

OCAD Offline Wiki

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This document is opened if you are offline and press a help button inside the OCAD program.

If you are online, you will be directed to the corresponding online OCAD Wiki page:

https://www.ocad.com/wiki/ocad/en/index.php?title=Main_Page

The online OCAD Wiki is always up-to-date. The OCAD Offline Wiki will be updated once a year.

The latest version can be downloaded from the OCAD website:

<https://www.ocad.com/en/documents/>

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About this Wiki

About this Wiki

This wiki will help familiarize you with the functions of OCAD.

How to Get to the OCAD Wiki

There are different ways to open the Wiki from OCAD:

- In the **Help** menu you can choose the following items:
 - **Contents**: You will go to the **Main Page** of the OCAD Wiki.
 - **Menu**: You will go to the **Menu** part of the **Graphical User Interface** page.
 - **Toolbar**: You will go to the **Toolbar** part of the **Graphical User Interface** page.
 - **What's New**: You will go to the **What is New** page.
- If you want to go directly to an article about a function, press the **F1** key when you have selected the function from the menu or toolbar.
- Many dialog boxes provide a **Help** button. Click it to go directly to the article for that function.

OCAD Learn Videos

OCAD offers you **learn videos** for various subjects on **YouTube** ^[1].

 Some videos are made with earlier versions of OCAD. Functions or dialog boxes may have changed. Look for the OCAD Wiki article on the corresponding function to get help for the most recent version of OCAD.

Conventions

The following conventions are used in this Wiki:

- **Bold**: Menu commands, buttons, keyboard, dialog boxes
 - *Italics*: Files
 - "Quotation marks": Input values, selection values
 -  Hint
 -  **Mas** This function is available in OCAD Mapping Solution.
 -  **Ori** This function is available in OCAD Orienteering.
 -  **Sta** This function is available in OCAD Starter.
 -  **CS** This function is available in OCAD Course Setting.
 -  **View** This function is available in OCAD Viewer.
-

Terms/Glossary

The following terms from the disciplines of geospatial technology, computer science and cartography, are used in this manual. An explanation of the most important terms is provided here to keep the explanations as short as possible and avoid any possible misunderstanding.

- **Vertex:** **Vertices** are specified by a pair of coordinates (x/y values). **Vertices** are used to define the position of points, lines and areas.
- **Object:** Each element on a map is referred to as an object (map object). There are point, line, area and text objects.
- **Point Object:** The position of a point object on the map is defined by a single vertex. These points can be moved, deleted or rotated. The vertex generally represents the center of the symbol.
- **Line Object:** A line object on the map is defined using a sequence of vertices. Individual vertices can be moved or deleted and new ones added. The object can be disconnected, rotated, reshaped or merged with lines of the same symbol. The vertices represent the center of the line. Line objects are directional.
- **Area Object:** An area object on the map is defined by a sequence of vertices. Individual vertices can be moved or deleted and new ones added. The object can be stretched, reshaped, reduced, rotated or merged with other areas with the same kind of symbol.
- **Image Object:** An image object is an imported vector graphic element. These are solely line and area objects. Not all OCAD editing functions can be applied to image objects. An image object must be converted into an object or assigned to a symbol before it can be edited. Image objects can be converted individually or automatically based on a reference table.
- **Graphic Object:** A graphic object is an element created using the **Convert To Graphic Object** function. This function is used to break an object down into its individual basic elements or to convert it into an outline.
- **Layout Object:** A layout object is on the layout layer at the top of the map. The layout layer may contain raster images and vector objects like lines, areas or text. The vector layout objects color model is CMYK. The layout images' color model is RGB.
- **Symbol:** Symbols are used to define a map object's graphic appearance. For example, a tree may be represented by a green circle on the map. Every map object drawn using the "tree" symbol will therefore have the same graphic appearance. If the symbol is changed using the symbol editor, all map objects drawn using it also change. OCAD provides four basic symbol types that correspond to the properties of their respective objects:
 - Point symbol
 - Line symbol
 - Area symbol
 - Text symbol
- **Georeferencing:** Georeferencing refers to the allocation of spatial reference information to the map so that its content can be mapped to a geodetic reference system, i.e. augmented by geographic coordinates (geocoding). OCAD supports more than 50 geographic coordinate systems. Information about the geographic coordinate system appropriate for your application is available from national land surveying offices, cartographic institutes or data suppliers.
- **Vector Maps:** Vector maps are made up of vectors (points, lines or area objects) defined by vertices. Raster maps can be created using vector maps. OCAD maps are vector maps.
- **Georeferenced Vector Maps:** A georeferenced vector map refers to a vector map whose vectors have been referenced using geographic coordinates (geocoded).
- **Background Map:** Background map refers to a raster map or OCAD file used as a background. It serves as a drawing template or background map image. Examples include scanned draft maps, satellite pictures, orthophotos, and shading. OCAD cannot be used to edit background maps.

- **Raster Map:** A raster map (bitmap) is made up of a series of regularly spaced pixels positioned at right angles. In OCAD, they can only be used as background maps. They can neither be edited nor converted into vector maps using OCAD. OCAD supports the following raster map formats:
 - BMP - Bitmap
 - TIFF - Tagged Image File Format
 - JPG - Joint Photographic Experts Group
 - GIF - Graphics Interchange Format
 - PNG - Portable Network Graphics
- **Georeferenced Raster Map:** A georeferenced raster map refers to a raster map whose pixels have been referenced using geographic coordinates (geocoded). Georeferencing information is usually stored in a “world file”, a second file with the same name as the raster map file. The file extension is made up of three letters. The first two letters refer to the raster map file format, the third letter for world file. The world file should be neither renamed nor edited. With TIFF files, georeferencing information can be stored in the raster map file itself; a world file is therefore not always required. OCAD supports the following world files and/or georeferenced raster map file formats:
 - BPW -World file for a BMP file
 - TFW -World file for a TIFF file
 - JGW -World file for a JPG file
 - GFW -World file for a GIF file
 - PGW -World file for a PNG file

Contact

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<https://www.ocad.com>

[Back to Main Page](#)

References

[1] <https://www.youtube.com/user/ocadcom/playlists>

[2] <mailto:info@ocad.com>

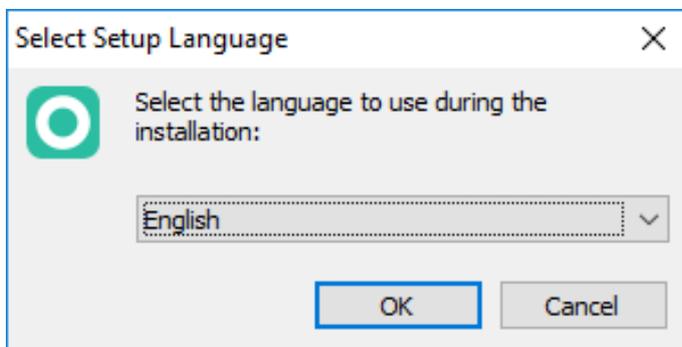
Installation and Activation

Installation

OCAD Installation

OCAD requires Windows 7 or Windows 8 or Windows 10 (32 or 64 bit).

1. Download the OCAD installation file from the download link you received by email. The installation wizard starts after double-clicking the downloaded file.
2. The installation wizard will guide you through the OCAD installation.
3. The license name, the license number and license checksum are sent to you by email.
4. Please keep the email with the download link and license information!



 Setup - OCAD 2018 Mapping Solution

License Agreement

Please read the following important information before continuing.

Please read the following License Agreement. You must accept the terms of this agreement before continuing with the installation.

1. General Terms and Conditions (GTC)
Last Update: March 1 2018. This version replaces all previous versions.

1.1 Scope of Application

1.1.1 All offers, orders, goods and services of OCAD Inc. shall be governed exclusively by the following General Terms and Conditions (GTC). In any event, they shall take precedence over differing terms and conditions, even those sent by the buyer or printed on its correspondence. Amendments and subsidiary agreements shall only be deemed valid if confirmed in writing by OCAD Inc.

1.1.2 By ordering a product or a service, the customer confirms that he has taken note of and accepted the contents of these General Terms and Conditions.

1.1.3 In addition to the terms and conditions listed here, the licensing terms

I accept the agreement

I do not accept the agreement

<http://www.ocad.com>

 Setup - OCAD 2018 Mapping Solution

License information

Please enter your license information and click Next to continue.

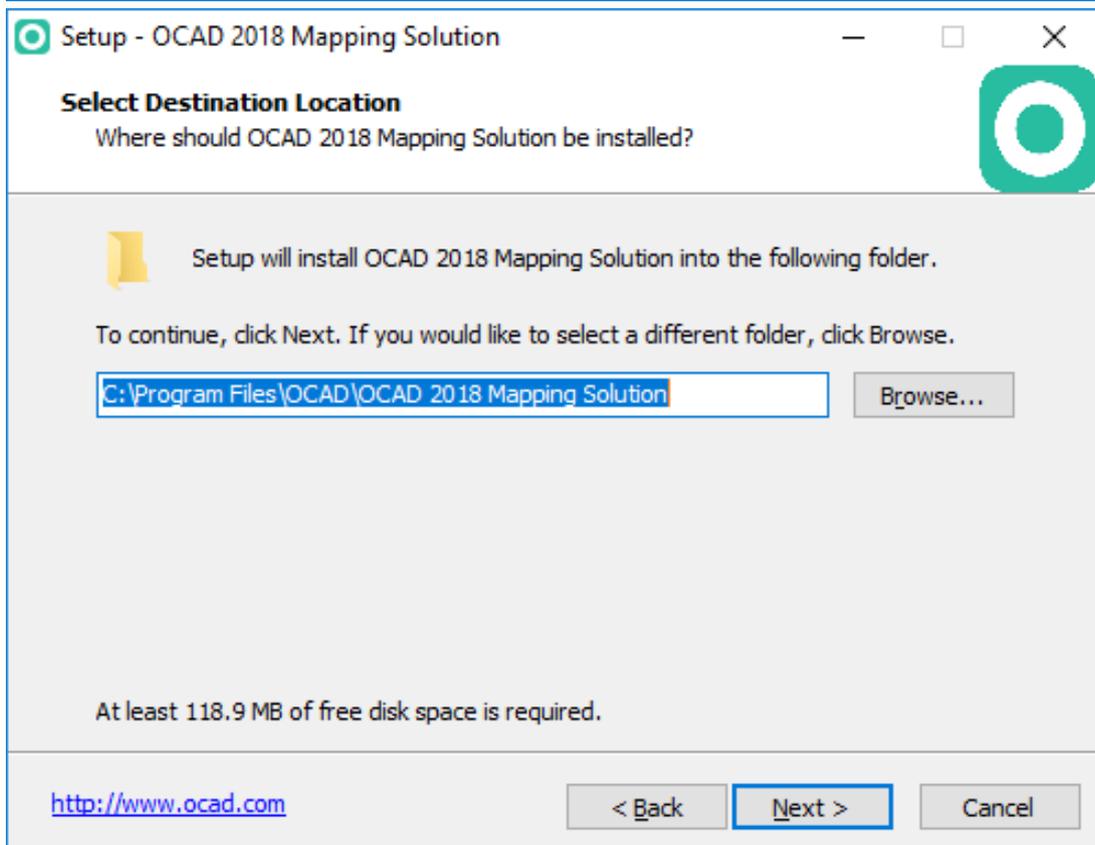
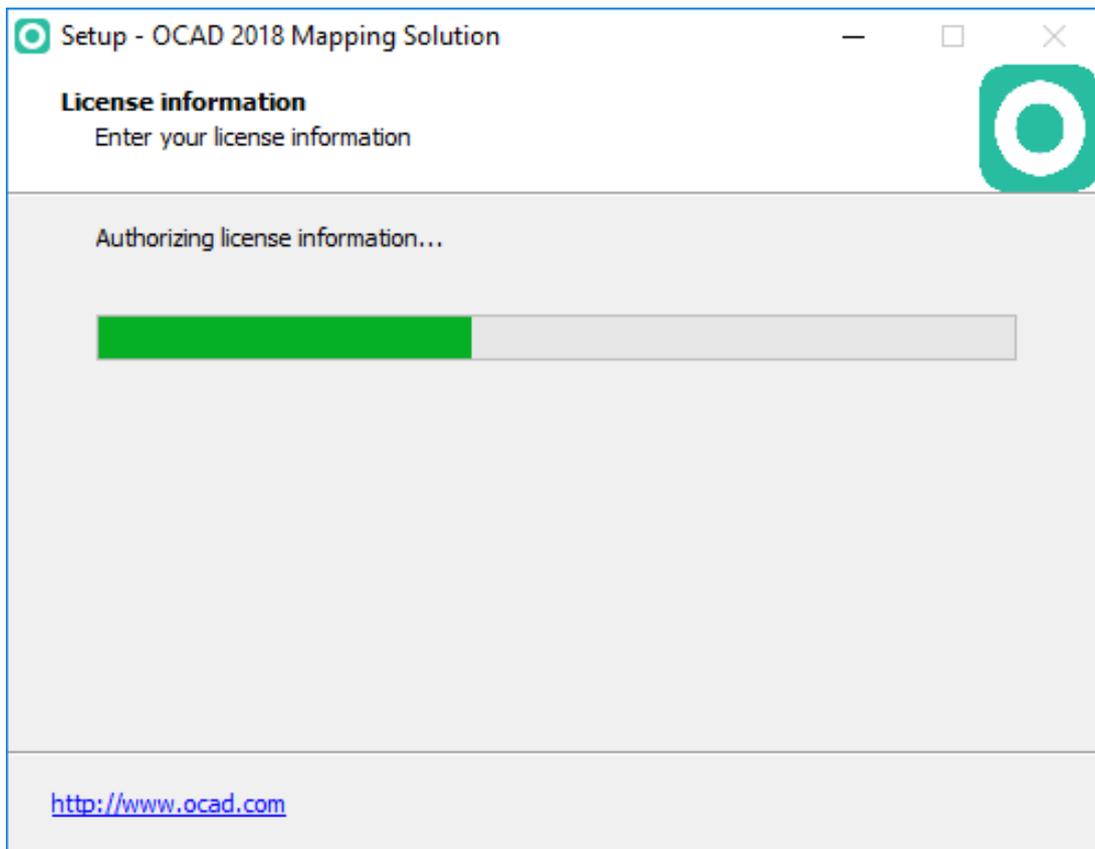
Enter your license information.

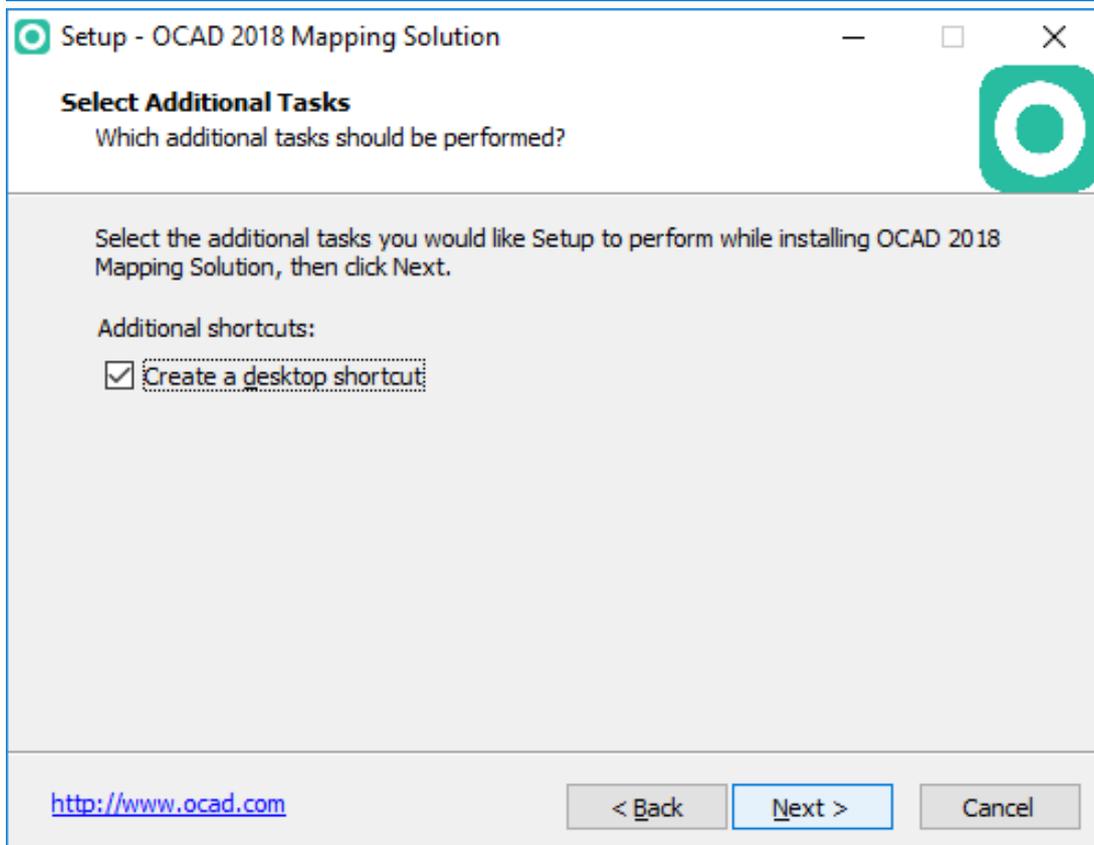
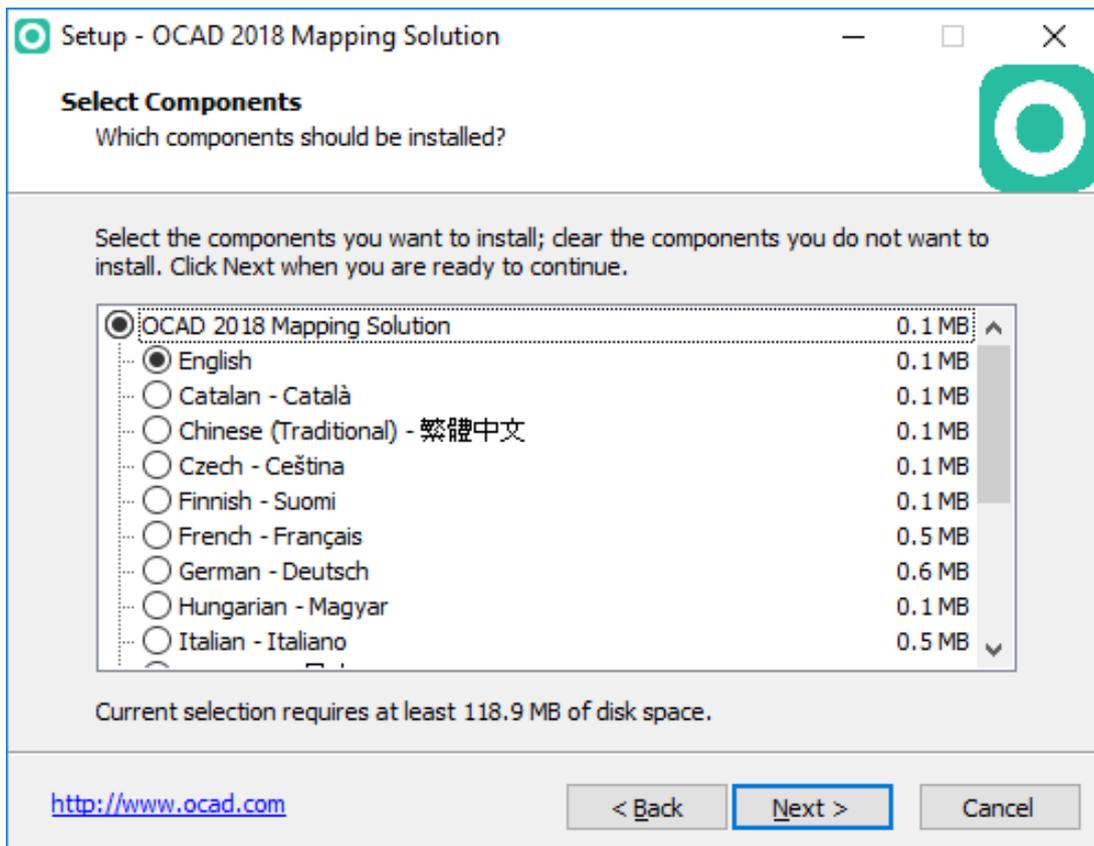
Name:

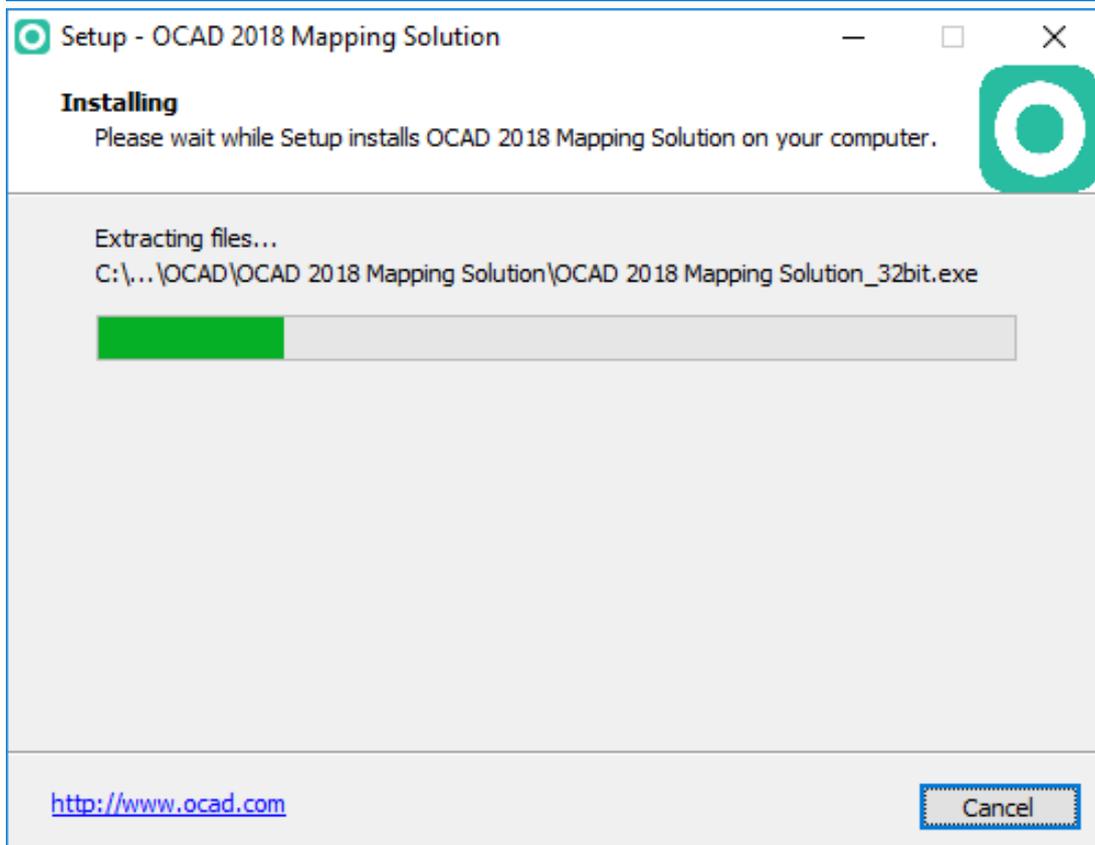
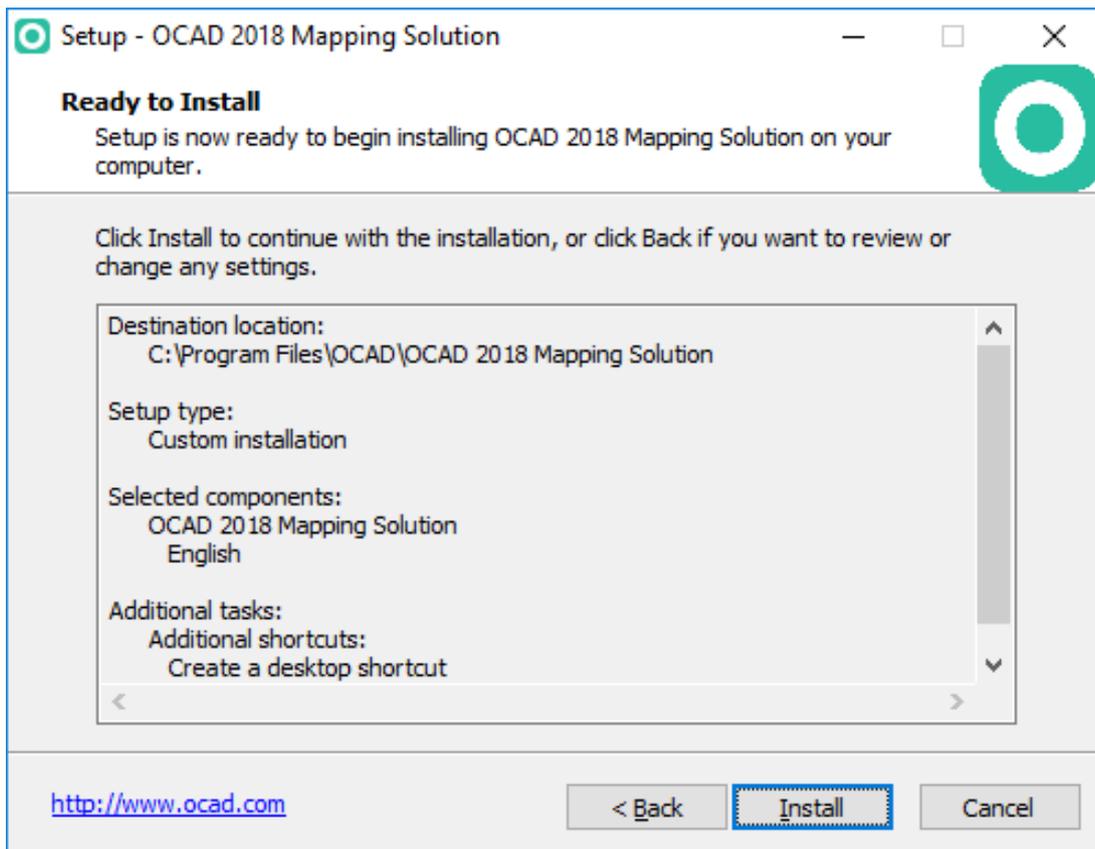
License no:

Checksum:

<http://www.ocad.com>









Silent Installation

Please visit the **Silent Installation** page for further information.

Installation in the Cloud

OCAD runs as app on clouds like DropBox or OneDrive. Install your Team or Single User Licenses in the Cloud and make updating and sharing of Team Licenses much easier.

OCAD Activation

Please visit the **Activation** page for further information.

Activation/Reactivation

Activation

Before you can run OCAD you have to activate the software. While starting the software for the first time, the Activation Wizard will start automatically and guide you through the activation procedure.

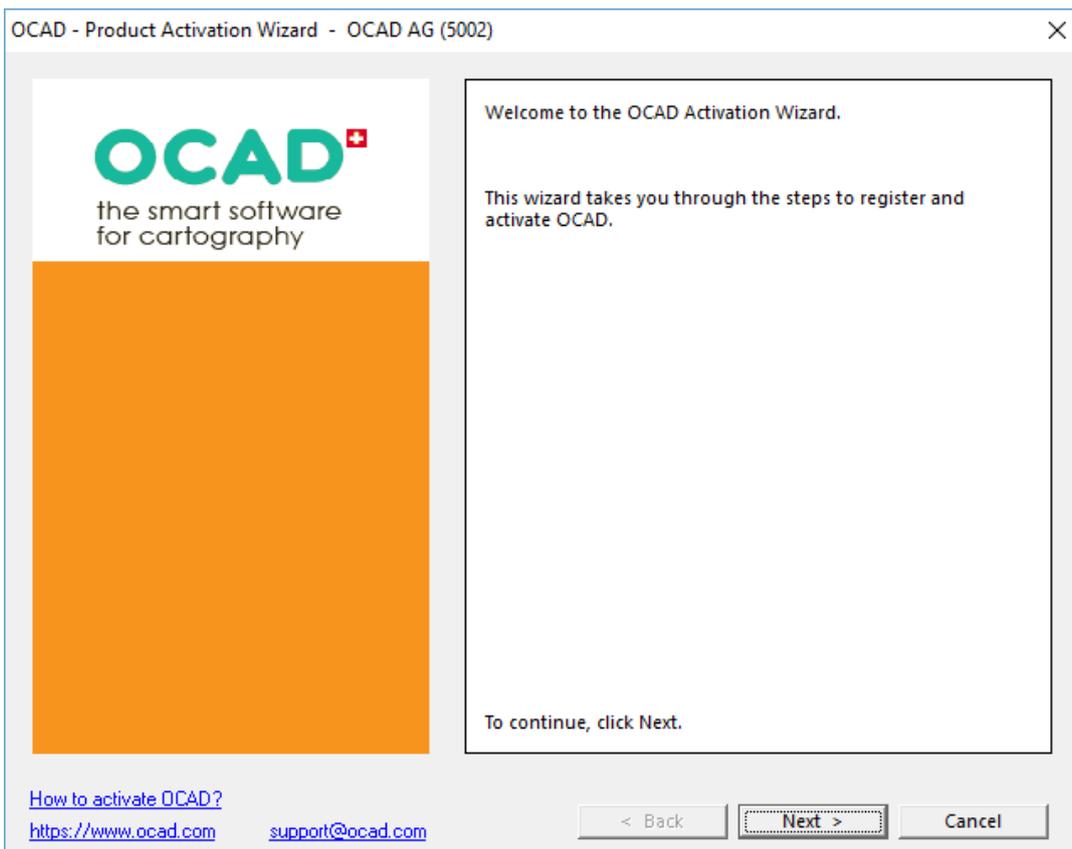
- **OCAD for Teams** can only be activated once.
- **OCAD for Single Users** can be activated automatically on 1 device (desktop or notebook). In order to allow the use on several own devices at the same time (desktop, notebook, tablet) further activations for own devices can be granted by OCAD on request. Contact **OCAD Support** ^[1].

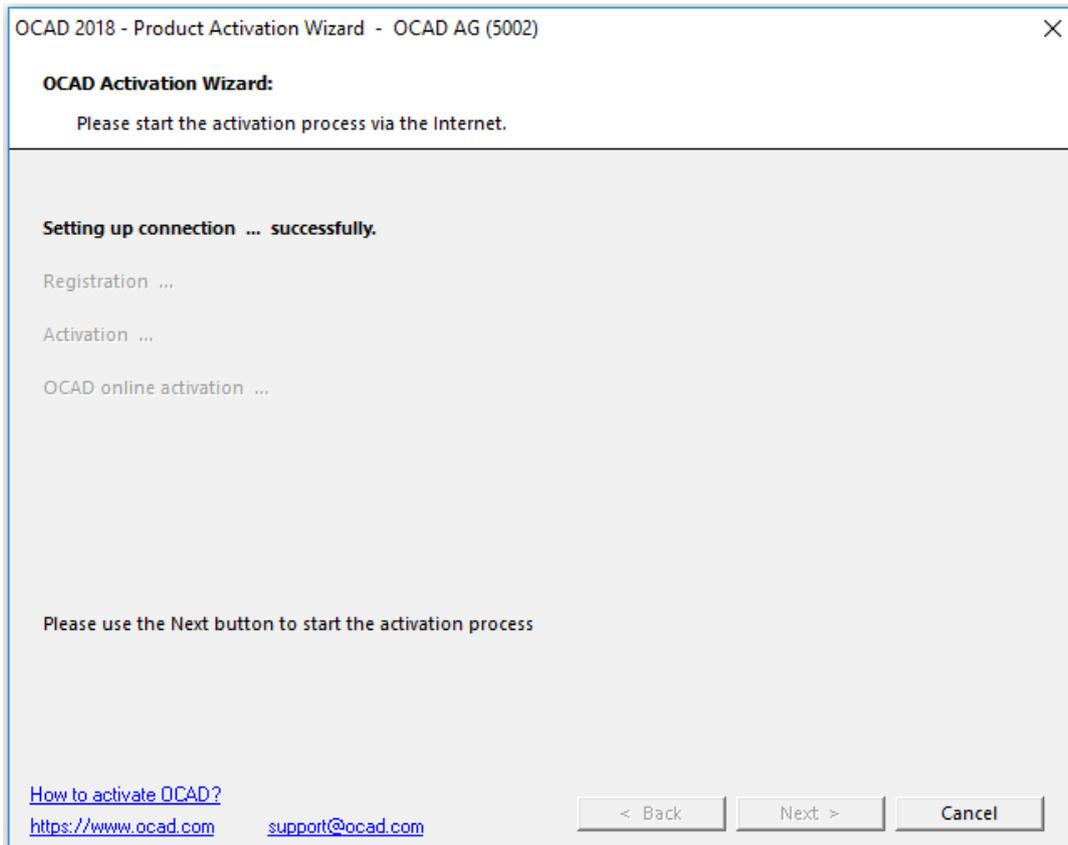
Read more about activation in the **Subscription Model** ^[2] section in the **FAQ** on our webpage or in the **License Terms**.

In case of purchasing a new PC or a total failure of your hard disk, please contact OCAD via the **Transfer form** ^[3] for re-installation and re-activation.

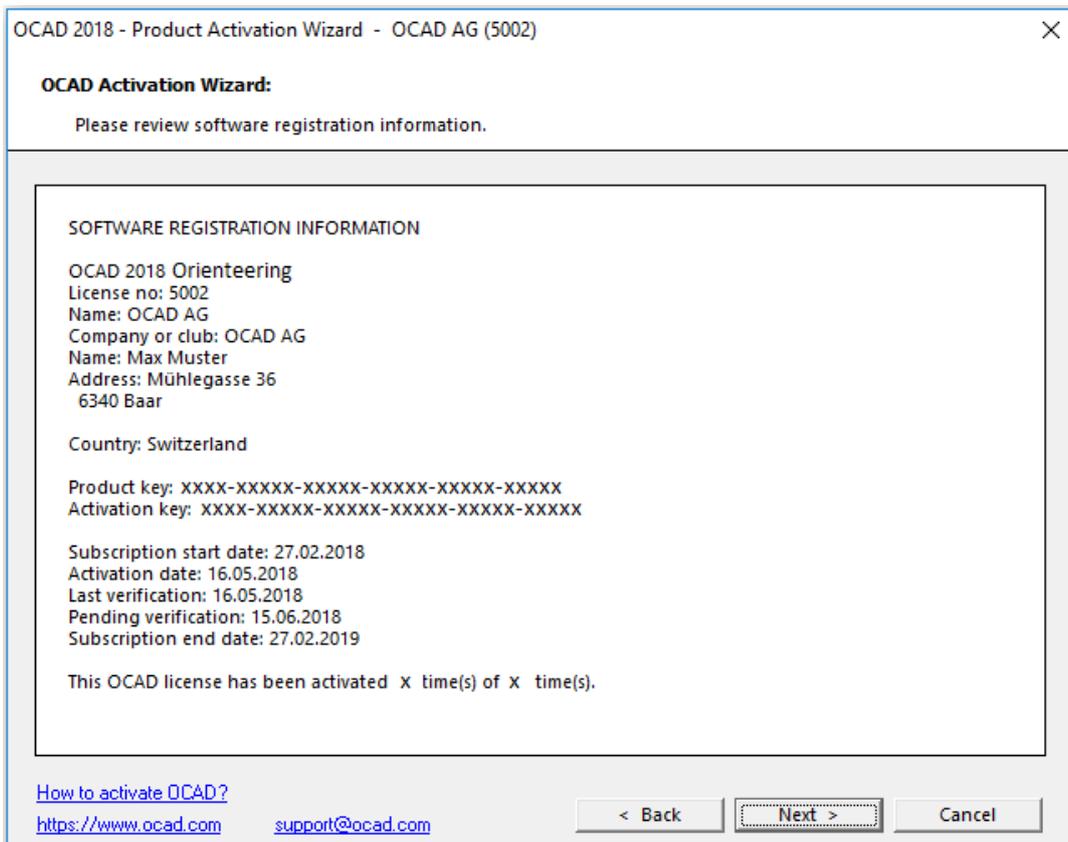
In the **License Transfer Utility** you can transfer your license to another user. By doing so, the license on your computer will be deactivated and you can activate the license again on another one.

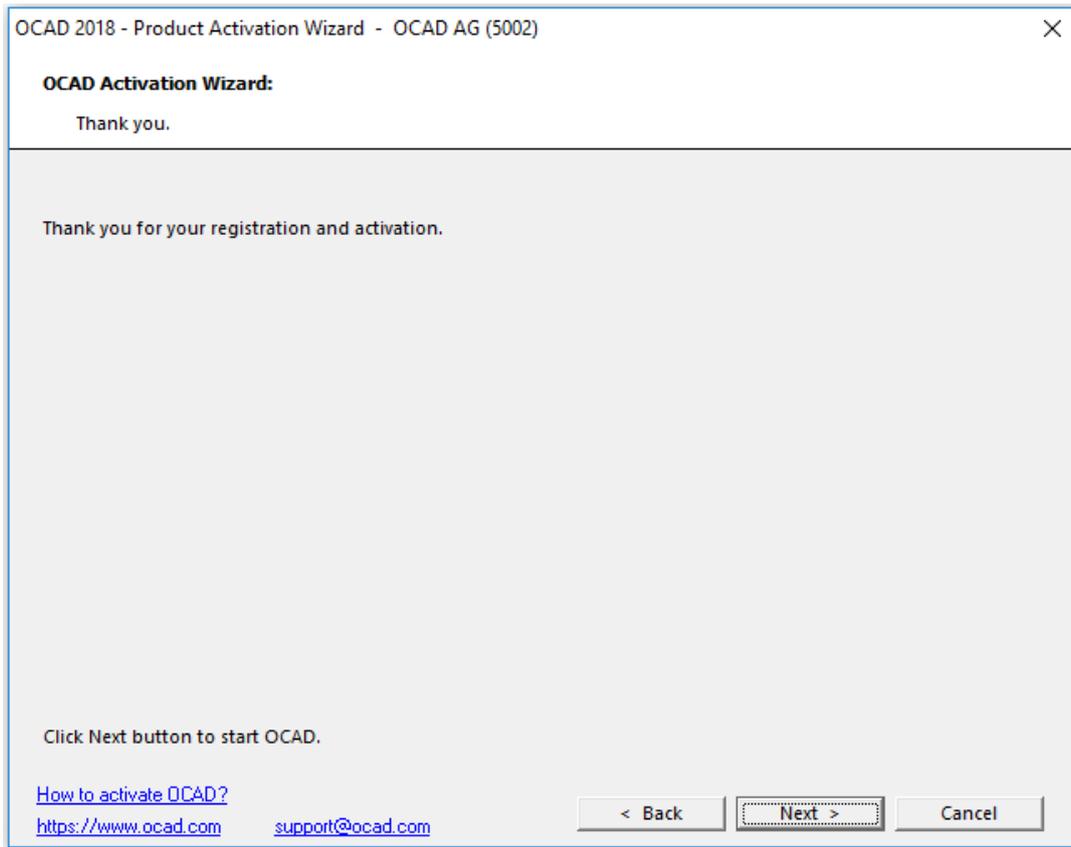
Online Activation





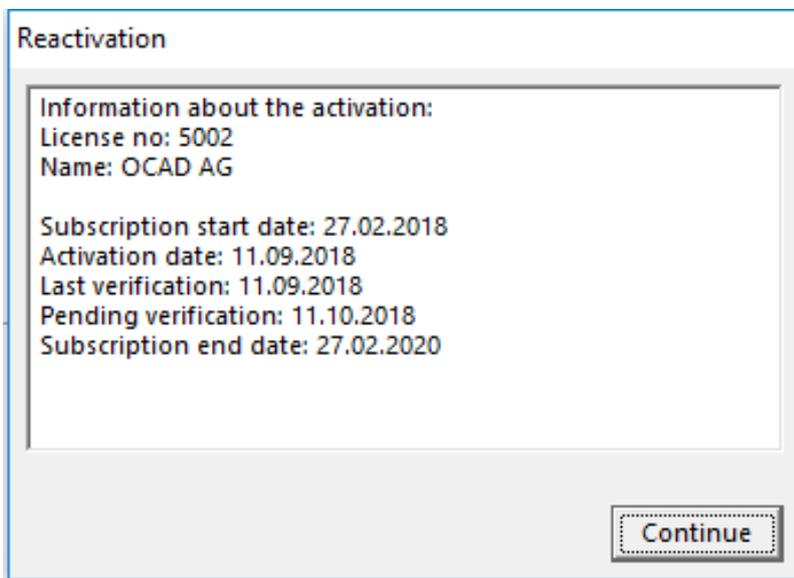
💡 If the error message **Internal Error http.GetHttps.Url: .../testConnection.php** appears while *setting up connection...* then a firewall may blocks the connection.





Reactivation

If you start OCAD and have no Internet Connection, you will get a message.



License number: The number of your license.

Name: How the license is named.

Subscription start date: The date your Subscription has started.

Activation date: The date you have activated OCAD.

Last verification: The date your license was verified the last time.

Pending Verification: The date after that your license has to be verified within 30days.

Subscription end date: When your Subscription will end. After this date, OCAD will not run anymore.

Pending Verification

Due to the subscription model OCAD needs to check, if your license is valid. If you have no internet connection (e.g. during fieldwork), this can't be done. That's why there is a **Pending Verification** date. After the Pending Verification Date, you need to start OCAD once within 30 days with an internet connection, so OCAD can verify the license again (will be done automatically at the startup). Then, the date for the Pending Verification will be shifted backwards. If you do not verify the license again in these 30 days, you can't use OCAD anymore offline until you reactivate OCAD online.



The Pending Verification date can be seen under **About OCAD** in the **Help** menu.

References

[1] <https://www.ocad.com/en/#support>

[2] <https://www.ocad.com/en/faq/#subscription>

[3] <https://www.ocad.com/transfer/transferform.php>

OCAD as Cloudable App

OCAD runs as app on clouds like Dropbox or OneDrive. Install your Team or Single User Licenses in the Cloud. See below how it works and what you gain.

OCAD Team User Licenses in the Cloud

Advantages

- Only one installation, easier to update
- Easier to transfer a Team license from one member to another one
- Information about the free licenses when starting OCAD

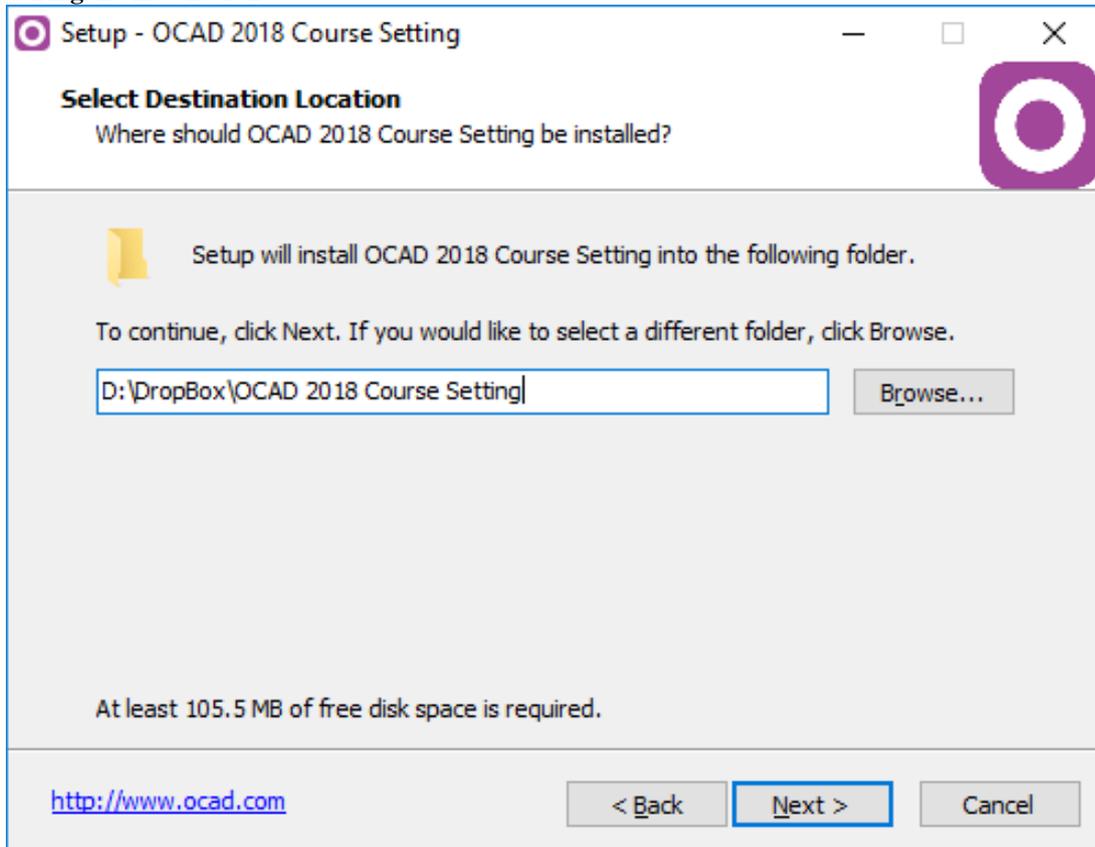
Example

- Your club bought 5 OCAD Course Setting Team Licenses.
- You get an email from OCAD with the license information and download links for all 5 licenses.

Installation

- You install one OCAD Team license on your Dropbox. For that, you need to change the installation folder to your Dropbox

during the installation.

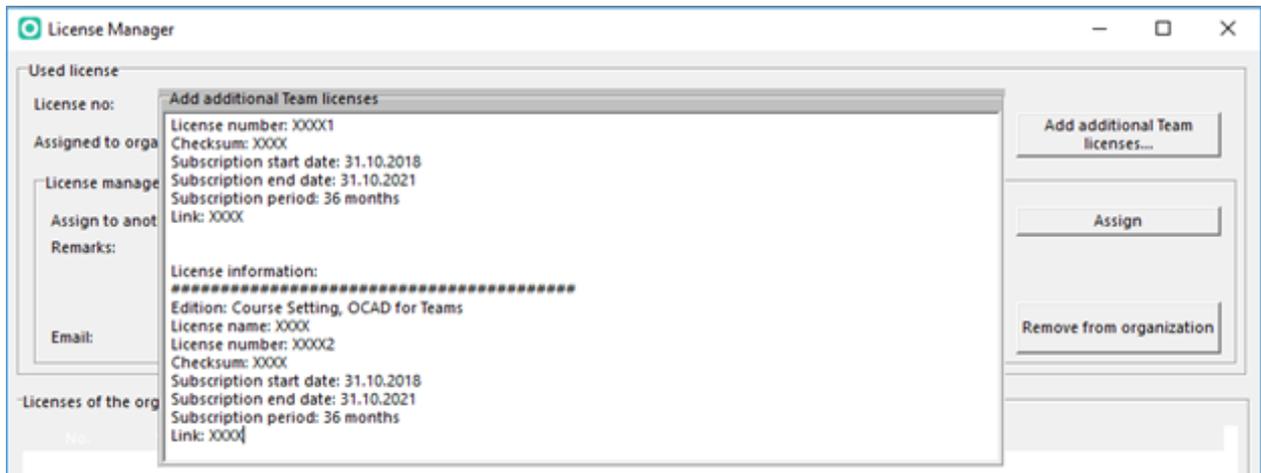


Activation

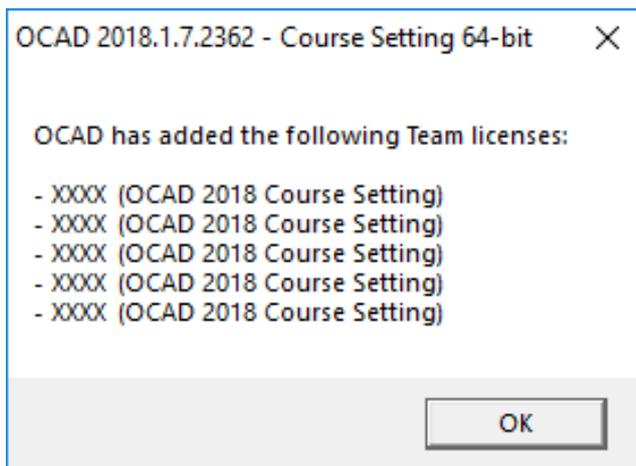
- Start and activate your OCAD Team license using the **Activation Wizard**.
- You are ready to use OCAD Course Setting.

Install Addition Licenses

- Open the **License Manager** in **Help** menu and click on **Add additional Team licenses**.
- Paste the complete text with the license data of all 5 licenses from your order email here.



- You will get a confirmation when the licenses have been added successfully.



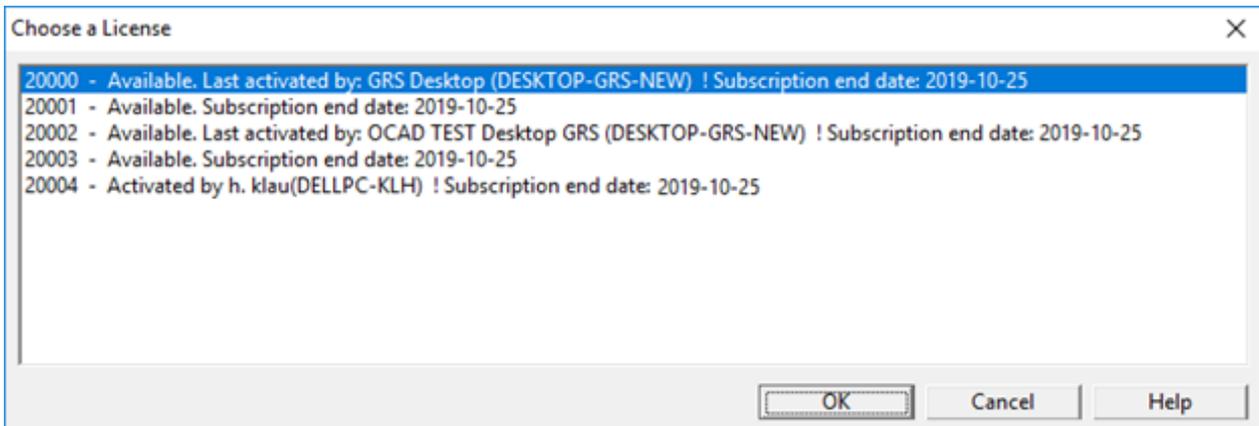
💡 It is only possible to add licenses for the same OCAD edition. It is the Course Setting edition in your example. Also, you need to run OCAD as administrator to be able to add the additional licenses.

Dropbox

- Share OCAD Dropbox folder with other team members.

Start OCAD as a Team member

- Go to the Dropbox folder and start OCAD. Multiple users can start OCAD the same time.
- You see the information about the available and used license.
- Choose an available license.



- You do not need to install OCAD.
- If you have not activated the license before, you also need to follow the **Activation Wizard**.
 - If you choose a license, that you have activated before, you do not need to fill in all license information again.

Release a OCAD Team License

- When you or a Team member has finished the work, you need to close all ocd files first and open the **Transfer License Utility** from the **Help** menu. There you can deactivate your license and release it for another team member.
- The released license will be shown shown as *Available* in the Choose a License window.

How to update the license

- When OCAD releases a new Service Update, you only need to update the installation in your Dropbox folder.

OCAD Single User Licenses in the Cloud

It also makes sense to install Single User Licenses in the Cloud. If you have several devices (e.g. Home PC, Laptop), all Service Updated only need to be done once.

- Install and activate OCAD the same way as described above.
- You can not add additional licenses in the License Manager.

OCAD on Mac OS X



OCAD is a Windows software.

However, running OCAD on an Intel-based Mac is possible in different ways. We tested it with a **Virtual Machine (VirtualBox [1])** and **VMWare Fusion**.

Virtual Machines

OCAD can be run perfectly within a virtual machine.

💡 OCAD runs also with Parallels Desktop for Mac. Please note that Windows needs 2 GB RAM or more that OCAD works stable.

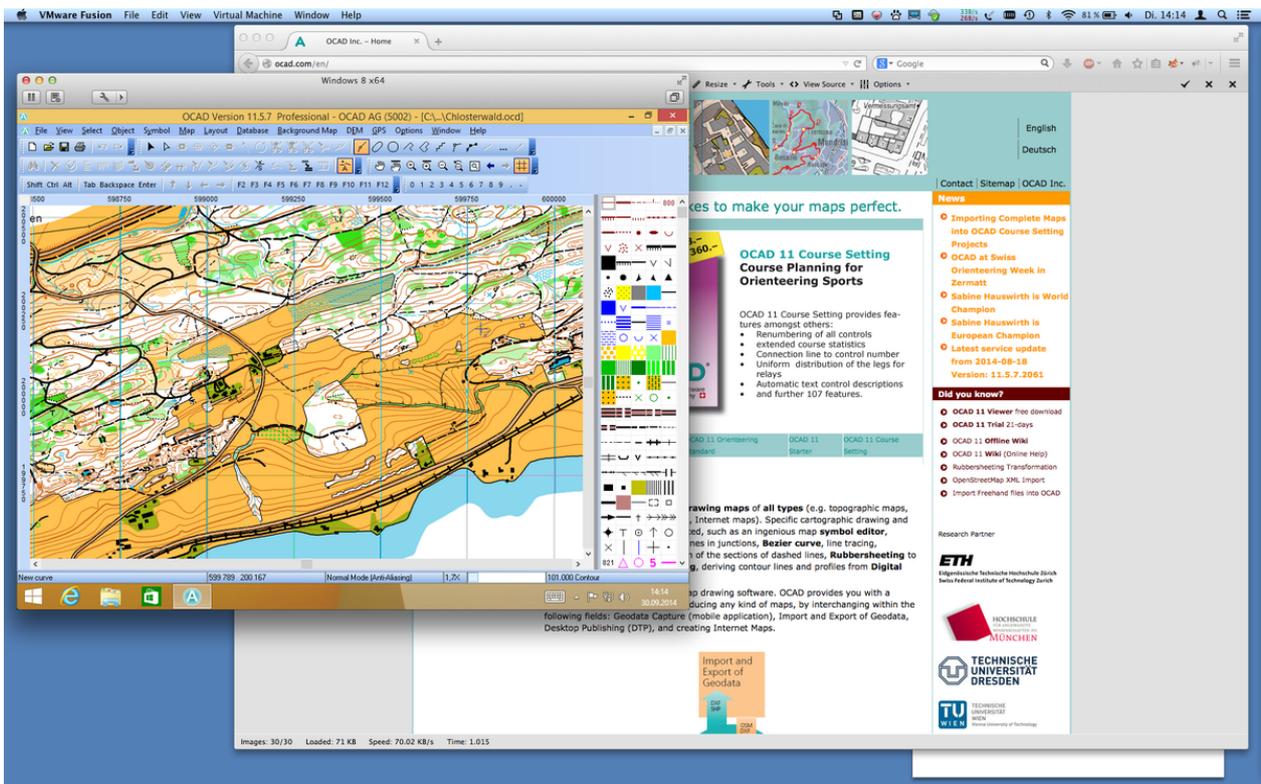
VMware Fusion

As in contrast to Virtual box **VMWare Fusion [2]** is not free but more stable. We have installed Windows 8.1 with VMWare Fusion on Mac OS X 10.9. You can work with OCAD/Windows in the so called single Window Mode or complete transparent in the Unity mode.

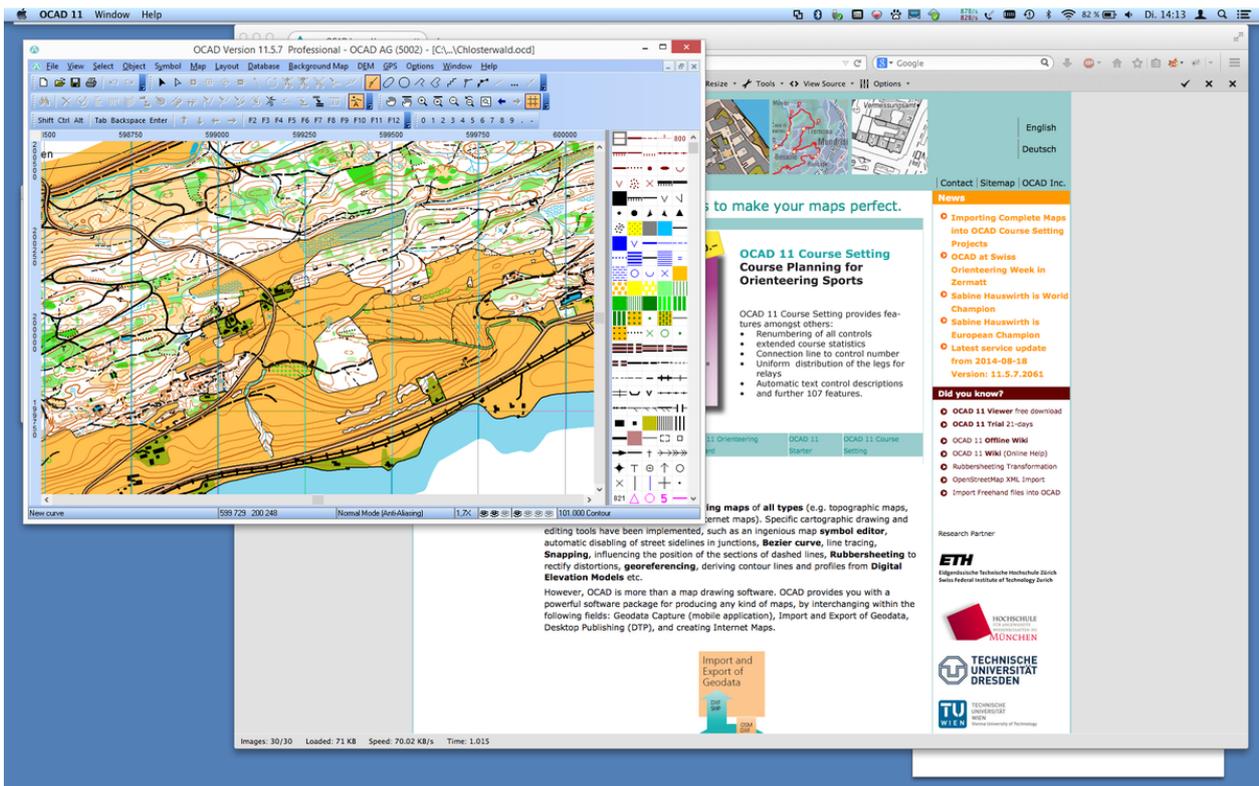
💡 VMWare Fusion is enough to use OCAD. OCAD does not need VMWare Fusion Pro.

Screenshots from the OCAD:

Single Window Mode



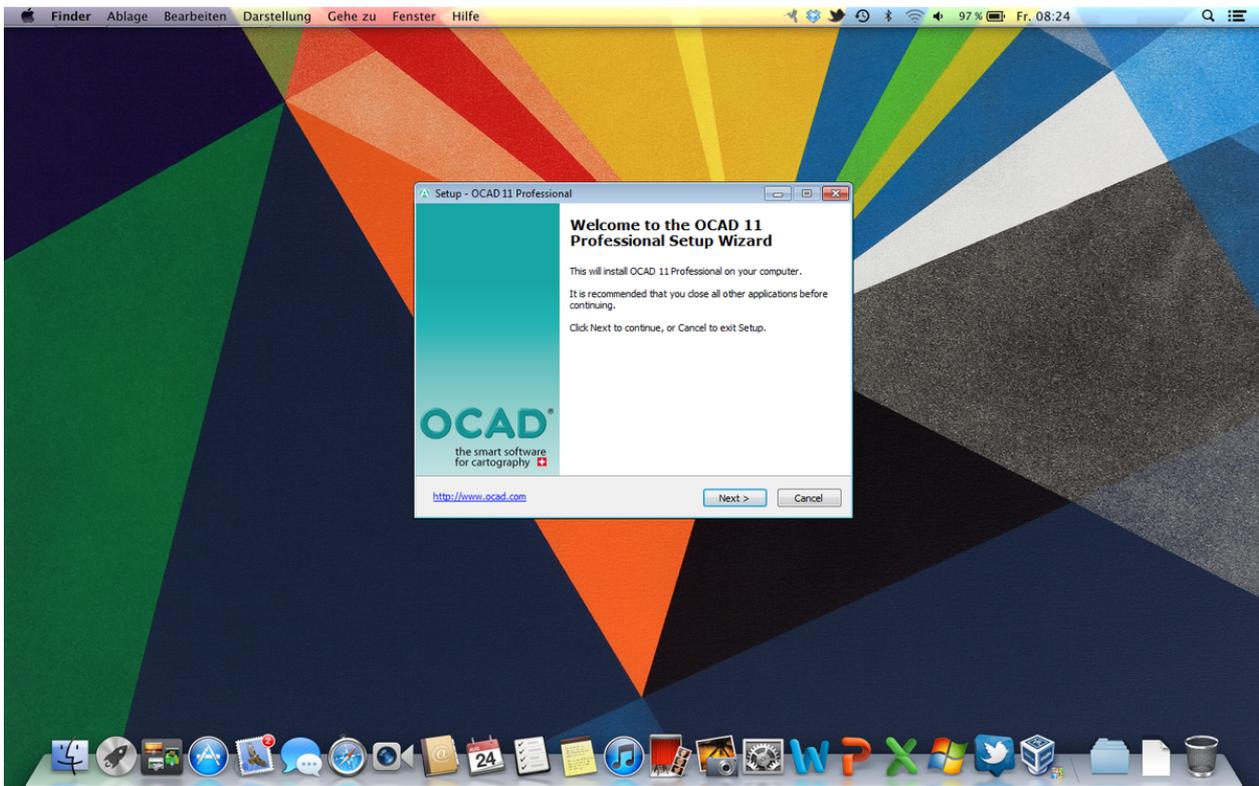
Unity Window Mode



Virtual Box

The advantage of **VirtualBox**^[1] is that it is free. Well, at least the software is free but you will need a Windows license in addition which can cause costs. To show how it looks like, we installed **VirtualBox**^[1] on a MacBook Pro with Mac OS X Mountain Lion and took some screenshots.

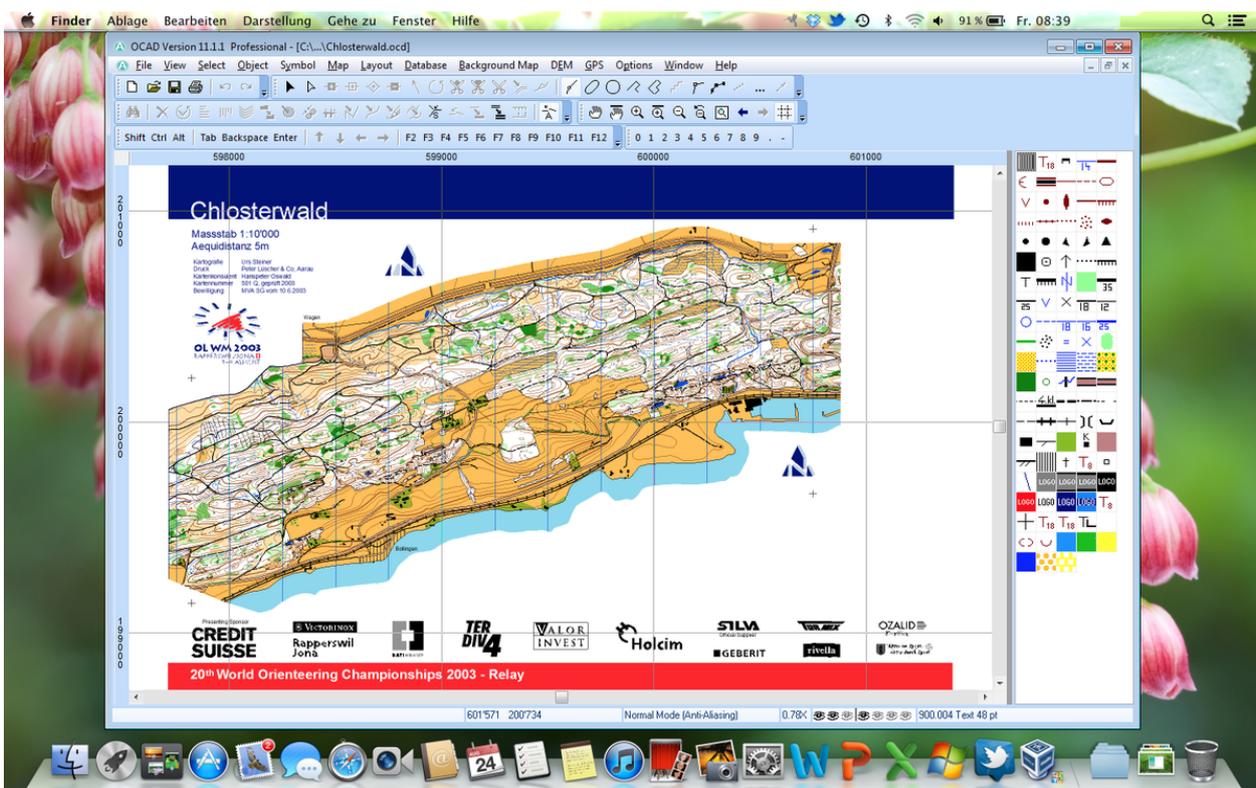
Installation:



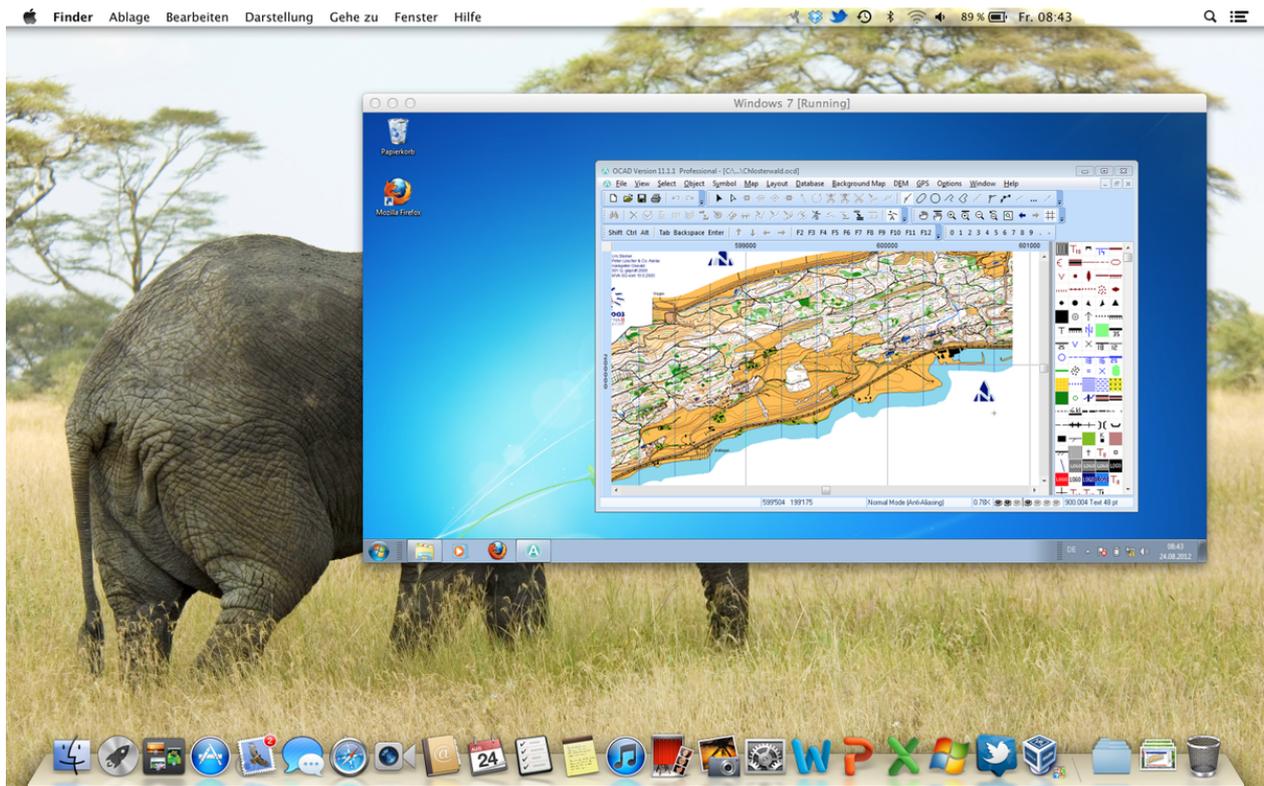
Activation:



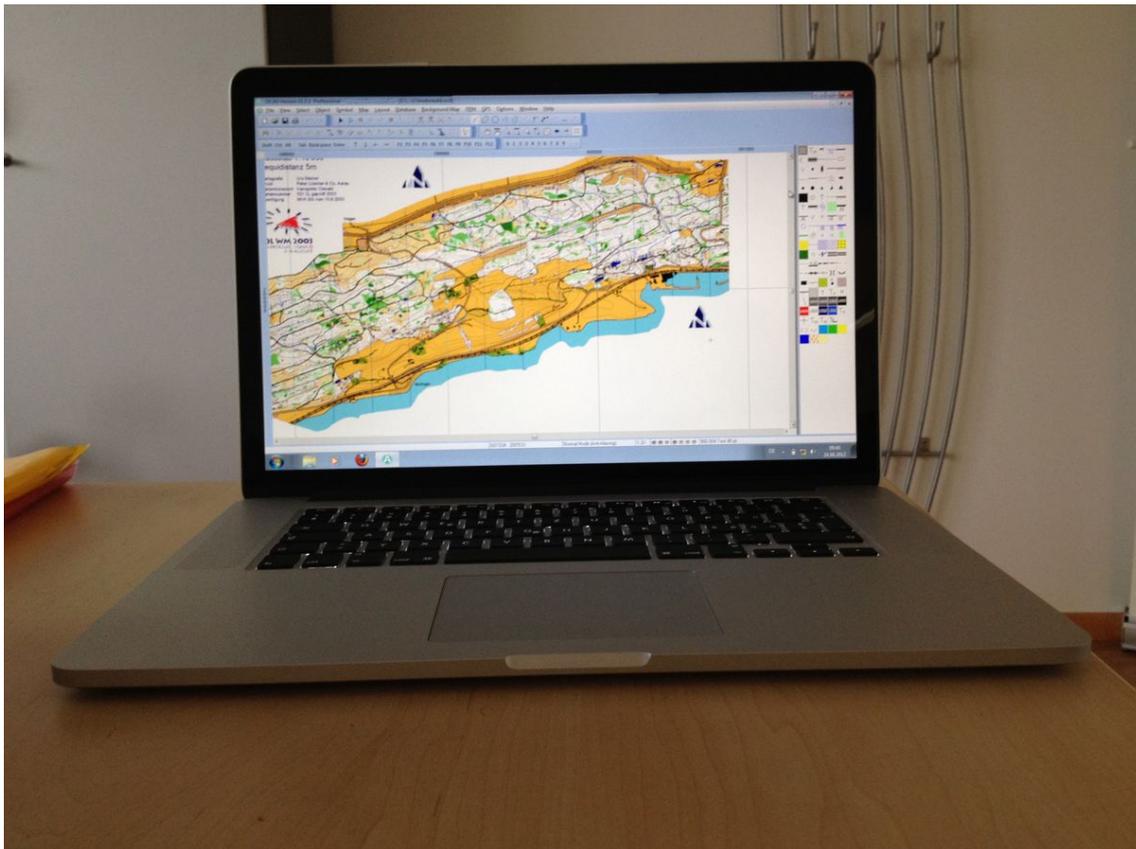
Run OCAD in Seamless Mode:



Run OCAD in Scale Mode:



Run OCAD in Fullscreen Mode:



VirtualBox can also be used with Linux and Solaris systems as a host.

Comparison Virtual Machines

Our experience shows that VMWare Fusion is approx. 30-40% more performant than VirtualBox

Problems

At the moment, there are no OCAD problems known.

CrossOver

OCAD doesn't run on CrossOver^[3].

BootCamp

OCAD can also be run on a Mac with help of **BootCamp**^[4].

References

[1] <https://www.virtualbox.org>

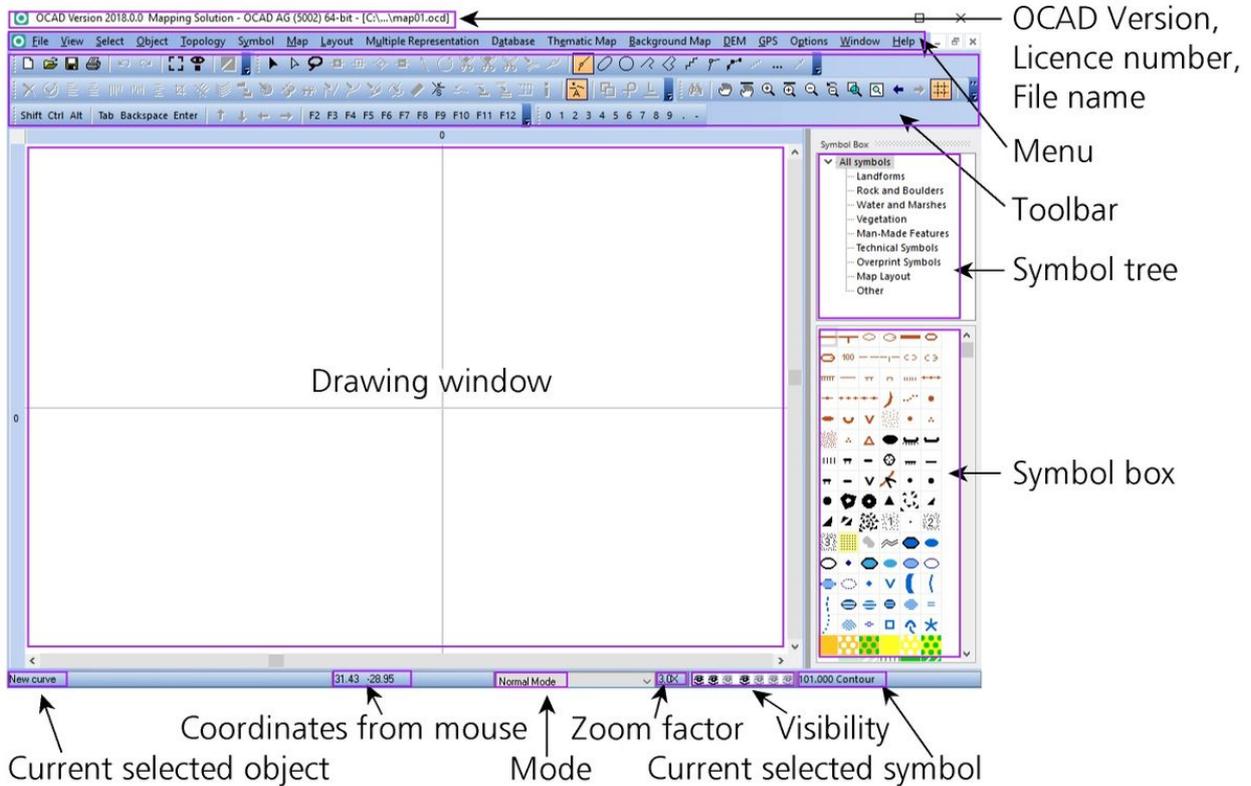
[2] <http://www.vmware.com/products/fusion>

[3] <https://www.codeweavers.com/>

[4] <http://www.apple.com/support/bootcamp>

Drawing in OCAD

Graphical User Interface



Toolbars

Toolbars can be moved within the graphical user interface. The buttons can be individually shown or hidden in the **GUI (Graphical User Interface)** category of the **OCAD Preferences** which can be found in the **Options** menu. Alternatively, click the small arrow at the end of each toolbar to adjust it.



Standard Toolbar



-  **New:** Create a new map.
-  **Open:** Open an existing map.
-  **Save:** Save changes made to the map.
-  **Print:** Print out the map.
-  **Undo:** Undo previous actions.
-  **Redo:** Cancel the previous undo action.
-  **Manage Background Maps:** Manage the background maps.
-  **Symbol Status Manager:** Manage the symbol status settings.
-  **Open Google Street View:** Opens Google Street View in your web browser at the chosen position of the map.

Edit Functions Toolbar



-  **Delete:** Delete the selected object(s).
-  **Rotate (Enter Angle):** Rotate selected object(s) by entering an angle.
-  **Align Objects: Horizontal Coordinates:** Align objects at a horizontal coordinate.
-  **Align Objects: Horizontal Coordinate Centered:** Align objects at horizontal centered coordinates.
-  **Align Objects: Vertical Coordinates:** Align objects at a vertical coordinate.
-  **Distribute Objects: Horizontal Coordinate:** Distributes the selected objects horizontal with equal space between.
-  **Distribute Objects: Vertical Coordinate:** Distributes the selected objects vertical with equal space between.
-  **Crop Objects:** Crop objects in a designated area (desired sector, hole, delete selected objects).
-  **Move/Duplicate Parallel by Specified Distance:** Move/Duplicate an object by a specified distance and direction.
-  **Interpolate Objects:** Insert line or point objects regularly between existing objects.
-  **Duplicate Object:** Create a copy of the selected objects.
-  **Fill or Make Border:** Fill a line or area object with area object, make a line border for an area object or duplicate the object identically. Create a line text object on a selected line object.
-  **Merge:** Merge multiple line, area and text objects with the same symbol.
-  **Reverse Object:** Reverse the direction of the selected line object(s).
-  **Change to Polyline** Convert the selected line or area object(s) into a polyline.
-  **Change To Bézier Curve:** Convert the selected line or area object(s) drawn in freehand mode into Bezier curves.
-  **Convert To Graphic Object:** Convert the selected object(s) into their graphic elements (lines and areas).
-  **Smooth:** Smooth line or area objects.
-  **Generalize Buildings:** Simplify the building geometry or rectangle it.

-  **Snapping:** Snap vertices automatically to other curves or points.
-  **Join:** Move the ends of the selected line object to connect to adjoining objects.
-  **Change Symbol of Object:** Assign the symbol selected in the symbol box to the selected object(s).
-  **Change Symbol For All Objects With This Symbol:** Change the symbol of all objects with a symbol A to symbol B.
-  **Measure:** Measure the selected line or area object or the distance between 2 selected point objects.
-  **Object Information:** Shows the object informations.
-  **Automatic Joining:** Automatically join the ends of lines and areas during the drawing process.
-  **Select Duplicate Objects:** Selects identical objects at the same position.
-  **Select Self-Intersected Objects:** Selects all line, area and line text objects with a self-intersecting geometry.
-  **Select Line Text Objects with Line too Short:** Selects all line text objects whose text is longer than the line length.

View Toolbar



Various functions are available for increasing or reducing the size of map view as well as repositioning it.

-  **Find Selected Objects:** Move screen to the selected object.
-  **Pan:** Reposition the map view
-  **Pan Locked:** Reposition the map view a number of times in succession.
-  **Zoom In:** Zoom in the map view to greater magnification.
-  **Zoom In Locked:** Zoom in the map view a number of times in succession.
-  **Zoom Out:** Zoom out the map view to lesser magnification.
-  **Zoom Out to Previous View:** Zoom out to the last map view of lesser magnification.
-  **Zoom to Selected Objects:** Zoom the view to the biggest possible view showing the selected objects.
-  **Show Entire Map:** Display the entire map in the drawing window.
-  **Zoom to Previous View:** Return to last map view.
-  **Zoom to Next View:** Undo "Zoom to Previous View".
-  **Show Screen Grid:** Display the coordinate grid in the drawing window.
-  **Show Rulers:** Show rulers along the top and left side of the drawing area.
-  **Ruler Guides:** Display all ruler guides in the drawing area.
-  **Draft Mode Slider:** The upper slider (M for map) is used to fade out the map objects; the lower slider (B for background) to fade out the **Background Map**. The **Draft Mode Slider** is only visible if the **Draft Mode** is activated in the **View** menu.

Editing and Drawing Toolbar

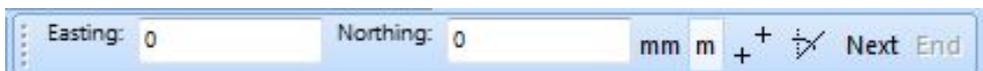


Edit modes

-  **Select and Edit Object:** Select and move objects.
-  **Select Object and Edit Vertex:** Select objects or move points of objects.
-  **Select Object with Lasso Tool:** Select objects with a Lasso.
-  **Normal Vertex:** Add a vertex. This will not influence a dashed line.
-  **Corner Vertex:** Add a corner vertex or turn a normal vertex into a dash vertex. This will affect the dashed line so that it will start with a full dash from this point, and/or the specific main symbol of a line will appear at the corner vertex.
-  **Dash Vertex:** Add a dash vertex or turn a normal vertex into a dash vertex. This will affect the dashed line, which will start with half a dash from this point.
-  **Remove Vertex**
-  **Indicate Direction of Area Pattern, Point or Text Object:** Indicate the direction of an area pattern, point or text object.
-  **Rotate Object:** Rotate the selected object(s).
-  **Cut hole:** Cut a hole into the selected area object.
-  **Cut area:** Cut the selected area object.
-  **Cut:** Cut the selected line object or the borderline of the selected double line or area.
-  **Move parallel:** Move the selected line or area object parallel to the original object.
-  **Reshape:** Redraw part of a line, area or text object.

Drawing modes

-  **Curve mode:** Draw in curve mode.
-  **Ellipse mode:** Draw elliptical (oval) objects.
-  **Circle mode:** Draw circular objects.
-  **Rectangular line mode:** Draw rectangular line objects with any number of corners.
-  **Rectangular mode:** Draw rectangular area objects with any number of corners.
-  **Stairway drawing mode:** Draw a rectangular stairway.
-  **Straight line mode:** Draw objects with straight lines.
-  **Freehand mode:** Draw objects in freehand mode.
-  **Drawing multiple point objects:** Draw several point objects that are placed on a line with a constant interval.
-  **Numeric Mode:** Draw objects in numeric mode.
-  **Laser Rangefinder drawing mode:** Draw objects by distances transmitted from a laser distance meter.

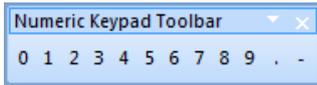


Numeric Mode

Toolbar

Numeric Keypad Toolbar

Mas Ori



This toolbar can be used as an alternative to the numeric keypad. Some tablet PCs do not have a keyboard; **Numeric Toolbar** can be used to enter numbers.

Mobile Toolbar

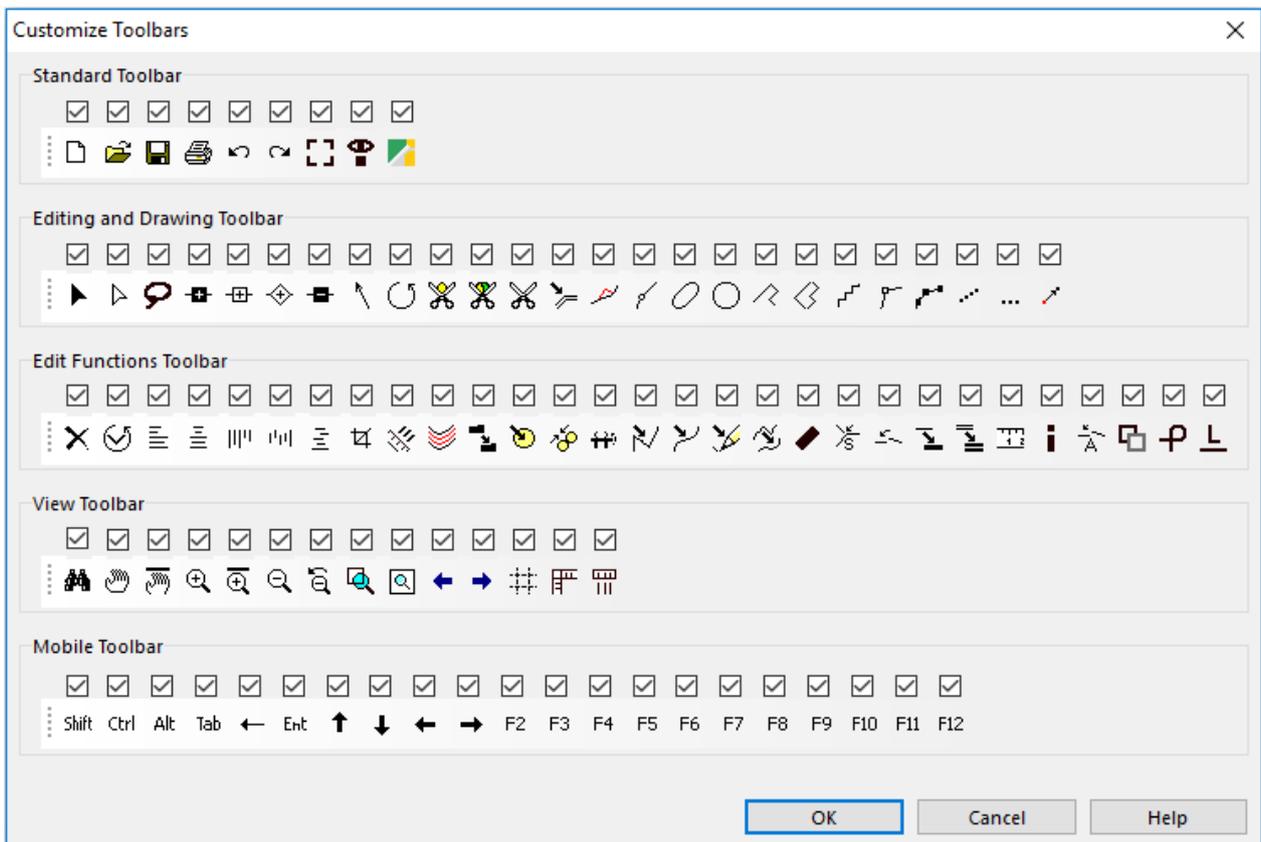
Mas Ori



This toolbar can be used as an alternative to the keyboard. Some tablet PCs do not have a keyboard with these special keys; use the **Mobile Toolbar** to use these keys.

Customize Toolbar Dialog Box

Choose this command to customize toolbars. The dialog box is opened by clicking **Customize** in the **GUI (Graphical User Interface)** page in **OCAD Preferences** dialog box (Menu **Options**) or by clicking on the right end of a toolbar. When the box above the button is checked the button will be visible otherwise it will be hidden.



💡 The Numeric keypad toolbar cannot be customized.

💡 In Orientering edition some icons and checkboxes are disabled. That means that these functions are not in the Orientering edition.

Menu

OCAD Mapping Solution Edition features the following menus:

File View Select Object Topology Symbol Map Layout Multiple Representation Database Thematic Map Background Map DEM GPS Options Window Help

- **File:** File management, file import and export functions, printing
- **View:** Functions for viewing the map
- **Select:** Functions for selecting an object or a vertex
- **Object:** Object editing functions
- **Symbol:** Functions for creating and editing symbols
- **Map:** Map editing functions
- **Layout:** Layout management functions
- **Multiple Representation:** Multiple representation management functions
- **Database:** Functions for connecting and editing databases
- **Thematic Map:** Create, modify and delete thematic maps
- **Background Map:** Functions for loading and managing background maps
- **DEM:** Functions for the import, export and processing of Digital Elevation Models
- **GPS:** Functions for connecting GPS devices or importing GPS data
- **Options:** Functions for customizing personal preferences
- **Window:** Functions for arranging the map window
- **Help:** OCAD Help

File Menu

New: Create a new map file.

New Map Wizard: Create a new map file with the wizard.

New Course Setting Project Wizard: Create a new course setting project.

Open: Open a map file.

Open Sample Map: Open a sample map file.

Close: Close the current map file.

Save: Save changes in the current map file.

Save As: Save the current map file under a new name.

Undo: Undo the last draw or edit operation.

Redo: Reverse the effect of the last Undo operation.

Print: Print a color map or color separations.

Import: Import a map file.

Export: Export the map in a different file format.

Export OCAD Internet Map: Export the map as an OCAD Internet Map.

Export Encrypted File: Export the map to encrypted OCAD file format.

Send File by Email: Send the map file by email.

Execute XML Script: Execute functions defined in a XML script file.

Create Backup: Make a backup copy of the current map file.

Restore Backup: Restore a map file saved with the Backup function.

Open Recently Exported Documents: Open one of the documents you have exported recently from the file that you have open.

Open Recently Used OCAD Files: Open one of the map files you have worked on recently.

Exit OCAD: Terminate OCAD.

View Menu

Normal Mode: Normal mode view.

Spot Color Mode: Spot color view.

Draft Mode: Draft mode view. The **Background Map** can be seen behind the map.

Draft Mode Only Background Map Favorites: Draft mode view. Only favorited **Background Maps** are shown.

Keyline: Show objects as a rough sketch.

Hatch Areas: Display full areas as hatched areas on the screen.

Anti-Aliasing: Activate or disable Anti-Aliasing.

Line Objects Appearance as in OCAD 10: Shows line objects as in OCAD 10.

Redraw: Redraw the drawing area.

Pan: Move the view.

Move To: Move the view to a desired position.

Find Selected Objects: Move the view to selected objects in sequence.

Zoom In: Display the map with a higher magnification.

Zoom Out: Display the map with lesser magnification.

Zoom to Selected Objects: Display the map zoomed in to selected objects.

Show Entire Map: Display the entire map on the screen.

Zoom: Select the magnification in which the map is to be displayed.

User Defined: Set the view to a zoom factor defined in Preferences.

Bookmarks: Create and manage bookmarks.

- **Create:** Create a new bookmark

- **Manage:** Manage available bookmarks

Show Screen Grid: A screen grid is shown in the drawing area.

Show Rulers: Rulers are shown around the drawing area.

Ruler Guides: Manage ruler guides.

- **Show:** Show vertical or horizontal ruler guides.

- **Manage:** Add a new ruler guide.

Select Menu

Select and Edit Object: Select, move or stretch object(s).

Select Object and Edit Vertex: Select or move vertex of object(s).

Select Object with Lasso Tool: Select objects with a Lasso.

Select Objects by Symbol: Select all objects with a specified symbol or layer.

Select Objects by Property: Select all objects with same properties.

Select Objects by Date: Select objects by their creation or modification date.

Select Object by Object Index: Select the object with a given index.

Select Duplicate Objects: Select objects with identical coordinates.

Select Self-Intersected Objects

Select Objects with Invalid Geometry

Select Line Text Objects with Line too Short

Select Group: Select a group of objects.

Select All: Select all objects in map.

Clear Selection: Nothing is selected.

Invert Selection: Change current selection such that everything previously unselected will now be selected and vice versa

Select Next Object: Selects the next obvious object.

Save Selection: Save current selection for later use.

Reload Selection: Reload saved selection.

Edit Selection: Manage saved selection.

Object Menu

Cut: Copy the selected object(s) to the clipboard and delete them in the current map.

Copy: Copy the selected object(s) to the clipboard.

Paste: Insert the object(s) in the clipboard into the current map.

Delete: Delete the selected object(s).

Rotate Object: Rotate object(s).

-**Rotate:** Rotate the selected object(s).

-**Rotate Object by Angle:** Rotate the selected point object(s) by specifying a rotation angle.

Align Objects: Align the selected objects horizontally or vertically.

-**Horizontally**

-**Horizontally Centered**

-**Vertically**

Distribute Objects: Distributes objects to equal spaces.

Indicate Direction of Area Pattern, Point or Text Object: Change direction of selected point object, area pattern or text.

Cut Objects: Cut hole, area or line.

-**Cut hole:** Cut a hole in an object.

-**Cut area:** Divides an area.

-Cut line: Divides a line.

Crop Objects: Crop selected Object(s).

Move Parallel: Move the selected line or area object parallel from the original object.

Move Parallel with Distance: Move the selected line or area object parallel with a distance from the original object.

Reshape: To shape a part of an object again or differently.

Interpolate Objects: Interpolate selected Objects to each other.

Duplicate: Duplicate (create a copy of) the selected object(s).

Move and Duplicate: Duplicate selected object and move it.

Mirror and Duplicate: Mirror selected object and duplicate it.

Fill, Make Border, Duplicate Identically: Fill a line or area object(s) with area object(s) or make line border of area object(s).

Merge: Merge multiple line, area and text objects into one object.

Reverse Object Direction: Reverse the direction of the selected line object(s).

Change to Polyline: Change selected object to polyline.

Change to Bézier Curve: Change selected object to a Bézier curve.

Convert into Graphic Object: Convert the selected object(s) to their graphic elements (lines and areas).

Convert into Image Object: Convert the selected object(s) to their graphic elements (lines and areas) as image objects.

Convert into Layout Object: Convert selected object to layout object.

Smooth: Smooth selected line or area object(s) drawn in freehand mode.

Create Color Gradient

Change Vertex Types to: Change vertex types for the selected object(s).

Change Symbol (Selected objects)

Change Symbol (All Objects with Corresponding Symbol)

Group

Ungroup

Find and Replace Text

Insert Glyphs: Insert special letters.

Measure: Measure the selected line or area object or the distance between 2 selected point objects

Change Creation Date: Change the creation date of the selected object(s).

Object Information: Show information about selected object(s).

Topology Menu

Join: Move the ends of the selected line object to connect to adjoining objects.

Smooth: Smooth 'dithered' line or area objects.

Generalize Buildings: Simplify the buildings geometry.

Make Objects Rectangular: Make objects rectangular.

Close Area Objects

Change Area Objects to CCW

Lengthen Line Text Objects: Lengthen line text objects if the line is too short for the objects' text.

Remove Overshoots and Undershoots

Insert, Cut or Add at Intersections

Remove Duplicate Vertices From Selected Objects

Symbol Menu

New: Create a new symbol.

Edit: Define or redefine the selected symbol.

Icon: Draw or edit the symbol's icon, which appears in the symbol box.

Enlarge/Reduce: Enlarge or reduce the selected symbol or all symbols.

Copy: Copy the selected symbol to the clipboard.

Paste: Copy a symbol from the clipboard to the current map.

Delete: Delete the selected symbol.

Duplicate: Make a copy of the selected symbol.

Sort Symbol Box: Sort the symbols in the symbol box.

-**By Symbol Number:** Sort symbol in symbol box by symbol number.

-**By Color:** Sort symbol in symbol box by color.

-**By Symbol Type:** Sort symbol in symbol box by symbol type.

-**By Status (Normal, Protect or Hide):** Sort symbol in symbol box by status.

-**Usage Frequency:** Sort symbol in symbol box by Usage Frequency.

Select: Select certain symbols in the symbol box.

-**Used:** Select used symbols in symbol box.

-**Unused:** Select unused symbols in symbol box.

-**Invert:** Change current selection such that everything previously unselected will now be and vice versa.

-**All:** Select all symbols in symbol box.

-**By Symbol Number:** Select Symbols by Symbol Number.

-**By Symbol Type:** Select Symbols by Symbol Type.

-**By Status (Normal, Protected or Hidden):** Select Symbols by Status.

-**By Color:** Select all Symbols with same color.

-**By Font:** Select all Symbols with same font.

Replace:

-**Font**

-Color

Normal (Visible and Selectable): Make objects with the selected symbol(s) appear normal.

Protect Objects: Make objects with the selected symbol(s) protected from editing.

Hide Objects: Objects with the selected symbol(s) do not appear.

Symbol Status Manager: Choose this command to save, load, export or import the status of your Symbol box.

Show Objects without Symbols: Normal / Hide.

Show Graphic Objects: Normal / Hide.

Image Objects: Protected / Hidden

-Protected: Selected image objects that are visible but cannot be selected, edited, moved or deleted.

-Hidden: Selected image objects that are not visible .

Show Symbol Favorites: Display the symbol favorites in symbol box.

Add To Favorites: Add the selected symbol(s) to symbol favorites.

Remove From Favorites: Remove the selected symbol(s) from symbol favorites.

Show Symbol Tree: Display the symbol tree in symbol box.

Remove From Symbol Tree: Remove the selected symbol(s) from symbol tree.

Map Menu

Optimize/Repair: Remove empty space in the map file and repair damaged objects.

Set Scale and Coordinate System: Set map scale and define the coordinate system.

Change Scale: Change the scale of the map and enlarge/reduce the map according to the new scale.

Create Map Grid: Create grid lines on the map.

Create WGS84 Grid: Create a WGS84 grid on your current view.

Hide: Hide the map on the screen.

Transform: Adjust the map to the background map.

-Move: Move the entire map to a different location in the coordinate system.

-Stretch / Shrink: Stretch (enlarge or reduce) the entire map horizontally or vertically.

-Mirror: Mirror the entire map horizontally or vertically.

-Rotate Map: Rotate the entire map.

-Rotate Map to Magnetic North: Rotate the map to Magnetic North.

-Change Coordinate System: Change current coordinate system to another.

-Affine: Adjust the whole map on background map or on grid.

-Rubbersheeting: Adjust a part of the map on a georeferenced background map.

-Local Transformation: Local Transformation is an interactive tool to eliminate local distortions.

-Center map in Drawing Area

Convert Imported Layers to Symbols: Convert the layers of an imported *.dxf or *.ai file.

Convert Area or Line Objects to Point Objects: Convert area to point object(s).

Convert Text Objects to Point Objects: Convert text to point object(s).

Convert Text Objects from OEM to Unicode: Convert text objects from OEM to Unicode.

Export Objects by Selected Symbol: Export all objects with a selected symbol to a new map file.

Export Selected Objects**Delete Objects by Selected Symbols**

Export Part of Map With this function you can export a part of the current map to a new OCAD-File.

Colors: Define or edit the colors of the current map.

Define Spot Colors: Define the spot colors of the current map.

Load Colors From: Load a color table from another map.

Load Colors and Symbols From: Load the symbol set from another map.

Compare Symbols and Colours: Compare two symbol sets.

Load Symbol Descriptions From**Save Symbol Descriptions To**

Symbol Set Report creates an Excel-file with a detailed description of all symbols in your file.

Symbol Set Conversion

Renumber Symbols and objects with a crt file.

Check Legibility: Check minimum distances between objects, minimum length of line objects or minimum size of area objects according to ISOM 2017.

Routing: Import kml file with route from Google Maps API.

Map Information: Show map information.

Layout Menu

Edit Layout Objects: Draw and edit the layout objects.

Import Layout**Save Layout****Delete Layout****Hide****Add North Arrow or Scale Bar****Add Map Legend****Add Trim and Bleed Marks****Create Graticule Name Index****Create Name Index****Multiple Representation Menu**

Manager: The multiple representation manager serves for the activation and management of the representations.

Disable Multiple Representation: Disable multiple representation and the contents of the representations get lost.

Database Menu

Manage Database Connections: Create and edit datasets.

Create and Update Database Records: Create OCAD objects out of the database.

Update Special Fields from Database Records

Create Objects from Database Records: Create OCAD objects from database records.

Assign Symbols from Database Records: With this command you can use the information in the database table to assign OCAD symbols to the objects.

Add Texts from Records With this function it is possible to add a text which is written in a field of a record to an OCAD object.

Set Object Directions by Records: Assign angle information from the open dataset(s) to the objects.

Merge Objects from Database Records With this function, objects with the same value on a specified database field are merged.

Select Objects with Good Database Record Links

Select Objects with Broken Database Record Links

Select Objects without Database Record Link from Selected Symbols

Select Objects Linked to the same Database Records

Delete Database Records without Linked Object: Use this function to delete unused database records for example after using the Part of Map function.

Options

-Create Database Record when Cutting Object

-Delete Database Record when Deleting Object: If the option is turned on and an OCAD object with a linked database record is deleted, the database record is deleted, too.

Database Information Allows you to see all the information about each dataset.

Thematic Map Menu

Create a Thematic Map with Wizard

Delete Themes

Background Map Menu

Scan: Scan a background map using a TWAIN interface.

Open: Open a scanned background map stored in a file.

Adjust: Adjust the background maps in horizontal and vertical directions.

Hide All: Hide the background maps temporarily.

Manage: Set options for displaying and printing the background maps.

WMS - Web Map Service: Add background map from WMS

Online Map Services: Choose this command from the Background Map menu to load temporary a screenshot from Google Maps as background map.

DEM Menu

DEM Import Wizard: With this DEM Import Wizard you can import DEM data and create several output formats.

Open: Open an OCAD DEM file (*.ocdDem).

Show Frame: Shows blue rectangle with the extent of loaded DEM.

Resize: Resize OCAD DEM file (make a subset) and save it as a new OCAD DEM file.

Info: Shows information about OCAD DEM file.

Close: Close OCAD DEM file.

Merge DEM: Merges two parts of a DEM together.

Calculate DEM Difference Calculates the difference between a surface and a terrain model.

Create Contour Lines: Calculates contour lines based on the loaded DEM.

Create Hypsometric Map: Calculates a grayscale or colored hypsometric map

Create Hill Shading: Calculates a shaded relief picture.

Calculate Slope Gradient Calculates a grayscale picture with slope gradient.

Classify Vegetation Height Calculates picture with vegetation height classes.

Merge Contour Lines By Selected Symbols This is an obsolete function. It is still in the latest OCAD version due to compatibility issues. OCAD merges the contour lines automatically.

Create Profile: Creates a profile for the selected line object.

Export: Save loaded OCAD DEM file as ESRI ASCII Grid or as ASCII Grid XYZ.

Lidar Point Cloud Manager: The LiDAR Point Cloud Manager analyzes the vegetation within the forest and creates a vegetation raster map.

-Load: This function loads an OCAD LAS file (*.ocdLas) and opens the LiDAR Point Cloud Manager.

-Info: This function shows information about the ocdLas file.

-Show Frame: This function shows a red rectangle with the extent of the loaded ocdLas file.

-Close: This function closes ocdLas file.

-Manage: This function reopens the LiDAR Point Cloud Manager with the already loaded ocdLas file.

GPS Menu

Real Time GPS

Import Data from GPS Device

Import from File

Connect to Laser Rangefinder

Options Menu

OCAD Preferences: Options for your individual working methods.

Shortcuts: Define or change keyboard shortcuts for menu commands.

Backup and Restore Options Choose this command to save or restore the OCAD Options.

Language: Choose a language.

Window Menu

Tile: Arrange all open maps horizontally or vertically on the screen.

Cascade: Arrange all open maps in a way that the title of each map is visible.

Help Menu

Contents: The contents of this help file.

Menu: Help for menu commands.

Toolbar: Help for toolbar buttons.

Tutorials: Link to the OCAD Tutorials.

What is New: Click on this menu item to open the **What is New** page.

OCAD Home page ^[1]: Connect to the OCAD homepage on the Internet.

OCAD Service Update: Download the current Service Update from the OCAD website.

OCAD Youtube Channel ^[2]: OCAD Youtube Channel

Getting Started with OCAD: Open the pdf file 'Getting Started with OCAD'. For different languages see [here](#) ^[3].

OCAD Blog ^[4]: Show the newest posts from OCAD Blog.

License Transfer Utility: Deactivate this license and transfer it to a new user.

License Manager: Overview about the licenses from your organization.

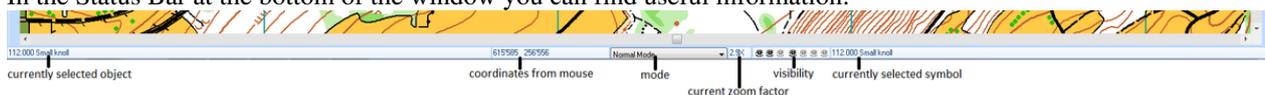
About OCAD: General Information about OCAD.

Using the Keyboard with the Mouse

You find an overview of options for using the keyboard and the mouse together on the **Tips with Keyboard and Mouse** page.

Status Bar

In the Status Bar at the bottom of the window you can find useful information:



Currently

Selected Object: The symbol number and the name of the currently selected symbol is displayed in this part. If multiple objects are selected, the number of selected objects is shown. In addition, if you retrieve a **Bookmark**, the saved comment is displayed here.

 If the selected object is an area object or line object, its length (paper and real-world) will be shown as well.

Coordinates from Mouse: The coordinates of the current position of the mouse pointer is displayed in this part. You can change the format of the coordinates shown here in the **Graphical User Interface** category of **OCAD Preferences** in the **Options** menu. If a **DEM** is loaded, the elevation in meters is given in brackets after the coordinates.

Mode: The current **View Mode** is displayed in this part of the status bar. The view mode can be changed either here or in the **View** menu.

Current Zoom Factor: This field shows the current **Zoom Factor**.

Visibility: 

There are seven eye icons which indicate whether a certain map feature is visible or not. These features are (from left to right): Layout, Map, Background Map, Symbols, Unsymbolized Objects, Graphic Objects and Image Objects.

If the eye icon is black, the feature is visible.

If the eye icon is grey, no corresponding features exist.

If the eye icon is crossed off with a red cross, the feature is not visible.

If the eye icon is crossed off with an orange cross, the feature is only partially visible.

Currently Selected Symbol: The currently selected symbol is shown in this part of the status bar.

Docking

Mas Ori

It is possible to dock/undock some panels, which were located on the right side.

[Back to Main Page](#)

References

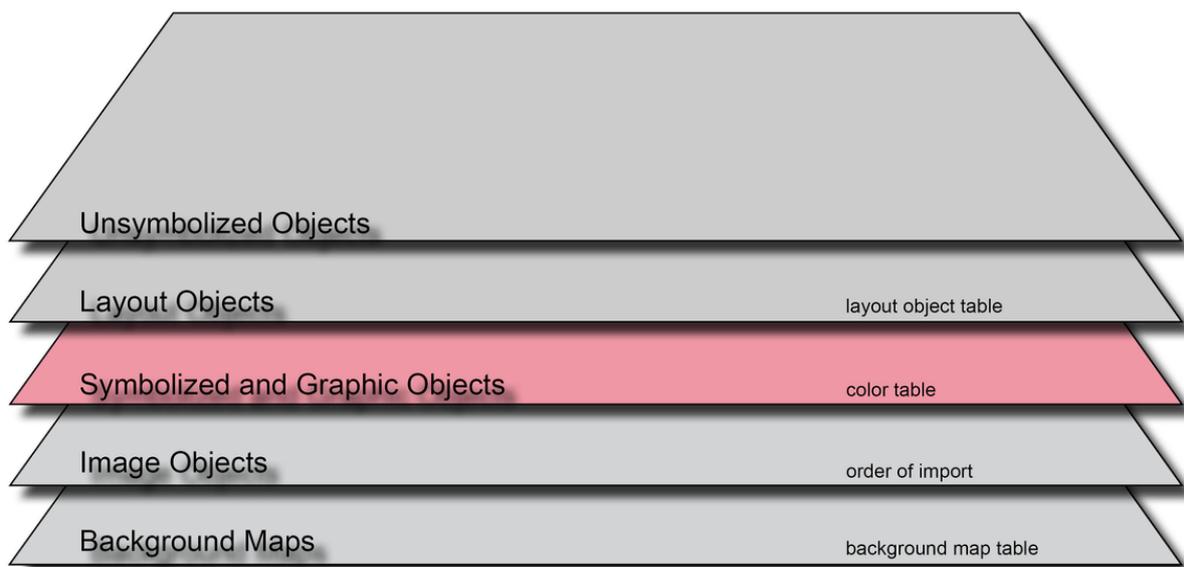
[1] <https://www.ocad.com/en/>

[2] <https://www.youtube.com/user/ocadcom/>

[3] <https://www.ocad.com/en/getting-started/>

[4] <https://ocad.com/blog/>

Drawing an Object



Draw a Point Object

Mas Ori Sta CS

1. Choose a point symbol.
2. Select any drawing mode. The cursor appears as a crosshair with a point in the lower right-hand corner.
3. Click a position in the drawing window.
4. The point object appears.

💡 -To define a specific direction of for the object, click and hold the left mouse button on desired position; then drag to the direction you wish the object to be oriented to.

-The object can be adjusted retrospectively. To do this, select the point object and align it using the **Indicate direction of area pattern, point or text object** function.

Draw a Line or Area Object

Mas Ori Sta CS

You must select one of the eight drawing modes to draw a line or area object.

- The cursor appears as a crosshair with the symbol for the selected drawing mode in the lower right-hand corner.
- In the lower left-hand corner will be shown the total line length.



If you draw an area the finishing line is shown dashed, whilst the left mouse button is pressed.

Draw a Straight Line

Mas Ori Sta CS



1. To draw straight lines such as streets, power lines or sidewalks, select **Straight line mode**.
2. Select a line or area symbol from the symbol box.
3. Select **Straight line mode**.
4. Position the cursor at the point where you want to start the line, then click and hold the left mouse button and drag the cursor in the desired direction. The help line provides a preview of the line that has just been drawn.
5. To add a vertex to the straight line, release the left mouse button. Now press and hold the left mouse button once more and drag the cursor in the desired direction. Repeat this process as often as necessary.
6. Click the left mouse button when you have finished drawing and the help line is transformed into the selected line or area symbol.

Draw a Curve

Mas Ori Sta CS

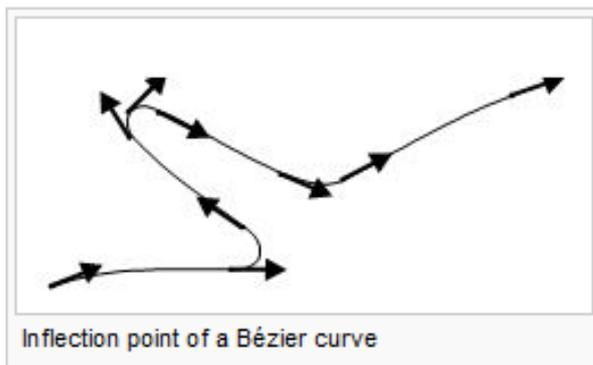


Select Bézier **Curve mode** to draw flowing or curved lines such as contours or shore lines. Drawing Bézier **Curves** requires some practice as you need to get a feeling for where the radius or curvature of a flowing or curved line changes. The turning point is where the vertex and its tangents need setting. Once you have mastered this technique, you will be able to draw curved lines and area objects efficiently and precisely.

Beside the Bézier Curve mode, you can change in the OCAD Preferences to the Adobe Illustrator mode.

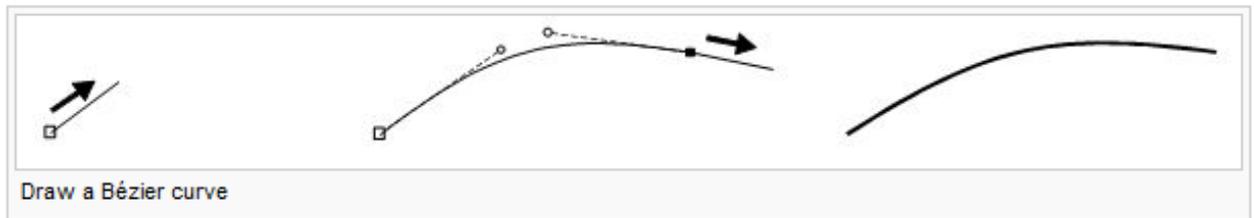


Download this exercise ^[1] to draw Bézier curves.



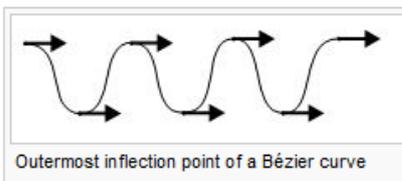
1. Select a line or area symbol from the symbol box.
2. Select Bézier-**Curve mode**.
3. Position the cursor at the point where you want to start the line, click and hold the left mouse button and drag the cursor to form the radius you want and release the left mouse button.
4. Position the cursor at the next inflection, click and hold the left mouse button and drag the cursor to form the radius you want and release the left mouse button. The help line provides a preview of the curved line that has just been drawn. Repeat this process for each inflection point.

5. Click the left mouse button when you have finished drawing and the help line is transformed into the selected line or area symbol.

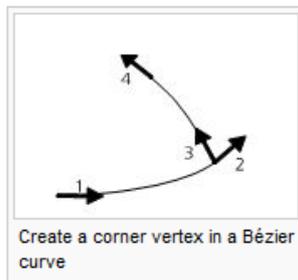


💡 -If you are unhappy with the tangent, simply click the **Backspace**  button. The last tangent will be deleted and you can try again. You can delete as many tangents as you like up to the beginning of the line. This is not possible once the object has been completed.

-Sinuous lines can be managed easily by placing tangents at the outermost points.

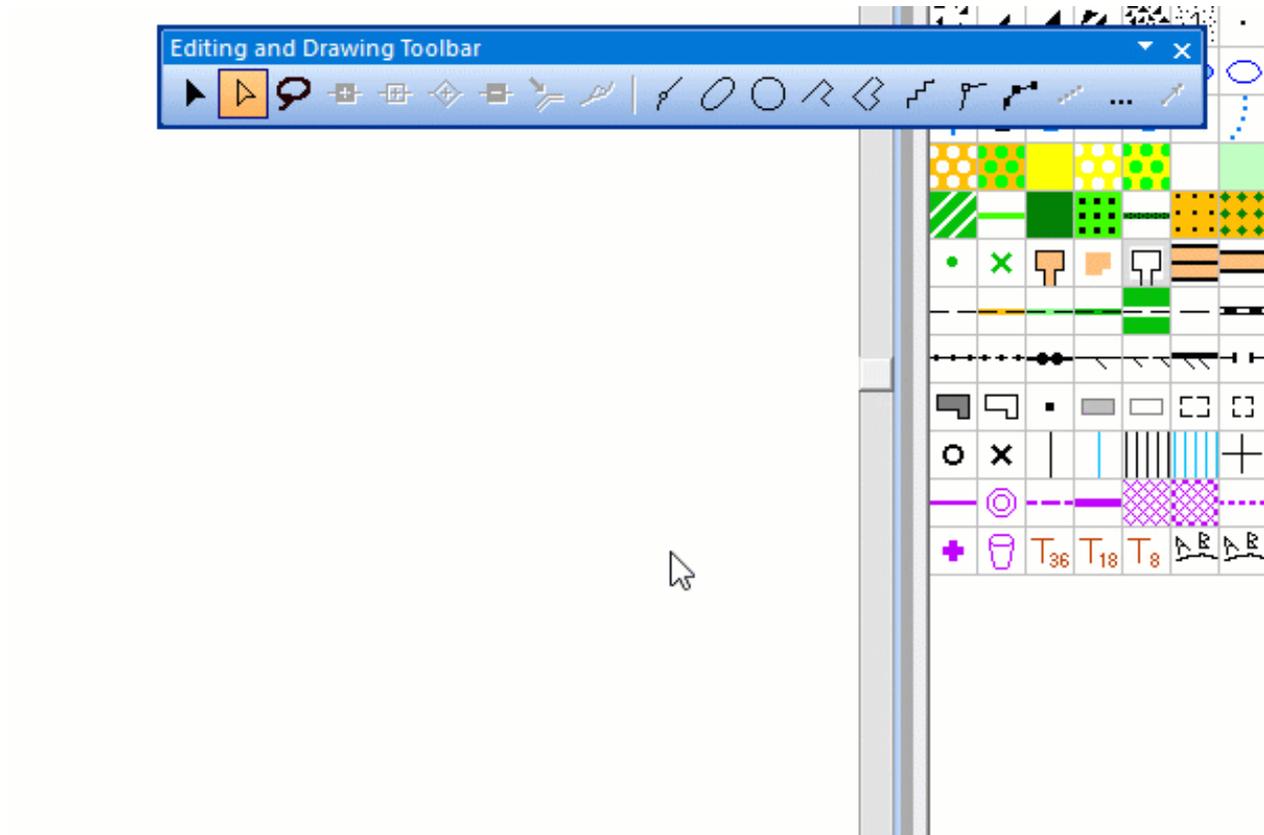


💡 You can force a corner vertex by dragging two tangents from the same vertex point. **Curve:** Tangents 2 and 3 start at the same point but move in different directions. A corner vertex is created.



Change Drawing Mode

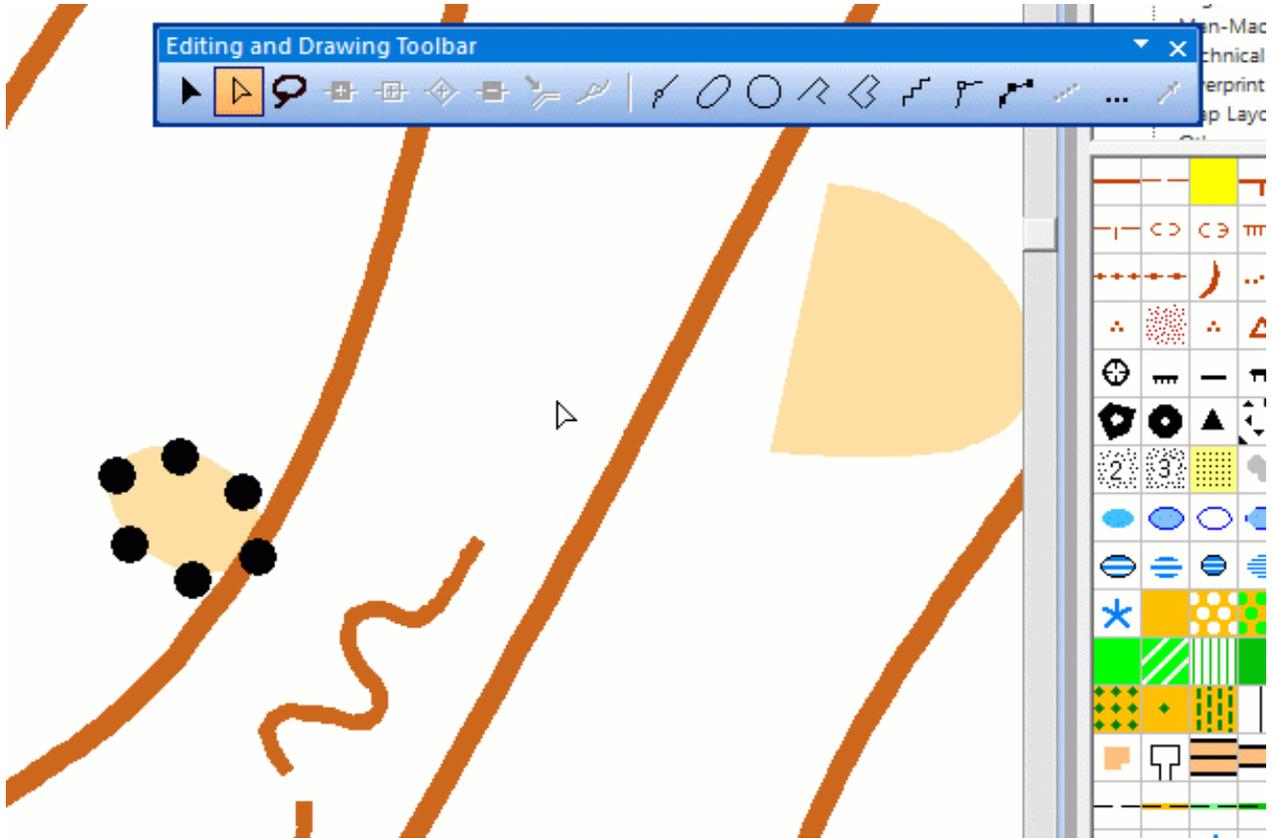
You can draw parts of a line or area object using different drawing modes. Select the appropriate symbol and draw the first part of your object using a drawing mode. Now press the **Tab** button until the desired drawing mode appears and then continue drawing.



Continuing existing objects

You can lengthen existing line objects or expand area objects. Simply select the appropriate symbol, press and hold the **Shift**  button and start drawing at the beginning or end of the existing object. Release the **Shift**  button once the line or area has been added.

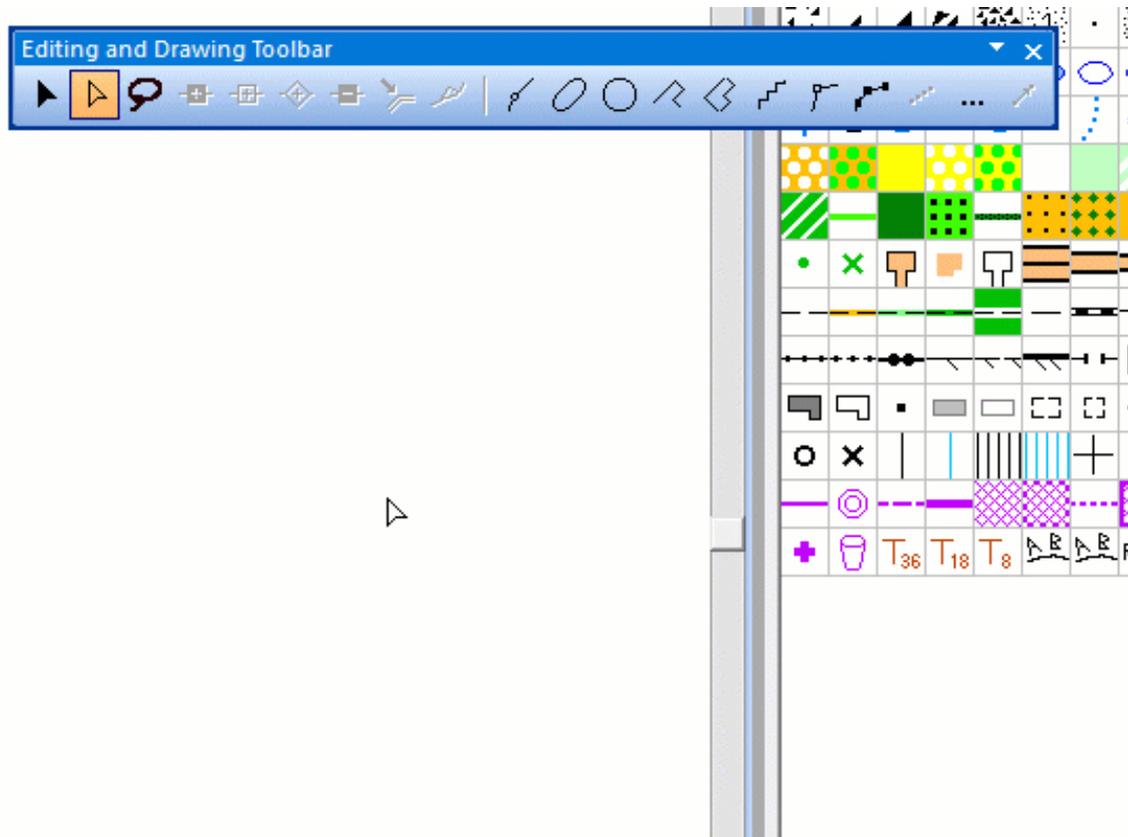
This can be used instead of the  **Merge** function.



Draw Horizontal Lines

To draw horizontal or vertical lines, press and hold the **Alt** button. The line snaps in a vertical or horizontal direction. This can be useful when drawing a border or north lines.

The **Shift**  and **Alt** button functions can be combined.



Change to Straight Line Mode

This function makes it easier to combine curves and straight lines.

First activate this option **Curve mode: Change to straight line mode when clicking in drawing area** in the **Preferences -> Drawing and Editing** tab.

Start drawing the curve. To draw a straight line click in the drawing area and release the left mouse button. So you can easily switch between straight line mode and curve mode. Double click the left mouse button to finish drawing.

To finish the object with the right mouse button change the corresponding setting in **Right click in drawing area opens context menu**

Draw a Freehand Line

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Freehand drawing mode plots the movement of the cursor and converts it into a line. Tracing flowing or curved lines using this mode is not very efficient or precise. Depending on the drawing speed and selected smoothing factor (1, 2 or 3), the line may appear somewhat angular because the vertices are connected using straight lines.

1. Select a line or area symbol from the symbol box.
2. Select **Freehand mode**.
3. Position the cursor at the beginning of the line, press the left mouse button briefly and trace the line you want using the mouse.

- Click the left mouse button when you have finished drawing and the help line is transformed into the selected line or area symbol.

If you draw in freehand mode the same way as in straight mode, normal points will be placed at the corners. Unlike corner points, normal points do not affect dashed lines.

Draw a Rectangular Area

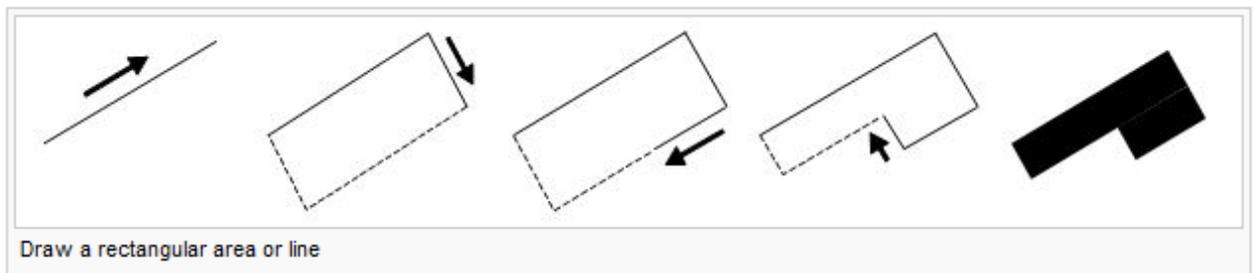
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Select **Rectangular mode** if you want to draw rectangular areas or objects such as buildings or squares. This drawing mode creates a right-angle in every corner and ensures the start and end points of the outline are identical.

- Select a line or area symbol from the symbol box.
- Select **Rectangular mode**.
- Position the cursor on one of the corners of the longest side of the rectangular area. Press and hold the left mouse button and drag the cursor along the longest side to the next corner.
- When the cursor reaches the corner, release the left mouse button and then press it again. Hold the left mouse button and drag the cursor towards the next corner. The help line provides you with a preview of the straight line that has just been drawn. A broken line shows you what the rectangular object will look like when you have finished. Repeat the above process to draw a line to the third corner.
- Click the left mouse button to finish the drawing; the help line is then transformed into the selected line or area symbol.

You should always draw the longest side of a rectangular area first since it is easier to define the rectangular orientation of an area from the longer side.



Draw a Rectangular Line

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Select **Rectangular line mode** if you want to draw rectangular line objects such as sidewalks or stairs. This drawing mode creates a right-angle in every corner. The only difference between **Rectangular line mode** and **Rectangular mode** is that the start and end points are not identical when using rectangular line mode.

- Select a line symbol from the symbol box.
- Select **Rectangular line mode**.
- Position the cursor at the beginning of the rectangular line. Press and hold the left mouse button and drag the cursor along the longest side to the next corner.
- When the cursor reaches the corner, release the left mouse button and then press it again. Hold the left mouse button and drag the cursor towards the next corner. The help line provides a preview of the line that has just been drawn. Repeat this process until you reach the end of the rectangular line.
- Click the left mouse button when you have finished drawing and the help line is then transformed into the selected line symbol.

You should always draw the longest side of a rectangular line first since it is easier to define the rectangular orientation of a line from the longer side.

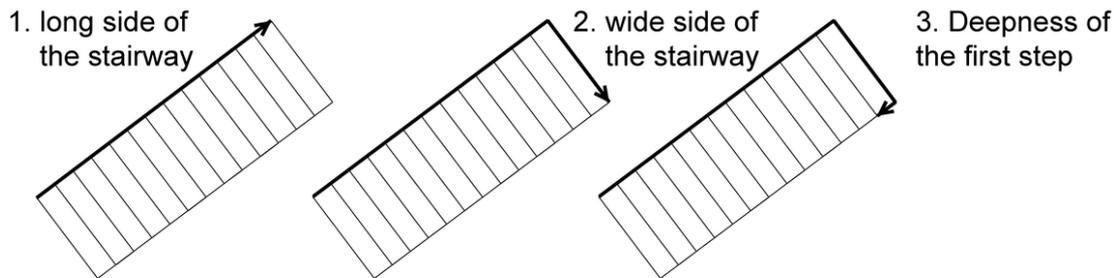
Draw a Stairway

Mas Ori



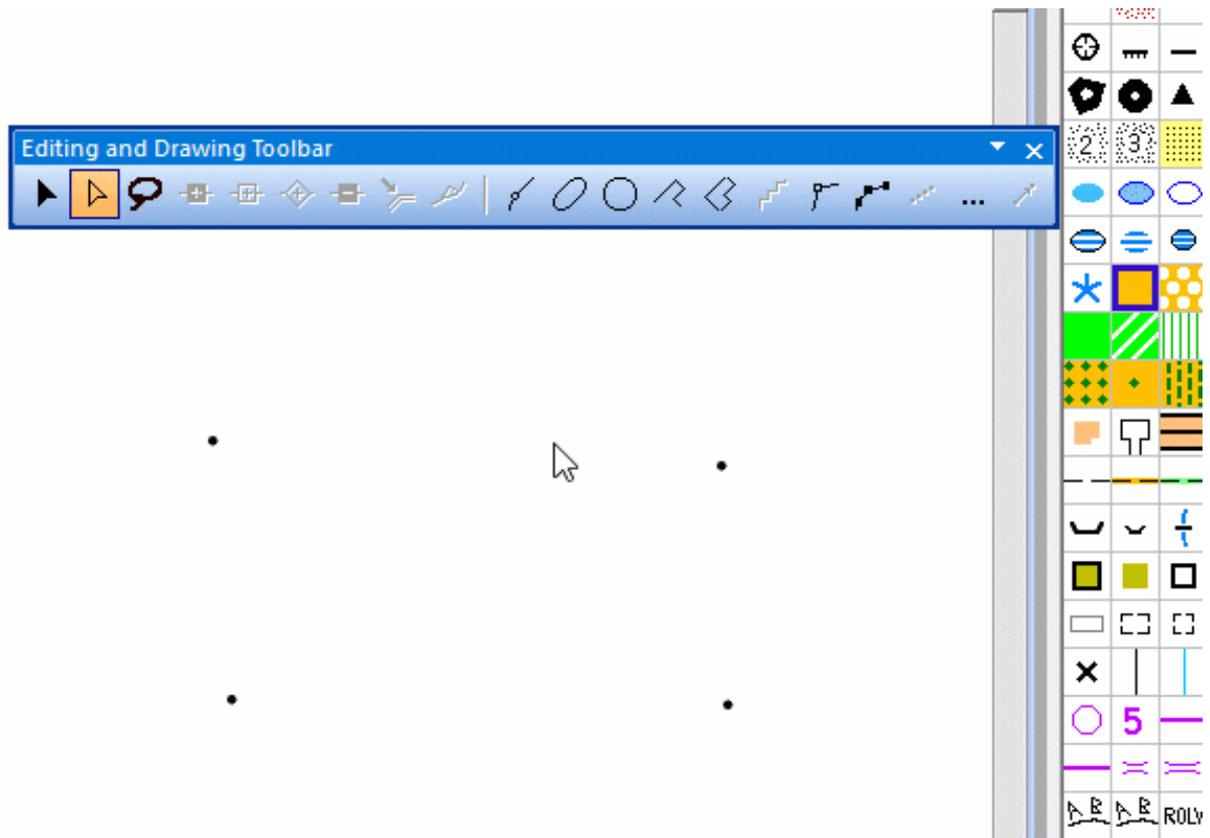
Select **Stairway drawing mode** if you want to draw a rectangular stairway.

1. Select a line symbol from the symbol box.
2. Select **Stairway mode**.
3. Position the cursor at the beginning of the stairway. Press and hold the left mouse button and drag the cursor along the longest side to the next corner.
4. When the cursor reaches the corner, release the left mouse button and then press it again. Hold the left mouse button and drag the cursor towards the next corner. The help line provides a preview of the line that has just been drawn.
5. Hold the left mouse button and drag the cursor to the first step. The step help lines provide a preview of the stairway. Release the left mouse button.



Draw a Circular Object

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Select **Circle mode** if you want to draw circular objects such as roundabouts or silos.

1. Select a line or area symbol from the symbol box.
2. Select **Circle mode**.
3. Position the cursor at the edge of the object, then press and hold the left mouse button and drag the cursor to the opposite edge. Release the mouse button. The help line is transformed into the selected line or area symbol.

 -The outline or circular line is drawn as a Bézier curve.

-You can also drag the circle from the center point. Simply press and hold the **Shift**  button and drag a radius.

-Clicking the center of the circle with the right mouse button without dragging displays the **Draw Circle** dialog box. Here you can enter the radius of the circle in mm or m.

Draw an Elliptical Object

Mas Ori Sta



Select **Ellipse mode** if you want to draw oval objects such as hills or dips.

1. Select a line or area symbol from the symbol box.
2. Select **Ellipse mode**.
3. Position the cursor at the beginning of the longer ellipse axis, then press and hold the left mouse button and drag the cursor towards the end of the axis.
4. Position the cursor at the beginning of the shorter ellipse axis, then press and hold the left mouse button and drag the cursor towards the end of the axis. Release the mouse button. The help line is transformed into the selected line or area symbol.



The outline or ellipse line is drawn as a Bézier curve.

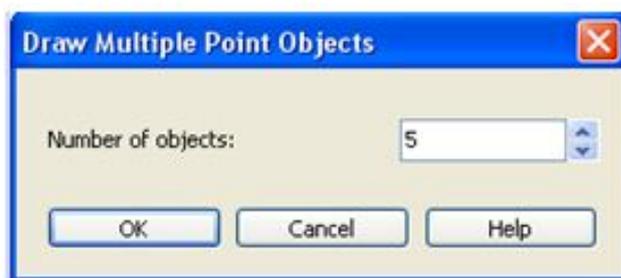
Draw Multiple Point Objects

Mas Ori



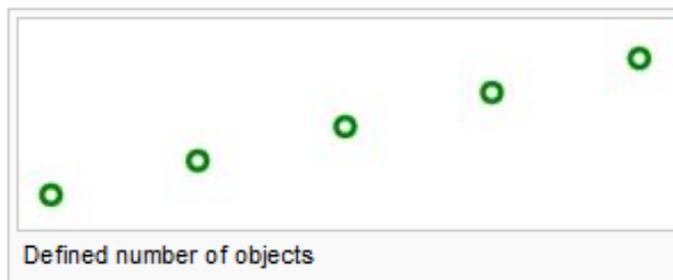
This drawing tool is used to draw several point objects that are placed on a line with a constant interval.

1. Choose a point symbol in the symbol box.
2. Choose the drawing tool Drawing multiple point objects from the Edit and Drawing toolbar.
3. Draw a line from the position of the first to the position of the last feature.
4. The Dialog Draw Multiple Point Objects appears:



Enter the number of objects and click the OK button.

The defined number of objects are drawn:



If the number of objects is 1, the objects position will be in the center of the drawn line.

Laser Rangefinder Drawing Mode

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Laser rangefinder drawing tool.

Numerical Drawing Mode

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Select Numeric mode if you have measurement values or coordinate pairs for specific objects.

Construct a point object using distance or azimuth measurements.

1. Select a point symbol from the symbol box.
2. Select **Numeric mode**.

3. Enter the coordinates of your location in the **Easting** and **Northing** fields. A small cross highlights the position in the drawing window.
4. Enter the length in mm or m in the **Length** field and the **Angle** in a clockwise or counterclockwise direction.
5. Click **End**.
6. The angle and distance measurements are used to position the point object.



-You can change the direction from clockwise to counterclockwise, or vice-versa, by clicking the **Counterclockwise** or **Clockwise** buttons.

-You can change the unit of measurement from millimeter to meter, or vice-versa, by clicking the **Millimeter** or **Meter** button.

Construct a line or area object using coordinate pairs.

1. Select a line or area symbol from the symbol box.
2. Select **Numeric mode**.
3. Enter the coordinates of your first coordinate pair in the **Easting** and **Northing** fields. A small gray cross highlights the position of the first coordinate pair in the drawing window.
4. Select the construction mode  **Enter** positions.
5. Enter the coordinates of the second coordinate pair in mm or m and click **Next**. A help line appears between the first and second coordinate pair. Repeat this process as often as necessary; the help line is extended each time. Click **End** once you have entered the final coordinate pair.
6. The sections are then transformed into the selected line or area symbol.

Construct a line or area object using distance or azimuth measurements.

1. Select a line or area symbol from the symbol box.
2. Select **Numeric mode**.
3. Enter the coordinates of your starting point in the **Easting** and **Northing** fields. A small cross highlights the position of the starting point in the drawing window.
4. Select the construction mode  **Enter length and angle**.
5. Enter the length in mm or m in the **Length** field and enter the **Angle** in a clockwise or counterclockwise direction. A help line appears that displays the distance and azimuth from the starting point. Repeat this process as often as necessary; the help line is extended each time. Click **End** once you have entered the final distance and azimuth values.
6. The sections are then transformed into the selected line or area symbol.

Place a Text Object



Text and line text symbols are available for placing text. Text symbols are generally aligned horizontally. Line text symbols follow the flow of rivers or streets.

Place a text object

You can choose text frames or anchor points for placing text objects.

Define a text frame

1. Select a text symbol from the symbol box.
2. Select a drawing mode.
3. Position the cursor on the upper left-hand corner of the desired text frame, then click and hold the left mouse button and drag the cursor to the lower right-hand corner. Release the mouse button. The text cursor for inputting text appears.
4. Enter the desired text. The line break is added automatically Press **Enter** to start a new paragraph.



💡 You **can't** draw a text frame with a text symbol whose **Drawing Mode** is set to **Rotated Text**.

Define a text anchor point

1. Select a text symbol from the symbol box.
2. Select a drawing mode.
3. Position the cursor at the point where the text is to be anchored. Release the mouse button. The text cursor for inputting text appears.
4. Enter the desired text. Press **Enter** to start a new paragraph.

💡 The text objects line length gets enlarged while writing.

Place a Line Text Object

Select a Line Text symbol if you want your text to follow the flow of a curve.

1. Select a Line Text symbol from the symbol box.
2. Select Bézier **Curve mode**.
3. Draw a curve
 1. Once you have finished drawing the line, a help line appears as well as the text cursor for inputting text.
4. Enter the desired text.



💡 Line text object's **line length is enlarged while writing text** if the line text symbol alignment is **left aligned**.

💡 **Video:** Writing Text ^[2]

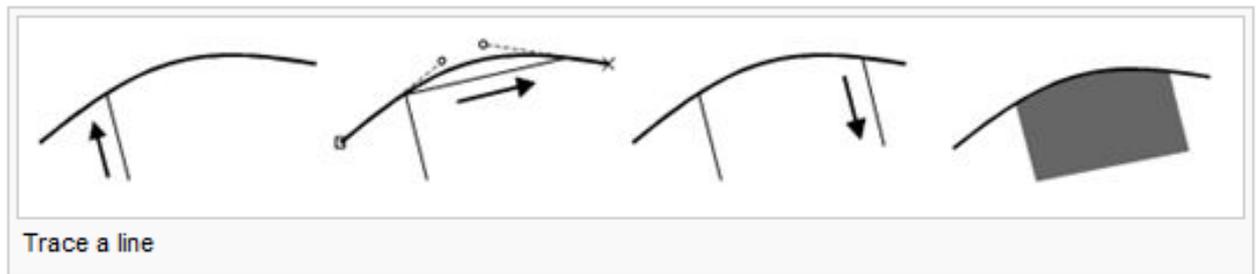
Following Existing Objects

Mas Ori Sta

Ctrl button: **Following existing objects**

Area objects are often limited by line objects. You can trace existing line or area objects without having to redraw them.

1. Select a line or area symbol from the symbol box.
2. Select a drawing mode.
3. Press and hold the **Ctrl** button, then position the cursor at the point from which you want to trace the line. This does not have to be the start or end point of the line. The help line will appear with its vertices.
4. Click and hold the left mouse button and drag the cursor to the desired point. This does not have to be the start or end point of the line.
5. Release the mouse button. The traced line is transformed into the selected line or area symbol.



 -With double lines (e.g. streets), you can trace the middle line as well as both side lines. If you do not require this option, you can deactivate it under Preferences, Drawing in the Options menu.

-Line tracing is only possible in straight, Bézier and freehand mode.

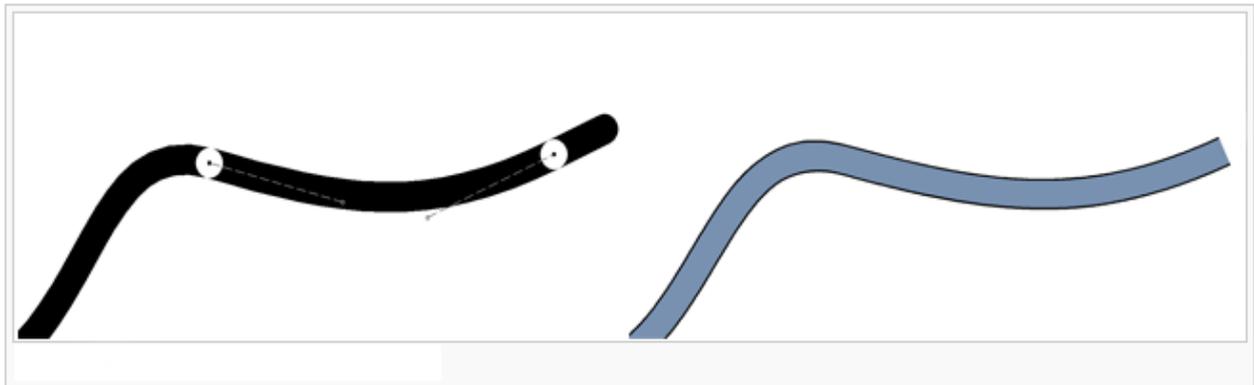
-It is possible to trace the outline of existing area objects. However, it is only possible to trace up to one half of the outline, otherwise the trace would be in the opposite direction. The point, up to which the object can be traced, is represented by a large square  .

Snapping

Please look at the **Snapping** page.

Live Preview

The live preview can be turned on in the **OCAD Preferences** in the menu **Options** and check **Enable Live Preview** in the category **Drawing and Editing**.



Edit a Vertex



To edit a vertex, select the **Select Object and Edit Vertex** editing mode  . You will then be able to move, delete or change the type of vertex.

For point objects, the middle of the symbol is represented by a large square  . For line and area objects, the first point of the object is represented by a large square  , vertices by small squares  , and the last point of the object by a cross **X**. With Bézier curves, circle symbols  are used to represent the ends of the tangents.

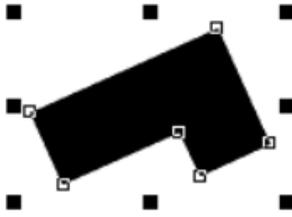
For more and detailed information, please visit the **Select Object and Edit Vertex** page.

Edit an Object

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To edit an object, you must select the **Select and Edit**  object mode. As soon as you have selected the object, the object frame appears with anchor points ■ .



You can now move, rotate, cut, stretch or reduce the size of the object. You find all functions in the Toolbars or in the **Object Menu**.



For more and detailed information, please visit the **Edit Object** page.

Tips with Keyboard and Mouse

Please visit the **Tips with Keyboard and Mouse** page for more information.

[Back to Main Page](#)

References

- [1] <http://www.ocad.com/schulung/UebungBezier.zip>
- [2] <https://www.youtube.com/watch?v=RMNfdGu8yeE>

Vertices

Vertices are specified by a pair of coordinates (x/y values). Vertices are used to define the position of points, lines and areas.

There are 3 types of vertices:

- Normal Vertex
- Corner Vertex
- Dash Vertex

Add Vertex

The commands for adding new vertices can be found in the **Editing and Drawing Toolbar**.

-  Add normal vertex
-  Add corner vertex
-  Add dash vertex

Add Normal Vertex



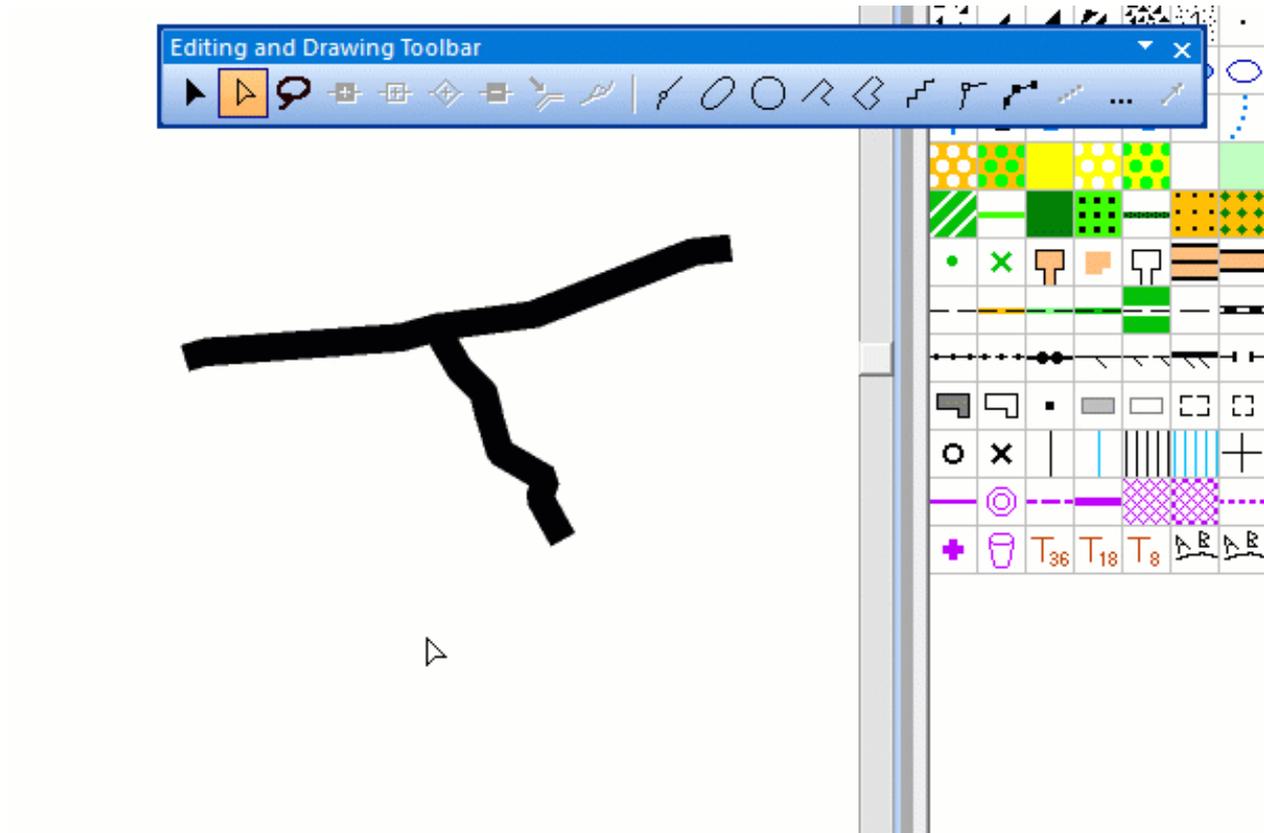
The  **Add normal vertex** function is enabled when a line, line text or area object is selected. Click this button to change the cursor to the **Add normal vertex** mode. When this mode is selected, you can insert additional normal vertices or change existing vertices to normal vertices.

Hold the **Alt** key to switch temporary to  **Select Object and Edit Vertex** mode, in order to select other objects.

Insert Normal Vertices

Select a line, line text or area object, change to the **Add normal vertex** mode and move the mouse pointer to the desired position on the line object or on the border of the area object. Then, click the left mouse button. A new normal vertex is inserted.

You can also insert normal vertices in  **Select and Edit Object** or  **Select Object and Edit Vertex** mode when holding down both the  and the **Ctrl** key.



Change a Vertex to a Normal Vertex

Select a line, line text or area object, change to the **Add normal vertex** mode and move the mouse pointer to the vertex to be converted. Then, click the left mouse button. The vertex is changed to a normal vertex.

💡 If you want to change all vertices of an object to normal vertices use the **Change Vertex Types** to function.

Add Corner Vertex

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A  **Corner Vertex** is a special vertex of line, line text and area objects. You can use this function if a line, line text or area object is selected.

Corner vertices have 3 effects:

- they influence how line objects are drawn
- they influence the editing of a Bézier curves
- when smoothing (automatically or manually) they remain in the same position

When an object is selected, corner vertices are marked with an empty rectangle ().

Corner vertices are automatically created when drawing in the  **Straight Line** mode.

Hold the **Alt** key to switch temporary to  **Select Object and Edit Vertex** mode, in order to select other objects.

Insert Corner Vertices

Select a line, line text or area object, change to the **Add corner vertex** mode and move the mouse pointer to the desired position on the line object or on the border of the area object. Then, click the left mouse button. A new corner vertex is inserted.

Change a Vertex to a Corner Vertex

Select a line, line text or area object, change to the **Add corner vertex** mode and move the mouse pointer to the vertex to be converted. Then, click the left mouse button. The vertex is changed to a corner vertex.



If you want to change all vertices of an object to corner vertices use the **Change Vertex Types to** function.

Influence on line objects

Corner vertices influence structured line objects such as dashed lines. When OCAD renders a dashed line it distributes dashes of equal length on that line. Corner vertices divide a line into several line sections. OCAD distributes the dashes on each section as if they are individual objects.

In the **Comparison** part of this page some examples can be found.

Influence on Bézier curves

Corner vertices allow you to create corners in Bézier curves. The **Bezier vertex** before and after a corner vertex can be moved individually without influencing each other. This allows you to create sharp corners.

Add Dash Vertex



A  **Dash Vertex** is a special vertex of line or area objects. Dash vertices influence how line objects are rendered. When an object is selected, dash vertices are marked with a diamond (). You can use this function if a line, line text or area object is selected.

Hold the **Alt** key to switch temporary to  **Select Object and Edit Vertex** mode, in order to select other objects.

Insert Dash Vertices

Select a line, line text or area object, change to the **Add dash vertex** mode and move the mouse pointer to the desired position on the line object or on the border of the area object. Then, click the left mouse button. A new dash vertex is inserted.

Change a Vertex to a Dash Vertex

Select a line, line text or area object, change to the **Add dash vertex** mode and move the mouse pointer to the vertex to be converted. Then, click the left mouse button. The vertex is changed to a dash vertex.



If you want to change all vertices of an object to dash vertices use the **Change Vertex Types to** function.

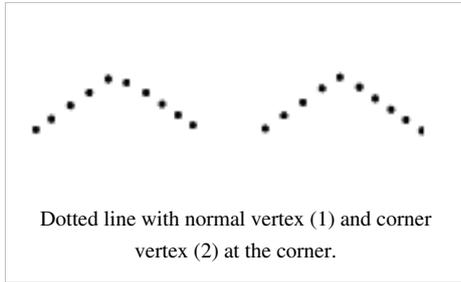
Influence on line objects

Dash vertices influence structured line objects such as dashed lines. When OCAD renders a dashed line it distributes dashes of equal length on that line. Insert a dash vertex to force a dash to a certain position.

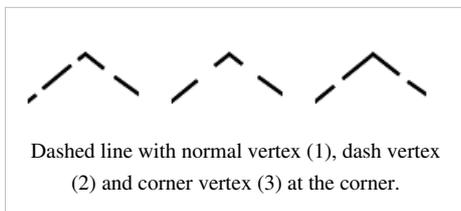
In the **Comparison** part of this page some examples can be found.

Comparison and Examples

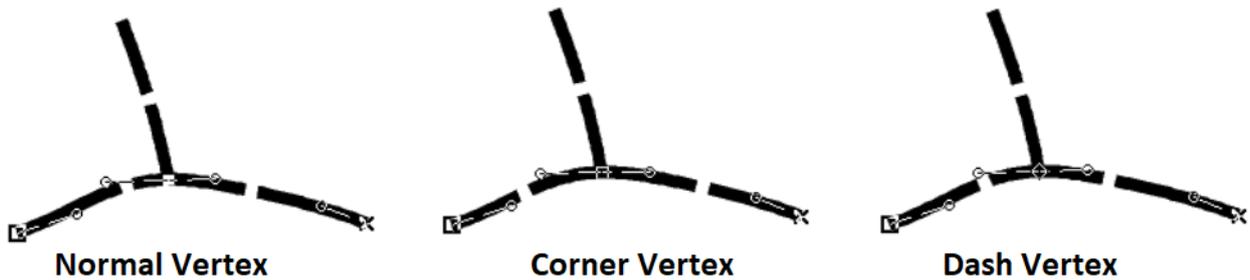
Dotted Line



Dashed Line



Dashed Line with Intersection



Remove Vertex



Click the  **Remove Vertex** button in the **Editing and Drawing Toolbar** to remove a vertex.

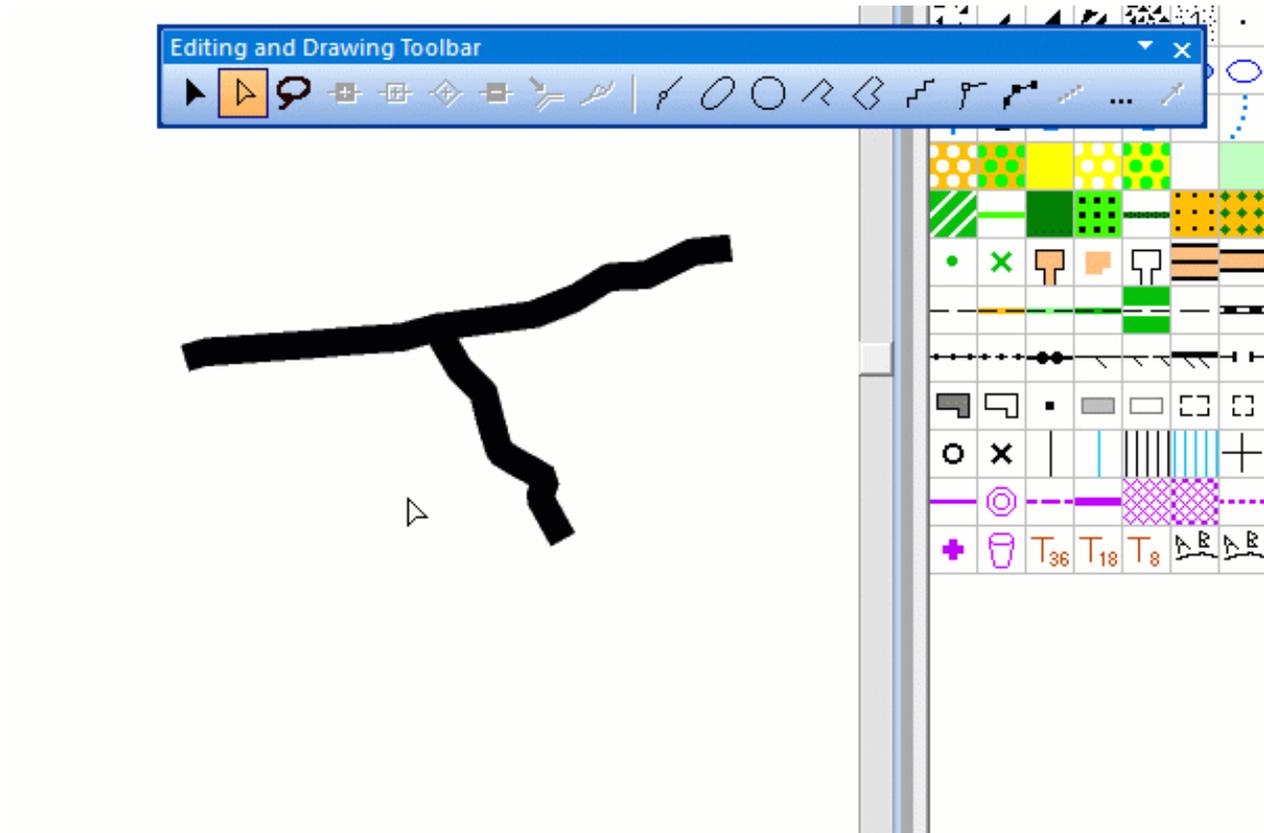
This function is enabled when a line or area object is selected. When you use this function, the cursor changes to the **Remove Vertex** mode.

Remove a vertex from a line or area object by clicking the desired vertex on the selected object with the left mouse button.

 **Remove multiple vertices** by clicking the  **Remove Vertex** button and **holding down** the **Ctrl** key and the **left mouse** key while moving over the vertices. The mouse movement works like an eraser for the vertices of the selected object.

 You can also remove vertices in  **Select and Edit Object** or  **Select Object and Edit Vertex** mode when holding down the **Ctrl** key and clicking on a vertex.

 Hold the **Alt** key to switch temporary to  **Select Object and Edit Vertex** mode, in order to select other objects.



Change Vertex Types to Mas Ori

You can find this function in the **Object** menu and is enabled if at least one line, line text or area object is selected.

1. Select at least one line, line text or area object.
2. Select the **Change Vertex Types to** submenu in the **Object** menu and choose the desired vertex type (normal vertex, corner vertex or dash vertex).
3. The **Change Vertex Types to** dialog appears.
4. In the **From** field, choose which vertex types you want to convert.
5. If you do not want to change the first and last vertex, check the **Do not change first and last vertex** option.
6. Click the **OK** button.

Note: Virtual gap vertices can only be converted to normal vertices (Learn how to make a virtual gap here: **Cut Line**).

To the **Edit Object** page.

Tips with Keyboard and Mouse

This page summarises Tipps and Tricks with Keyboard and Mouse to optimize your drawing and editing skills in OCAD.

Click on the links for each function to learn more and see an animation.

Navigation

Space + Mouse Drag	Move the view. See also:  Pan Tool
Mouse Wheel Down	Pan while holding the mouse wheel down.
Mouse Wheel + Ctrl	Zoom in/Zoom out. See also:  Zoom Tools
Mouse Wheel	Move the view vertically.
Mouse Wheel + Shift	Move the view horizontally.
F5	Redraw
Window > Tile	Fit all opened OCAD projects horizontally or vertically in the OCAD window

There are some **Shortcuts** by default corresponding to view and navigation functions.

Drawing

Shift + 	Continue an existing line or expand areas objects. Press the Shift key and click the start or end point of line or area object to be continued.
Shift + 	Drawing circular objects from the center point.
Ctrl + 	Following Existing Objects.
Alt + 	Draw horizontal or vertical lines. Press the Alt key while drawing. The line snaps in a vertical or horizontal direction.
Tab	Change drawing mode during drawing and editing. Press the Tab key until the desired drawing mode appears to change the drawing mode.
P	Press the P key to change to the last used drawing mode.
Backspace	Delete last vertex.

Visit the **Drawing and Editing** Section in the **OCAD Preferences** to choose your favourite settings.

Editing

		Move Segments
Shift +	 or 	Object not selected: add to the selected objects. As an alternative, drag an area with the Left Mouse Button. Selected object: remove from selected objects. Keep right angle when moving a corner (e.g. building).
Ctrl +		Remove Vertex
Ctrl +	 + Mouse	Remove Vertex with <i>Mouse Over</i> .
Shift + Ctrl +		Add Vertex
Alt +		Select an object under a already selected object.
Alt +	 or 	Select next object for editing
Arrow Keys		Move selected objects (fine tuning)
Arrow Keys		Double Click on Vertex and Move Vertex With Arrow Keys.
Tab +		Move neighboring Segments and congruent Vertices in one single step.
Shift +	Arrow Keys	Move selected objects (fast)
P		Get latest used drawing tool
A		Change to the Select Object and Edit Vertex mode.
V		Change to the Select and Edit Object mode.

Cutting

Ctrl +		Insert a virtual gap.
Shift +		Dashed line: Insert a gap at the cutting point

Background Map

F9	Adjust a Background Map
F10	Hide all Background Maps

Varia

F2	Normal (Visible and Selectable)
F3	Protect Objects
F4	Hide Objects
File > Open Recently Exported Documents	Shortcut to open exported OCAD Files, PDFs, PNG, ...
File > Open Recently Used OCAD Files	Shortcut to open an OCAD file which you recently opened.

Menu File

File

New



Choose this command from the **File** menu or click the  **New** button in the **Standard** toolbar to create a new, empty map. The **New File** dialog box is displayed. For further information visit the **Create a New Map** page.

New Map Wizard



Choose this command from the **File** menu to create a new map using the wizard. The **New Map Wizard** dialog box appears. For further information visit the **New Map Wizard** page.

New Course Setting Project Wizard



Choose this command from the **File** menu to create a new course setting project using the wizard. The **New Course Setting Project Wizard** dialog box appears. For further information visit the **New Course Setting Project Wizard** page.

Open



Choose this command from the **File** menu or click the  **Open** button in the **Standard** toolbar to open an existing map. The **Open Map** dialog box is displayed. Browse the map to be opened and click the **Open** button.

If the map was created with an earlier OCAD version, you will be asked if you want to convert it into the OCAD 2019 format. If you answer by clicking the **No** button, the map will not be opened.

OCAD 2019 can open maps vom OCAD 6 to 2019. OCAD 2019 doesn't support earlier OCAD file formats.

 - Do not use this command to restore a backup copy from a floppy disk created with the **Create Backup** command. Use the **Restore Backup** command instead.

- The error message "This OCAD version is not yet supported" appears if the file is an OCAD file from a higher OCAD version.
 - The error message "Format not correct" appears if the file is either damaged or not an OCAD file.
 - The **Fonts Not Found** dialog box appears if the map contains one or more fonts that are not installed on the computer. Probably the map was created on another computer. You must install the missing fonts in Windows or select other fonts. Otherwise a standard font is used for the missing ones.
-

Open Sample Map



This command chosen from the **File** menu opens the **Open Sample Map** dialog. There you can choose a sample file. The sample files are saved in the OCAD program subfolder *Samples* (usually *C:\Program Files\OCAD\OCAD 20xx\Samples*).

Close



Choose this command from the **File** menu to close the current map. If changes were made to the current map, then you will be asked if you want to save the changes.

Save



Choose this command in the **File** menu or click the  **Save** button in the **Standard** toolbar to save all changes in the current map on volume. If the current map has no name (untitled) the **Save As** dialog box will be displayed, where a name for the map can be entered.

Save As



Choose this command from the **File** menu to save the current map under a new name. The **Save As** file dialog box is displayed.

You can use this command to save the map in a previous OCAD version (10, 11 or 12). Choose the format in the **Save as type** list.

To create a backup file use the **Create Backup** command in the **File** menu.



OCAD 2019 Course Setting files can be saved in an previous OCAD version if the file passes the **Compatibility Check**.



All changes made since the old map was saved the last time are not written to the old map. They are only written to the new map.



OCAD TRIAL can't save the ocd files in an earlier OCAD version.

Undo



Click on the **Undo** icon  in the standard toolbar, press Ctrl+Z or select **Undo** in the **File** menu to undo the last draw or edit operation.

Redo



Click on the **Redo** icon  in the standard toolbar, press Ctrl+Y or select **Redo** in the **File** menu to reverse the effect of the **Undo** operation.

Print

Print out the desired area of your map. Visit the **Printing Maps** page to read all about printing.

Import

Choose this command to import an external file to the current map. Visit the **Import Files** page for more information.

Export

Export the map in different file formats. See the **Export** page for more informations.

Export OCAD Internet Map

Export the map as an OCAD Internet Map. Read more about it on the **Export OCAD Internet Map** page.

Export Encrypted File

Export the map to encrypted OCAD file format. An encrypted OCAD map can only be loaded as a Background Map and cannot be edited. See the **Export Encrypted File** page for more informations.

Send File by Email

Choose the Send File by Email command to send an OCAD map, including the loaded DEM, Databases, Background Maps and Layout Objects, by E-Mail. Please find more information on the **Send File by Email** page.

Execute XML Script

Choose this command to execute functions whose settings are defined in a XML file. Please find more information on the **Execute XML Script** page.

Create Backup



To create a backup of the currently opened file:

1. Choose the **Create Backup** command in the **File** menu.
2. The **Backup** dialog appears.
3. OCAD creates a new folder called **Backup** and suggests a name for the backup file, which consists of the current date and time and the file name. Alternatively, you can enter an own name.
4. Click the **Save** button to save the backup.

This function has not the same effect as the **Save As** function. After saving the backup you are still working on the old file.

Open Recently Exported Documents



Choose **Open Recently Exported Documents** in the **File** menu to open a recently exported document from the opened OCAD file. The information about the recently exported documents are saved in the OCAD file that you have open. This function is not available if you do not have a file open.

Click on the **Delete List** command to clear the list.

Not existing files are disabled and cannot be opened.

Open Recently Used OCAD Files



Choose **Open Recently Used OCAD Files** in the **File** menu to open an OCAD file which you recently opened. Not existing files are disabled and cannot be opened.

Exit OCAD

Click on to exit OCAD.

[Back to Main Page](#)

Create a New Map

OCAD provides predefined symbol sets to help you begin drawing your map immediately.

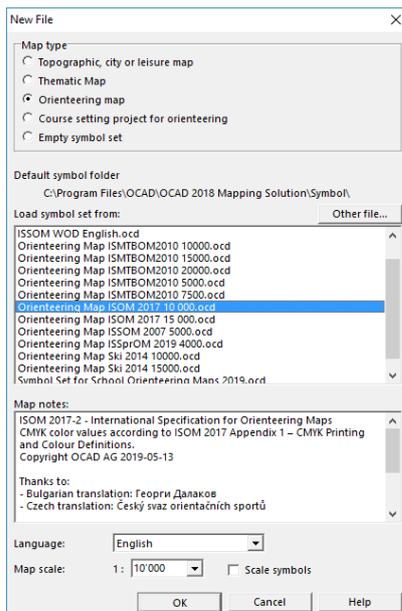
If you want to import Open Street Map (OSM) data, have a look at the [New Map Wizard Page](#)

Create a New Map



To create a new map:

1. Select **New** in the **File** menu. The **New File** dialog box appears.



2. Choose a map type. You can now choose a predefined symbol set which fits to your intended map from the selection box. If you want an empty symbol set, choose the **Empty symbol set** option. Click the **Other file** button to start with symbols from a different map than those listed. The box lists all symbol files in the \symbol\ sub directory.



- To add your own set of symbols to the list of predefined symbol sets, simply copy the ocd file to the OCAD sub directory *Symbol* (usually *C:\Program Files\OCAD\OCAD 20xx\Symbol*). Symbol files are just normal OCAD maps, usually without any objects. The **Map notes** box shows information about the specifications of the map.

- Map notes can be edited in the template file itself. For this purpose choose **Map Information** in the **Map** menu.

- Edit the file *OrienteeringMapList.User.txt* in the OCAD sub directory *Symbol* if you want that user defined symbol sets are listed as map type **Orienteering map**.

💡 - Do not edit the symbol sets provided by OCAD. When installing a Service Update, OCAD overwrites these symbol sets. So, your changes will be lost. If you want to modify symbols in the symbol set then first save the symbol set with another file name and edit this symbol file.

💡 - You can add, change or delete symbols in the symbol box at any time.

3. Decide in which **scale** the map shall be drawn. If you change the scale, you can choose also to scale the symbols.
4. Choose the language of the symbol set (only at ISOM 2017 available).
5. By clicking the **OK** button, OCAD creates a new map and copies the chosen symbol set to it. You are ready to start!

Set Scale and Coordinate System



Select the **Set Scale and Coordinate System** item from the **Map** menu. The **Set Scale and Coordinate System** dialog box appears.

Set Scale and Coordinate System

Map scale: 1 : 10.000

Coordinates

Paper coordinates

Grid distance: 500,0000 mm

Real-world coordinates

Easting offset: 616000 m

Northing offset: 257000 m

Angle: 0,00 deg

Grid distance: 500 m

Coordinate system

Swiss Grid CH1903 / LV03

Additional local offset

Easting: 0,00 m

Northing: 0,00 m

Map Scale

Enter a scale and click the **OK** button or adjust the **Coordinates** settings.

 Do not use this dialog to change the scale after entering the initial values. To increase or decrease the size of the map subsequently, use the **Change Scale** function in the **Map** menu. Setting the current scale does not enlarge or reduce the map. It only changes a number in the map file and georeferencing will be lost.

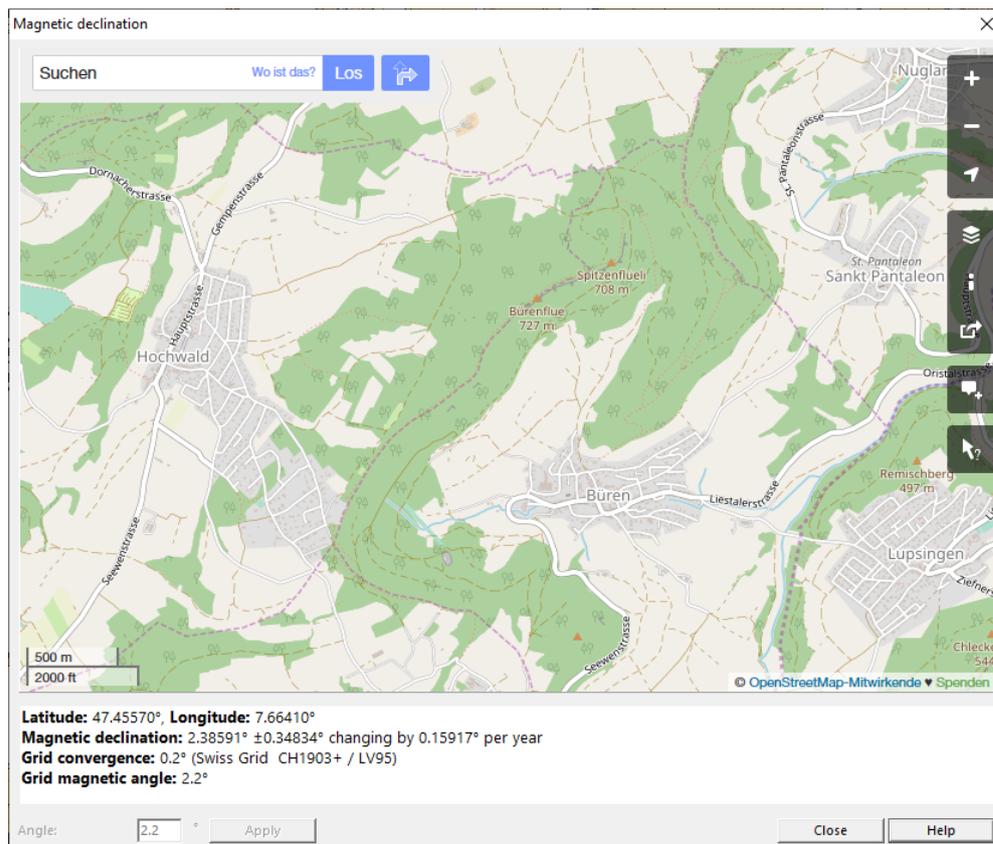
Georeference the Map

Before loading a georeferenced **Background Map**, work with **GPS** data or import **Spatial Base Data**, we recommend that you first georeference the map. You should contact your data supplier, national surveying office or cartographic institute to find out which coordinate system will best suit your needs.

Coordinates

1. Choose whether you want define **Paper coordinates** (in mm) or **Real world coordinates**. Click the corresponding radio button.
2. In the **Easting offset** and **Northing offset** fields, enter the coordinate values for the center of your map.
3. The coordinate system can be rotated by entering a value in the **Angle** field.

Click on **Magnetic Declination** to see the current Declination for your position. You can only **Apply** the Angle, if no objects have been drawn yet. If you have already drawn objects, use the **Rotate Map to Magnetic North** function instead.

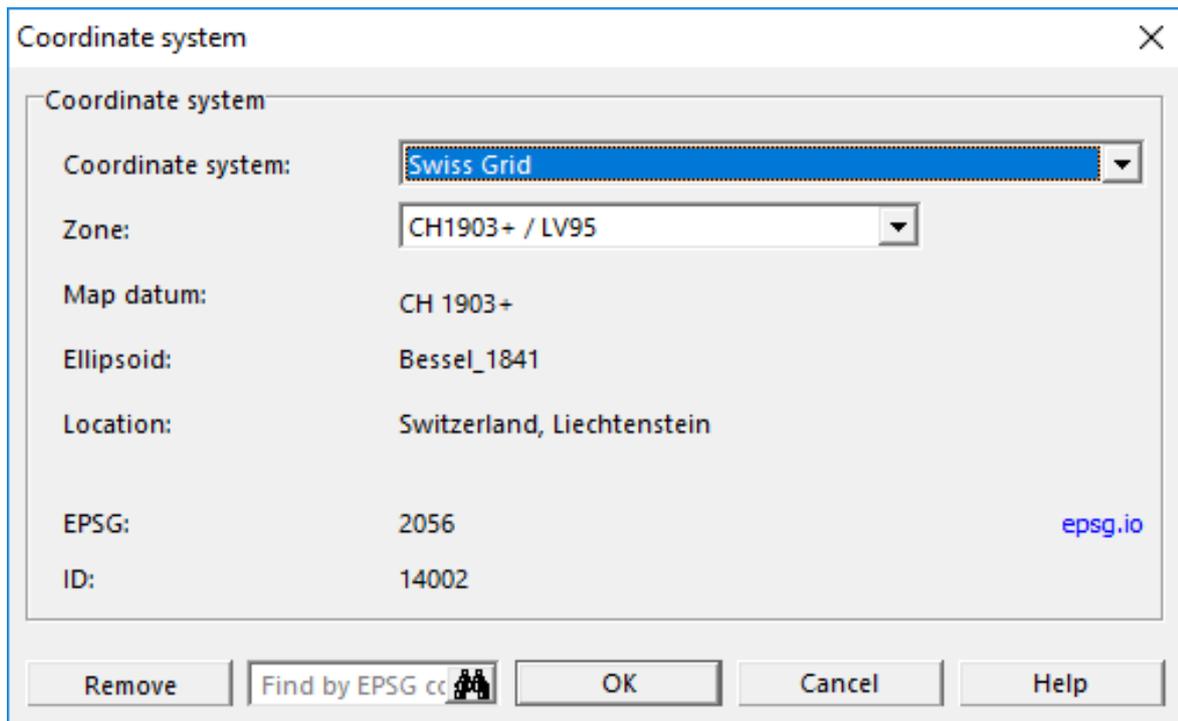


4. In the **Grid distance** field, enter the desired distance for the **Coordinate Grid lines**.

 Enter the coordinate values for the center of your map in the horizontal and vertical offset fields. This is important since the drawing area of OCAD is limited to 4 x 4 m in the **Ori** Orienteering edition, in the **Sta** Starter edition as well as in the **CS** Course Setting edition and 80 x 80 m in the **Mas** OCAD Mapping Solution. This option is used to ensure that imported **Spatial Base Data**, georeferenced **Background Maps** and **GPS** measurements do not lie outside the drawing area.

Coordinate System

Click the **Choose** button to define a coordinate system. The **Coordinate System** dialog appears.



Choose the desired coordinate system. OCAD supports a lot of coordinate systems. The most common one is the **UTM** ^[1] (Universal Transverse Mercator) system which is divided into 60 zones limited by meridians and defined worldwide.

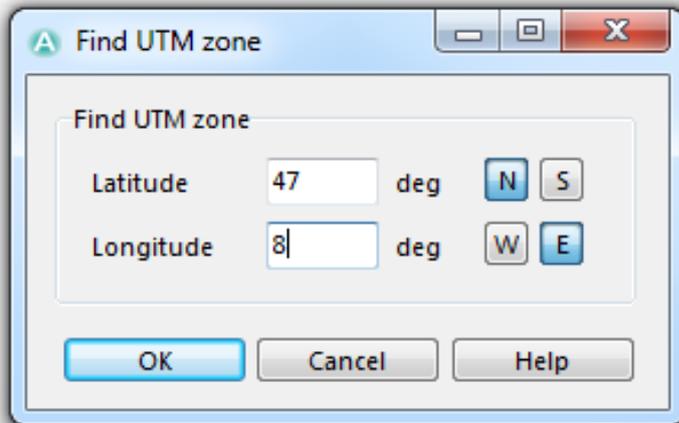
- **Zone:** Depending on the selected coordinate system you must select a zone. If the coordinate system **UTM** is selected, you can click the **Find** button to find the correct UTM zone. This function is described in the next paragraph.
- **Map datum:** This field displays the map datum for the desired coordinate system (**Map Datum** ^[2]).
- **Ellipsoid:** The field displays the ellipsoid from the map datum (**Reference Ellipsoid** ^[3]).
- **Location:** The field displays the location, where the coordinate system can be used.
- **EPSG:** The field displays the EPSG-Code (European Petroleum Survey Group Geodesy) of the coordinate system. An external link is provided on the right side of the dialog box. This link refers to **spatialreference.org** ^[4], where you can get more information about the chosen coordinate system and zone.
- **ID:** The field displays the internal grid ID for this coordinate system. This grid ID is used in the [[XML Script]].

Click the **Remove** button to reset the coordinate system to **Grid undefined**.

If you are finished, click the **OK** button.

Find UTM Zone

If **UTM**^[1] is chosen as a coordinate system, the local zone can be found with this tool. Click the **Find** button next to the **Zone** dropdown list. The **Find UTM Zone** dialog appears.



Enter the geographical coordinate (degree of longitude and degree of latitude) of your map.

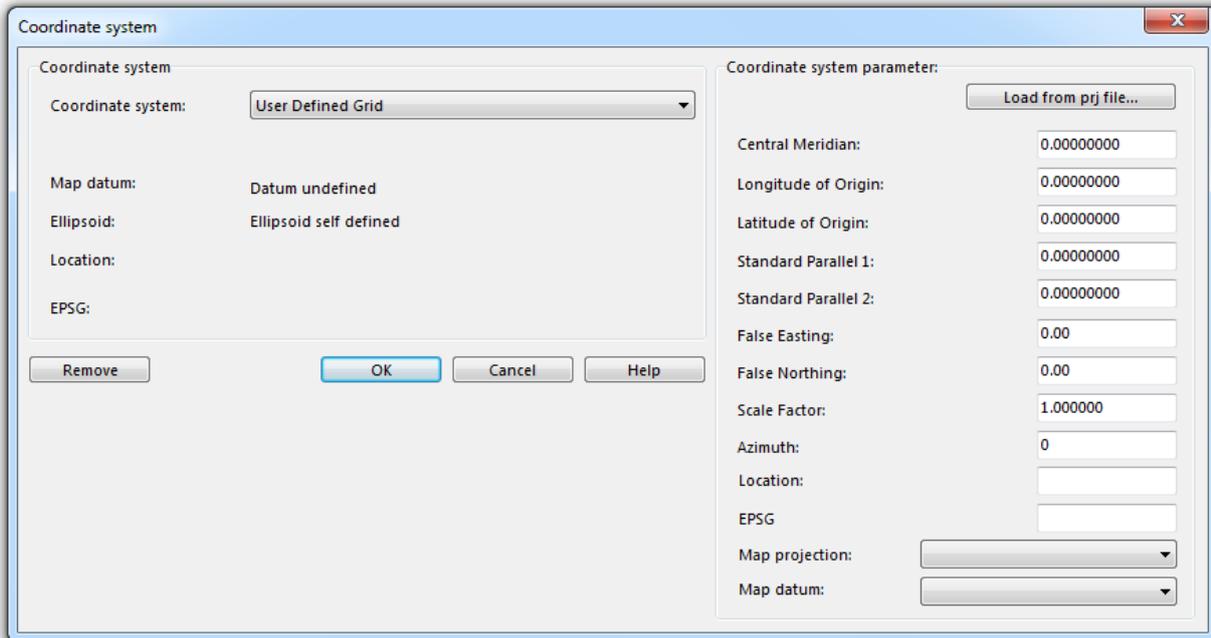
- **Latitude:** Enter in this field the degrees of latitude.
 - N (North):** Click this button if the position is northern of the equator.
 - S (South):** Click this button if the position is southern of the equator.
- **Longitude:** Enter in this field the degrees of longitude.
 - W (West):** Click this button if the position is western of Prime Meridian (London Greenwich).
 - E (East):** Click this button if the position is eastern of Prime Meridian (London Greenwich).

Click the button **OK** to calculate the UTM zone. The UTM zone appears in the **Coordinate system** dialog box.

Example: Coordinate from Baar (Switzerland): 47° 12' North (Latitude), 8° 31' East (Longitude). Enter 47 in the **Latitude** and 8 in the **Longitude** field. You will find out that this place is in the UTM zone 32 North.

User Defined Grid

In the **Coordinate System** dialog you have the option to choose a **User Defined Grid** in the dropdown list. If you choose it, the dialog box is extended with the **Coordinate system parameter** part.



You can load the coordinate system from a PRJ-File by clicking the corresponding button. A PRJ-File is a projection format containing coordinate system and projection information. The coordinate system parameter are updated after loading a PRJ-File. Alternatively, the required values can be typed manually but this requires a little experience.

Additional local offset

It is possible to give an additional local offset to the chosen coordinate system. Enter a value for the horizontal and vertical offset in the corresponding fields. This is especially useful if you have to work with GPS very precisely. A tectonic plate can move but the coordinate system stays the same. If you enter a local offset, this problem can be cleared.

Click the **OK** button to save changes and quit the **Set Scale and Coordinate System** dialog.



Do not use this dialog to change the real world coordinate offset if the map is georeferenced. To move a georeferenced map, use **Transform -> Center Map to Drawing Area** in the **Map** menu and enter the new offset.

Next Steps

Now as you created a new map, you are ready for the next steps.

- Learn how to **Draw Objects**.
- Learn how to **Edit Objects**.
- Use Existing Spatial Data: **Import Files, Database, WMS, Background Maps**.
- Processing of LiDAR data and Digital Elevation Models: **DEM Import Wizard, Lidar Point Cloud Manager**.
- Capture and derive own Data: **GPS, Laser Rangefinder**.



Check out our tutorials about **Mapping with OCAD**.

[Back to Main Page](#)

References

- [1] http://en.wikipedia.org/wiki/Universal_Transverse_Mercator_coordinate_system
- [2] http://en.wikipedia.org/wiki/Datum_%28geodesy%29
- [3] http://en.wikipedia.org/wiki/Reference_ellipsoid
- [4] <http://spatialreference.org/ref/epsg/>

New Map Wizard

Choose this command from the **File** menu to create a new map.

This wizard helps you to set the geo-reference and import optionally Open Street Map ^[1] data.

See also the **Create a New Map Page** if you do not want to import OSM data.

Choose Symbol Set



New Map Wizard ✕

Symbol set:
Choose your symbol set

Default symbol folder: C:\Program Files\OCAD\OCAD 2018 Mapping Solution\Symbol\

Load symbol set from:

- Orienteering Map ISMTBOM2010 10000.ocd
- Orienteering Map ISMTBOM2010 15000.ocd
- Orienteering Map ISMTBOM2010 20000.ocd
- Orienteering Map ISMTBOM2010 5000.ocd
- Orienteering Map ISMTBOM2010 7500.ocd
- Orienteering Map ISOM 2017 10 000.ocd**
- Orienteering Map ISOM 2017 15 000.ocd
- Orienteering Map ISSOM 2007 5000.ocd
- Orienteering Map ISSOM 20XX Final Draft 4000.ocd
- Orienteering Map Ski 2014 10000.ocd
- Orienteering Map Ski 2014 15000.ocd
- Thematic Map.ocd
- Topographic Map 15 000 Sweden.ocd

Map notes:

ISOM 2017 - International Specification for Orienteering Maps
 CMYK color values according to ISOM 2017 Appendix 1 – CMYK Printing and Colour Definitions.
 Copyright OCAD AG 2018-12-06 (with ISOM 2017 corrections approved November 2018)

Thanks to:

- Bulgarian translation: Георги Данakov
- Czech translation: Český svaz orientačních sportů
- Danish translation: Dansk Orienterings-Forbund, Flemming Nørgaard
- Latvian translation: Latvijas orientēšanās federācija
- Portuguese (Brazil) translation: Confederação Brasileira de Orientação
- Spanish translation: Federación Española de Orientación FEDO
- Catalan translation: Santi Guillén

Map scale: 1 :

File name: C:\Tmp\NewMapWizard.ocd ...

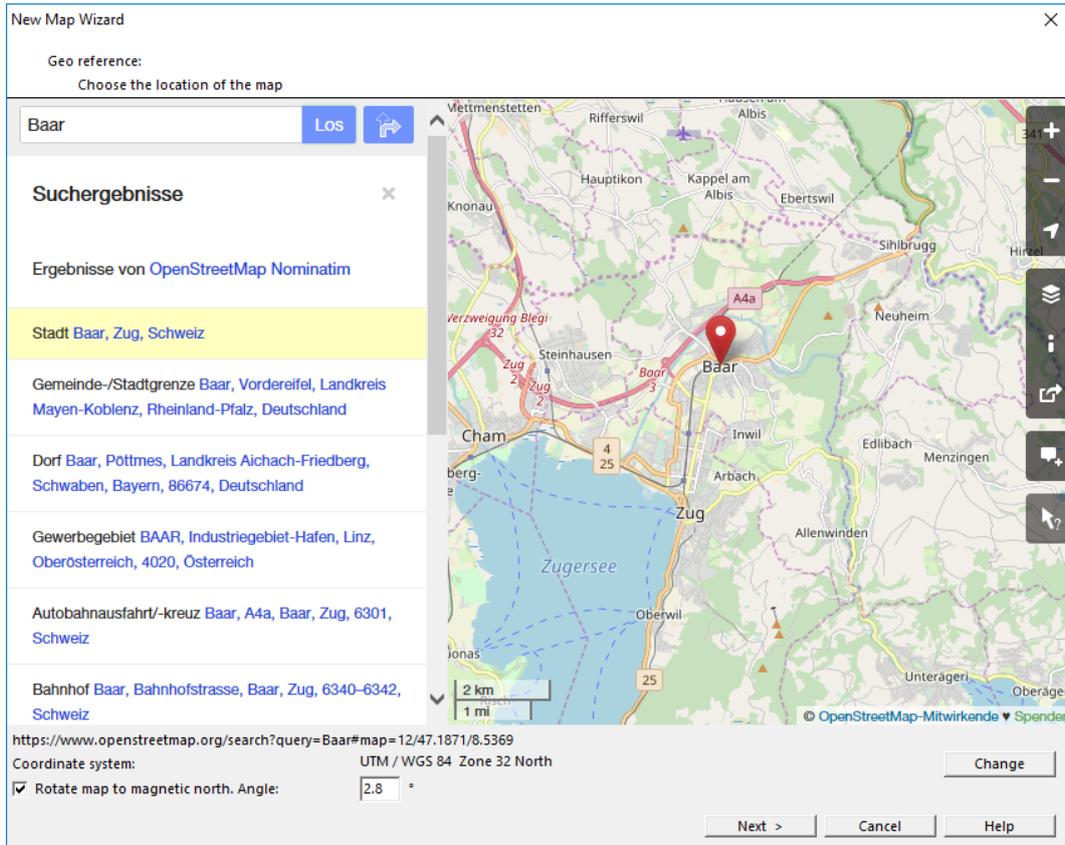
Language:

The **New Map Wizard** dialog shows only OCAD symbol sets. If the **Load symbol set from** field is empty, then change the **Default Symbol Folder** in the **Preferences** to the OCAD symbol folder.

- **Map Scale:** Set the Map Scale.
- **File Name:** Click the button to change the default temporary file name and the file location.
- **Language:** Choose the language.

Click the **Next** button.

Choose Location

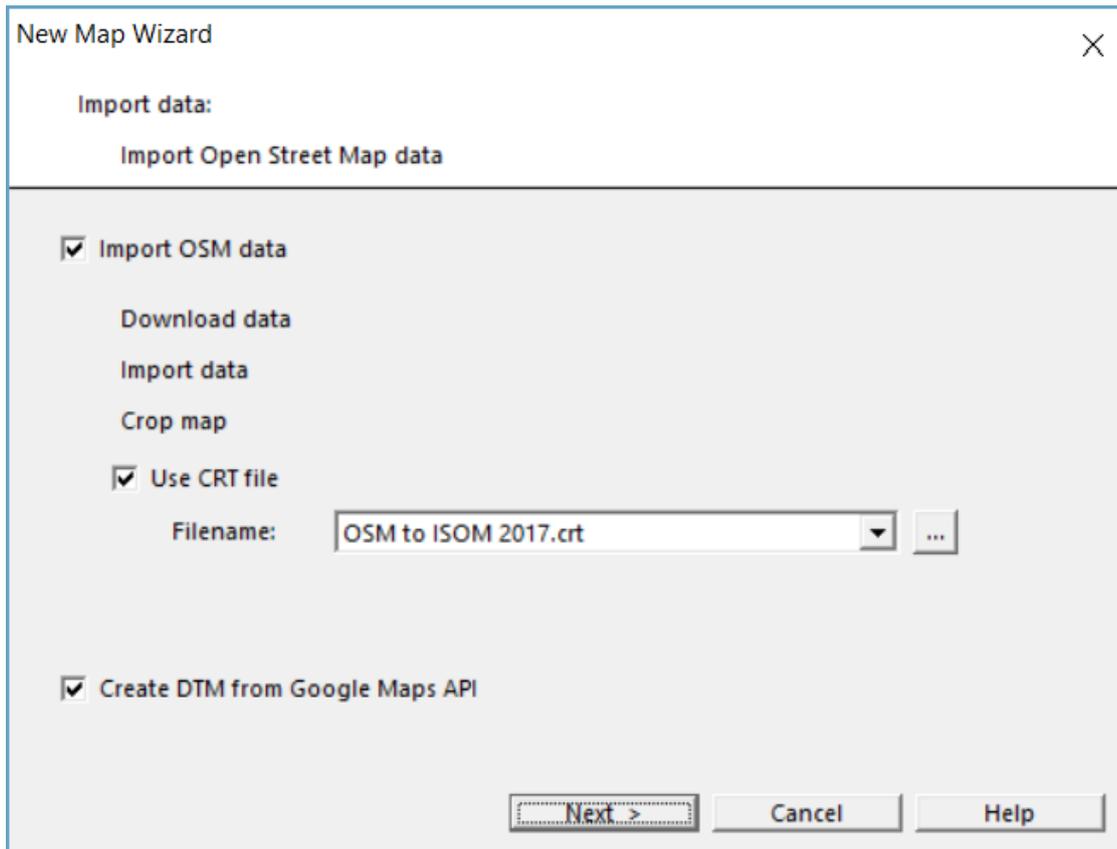


Choose the location of the map. Enter the location (e.g. *Baar*) in the search field and click **Go**. Choose the location in the list or move the Open Street Map to the map location. OCAD show the correct UTM coordinates system for the map location (e.g. *UTM/WGS 84 Zone 32 North*). Click the **Change** button to change to another coordinate system.

OCAD also calculates the correct declination for your position and fills in the correct angle in the box **Rotate map to magnetic north**. Check this option to have considered the declination from start.

Click the **Next** button.

Import Data



Import OSM Data

You can import **Open Street Map** ^[1] data for this location. Check this option to import OSM data.

OSM are free and available all over the globe. However, in some places they are more accurate and in other places less accurate.

Choose Cross Reference Table

Choose the CRT file to change automatically the objects into the symbols. Note: OSM data consists of many layers and not all of them are listed in the CRT File. This data will appear in red color (Objects without Symbol). Select these layers and convert them manually.

1. Click on one of these unsymbolised red object.
2. Go to **Select>Select by Symbol>All objects in layer**. The layer with the red object you selected before should appear.
3. Click **OK**. Now you have selected all objects of this layer.
4. Click on a symbol in the **Symbol Box** and go to **Objects>Change Symbol (Selected Objects)**

Create DTM from Google Maps API

This option is only activated if a Google API key is entered in the OCAD Preferences. With this option you can create contour lines, based on a DEM from Google Maps data. You shouldn't trust these data too much, so we recommend to use this function only if no other precise DTM is available. Nevertheless, it can give you an impression how the terrain looks like.

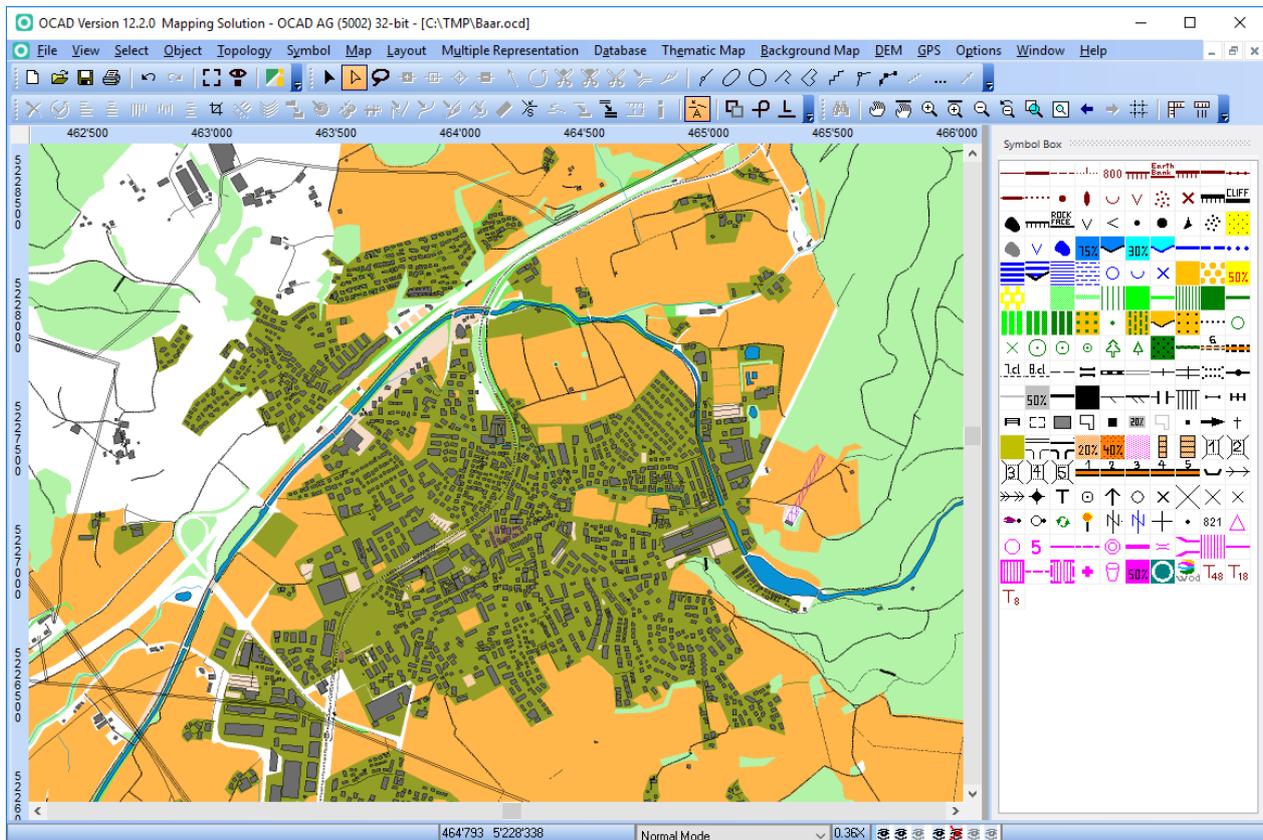
Click the **Next** button.

This step will take some time, as all the data will be downloaded and proceeded.

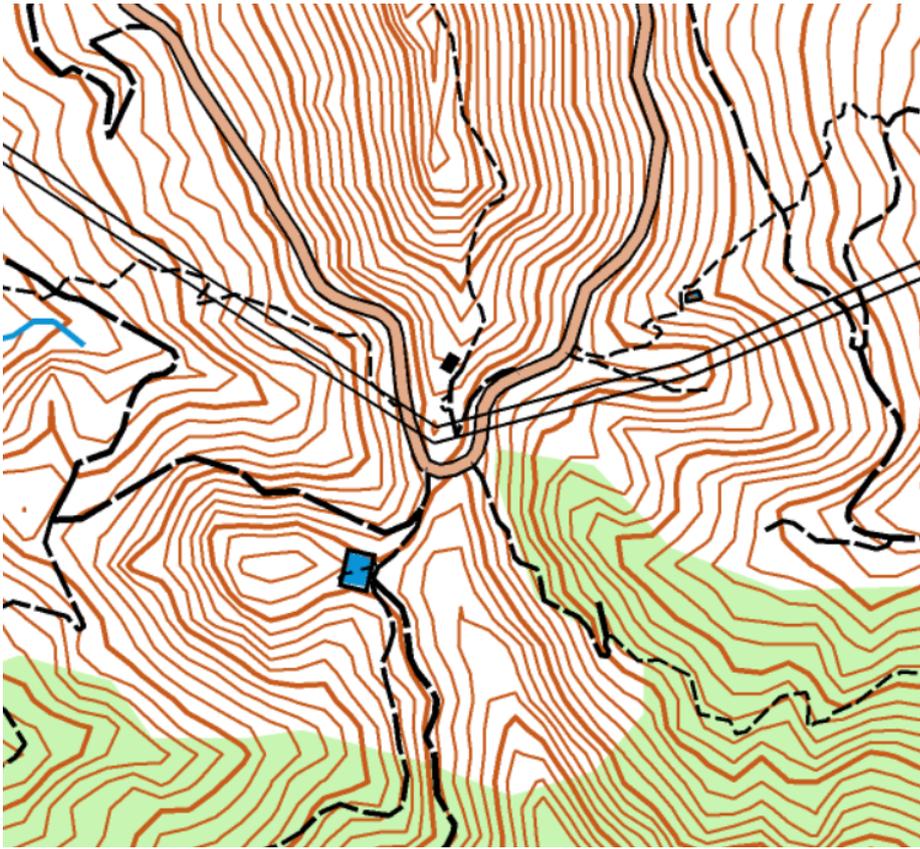
Click the **Close** button.

Example

The following maps have been created automatically with the **New Map Wizard**.



Map of Baar, Switzerland



Map of Cruz Grande, Gran Canaria

💡 **Video:** Start a New Map ^[2]

References

[1] <https://www.openstreetmap.org>

[2] <https://www.youtube.com/watch?v=iWERDnjMyO4&t=2s>

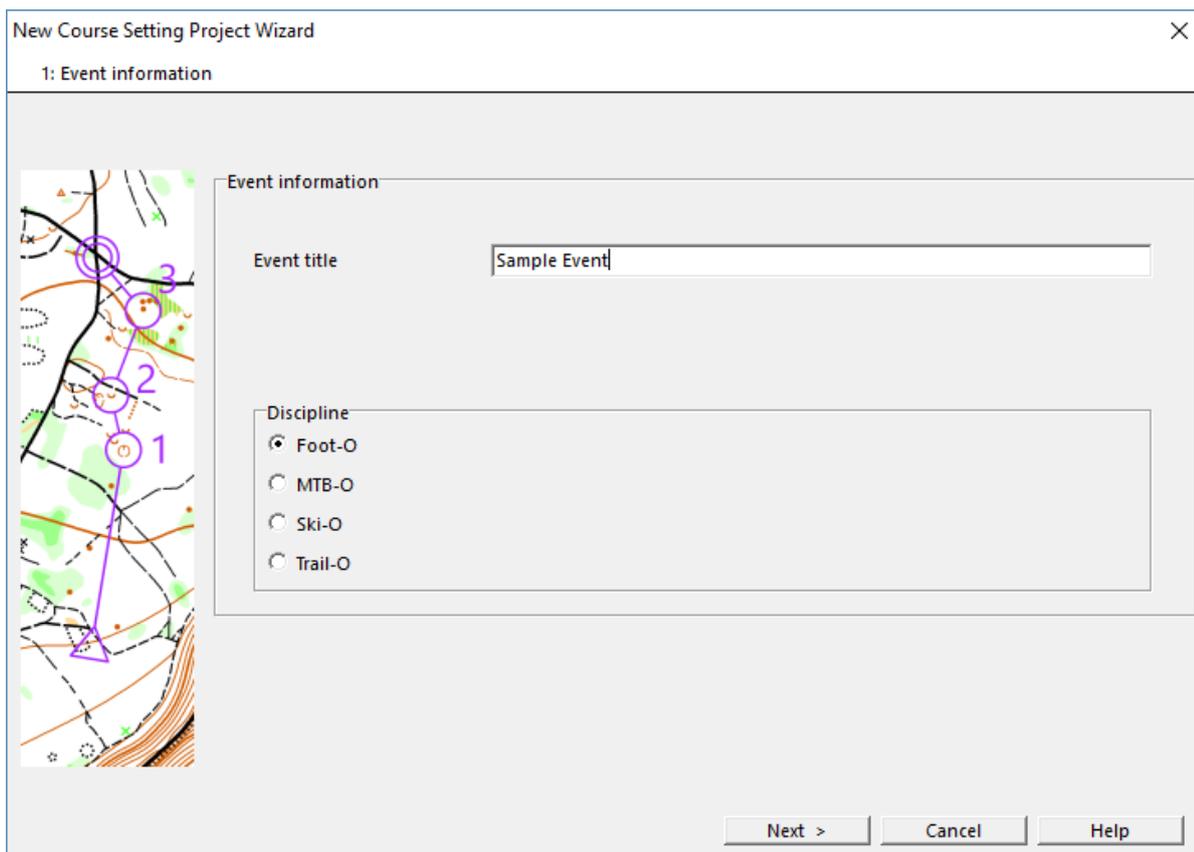
New Course Setting Project Wizard

Choose this command from the **File** menu to create a new course setting project.

This wizard guides you through the first steps like setting an event title and loading a map file in the background layer.

Event Information

- Enter the **Event Title**
- Choose the **Discipline**



New Course Setting Project Wizard

1: Event information

Event information

Event title

Discipline

Foot-O

MTB-O

Ski-O

Trail-O

Next > Cancel Help

Map file, symbol set and language

- Choose the **Map File**. The scale of the map will appear automatically.
- Choose which **Symbol Set** you want to load. You can browse to any folder.
- If available, choose the **Language** of the Symbol Set
- Enter the **Name** of the Course Setting Project and browse to the location where you want to save the file.

New Course Setting Project Wizard

2: Map file, symbol set and language

Map file

Name: Bärenflue_ISOM 2017.ocd

Scale: 1:10000

Course setting file:

Load symbol set from: n:\Build\Symbol\

Course Setting 10 000 ISCD 2018 - ISOM 2017.ocd
 Course Setting 15 000 ISCD 2018 - ISOM 2017.ocd
 Course Setting 4 000 ISCD 2018 - ISSOM 2007.ocd
 Course Setting 5 000 ISCD 2018 - ISSOM 2007.ocd

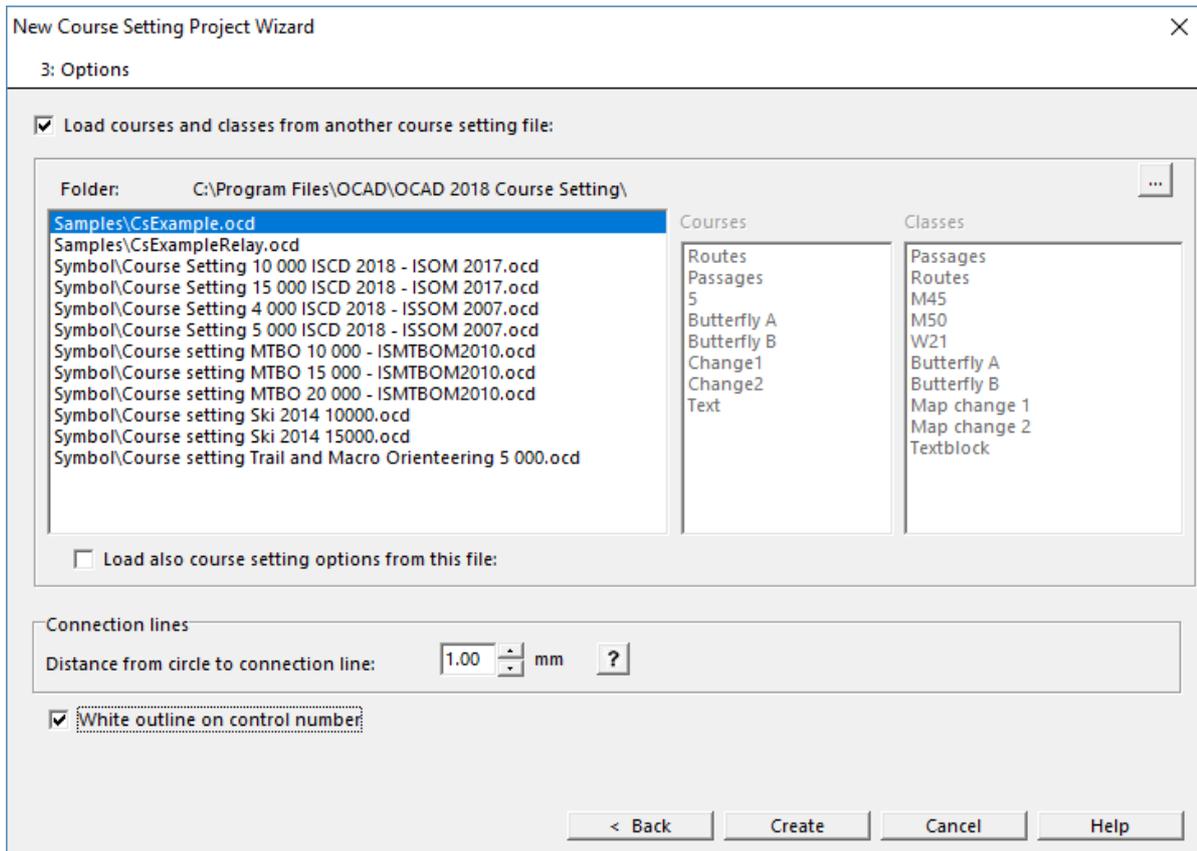
Language: English

Course setting file name: C:\Samples\NewCourseSettingProjectSample.ocd

< Back Next Cancel Help

Options

- Check the option **Load courses and classes from another from another course setting file**.
Browse to a already existing Course Setting Project, from which you want to import Courses and Classes. This can be the case, if you organise an orienteering competition regularly.
- Check **Load also course setting option from this file** if all **Course Setting Options** from this file should be adopted.
- Specify the **Distance from circle to connection line**.
- Activate **White Outline on Control Number**, if wanted.
- Click on **Create** to set up the Course Setting Project and to close the Wizard.



Undo and Redo

Undo



Click on the **Undo** icon  in the standard toolbar, press Ctrl+Z or select **Undo** in the **File** menu to undo the last draw or edit operation.

Redo



Click on the **Redo** icon  in the standard toolbar, press Ctrl+Y or select **Redo** in the **File** menu to reverse the effect of the **Undo** operation.

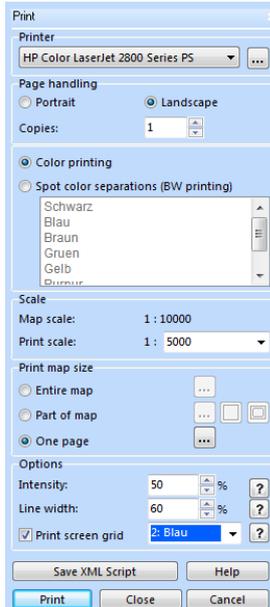
Back to the **File** page.

Printing Maps



Print a map

1. Select **Print** in the **File** menu, press Ctrl+P or click on the **Print** icon  in the standard toolbar. The **Print** dialog appears on the right hand side of the window.

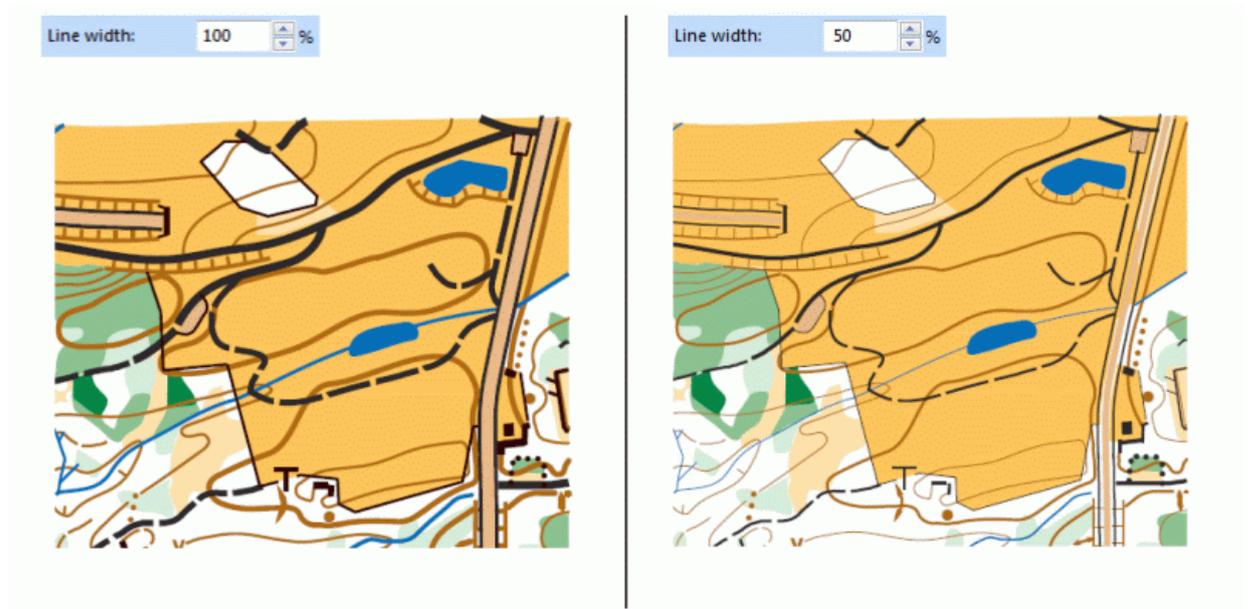


2. Select the printer to print the map. In the box you can select one of the installed Windows printer drivers. Click the **Properties** button  to change printing options.
3. In the **Page handling** box you can set the page orientation (**Portrait** or **Landscape**) and the number of copies you would like to print.
4. Decide between **Color printing** or **Spot color separations (Black & White printing)** in the next box. Select the second option to print black and with the spot color separations. Choose **Define Spot Colors** from the **Map** menu to define spot colors. When this radio button is activated and spot colors are defined, you can select one or more of the defined spot colors in the **Spot colors** list box.
5. Define the print scale in the **Scale** box. You can enter the scale on the keyboard, or choose one of the predefined scales. If the print scale is different from the map scale, the map and the symbols are enlarged/reduced according to the ratio of the map and print scales.
6. In the **Print map size** box you have the following options:
 - **Entire map:** The entire map will be printed. Gray frames show a print preview on the basis of the defined paper size in the printer settings. If the map is too large for one page, it will be printed on several pages. Click on the **Setup** icon  to make more adjustments.
 - **Part of map:** Print a part of the map. If you choose this option a thin black and a grey frame appear. The thin black frame shows the area which is to be printed, the grey frame shows the paper size. Adjust the thin black frame to your desired map part. More information about setting up **Part of the Map** can be found further down on this page.
 - **One page:** Select this option to print one page of paper of the map. Click the **Setup**  button to define the region to be printed. More information about setting up **One Page** can be found further down on this page.
 - If you cannot see the frame, click **Zoom out** in the **View** menu until the frame becomes visible.

- Move the mouse pointer inside the rectangle to drag the entire rectangle. Drag a corner or one side to resize the rectangle.
- 7. In the **Options** box you can make the following adjustments:
- **Intensity:** For older ink jet printers you can reduce the color intensity here. This reduces the amount of ink applied.



- **Line width:** For older ink jet printers you can reduce the line width here. This reduces the amount of ink applied.



- **Print screen grid:** Check this box to print a grid on the map. Choose the color of the grid in the drop-down list.



8. Click **Print** to print out the respective area.

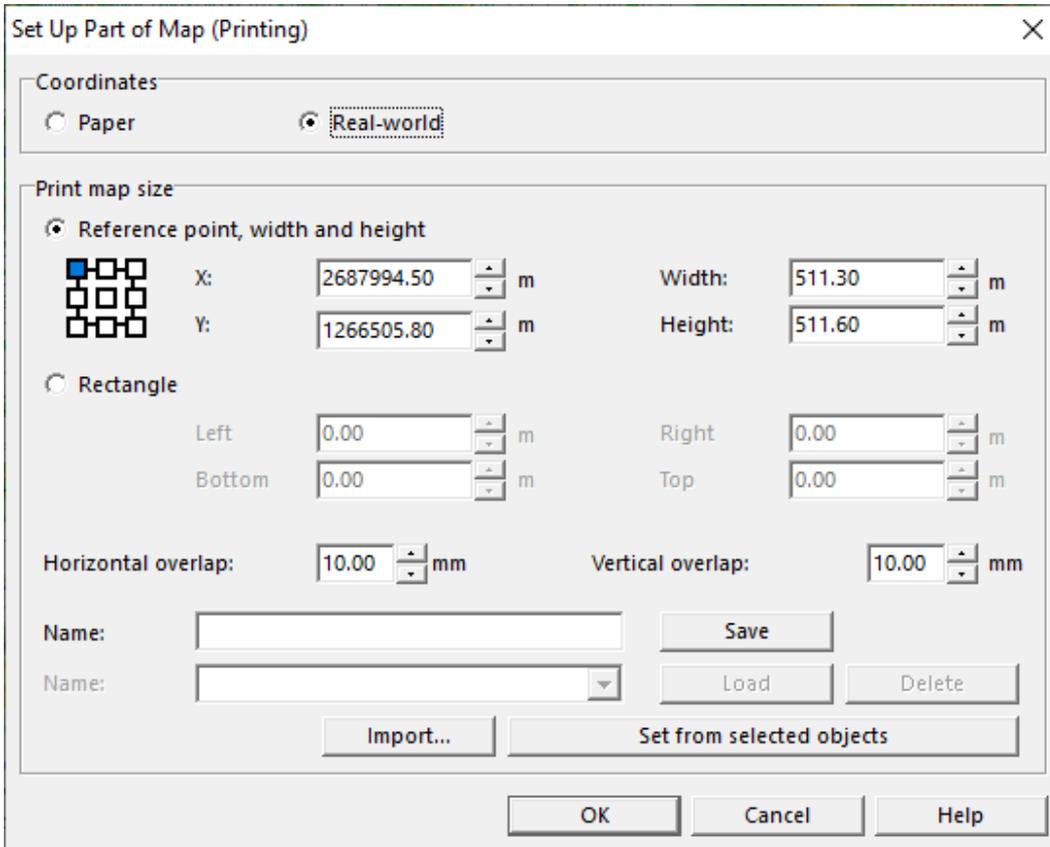
Click **Save XML** to save an XML file with the print settings (Same filename and path as OCAD map). Use **Execute XML Script** command in **File** menu to print the map with the settings saved in the XML file.

Hide the background map before printing the map, if you do not want this to be printed out as well. If you are still in **Draft mode**, select **Normal Mode** in the **View** menu.

💡 The error message: "Paper size is not defined" appears if a paper size is defined that is not available for the selected printer.

Setup Part of Map

Choose the **Part of map** option as the print map size and click the  **Setup** button to define the printing area. The **Setup Part of Map (Printing)** dialog appears.



Set Up Part of Map (Printing)

Coordinates

Paper Real-world

Print map size

Reference point, width and height

 X: 2687994.50 m Width: 511.30 m
Y: 1266505.80 m Height: 511.60 m

Rectangle

Left: 0.00 m Right: 0.00 m
Bottom: 0.00 m Top: 0.00 m

Horizontal overlap: 10.00 mm Vertical overlap: 10.00 mm

Name: Save
Name: Load Delete
Import... Set from selected objects
OK Cancel Help

Coordinates

Choose between **Paper** or **Real World Coordinates**.

Export map size

Reference point, width and height:

Choose the point of the map which you want to define as the reference point (e.g. upper left corner). Click one of the nine squares.

Enter the coordinate of the chosen point.

Enter the dimension (**Width** and **Height**) of the map to be printed in m (real world coordinates) or mm (paper coordinates).

Rectangle

Enter the coordinate of the bottom left and the top right corner of the rectangle to be exported in m (real world coordinates) or mm (paper coordinates).

Overlap

If the map does not fit to one page, the given **vertical and horizontal overlap** is printed on both pages, therefore the maps are overlapping.

 The overlap values can be negative. This can be useful when printing the courses for relays in orienteering. Place the start number and or advertisement to be printed on the back side beside the map. With a negative overlap a gap between the two pages is created.

Save

You can name the adjustments/rectangles and save them by clicking the **Save** button.

Load

If there are saved settings, you can load them using the **Load** button or delete them using the **Delete** button.

Set to entire map

Click the **Set to map** to set the values given in the **Export map size** part of the dialog to the entire map

Import

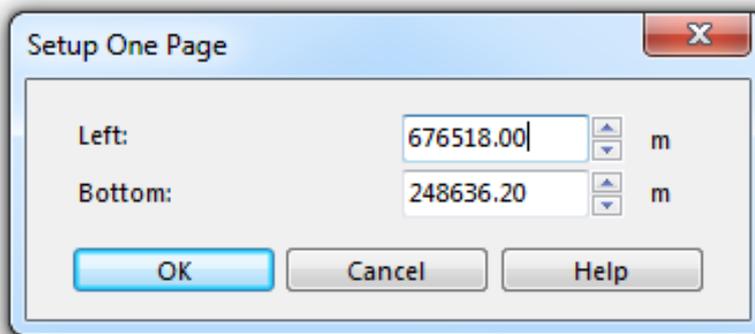
You can import export-rectangles from another ocd file.

Set from selected objects

Click this option and the rectangle will be adapted to the selected objects.

Setup One Page

Choose the **One page** option as the print map size and click the  **Setup** button to define the printing area. The **Setup One Page** dialog appears.

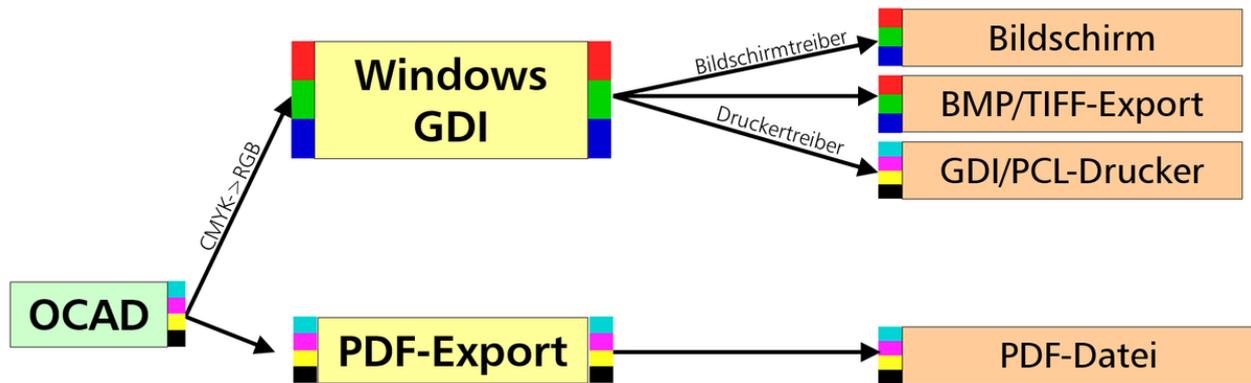


In this dialog you have to set the bottom left corner of the page to be printed in mm (paper coordinates) or m (when you have **Set a Coordinate System**). Click the **OK** button when finished.

 A preview is given in the drawing area.

Color Display

Due to color display, we recommend you to always create a PDF first out of OCAD and print this PDF afterwards. OCAD works with CMYK Colors and they will only be displayed correctly this way. What you see on your screen are RGB-Colors from the Windows Graphics Device Interface (GDI). When you print maps directly out of OCAD, the Windows GDI converts the CMYK values first in RGB values and your printer driver back to CMYK values. This way it may come to changes in the color values.



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Import Files

Choose this command in the **File** menu to import an external file to the current map. The **Import** dialog box is displayed. Initially all importable files are listed. The following file types can be imported:

- OCAD map files (*.ocd)
- Adobe Illustrator files (*.ai) (only vector data)
- CSV files (*.csv)
- DXF files (*.dxf)
- Enhanced Meta files (*.emf) (only vector data)
- GML files (*.gml)
- GPX files (*.gpx)
- KML files (*.kml)
- OpenStreetMap files (*.osm)
- NMEA files (*.nmea)
- PDF files (*.pdf) (only vector data)
- Freehand XML files (*.rcw)
- Shape files (*.shp)
- SVG files (*.svg)
- Windows Meta files (*.wmf) (only vector data)
- xyz files (*.xyz)



It is possible to select and import multiple dxf, gpx, nmea, shp and xyz files in this dialog box.



OCAD opens the File Dialog in the folder of the last imported file. Press the **Shift** key to open a file from the *Templates* folder. The *Templates* folder is a subfolder of OCAD program folder (e.g. *C:\Program Files\OCAD\OCAD 20xx Mapping Solution\Templates*).

Import OCAD Map



Choose an OCAD-File (*.ocd) in the **Import** dialog box and click the open button. The **Import OCAD Map** dialog appears with the following options:

Position

- **Place using the mouse:** Choose this option to import for example a logo. The imported map is displayed in the center of the screen and all objects are selected. Thus, you can drag it with the mouse to the desired position.
- **Place with offset:** Choose this option when combining different parts of a map. Enter the offset in mm where the origin (0, 0) of the imported map should be placed.
- **Use real world coordinates:** Choose this option to import a georeferenced map. The map is automatically placed at the correct position.

Symbols

- **Do not import any symbols and colors:** Choose this option to not import any symbols and colors.
- **Import symbols only if symbol number does not exist yet:** Choose this option to import symbols only if the symbol number does not exist yet. The symbol signature will not be compared. OCAD will not produce a new symbol if there is a symbol with an equal symbol number but a different signature. Colors will not be imported.
- **Import symbols that do not exist. If the imported symbol number exists then a new symbol number is applied:** Choose this option to import symbols if they do not exist. OCAD will produce a new symbol if there is a symbol with an equal number but a different signature. The new symbol number gets the next unused decimal (e.g. 102.001 becomes 102.002). Colors will not be imported. *This option accords with the data import function of OCAD 8.*
- **Import all symbols and colors:** Choose this option to import all symbols and colors from the imported map (for example to print 2 maps with different symbol sets and color tables). There are two options to import the **Colors** either *at the top* or *at the bottom* of the color table.
- **Change symbol status from Normal to Protect:** Check this option to change to symbol status off the imported symbols from Normal to Protect. This option is recommended for importing an ocd map into a course setting project.
- **Rotate objects with symbols orientated to north:** This option is only available if the **Real world coordinates** options are turned on in the current and the imported map file and if the real world angle property is different in both maps. Select this option if the imported objects with north oriented symbols shall be rotated by this angle difference.
- **Use CRT file:** Activate this button to use a CRT converting table. This table consists of two columns, which are separated by a blank. In the first column there is the symbol number of the OCAD symbol in the map which is to be imported. In the second column there is the symbol number of the opened OCAD file. Visit the **Cross Reference Table** page to get more information about CRT-Files.

Example:

```
526.0 813.1
```

That means that all objects with the symbol number 526.000 will get the number 813.001 after the import.

- **Load:** Click this button to load a CRT file.

Database

- **Database, Import existing database connections:** This option is enabled if the import file contains database connections. When this option is chosen then OCAD creates a new database connection to the existing database if there is not already a database connection with the same name and file path in the OCAD file. Please note that OCAD creates a new connection with a new name if a dataset with the same name but another file path exists. Otherwise OCAD uses the existing dataset. OCAD does not merge databases.

💡 Please note that this CRT file is not compatible with the CRT files created in **Convert Layers** dialog! A list of all CRT-Files which can be used with OCAD can be found on the **Cross Reference Table** page.

💡 The error message: "Cannot import symbol" appears if OCAD could not import a symbol. The import is aborted.

Import Adobe Illustrator File

Mas Ori

Choose an Adobe Illustrator file (*.ai) in the **Import** dialog and click the open button. Files from Illustrator version 4 and later can be imported.

The objects from an Adobe Illustrator file are imported into OCAD as image objects. The layer names are imported with the objects. The layer name is displayed in the left part of the status bar if an image object is selected.

💡 Use **Convert Imported Layers to Symbol** from the **Map** menu to convert the imported objects from image objects to symbolized OCAD objects.

Import DXF File

Mas Ori Sta

DXF stands for Drawing Exchange Format and is a CAD data file format developed by Autodesk made for data exchange between AutoCAD and other programs (Read more in the [Wikipedia Article](#)^[1]).

Choose a DXF-File (*.dxf) in the **Import** dialog and click the open button.

The **Import DXF-File** dialog appears with the following options and information:

- **DXF size:** This box shows the range of the coordinates in the DXF file.
- **Offset:** Choose here whether you want to change the OCAD real world coordinates or to keep the existing ones.
 - **New offset:** Choose this option if no real world coordinates are defined for the map. If you leave the proposed offset unchanged, the imported objects will be placed in the center of the OCAD drawing area. In addition, you can set the desired scale of the OCAD map here.
 - **Existing offset and angle:** Choose this option if the map already has real world coordinates and you want to fit the imported DXF file to the existing coordinates.

- **Coordinates:** Define here how the coordinates of the DXF file should be interpreted. OCAD does not support WGS 84 coordinates.
- **GIS (1 meter/unit):** Choose this option when importing DXF files from Geographic Information Systems (GIS), where 1 unit in the DXF-File corresponds to 1 meter in the real world. The map scale is used for the transformation. Choose **Scale and Coordinate System** from the **Map** menu to set the map scale.
- **GIS (1 millimeter/unit):** Choose this option when importing DXF files from Geographic Information Systems (GIS), where 1 unit in the DXF-File corresponds to 1 millimeter in the real world. Usually GIS data uses the unit meter. Please check the unit of the dxf data before importing the data into OCAD.

This example is from British Ordnance Survey data. The dxf size and the proposed new offset is in millimeter.

- **Other:** Choose this option when importing DXF files from graphic programs. Enter the size in millimeters of one DXF unit on the map (e.g. if the DXF units are inches, enter 25.4).
- **Convert text Objects from OEM to Unicode:** Activate this box if the text in the DXF file is encoded in the OEM character set. OEM character set is used by old DOS programs and concerns only accented characters (ä, å, å etc.). Windows programs normally produce text in the ANSI character set. If accented characters are not imported correctly, try this option.
- **Import INSERT as point object:** Activate this option to import INSERT objects in the DXF file as point objects in OCAD. Otherwise the definition of INSERT objects is imported.
- **CRT:** Click this button if you have converted a similar DXF file before using **Convert layers**. A file dialog box appears. Choose the CRT file created with the **Convert layers** command. Read more about CRT-Files on the **Cross Reference Table** page. You will find examples there, too.

💡 If you do not use a CRT-File for importing a DXF-File, the DXF objects are imported as **Unsymbolized Objects**. Use the **Convert Imported Layers to Symbol** function in the **Map** menu to assign the objects to a symbol later on.

Import EMF File Mas Ori

Choose this function to import Windows Enhanced Metafile.

This import file format is obsolete.

Import GML Files Mas

Choose this function to import Normbasierte Austauschchnittstelle (NAS) ^[2] data.

OCAD cannot import other GML files.

Import GPX File Mas Ori

Choose the .gpx file format in the **Import File** dialog. Read more about importing GPX files in the **GPS - Import from File** article.

This function is also available for the Sta **OCAD Starter** and the CS **OCAD Course Setting** Edition. For this purpose, choose the **Import from File** command in the **GPS** menu.

Import KML File Mas

Choose the *.kml format in the file import dialog to import Keyhole Markup Language (KML) ^[3] files.

The line color, line width and fill color of the objects is also imported.

Import OSM Files Mas Ori Sta

A description of this function with an example can be found on the **Import Open Street Map Files** page.

Import NMEA Files Mas Ori

Choose the .nmea file format in the **Import File** dialog. Read more about importing NMEA files in the **GPS - Import from File** article.

This function is also available for the Sta **OCAD Starter** Edition. For this purpose, choose the **Import from File** command in the **GPS** menu.

Import PDF Files Mas Ori

Choose a **PDF-File** in the **Import** dialog and click the **Open** button. The **Save Cross Reference Table** dialog appears. If you want to save a CRT-File, click the **Save** button. If you want to continue without saving a CRT-File, click the **Cancel** button. Learn more about CRT-Files on the **Cross Reference Table** page.

The PDF-File is displayed in the middle of the current view of the map. All objects are selected, hence, it can be easily moved to the desired position.

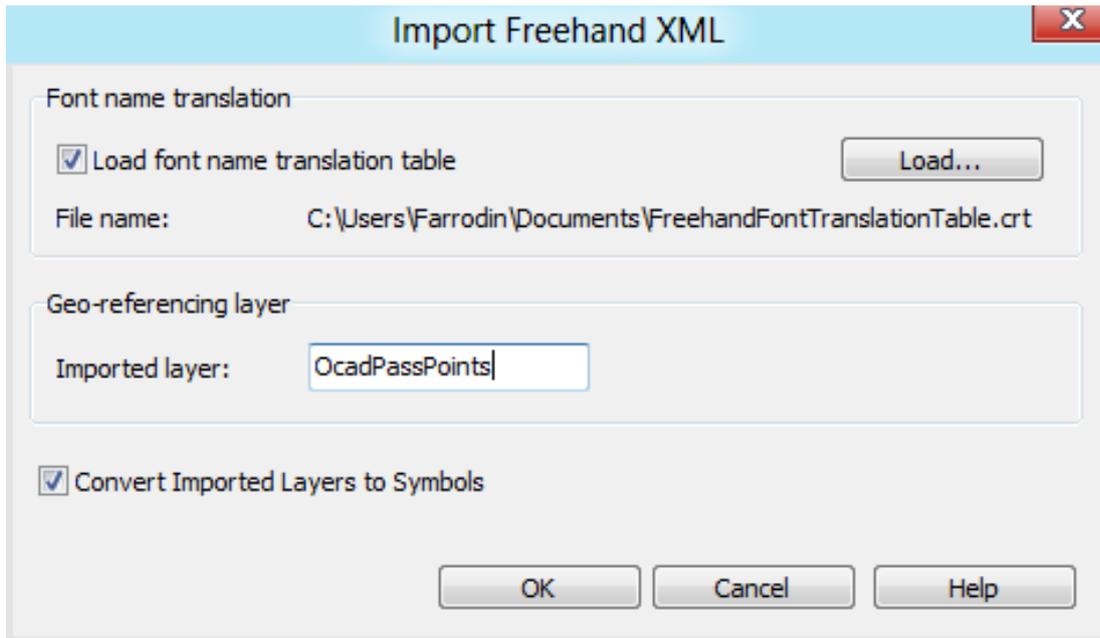
Please note, that it is only possible to import vector PDF-Files. If the PDF-File contains raster images, they are displayed as a grey area on the map.

 Vector objects in PDF-Files are imported as **Image Objects** and can be converted to symbols using the **Convert Imported Layers to Symbols** function. Learn how to make a point symbol out of a vector graphic by reading the **Create a Point Symbol out of Vector Data** article.

 If you import a PDF-File, it should not be open in Acrobat Reader the same time. This will cause an error message.

Import Freehand XML Files

Mas



Choose a Freehand XML File (*.rw) in the Import dialog and click the open button. The **Import Freehand XML** dialog appears with the following options:

Font name translation:

- Select the **load font name translation table** option if the Macintosh font names used in the Freehand XML file should be translated to the Windows font names. This translation is defined in a cross reference table (*.crt).

Example:

```
NicV-Normal;NicV
```

That means the font of all objects that used the **NicV-Normal** in Freehand will be changed to **NicV** after the import.

- **Load:** Click this button to load a CRT file.
- **File name:** The file name of the loaded CRT file is shown here.

Geo-referencing layer:

- **Imported layer:** OCAD offers a coarse georeferencing for Freehand XML files if the Freehand XML file contains a layer with coordinate values. This layer must be entered in the **imported layer** text box.

Convert imported layers to symbols:

- Select this option if the imported layers should be converted to OCAD symbols. This step can be done also after the import by using **Convert Imported Layers to Symbol** from the **Map** menu.

Import Shape Files

Mas

Get some information about **Shape Files** on **Wikipedia** ^[4].

If you choose an **ESRI Shape File** in the **Import** dialog, the **Import Shape File** dialog appears.

The import dialog offers the following options:

Shape size:

- This box shows the dimension of the data in the shape file using its coordinates.

Coordinate System:

- This box allows you to transform the imported Shape file data to the maps coordinate system. Click the **Choose** button to choose the Shape file's coordinate system if it is different to the map coordinate system.

Offset:

- **New offset:** Choose this option when importing the first shape file to the actual map and if the map is not georeferenced yet. OCAD proposes reasonable easting and northing offset values. OCAD also proposes a map scale that the entire map in the shape file fits into the drawing area of OCAD.
- **Existing offset and angle:** Select this option when importing the second and the following shape file to the actual map or if the map is already georeferenced. The new shape file will then fit to the already imported shape files.

New database type:

- When importing Shape files, OCAD creates a new database for each Shape file. You can choose between the database types **dBase**, **Microsoft Access 2007 accdb** and **Microsoft Access 2003/2010 mdb**.
- Microsoft Access databases are much faster than dBase and support Unicode. dBase is more compatible with Shape export.
- If one of the Microsoft Access options is chosen then the **code page** of the imported Shape file's dBase file should be declared. This is important to ensure a correct text conversion from dBase (Ansi) to Microsoft Access (Unicode) conversion.

- Choose **Do not create a database** when you do not need the attribute data. Then OCAD imports only the geometry from the Shape file. You can add one attribute as layer name when choosing the option **Use layer information from field**.

Key field in database: OCAD creates a copy of the Shape file's dBase file during the import process. OCAD can optionally add an additional key field to the copied dBase file.

- **Create new key field:** Select this option, if the dBase file does not contain a key field with a unique key for each object or if you are not sure if such a key field exists.
- **Use existing key field:** Select this option, if the dBase file already contains a key field and you are sure that it contains a unique key for each object. Select the key field.
- **View table:** Click on this button to see the dBase table. The **View Table** dialog opens. This table helps to decide which key field can be used. It is not possible to edit this table.

Import layer information:

- **Do not import any layer information:** Select this option if no layer information should be imported. Symbols must be assigned with **Assign Symbols by Records** command in **Database** menu. This may takes a lot of time.
- **Use layer information from field:** Select this option if you want to import layer information (ex. lake, forest etc.) from a specified dBase field. This allows you to choose **Convert Imported Layers to Symbol** from the **Map** menu to assign symbols to the imported data.
- **Field 2:** Check the **Field 2** box to choose a 2nd database field. In that case the imported layer information will be both field values, concatenated by an underscore: FieldValue1_FieldValue2.

- **View table:** Click on this button to see the dBase table. The **View Table** dialog opens. This table helps to decide which field contains the layer information. It is not possible to edit this table.

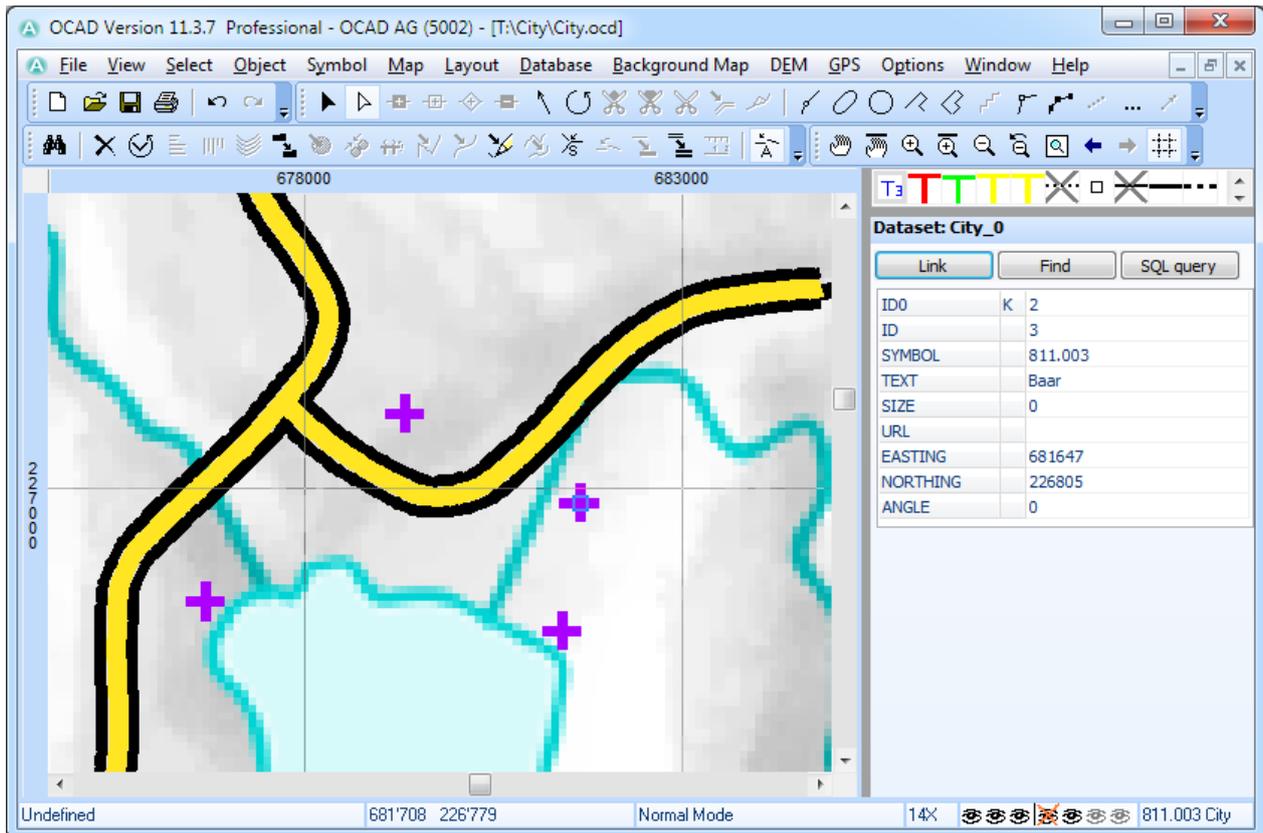
Smooth objects Additional option whether objects imported from shape file should be smoothed with a tolerance.

Import Text or Line Text Objects

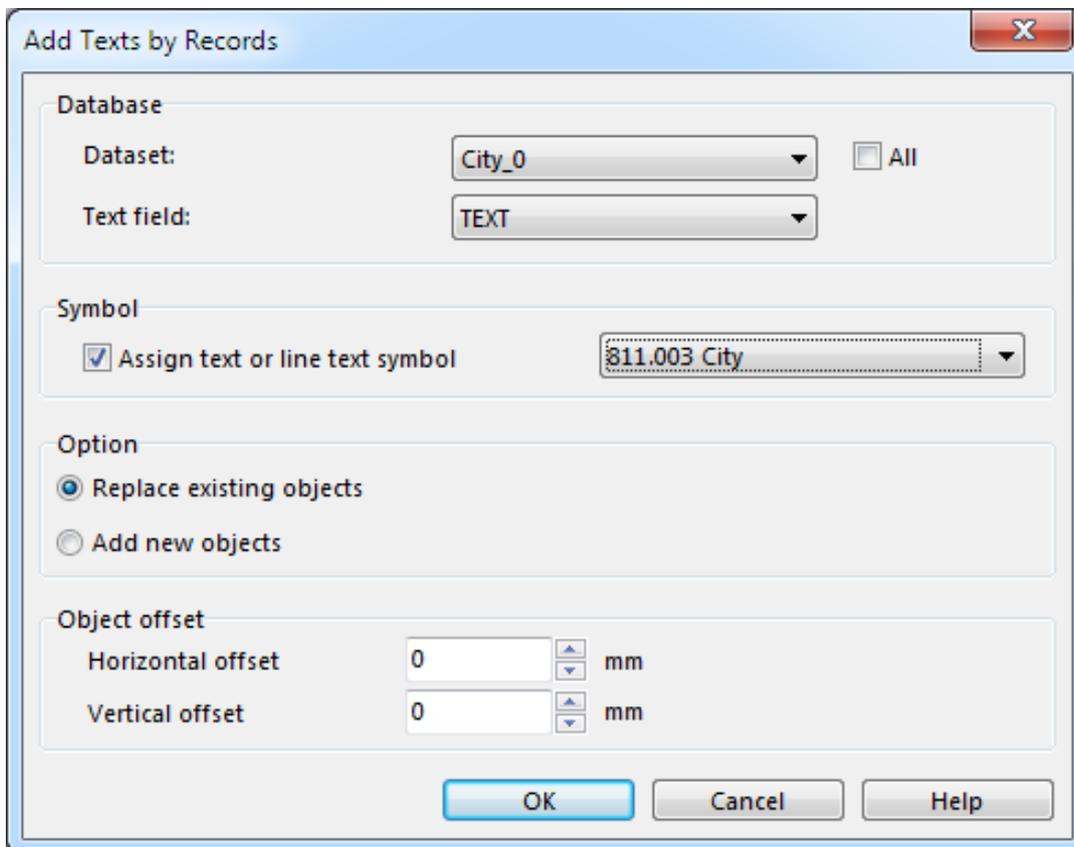
There are no text objects in Shape files. The texts like city names or river names are stored as attributes of the objects in the Shape file's dBase file. You can create text objects from imported point objects or line text objects from imported line objects by using **Add Texts by Records...** in the **Database** menu.

Example

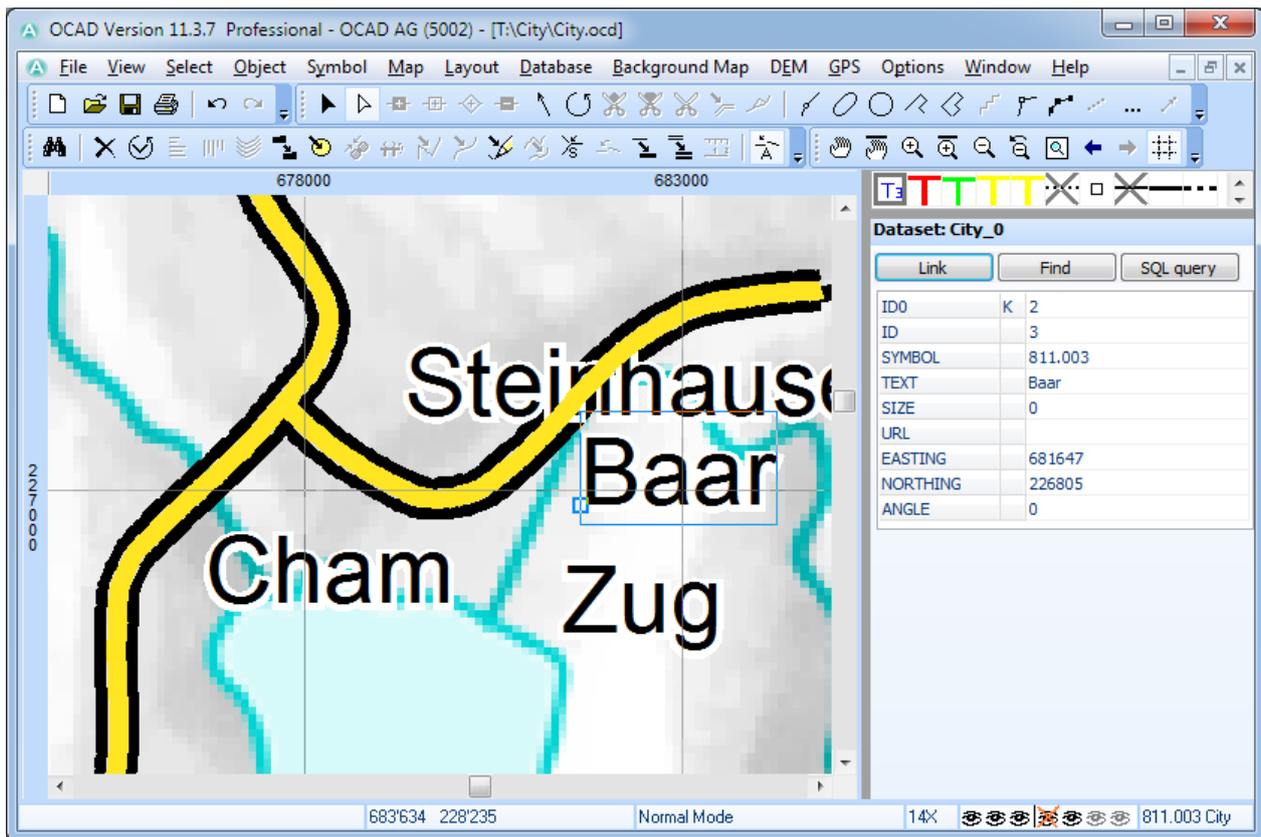
After importing the Shape file the objects appear in OCAD as unsymbolized objects. The label of the selected object is stored in the according database record ('Baar' in the field 'TEXT').



Click **Add Texts by Records...** in **Database** menu to create the text objects. The **Add Texts by Records** dialog appears.



Choose the option **Replace existing objects** and click **OK** to create the text objects.

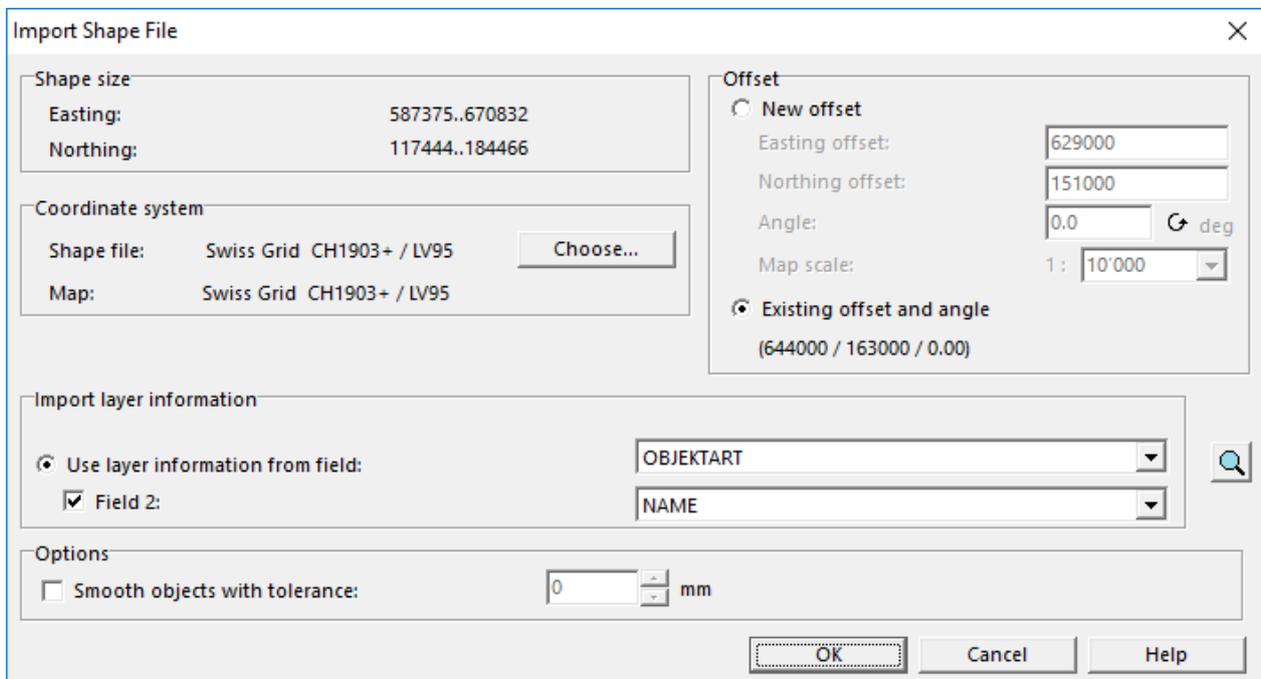


Import Shape Files in Orienteering Edition

Ori

Geodata are often provided in the Shape file format. Get some information about **Shape Files** on **Wikipedia** ^[4].

If you choose an **ESRI Shape File** in the **Import** dialog, the **Import Shape File** dialog appears.



The import dialog offers the following options:

Shape size:

- This box shows the dimension of the data in the shape file using its coordinates.

Coordinate System:

- This box allows you to transform the imported Shape file data to the maps coordinate system. Click the **Choose** button to choose the Shape file's coordinate system if it is different to the map coordinate system.

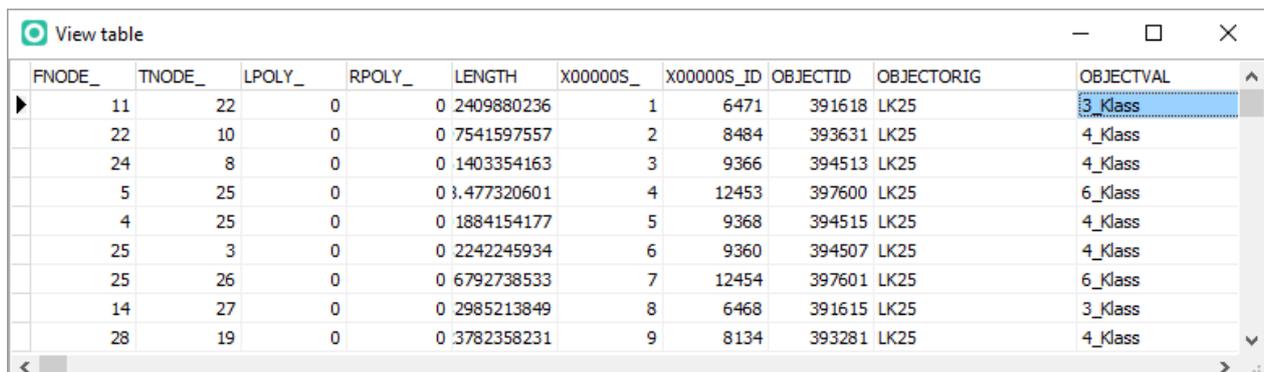
Offset:

- **New offset:** Choose this option when importing the first shape file to the actual map and if the map is not georeferenced yet. OCAD proposes reasonable easting and northing offset values. OCAD also proposes a map scale that the entire map in the shape file fits into the drawing area of OCAD.
- **Existing offset and angle:** Select this option when importing the second and the following shape file to the actual map or if the map is already georeferenced. The new shape file will then fit to the already imported shape files.

Import layer information:

- **Use layer information from field:** Select this option if you want to import layer information (ex. lake, forest, street classes etc.) from a specified dBase field. This allows you to choose **Convert Imported Layers to Symbol** from the **Map** menu to assign symbols to the imported data.
- **Field 2:** Check the Field 2 box to choose a 2nd database field. In that case the imported layer information will be both field values, concatenated by an underscore: FieldValue1_FieldValue2.
- **View table:** Click on this  button to see the dBase table. The **View Table** dialog opens. This table helps to decide which field contains the layer information. It is not possible to edit this table.

Example:



FNODE_	TNODE_	LPOLY_	RPOLY_	LENGTH	X00000S_	X00000S_ID	OBJECTID	OBJECTORIG	OBJECTVAL
11	22	0	0	2409880236	1	6471	391618	LK25	3_Klass
22	10	0	0	7541597557	2	8484	393631	LK25	4_Klass
24	8	0	0	1403354163	3	9366	394513	LK25	4_Klass
5	25	0	0	3.477320601	4	12453	397600	LK25	6_Klass
4	25	0	0	1884154177	5	9368	394515	LK25	4_Klass
25	3	0	0	2242245934	6	9360	394507	LK25	4_Klass
25	26	0	0	6792738533	7	12454	397601	LK25	6_Klass
14	27	0	0	2985213849	8	6468	391615	LK25	3_Klass
28	19	0	0	3782358231	9	8134	393281	LK25	4_Klass

This Shape file contains roads. In the database field *OBJECTVAL* is the road classification. So choose this field to import for each street object the classification.

Smooth objects Additional option whether objects imported from shape file should be smoothed with a tolerance.

Import SOSI Files

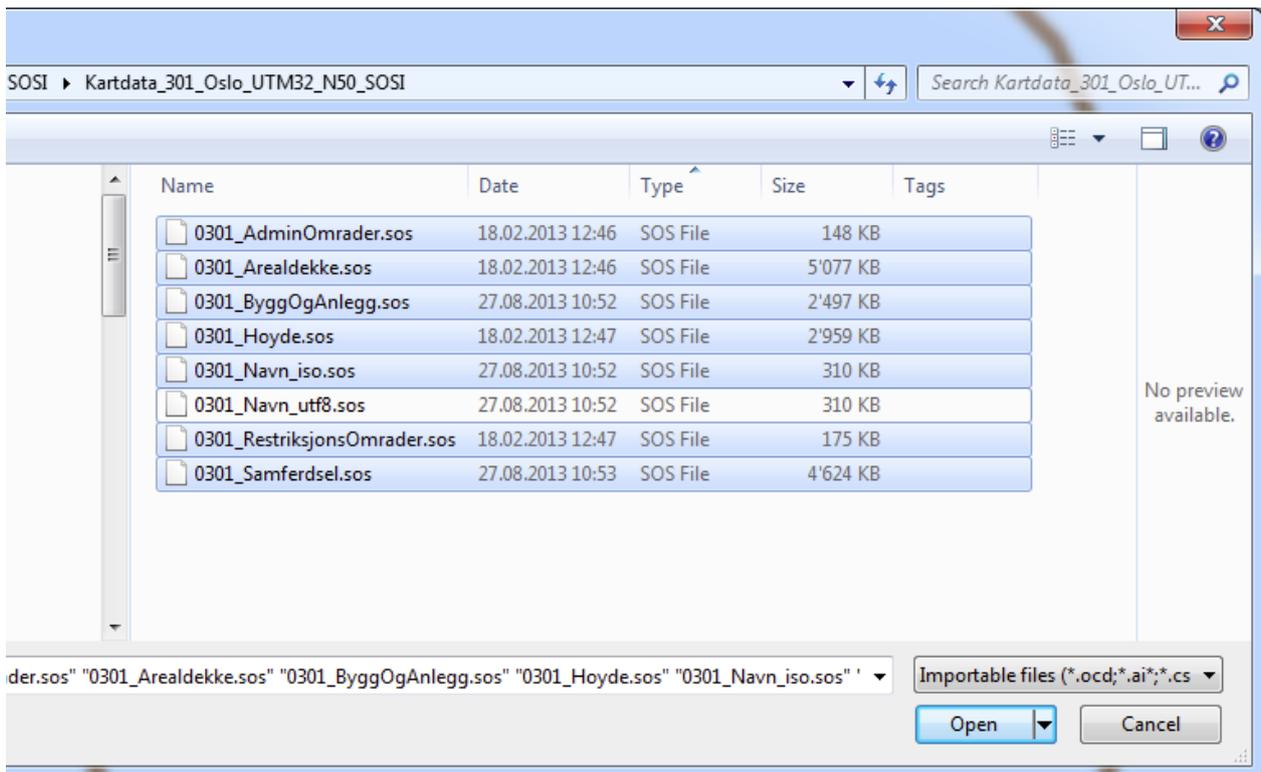


Choose this function import SOSI files. SOSI ^[5] is a much used geospatial vector data format predominantly used for exchange of geographical information in Norway.

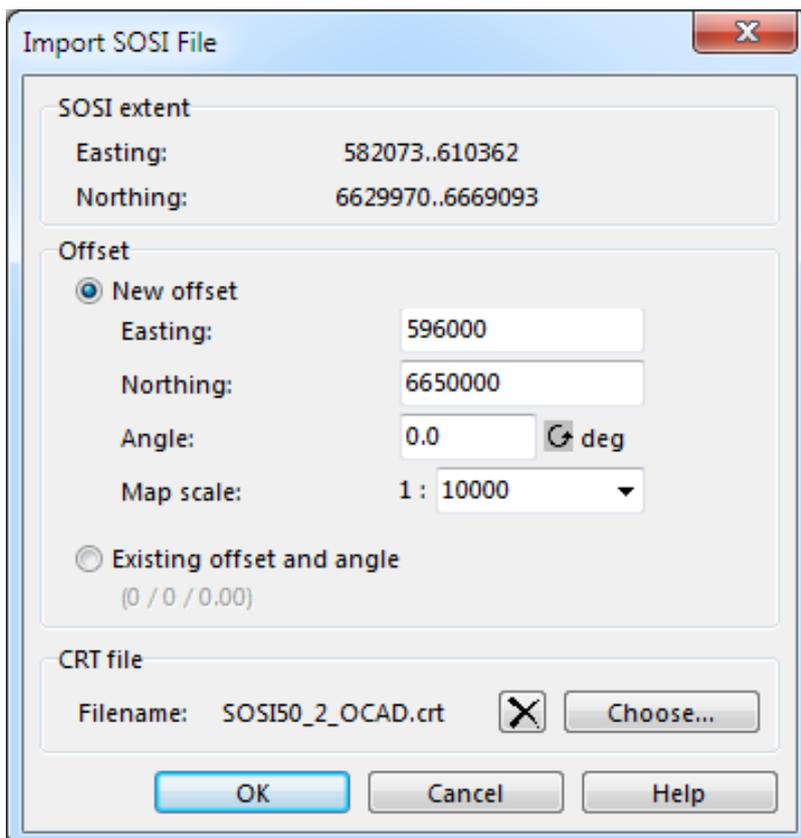
The Norwegian Mapping Authority Kartverket ^[6] released its map data in SOSI file format for free use ^[7] in September 2013.

This example shows the import of the N50 Kartdata, UTM 32 data of Oslo. Each community consists of 8 SOSI files.

Choose **Import** from the **File** menu. Select all sos-files except the utf8 text file. Otherwise you will import every text label twice.



Click Open. The Import SOSI File dialog appears.



OCAD has already two predefined crt tables for Orienteering maps which assigns the imported layers to symbols. Both crt files are in the OCAD program subfolder *crt*.

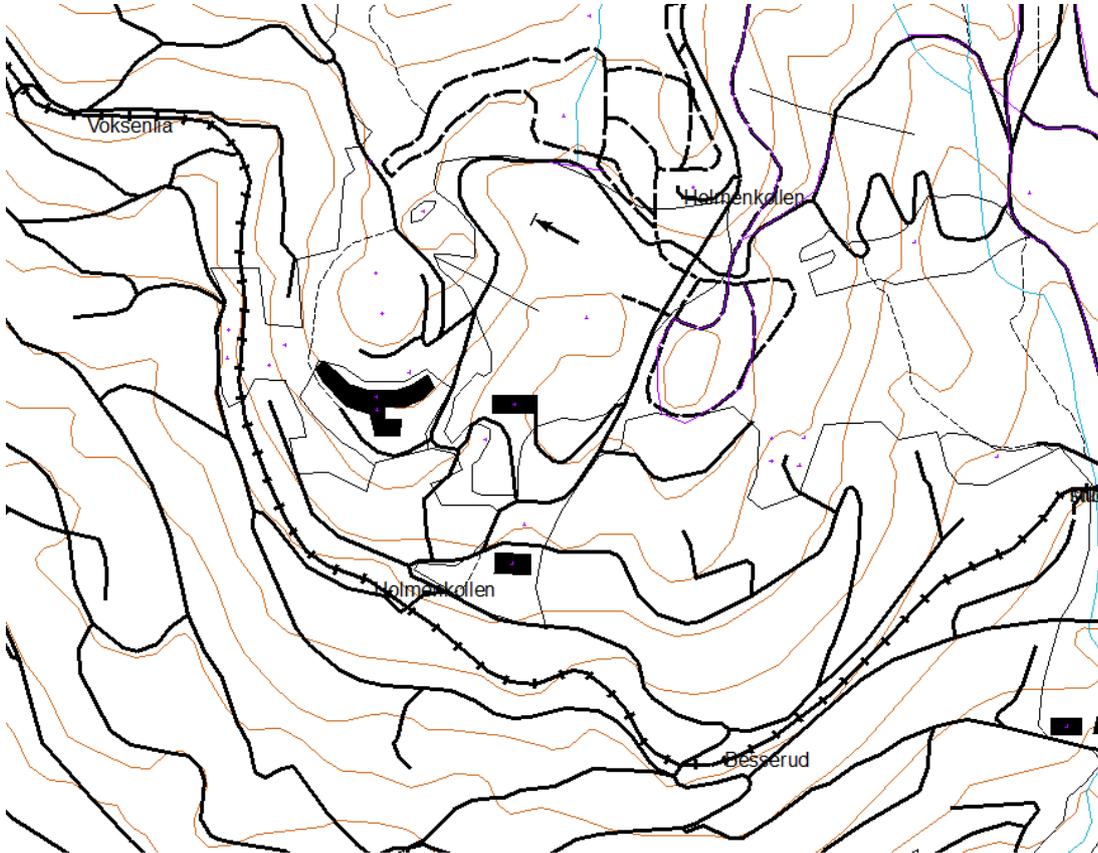
- *SOSI_2_ISSOM.crt*: Convert the objects from SOSI layers to the symbols of sprint orienteering maps (ISSOM in the scale 1:4000 or 1:5000).

- SOSI_N50_2_ISOM.crt: Convert the objects from SOSI layers to the symbols of orienteering maps (ISOM in the scale 1:10000 or 1:15000)

Click **Choose** to choose another crt file or **X** if you do not want to use a crt file.

Read more about crt-files in the Cross Reference Table article.

Click OK to import the files.



💡 OCAD imports only vector objects. OCAD doesn't support the RASTER object.

Import SVG Files

Mas

[SVG ^[8]] stands for Scalable Vector Graphics, an XML-based file format for two-dimensional vector graphics. Choose an SVG file (*.svg) in the **Import** dialog and click the open button.

The objects from the SVG file are imported into OCAD as image objects. The layer names are imported with the objects. The layer name is displayed in the left part of the status bar if an image object is selected.

💡 Use **Convert Imported Layers to Symbol** from the **Map** menu to convert the imported objects from image objects to symbolized OCAD objects.

Import WMF Files

Mas Ori

Choose this function to import Windows Metafile.

This import file format is obsolete.

Import CSV and XYZ Files

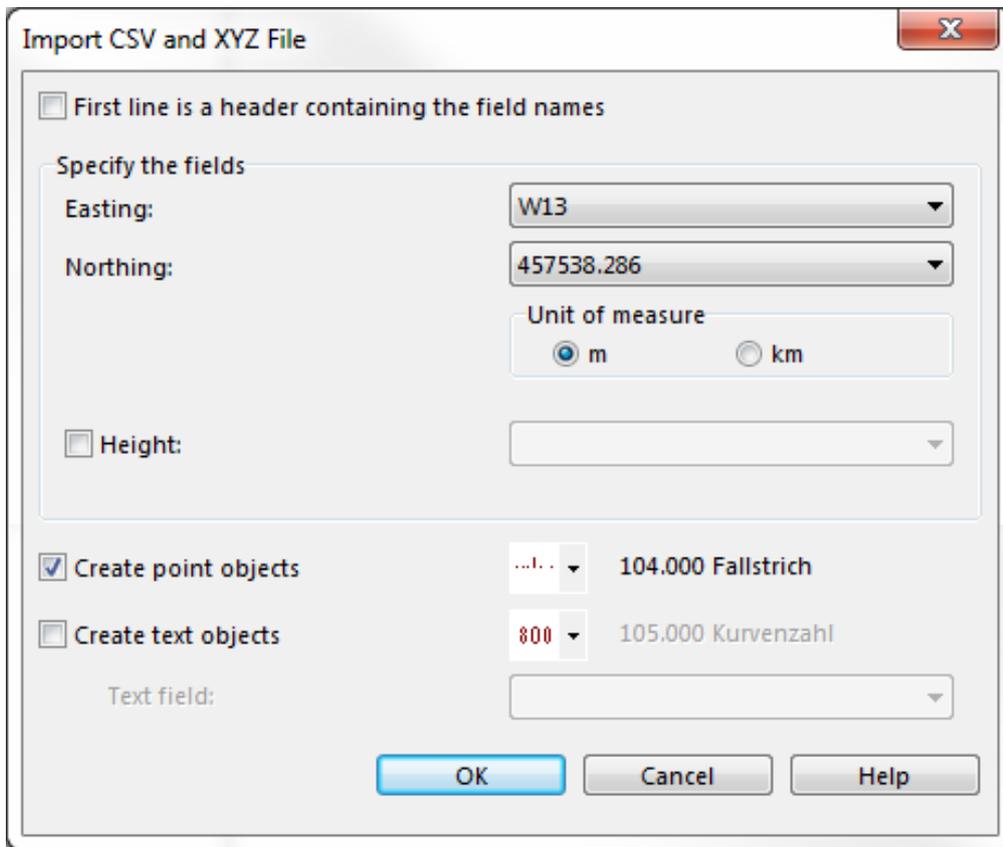
Mas Ori

Choose this function to import csv and xyz files.

csv (Comma-separated values) files contain coordinates and other information like text label. Read more about CSV ^[9] in Wikipedia ^[10].

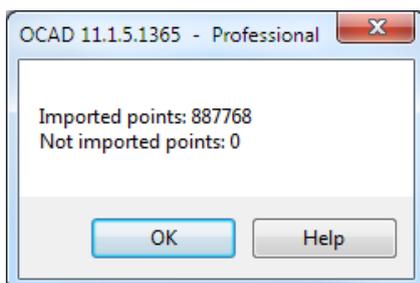
xyz files contain 3d coordinate values.

 Real world coordinates must be chosen in **Scale and Coordinate System** dialog from the **Map** menu and map offset must be set that the imported points are within the drawing area.



Specify the Northing, Easting and optionally the Height field. Specify the unit of measure and choose a point or text symbol that should be assigned to the imported objects. OCAD will create point and text objects with x/y coordinates. Height values are assigned to the objects' height property. Select an object and show **Object Information** to see height value of the selected object.

After the import OCAD shows a summary about the imported points.



CSV File Example with Comma as Separator

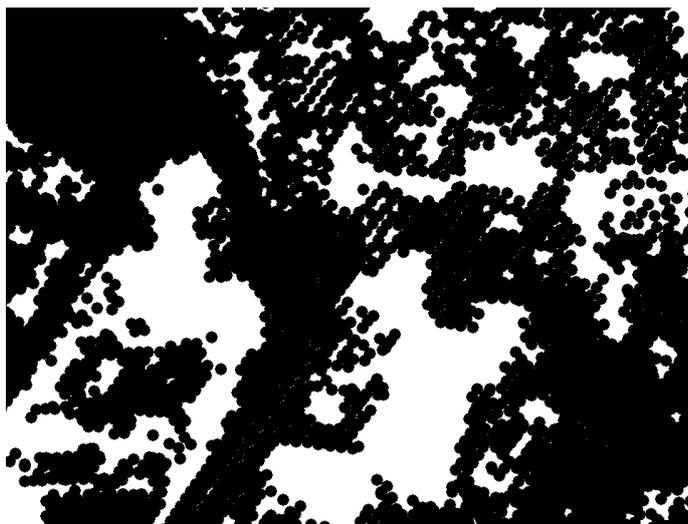
```
W13,457538.286,287921.422,105.426,A  
W14,457530.267,287906.700,105.351,A  
W15,457513.024,287892.899,105.736,B  
W16,457509.835,287889.936,105.788,D  
W17,457495.739,287896.681,106.758,C
```

XYZ-File Example Space as Separator and File Header

```
EASTING NORTHING HEIGHT  
579609.39 335648.46 701.00  
579609.40 335627.71 698.79  
579609.40 335659.36 702.60  
579609.40 335729.36 711.52  
579609.40 335766.15 715.91  
579609.41 335674.01 704.39
```

Example

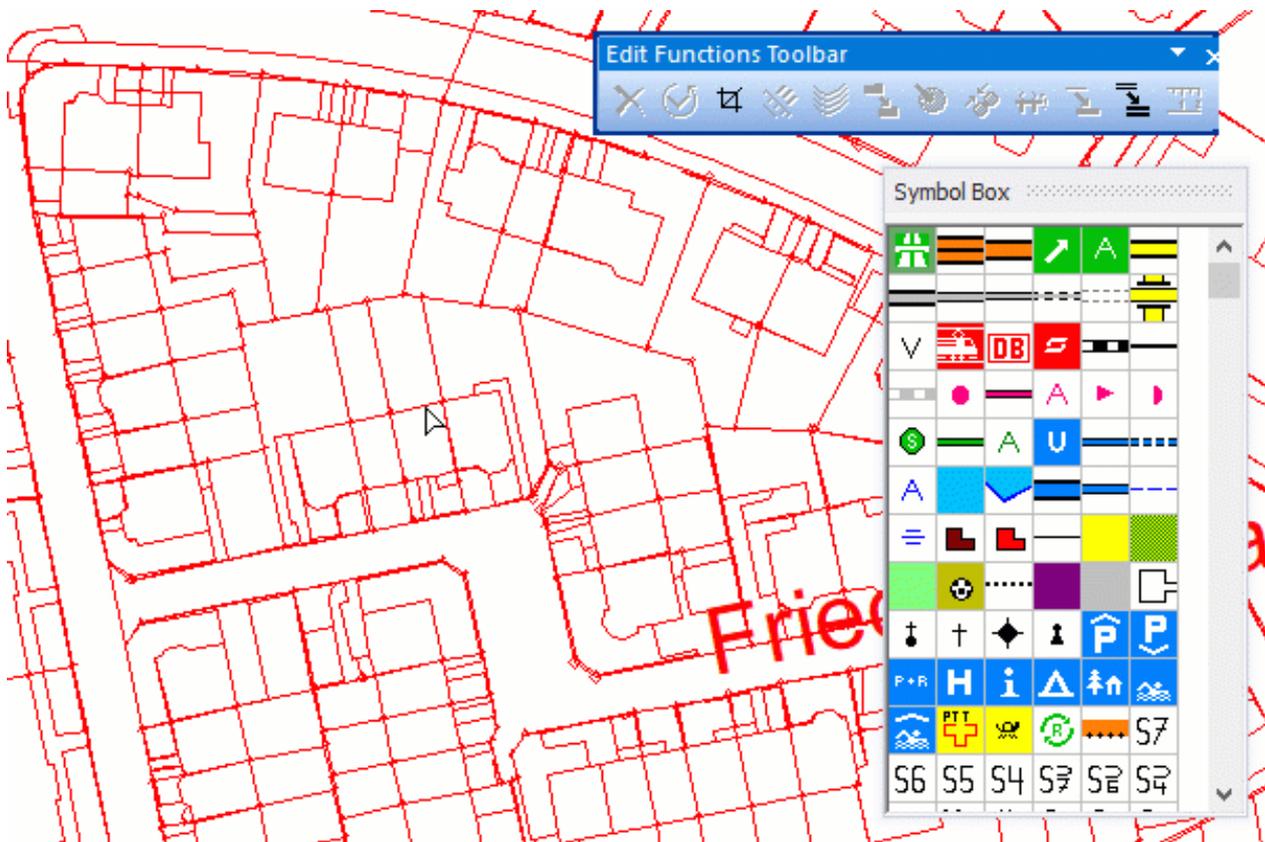
The following example shows the result of DTM xyz file import.



OCAD created for each data point a point object which are assigned to a point symbol (black dot).

Converting a Layer Manually

When importing a file which is not an OCAD file, **Unsymbolized Objects** are created. They appear in the color specified in **OCAD Preferences**.



When you select such an object, a layer name will appear on the left side of the **Status Bar**. To get a real map, the layers have to be converted to OCAD symbols.

Normally you convert layers using the **Convert Imported Layers to Symbols** command from the **Map** menu. You can also convert a layer manually:

1. Select an imported unsymbolized object. On the left side of the **Status Bar** the layer name is shown.
2. Select the corresponding OCAD symbol in the symbol box.
3. Choose the **Change symbol for all objects with this symbol** function in the **Object** menu or the  button in the **Edit Functions Toolbar**.
4. Leave the preset values unchanged and click the **OK** button.

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References

- [1] <http://en.wikipedia.org/wiki/Dxf>
- [2] https://de.wikipedia.org/wiki/Normbasierte_Austauschnittstelle
- [3] https://de.wikipedia.org/wiki/Keyhole_Markup_Language
- [4] https://en.wikipedia.org/wiki/Shape_file
- [5] <https://en.wikipedia.org/wiki/SOSI>
- [6] <https://kartverket.no>
- [7] <https://www.statkart.no/Kart/Gratis-kartdata/Last-ned-gratis-kartdata/>
- [8] <https://www.w3.org/TR/SVG11/>
- [9] https://en.wikipedia.org/wiki/Comma-separated_values
- [10] <https://en.wikipedia.org/>

Export Files

To print out a map or use it in another desktop publishing program, export it in for example PDF format.

1. Select **Export** in the **File** menu.
2. Select the area to print (**Entire Map, Part of Map** or **One page**) in the **Setup field**. Now place the gray frame in the drawing window over the area you want to print out. If you cannot see the frame, click **Zoom out** in the **View** menu until the frame becomes visible.
3. Click **OK** to export the map.

 If you want to export the raster background map as well, enter a resolution for it.

 File Export Information

Export AI

Mas

(This function is not available in Draft mode. Change to Normal mode to export AI file.)

Choose this command to export the map to an AI (Adobe Illustrator) file.

After clicking **OK**, a file dialog box is displayed where you can enter a file name for the exported map.

The AI format is the preferred format if you want to process the map further in a graphics program. It preserves the full graphics quality of the map. The exported file contains layers corresponding to the OCAD symbols appearing on the map. The format is Adobe Illustrator version 7.

Part of Map Activate this check box to export a part of the map. The map section will be shown with a rectangle on the drawing window. You can alter the rectangle with the mouse.

Click the button Setup  to define the part of map to be exported by coordinates. The dialog box **Setup Part of Map (Export)** appears.

Click the button Entire map  to export the entire map.

Click the button To current view  to export the currently on the screen displayed map.

If this check box is not active the entire map will be exported.

Export scale Enter the scale for the exported map. You can enter the scale on the keyboard, or choose one of the predefined scales.

Colors CMYK (process) colors: Select this radio button if you want to print the map using **process colors**. Spot colors: Select this radio button if you want to print the map using spot colors Mode. If you choose this option, the appearance must be specified for each spot color. Choose **Spot color Mode** from the **Map** menu to define the appearance for the different spot colors. Activate Combine to export all selected spot colors in the same file. This is for very special cases. Normally you should not use this option.

Export BMP



Choose this command to export the map to a BMP file. The **Export BMP File** dialog box is displayed. After clicking OK, a file dialog box is displayed where you can enter a file name for the exported bitmap.

- **Resolution:** Enter here the desired resolution for the exported BMP file.
- **Pixel size:** Enter here the size of a pixel in the real world.
- **Create World file (*.bpw):** Choose this option if you want to use the exported file in a GIS (Geographical Information System). A World file with the georeference information is created.
- **Anti-Aliasing:** Anti-Aliasing is method to make the edges of lines and texts appear soft. Normally you should activate this option.
- **Color correction:** Activate this option to apply the same color correction as for the screen. Set up the color correction in the OCAD Preferences from the Options menu (Category: View)

- **Part of map**

Activate this check box to export a part of the map. The map section will be shown with a rectangle on the drawing window. You can alter the rectangle with the mouse.

Click the button Setup  to define the part of map to be exported by coordinates. The dialog box **Setup Part of Map (Export)** appears.

Click the button Entire map  to export the entire map.

Click the button To current view  to export the currently on the screen displayed map. If this check box is not active the entire map will be exported.

- **Tiles**

Activate this check box to export the map in tiles instead of one single file. Click the button Setup  to define the tiles. The dialog box Setup tiles appears.

Pixel size and **Create World file** option are only available if **Real world coordinate** mode in **Scale and Coordinate System** from the **Map** menu is activated

 The error message: "Not enough memory for exporting" appears if Windows cannot provide the memory needed. Choose a lower raster resolution.

 The size of the exported BMP is limited to 32000 x 32000 pixels.

Export DXF



(This function is not available in Draft mode. Change to Normal mode to export DXF file.)

(This function is not available if the map is hidden.)

Choose this command to export the entire map to a *.dxf file. After clicking OK, a file dialog box is displayed where you can enter a filename for the exported map. The exported DXF contains only layers (corresponding to the symbols) and coordinates, but no graphics. (That is, the appearance of the symbols is lost.) If you want to process a map further in a graphics program, the PDF format is the preferred format. There all graphics are exported.

Export Scale

Enter the scale for the exported map. You can enter the scale on the keyboard, or choose one of the predefined scales.

Convert text from ANSI to Unicode: Activate this option if text should be converted to the Unicode character set.

Only objects with a selected symbol: Activate this option to export only objects with a **selected symbol**.

CRT

- **Use CRT file:** Choose this option and click the button to load a cross reference table. In a **cross reference table** you can define how the OCAD symbols are translated to DXF layers. If you do not use a cross reference table, then the symbol numbers without decimal point are used as DXF layers (e.g. symbol 101.0 is translated to 1010). The **Load Cross Reference Table** file dialog box is displayed.
- **Write CRT file from symbols:** Choose this option to create a CRT file from the symbol set in the same folder as the dxf file.

Export OCAD curves as DXF splines

Activate this option if OCAD Bézier curves should be converted to DXF splines. Otherwise they are converted to polylines.

- **GIS (m):** Select this radio button if you want to use the *.dxf file in a Geographic Information System (GIS). 1 unit corresponds to 1 meter in the real world. The map scale is used for the transformation.
- **Paper (mm):** Select this radio button if you want to use the *.dxf file in a graphics program. 1 unit corresponds to 1 mm on the map.

Export EPS



(This function is not available in Draft mode. Change to Normal mode to export EPS file.)

Choose this command to export the map (or part of it) in the EPS format. After clicking **OK**, a file dialog box is displayed where you can enter a filename for the exported map. *.eps files are mainly used to print maps on a color copier or to make the printing films for offset printing. EPS files can be opened in Adobe Illustrator.

Part of map

Activate this check box to export a part of the map. The map section will be shown with a rectangle on the drawing window. You can alter the rectangle with the mouse.

- Click the button **Setup**  to define the part of map to be exported by coordinates. The dialog box **Setup Part of Map (Export)** appears.
- Click the button **Entire map**  to export the entire map.
- Click the button **To current view**  to export the currently on the screen displayed map. If this check box is not active the entire map will be exported.

Export scale

Enter the scale for the exported map. You can enter the scale on the keyboard, or choose one of the predefined scales. If the export scale is different from the map scale, the map and the symbols are enlarged/reduced according to the ratio of the map and export scales.

Colors

- **Color EPS (CMYK):** Select this radio button to export a colored map. The color EPS contains CMYK colors. At the service bureau color copies or films for CMYK printing can be made.
- **Spot color separations:** Select this option to export spot color separations. Choose Spot color Mode from the View menu to define spot colors. When this radio button is activated and spot colors are defined, you can select one or more of the defined spot colors in the Spot colors list box. Normally you export an EPS file for each of these spot colors.

Export GIF



Choose this command to export the map as a GIF file. After clicking **OK**, a file dialog box is displayed where you can enter a filename for the exported map. GIF files are used to publish small maps in the Internet. For large maps the OIM (OCAD Internet) file format is recommended. For maps GIF offers the better compression than JPEG and therefore gives smaller files.

- **Resolution:** Enter here the desired resolution for the exported GIF file.
- **Pixel size:** Enter here the size of a pixel in the real world.
- **Create World file (*.gfw):** Choose this option if you want to use the exported file in a GIS (Geographical Information System). A World file with the georeference information is created.

Anti-Aliasing Anti-Aliasing is method to make the edges of lines and texts appear soft. Normally you should activate this option.

Color correction Activate this option to apply the same color correction as for the screen.

Part of map Activate this check box to export a part of the map. The map section will be shown with a rectangle on the drawing window. You can alter the rectangle with the mouse.

- Click the button Setup  to define the part of map to be exported by coordinates. The dialog box **Setup Part of Map (Export)** appears.
- Click the button Entire map  to export the entire map.
- Click the button To current view  to export the currently on the screen displayed map. If this check box is not active the entire map will be exported.

Tiles Activate this check box to export the map in tiles instead of one single file. Click the button Setup  to define the tiles.

 Pixel size and **Create World file** option are only available if **Real world coordinate** mode in **Scale and Coordinate System** from the **Map** menu is activated.

 The error message: "Not enough memory for exporting" appears if Windows cannot provide the memory needed. Choose a lower raster resolution.

 The size of the exported GIF is limited to 65535 x 65535 pixels.

Export GPX



(This function is not available if the map is hidden.)

(This function is not available for course setting projects. Use the Export Courses GPX function to export the courses and the course setting objects in a gpx file).

Choose GPX file format to export OCAD objects as waypoints, tracks or routes that can be loaded to GPS devices.

-  -Only the selected map objects are exported.
 - Only point, line, text and line text objects are exported. Area objects cannot be exported to GPX.
 - Export elevation of waypoints and track points if DEM is loaded.

Metadata

- **Description:** A description of the contents of the GPX file.
- **Author:** The person or organization who created the GPX file.
- **Keywords:** Keywords associated with the file. Search engines or databases can use this information.

Export line objects as

- **Routes:** Line objects are exported as routes: <rte>. A route is an ordered list of waypoints leading to a destination.

- **Tracks:** Line objects are exported as tracks: <trk>. A track is an ordered list of points describing a path.

After clicking OK, the file dialog box is displayed where you can enter a filename.

Export JPEG



Choose this command to export the map as a JPEG file. After clicking **OK**, a file dialog box is displayed where you can enter a file name for the exported map. JPEG files are used to publish small maps in the Internet. For large maps the OIM (OCAD Internet) file format is recommended. For maps GIF offers the better compression than JPEG and therefore gives smaller files.

- **Resolution:** Enter here the desired resolution for the exported JPEG file.
- **Pixel size:** Enter here the size of a pixel in the real world.
- **Create World file (*.jgw):** Choose this option if you want to use the exported file in a GIS (Geographical Information System). A World file with the georeference information is created.

Anti-Aliasing: Anti-Aliasing is method to make the edges of lines and texts appear soft. Normally you should activate this option. **Color correction:** Activate this option to apply the same color correction as for the screen. Choose Color correction from the Options menu to setup the color correction.

Part of map: Activate this check box to export a part of the map. The map section will be shown with a rectangle on the drawing window. You can alter the rectangle with the mouse.

Click the button Setup to define the part of map to be exported by coordinates. The dialog box **Setup Part of Map (Export)** appears.

Click the button Entire map to export the entire map.

Click the button To current view to export the currently on the screen displayed map.

If this check box is not active the entire map will be exported.

Tiles: Activate this check box to export the map in tiles instead of one single file. Click the button **Setup** to define the tiles. The dialog box Setup tiles appears.

 **Pixel size** and **Create World file** option are only available if **Real world coordinate** mode in **Scale and Coordinate System** from the **Map** menu is activated.

 The error message: "Not enough memory for exporting" appears if Windows cannot provide the memory needed. Choose a lower raster resolution.

 The size of the exported JPEG is limited to 65535 x 65535 pixels.

Export PNG



Choose this command to export the map to a PNG file. The **Export PNG File** dialog box is displayed. After clicking OK, a file dialog box is displayed where you can enter a file name for the exported PNG.

- **Resolution:** Enter here the desired resolution for the exported PNG file.
- **Pixel size:** Enter here the size of a pixel in the real world.
- **Create World file (*.pgw):** Choose this option if you want to use the exported file in a GIS (Geographical Information System). A World file with the georeference information is created.
- **Anti-Aliasing:** Anti-Aliasing is method to make the edges of lines and texts appear soft. Normally you should activate this option.
- **Color correction:** Activate this option to apply the same color correction as for the screen. Set up the color correction in the OCAD Preferences from the Options menu (Category: View)
- **Part of map**

Activate this check box to export a part of the map. The map section will be shown with a rectangle on the drawing window. You can alter the rectangle with the mouse.

Click the button Setup  to define the part of map to be exported by coordinates. The dialog box **Setup Part of Map (Export)** appears.

Click the button Entire map  to export the entire map.

Click the button To current view  to export the currently on the screen displayed map. If this check box is not active the entire map will be exported.

- **Tiles**

Activate this check box to export the map in tiles instead of one single file. Click the button Setup  to define the tiles. The dialog box Setup tiles appears.

Pixel size and Create **World file** option are only available if **Real world coordinate** mode in **Scale and Coordinate System** from the **Map** menu is activated

 The error message: "Not enough memory for exporting" appears if Windows cannot provide the memory needed. Choose a lower raster resolution.

 The size of the exported PNG is limited to 32000 x 32000 pixels.

Export KML

Mas Ori

(This function is not available if the map is hidden.)

Choose **KML Google Earth (Vector)** file format if you want to view the export map objects in a Earth Viewer.

 -Only the selected map objects are exported.

-Only point, line and area objects are exported. Text object cannot be exported to KML.

- **Name:** This is the name of the place folder in the places panel of Google Earth.
- **Screen overlay:** Define what an icon should be shown in top left corner of the Earth Viewer window when the KML file is opened. This icon is not included in the KML file. An URL must be entered. The screen overlay name is the name shown in the places panel of Google Earth
- **Look at (longitude, latitude and range):** Geographical coordinates and height above sea level where the viewer should start navigating by opening Google Earth.
- **Height for area objects:** Set a height value for area objects to make them looking three-dimensional.
- **Placemark default name:** Set a default name that is shown in the places panel of Google Earth.
- **Default icon for point objects:** Point objects are converted to placemarks. A placemark needs an icon (small picture). This icon is not included in the KML file. An URL must be entered. Google Earth loads the icon dynamically when the KML file is opened.
- **Compress file:** Compress the file and change the extension to *kmz*.

After clicking OK, a file dialog box is displayed where you can enter a filename.

Export KMZ

Mas Ori

Choose **KMZ Google Earth (Raster)** to export the map as a raster KMZ file. It is possible to open the exported KMZ file in Google Earth ^[1]. Like this, you can check if the scale of a map is correct.

- **Opacity:** Choose here the desired opacity for the exported KMZ file.
- **Resolution:** Enter here the desired resolution for the exported KMZ file.
- **Pixel size:** Enter here the size of a pixel in the real world.
- **Anti-Aliasing:** Anti-Aliasing is method to make the edges of lines and texts appear soft. Normally you should activate this option.
- **Color correction:** Activate this option to apply the same color correction as for the screen. Set up the color correction in the OCAD Preferences from the Options menu (Category: View)

- **Part of map**

Activate this check box to export a part of the map. The map section will be shown with a rectangle on the drawing window. You can alter the rectangle with the mouse.

Click the button Setup  to define the part of map to be exported by coordinates. The dialog box **Setup Part of Map (Export)** appears.

Click the button Entire map  to export the entire map.

Click the button To current view  to export the currently on the screen displayed map. If this check box is not active the entire map will be exported.

- **Tiles**

Activate this check box to export the map in tiles instead of one single file. Click the button Setup  to define the tiles. The dialog box Setup tiles appears.

Garmin Custom Maps

Another possibility is to upload this kmz file on a Garmin GPS which supports 'Garmin Custom Maps'.



More about Garmin Custom Maps ^[2]

Tiles: Choose here between no tiles, 'Garmin Custom Maps' optimized tiles (max 1024x1024 pixels) or user-defined tiles.

Some Garmin GPS support only a limited number of tiles in kmz file. OCAD shows the number of tiles for the chosen export rectangle in the status bar.

[Export size: 177.1 x 373.5 mm \(32 Tiles\)](#)

After clicking OK, a file dialog box is displayed where you can enter a filename.

Export OCAD Internet Map

Mas

Read more about this topic on the **OCAD Internet Map** page.

Export PDF

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(This function is not available in Draft mode. Change to Normal mode to export PDF file.)

Choose this command to export the map to a PDF-file. After clicking **OK**, a file dialog box is displayed where you can enter a filename for the exported map. You can open and print PDF files with Adobe Acrobat Reader.

Part of map Activate this check box to export a part of the map. The map section will be shown with a rectangle on the drawing window. You can alter the rectangle with the mouse.

- Click the button **Setup**  to define the part of map to be exported by coordinates. The dialog box **Setup Part of Map (Export)** appears.
- Click the button **Entire map**  to export the entire map.
- Click the button **To current view**  to export the currently on the screen displayed map.

If this check box is not active the entire map will be exported.

Export scale Enter the scale for the exported map. You can enter the scale on the keyboard, or choose one of the predefined scales. If the export scale is different from the map scale, the map and the symbols are enlarged/reduced according to the ratio of the map and export scales.

Colors

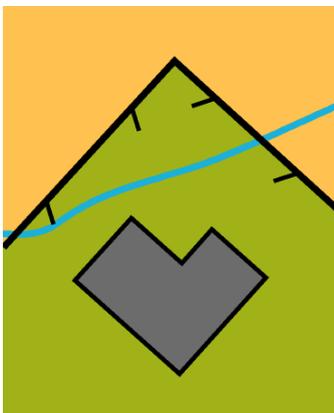
CMYK (process) colors: Select this radio button to export a color map. The color PDF contains CMYK colors. At the service bureau color copies or films for CMYK printing can be made.

Spot color separations: Select this option to export spot color separations. Choose Spot color mode from the View menu to define spot colors. When this radio button is activated and spot colors are defined, you can select one or more of the defined spot colors in the Spot colors list box. Normally you export a PDF file for each of these spot colors. Activate Combine to export all selected spot colors in the same file. This is for very special cases. Normally you should not use this option.

Compress file: Activate this box to compress the export file. The compression does not influence the print quality.

Export Example

This is an example of an Orienteering map in the Normal View. The small watercourse is blue.



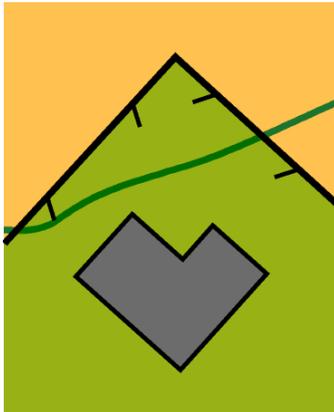
All 5 used colors (Black, Blue, Gray, Olive, Yellow) are defined as CMYK values and Spot color values in the Color table.

The color Olive consists 50% of the spot color Green_PMS361 and 100% of Yellow_PMS136.

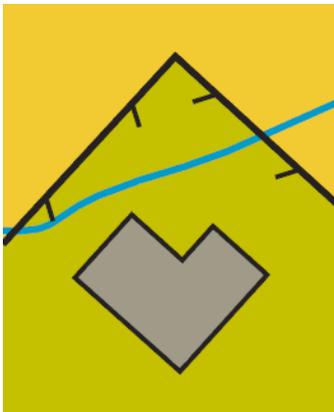
The value '0' in the spot colors column means 'Knocking out'. For example the color Gray knocks out the three spot colors Blue_PMS299, Green_PMS361, Yellow_PMS136. But the color Blue doesn't knock out the spot color Yellow_PMS136.

Colors											Spot colors [%]			
CMYK (process) colors [%]														
No.	Name	Cyan	Magenta	Yellow	Black	Ov.	Opacity	Symbols	Map	Black_Spot	Blue_299	Green_361	Yellow_136	
0	Black	0	0	0	100	✓	100	✓	✓	100				
2	Blue	87	18	0	0	✓	100	✓	✓	100				
23	Gray	0	0	0	55		100	✓	✓	55	0	0	0	
12	Olive	10.5	0	97.5	27		100	✓	✓		50	100		
9	Yellow	0	27	79	0		100	✓	✓				100	

In Spot color view mode OCAD simulates the spot color printing. Spot colors appear transparent to get a simulation of the final printing result. The overlapping watercourse doesn't knockout the Yellow color below and appears green.



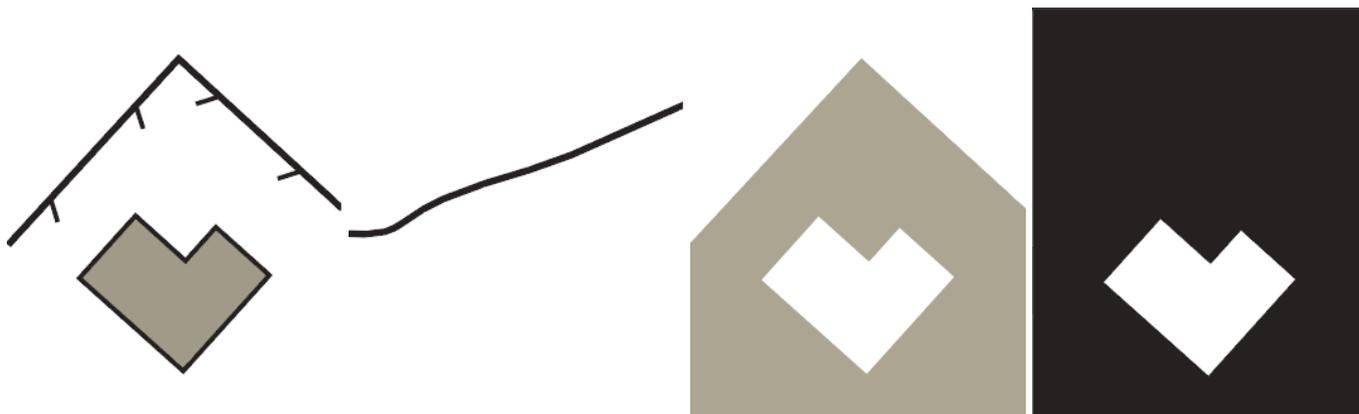
When exporting the file as pdf and choosing the **CMYK (process) colors** option then OCAD ignores the spot colors. The pdf appears in Adobe Reader as in OCAD Normal View.



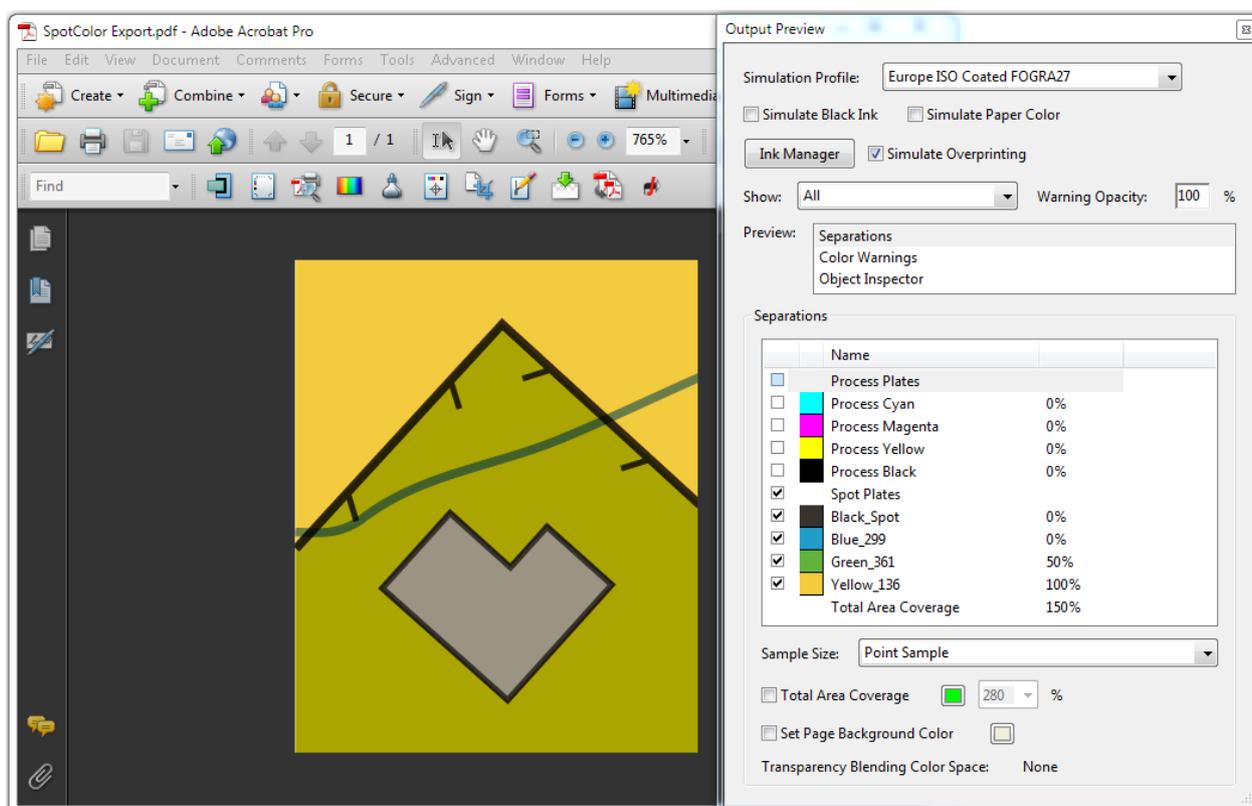
When choosing the not combined Spot colors then OCAD creates for each spot color a pdf file in grayscale. That are the four spot colors:

- Black_Spot
- Blue_PMS299
- Green_PMS361
- Yellow_PMS136

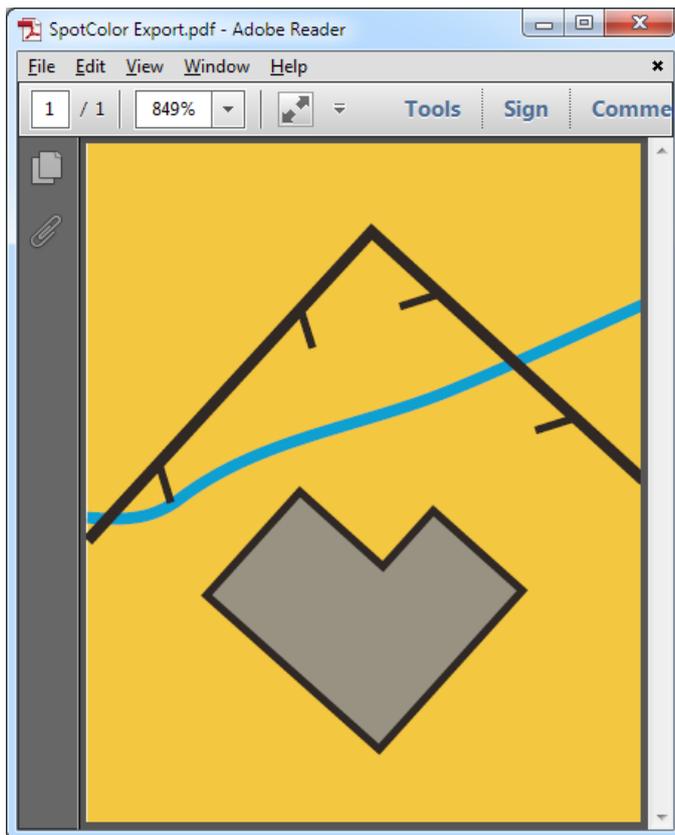
The color Olive consists of 50% Green_PMS361 and 100% Yellow_PMS136. The gray building knocks out the other three spot colors.



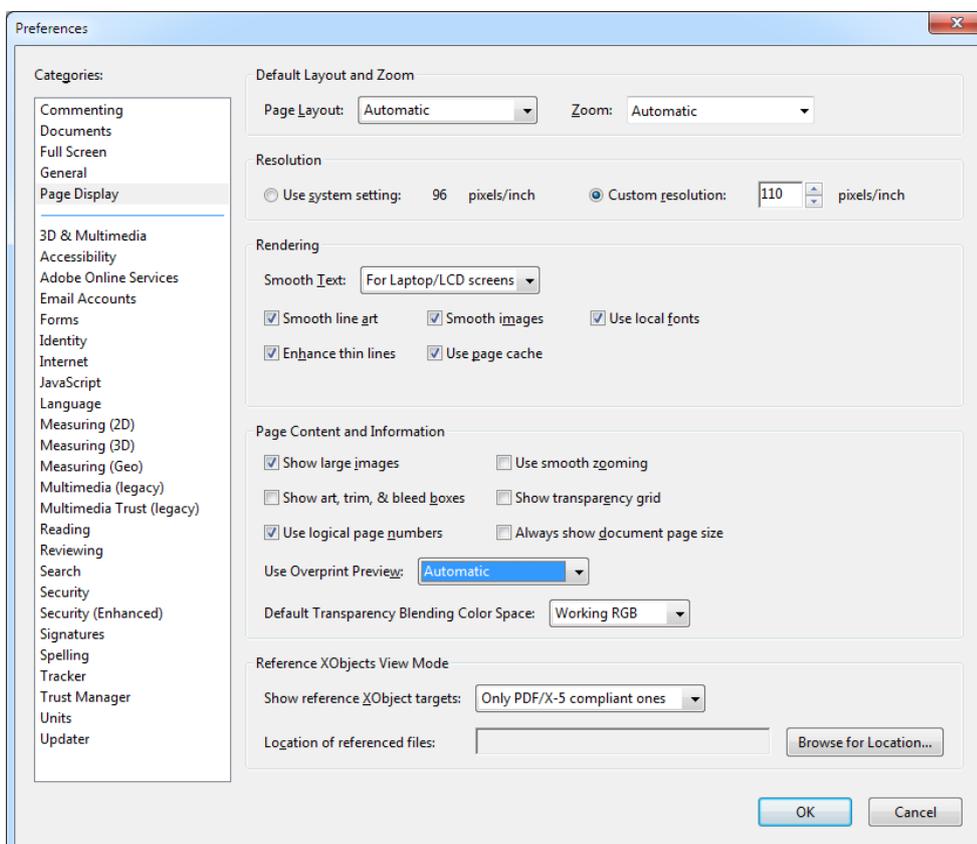
When choosing the combined Spot colors then OCAD creates one pdf file with the four selected spot colors. The four single spot plates are visible in the Separations list in Adobe Acrobat Pro. Please check that the option **Simulate Overprinting** is activated.



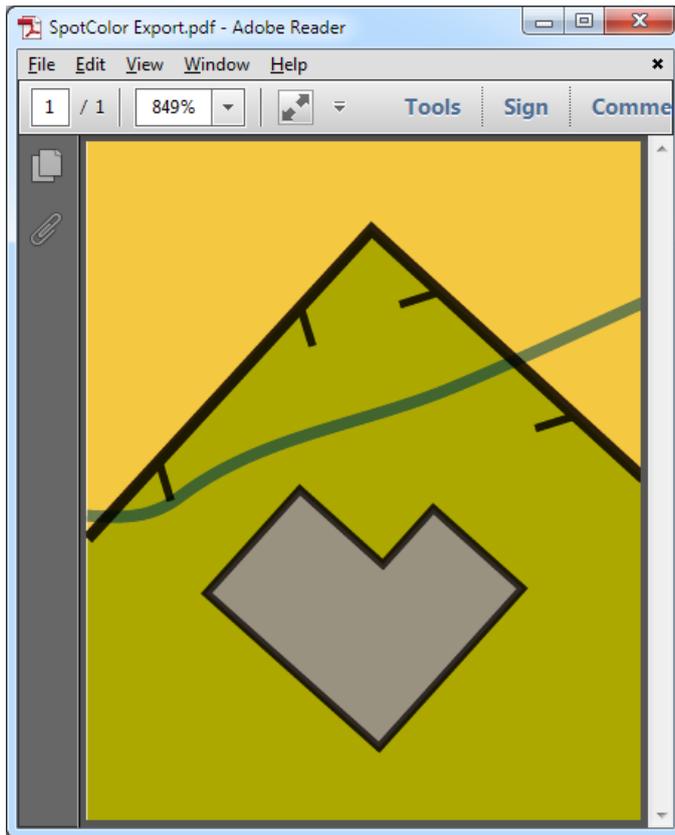
With the default settings Adobe Reader doesn't simulate the spot color printing. The yellow part of the Olive area overlays the green part and isn't transparent.



Click **Preferences** in **Edit** menu. The Preferences opens. Choose the **Page Display** page and change the **Use Overprint Preview** value from **Only For PDF/X Files** to **Automatic**.



Then Adobe Acrobat simulates the spot color printing also for this combined spot color pdf file.



Export Shape

Mas

(This function is not available in Draft mode. Change to Normal mode to export Shape file.)

(This function is not available if the map is hidden.)

Choose this command to export the map in the shape format.

The shape format consists of 3 files

- *.shp: the shape file
- *.shx: the shape index
- *.dbf: a dBase file

Point, line, area and texts objects must be exported separately. If you export all types totally 12 files will be produced.

Objects In this box you select which object types should be exported. You can select one or more types by using the  and **Ctrl** keys. Initially all types are selected.

Dataset Select here if all objects should be exported or only objects linked to a specified dataset.

If you select **All objects** the dBase file will contain an ID, the symbol number, the angle and for texts the text. OCAD exports also elevation of line objects in TEXT1 field, if available.

 OCAD exports also the objects from visible ocd background maps.

 The text length is limited to ANSI 128 characters.

If you select **Objects in dataset** the dBase file will contain the information of the corresponding table.

 The text length is limited to ANSI 256 characters.

 OCAD exports the line text objects as lines. The text is in exported database.

 OCAD does not export unsymbolized objects.

 OCAD cannot export excel tables that contain fields with user defined formats like hh:mm:ss because dBase does not support them. Please define such columns as text fields.

Export SVG



(This function is not available in Draft mode. Change to Normal mode to export SVG file.)

Choose this command to export the map to a SVG (Scalable Vector Graphics) file. After clicking **OK**, a file dialog box is displayed where you can enter a filename for the exported map. Part of map Activate this check box to export a part of the map. The map section will be shown with a rectangle on the drawing window. You can alter the rectangle with the mouse.

- Click the button **Setup**  to define the part of map to be exported by coordinates. The dialog box **Setup Part of Map (Export)** appears.
- Click the button **Entire map**  to export the entire map.
- Click the button **To current view**  to export the currently on the screen displayed map.

If this check box is not active the entire map will be exported.

Export scale Enter the scale for the exported map. You can enter the scale on the keyboard, or choose one of the predefined scales.

Compress file Activate this box to compress the export file.

Export TIFF



Choose this command to export the map as a TIFF file After clicking **OK**, a file dialog box is displayed where you can enter a filename for the exported map.

- **Resolution:** Enter here the desired resolution for the exported TIFF file.
- **Pixel size:** Enter here the size of a pixel in the real world.
- **Create World file (*.tfw):** Choose this option if you want to use the exported file in a GIS (Geographical Information System). A World file with the georeference information is created. This option is only available if the map is georeferenced. Additional OCAD writes the georeference (map projection, coordinate systems) in the tiff file (geotiff).

Anti-Aliasing Anti-Aliasing is method to make the edges of lines and text appear soft. Normally you should activate this option.

Color correction Activate this option to apply the same color correction as for the screen.

Part of map Activate this check box to export a part of the map. The map section will be shown with a rectangle on the drawing window. You can alter the rectangle with the mouse.

- Click the button **Setup**  to define the part of map to be exported by coordinates. The dialog box **Setup Part of Map (Export)** appears.
- Click the button **Entire map**  to export the entire map.
- Click the button **To current view**  to export the currently on the screen displayed map.

If this check box is not active the entire map will be exported.

Tiles Activate this check box to export the map in tiles instead of one single file. Click the button **Setup**  to define the tiles. The dialog box Setup tiles appears.

Setup Tiles This dialog box appears if you click the **Setup** button for **Tiles** in the **Export** panel. If you choose the Tiles option, the map is divided into small rectangular fields (tiles) and one file is exported for each tile. The tiles start from the lower left corner. To number the files, the number of the column and the number of the row are

appended to the file name.

"filename_0_0.tif" is the tile in the lower left corner.

"filename_1_0.tif" is the tile to the right of the first tile.

All tiles have the same size, even if they extend beyond the map size or the part of map defined.

Tile size: Enter here the size of a tile.

Color

Color TIFF (RGB): Select this option to export a color map.

Compression: Choose LZW to compress the export file.

Spot color separations: Select this option to export spot color separations. Choose Spot colors Mode from the View menu to define spot colors. When this radio button is activated and spot colors are defined, you can select one or more of the defined spot colors in the Spot colors list box. Normally you export a TIFF file for each of these spot colors. Activate Combine to export all selected spot colors in the same file. This is for very special cases. Normally you should not use this option.

Color depth: Select the color depth (number of different colors to export):

CMYK (32 Bits): 4295 million colors.

RGB (24 Bits): 16 million colors.

256 colors: 8 bits with 256 colors.

Grayscale: 8 bits with 256 gray scales

Black/White: 1 bit with black or white.

Halftone screen: 1 bit with black or white.

 Pixel size and Create World file option are only available if Real world coordinate mode in Scale and Coordinate System from the Map menu is activated.

 The error message: "Not enough memory for exporting" appears if Windows cannot provide the memory needed. Choose a lower raster resolution.

Export Encrypted File

Mas Ori

Learn more about this topic on the [Encrypted OCAD File](#) page.

Setup Part of Map

When exporting in certain file formats, you will have the option to export only a part of the map. By clicking the



Setup button, the export area can be defined. The **Setup Part of Map (Export)** dialog appears.

Coordinates

Choose between **Paper** or **Real World Coordinates**.

Export map size

Reference point, width and height:

Choose the point of the map which you want to define as the reference point (e.g. upper left corner). Click one of the nine squares.

Enter the coordinate of the chosen point.

Enter the dimension (**Width** and **Height**) of the map to be printed in m (real world coordinates) or mm (paper coordinates).

Rectangle:

Enter the coordinate of the bottom left and the top right corner of the rectangle to be exported in m (real world coordinates) or mm (paper coordinates).

Save

You can name the adjustments/rectangles and save them by clicking the **Save** button.

Load

If there are saved settings, you can load them using the **Load** button or delete them using the **Delete** button.

Set to entire map

Click the **Set to map** to set the values given in the **Export map size** part of the dialog to the entire map

Import

You can import export-rectangles from another ocd file.

Set from selected objects

Click this option and the rectangle will be adapted to the selected objects.

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References

[1] <https://www.google.com/earth/>

[2] <http://www.garmin.com/us/products/onthetrail/custommaps>

OCAD Internet Map

Export OIM



Choose **Export OCAD Internet Map** from **File** menu to export the map as OIM (OCAD Internet Map). With OIM you can publish big OCAD maps on internet. Additionally, it is possible to display and query Points of Interest (POI). You can insert the OCAD Internet Map to a HTML file.

- **Resolution:** Enter here the resolution for the map tiles (GIF).
- **Part of map:** Activate this check box to export a part of the map. The map section will be shown with a rectangle on the drawing window. You can alter the rectangle with the mouse.

Click the Setup button  to define the part of map to be exported by coordinates. The dialog box Setup Part of Map (Export) appears.

Click the Entire map button  to export the entire map.

Click the To current view button  to export the currently on the screen displayed map.
If this check box is not active the entire map will be exported.



It is also possible to choose a defined format like A4 landscape.

-> Click **Export**. The **Export OCAD Internet Map** dialog box appears.

OCAD Internet Map (OIM) Export Wizard

General Project Settings

- Map title - heading of the map
- Map subtitle - may be a copyright statement or similar
- Choose the favoured position of the Map tile/ Map subtitle by clicking on the corresponding button.

Base map layout:

- Base layer name - name of the map (e.g. St. Moritz - OCAD Internet Map Example)
- Edit layer enable - enables the users the ability to draw on the map
- Search with selection - search only in one POI category, for example streets
- Classic layout - use default layout for export
- Global searchbox - search for POI's (works only with PHP support)
- OCAD Slogan - displays OCAD slogan on your exported map

POI selection hint - change default label for POI selection hint

Search with selection heading - change default heading for Search with selection

Global search box heading - change default heading for Global search box

Search button (Global search box) - change default label for Search button

- Create tiles - need to be selected if the map tiles should be created, otherwise only the meta files are created

-> Click **Next**

Export OCAD Internet Map

OCAD Internet Map (OIM) Export Wizard
General project settings

Map title:
 Middle left Middle center Middle right

Map subtitle:
 Middle left Middle center Middle right

Base map layout

Base layer name:

Edit layer enable Search with selection
 Classic layout Global search box
 OCAD Slogan

POI selection hint:

Search with selection heading:

Global search box heading:

Search button (Global search box):

Create tiles To continue, click Next.

< Back Next > Cancel Help

General project settings

Export OCAD Internet Map

OCAD Internet Map (OIM) Export Wizard
Zoom level settings

Zoom from: Zoom to:

Zoom level	Map file
Zoom 0	L:\9_Lernhilfen\4_Demos\15_Visualisierung von GIS-Daten\St Moritz_oim\St Moritz Overview.ocd
Zoom 1	L:\9_Lernhilfen\4_Demos\15_Visualisierung von GIS-Daten\St Moritz_oim\St Moritz Overview.ocd
Zoom 2	L:\9_Lernhilfen\4_Demos\15_Visualisierung von GIS-Daten\St Moritz_oim\St Moritz Centre.ocd
Zoom 3	L:\9_Lernhilfen\4_Demos\15_Visualisierung von GIS-Daten\St Moritz_oim\St Moritz Centre.ocd

Relink Change Reset all to current file

To continue, click Next.

< Back Next > Cancel Help

Zoomlevel settings

Zoom Level Settings

Select **Zoom from** and **Zoom to** levels which are created. Be aware that the overview map need a zoom level 0.

Generated levels are highlighted green, not created levels are grayed out. If the file is not found it is highlighted in red.

- **Relink** - change the folder of all maps
- **Change** - change the map for the selected zoom level
- **Reset all to current file** - currently opened file is taken for all zoom levels

-> Click **Next**

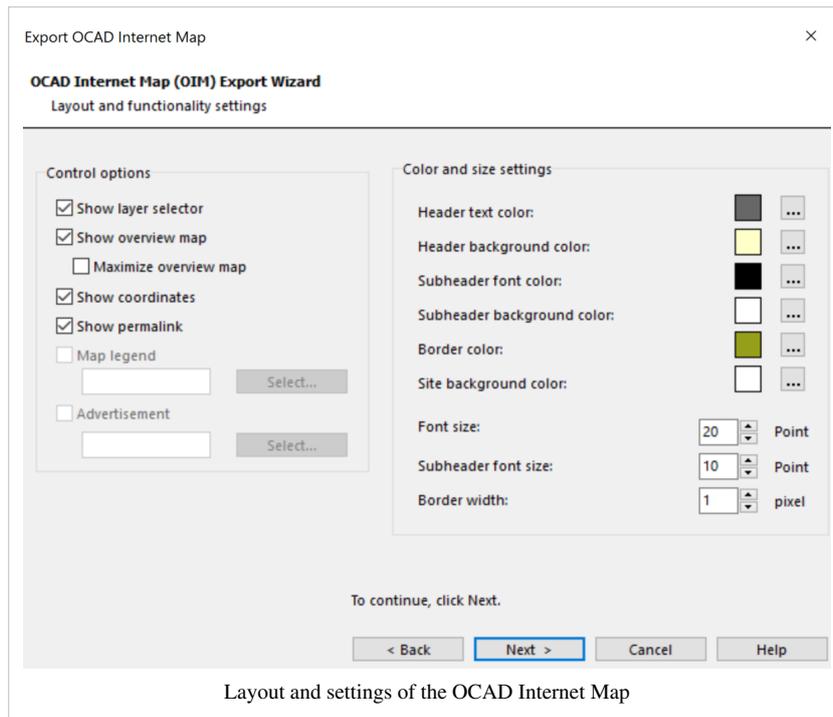
Layout and Functionality Settings

Control Options:

- Show layer selector - enables the user to select different POI groups
- Show overview map - enables the overview map feature
 - Maximize overview map - shows the map maximized by default
- Show coordinates - show coordinates in the lower right corner
- Show permalink - enables the user the ability to link to a specific zoom, map view and layers
- Map legend - if activated, you can select a file to display a map legend (jpg, png, gif)
- Advertisement - if activated, you can select a file for an advertisement (jpg, png, gif)

Color and Size Settings:

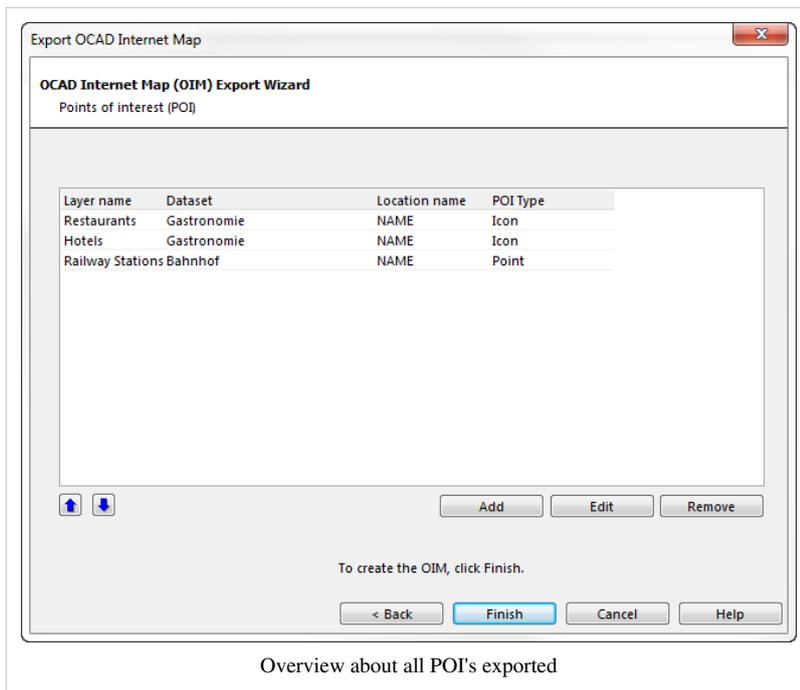
- Header text color - color of the map title
 - Header background color - background of the map title
 - Subheader font color - color of the map subtitle
 - Subheader background color - background of the map subtitle
 - Border color - border color of the map
 - Site background color - general site background
 - Font size - font size of the map title
 - Subheader font size - font size of the map subtitle (e.g. copyright)
 - Border width - thickness of the border
-



Layout and settings of the OCAD Internet Map

-> Click Next

Points of Interest (POI)



Overview about all POI's exported

💡 Points of Interest (POI), like Restaurants, Hotels or train stations can only displayed in the web map, if they have been added to the OCAD map before.

Choose **Add** to add a POI layer. The **POI Selector** dialog box appears:

- Title - name of the layer
- Dataset - dataset to choose from
- Condition - with an SQL expression the result set can be limited.

e.g.:

TYPE LIKE "Hotel" or
symbolnumber = 521.000

- Location field - Name. It's the main name of the POIs, which is shown in the search

- Hover title on mouseover - a tooltip will be provided if the mouse moves over the POI
- Highlight POI through search result - an arrow will blink three times when the POI is selected from the search box
- Visible from zoom level - shows the entire overlay starting from the given zoom level. e.g.: show from zoom level 3 on
- Points of Interest type:
 - Point (vector) - POIs are drawn as vector points on the map

-Icon (information bubbles) - POIs are represented by the provided icon file

-> Click **Next**

POI Selector: Icon Settings (if chosen)

Icon settings (only if **icon** is chosen in the previous step):

- Icon - click the **select** button and choose a file (red background if file not found)
- Icon offset - offset from the anchor point
- Icon size - size of the icon (only in html, image will not be resized)

-> Click **Next**

POI Selector: Vector Settings (if chosen)

Vector settings (only if **vector** is chosen in the previous step):

- Point fill color - represents the main color (fill color) of the vector point.
- Point stroke color - represents the outline color
- Point radius - size of the vector point
- Point fill opacity - applies to the main color
- Point stroke opacity - applies to the stroke color



If you set both opacity values to 0, the vector points are transparent to the web map user. However, the points will still provide information for queries and mouseover events. -> Click **Next**

POI Selector: General settings (if previously chosen Vector Settings)

- Short description - database field containing short description (important for search)
- Description - database field containing description for the info bubble or the right info box
- URL field - database field containing the URL
- Link name - database field containing a link name

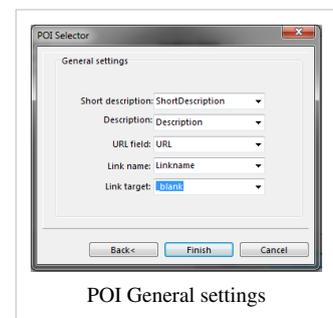
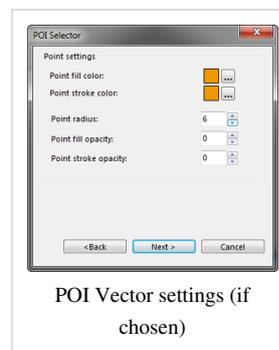
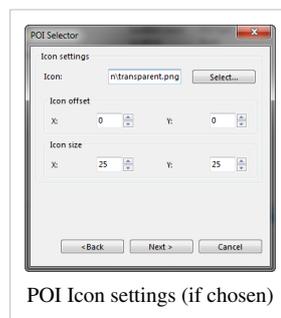
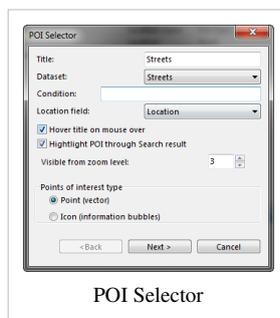


If the URL should be shown select the same field as for the URL

- Link target - link target for the browser
 - _blank - opens the linked target in a new window or tab
 - _parent - opens the linked target in the parent frame
 - _self - opens the linked target in the same window/tab as it was clicked
 - _top - opens the linked target in the full body of the window

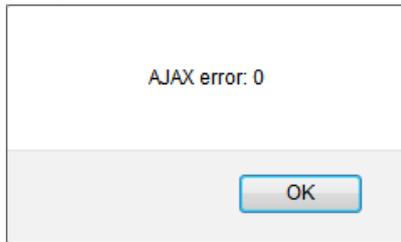
URL, Link name and target are not mandatory fields.

-> Click **Finish**



Choose a directory and **Save** the file. To see the exported internet map, open the *.html file in the browser.

The search functionality only works on a server with PHP support otherwise the error message **AJAX error: 0** occurs.



On the site HTML Entities the supported and convertible HTML characters can be seen.

💡 If you have stored your web map files locally, the POI will be displayed correctly only in Firefox at the moment. However, as soon as the web map files have been uploaded on your web server, the POI are also displayed correctly in other common browsers.

💡 Let's assume you check your OIM in your browser after the export. The map tiles have been exported properly, but there's something wrong with your POI. So, if you re-export your map, just skip the option **Create files** in the General project settings. The export will thereby run much faster, especially if you have big maps.

OCAD Internet Map Example St.Moritz

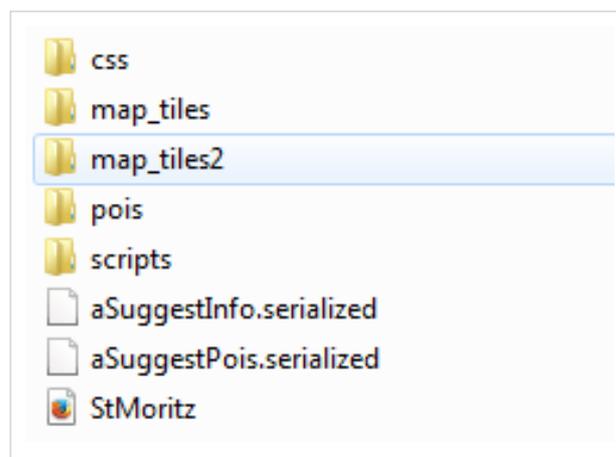
Example of an OCAD Internet Map export: Internet Map St. Moritz ^[1]

Extend OIM Functionality with Scripting

More advanced functions can be scripted. Examples can be found under OIM scripting

How To Add Second Base Map Layer to the OCAD Internet Map

- Export two OCAD Internet Map exports with a different base map (ex. one with a topographic map and the other with an aerial image). Save them to different folders.
- Navigate to the folder of the 2nd export and rename the sub folder *map_tiles* to *map_tiles2*.
- Copy *map_tiles2* to the folder of the 1st OIM export. There should be now two sub folders *map_tiles* and *map_tiles2*.



- Navigate from the 1st OIM export folder to the sub folder *scripts* and open the file *BasisFunctions.js* in a text editor. Duplicate the function *overlay_getTileURL* and rename the 2nd to *overlay_getTileURL2*. Within this "*overlay_getTileURL2* function rename *map_tiles* to *map_tiles2*.

```

/*
 * OCAD Internet Map for OpenLayers
 * OCAD AG, Baar, Switzerland 2012
 * Author: Markus Fuchs-winkler
 */

function overlay_getTileURL(bounds) {
var res = this.map.getResolution();
var x = Math.round((bounds.left - this.maxExtent.left) / (res * this.tileSize.w));
var y = Math.round((bounds.bottom - this.maxExtent.bottom) / (res * this.tileSize.h));
var z = this.map.getZoom();
if (x >= 0 && y >= 0) {
return this.url + "map_tiles/" + z + "/" + x + "/" + y + "." + this.type;
} else {
return "none.png";
}
}

function overlay_getTileURL2(bounds) {
var res = this.map.getResolution();
var x = Math.round((bounds.left - this.maxExtent.left) / (res * this.tileSize.w));
var y = Math.round((bounds.bottom - this.maxExtent.bottom) / (res * this.tileSize.h));
var z = this.map.getZoom();
if (x >= 0 && y >= 0) {
return this.url + "map_tiles2/" + z + "/" + x + "/" + y + "." + this.type;
} else {
return "none.png";
}
}

```

- Open the OIM main html file from the OIM export folder in an editor and duplicate the *basemap* section and add them as *basemap1* and *basemap2*. Change the layer name for *basemap2* to *Orthophoto* (or something else...) and call the *overlay_getTileURL2*. Duplicate also *map.addLayer(basemap)* add it as *map.addLayer(basemap1)* and *map.addLayer(basemap2)*.

```

function init() {
var options = {
controls: [],
maxExtent: new OpenLayers.Bounds(575127.600000,197313.700000,575850.100000,197821.200000),
maxResolution: 3.386667,
numZoomLevels: 10};
map = new OpenLayers.Map('map', options);

basemap1 = new OpenLayers.Layer.TMS( "Topographic Map", "",
{ url: '.', serviceVersion: '.', layername: '.', alpha: false,
type: 'gif', getURL: overlay_getTileURL, transitionEffect: resize });

basemap2 = new OpenLayers.Layer.TMS( "orthofoto", "",
{ url: '.', serviceVersion: '.', layername: '.', alpha: false,
type: 'gif', getURL: overlay_getTileURL2, transitionEffect: resize });

map.addLayer(basemap1);
map.addLayer(basemap2);
map.zoomToExtent(mapBounds);
map.addControl(new OpenLayers.Control.PanZoomBar({ zoomStopHeight: 15 }));

```

[Back to Main Page](#)

References

- [1] http://ocad.com/demo/OIM_StMoritz/StMoritz.html

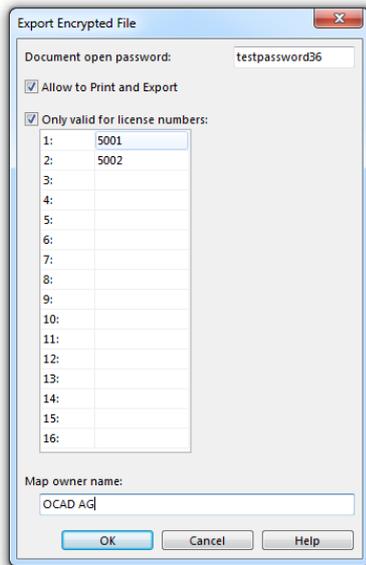
Encrypted OCAD File

When a map is sold for example for **Course Setting for Orienteering** or drawing an overlay, it is possible to encrypt the map. An encrypted OCAD map can only be loaded as a **Background Map** and cannot be edited. The owner of the map can make more limitations which are described on this page.

Export an Encrypted OCAD File

Mas Ori

Choose the **Export Encrypted File** command in the **File** menu. The **Export Encrypted File** dialog appears.



- **Document open password:** In this field you can set a password, which is needed to load the encrypted file as a background map. The password must have minimum four characters.
- **Allow to Print and Export:** Check this option to allow to print and export the map.
- **Only valid for license numbers:** Check this option to allow only the listed license numbers to load the map. Add license numbers by clicking a field and typing them. You can give the permission to load your map as a background map to maximum 16 licenses.
- **Map owner name:** Enter the map owner's name. This name is displayed when the encrypted file is opened.

Click the **OK** button to continue. The **Save** dialog appears. Browse a location, enter a name and click the **Save** button. The **Export Encrypted File** dialog appears with a summary of the settings made. You can select and copy this information and send it to the map receiver.

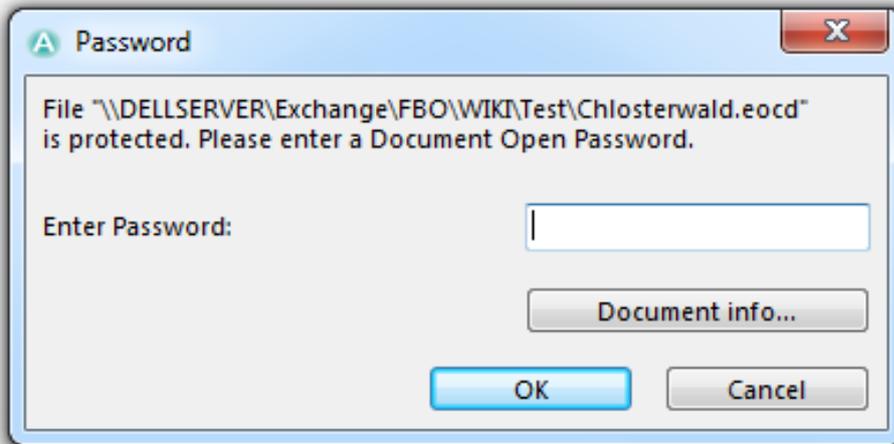
Load an Encrypted OCAD File

Mas Ori Sta CS

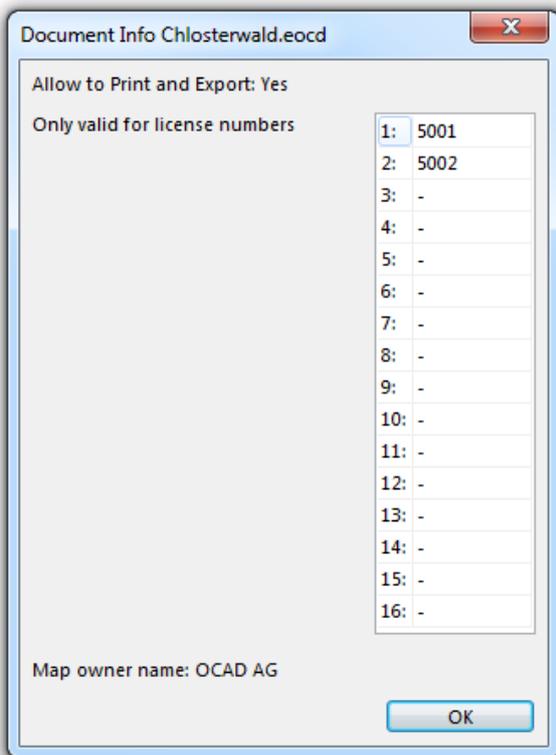
In the OCAD Starter Edition, encrypted OCAD files can only be loaded in course setting projects.

Encrypted OCAD Files can only be loaded as **Background Maps**. For this purpose, choose the **Open** command in the **Background Map** menu. The **Open Background Map** dialog appears. Choose the .eocd file and click the **Open** button.

The following dialog appears:



Enter the password you received from the map owner and click the **OK** button.
 You get more information about the encrypted file by clicking the **Document info** button.



This dialog can also be displayed by clicking the **Document info** icon in the **Manage Background Map** dialog.

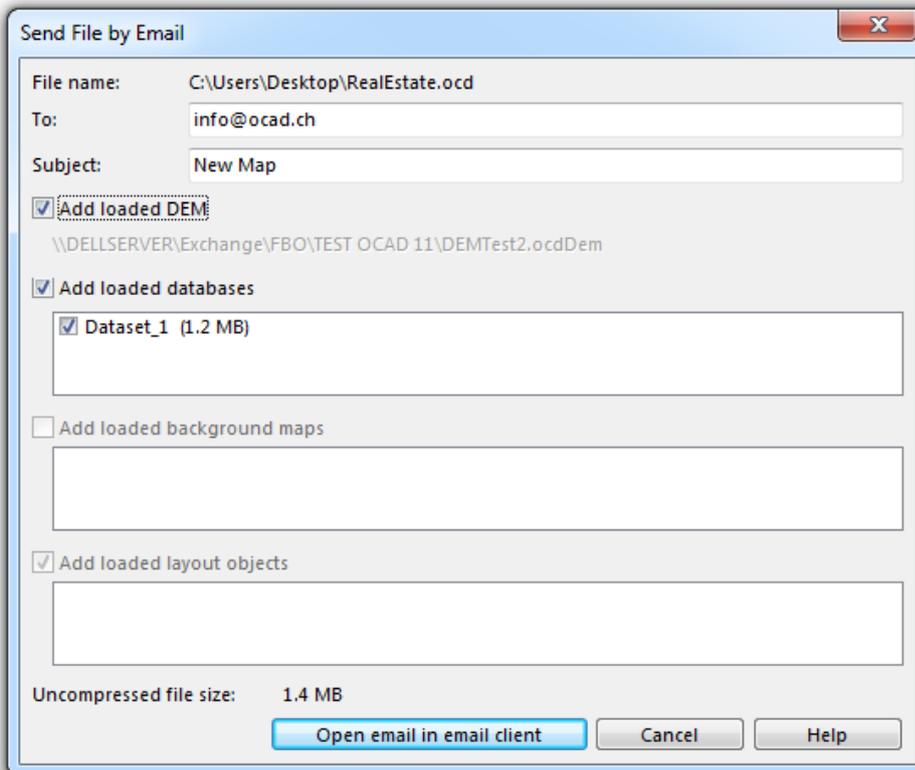
 OCAD 2019 can load only encrypted OCAD files exported from OCAD 2019. Encrypted OCAD 10, OCAD 11 or OCAD 12 files are not compatible with OCAD 2019.

Back to the **Export Files** page.

Send File by Email

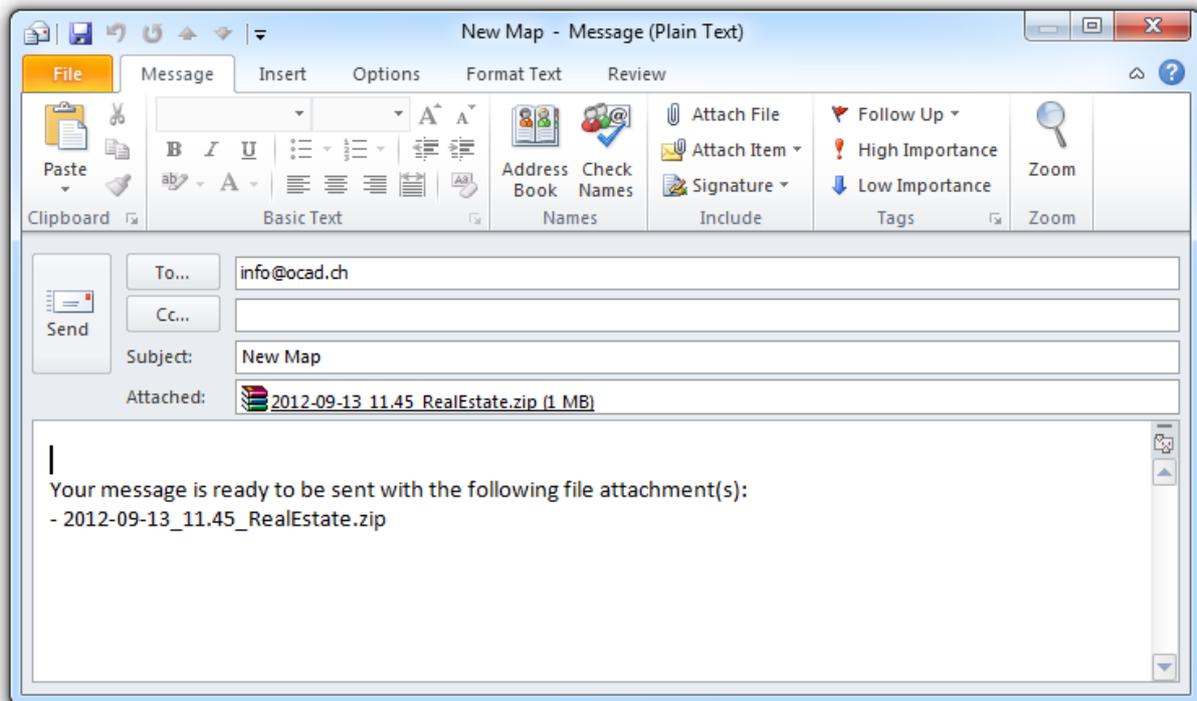
Mas Ori

Choose the **Send File by Email** command in the **File** menu to send an OCAD map, including the loaded **DEM**, **Databases**, **Background Maps** and **Layout Objects**, by E-Mail. The **Send File by Email** command appears.



Enter the E-Mail address of the recipient in the **To** field and enter a subject. You can check all loaded **DEM**, **Databases**, **Background Maps** and **Layout Objects** you want to add to the E-Mail. The **Uncompressed file size** value shows the size of the attachment.

When you are finished, click the **Open email in email client** button to continue. OCAD opens the predefined E-Mail in the standard client (e.g. Outlook, Thunderbird, etc.).



You can add text and send it.



- Windows XP opens the email in Outlook (if installed) and not in the standard email client.

- OCAD uses the **Messaging Application Programming Interface (MAPI)** ^[1] to send the emails. Your installed email client must support the MAPI.

- OCAD does not send the used fonts.

References

[1] http://en.wikipedia.org/wiki/Messaging_Application_Programming_Interface

XML Script

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Choose this command to execute functions whose settings are defined in a XML file.

Introduction

Select **Execute XML Script** from **File** menu or drag-and-drop then xml file to the OCAD window.

OCAD creates a log file in the temporary folder (*C:\Users\USERNAME\AppData\Roaming\OCAD\OCAD 20xx\Tmp*).

XML Script General

File

Node <OcadScript>	Parameter	Data type	Values / Description
File.New	File MapScale Easting Northing Angle	String Integer Integer Integer Double	file name of existing symbol set 10000 obsolete, use Map.ScaleAndCoordinateSystem obsolete, use Map.ScaleAndCoordinateSystem obsolete, use Map.ScaleAndCoordinateSystem
File.Open	File IgnoreMissingBackgroundMaps	String Boolean	ocd file name true, false (default: false)
File.Close	Enabled	Boolean	true, false
File.Save	Enabled	Boolean	true, false
File.SaveAs	File	String	ocd file name
File.Import.Ocd	File SymbolOption ColorOption	String Integer Integer	File name [0..3] [0, 1]
File.Import.DXF	Directory NewOffset HorizontalOffset VerticalOffset Angle MapScale	String Boolean Integer Integer Double Integer	Directory name ignored if NewOffset = false ignored if NewOffset = false ignored if NewOffset = false ignored if NewOffset = false
File.MultipleFileImport	Directory CoordinateSystem NewOffset Horizontally Vertically Angle MapScale GridDistance DatabaseType Codepage KeyField LayerField LayerField2	String Integer Boolean Integer Integer Double Integer Integer Integer Integer String String String	Directory of import files -1 = WGS 84, 1000 = existing grid of OCAD file 0 = dBase, 1 = Access 2007, 2 = Access 2003/2010, 3 = Do not create a database 0 = Default, Codepage number ' ' = Create new key field, field name ' ' = do not import layer information, field name ' ' = do not import 2nd layer information, field name, LayerField and LayerField2 content are concatenated by '_'
File.Exit	Enabled	Boolean	true, false

View

Node <OcadScript>	Parameter	Data type	Values / Description
View.Mode		Enum types	normalMode, spotColorMode, draftMode
View.EntireMap	Enabled	Boolean	true, false
View.MoveTo	X Y	Double Double	
View.Zoom		Double	

Map

Node <OcadScript>	Parameter	Data type	Values / Description
Map.OptimizeRepair	Enabled	Boolean	true, false
Map.ChangeScale	NewScale EnlargeReduceSymbols	Integer Boolean	e. g. 10000 true, false
Map.ConvertLayer	CrtFile	String	crt file name
Map.DeleteObjectsBySymbol	SymbolNumber	Double	e.g. 526.002
Map.LoadSymbolsFrom	File	String	ocd file name (with symbols to be loaded) The option <i>replace existing colors and symbols</i> is used
Map.ScaleAndCoordinateSystem	MapScale Easting Northing Angle CoordinateSystem	Integer Integer Integer Double Integer	e.g. 10000 e.g. 600000 e.g. 200000 e.g. 4.5 internal grid id
Map.Transform.ChangeCoordinateSystem	CoordinateSystem EastingOffset NorthingOffset ScaleSymbols	Integer Integer Integer Boolean	internal grid id true, false

Database

Node <OcadScript>	Parameter	Data type	Values / Description
Database.Dataset.New	DatasetName DBaseFile OdbcDataSource Table KeyField SymbolField TextField SizeField LengthUnit AreaUnit Decimals HorizontalCoordinate VerticalCoordinate Username Passwort	String String String String String String String String String String Integer String String String String	mandatory mandatory mandatory

Database.Dataset.Remove	Dataset	String Integer	<i>all</i> for all databases 3, 2, 1, ... for only one or several
Database.Assign.Symbols	Dataset CntFile	String or Integer String	<i>all</i> for all databases, dataset name or 1, 2, 3... for only one database Condition table file
Database.Assign.Texts	Dataset TextField Condition Symbol ReplaceExistingObjects	String or Integer String String String Boolean	<i>all</i> for all databases, dataset name or 1, 2, 3... for only one database ex. 101.0 true, false (Default)
Database.SetObjectDirection	Dataset AngleField MathematicalFunction	String or Integer String String	<i>all</i> for all databases, dataset name or 1, 2, 3... for only one database eg.: *180/3.14159
Database.CreateObjects	Dataset SelectSymbol Condition HorizontalCoordinate VerticalCoordinate Unit TextField HorizontalOffset VerticalOffset	Integer Double String String String Enum types String Double Double	1, 2, 3, ... Number of dataset Symbol numer. ex. 207.0 SQL String (ex. SYMBOL LIKE 207.0) Database fieldname Database fieldname m, km Database fieldname

Background Map

Node <OcadScript>	Parameter	Data type	Values / Description
BackgroundMap.Open	FileName Visible VisibleInFavorites Dimm Transparent SpotColor Blockout Infrared	String Boolean Boolean Integer Boolean String Boolean Integer	true, false; Default = true true, false; Default = true [0..100]; Default = 0 [only works if Blockout is false] true, false; Default = false [only works if Blockout is false] false] spot color name true, false; Default = false 0=undefined, 1=32bit-infrared, 2=32bit RGB
BackgroundMap.Remove		String	<i>all</i> or filename
BackgroundMap.Reload a)		String	<i>all</i> or filename

a): Limited functionality. Not available for all users.

Example

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<!-- OCAD XML Script for multiple Shape import and assigning symbols from database -->

<OcadScript>

  <File.New>
    <!-- This path has to be adjusted before using the script! Choose a template file. -->
    <File>C:\Export\Chlosterwald.ocd</File>
```

```
</File.New>

<File.MultipleFileImport>
  <!-- This path has to be adjusted before using the script! -->
  <Directory>C:\Export\Files</Directory>
  <CoordinateSystem>1000</CoordinateSystem>
  <NewOffset>true</NewOffset>
  <Horizontally>600000</Horizontally>
  <Vertically>200000</Vertically>
  <Angle>0</Angle>
  <MapScale>10000</MapScale>
  <GridDistance>500</GridDistance>
  <LayerField>OBJECTVAL</LayerField>
</File.MultipleFileImport>

<Database.Assign.Texts>
  <Dataset>all</Dataset>
  <Condition/>
  <TextField>TEXT</TextField>
  <Symbol>902.000</Symbol>
  <ReplaceExistingObjects>>false</ReplaceExistingObjects>
</Database.Assign.Texts>

<Database.Assign.Angles>
  <Dataset>all</Dataset>
  <AngleField>ANGLE</AngleField>
</Database.Assign.Angles>

<Database.Assign.Symbols>
  <Dataset>all</Dataset>
  <CntFile>C:\Export\Chlosterwald.cnt</CntFile>
</Database.Assign.Symbols>

<Database.Dataset.Remove>
  <Dataset>all</Dataset>
</Database.Dataset.Remove>

<Map.OptimizeRepair>
  <Enabled>true</Enabled>
</Map.OptimizeRepair>

<View.EntireMap>
  <Enabled>true</Enabled>
</View.EntireMap>

<File.Save>
  <Enabled>>false</Enabled>
```

```
</File.Save>

<File.SaveAs>
  <File>C:\Export\Chlosterwald_Example.ocd</File>
</File.SaveAs>

<File.Close>
  <Enabled>>true</Enabled>
</File.Close>

<File.Exit>
  <Enabled>>false</Enabled>
</File.Exit>

</OcadScript>
```

XML Script Thematic Maps



Node <OcadScript>	Parameter	Data type	Values / Description
-------------------	-----------	-----------	----------------------

File.CreateThematicMap	<MapTheme> Name StatDataPath StatDataTable StatDataCommonField VisualizeAttributes AttributesValuesType Classify RepresentationFeature GeometryDataPath GeometryDataCommonField JoinType VisualizationMethod VisualizationType <VisualizationProperties> ScalingMode MaxSize MinSize FillColor StrokeColor StrokeMaxWidth StrokeMinWidth DecreaseStroke ShowZeroValue ShowNoData Opacity ThemeLegendTitle </VisualizationProperties> </MapTheme> <MapTitleStyle> Color Opacity Font Size isBold isItalic Alignment </MapTitleStyle> <LegendTitleStyle> see MapTitleStyle... </LegendTitleStyle> <LegendTextStyle> see MapTitleStyle... </LegendTextStyle> AddScaleBar AddScaleText AdditionalInformationText	string string string string string ValueType ClassifyType RepresentationFeatureType string string JoinType VisualizationMethodType VisualizationTypeType ScalingModeType double double FillColor StrokeColor double double boolean boolean boolean integer string ColorType integer string double boolean boolean AlignmentType boolean boolean string	Theme name statistic data file path Sheet or table for Excel or Access files Common Id field Attribute(s) to visualize: Ex. 2004 or 2009 2011 absolute, relative yes, no point, line, area Geometry data file path Common Id field see Thematic Map Data Types table see Thematic Map Data Types table see Thematic Map Data Types table see Thematic Map Data Types table max. size in mm min. size in mm fill color: ex. C=84 M=0 Y=128 K=0 stroke color: ex. C=0 M=0 Y=0 K=255 max. stroke width in mm min. stroke width in mm true, false true, false true, false % ThemeLegendTitle font color: ex. C=0 M=0 Y=0 K=255 opacity in % font name font size true, false true, false 0=align bottom left true, false true, false Ex. Coordinate system: Pseudo-Mercator
------------------------	--	--	--

Thematic Map Data Types

Data type	Values
ValueType	absolute, relative
ClassifyType	yes, no
RepresentationFeatureType	point, line, area
JoinType	0=KeepAllRecords, 1=KeepOnlyMatchingRecords
VisualizationMethodType	mProportionalSymbols, vmProportionalLines, vmProportionalArrows, vmGraduatedSymbols, vmGraduatedLines, vmGraduatedArrows, vmChoropleths, vmCharts
VisualizationTypeType	vtProportionalBar, vtProportionalCircle, vtProportionalSquare, vtProportionalLine, vtProportionalArrow, vtGraduatedBar, vtGraduatedCircle, vtGraduatedSquare, vtGraduatedLine, vtGraduatedArrow, vtChoropleth, vtPieChart, vtWingChart, vtBarChart, vtDividedPieChart, vtDividedWingChart, vtDividedBarChart, vtStackedBarChart, vtPercentageStackedBarChart
ScalingModeType	0=scaling by representation ratio, 1=scaling by max. size
DataClassificationMethodType	cmManual, cmNaturalBreaks, cmEqualIntervals, cmQuantiles
ColorType	CMYK color definition [0..255]: C=84 M=0 Y=128 K=0

Thematic Map Script Examples

The following example creates a **thematic map** with proportional squares about the population in europe 2011.

```
<?xml version="1.0" encoding="UTF-8"?>
<OcadScript>
  <OcadVersion>OCAD 2018 - Mapping Solution 32-bit</OcadVersion>

  <File.New>
    <File>Thematic Map.ocd</File>
    <MapScale>25000000</MapScale>
  </File.New>

  <File.SaveAs>
    <File>Thematic Map Population Europe ProportionalSquare.ocd</File>
  </File.SaveAs>

  <File.CreateThematicMap>
    <MapTheme>
      <Name>Population 2011</Name>
      <StatDataPath>C:\import\population.xls</StatDataPath>
      <StatDataTable>Sheet0$</StatDataTable>
      <StatDataCommonField>id</StatDataCommonField>
      <VisualizeAttributes>2011</VisualizeAttributes>
      <AttributesValueType>absolute</AttributesValueType>
      <Classify>no</Classify>
      <RepresentationFeature>point</RepresentationFeature>
      <GeometryDataPath>C:\import\europa.shp</GeometryDataPath>
      <GeometryDataCommonField>ne_10m_adm</GeometryDataCommonField>
      <JoinType>0</JoinType>
    </MapTheme>
  </File.CreateThematicMap>
</OcadScript>
```

```
<VisualizationMethod>vmProportionalSymbols</VisualizationMethod>
<VisualizationType>vtProportionalSquare</VisualizationType>
<VisualizationProperties>
  <ScalingMode>1</ScalingMode>
  <MaxSize>30.00</MaxSize>
  <MinSize>1.00</MinSize>
  <FillColor>C=84 M=0 Y=128 K=0</FillColor>
  <StrokeColor>C=0 M=0 Y=0 K=181</StrokeColor>
  <StrokeMaxWidth>0.40</StrokeMaxWidth>
  <StrokeMinWidth>0.08</StrokeMinWidth>
  <DecreaseStroke>true</DecreaseStroke>
  <ShowZeroValue>true</ShowZeroValue>
  <ShowNoData>true</ShowNoData>
  <Opacity>80</Opacity>
  <ThemeLegendTitle>Population</ThemeLegendTitle>
</VisualizationProperties>
</MapTheme>
<MapTitle>Population in Europe 2011</MapTitle>
<DefaultTextStyle>
  <Color>C=0 M=0 Y=0 K=150</Color>
  <Opacity>100</Opacity>
  <Font>Arial</Font>
  <Size>9.0</Size>
  <isBold>0</isBold>
  <isItalic>0</isItalic>
  <Alignment>0</Alignment>
</DefaultTextStyle>
<MapTitleStyle>
  <Opacity>80</Opacity>
  <Size>24.00</Size>
  <Alignment>1</Alignment>
</MapTitleStyle>
<AddThemeLegend>true</AddThemeLegend>
<AddBasemapLegend>true</AddBasemapLegend>
<LegendTitleStyle>
  <Size>12.0</Size>
</LegendTitleStyle>
<LegendTextStyle>
  <Size>9.0</Size>
</LegendTextStyle>
<AddScaleBar>true</AddScaleBar>
<AddScaleText>true</AddScaleText>
<AdditionalInformationText>OCAD ThematicMapper sample map</AdditionalInformationText>
</File.CreateThematicMap>

<File.Save>
  <Enabled>true</Enabled>
```

```
</File.Save>
</OcadScript>
```

XML Script Partial Map

Node <OcadScript>	Parameter	Data type	Values / Description
Export	File coordSystem L, R, B, T	String Enum types Float	eg.: , c:\export\PartialMap1.ocd ' OCAD creates files PartialMap1_#verticalPages_#horizontalPages.ocd mm (paper, m (real world) left, right, bottom, top
Export.loop	Enabled HorizontalPages VerticalPages HorizontalOverlap VerticalOverlap	Bool Integer Integer Float Float	true, false number of pages in horizontal direction number of pages in vertical direction horizontal overlap in [mm] or [m] vertical overlap in [mm] or [m]

Example

The following example exports parts of an ocad map.

```
<ocadScript> // comment
  <partialMapScript><br>
    <export id="0"> // first export section
      <file>c:\export\PartialMap1.ocd</file> // export file
      <coordSystem>mm</coordSystem> // paper oder real world coordinates
      <T>100</T> // export rectangle with Top Left point and Bottom Right point
      <L>0</L>
      <B>50</B>
      <R>50</R>
      <loop> // the loop export several ocd files. For this example 21 files.
        <enabled>>true</enabled>
        <horizontalPages>7</horizontalPages>
        <verticalPages>3</verticalPages>
        <horizontalOverlap>10</horizontalOverlap> // horizontal and vertical overlap.
        <verticalOverlap>10</verticalOverlap>
      </loop>
    </export>

    <export id="1"> // second export section
      <file>c:\export\PartialMap2.ocd</file>
      <coordSystem>mm</coordSystem>
      <L>0</L>
      <R>50</R>
      <B>50</B>
      <T>100</T>
      <loop> // export only one ocd file
        <enabled>>false</enabled>
      </loop>
```

```

</export><br>
</partialMapScript>
</ocadScript>

```

XML Script Print

Print parameters can be saved in a XML script.

Node <OcadScript>	Parameter	Data type	Values / Description
File.Print.Printer	Name DmPaperSize DmDefaultSource DmPrintQuality DmColor DmMediaType	String Integer Integer Integer Integer Integer	Eg. ',HP Color LaserJet 2840 PCL' File->Print->Save XML Script->Open the Script and depending on which printer was choosen, the informations are there.
File.Print.Portrait	Enabled	Bool	true, false
File.Print.SpotColor	Enabled Colors	Bool String	true, false Name of the spot color(s)
File.Print.PartOfMap	Range Coordinates L, R, B, T	Integer Enum types Float	1 mm (page), m (real world) Left, Right, Bottom, Top
File.Print.HorizontalOverlap		Float	
File.Print.VerticalOverlap		Float	
File.Print.PrintScale		Integer	Eg. 25000
File.Print.Copies		Integer	Number of copies
File.Print.Intensity		Integer	
File.Print.LineWidth		Integer	
File.Print.PrintScreenGrid	Enabled PrintScreenGridColor	Bool Integer	true, false Ocad color number

XML Script Export

Watch out for the file endings.

Resolution is only used if File.Export.GeoRef -> Enabled = false

AI (Adobe Illustrator), PDF

Node <OcadScript>	Parameter	Data type	Values / Description
File.Export	File Format Resolution ExportScale	String Enum types Integer Integer	eg.: .c:\Export\Chlosterwald.ai' AI, PDF in dpi [40..2540] (only if the map has raster background maps) eg. '10000' for the scale 1:10'000
File.Export.PartOfMap	Enabled Coordinates L, R, B, T	Bool Enum types Float	true, false mm (page), m (real world) left, right, bottom, top
File.Export	Colors	Enum types	normal, spotColors
File.Export.SpotColors	Combine Enabled	Bool String	true, false [only if Colors = spotColors] Spotcolor name [only if Colors = spotColors]

BMP, GIF, JPEG, PNG

Node <OcadScript>	Parameter	Data type	Values / Description
File.Export	File Format Quality Resolution Anti-Aliasing ColorCorrection	String Enum types Integer Integer Boolean Boolean	eg.: .c:\Export\Chlosterwald.bmp' BMP, GIF, JPEG, PNG only for JPEG, [0..100] in dpi [40..2540] true, false true, false
File.Export.PartOfMap	Enabled Coordinates L, R, B, T	Bool Enum types Float	true, false mm (page), m (real world) left, right, bottom, top for rotated maps use here the coordinate of the upper left und lower right corner
File.Export.Tiles	Enabled Width Height	Boolean Integer Integer	true, false [only if Enabled = true] [only if Enabled = true]
File.Export.GeoRef	Enabled PixelSize CreateWorldFile	Bool Float Bool	true, false in meter [only if Enabled = true] true, false [only if Enabled = true]

EPS

Node <OcadScript>	Parameter	Data type	Values / Description
File.Export	File Format ExportScale	String Enum types Integer	eg.: .c:\Export\Chlosterwald.eps ' EPS e.g. '10000' for the scale 1:10'000
File.Export.PartOfMap	Enabled Coordinates L, R, B, T	Bool Enum types Float	true, false mm (page), m (real world) left, right, bottom, top
File.Export	Colors	Enum types	normal, spotColors
File.Export.SpotColors	Enabled	Spotcolor name	[only if Colors = spotColors]

SVG (Scalable Vector Graphics)

Node <OcadScript>	Parameter	Data type	Values / Description
File.Export	File Format ExportScale CompressFile	String Enum types Integer Boolean	eg.: .c:\Export\Chlosterwald.svg ' SVG e.g. '10000' for the scale 1:10'000 true, false
File.Export.PartOfMap	Enabled Coordinates L, R, B, T	Bool Enum types Float	true, false mm (page), m (real world) left, right, bottom, top

TIFF

Node <OcadScript>	Parameter	Data type	Values / Description
File.Export	File Format Resolution Anti-Aliasing ColorCorrection	String Enum types Integer Boolean Boolean	eg.: .c:\Export\Chlosterwald.tif TIFF in dpi [40..2540] true, false true, false
File.Export.PartOfMap	Enabled Coordinates L, R, B, T	Bool Enum types Float	true, false mm (page), m (real world) left, right, bottom, top
File.Export.Tiles	Enabled Width Height	Bool Integer Integer	true, false [only if Enabled = true] [only if Enabled = true]
File.Export.GeoRef	Enabled PixelSize CreateWorldFile	Bool Float Bool	true, false in meter [only if Enabled = true] true, false [only if Enabled = true]
File.Export	Colors	Enum types	normal, spotColors
File.Export.SpotColors	Combine Enabled	Bool Spotcolor name	true, false [only if Colors = spotColors] [only if Colors = spotColors]
File.Export	ColorMode	Integer	0 = 32 bit CMYK 1 = 24 bit RGB 2 = 256 colors 3 = grayscale 4 = 8 bit CMYK 5 = 1 bit black/white 6 = halftone screen [only if spotColor = true]
File.Export	Compression	Integer	1 = no compression 2 = CCITT [only used with ColorMode 5/6] 4 = FaxG4 [only used with ColorMode 5/6] 5 = LZW

DXF

Node <OcadScript>	Parameter	Data type	Values / Description
File.Export	File	String	eg.: ;c:\Export\Chlosterwald.dxf
	Format	Enum types	'
	ExportScale	Integer	DXF
	ConvertAnsiToOem	Boolean	e.g. '10000' for the scale
	ConvertOemToUnicode	Boolean	1:10'000
	ObjectsSelectedSymbols	Boolean	true, false
	AddSymbolDescription	Boolean	true, false
	UseCrtFileName	String	true, false
	ExportAsSplines	Boolean	true, false
	Coordinates	Enum types	eg.: ;c:\CRT\Chlosterwald.crt' true, false m, mm

Shape

Node <OcadScript>	Parameter	Data type	Values / Description
File.Export	ExportPath	String	eg.: ;c:\Export' (only path name)
	File	String	eg.: ;c:\Export\test.shp' (using ExportPath OR File, not both)
	Format	Enum types	SHAPE
	PointObjects	Boolean	true, false
	LineObjects	Boolean	true, false
	AreaObjects	Boolean	true, false
	TextObjects	Boolean	true, false
	Dataset	Boolean	true, false
	WordWrap	String	all for all databases
	ProjectionFile	Integer	1, 2, 3, ... for only one database
	Utf8Encoding	Boolean	true, false
		Boolean	true, false
		Boolean	true, false

Example

The following example exports two pdf files in spot colors and two Shape files. Each OcadScript node can contain many children.

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<OcadScript>

  <File.Open>
    <File>M:\OCAD2018\Changes\11-06xx\11-0663\Chlosterwald.ocd</File>
  </File.Open>

  <File.Export> //PDF export
    <File>M:\OCAD2018\Changes\11-06xx\11-0663\output\Chlosterwald.pdf</File>
    <Format>PDF</Format>
    <PartOfMap>
      <Enabled>true</Enabled>
      <Coordinates>mm</Coordinates>
    </PartOfMap>
  </File.Export>
</OcadScript>
```

```
<R>50</R>
<B>50</B>
<T>100</T>
</PartOfMap>
<ExportScale>10000</ExportScale>
<Colors>spotColors</Colors>
<SpotColors>
  <Combine>>false</Combine>
  <Enabled>Blau</Enabled>
  <Enabled>Gelb</Enabled>
</SpotColors>
</File.Export>

<File.Export> //Shape export
  <ExportPath>M:\OCAD2018\Changes\11-06xx\11-0663\output\</ExportPath>
  <Format>SHAPE</Format>
  <PointObjects>>false</PointObjects>
  <LineObjects>>true</LineObjects>
  <AreaObjects>>true</AreaObjects>
  <TextObjects>>false</TextObjects>
  <Dataset>all</Dataset>
  <WordWrap>>true</WordWrap>
  <ProjectionFile>>false</ProjectionFile>
</File.Export>

<File.Save>
  <Enabled>>true</Enabled>
</File.Save>

<File.Close>
  <Enabled>>true</Enabled>
</File.Close>
</OcadScript>
```

Run XML Script from the Command Line

It is possible to execute a XML script file from the command line or from batch file.

Open the Windows command and enter the OCAD program name and the xml script file. For example: "C:\Program Files\OCAD\OCAD 2018\Ocad2018.exe" "C:\Data\ExportScriptExample_PDF.xml"

Do not forget to use the parameter <File.Open> to open the file, <File.Close> to close it and <File.Exit> to close OCAD.

Open ocd File from the Command Line

It is possible to open an ocd file from the command line with optional view parameters.

Open the Windows command and enter the OCAD program name and the ocd file name.

For example:

```
"C:\Program Files\OCAD\OCAD 2018\Ocad2018.exe" "M:\Data\Map.ocd"
```

Additional OCAD supports the following optional view parameters to open a map at desired position and view scale.

```
-c: center for view  
-s: view scale
```

For example:

```
"C:\Program Files\OCAD\OCAD 2018\Ocad2018.exe" -c 710000,231000 -s 2500 "M:\Data\Map.ocd"
```

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Create Backup

Create Backup



To create a backup of the currently opened file:

1. Choose the **Create Backup** command in the **File** menu.
2. The **Backup** dialog appears.
3. OCAD creates a new folder called **Backup** and suggests a name for the backup file, which consists of the current date and time and the file name. Alternatively, you can enter an own name.
4. Click the **Save** button to save the backup.

This function has not the same effect as the **Save As** function. After saving the backup you are still working on the old file.

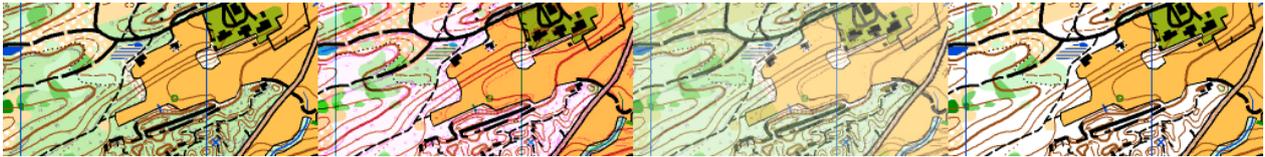
[Back to the File page.](#)

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Menu View

View

View Mode



There are four different view modes:

Normal Mode

In the Normal Mode the map objects appear absolutely intransparent and lie over the Background Map.

Spot Color Mode

This command gets a simulation of the spot color printing. It's enabled if at least one spot color has been defined.

Draft Mode

In the draft mode the map is displayed transparent and the background maps are visible.

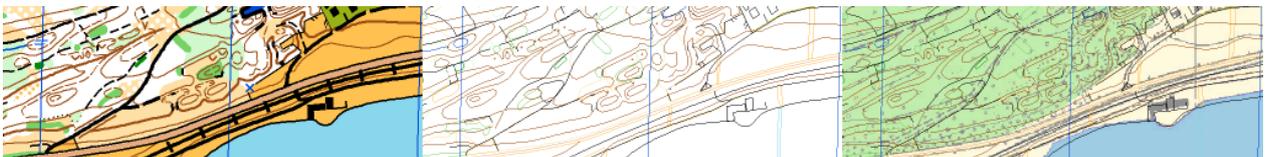
Draft Mode (Only Background Map Favorites)

This view mode has the same characteristics as the Draft Mode, with the exception that only background maps marked as favorites are displayed.

Visit the **View Mode** page to get more information about the view modes.

Keyline

Mas



Visit the **Keyline** page to get some information about the **Keyline** mode.

Hatch Areas

Mas Ori Sta View



Visit the **Hatch Areas** page to get some information about the **Hatch Areas** mode.

Anti-Aliasing

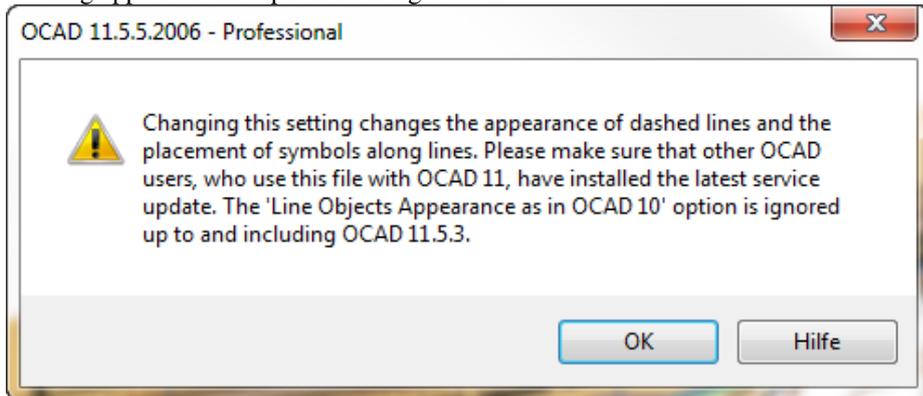


Visit the **Anti-Aliasing** page to get some information about **Anti-Aliasing**.

Line Objects Appearance as in OCAD 10



This option sets the appearance of dashed lines as it was in former OCAD versions (OCAD 10 and earlier). This option is unchecked by default. If it is checked then dashed lines appear as in OCAD 10. If the option is unchecked, then dashed lines' appearance is based on the new more precise calculation introduced in OCAD 11. Please make sure that other OCAD users, who use this file with OCAD 11, have installed the latest service update. The *Line Objects Appearance as in OCAD 10* option is ignored up to and including OCAD 11.5.3. For this reason a warning appears if this option is changed:



Example

Line Appearance in OCAD 11 and later (left image) and OCAD 10 and earlier(right image). Path and form line dashes can be different.

💡 Please note that you can avoid unwanted gaps by placing **dash vertices** at critical places like bifurcations or tight curves.



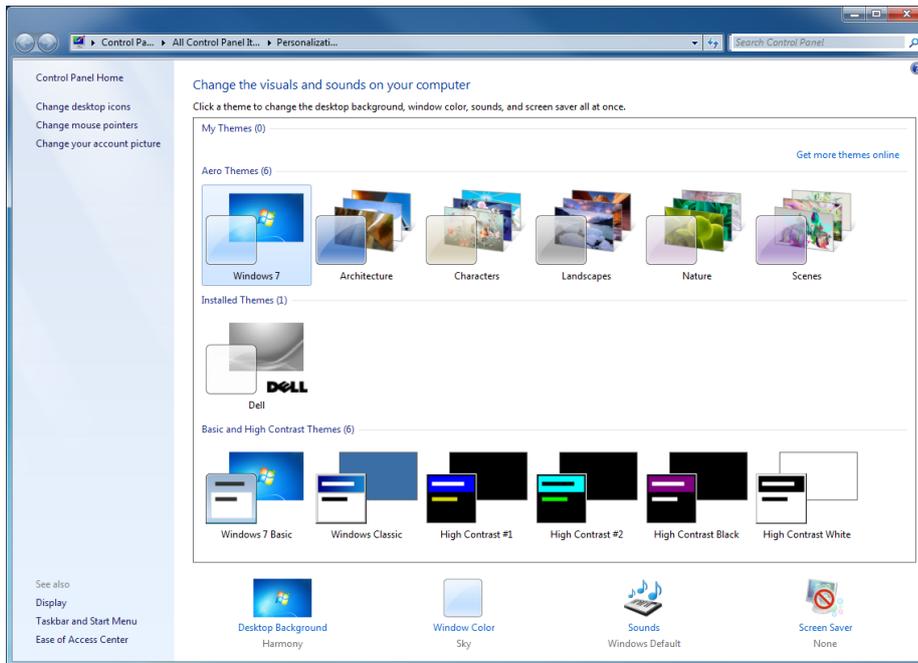
Redraw

Mas Ori Sta View CS

Choose this command from the **View** or press the **F5** key (**Shortcut** by default) to redraw the map on the screen. This is especially useful when the displayed map is out of date due to editing operations (like deleting area objects). By default, the map is redrawn automatically after editing it. If you want to disable the automatic redrawing, uncheck the **Redraw background automatically** option in the **View** category of **OCAD Preferences**.



For Windows Vista and 7 users: We recommend to use an Windows Aero Theme. You can change the theme in *Control Panel\All Control Panel Items\Personalization*. The Themes *Windows Basic* and *Windows Classic* lead to many unnecessary screen redrawings in OCAD.



Pan

Mas Ori Sta View CS

Choose **Pan** in the **View** menu, press the **F6** key (**Shortcut** by default) or click the  **Pan** icon in the **View Toolbar** to activate the **Pan** tool. With this tool you can move to another part of the map. Drag the map to the desired location. After you dragged once the cursor changes to the previous mode (e.g. **Select Object and Edit Vertex** mode). If you want to use the **Pan** mode several times, use the  **Pan locked** tool.



You can also hold the **Space** key or the mouse wheel to change to **Pan** mode.

Pan Locked

Mas Ori

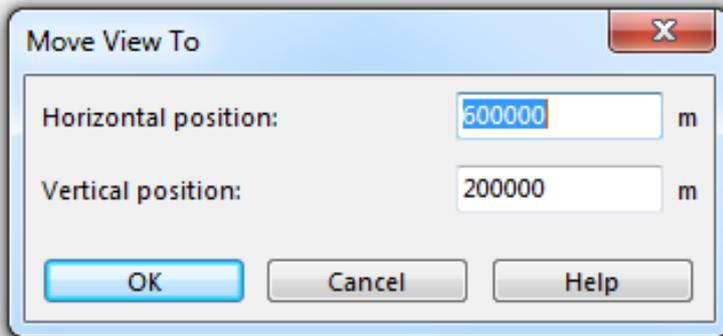
Click the  **Pan Locked** icon in the **View Toolbar** to activate the **Pan Locked** tool. With this tool you can use the **Pan** mode several times. Press the **Esc** key or another toolbar button to exit the **Pan** mode.

 You can also hold the **Space** key to change to **Pan** mode.

Move To

Mas Ori

Choose this command in the **View** menu to move the view to a desired position. The **Move View To** dialog appears.

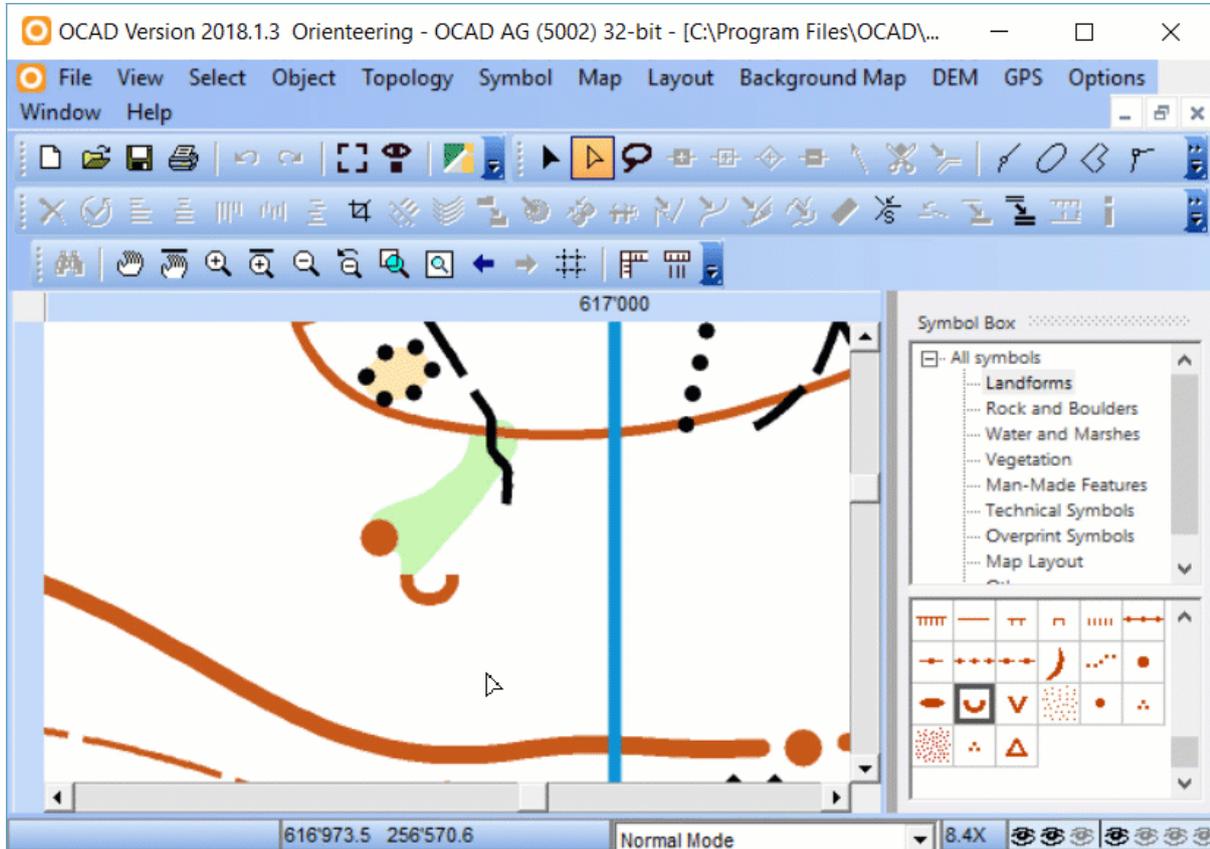


Enter the **Horizontal** and **Vertical position** in real world coordinates (or paper coordinates, if no real world coordinates are set up) and click the **OK** button. To set up the real world coordinates choose **Scale and Coordinate System** from the **Map** menu.

Find Selected Objects Mas Ori

If you have objects on the map selected, choose this command in the **View** menu or click the  **Find Selected Objects** icon in the **Edit Functions Toolbar** to move the view to those selected objects. The selected objects are displayed in the middle of the drawing area.

If multiple objects are selected, you can use this function to center the view to all selected objects in sequence.



Zoom

Zoom In Mas Ori Sta View CS

Choose the **Zoom In** command in the **View** menu, click the  **Zoom In** button in the **View toolbar** or press the **F7** key (**Shortcut** by default) to display the map with a higher magnification. There are two options to zoom into the map:

- Drag a rectangle with the mouse pointer around a desired area to see this area magnified.
- Click on the drawing area to get the double magnification of the current map view at the point you clicked.

After zooming in once, the cursor changes to the previous mode (e.g. **Select Object and Edit Vertex** mode).



Alternatively, hold the **Ctrl** key and use the mouse wheel to zoom in and out.

Zoom In Locked

Mas Ori

Click  **Zoom In Locked** button in the **View Toolbar** to use the **Zoom In** mode several times. Press the **Esc** key or another toolbar button to exit the **Zoom In** mode.

Zoom Out

Mas Ori Sta View CS

Choose the **Zoom Out** command in the **View** menu, click the  **Zoom Out** button in the **View toolbar** or press the **F8** Key (**Shortcut** by default) to see a larger area of the map. The view is always reduced by half.



Alternatively, hold the **Ctrl** key and use the mouse wheel to zoom in and out.

Zoom Out to Previous View

Mas Ori

Click the  **Zoom Out to Previous View** button in the **View** toolbar to reduce the view of the map to the previous view. If there is no previous view which is smaller than the current one, this function has the same effect as the **Zoom Out** function.

Zoom to Selected Objects

Mas Ori

If you have some objects selected, choose this command  in the **View** menu to zoom the view to them.

Show Entire Map

Mas Ori Sta View CS

Choose the **Show Entire Map** command in the **View** menu or click the  **Show Entire Map** button in the **View Toolbar** to see the entire map on the screen. The scroll bars will be adjusted to the entire map.

Zoom to Previous View

Mas Ori Sta View CS

Click the  **Zoom to Previous View** button in the **View Toolbar** to change the view to the previous one. This function is similar to the **Undo** function, but applies only for the view.

Zoom to Next View

Mas Ori Sta View CS

Click the  **Zoom to Next View** button in the **View Toolbar** to change the view to the next one. This function is similar to the **Redo** function, but applies only for the view.

Zoom

Mas Ori Sta View CS

Choose the **Zoom** command in the **View** menu to change to one of the following zoom levels. The **Shortcuts** by default are indicated in brackets.

- 0.1x
- 0.25x (Shift+F5)
- 0.5x (Shift+F6)
- 1x (Shift+F7)
- 2x (Shift+F8)
- 4x (Shift+F9)
- 8x (Shift+F10)
- 16x (Shift+F11)
- 32x (Shift+F12)
- 64x (Shift+Ctrl+F12)



The current zoom level is displayed in the **Status Bar**.

User Defined

Mas Ori

Choose the **User Defined** command in the **View** menu to change the magnification of the map to a user defined factor. This factor can be defined in the **View** category of **OCAD Preferences** in the **Options** menu.

Bookmarks

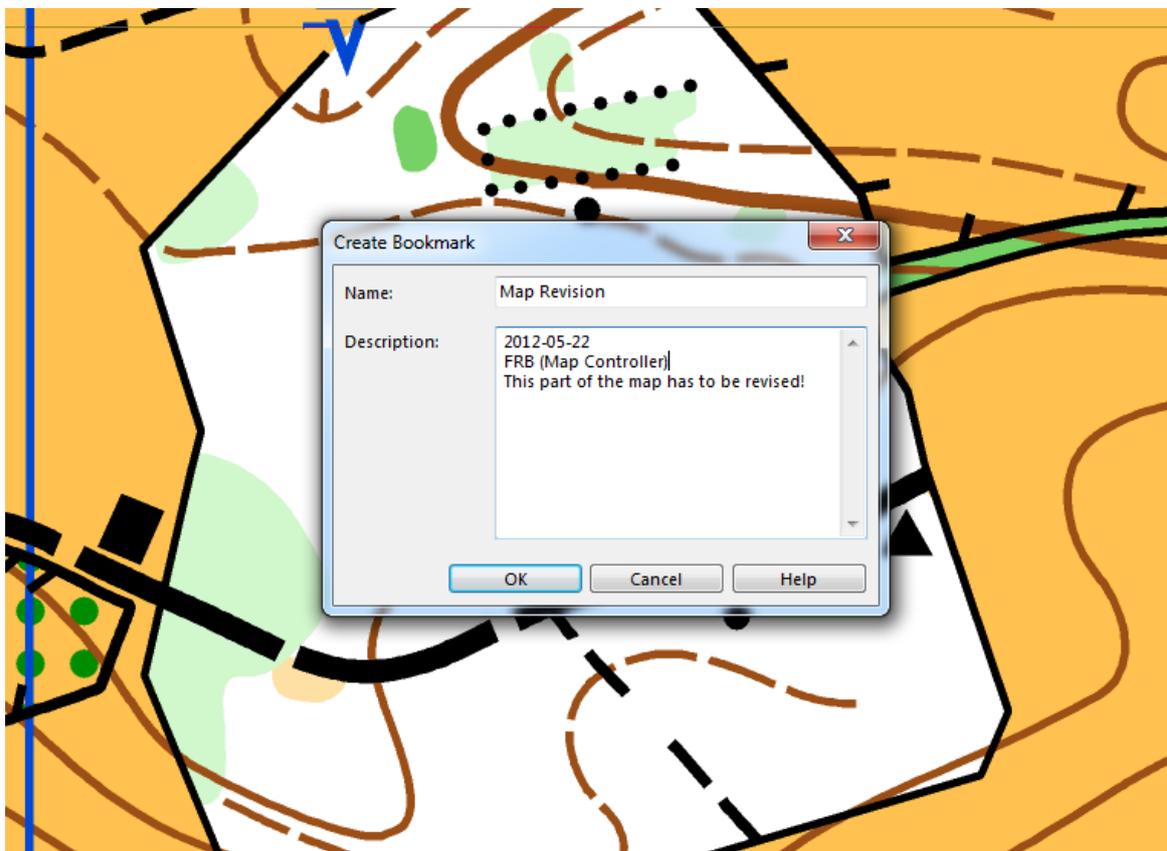
Mas Ori

Choose the **Bookmarks** command in the **View** menu to create and manage bookmarks.

Bookmarks are stored views of the map, which can be easily retrieved. In addition, you can add a name and a description to the bookmark.

Create a Bookmark

1. Zoom to the view you want to store, i.e. you want to create a bookmark.
2. Choose **Bookmarks** and then **Create** in the **View** menu.
3. The **Create Bookmark** dialog box appears.



4. Enter a name and a description for the bookmark.
5. Click the **OK** button.

Retrieve a Bookmark

1. Select **Bookmarks** in the **View** menu.
2. In the submenu you can see your bookmarks listed. Choose a bookmark to display the stored view of the map.

💡 If you have saved a comment, it is displayed in the Status Bar.

Manage Bookmarks

1. Select **Bookmarks** and then **Manage** in the **View** menu to manage bookmarks.
2. The **Manage Bookmarks** dialog appears.
3. Select a bookmark in the **Name** box. You have the following options now:
 - You can edit the description.

- You can delete the bookmark by clicking the **Delete** button.
 - You can change the stored view by clicking the **Update window** button. The current view is overwritten with the previous one.
4. Click the **OK** button to save the changes or click the **Cancel** button to quit the dialog without saving any changes.

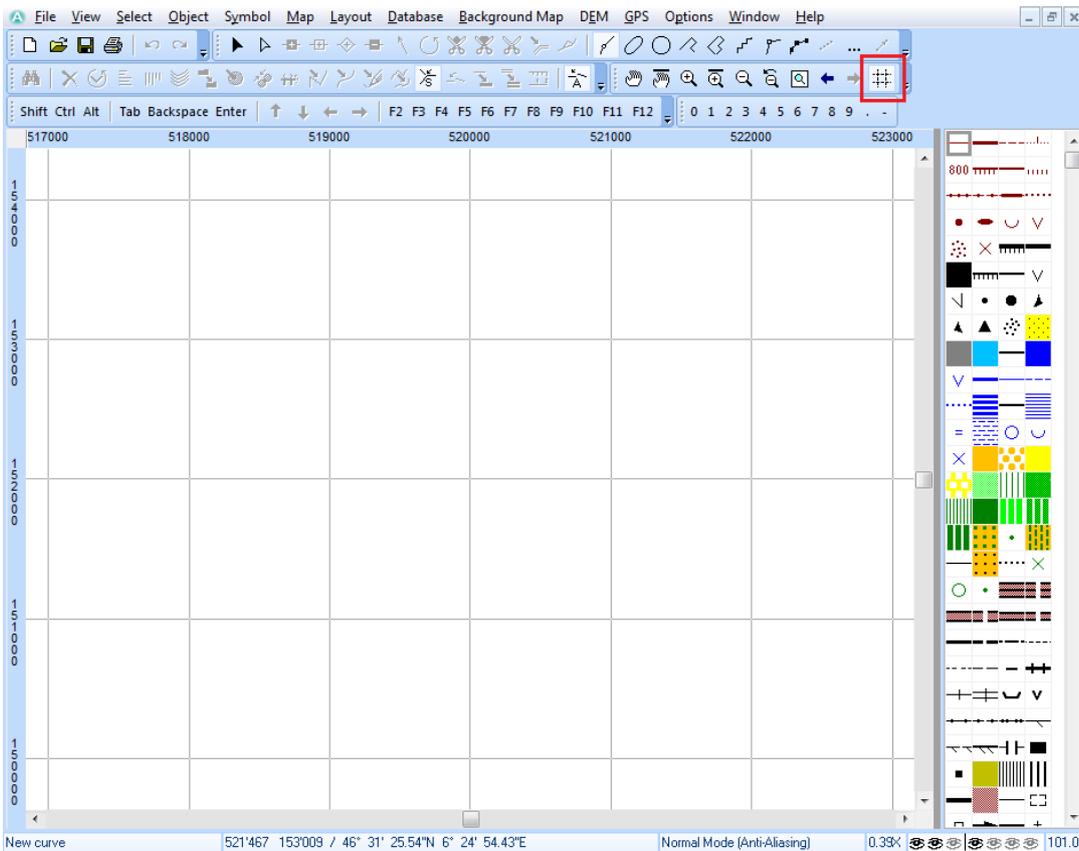
 The number of bookmarks is limited by 64.

 Bookmarks ^[1]

Show Screen Grid



Enable the **Show Screen Grid** command in the **View** menu or click the  **Show Screen Grid** button in the **View Toolbar** to show a grey grid in the drawing window.



Choose **Scale and Coordinate System** from the **Map** menu to define the screen grid distance. The color and style of the screen grid can be changed in the **OCAD Preferences**.

Show Rulers

Mas Ori

Click on this funktion and rulers are shown around the drawing area. Visit the **Show Rulers** page to get more information.

Ruler Guides

Mas Ori

Add and manage vertical or horizontal ruler guides. Visit **Ruler Guides** for more information.

[Back to Main Page](#)

References

[1] <http://ocad.com/howtos/124.htm>

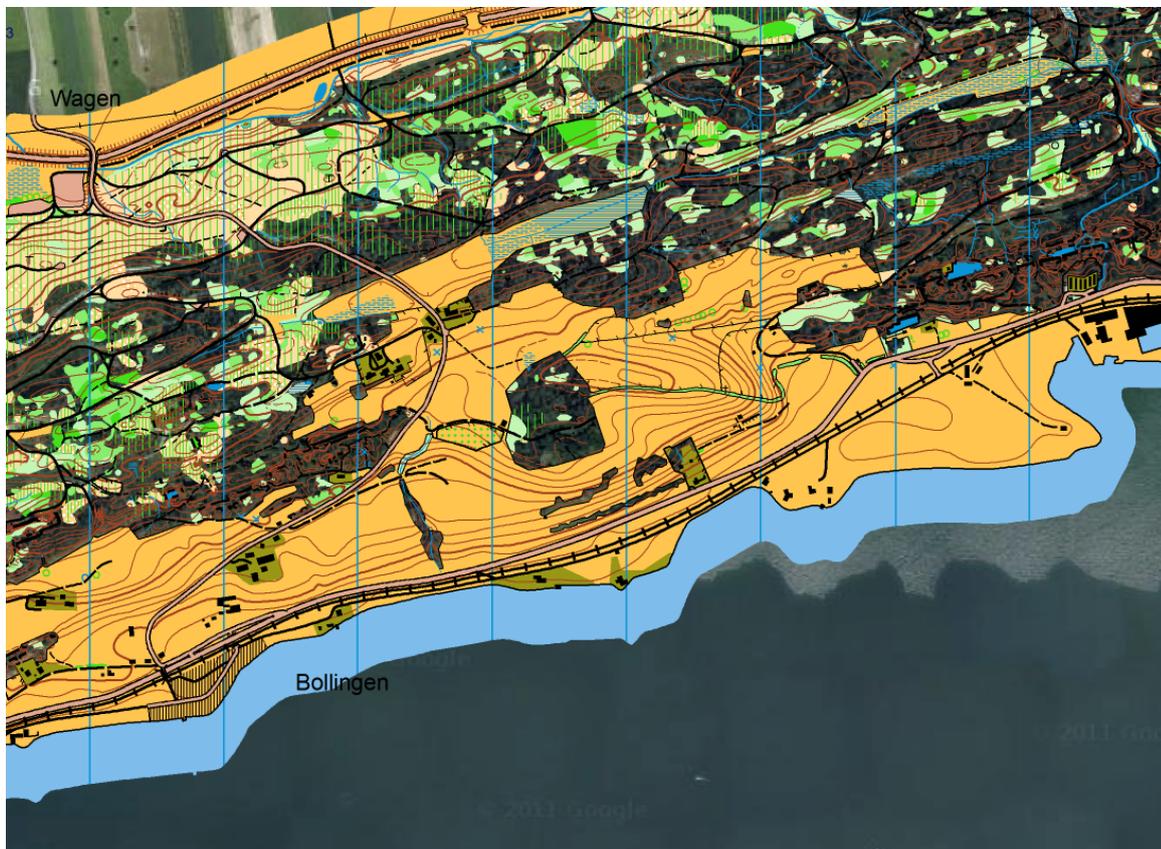
View Mode



Normal Mode

Mas Ori Sta View CS

In the **Normal Mode** the map objects appear absolutely intransparent and lie over the **Background Map** which looks as follows:



Spot Color Mode

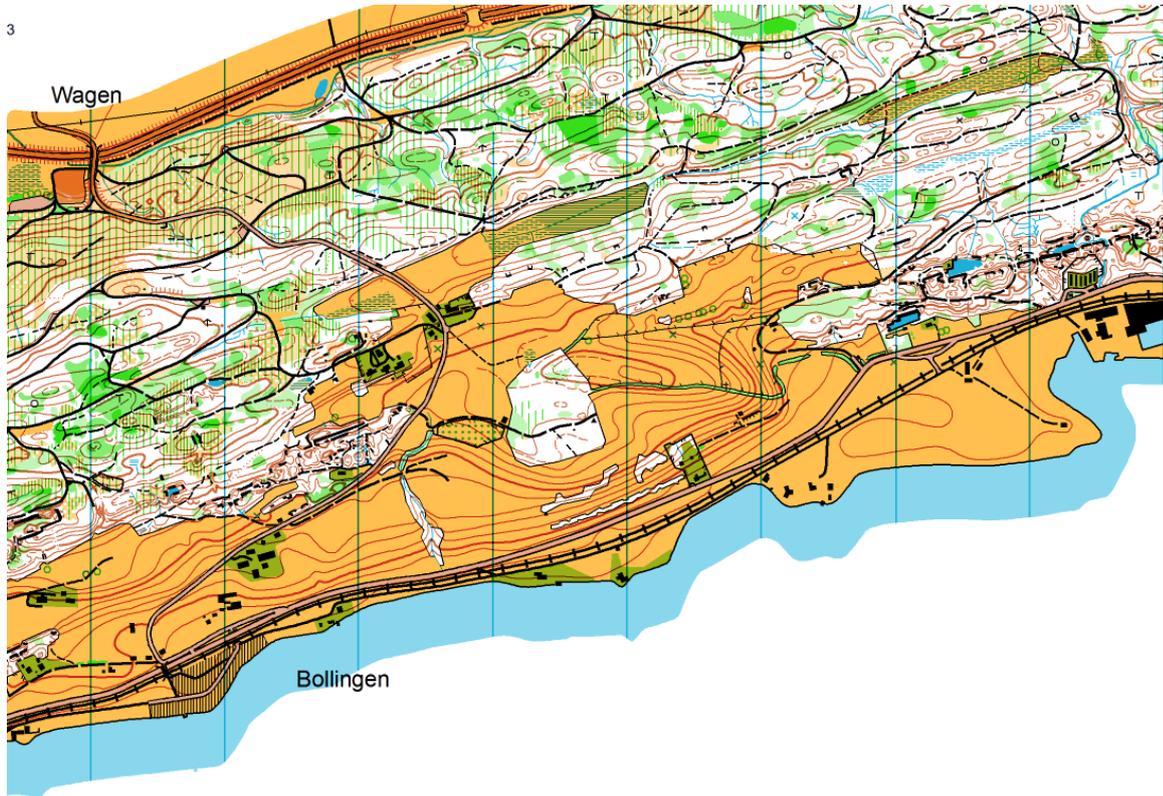


This command is enabled if at least one spot color has been defined (**Define Spot Colors**).

Choose this command to get a simulation of the spot color printing. Choose the **Spot Colors** command from the **Map** menu to define how the spot colors appear on the screen.

Raster **Background Maps** are only visible if these are assigned to a spot color in the **Background Map** dialog. OCAD **Background Maps** are always hidden.

Spot colors appear transparent to get a simulation of the final printing result.



Draft Mode



Choose this command in the **View** menu to display the map and the **Background Maps** in the draft mode. The draft mode slider  appears in the **View Toolbar**.

In the draft mode the map is display transparent and the background maps are visible.

With the draft mode slider you can set the transparency for the map and the background maps.

Use the upper slider (M stands for **Map**) for the **Map** and the lower slider (B stands for **Background Maps**) for the **Background Maps**.

- 0 (slider left) means that the map is invisible.

- 100 (slider right) means full transparency.

 The draft mode replaces the **Transparent Mode** from OCAD 8. To set a color opacity choose the **Colors** command from the **Map** menu. Set the opacity for each color.



Draft Mode Only Background Map Favorites

Mas Ori

Choose the **Draft Mode (Only Background Favorites)** command in the **View** menu to change to this view mode. This view mode has the same characteristics as the **Draft Mode**, with the exception that only background maps marked as favorites are displayed. Visit the **Visibility Features** article of the **Background Map** page to learn how to set a background map to the favorites.

View Mode Loop

Mas Ori

Define View Mode Loop

With the **View Mode Loop** you can switch between different view modes using a **Shortcut**.

In the **View** category of the **OCAD Preferences** found in the **Options** menu you can declare which view modes shall be included in the **View Mode Loop**. All four view modes are available: **Normal Mode**, **Spot Color Mode**, **Draft Mode** and **Draft Mode (Only Background Favorites)**.

Choose the **Shortcuts** command in the **Options** menu to assign a **Shortcut**. Search for the **View - View mode loop** entry in the shortcut list. Select it and choose a shortcut from the **Shortcut** dropdown menu (e.g. F11). Click the **Close** button to finish.

Next View Mode in Loop

By using your defined shortcut (e.g. pressing the **F11** key), you can switch between the view modes selected in **OCAD Preferences**.

Back to the **View** page.

Keyline

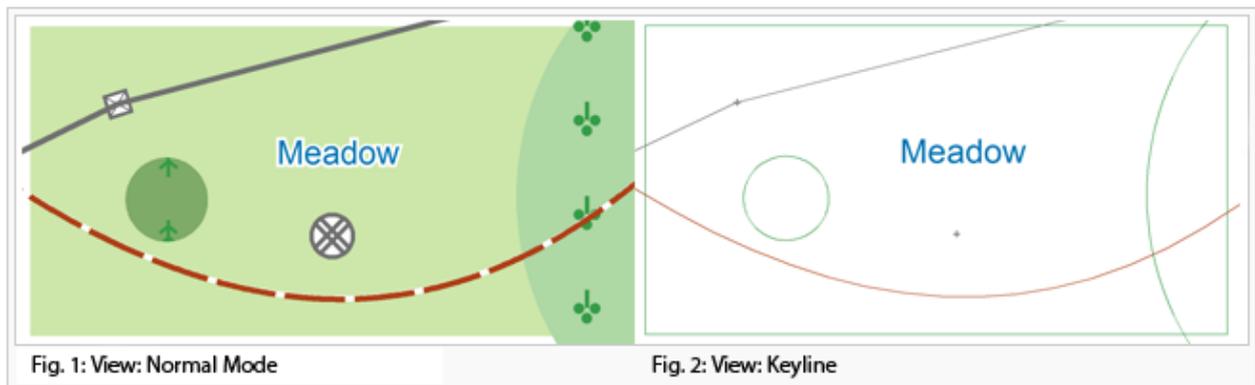


Mas

Check **Keyline** in the **View** menu to change the view into **Keyline** mode.

This view mode reduces objects to the fundament.

- Area objects: Only the border line is displayed in the main color of the object. White is converted to black.
- Line objects: A thin line in the main color of the line object is displayed. White is converted to black.
- Point objects: Instead of the point object, a cross is displayed in the main color of the symbol.
- Text objects: Only the letter outlines appear.



 The topology of the map is shown (e.g. because of the thin lines you can distinguish if an area is completely closed or not).

Back to the **View** page.

Hatch Areas



Choose this mode in the **View** menu to hatch all area objects so that they become transparent. Other objects are displayed normally.

This view mode is obsolete. We recommend to use the **Draft mode** or the **Keyline mode**.

Example:



 Please note that the hatched areas mode is not available for course setting projects.

Back to the **View** page.

Anti-Aliasing

Mas Ori Sta View CS

The **Anti-Aliasing** view option in the **View** menu removes the jaggies (aliasing) during the screen representation, as the edges of the objects are smoothed.

The **Anti-Aliasing** mode makes the screen redraw slower.

The **Anti-Aliasing** mode is automatically switched off in the zoom levels higher than 16x.

The screen redrawing in **Anti-Aliasing** and **Spot Colors** mode is quite slow if the map has a lot of objects or big raster background maps are loaded. In this case we recommend to switch off **Anti-Aliasing**.



Read more about Anti-Aliasing on Wikipedia ^[1].

Back to the **View** page.

References

[1] <http://en.wikipedia.org/wiki/Antialiasing>

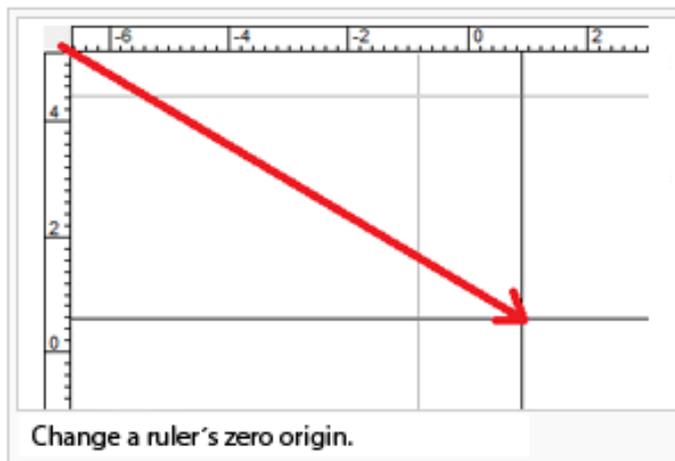
Show Rulers

Mas Ori

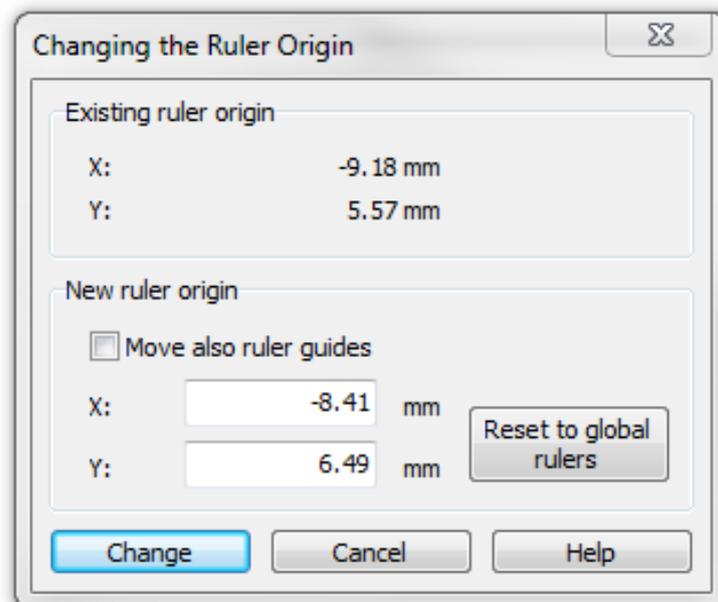
Check **Show Rulers** in the **View** menu to show rulers. They appear along the top and left side of the drawing area. By default, the ruler's origin (0|0) is the same as the grid's point of origin. Disable **Show Rulers** in the **View** menu to hide rulers again. Rulers are an assistance to create the map layout.

Change a ruler's origin

1. Position the cursor over the intersection of the rulers in the upper-left corner of the window, and drag diagonally down onto the image. Mark the new origin with the emerging cross hairs.



2. The dialog box **Change the Ruler Origin** appears.



You can also enter the position of the origin manually (in mm).

Check **Move also ruler guides** to move the **Ruler Guides**, too.

Click on **Reset to global rulers** to change the origin to default ((0mm|0mm), which is the center of the map, hence the origin of the grid).

- 💡 -The rulers are not visible on exported or printed files.
- Changing the rulers does not influence the georeference.

-The coordinates are shown in paper coordinates (mm).

To the **Ruler Guides** page.

Back to the **View** page.

Ruler Guides

Mas Ori

Enable the **Rulers** in the **View** menu. Enable **Show** in the **Ruler Guides** submenu located in the **View** menu to display all ruler guides in the drawing area.

Place a Ruler Guide

You have two options to place a ruler guide:

- Drag from the horizontal ruler to the drawing area to create a horizontal guide or drag from the vertical ruler to the drawing area to create a vertical guide. The **Show** menu item in the **Ruler Guides** submenu located in the **View** menu must be enabled to place ruler guides in this way.
- Choose **Ruler Guides** and then **Manage** in the **View** menu.

In both cases the **Ruler Guides** dialog appears.

'The Ruler Guides' Dialog

Ruler Guides

New ruler guide

Horizontal ruler guide: 20 mm

Vertical ruler guide: 15 mm Add

Default size

A4 Portrait Add

Existing ruler guides

Horizontal ruler guides: 10.00
20.00

Vertical ruler guides: 15.00

Delete

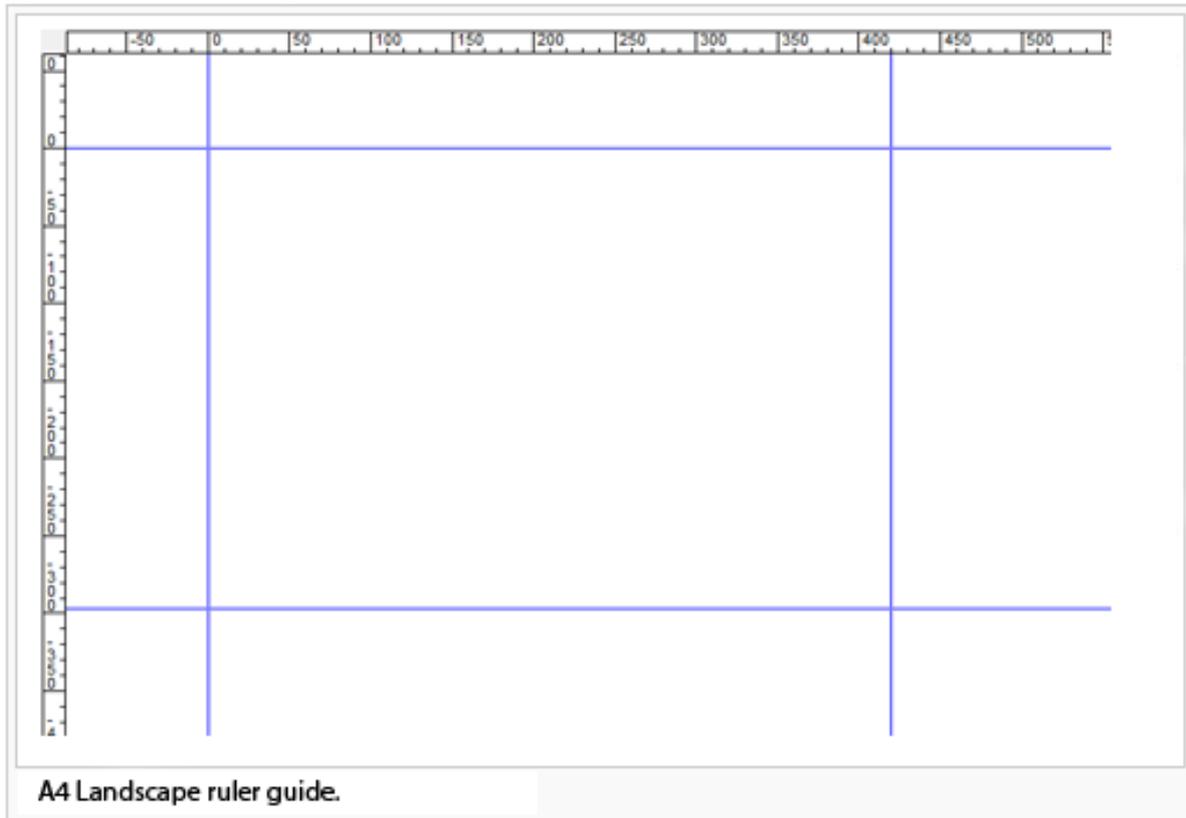
Load... Close Cancel Help

'New ruler guide' Field

If you dragged the ruler guides to the drawing area the corresponding position (in mm) is shown in the **New ruler guide** field. If you have chosen the second way to place ruler guides, enter there either a value (in mm) for a horizontal or a value for a vertical ruler guide. In both ways, click the **Add** button in the **New ruler guide** field to place the ruler guide.

'Default size' Field

In the **Default size** field of the **Ruler Guides** dialog you can place ruler guides with predefined dimensions (This is helpful if you want for example draw and print a map in DIN A4 landscape size.) Select a size from the dropdown list and click the **Add** button to place ruler guides in the chosen format. Note: The ruler's origin has to be set in the upper left corner of the map.



'Existing ruler guides' Field

In the **Existing ruler guides** field in the **Ruler Guides** dialog you can see an overview of existing ruler guides. Select one and click on the **Delete** button to delete the corresponding ruler guide.

Click on **Load** to load Ruler Guides from another ocd file.

Click on **Close** to close the **Ruler Guides** dialog box and apply all changes.

Click on **Cancel** to close the **Ruler Guides** dialog without saving any changes.



Read more about customizing the **Rulers**.



Video: Rulers ^[1]

To the **Show Rulers** page.

Back to the **View** page.

References

[1] <https://www.youtube.com/watch?v=e0faGUOK6Ns>

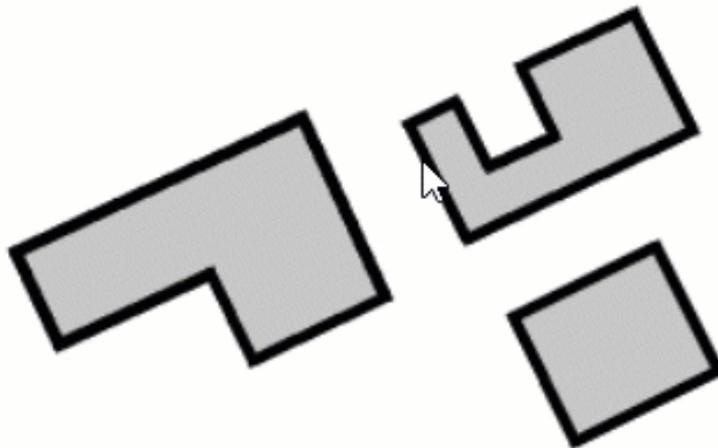
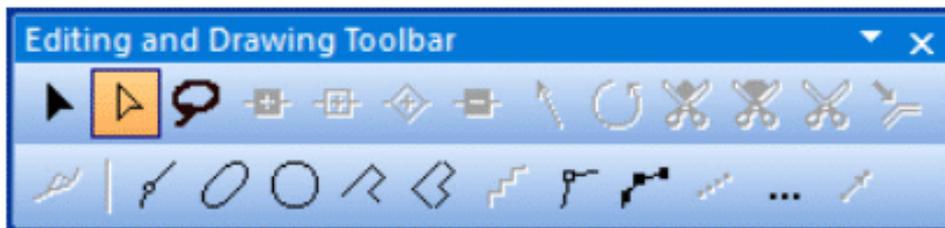
Menu Select

Select

Select and Edit Object

Mas Ori Sta CS

Choose **Select and Edit Object** in the **Select** menu or click the **Select and Edit Object** icon  in the **Editing and Drawing Toolbar** to select and edit an object. The cursor changes to a black arrow like on the icon . You are now in the **Select and Edit Object** mode.



- Objects can be selected by either clicking on them or clicking outside and drawing a window over the object. You can select multiple objects on the same time with this method.
- While moving/stretching/rotating an object, it's new position is shown with a draft line.

Stretch an Area or Line Object

If you have **Object Stretching** in the **Object** category in **OCAD Preferences** activated, you can click and drag the black squares ■ (stretching points) to stretch the object. If you want to keep the shape of the object drag one of the corner points. If you drag one of the middle points, the object is distorted in the corresponding direction. If you hold down the  key while dragging a stretching point ■, the object is stretched relative to the center.

Stretching does not work for point and text objects. If you stretch line text objects, the line is stretched and not the text.

If **Object Stretching** is not enabled, the stretching points ■ are not visible.

Move an Object

Objects can be moved by clicking inside the object and moving the mouse after the object got selected. If the mouse is in a correct spot, it changes to a cross shaped cursor \oplus .

Alternatively, click and drag one of the unfilled squares \square (moving points) to move the object. Each square represents a vertex. If a hole is selected, you can move it in the same way. Line, area and text objects don't need to be picked by their moving points to be moved, a simple click and drag in the object is sufficient.

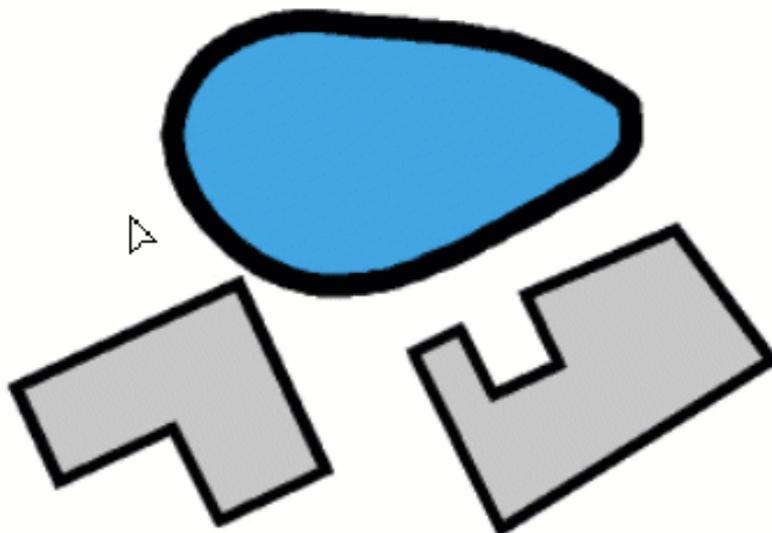
Objects can also be moved using the **Arrow Keys**. Additionally, press the **Shift** key to move the object faster.

Select Object and Edit Vertex

Mas Ori Sta CS

Choose **Select Object and Edit Vertex** in the **Select** menu or click the **Select Object and Edit Vertex** icon  in the **Editing and Drawing Toolbar** to select and edit vertices. The cursor changes to a transparent arrow like on the icon . You are now in the **Select Object and Edit Vertex** mode. Click on an object to select it.

For point objects, the middle of the symbol is represented by a large square \square . For line and area objects, the first point of the object is represented by a large square \square , vertices by small squares \square , and the last point of the object by a cross **X**. With Bézier curves, circle symbols \circ are used to represent the ends of the tangents.



- Objects can be selected by either clicking on them or clicking outside and drawing a window over the object. You can select multiple objects on the same time with this method.
- While moving vertices, a draft line shows the connection to the previous and next unmoved vertex.

Move an Object

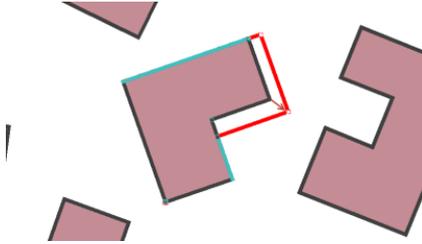
Objects can be moved by shifting vertices.

Objects can also be moved using the **Arrow Keys**. Additionally, press the **Shift** key to move the object faster.

Move Single Vertices

Once an object is selected you can move a single vertex of the selected object. Simply drag the desired point to the new position.

 Right angles are kept by holding down **SHIFT** key while moving a single vertex.



Edit Vertices

Vertices are used to define the position of points, lines and areas. There are 3 types of vertices:

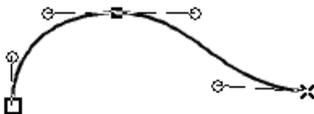
- Normal Vertex  Add normal vertex
- Corner Vertex  Add corner vertex
- Dash Vertex  Add dash vertex

Which type you choose Vertices is of importance, especially for dashed or dotted lines.

Read more on the **Vertices** page.

Edit a Bezier Vertex

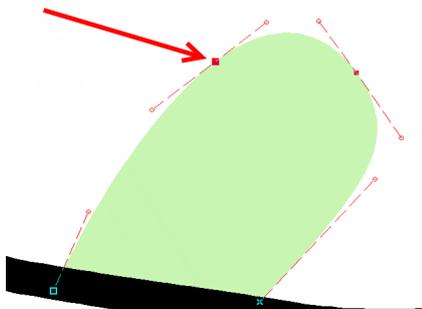
Once an object containing Bezier vertices is selected you can edit those.



Drag a tangent endpoint O to edit the tangent.

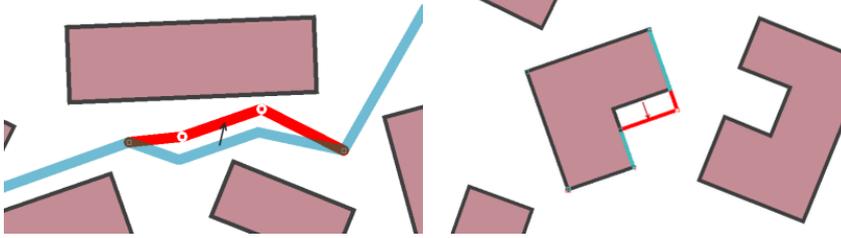
Move Vertex With Arrow Keys

It is also possible to move a vertex with arrow keys. **Double click** on a vertex and move it then with the **arrow keys**. The selected vertex gets shown a little bigger after double click.



Move a Segment

A selected object can be changed by moving its segments. Just click on the segment and drag it.



💡 **Move Line and Area Segements** needs to be activated before in the OCAD Preferences.

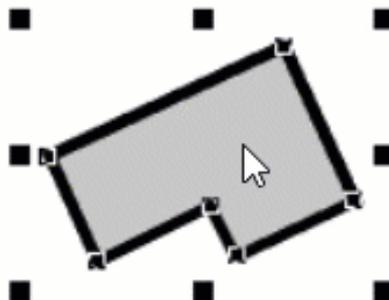
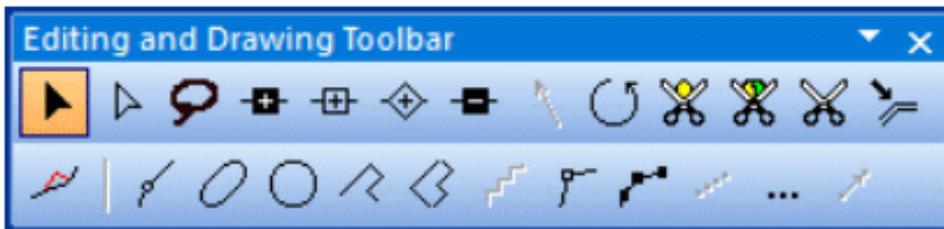
💡 If a corner is rectangular, the angle will be kept and the segment can be move only along this/these straight/s.

Select and Edit Objects and Vertices - Varia

Settings for Select and Edit Objects and Vertices

If you have enabled the **Auto select symbol when selecting object** option in the **Symbol** category of **OCAD Preferences**, the corresponding symbol is automatically selected when selecting an object. This does not work for a selection of multiple objects.

Disable **Context menu in drawing area** in the **GUI (Graphical User Interface)** category of **OCAD Preferences** to switch easily between the current **Drawing** mode and the **Select Object and Edit Vertex** mode by a simple click with the right mouse button on the drawing area. If this option is enabled, the context menu appears by clicking on the drawing area with the right mouse button. Read more about the context menu on the OCAD Preferences page.



Select a Hole in an Area

It is possible to select a hole in an area object by clicking inside the desired hole. Only the hole and its vertices will be selected. You can accomplish editing operations (e.g. **Enlarge/Reduce**, **Fill**, **Rotate**, **Move** or **Delete**) as for a normal area object. Find more about cutting holes on the **Edit Object** page.

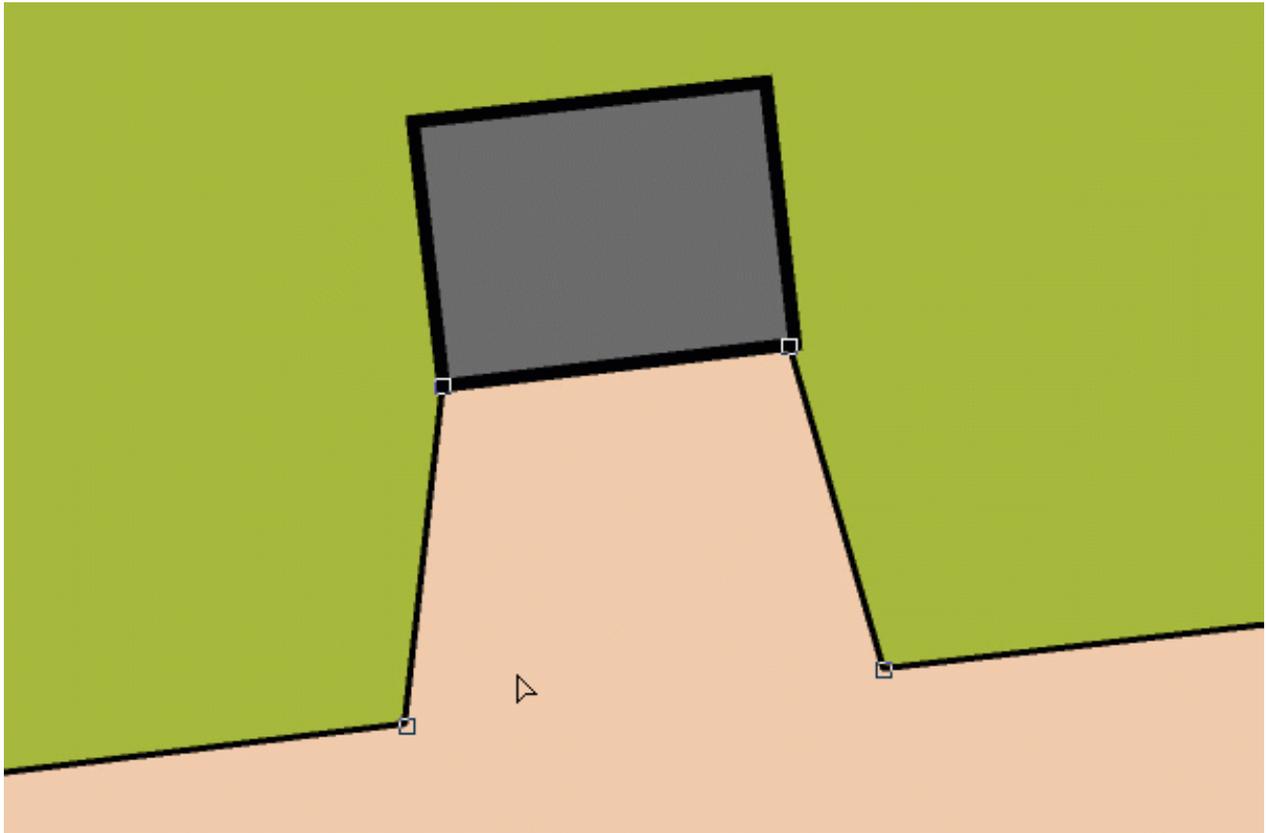
Move neighboring segments and congruent vertices

Mas Ori

If you have objects with congruent vertices and/or neighbouring segments, you can move their vertices and segments together.

- For vertices, at least three congruent vertices in a row must have **exactly** the same position.
- For segments, at least two congruent vertices in a row must have **exactly** the same position.

First select the vertex or the segment to be shifted, then press the **Tabulator key** and move the vertex/segment.



💡 This function won't work if there's even a small offset between the vertices. Use the **Ctrl** button for **line tracing**, **Snapping** or the **Fill** function to be sure the vertices of the different objects are at exact the same place.

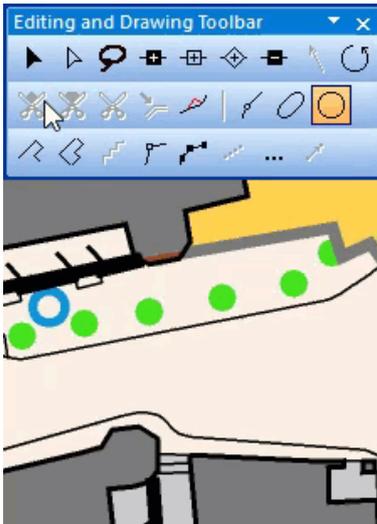
💡 Activate **Move line and area segments** to shift segments and **Move closed start and end points of line and area objects together** in the **OCAD Preferences** to not get trouble if one of the three vertices is a start or end point and.

Select and Edit Multiple Objects

Mas Ori Sta CS

Drag an area in the **Select and Edit Object** or **Select Object and Edit Vertex** mode to select all objects which are in it.

You can choose between two modes to select multiple objects in the **Select** category of **OCAD Preferences** in the **Options** menu: Either all objects must be with at least one vertex in the selection or all objects must be completely in the selection.



Alternatively, you can select every object individually by holding the **Shift** key while clicking the objects (or remove from selected objects, if already selected before).

In the **Select and Edit Object** mode it is possible to enlarge or reduce a selection of objects. For that purpose, drag one of the black squares ■ in the desired direction.

It is also possible to move a selection of objects in both modes. If you move the mouse over the selection the cursor changes its appearance to . By clicking and dragging the selection or using the arrow keys you can move it.

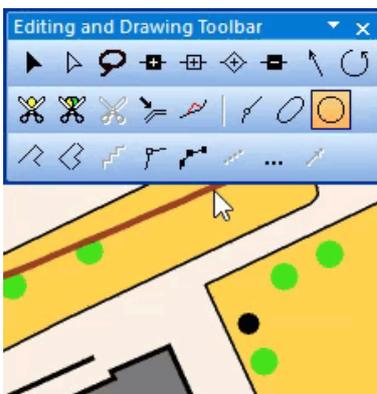
Enable the **Move multiple objects** option in the **Warnings** category of **OCAD Preferences** to get a warning message when you move multiple objects. Use this option in order to guard against moving multiple objects accidentally.

Select Object with Lasso Tool

Mas Ori

1. Choose **Select Object with Lasso Tool** in the **Select** menu or click the **Select Object with Lasso Tool** icon in the Editing and Drawing Toolbar. The transparent arrow with a loop behind shows that you are now in the Select Object with Lasso Tool mode.
2. Draw a Freehand line by holding down the left mouse button when moving the mouse cursor.
3. Finish the lasso line by leaving the left mouse key. The objects within the lasso line are selected.

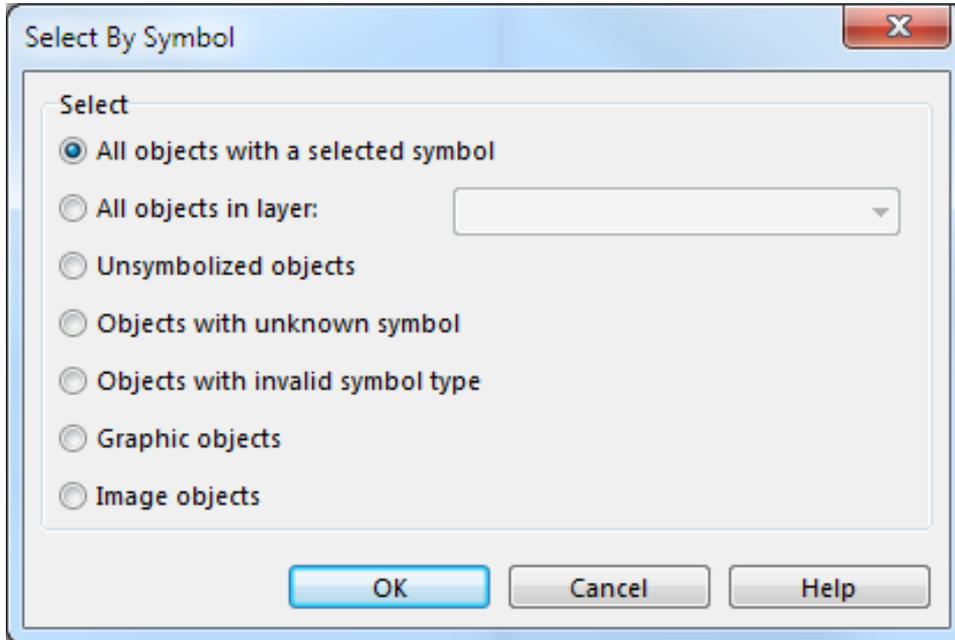
It depends from the Select Preferences if objects that are only partially within the lasso line are selected.



Select Objects by Symbol

Mas Ori Sta

Choose **Select Objects by Symbol** in the **Select** menu to select all objects with certain symbols or in a certain layer. As an example you can select all roads. The **Select By Symbol** dialog box appears.



All objects with a selected symbol

Choose this option and click on the **OK** button to select all objects with the selected symbol(s). Select the symbol(s) before you choose the **Select Objects by Symbol** command. For the example given above, select all road symbols. All roads are selected and you can for example measure their total length or make a modification to them.

All objects in layer

If you import files like PDF, DXF, Adobe Illustrator or OpenStreetMap with layer information, the layer information does not get lost, though OCAD does not support layers as they are known in Adobe Illustrator or similar applications. Choose the **All objects in a layer** option to select all objects which are in the same layer. Choose a layer in the dropdown list. If you have selected an object of this layer before choosing this command, the layer name will already be filled in. For example, choose the layer which contains all the roads and click the **OK** button to select all roads.

Objects without symbol

Choose this option and click on the **OK** button to select all Unsymbolized Objects.

Objects with unknown symbol

Choose this option and click on the **OK** button to select all Objects with Unknown Symbol.

Objects with invalid symbol type

Choose this option and click on the **OK** button to select all Objects with Invalid Symbol Type.

Graphic objects

Choose this option and click on the **OK** button to select all Graphic Objects.

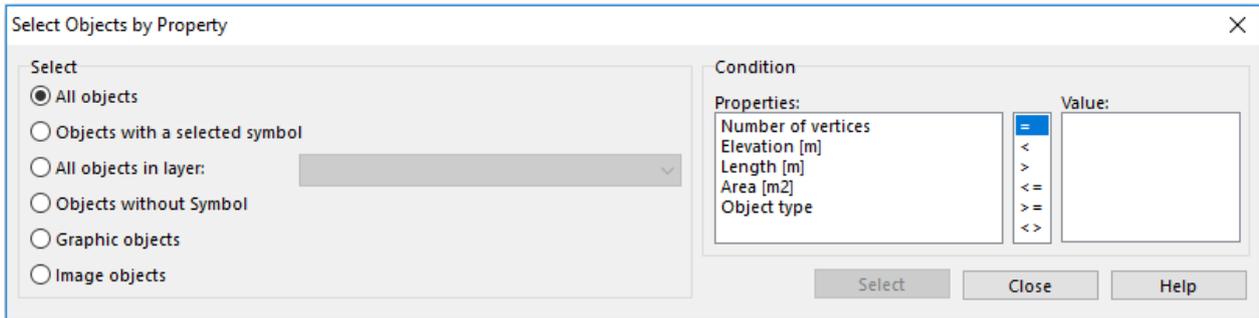
Image objects

Choose this option and click on the **OK** button to select all Image Objects.

Select Objects by Property



Choose **Select Objects by Property** in the **Select** menu to select objects by particular properties. The **Select by Property** dialog box appears.



In the **Select** field you can choose between different options:

- The **All Objects** option means that the selection is made out of all objects on the map.
- The **Objects with a selected symbol** option means that the selection is reduced to the objects with a symbol that is selected in the symbol box.
- The **All objects in Layer** option means that the selection is made out of all objects which are in the same layer. .
- The **Object without Symbol** option means that the selection is made out of all Objects without Symbol.
- The **Graphic Object** option means that the selection is made out of all Graphic Objects.
- The **Image Object** option means that the selection is made out of all Image Objects.

In the **Condition** field you can impose conditions.

- Choose a property like **Number of vertices**, **Elevation [m]**, **Length [m]**, **Area [m]** or **Object Type** in the first box.
- Choose an operator like **<** **>** **=** in the second box.
- Enter a condition value in the third box.

Click the **Select** button to continue.

The **Object Information** table dialog box appears and the desired objects are selected. The number of selected objects is shown in the header of the dialog. You have now different options:

- Click the **Save Selection** button to save the selection.
- Click the **Report** button to save a report in a Microsoft Excel (.xls), Text (.txt), Website (.htm) or Microsoft Word (.doc) file.
- Click the **Close** button to close the dialog and return to the **Select Objects by Property** dialog.



The **Object Information** and the **Select Objects by Property** dialog are non-modal dialogs. This means, that you can edit the map without closing the dialogs. If the **Object Information** dialog box is opened, you can for example select other objects on the map. The object information is refreshed automatically.

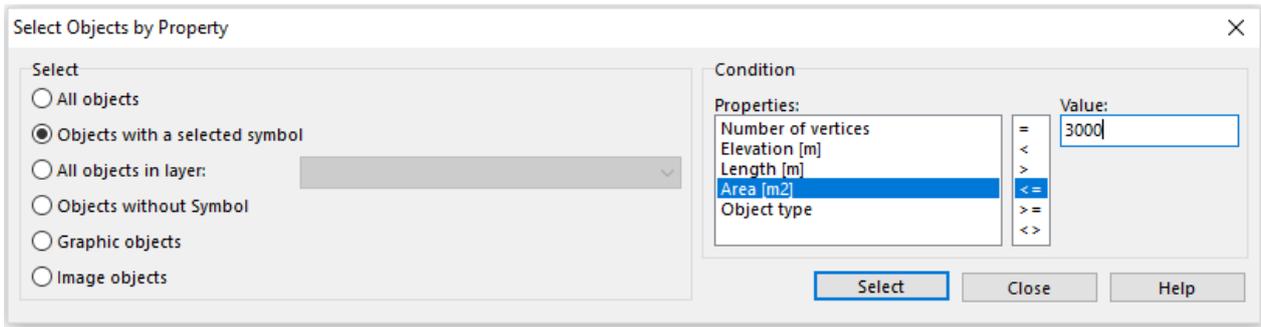
Example 1: Select all objects which are longer than 200m.

1. Choose the **All objects** option in the **Select Objects by Property** dialog.
2. In the **Condition** field choose **Length [m]** as the **Property**, **>** as an operator and enter the value **200**.
3. Click on the **Select** button to continue. The **Object Information** table dialog box appears. All objects longer than 200m are selected and listed in the table dialog box.

Example 2: Select all lakes and ponds with an area smaller or equal than 3000m².

1. Select the symbol for a lake and a pond in the symbol box. It is possible to do this even if the **Select Objects by Property** dialog is opened because it is a non-modal dialog.
2. Choose the **Objects with a selected symbol** option in the **Select Objects by Property** dialog.
3. In the **Condition** field choose **Area [m²]** as the **Property**, **<=** as an operator and enter the value **3000**.

- Click on the **Select** button to continue. The **Object Information** table dialog box appears. All lakes and ponds with an area smaller or equal than 3000m² are selected and listed in the table dialog box.



Select Objects by Date

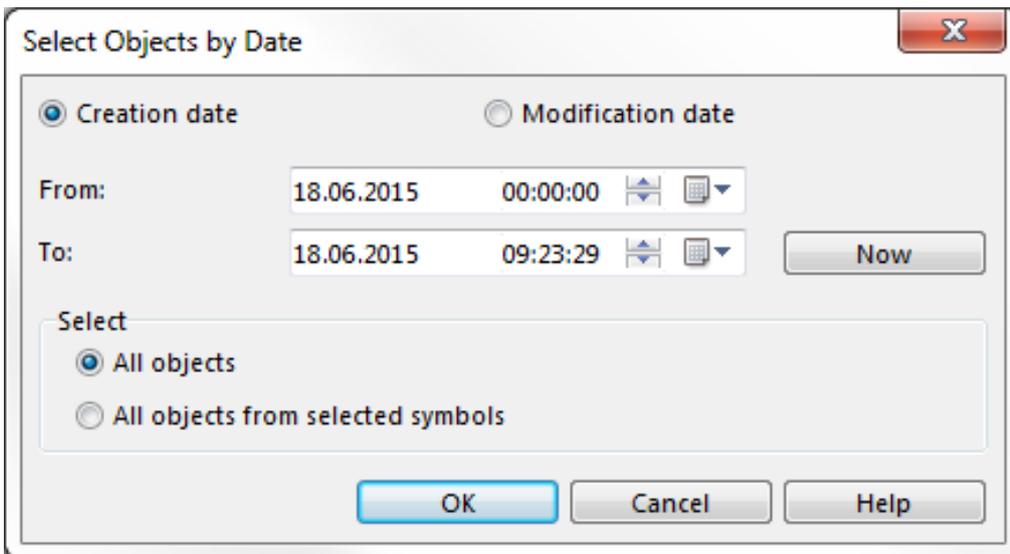
With this function objects can be selected either by their **Creation date** or **Modification date**. It also allows to differ between **All objects** and **All objects from selected symbols**.

Lightbulb: **All objects from selected symbols** means to select only the previously selected symbol within the time frame.

- Choose the Select Object by Date command from the Select menu.
- A dialog appears where you can pick the date mode, enter the time frame and decide which symbols shall be selected.

Lightbulb: By default, the actual date is picked.

- Click the OK button to select the object(s).



The **Object Information** dialog appears.

Object index	Object type	Symbol	Colors	Creation date	Modification date	Number of	Elevation [r]	Length [m]	Area [m]
1	Line object	101.000 Contour	C=0 M=143 Y=255 K=4	24.06.2015 09:48:05	24.06.2015 09:48:05	4	0.00	222.97	-
3	Point Object	207.000 Large boulder	C=0 M=0 Y=0 K=255	24.06.2015 09:50:29	24.06.2015 09:50:29	1	0.00	-	-
4	Point Object	207.000 Large boulder	C=0 M=0 Y=0 K=255	24.06.2015 09:50:30	24.06.2015 09:50:30	1	0.00	-	-
2	Line object	101.000 Contour	C=0 M=143 Y=255 K=4	24.06.2015 09:48:08	24.06.2015 09:50:54	6	0.00	194.14	-

At the bottom of the dialog, there are "Save Selection...", "Report...", and "Close" buttons.

Lightbulb: It's possible to sort the values by double clicking on the top row.

Last Modified Objects

Click the **Last modified** button to select the last 100 changed objects. The **Object Information** dialog appears. The objects are sorted by the *Modification date*.

Select Object by Object Index

Mas

With this function objects can be selected by their object index. The object index is an internal index for each object and cannot be changed. The object information is shown in the **Object Information** dialog which can be found in the **Select** menu.

Choose the **Select Object by Object Index** command from the **Select** menu. A dialog appears where you can enter the object index. Click the **OK** button to select the object.

The first drawn or imported object has the object index 1. The object index is a number and unique in a ocd file.

Select Duplicate Objects

Mas

Ori

Choose this function from the **Select** menu.

With this function you can find all duplicate objects. The objects must be identical and on the same position that they can be found. The selection can be saved with OCAD Mapping Solution right after carrying out the command (Save a Selection).



Objects with different symbols whose geometry is identical are not selected.

Select Self Intersected Objects

Mas

Ori

Choose this function from the **Select** menu.

This function selects all line, area and line text objects with a self-intersecting geometry. The selection can be saved right after carrying out the command (**Save a Selection**).

Select Objects with Invalid Geometry

Mas

Choose this function from the **Select** menu to select all objects with invalid geometry.

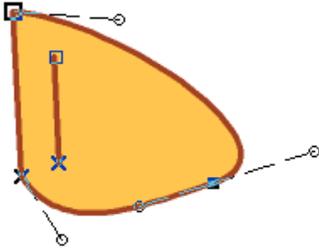
The following objects are selected:

- **Objects which start with a hole:** OCAD selects all objects, whose first vertex has a hole flag. This can be a hole with no exterior ring.
- **Damaged Bezier curves:** A Bezier curve is composed of minimum a start point, a first Bezier vertex, a second Bezier vertex and an end point (see illustration).



If a Bezier curve has less than these vertices, it is selected.

- **Line objects with invalid hole flag:** A line object which contains a vertex with a hole flag is selected.
- **Area object with invalid geometry:** OCAD selects all area objects, whose vertices have the same coordinate. This problem can occur when the scale is reduced.
- **Line objects with the same start and end point:** This problem can occur when the scale is reduced. In this case, the start and end point of a really short line object can fall together.
- **Area object with an invalid hole:** A hole must have minimum three vertices. A hole with one or two vertices is selected (see illustration).



- **Area object with an invalid exterior ring:** An invalid exterior ring can be a ring with only one vertex (see illustration).
- **Graphic object with invalid object type:** **Graphic Objects** are either areas or lines. OCAD selects all other types.
- **Object with invalid number of vertices:** A line object must have minimum two vertices and an area object three. If they have less vertices, they are selected. In addition, text and line text objects containing no text are selected. To select line text objects with a too short line, use the **Select Line Text Objects with too Short Line** function.

It is difficult to get an object with invalid geometry. It can happen when you import files or change the scale.

After choosing the function, OCAD searches objects with invalid geometry, selects them and displays them in the **Object Information** dialog. In addition, a text file opens with a report. This file is stored in a temporary folder.

The screenshot shows the 'Object Information (2 Objects)' dialog box with the following table:

Object index	Object type	Symbol	Colors	Number of v	Elevation [m]	Length [m]	Area [m]
1	Area object	401.000 Offenes Gebiet	121, 110	9	0.00	-	11852.86
2	Line object	102.000 Zählkurve	C=0 M=173 Y=232 K=8:2	0.00	0.00	-	-

Below the dialog box is a Notepad window titled 'Select Objects with Invalid Geometry.txt' containing the following report:

```

Report: Select Objects with Invalid Geometry
Object index  Description
1      Area object with Invalid Hole: Hole starts at vertex 8 has only 2 vertexes!
2      Line object with Same Start and End Point: Object has 2 vertexes.
    
```

At the bottom of the dialog box are three buttons: 'Save Selection...', 'Report...', and 'Close'.

The selected objects should be deleted, otherwise they can cause problems when exporting files like PDF or Shape.

The object index is indicated in the **Object Information** dialog as well as in the text file. Use the **Select Object by Object Index** function to find the object later with help of the object index.

Select Line Text Objects with Line too Short



Choose this function from the **Select** menu.

This function selects all line text objects whose text is longer than the line length. This can happen when the font of a text symbol has been increased. The selection can be saved right after carrying out the command (**Save a Selection**).

Select Group



If you have **Grouped** objects on your map, you can select them easily by choosing the **Select Group** command in the **Select** menu.

Select All

Choose **Select All** in the **Select** menu to select all symbolized (also from protected and hidden symbols), unsymbolized, graphic and image objects. Layout objects are not selected.

Clear Selection

Choose **Clear Selection** in the **Select** menu or press the **Esc** key to deselect all objects.

Invert Selection

Choose **Invert Selection** in the **Select** menu to deselect all selected objects and select all unselected object. Layout objects are not selected.

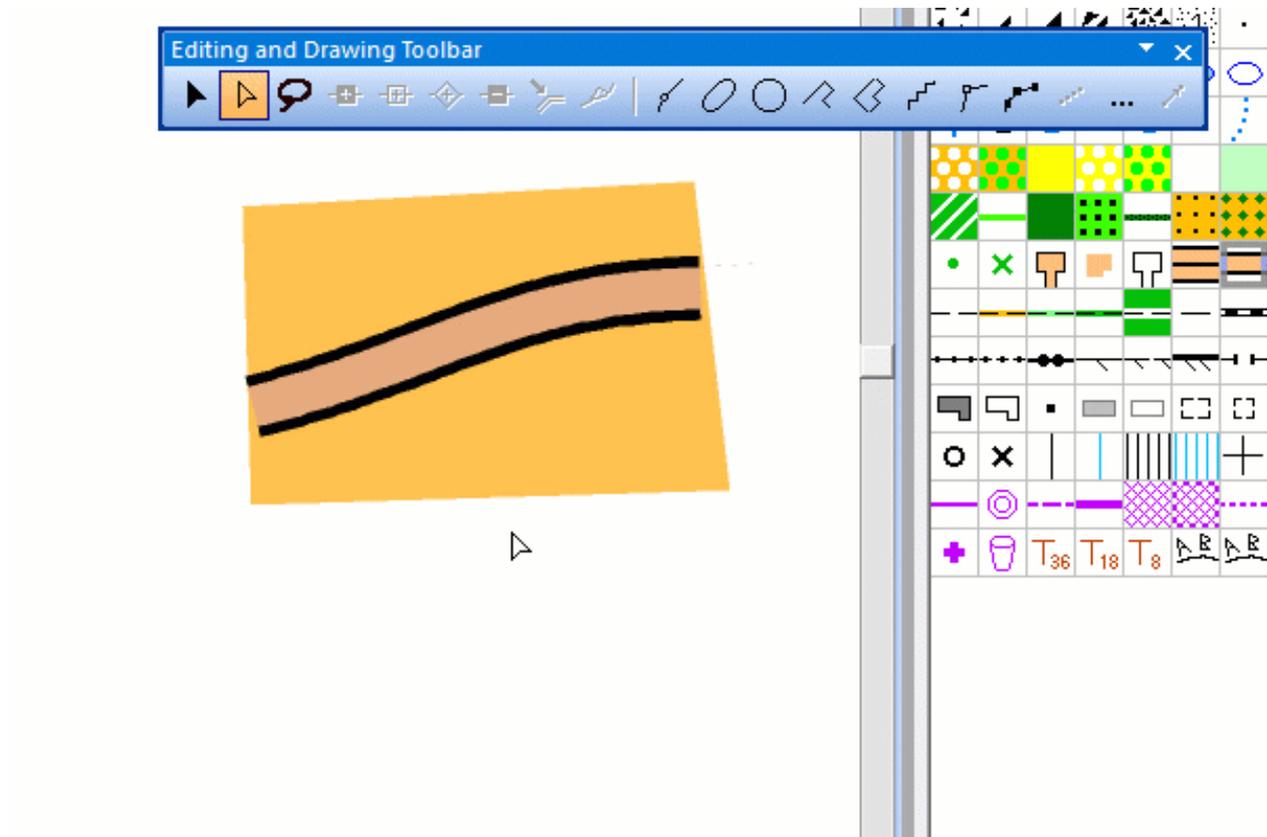
Select Next Object

Mas Ori

Select an object behind an object already selected

This menu item is only available if an object is already selected. Choose **Select Next Object** in the **Select** menu to select an object which is behind an object that is already selected.

💡 To select an object behind an already selected object you can also keep the **Alt** or **Alt Gr** key pressed and click on the already selected object.



Select next object for editing

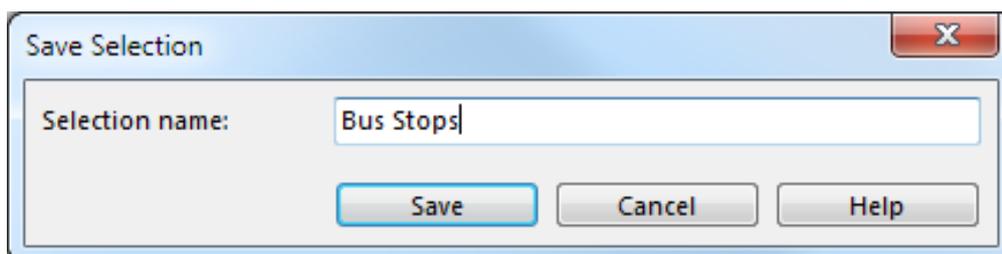
Select a line object and choose the  **Cut** function. If you press the **Alt** key, the cursor changes to the  **Select Object and Edit Vertex** mode. Keep the **Alt** key pressed and click the next object you want to cut. Release the **Alt** key and continue with the cutting.

This works also with the **Reshape** function and with adding/removing **Vertices**.

Save Selection

Mas Ori

Choose **Save Selection** in the **Select** menu to save the current selection. The **Save Selection** dialog box appears.



Enter the name of the selection and click on the **Save** button.

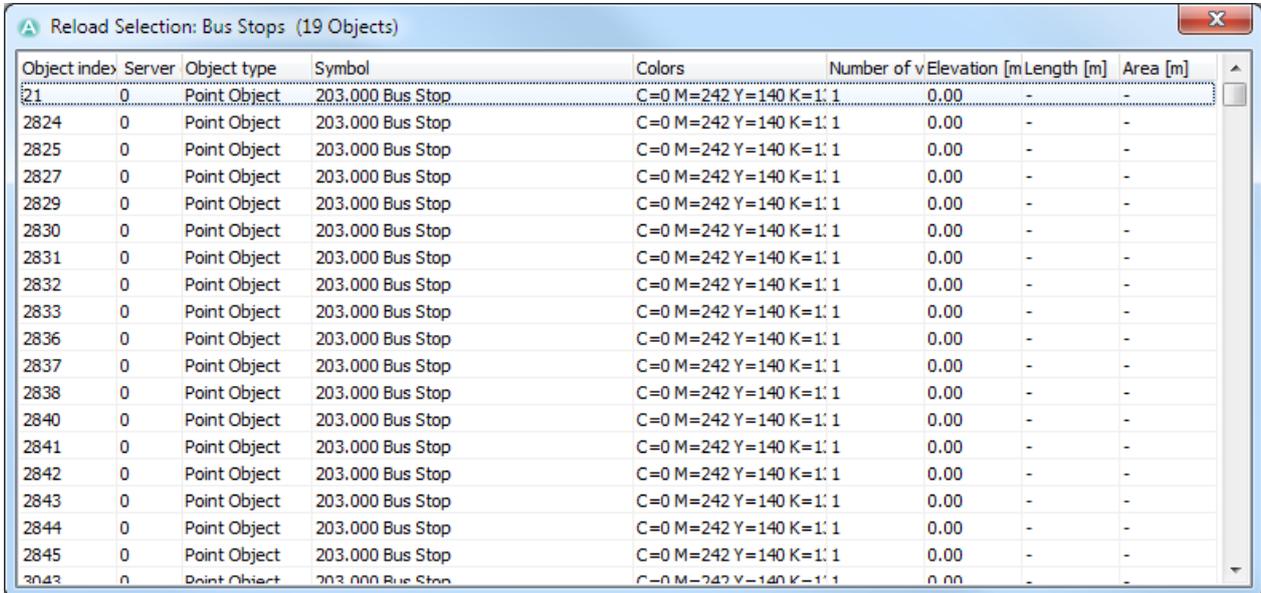
💡 Choose **Select Objects by Symbol** in the **Select** menu to select all objects of the selected symbols.

 Due to performance issues the number of objects in a selection is limited by 50'000 objects.

Reload Selection

Mas Ori

Choose **Reload Selection** in the **Select** menu to select all objects from a saved selection. Choose a saved selection and the **Reload Selection** dialog appears.



Object index	Server	Object type	Symbol	Colors	Number of vertices	Elevation [m]	Length [m]	Area [m]
21	0	Point Object	203.000 Bus Stop	C=0 M=242 Y=140 K=1:1	0.00	-	-	-
2824	0	Point Object	203.000 Bus Stop	C=0 M=242 Y=140 K=1:1	0.00	-	-	-
2825	0	Point Object	203.000 Bus Stop	C=0 M=242 Y=140 K=1:1	0.00	-	-	-
2827	0	Point Object	203.000 Bus Stop	C=0 M=242 Y=140 K=1:1	0.00	-	-	-
2829	0	Point Object	203.000 Bus Stop	C=0 M=242 Y=140 K=1:1	0.00	-	-	-
2830	0	Point Object	203.000 Bus Stop	C=0 M=242 Y=140 K=1:1	0.00	-	-	-
2831	0	Point Object	203.000 Bus Stop	C=0 M=242 Y=140 K=1:1	0.00	-	-	-
2832	0	Point Object	203.000 Bus Stop	C=0 M=242 Y=140 K=1:1	0.00	-	-	-
2833	0	Point Object	203.000 Bus Stop	C=0 M=242 Y=140 K=1:1	0.00	-	-	-
2836	0	Point Object	203.000 Bus Stop	C=0 M=242 Y=140 K=1:1	0.00	-	-	-
2837	0	Point Object	203.000 Bus Stop	C=0 M=242 Y=140 K=1:1	0.00	-	-	-
2838	0	Point Object	203.000 Bus Stop	C=0 M=242 Y=140 K=1:1	0.00	-	-	-
2840	0	Point Object	203.000 Bus Stop	C=0 M=242 Y=140 K=1:1	0.00	-	-	-
2841	0	Point Object	203.000 Bus Stop	C=0 M=242 Y=140 K=1:1	0.00	-	-	-
2842	0	Point Object	203.000 Bus Stop	C=0 M=242 Y=140 K=1:1	0.00	-	-	-
2843	0	Point Object	203.000 Bus Stop	C=0 M=242 Y=140 K=1:1	0.00	-	-	-
2844	0	Point Object	203.000 Bus Stop	C=0 M=242 Y=140 K=1:1	0.00	-	-	-
2845	0	Point Object	203.000 Bus Stop	C=0 M=242 Y=140 K=1:1	0.00	-	-	-
3043	0	Point Object	203.000 Bus Stop	C=0 M=242 Y=140 K=1:1	0.00	-	-	-

The list of the selected objects with additional information is shown in the dialog. The number of selected objects is shown in the caption in brackets.

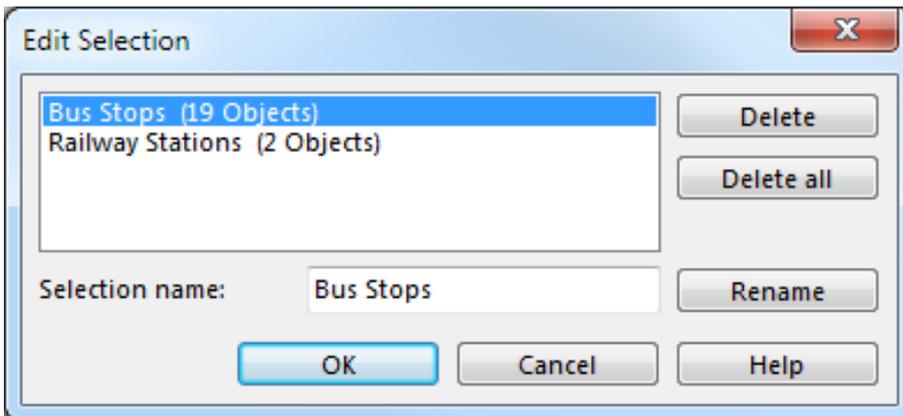
Select one object in the list and OCAD selects this object in the drawing area in the edit mode.

 The **Reload Selection** function selects also symbolized objects from symbols with the status **Protect** or **Hide**.

Edit Selection

Mas Ori

Choose **Edit Selection** in the **Select** menu to rename or delete saved selections.



Delete a Selection

Select a selection in the **Edit Selection** dialog and click the **Delete** button to delete it. Click the **Delete all** button to delete all selections.

Rename a Selection

Select a selection in the **Edit Selection** dialog. Then enter a new name for the selection in the **Selection name** field.

Click the **Rename** button to apply the new name.

Click the **OK** button to save and quit the **Edit Selection** dialog. Click the **Cancel** button to close the **Edit Selection** dialog without saving any changes.

[Back to Main Page](#)

Menu Object

Object

Cut



Choose this command in the **Object** menu to cut the selected object(s). Optionally, you can press Ctrl+X. The cut object(s) are stored in the clipboard and can be pasted again by choosing the **Paste** command in the **Object** menu or pressing Ctrl+V.

Copy



Choose this command in the **Object** menu or press Ctrl+C to copy the selected object(s) to the clipboard. A maximum of 50 MB of data can be copied to the clipboard.

Paste



This command is enabled in the **Object** menu when the clipboard contains OCAD objects or text and you are writing text.

Choose this command to copy the object(s) in the clipboard to the current map. Alternatively, you can press Ctrl+V. They are initially placed in the center of the screen.

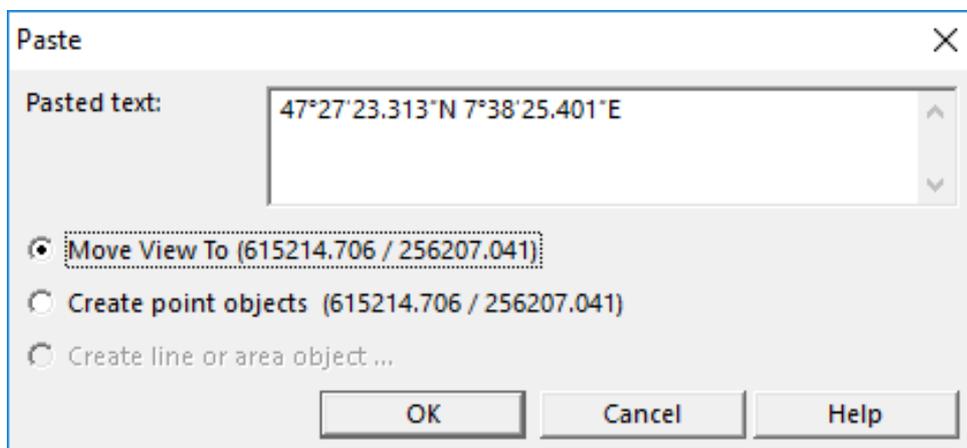
Choose **Cut** (Ctrl+X) or **Copy** (Ctrl+C) from the **Object** menu to copy objects to the clipboard.

 When pasting an object from a different map, and the corresponding symbol does not exist in the current map, the symbol will be added. However, if the color table is different, the object may appear in wrong colors. You will have to adjust the colors of the newly added symbol.

Paste Text

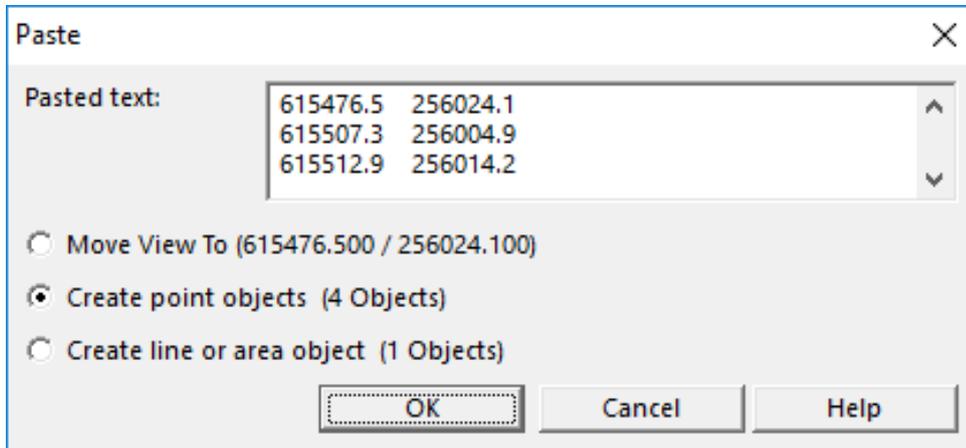
When writing text, the text from the clipboard is inserted.

When the clipboard contains text, but you are not writing text, a dialogue window appears. In case your text contains pairs of coordinates, you have three options:



- **Move View To:** Move the View so the first pair of pasted coordinates is in the center of the screen.

- **Create point objects:** You need to select the desired point object beforehand in the Symbol Box. The objects will be created at the coordinates.
- **Create line or area objects:** Only available if more than one pair of coordinates exists. You need to select the desired point or area symbol beforehand in the Symbol Box. The Vertices of the line/area objects will be inserted at the place of the coordinates.



💡 To use this function properly, a coordinate system has to be defined and the pasted coordinates need to fit to this coordinate system.

Supported formats so far:

geo.admin.ch: 615'582.01, 256'284.55

geo.admin.ch: 47.45648, 7.64039

geo.admin.ch: 47°27'23.313"N 7°38'25.401"E

Google: 47.4563036,7.6405326

Google: -24.8512749,-59.8029067

OpenStreetMap: 47.45295/7.64673

OpenStreetMap: -37.762/-62.183

OpenStreetMap: 46.3103041, 4.8142705

💡 **Video:** Create Object With Pairs Of Coordinates ^[1]

Delete



Choose this command in the **Object** menu or from the **Edit Functions Toolbar**  to delete the selected object(s).

Alternatively, press the **Delete** key on the keyboard.

When writing text, the next character or the selected text is deleted.

Back to the **Edit Object** page.

References

[1] <https://www.youtube.com/watch?v=n-6zoQIBGM&list=PLRHQMIImIeqFGEYQfdIRz07M6rlCX4EzS>

Edit Object

Basic Functions

Mas Ori Sta CS

Copy and Paste

Visit the **Copy and Paste** page to get some information about copying and pasting objects.

Cut and Delete

Visit the **Cut and Delete** page to get some information about cutting and deleting objects.

Edit Vertices and Objects

Visit the **Select an Object** page to get all information about selecting an object.

Visit the **Select and Edit Vertex** page to get all information about editing vertices.

Edit Text

Choose the **Select Object and Edit Vertex** tool  to select the text object or the line text object. Click with the mouse cursor into the text at the position where you want to change it.



Use **double click** to select a word.



Click **three times** to select the whole text of an object.

Rotate

Rotate an Object

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Choose **Rotate** in the **Rotate Object** submenu of the **Object** menu or click the  **Rotate Object** icon in the **Editing and Drawing Toolbar** to rotate an object. This function is only enabled when an object is selected.

The cursor changes to the anchor point symbol () first. With this cursor you can define the center of the rotation (anchor point). Click on the desired location. When the anchor point is defined, the cursor changes to the rotate symbol (). Now you can rotate the object. Move the mouse pointer to a place distant from the anchor point, press and hold the left mouse button. With the button pressed, rotate the object as desired. The object gets shown with a draft line as "preview", until you release the mouse button to finish the rotation.

Rotate an Object by Angle

Mas Ori

(This function is only enabled if one or several objects are selected)

Select **Rotate (Enter Angle)** in the **Rotate Object** submenu of the **Object** menu to rotate the selected object(s) by angle. The **Rotate (Enter Angle)** dialog appears.

- Enter an *angle* in degrees.
- Choose a rotation center option (this option is only visible if several objects are selected).
 - Use *selected objects centroid as common rotation center* will use the selected objects centroid as one common rotation center. This option is set by default if also line or area objects are selected.
 - Use *each object's centroid as rotation center* will use each object's centroid as an individual rotation center. This option is set by default if only point or text objects are selected.
- Click the **OK** button to finish the process.

Align Objects

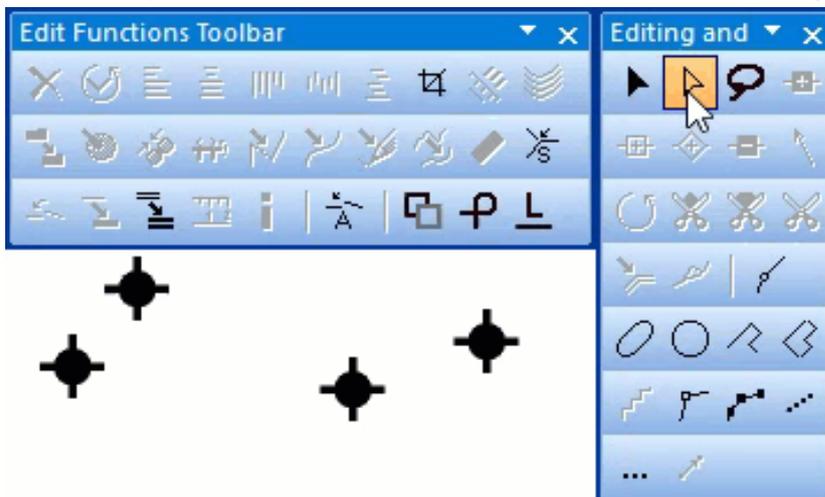
Mas Ori

Visit the **Align Objects** page to find some information about the  **Align Object: Horizontal Coordinate**,  **Align Objects: Horizontal Coordinate Centered** and the  **Align Object: Vertical Coordinate** function.

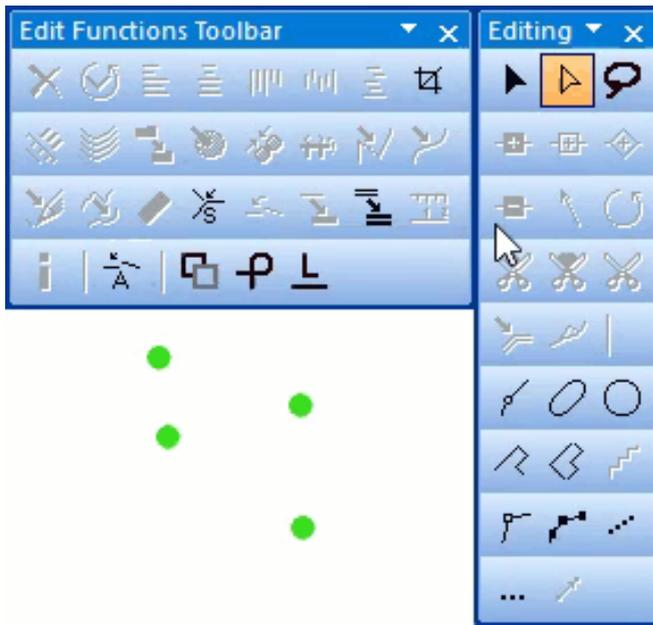
Distribute Objects

These functions distribute the selected objects with equal space between. The set borders are the upmost/leftmost and the lowest/rightmost object.

 **Distribute Objects: Horizontal Coordinate** This function distributes the objects horizontally.



 **Distribute Objects: Vertical Coordinate** This function distributes the objects vertically.

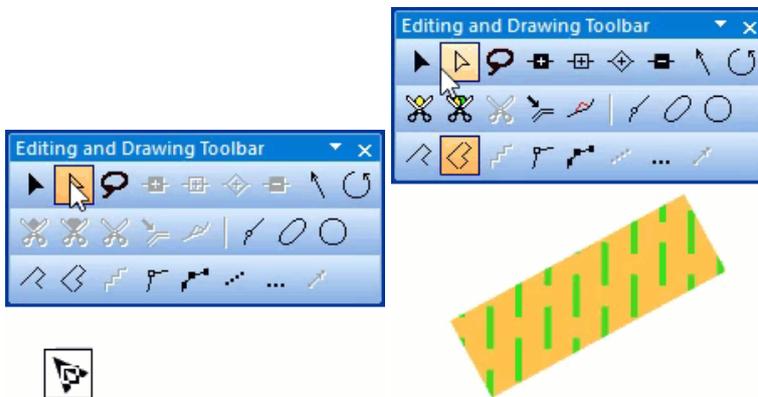


Indicate Direction of Area Pattern or Point or Text Object

Mas Ori Sta

Choose this command either from the **Objects** menu or click the corresponding button  in the **Editing and Drawing Toolbar** to indicate the direction of an area pattern, point or text object.

This function is only enabled if a point, area or text object is selected. Choose this function to change the direction of a point object, of the pattern of an area object or of text. Indicate the new direction by dragging a line from the object in the desired direction.

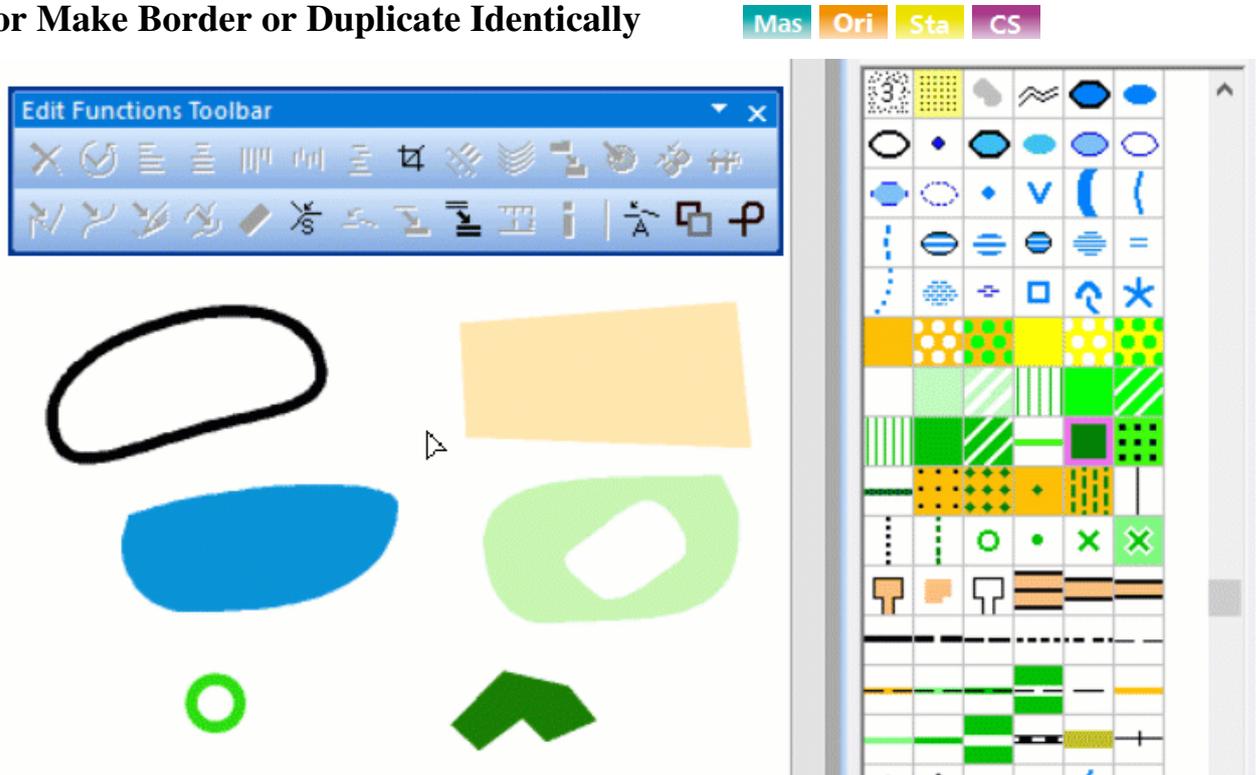


Note the difference to the Rotate button, where you first mark the anchor point and then rotate the object. In this mode you just drag a long line for the new direction. The object remains in the same place.

You can select Objects and stretch (enlarge / reduce) them. However, the objects will not stay at their original place.

To keep each object in place during the stretch / shrink process, go to **Stretch / Shrink** in the **Object** menu. In the following dialog, it's possible to define the new horizontal and vertical length (in %). By default, the **Preserve horizontal / vertical ratio** option is selected.

Fill or Make Border or Duplicate Identically



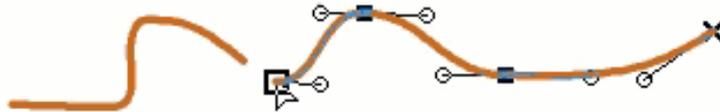
You can find this functions either in the **Object** menu or you can click the corresponding button  in the **Edit Functions Toolbar**.

This function is enabled when an object is selected on the map and a symbol is selected in the symbol box which is compatible with the selected object. For example, areas can be filled with other areas, or surrounded with line objects but you cannot fill them with point objects. With this function it is possible to do several things:

- If you use this function when you have selected an object with the same symbol as selected in the symbol box, an identical copy of the object at the same position is made.
- If you use this function when you have selected an object with the same symbol type as the symbol selected in the symbol box (e.g both are area, line, text or point symbols), a copy of the object is made at the same position and the selected symbol in the symbol box is assigned to this new object.
- If you use this function when you have selected an area object in the drawing area and a line symbol in the symbol box, a border line around the area object is created.
- The other way round, if you use this function when you have selected a line object in the drawing area and an area symbol in the symbol box, the line object is filled with the area symbol.
- If you use this function when you have selected a hole, the hole is filled if you have selected an area in the symbol box or a border line is created if you have selected a line in the symbol box. Read more about holes here.
- If you use this function when you have selected a line object in the drawing area and a line text object in the symbol box, a line text symbol with the default text 'LTEXT' is created along the line object.
- If you use this function when you have selected a text or point object, the bounding box is filled if you have selected an area in the symbol box or a border line is created if you have selected a line in the symbol box.

Merge

Mas Ori Sta CS



You can find this function in the **Object** menu or by clicking the  **Merge** button in the **Edit Functions Toolbar**. With this function you can merge the selected objects. It is enabled if two or more line, area or text objects with the same symbol are selected.

Merge Line Objects

To merge line objects, the start respectively the end points of the selected lines must be close together. You can set the merge tolerance in the Preferences. OCAD merges first objects with identically endpoints.

Merge Area Objects

To merge area objects, the selected area objects have to overlap.

Merge Text Objects

If you merge text objects, the text parts are positioned with a line break under the first text.



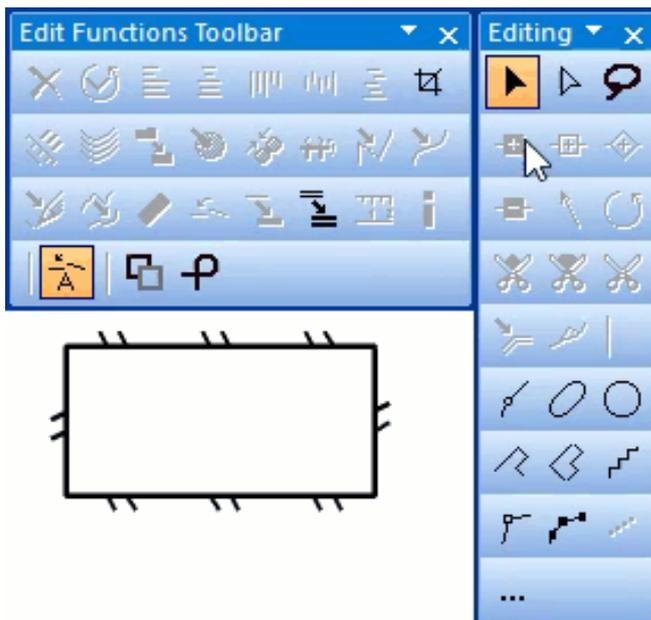
When drawing line or area objects, you can continue existing line or area objects, instead of merging them afterwards. To do this, keep the **Shift** key pressed and start drawing at the first or last vertex of the existing object.



in you want line ends to coincide, but the objects shall remain independent, use the **Topology#Join** function.

Reverse Object Direction

Mas Ori Sta CS



You can find this function in the **Object** menu or by clicking the  **Reverse Object** button in the **Edit Functions Toolbar**.

This function is enabled when a line, line text or area object is selected. It will reverse the direction of the object, the first vertex becomes the last one and vice versa.

Reverse object direction function is useful for objects with asymmetrical line symbols. If a line or borderline has tags to the right side, the tags will point to the left side after reversing. Line text appears on the other side of the line.

Change to Polyline or Bezier Curve

You can find some help about these functions on the [Change to Polyline or Bezier Curve](#) page.

Convert to

Graphic Object



Visit the [Convert into Graphic Object](#) page to get some information about converting objects into graphic objects.

Image Object



Visit the [Convert into Image Object](#) page to get some information about converting objects into image objects.

Layout Object



Visit the [Convert into Layout Object](#) page to get some information about converting objects into layout objects.

Create Color Gradient



With this function you can create a color gradient. Visit the [Create Color Gradient](#) page to get more information.

Vertices

Add Vertex

The commands for adding new vertices can be found in the [Editing and Drawing Toolbar](#).

- Add normal vertex
- Add corner vertex
- Add dash vertex

You can find more information about adding vertices on the [Vertices](#) page.

Remove Vertex

Click the **Remove Vertex** button in the [Editing and Drawing Toolbar](#) to remove a vertex.

You can find more information about removing vertices on the [Vertices](#) page.

Change Vertex Types to



You can find this function in the **Object** menu. You can find more information about this function on the [Vertices](#) page.

Change Symbol

Change Symbol of Object

Change Symbol of Object: With this function you can change a selected object's symbol. This command is enabled when at least one object is selected and the symbol selected in the symbol box is compatible with it.

Change Symbol for all Objects with this Symbol

 **Change Symbol for all Objects with this Symbol:** This function changes all objects with a symbol A to symbol B.

You can find more information about the  **Change Symbol of Object** and the  **Change Symbol for all Objects with this Symbol** functions on the [Change Symbol](#) page.

Group and Ungroup

Mas Ori

Learn how to group and ungroup objects on the [Group and Ungroup](#) page.

Find and Replace Text

Mas

Choose this command in the **Object** menu to find and replace text of objects. The **Find and Replace Text** dialog box is displayed.

The texts are loaded in the text field if the map does not contain more than 50'000 objects. If you want to load the text objects anyway then click the 'Auto fill' check box. To avoid long waiting time OCAD loads only the first 5'000 text objects in the combo box.

Find text

1. Enter a text you want to find.
2. If you choose the **Case sensitive** option, capitalization of letters is considered in the **Find** function.
3. Choose the **Whole words** only option if the **Find** function shall ignore parts of words.
4. Click the **Find** button. OCAD will select an object found. Click the **Find** button again to find the next object.

Click the **Delete object** to delete the last found, selected object.

Replace with

1. Enter a text that shall replace the word you looked for in the **Find text** part.
2. Click the **Replace** button to replace the text in the last found object. Click the **Replace all** button to replace every text which matches with the **Found text**.

Click the **Close** button to quit the dialog.

 Press the **Shift** key when opening the dialog. Then OCAD does not load the texts in the combo box. If the map contains several thousand text objects then the loading of the text objects needs some time (up to one minute).

 **Regular expressions**^[1]: Please note that regular expressions use *****, **+**, **.** or **?** as wildcards. These characters have to be used with a backslash ex. `\+` to find only the text objects with a **+** character.

 Enter `#13#10` to replace some characters with a new line.

Insert Glyphs

Mas

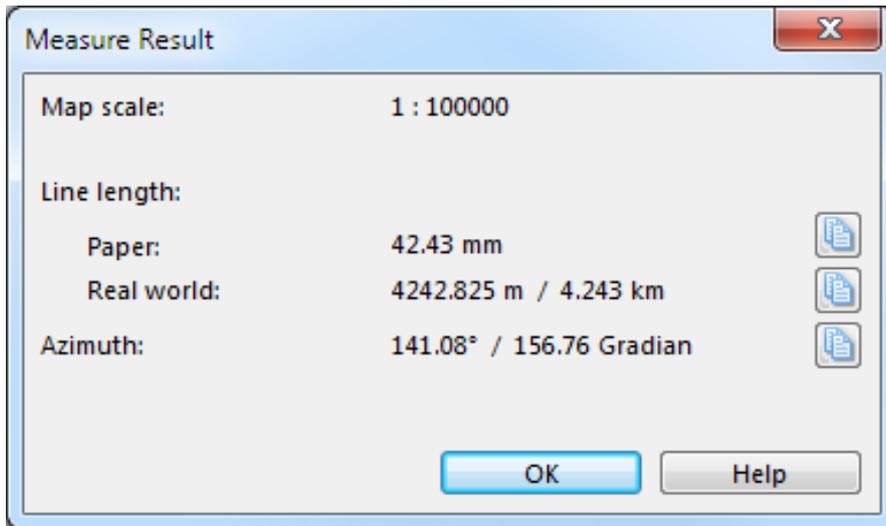
Visit the [Insert Glyphs](#) page to find information about glyphs in OCAD.

Measure

Mas Ori Sta CS

Choose this command from the **Object** menu or click the **Measure** icon in the **Edit Functions Toolbar**. This command is enabled when line or area objects or 2 point objects are selected.

Choose this command to measure the length of the selected line object(s), the area of the selected area object(s) or the distance between 2 point objects. The result is displayed in the **Measure Result** dialog box.



If you select multiple line or area objects (**Select Multiple Objects**), the displayed length respectively area is the sum of all selected lines or areas.

The map scale is used for the calculation.

Click on the **Copy** button to copy the value to the Windows Clipboard.

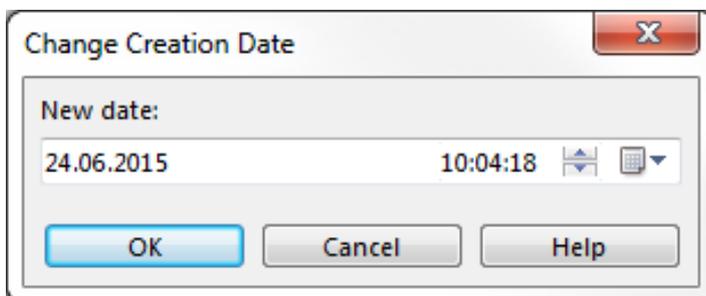
Change Creation Date

Choose this command from the **Object** menu to change the creation date of the selected object(s).

1. Select the desired objects and open the **Change Creation Date** dialog.
2. Enter your desired creation date and time.

 For **New date** is automatically the current time and date.

3. Click **OK** to change the date.



This function does not change the modification date of the selected object(s).

Object Information

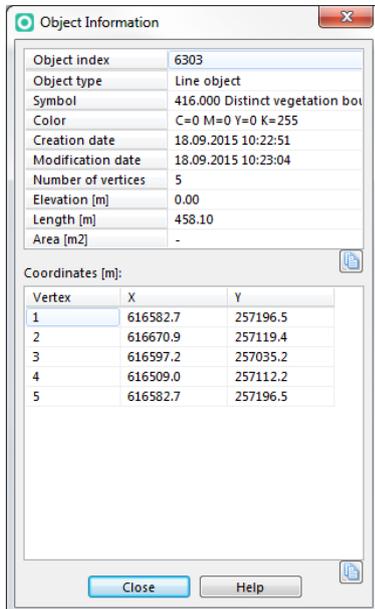
Mas Ori Sta CS

Choose this command from the **Object** menu to get more information about the selected object(s). This command is enabled if at least 1 object is selected.

The following information is shown in the **Object Information** dialog:

- Object index (for internal use)
- Server object index (for only internal use)
- Object type
- Symbol
- Color
- Creation date
- Modification date

- Number of vertices
- Elevation [m]
- Length [m]
- Area [m²]
- Coordinates [mm] or [m] (only if 1 object is selected)



 - This is a non-modal dialog. You can always add or remove objects from a selection even if the dialog box is opened. The information in the dialog gets updated instantly if you make any changes to the selection.

- It is possible to save a selection in the **Object Information** dialog when you select multiple objects (**Select Multiple Objects**). Click the **Save Selection** button in the dialog. Learn more about saving selections on the **Save Selection** page.

- Double click on a cell and press the **Ctrl + C** keys to copy a cell value to the Windows Clipboard.

- Click on the upper copy button to copy the object information or the lower copy button to copy coordinate values to the clipboard.

- A double click on the top row of the columns allows to sort the values.

[Back to Main Page](#)

References

[1] <http://www.regular-expressions.info>

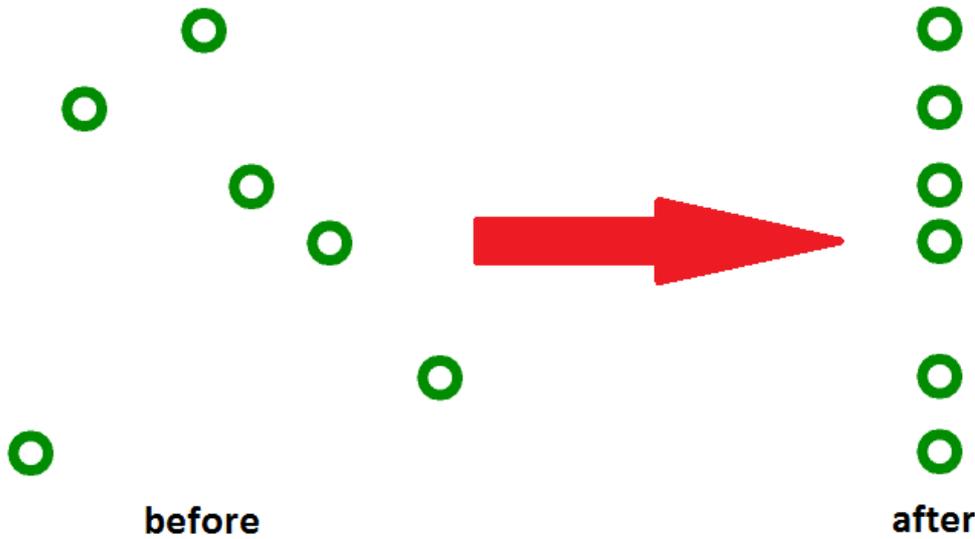
Align Objects

Mas Ori

This command is only enabled if two or more objects are selected. There are three alignment options, which you can either choose from the **Align Objects** submenu of the **Object** menu or from the **Edit Functions Toolbar**. The allignement orientates itself on the bounding box of the objects.

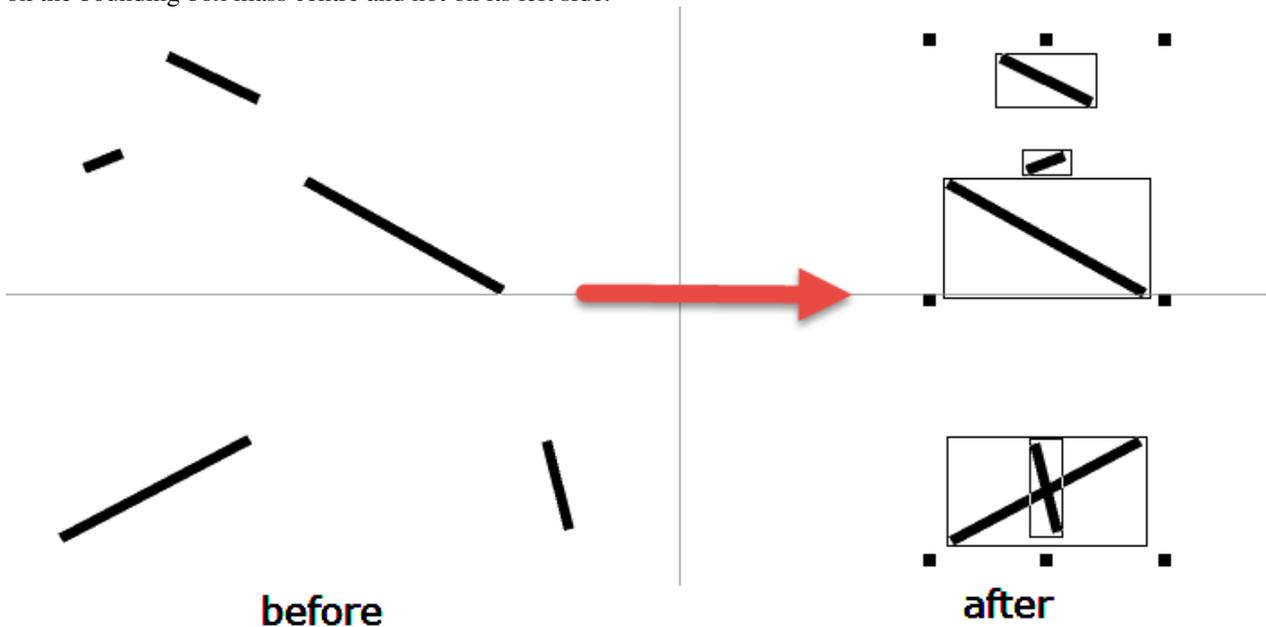
Align Object: Horizontal Coordinate

The selected objects are moved horizontally to the position of the first drawn object.



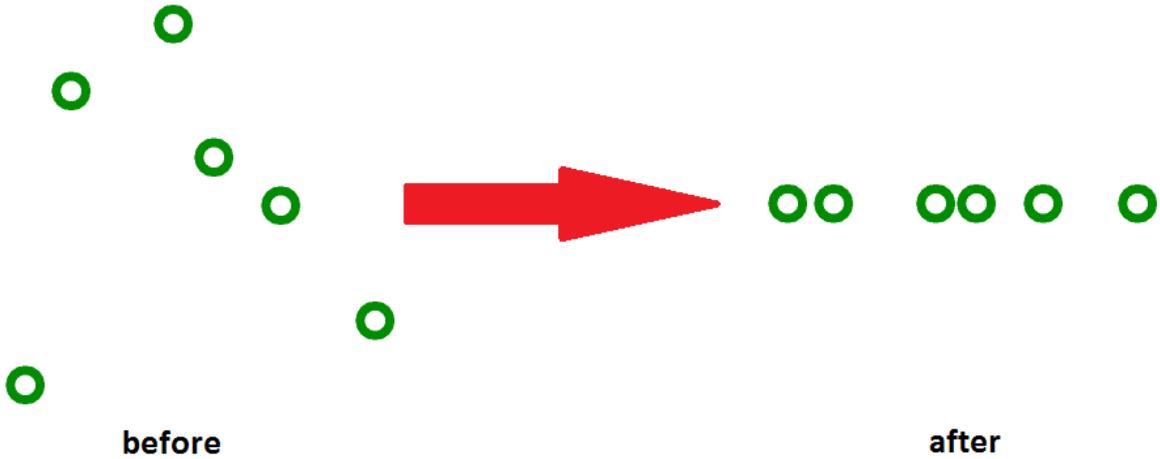
Object: Horizontal Coordinate Centered

The selected objects are moved horizontally to the position of the first drawn object. The allignement orientates itself on the bounding box mass centre and not on its left side.



Object: Vertical Coordinate

The selected objects are moved vertically to the position of the first drawn object.



For

line, area and text objects the alignment is related to the position of the objects' first vertex.

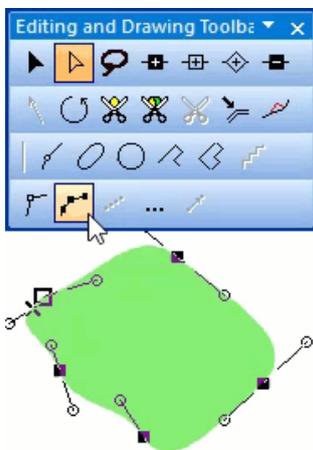
Back to the **Edit Object** page.

Cut

You can find the following functions in the **Cut Object** submenu of the **Object** menu or in the **Editing and Drawing Toolbar**.

Cut Hole

Mas Ori Sta CS



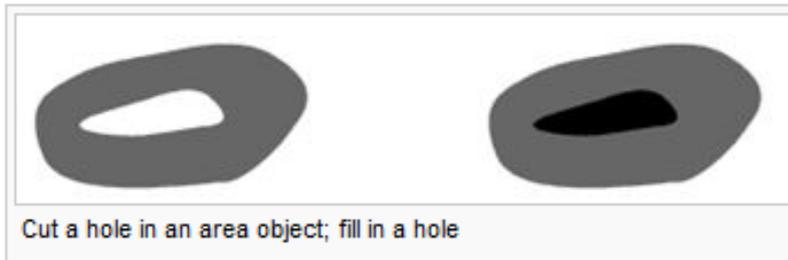
This function is enabled when an area object is selected.

Choose this function to cut a hole out of an area. Any drawing mode can be used (Curve, ellipse, circle etc.). This is the procedure:

1. Select the object to cut a hole in.
2. Select a drawing mode (Curve, Ellipse, Circle etc.)
3. Choose the  **Cut Hole** function.
4. Draw the hole.

 Use Fill or Make Border to fill in the hole.

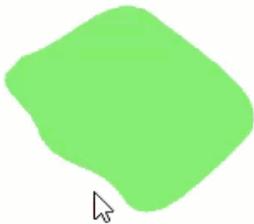
 Change drawing mode with the **Tab** key before starting to cut.



a: Cut a hole in an area object, b: Fill in a hole

Cut Area

Mas Ori Sta



This function is enabled when an area object is selected.

Choose this function to split an area into two objects.

You can use the Curve, Straight line, Rectangular line or Freehand mode to split an area object into two objects.

1. Select the area object to cut.
2. Select a drawing mode (Curve, Straight line, Rectangular or Freehand).
3. Choose the  **Cut Area** function.
4. Draw the cut line. It must start at the border of the area, go across the area and end at the border of the area. The last vertex of the cut line can be away from the border of the area.

The area is now split into two objects. Note that the cut line should not cross a hole. Otherwise the hole may not be treated correctly for the 2 resulting objects.



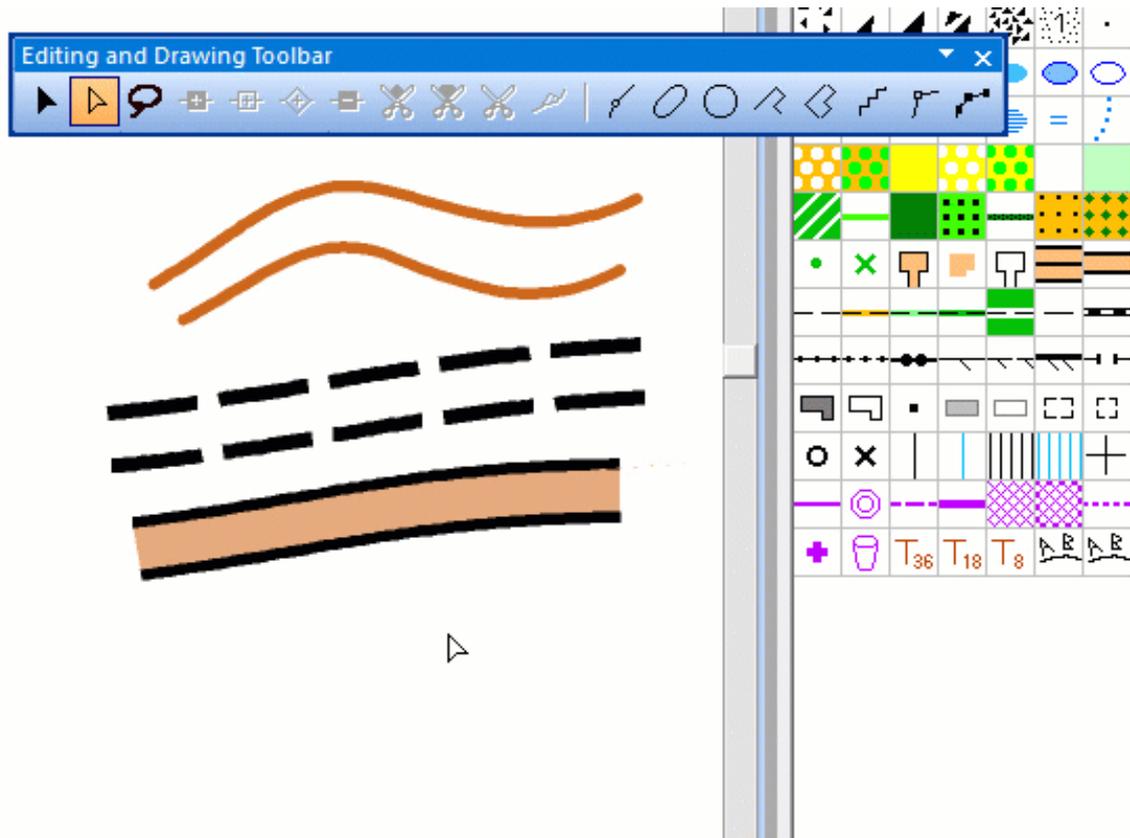
After cutting the area object always the smaller of the two new area objects is selected.



Change drawing mode with the **Tab** key before starting to cut.

Cut Line

Mas Ori Sta CS



This function is enabled when a line or an area object with border line is selected.

Choose this function to divide a line into 2 objects or to cut a **Virtual gap** into a line object, i.e. the line object is not divided, the gap concerns only graphic representation of the object.

Split a line object

Click on the desired position anywhere on the line. The line is then split into 2 objects. One of them is selected. You can use this function to influence the dashes of a dashed line.

Split a line object with cut-out

Instead of just splitting you can create a cut-out (a gap) in the line.

1. Choose the  **Cut** function.
2. Place the mouse pointer at the start point of the cut.
3. Press and hold down the left mouse button.
4. Move the mouse pointer to the end of the cut.
5. Release the mouse button. The object is now divided into two and the cut-out portion is deleted.

 -If you press the **Ctrl** key when cutting a line, the line is not divided into 2 objects. A Virtual gap concerning only the graphic representation of the object is inserted.

-If you press the **Shift** key when cutting a dashed line, you insert a gap with the same length, as the other gaps in the dashed line.

-It is possible to cut a part of the individual sidelines of double line symbols (like major roads), without having to cut the entire line itself.

Cut Object



If you are looking for help on the **Cut Object** function, visit the **Cut Object** page.

Back to the **Edit Object** page.

Crop Objects



Choose the **Crop Objects** command in the **Object** menu to crop objects. The **Crop Objects** dialog appears. This is a non-modal dialog.

In the first field, choose between 3 different **Objects to crop** modes:

- **All objects:** All objects (symbolized, unsymbolized, graphic, image and layout objects) in a certain area are cropped.
- **All objects from selected symbols:** All objects from selected symbols in the symbol box which are in a certain area are cropped.
- **Only chosen objects:** All selected objects in the drawing area will be cropped. Click the **Add selected objects** button to choose the objects.

Choose between 2 different **Line or area cropping objects** modes in the second field:

- **Use cropping rectangle:** All desired objects outside of a rectangle are cropped. Move and adjust the rectangle to the desired position and size.
- **Chosen line or area object** All desired objects outside of a line or area object are cropped. Click the **Choose selected cropping object** button to choose the cropping object. Check the option **Delete cropping object** to delete the selected cropping template after cropping.



The OCAD Starter edition has limited functionality. Only the **Use cropping rectangle** option is enabled.

Check the option **Cut a hole** to cut a hole instead of cropping, i.e. all desired objects inside a range are cropped. Click the **Crop** button to finish.



The number of vertices of the crop object has a big influence on the speed of this function.

Examples and Demonstrations

Create a desired sector



Use this options from **Crop Objects** to crop a smaller part of the entire map.

1. Choose **Crop Objects** from the **Object** menu.
2. Choose **All Objects** at **Objects to crop**.
3. Draw an object which narrows the desired area or select an existing object.
4. Choose **Chosen line or area object** and click **Choose selected cropping object**.
5. Choose **Delete cropping object** if you want to delete the drawn cropping template afterwards.
6. Instead of using points 3 and 4 it is also possible to use the **Use cropping rectangle** option.
7. Click **Crop** and OCAD creates the area you selected.

Create a hole

1. Choose **Crop Objects** from the **Object** menu.
2. Choose **All Objects** at **Objects to crop**.
3. Draw an object which narrows the desired area or select an existing object.
4. Choose **Chosen line or area object** and click the **Choose selected cropping object** button.
5. Choose **Delete cropping object** if you want to delete the drawn cropping template afterwards.
6. Instead of using points 3 and 4 it is also possible to use the **Use cropping rectangle** option.
7. Check **Cut a hole**.
8. Click **Crop** and OCAD creates a hole where you have drawn and selected the area.

Delete selected objects in a certain area

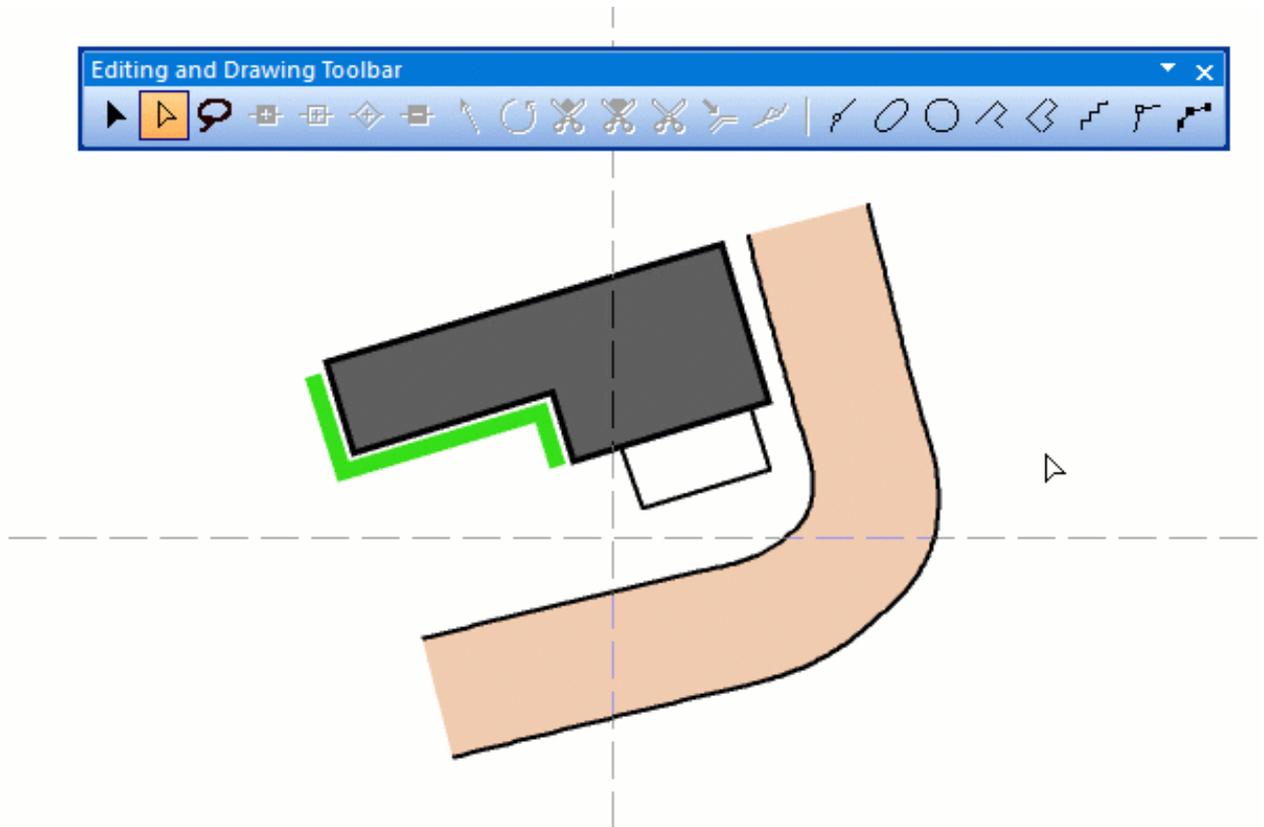
1. Choose **Crop Objects** from the **Object** menu.
2. Draw an object which narrows the desired area or select an existing object.
3. Choose **Chosen line or area object** and click the **Choose selected cropping object** button.
4. Instead of using point 2 and 3 it is also possible to use the **Use cropping rectangle** option.
5. Choose **Delete cropping object** if you want to delete the drawn cropping template afterwards.
6. Select **All objects from selected symbols** and mark the symbols in the symbol box which have to be cropped.
7. Click **Crop** and OCAD delete all selected symbols which you selected in the symbol box except the chosen area.

Back to the **Edit Object** page.

Move Parallel and Move and Duplicate Parallel by Specified Distance

Move Parallel

Mas Ori Sta



Choose this function in the **Object** menu or click the  **Move Parallel** button in the **Editing and Drawing Toolbar**. This mode is activated when a line, line text or area object is selected.

Choose this function to move a line (or the outline of an area) parallel to the original line.

1. Select a line, line text, or area object.
2. Choose the  **Move Parallel** function.
3. Drag a vertex of the selected object in the desired direction. A help line with vertices gives a preview of the parallel moved object.
4. Drop the object to finish parallel moving.
 - Hold the **ALT** key down to select a next object to move.
 - While moving parallel, duplicate object using **Shift+Ctrl** key.

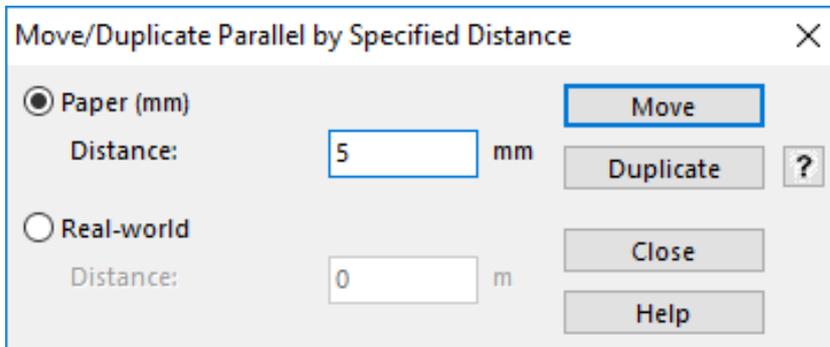
This mode is especially useful when writing street names on curved streets. To draw the line for the line text, follow the center line of the street and enter the text. Then select this mode to move the text to the desired position. The line of the text will stay parallel to the original line and follows curves so that a constant distance from the original line is kept.

Move and Duplicate Parallel by Specified Distance

Mas Ori



1. Choose the **Move/Duplicate Parallel by Specified Distance** function in the **Object** menu if you want to move a line, line text or area object parallel with a certain distance. Point and text objects are moved according to their direction.
2. The **Move/Duplicate Parallel by Specified Distance** dialog box appears.



3. Choose either the **Paper (mm)** or the **Real world coordinates** input option and enter a value in **mm** or in **m**.
4. Click the **Move** button to move the object, click the **Duplicate** button to duplicate and move the object.
5. Click the **Close** button to close the dialog.

 Positive values move the object to the right side, negative to the left.

Back to the **Edit Object** page.

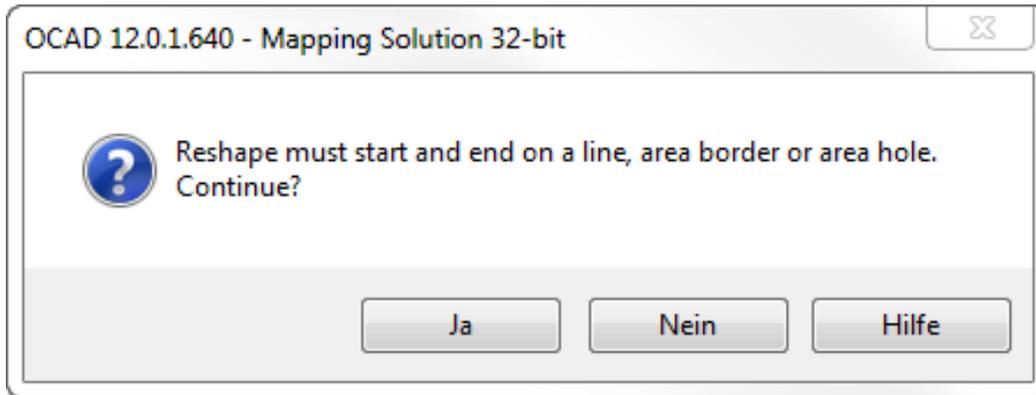
Reshape

Mas Ori

With the **Reshape** function you can edit the shape of a line, line text or area object easily.

1. Choose the  **Reshape** function either in the **Object** menu or in the **Editing and Drawing Toolbar**. A line, line text or area object must be selected.
2. Once you are in the **Reshape** mode, start drawing the new shape of the selected object. Reshape needs to start and end on the shape of the selected object.

 You will be asked whether you want to continue if the end point is not placed on the shape of the selected object.



Back to the **Edit Object** page.

Interpolate Objects

Mas Ori

This function is available if two point objects or two line objects are selected. Both line objects must have the same number of vertices! The function can be found either in the **Object** menu or when you click the  **Interpolate Objects** icon in the **Edit Functions Toolbar**.

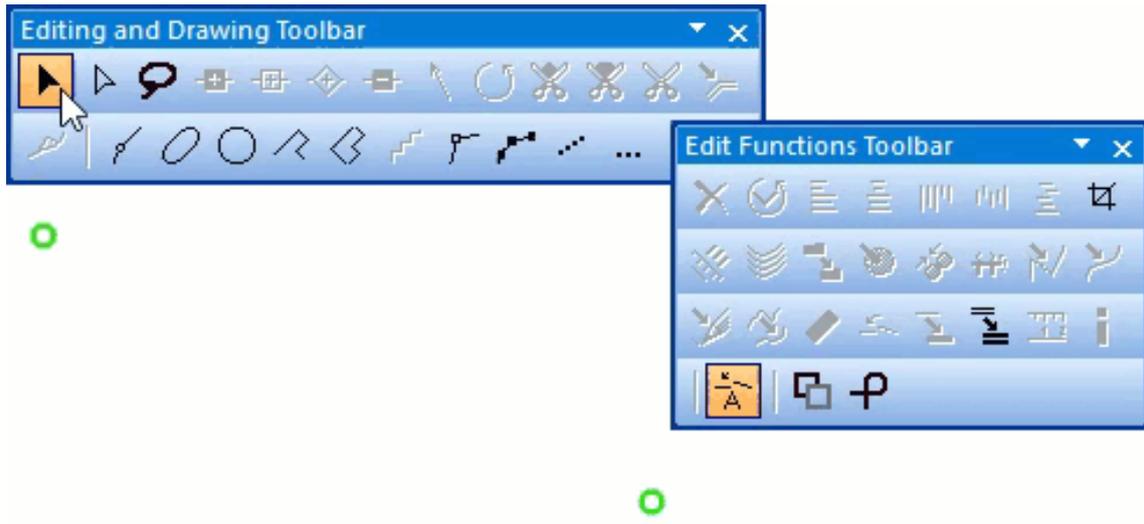
You can either...

- ... interpolate line objects like contour lines or
- ... interpolate point objects e.g. when you want to draw an avenue.

Line objects

1. Create the upper line with a certain number of vertices.
2. Create the lowermost line with the same number of vertices like the upper line.
3. Select both lines (Select Multiple Objects).
4. Choose the  **Interpolate Objects** function.
5. The **Interpolate Objects** dialog opens.
6. Enter the number of objects you want to insert between the two lines.
7. Choose a symbol for the inserted lines.
8. Click the **OK** button to finish the interpolation.

Point objects



1. Place two point objects in the drawing area.
2. Select both points (Select Multiple Objects).
3. Choose the  **Interpolate Objects** function.
4. The **Interpolate Objects** dialog opens.
5. Enter the number of objects you want to insert between the two point objects.
6. Choose a symbol for the inserted point objects.
7. Click the **OK** button to finish the interpolation.



-Inspect the **Symbol** in the **Interpolate Objects** dialog box for correct interpolating.

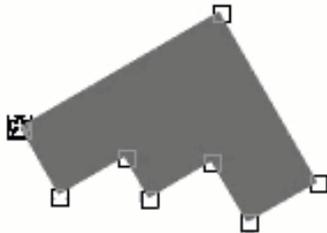
-Instead of using the **Interpolate Objects** function for point objects it is also possible to use the  **Drawing multiple point objects** tool.

Back to the **Edit Object** page.

Duplicate and Move and Duplicate

Duplicate

Mas Ori Sta CS



You can choose this function in the **Object** menu or by clicking the  **Duplicate object** icon in the **Edit Functions Toolbar**.

Alternatively, press Ctrl + C and Ctrl + V.

This function is activated if at least one arbitrary object is selected.

Click this button to duplicate (create a copy of) the selected object(s). The cursor changes automatically to the **Select and Edit Object** mode, which allows you to move the new objects to the desired place. Visit the **Select and Edit Object** page to get some information about moving objects.

Move and Duplicate

Mas Ori

Choose this function in the **Object** menu to move and duplicate an object. This function is activated if at least one arbitrary object is selected.

1. Select one or more object(s).
2. Choose the **Move and Duplicate** function.
3. The **Move and Duplicate** dialog box appears.

Move and Duplicate

Paper coordinates

X: 10 mm

Y: 0.00 mm

Real world coordinates

Easting: 0 m

Northing: 0 m

Distance: 10.00 mm

Angle: 90.00 °

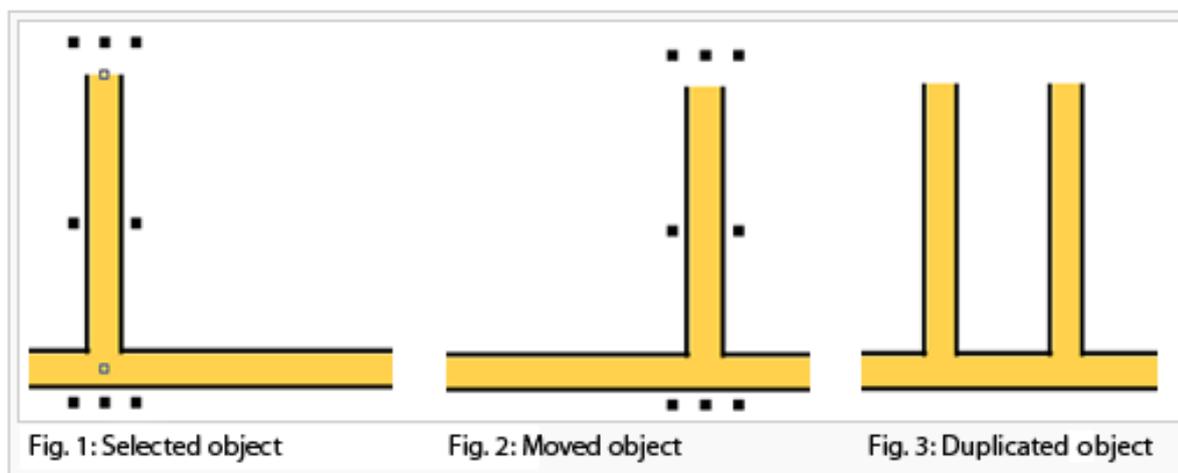
Move

Duplicate

Close

Help

4. Enter a position in **Paper coordinates (mm)** or **Real world coordinates (m)** for the moved or duplicated objects. Alternatively, you can enter a distance (mm) and an angle.
5. Click the **Move** button if you want to move the objects without duplicating or click the **Duplicate** button if you want to duplicate and then move the objects.



Back to the **Edit Object** page.

To the **Mirror and Duplicate** page.

Mirror and Duplicate

Mas Ori

Choose the **Mirror and Duplicate** function in the **Object** menu to mirror (and duplicate) an area or line object. The function is available when at least one object is selected.

1. Select a line, an area object or multiple objects (Select and Edit Multiple Objects).
2. Choose the **Mirror and Duplicate** function.
3. The **Mirror and Duplicate** dialog appears.
4. Choose whether the object(s) should be reflected horizontally or vertically.
5. Click the **Mirror** button to mirror the object(s) without duplicating them or click the **Duplicate** button to duplicate and mirror the objects.
6. Click the **Close** button to quit the dialog.

 - Point and text objects cannot be reflected. Convert them to a **Graphic Object** before reflecting.

Back to the **Edit Object** page.

To the **Duplicate** page.

Convert into Graphic Object

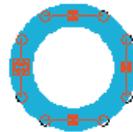
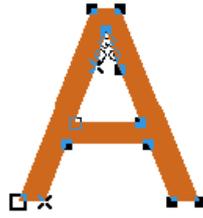
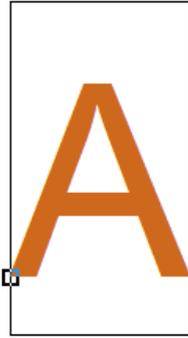
Mas Ori Sta

Choose **Convert into Graphic Object** from the **Object** menu or click the  **Convert into Graphic Object** button in the **Edit Functions Toolbar** to convert selected objects into graphic objects.



What is a Graphic Object?

A **Graphic Object** is an object which is not assigned to a symbol. It is either a line or area object with a color from the color table. Here are two examples:



Symbolized Object

Graphic Object

Symbolized text objects are converted into graphic area objects. A point object is taken apart in its fundamental components which are line or area objects, in this case a blue line object (circle).

To convert a graphic object into a layout object choose the **Convert into Layout Object** function from the **Object** menu.

Back to the **Edit Object** page.

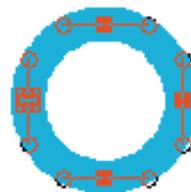
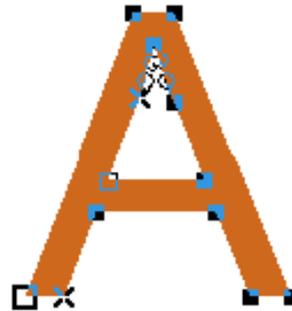
Convert into Image Object

Mas Ori Sta

Choose **Convert into Image Object** from the **Object** menu to convert selected objects into image objects.

What is a Image Object?

An **Image Object** is an object which is not assigned to a symbol. It is either a line or area object with a corresponding CMYK color. Here are two examples (Symbolized objects left, image objects right):



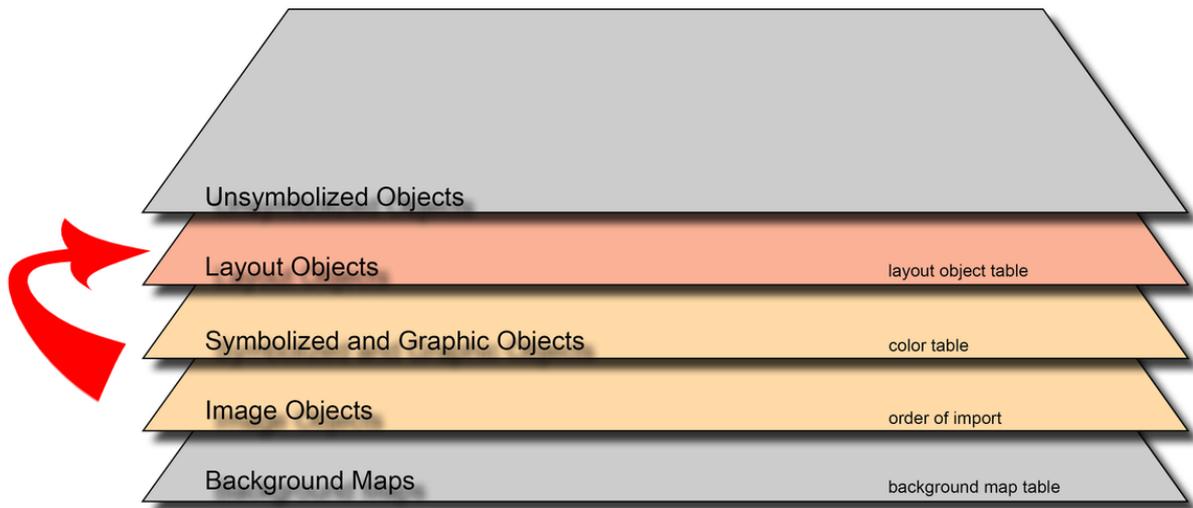
Symbolized text objects are converted into image area objects. A point object is taken apart in its fundamental components which are line or area objects, in this case a blue line object (circle).

To convert a image object into a layout object choose the **Convert into Layout Object** function from the **Object** menu.

Back to the **Edit Object** page.

Convert into Layout Object

Mas Ori



Choose the **Convert into Layout Object** function from the **Object** menu to convert selected objects into layout objects.

💡 **Edit Layout Objects** mode must be activated to be able to select and edit **Layout Objects**.

💡 Read more about **Layout Objects** on the **Layout** page.

To convert a layout object into a graphic object choose the **Convert into Graphic Object** function from the **Object** menu.

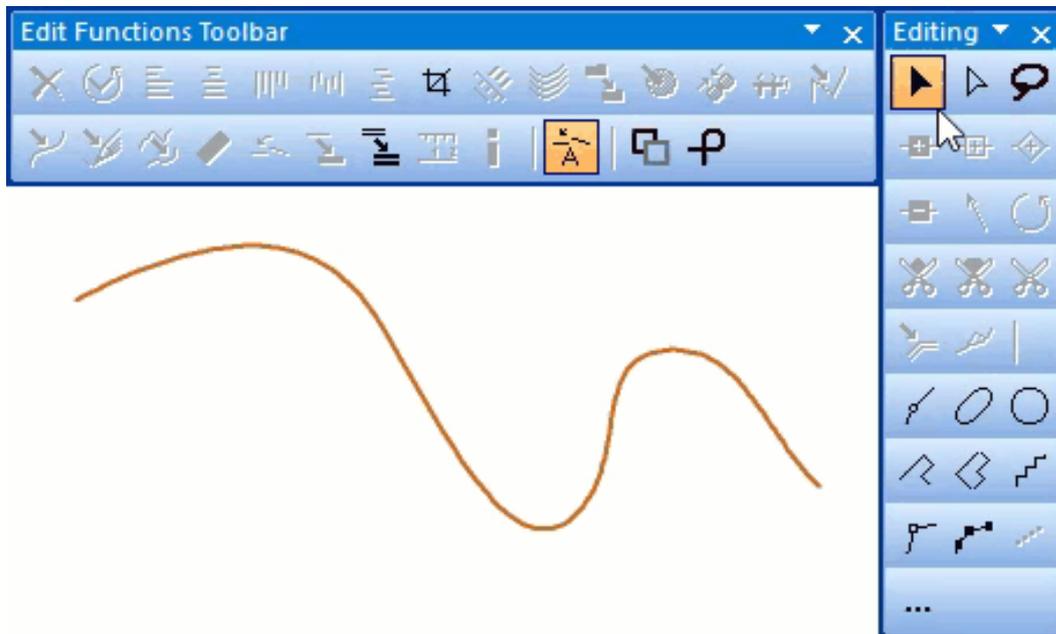
Back to the **Edit Object** page.

To the **Layout** page.

Change to Polyline and Change to Bezier Curve

Change to Polyline

Mas Ori



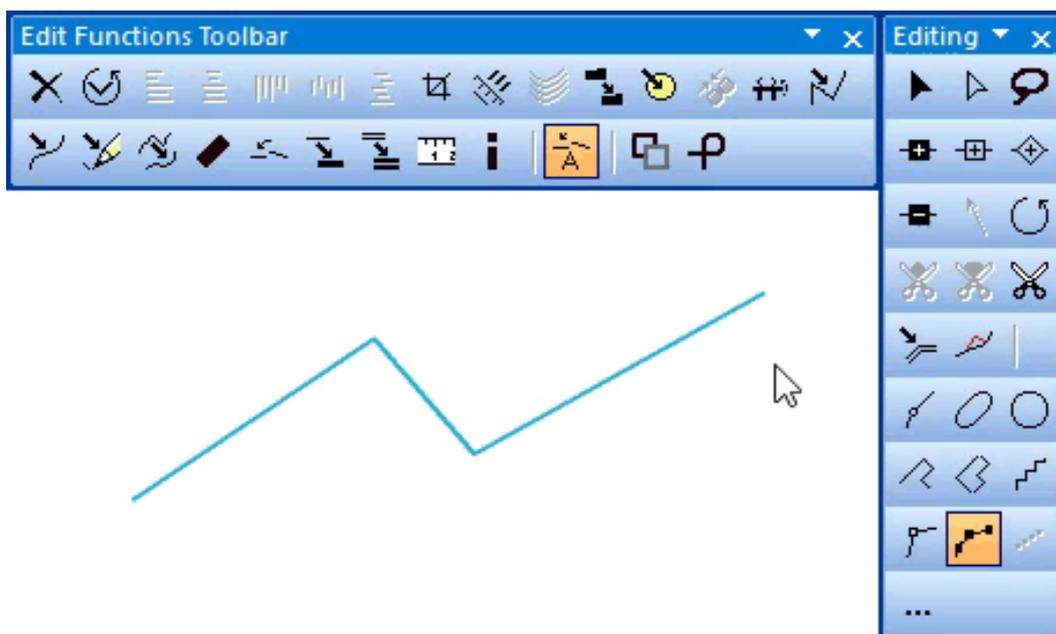
You can find this function in the **Object** menu or by clicking the  **Change to Polyline** button in the **Edit Functions Toolbar**. This function is available when a line, area or line text object is selected.

Choose this function to change a line into a polyline. A polyline is an angular line, this means all Bezier vertices are replaced with regular vertices.

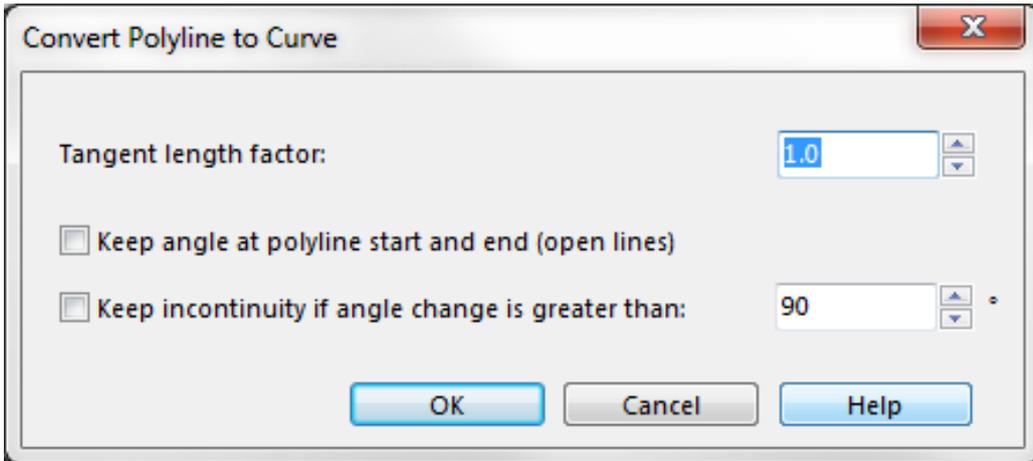
Define the **Smooth** tolerance in the menu **Options - OCAD Preferences - category Drawing and Editing**.

Change to Bezier Curve

Mas Ori Sta



You can find this function in the **Object** menu or by clicking the  **Change to Bezier Curve** button in the **Edit Functions Toolbar**. This opens a dialog and is available when a line, area or line text object is selected.



Choose this command to convert the selected polylines to Bezier curves. The quality of the Bezier curve depends on the number of vertices of the original polylines and the tangent length factor. If the polyline has only a few vertices the distance from the Bezier curve to the original polyline between the vertices can be much bigger than the tolerance value. The closer the tangent length factor gets to zero, the more points are left and the curve looks more like the polyline.



 The **Convert polyline to curve** dialog is not shown if the **Shift** key is pressed while clicking **Change to Bezier Curve** button in the toolbar.

 If a hole inside an area object is selected, only the border of the hole is converted.

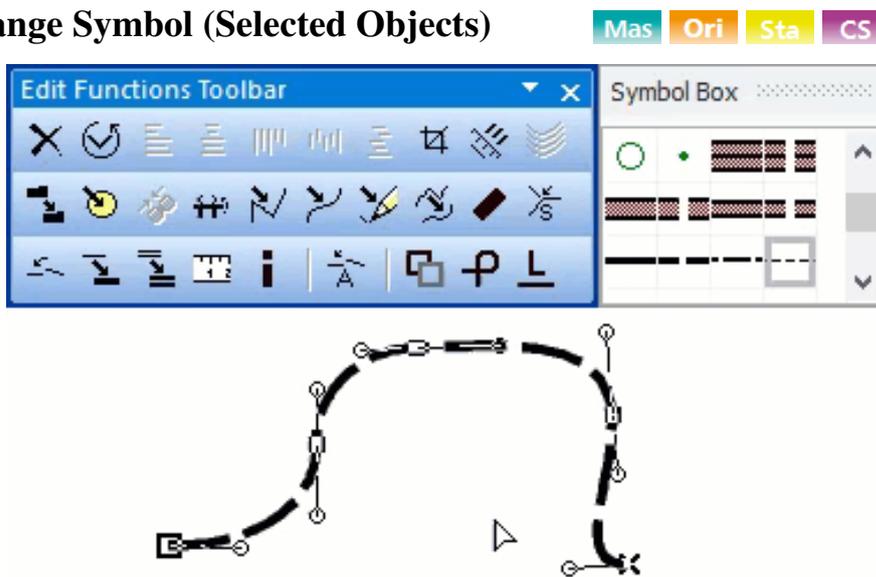


Define the **Change to Bezier curve** tolerance in the menu **Options - OCAD Preferences - category Drawing and Editing**.

Back to the **Edit Object** page.

Change Symbol

Change Symbol (Selected Objects)



You can find this function either in the **Object** menu or by clicking the  **Change symbol of object** button in the **Edit Functions Toolbar**. This command is enabled when at least one object is selected and the symbol selected in the symbol box is compatible with it.

With this function you can change a selected object's symbol.

1. Select at least one object in the drawing area.
2. Select the new symbol in the symbol box.
3. Choose the **Change Symbol (Selected Objects)** function.

OCAD assigns all selected objects the new symbol.

Change Symbol (All Objects with Corresponding Symbol)

Mas Ori Sta

Choose this command in the **Object** menu or click the  **Change symbol for all objects with this symbol** button to change all objects with a symbol A to symbol B. The **Change Symbol (All Objects with Corresponding Symbol)** dialog appears.

In the **Change all objects with** field you can choose whether you want to change all objects with a specific symbol number or all objects which are in an imported layer. Enter a symbol number or select an imported layer. The given number in the box is the currently selected object.

Enter the symbol number of the new symbol. The given number in the box is the currently selected symbol in the symbol box. Click the **OK** button to finish.

 This command is especially useful to **translate the layers** of an imported file to OCAD symbols.

Back to the **Edit Object** page.

Group and Ungroup

Select this function in the **Object** menu to group and/or ungroup objects from the drawing area.

- 💡 -Grouped objects can be moved easily because they behave as a single object.
-In contrast to image objects the individual properties will always remain.

Group

Mas Ori

1. Select all objects which have to be added in one group (**Select Multiple Objects**).
2. Select **Group** in the **Object** menu.
3. Enter a **Group name** and click the **Group** button.

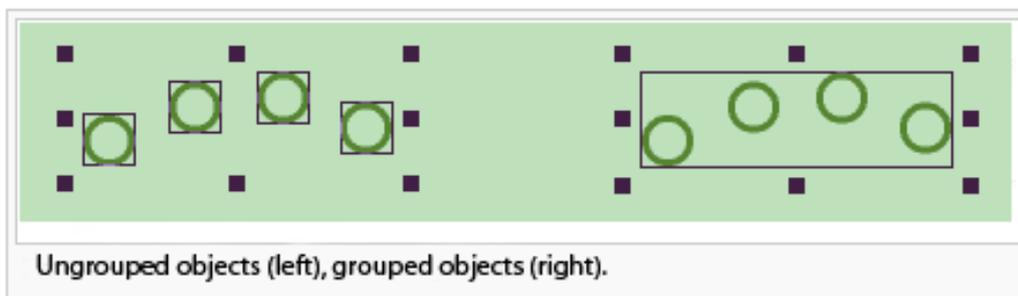
- 💡 -To select a group select **Select Group** in **Select** menu.
-If you want to edit a single object from a group, you have to ungroup first.

Ungroup

Mas Ori Sta

1. Select the group which have to be ungrouped.
2. Select **Ungroup** in the **Object** menu.

- 💡 To add objects in an existing group, the group must be ungrouped and then grouped again.



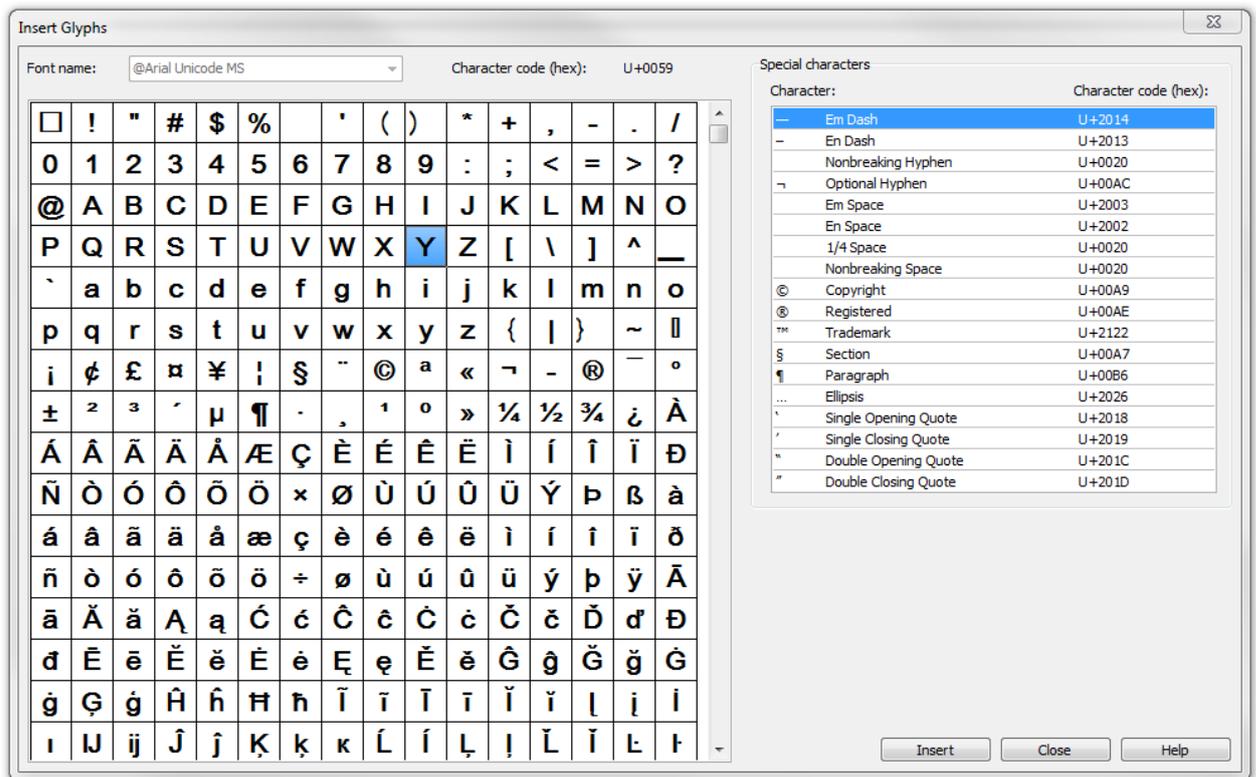
Back to the **Edit Object** page.

Insert Glyphs

Mas

The function **Insert glyphs** can be used to insert **special characters** like 2 for m^2 into your text objects.

1. To insert glyphs change the **Font** in the **Text Symbol** dialog box into a font which supports the required glyphs.
2. Select an existing text object and set the cursor to the position you want to insert a glyph.
3. Choose the **Insert Glyphs** command from the **Object** menu.
4. The **Insert Glyphs** dialog box appears:



5. Double click on a character to add it or select a character and click the **Insert** button.
6. Click the **Close** button to quit this dialog.

- 💡 -Only characters that are included in the character set can be added.
- 💡 -Add special characters on the right side of the dialog.
- 💡 -Glyphs can also be used in layout text objects.

Back to the **Edit Object** page.

Menu Topology

Topology

Join

Mas Ori Sta

Choose the  **Join** function in the **Topology** menu or in the **Edit Functions Toolbar**. This function is active if a line object is selected.

Use this function to adjust adjoining line ends so that they coincide. Only line objects with the same symbol are joined. This is especially useful when continuing a line object such as a contour. Note that the objects remain independent objects, but the coordinates of the end vertices are equalized. If you want to merge objects, choose the **Merge** command.

Automatic Joining

If you enable  **Automatic Joining** in the **Edit Functions Toolbar**, end points of lines or areas are joined automatically when finishing drawing a line or area near another end. The **Join when drawing lines** tolerance can be set in the **Drawing and Editing** category of the **OCAD Preferences**. To switch off the automatic joining temporary during drawing, press the Shift key when terminating the line or area object.

Tolerance Value

Define how close two line end points have to be for joining them in the **Drawing and Editing** category of **OCAD Preferences**.



Smooth



Visit the **Smooth** page to find some information about the  **Smooth** function.

Generalize Buildings



Allows to simplify the building geometry or rectangle it.

1. Click on **Generalize Buildings** in the **Topology** menu. The **Generalize Buildings** dialog opens.
2. Choose between **Geometry simplification** and **Rectangle** option.

Geometry simplification:

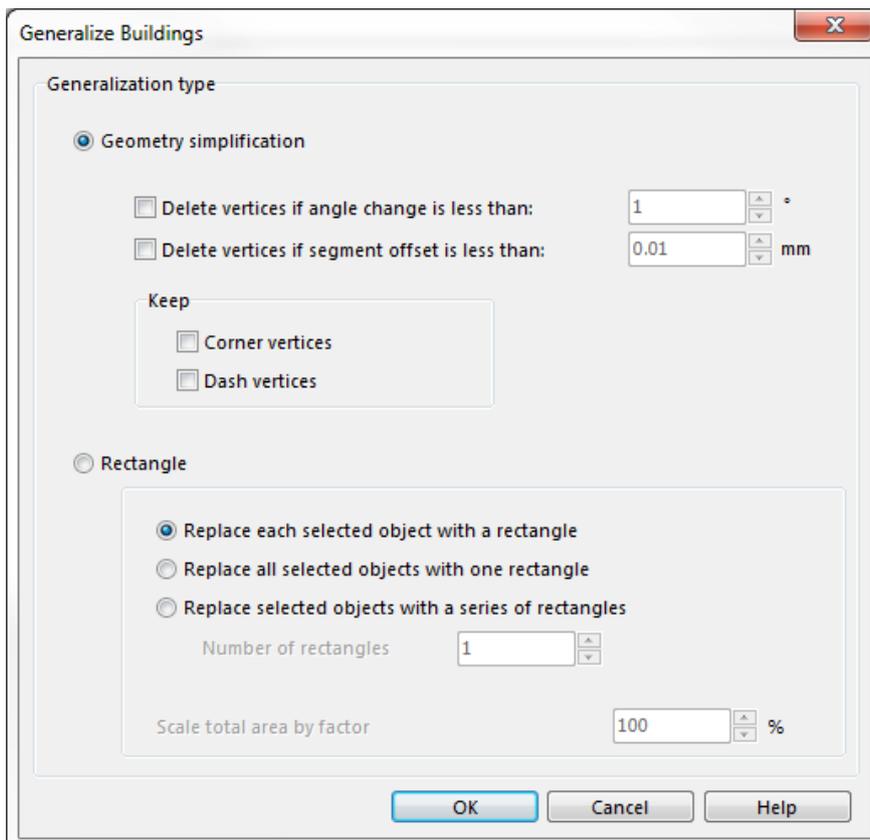
- Define the **angle change** and the **segment offset** as thresholds if vertices should be deleted.
- There are also options to keep **Corner vertices** and **Dash vertices**.

Rectangle:

- Decide if **each selected object will be replaced a rectangle**, if **all selected objects will be replaced with one rectangle** or if **the selected object will be replaced with a series of rectangles**. Enter the **Number of rectangles** if you choose the last option.
- Enter a **factor to scale the total area**.

 The result of replacing three buildings with one rectangle may be better if the new area is more than 100% of the sum of the three areas because of the space between the original buildings. In such cases often a factor of 130-140% is used.

3. Click **OK**

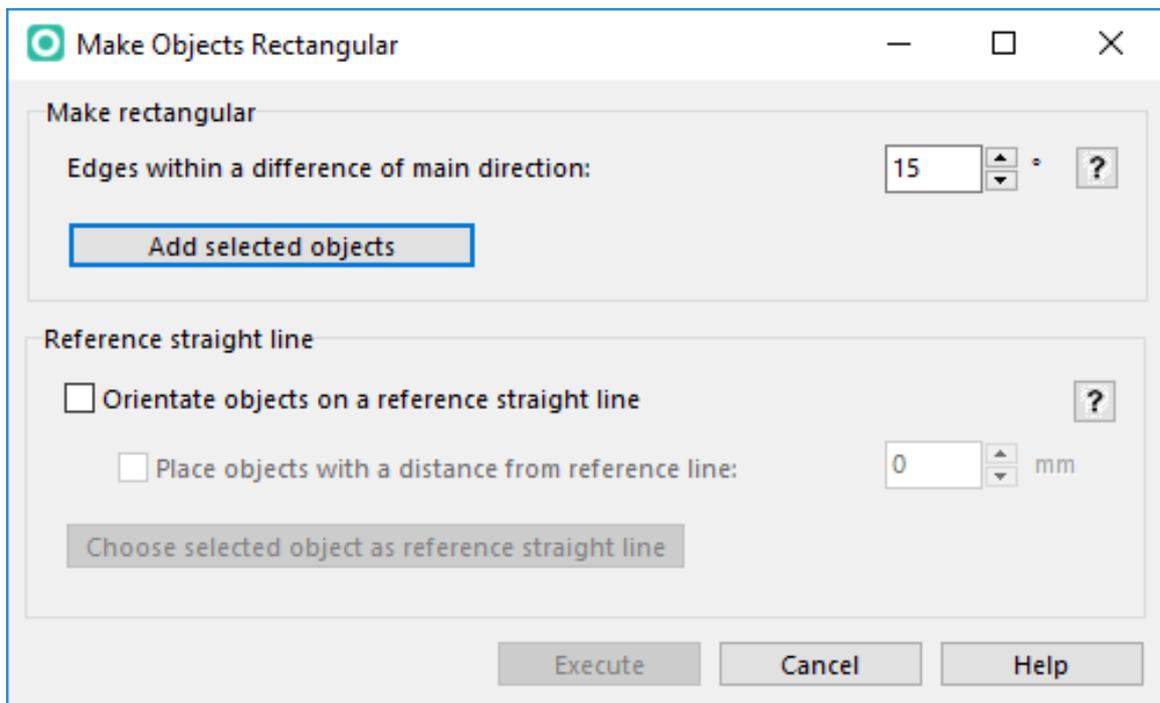


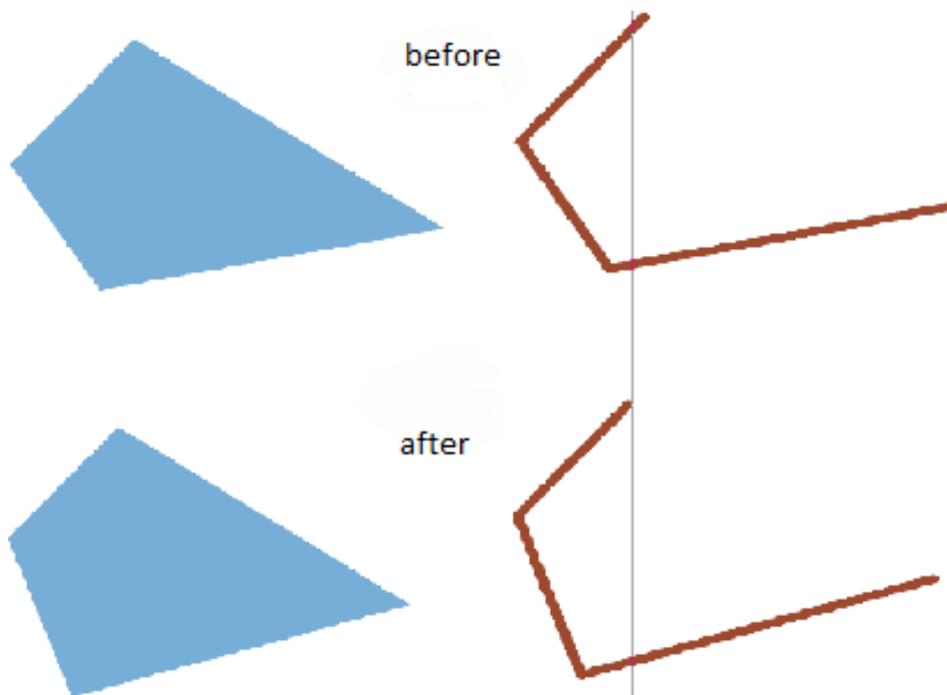
Make Objects Rectangular

Mas Ori

This function allows to rectify line and area objects. Angles close to 90° are forced to be exactly 90°.

1. Select the object(s) that should be rectified.
2. Click on **Make Objects Rectangular...** in the **Topology** menu to open the non-modal **Make Objects Rectangular** dialog.
3. Define the allowed angle tolerance as a **difference from 90°**. A tolerance of 10° means that all edges with an angle change between 80 and 100° will be rectified.
4. Click on **Add selected objects**. This is necessary since this is a non-modal dialog.
5. Decide, if the selected objects shall also be orientated along a reference line.
6. Define the distance between the object(s) and the reference line.
7. Select the reference line object on the map and click **Choose selected object as reference straight line**
8. Click **Execute** button to execute the function.





Close Area Objects

Mas

Choose this function from the **Topology** menu.

This function closes the desired area(s).

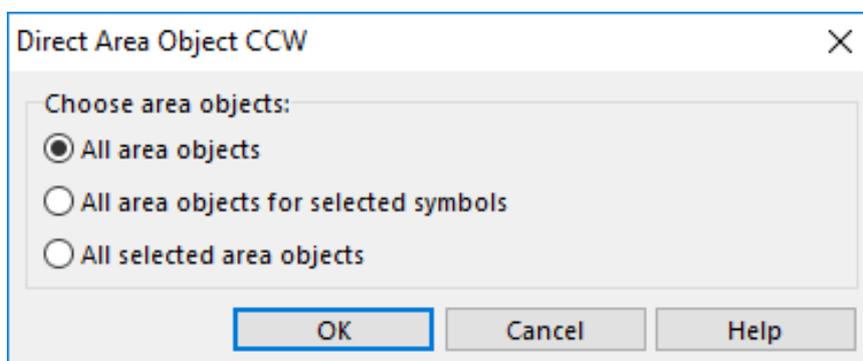
1. Select the area objects to close either in the drawing area or in the symbol box. Do not select any area object if you want to close all area objects on the map.
2. Choose the **Close Area Objects** command.
3. The **Close Area Objects** dialog appears.
4. Choose whether you want to close all area objects, all area objects from the selected symbols or all selected area objects on the map.
5. Click the **OK** button to finish. OCAD closes the desired areas (which means that the end and start point of an area object have the same coordinate).

 OCAD is able to close area objects automatically when drawing. Enable the **Close area objects when drawing** option in the **Drawing and Editing** category of **OCAD Preferences** to activate this function.

Change Area Objects to CCW

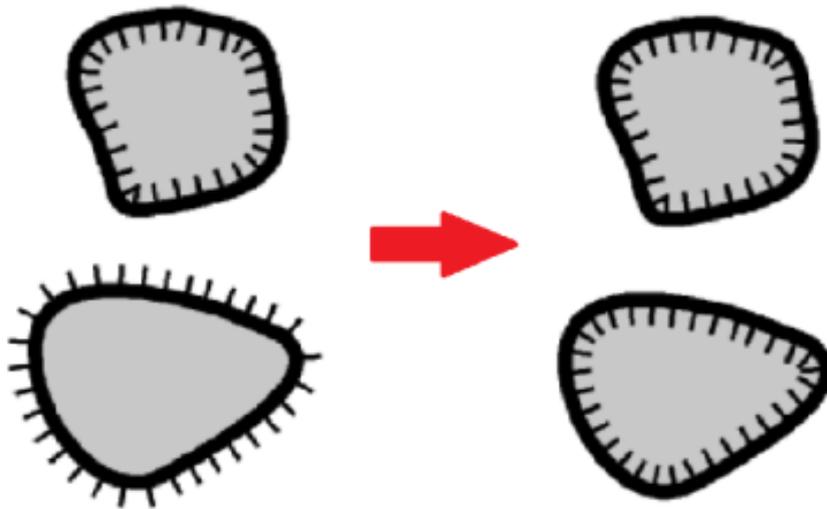
Mas Ori

Choose this function from the **Topology** menu.



This function changes the direction of area object to counterclockwise (CCW). You may use this function if you need the border lines of many area objects being oriented to the same direction. In addition, it can be necessary if

you export area objects to shape format, as in geodata formats area objects are defined counterclockwise. The holes within the areas are defined clockwise.

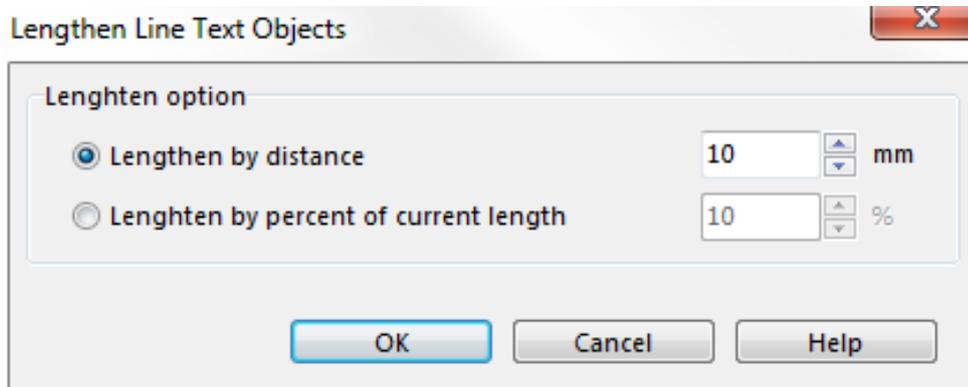


The direction of an area object can be changed with the Reverse Object Direction function.

Lengthen Line Text Objects Mas

Choose this function from the **Topology** menu.

The function lengthens the selected line text objects by distance or a percent value of current length. The lengthening is always added at the end of the line text object. Choose the option **Lengthen by distance** or **Lengthen by percent of current length** and enter the distance in mm or the percent value.

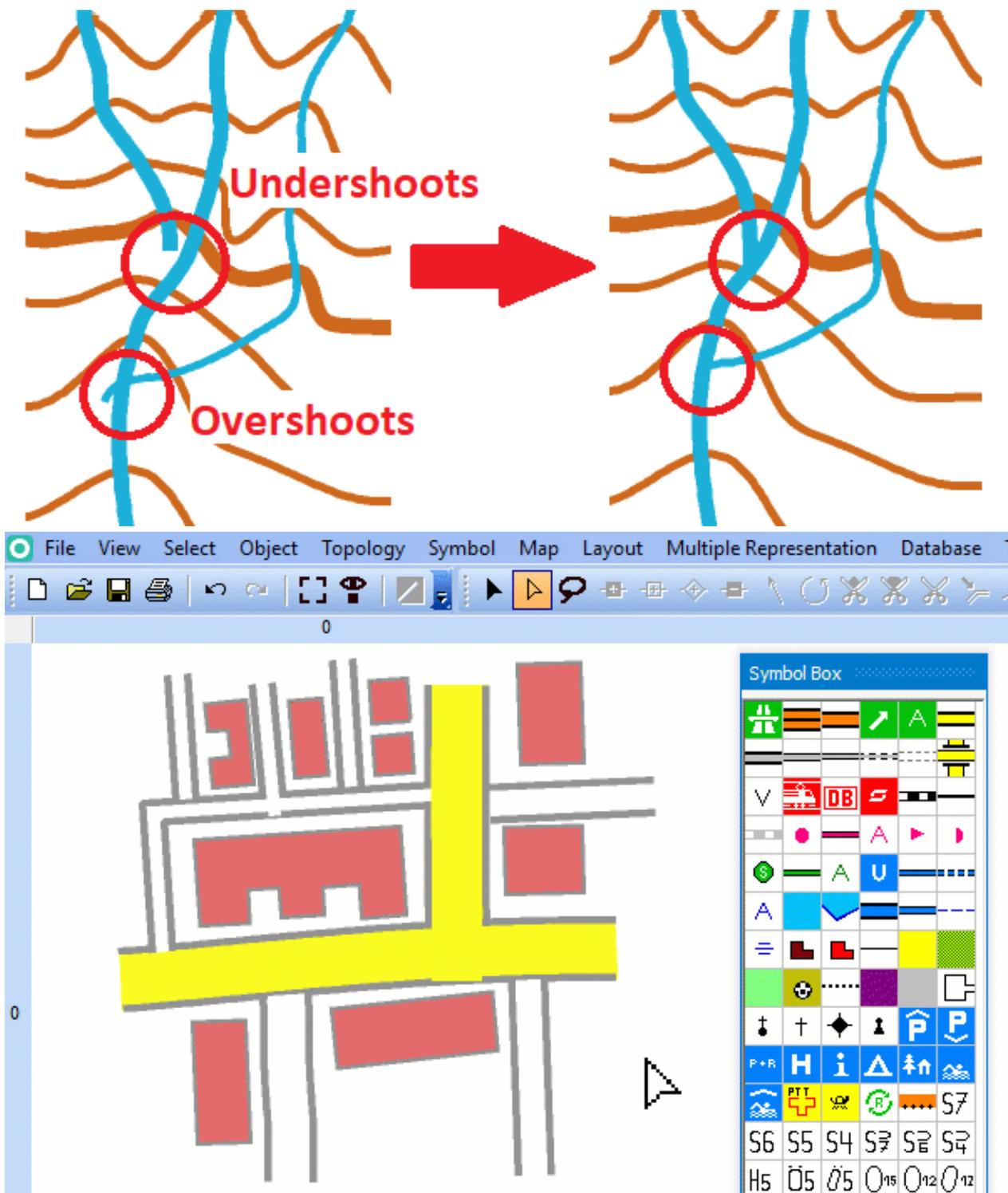


Remove Undershoots and Overshoots Mas Ori

Undershoots and overshoots occur when the snap distance is either not set or is set too low for the scale being digitized. Like this, the drawn line doesn't connect exactly with the neighboring line it should intersect with.

You find the function **Remove Overshoots and Undershoots** in the **Topology** menu.

This function removes over- and undershoots of the selected lines. It is only enabled when at least two line objects are selected.



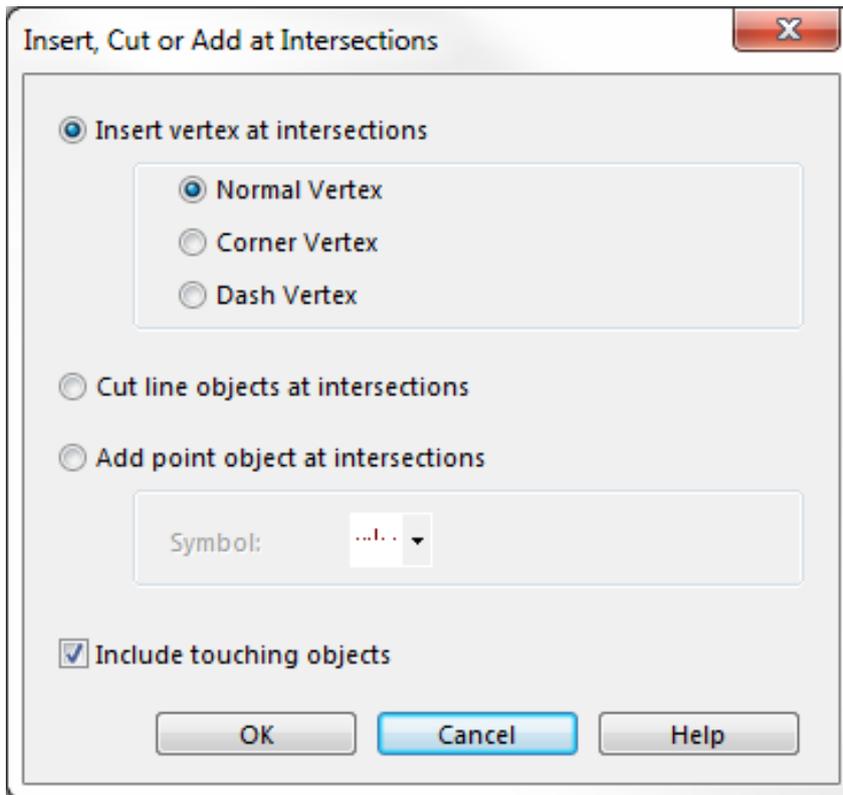
1. **Select** the line objects with over- and/or undershoots.
2. Choose the **Remove Overshoots and Undershoots** function.
3. The **Remove Overshoots and Undershoots** dialog box appears.
4. Decide whether you want to remove overshoots, undershoots or both of them.
5. Define a tolerance value. This value determines how much a line must over- or undershoot so that it gets cut or extended.
6. Click the **OK** button to finish.

💡 If you want to prevent from creating under- and overshoots, enable the **Snapping** function.

Insert, Cut or Add at Intersections

Mas Ori

You can find this function in the **Topology** menu.



1. Select the **line** objects you want to work with. Please note that the function applies only to intersections and self-intersections of the selected objects.
2. Choose the **Insert, Cut or Add at Intersections** function.
3. The **Insert, Cut or Add at Intersections** dialog appears.
4. Choose whether you want to **Insert vertex at intersections**, to **Cut line objects at intersections** or to **Add Point object at intersections**.
 1. If you want a vertex at intersections, you have to choose between a **Normal Vertex**, a **Corner Vertex** or a **Dash Vertex** (Read more about vertices on the **Vertices** page).
 2. If you want a point object at intersections, you have to pick one.
5. If desired, check the **Include touching objects** option.
 - 💡 If this option is checked, touching objects get the same reaction as intersected objects.
6. Click the **OK** button to finish.

This function can be useful if you want to improve the graphic appearance of dashed lines' intersections. For example, if you insert a **Dash Vertex**, the intersection will be in the middle of a dash (Learn more about vertices on the **Vertices** page).

Remove Duplicate Vertices from selected Objects

Mas Ori

Choose the **Remove Duplicate Vertices from selected Objects** command in the **Topology** menu to remove the duplicate (=consecutive with identical coordinates) vertices of selected objects.

[Back to Main Page](#)

Generalization

OCAD includes tools for Generalization.

Smoothing of line or area objects, using the Douglas-Peucker algorithm which removes unnecessary vertices.

Generalize Buildings: Simplify the building geometry or rectangle it.

Rectify line and area objects with the **Make Objects Rectangular** function.

Smooth and simplyfy **contour lines** using Topographic Position Index.

Snapping

Mas Ori

Click the  **Snapping** icon in the **Edit Functions Toolbar** to enable snapping.

The snapping works with unsymbolized, graphic and image objects and with objects from symbols with status normal or protect. The snapping does not work with layout objects, objects from hidden symbols and with background maps.

Enter the snapping tolerance in screen pixel in **OCAD Preferences** in the menu **Options** and change **Snapping Tolerance** in the category **Drawing and Editing**. The default value is 5 pixels.

 Press the Ctrl + Alt keys to switch on the snapping temporary if the snapping mode is switched off.



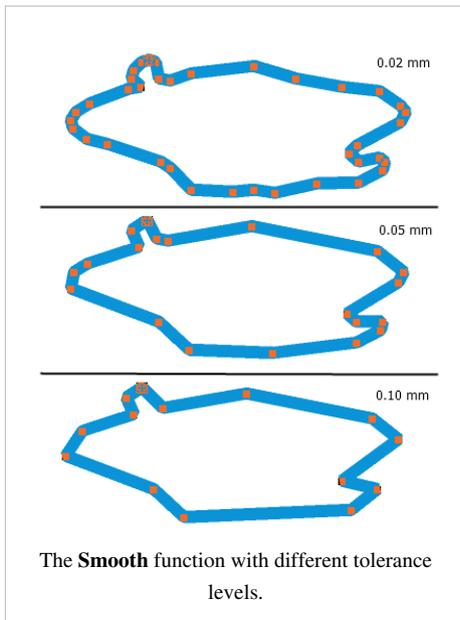
Smooth

Mas Ori Sta

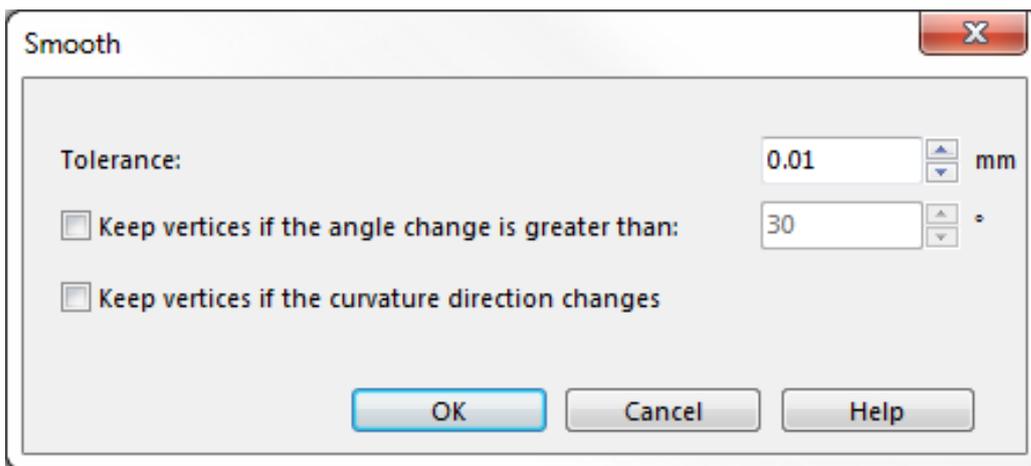
Choose this command in the **Topology** menu or by clicking the  **Smooth** button in the **Edit Functions Toolbar**.

This command is activated when at least one line or area object is selected.

Choose this command to smooth 'dithered' line or area objects with the smoothing tolerance defined in the **Drawing and Editing** category of **OCAD Preferences (Smooth (generalization))**. The **Smooth** function uses the Douglas-Peucker algorithm and removes unnecessary vertices.



1. Click **Smooth** to open the **Smooth Objects** dialog.
2. Enter the tolerance and decide if and under which conditions the vertices shall be kept.
3. Click **OK**



Back to the **Topology** page.

Menu Symbol

Symbol

Symbols are used to define a map object's graphic appearance (characteristic). For example, a tree is represented by a green point on the map. Every map object drawn using the "tree" symbol will therefore have the same graphic appearance. If the symbol is changed using the symbol editor, all map objects drawn using it are also changed. OCAD provides four basic symbol types that correspond to the properties of the respective objects:

- Point symbol
- Line symbol
- Area symbol
- Text symbol

 You can get to the **Symbol** menu by clicking a symbol in the symbol box with the right mouse button, too.

New



Choose this command to create a new symbol. The New Symbol dialog box is displayed. Check the desired symbol type and click OK. A dialog box is shown where the parameters of the symbol can be defined, varying according to the symbol type.

For basic principles see Create a New Symbol.

- **Point symbol:** Symbol for point objects.
- **Line symbol:** Symbol for line objects.
- **Area symbol:** Symbol for area objects.
- **Text symbol:** Symbol for text.

 For every text style, a separate symbol is required.

- **Line text symbol:** Line text symbols are used for text along curved lines.
- **Rectangle symbols:** Symbol for rectangular frames.

Edit



Choose this command from the **Symbol** menu or click with the right mouse button on a symbol in the symbol box to edit the currently selected symbol. According to the symbol type a dialog box is displayed where the symbol properties can be modified:

- **Edit Point Symbols**
- **Edit Line Symbols**
- **Edit Area Symbols**
- **Edit Text Symbols**
- **Edit Line Text Symbols**
- **Edit Rectangle Symbols**

 If you edit a symbol, all objects on the map with this specific symbol are changed.

Icon



Choose this command from the **Symbol** menu or click with the right mouse button on a symbol in the symbol box to draw or edit the icon for the selected symbol. The **Edit Icon** dialog box appears, which contains a simple paint program to draw an icon.

Learn more about the **Icon Editor** on the **Icon Editor** page.

Enlarge Reduce



Choose this command in the **Symbol** menu to enlarge or reduce the selected symbol(s) or all symbols. The **Enlarge Symbol** dialog appears.

Factor

Enter here a percentage value to enlarge or reduce the symbol(s). A value of 100 means that the size of the symbol remains the same. A value smaller than 100 means the size of the symbol is reduced, a value greater than 100 means the size of the symbol is enlarged.

All symbols

If this check box is checked, all symbols are enlarged/reduced. If it is not checked, only the selected symbol(s) are enlarged/reduced.

This function is disabled for course setting projects.

Copy



Choose this command from the **Symbol** menu to copy the selected symbol(s) to the clipboard.

If a symbol has been copied to the clipboard, choose **Paste** from the **Symbol** menu to paste it either to the symbol box of the original map or to the symbol box of a different map. Keep in mind that when you copy a symbol to a different map, the colors are not copied.

Paste



This command is activated if the clipboard contains one or more OCAD symbols.

Choose this command to paste a symbol or a group of symbols from the clipboard to the current map. If a symbol number already exists, it is changed to the next free number. Use the **Copy** function from the **Symbol** menu to copy symbols to the clipboard.

Delete



Choose this command from the **Symbol** menu to delete the selected symbol(s). A confirmation message appears before the symbols are removed from the symbol box.

If a deleted symbol is used in the map, the respective objects are not deleted, but appear gray as **Unsymbolized Objects**.

Duplicate



Choose this command from the **Symbol** menu to duplicate (create a copy of) the selected symbol(s). The duplicated symbols get the next free symbol number.

If one symbol is selected, the duplicated symbol is inserted after the selected symbol; otherwise the duplicated symbols are appended at the end of the symbol box.

Sort Symbol Box



You can sort the symbol box by various definition.

- **By Symbol Number**
- **By Color**
- **By Symbol Type**
- **By Status (Normal, Protected or Hidden)**
- **By Usage Frequency**

Learn more about sorting the symbol box on the **Symbol Box** page.

Select

It's possible to select objects without specially clicking on them.

- **Used**
- **Unused**
- **Invert**
- **All**
- **By Symbol Number**
- **By Symbol Type**
- **By Status**
- **By Color**
- **By Fonts**

Learn more about selecting symbols on the **Symbol Box** page.

Replace



Replace Font in Symbols

Choose the **Font** function in the **Replace** submenu of the **Symbol** menu to replace a font in symbols. The **Replace Font in Symbols** dialog opens.

The font can be replaced either in all symbols with a specified font (e.g. every text symbol with the font Arial gets a new font) or in all selected symbols (All selected text objects no matter which font they have get a new font). Choose the desired option. Afterwards, choose a new font in the **New font** dropdown menu and click the **OK** button to finish.

Replace Color in Symbols

Choose the **Color** function in the **Replace** submenu of the **Symbol** menu to replace a color in symbols. The **Replace Color in Symbols** dialog opens.

Choose wheter you want to replace the color in all symbols or only in the selected symbols of the symbol box. Then select the old color in the **Old color** dropdown list as well as the new color in the **New color** dropdown list.

Click the **OK** button and the color is replaced.

Symbol Status



Each symbol has one of these four status:

- normal (visible and selectable)
- protected (and visible). **Protected** means that it is not possible to select these objects by clicking on an object in the drawing area. However you can selected these objects with other functions like Select Object by Symbol or Select Object by Date.
- hidden and protected
- hidden and unprotected (former unprotected status is saved, but not selectable)

Normal (Visible and Selectable)

Choose this command in the **Symbol** menu to change the selected symbols to **Normal**. Normal symbols are neither protected nor hidden, which means they are visible and can be selected (draw, edit, delete).

 Alternatively, you can press the **F2** key (**Shortcut** by default) or right click into the symbolbox and select **Normal (Visible and Selectable)** to set the symbol status of the selected symbols to **Normal**.

Protect Objects

Choose this command in the **Symbol** menu to protect the selected symbol(s). Objects with a protected symbol are visible but cannot be edited.

Protected symbols appear with a gray diagonal in the symbol box.

 Alternatively, you can press the **F3** key (**Shortcut** by default) or right click into the symbolbox and select **Protect Objects** to protect the selected symbols.

Hide Objects

Choose this command in the **Symbol** menu to hide the selected symbols. Objects with a hidden symbol are not visible, not printed and not exported.

Hidden symbols appear with a gray cross (x) in the symbol box.

 - There is an option in the category **Warnings** of the **OCAD Preferences** to turn on/off the warning that the map contains hidden symbols.

- Alternatively, you can press the **F4** key (**Shortcut** by default) or right click into the symbolbox and select **Hide Objects** to hide the selected symbols.

Symbol Status Manager

Choose this command in the **Symbol** panel to save symbol status settings as .xml files. With the **Symbol Status Manager** you can **Load** and **Delete** previously saved settings. It's even possible to **Export** and **Import** setting from other ocad files.

Show Unsymbolized Objects



With this menu item you can show or hide **Unsymbolized Objects**.

Show Graphic Objects



With this menu item you can show or hide **Graphic Objects**.

Image Objects



With this menu item you can show, protect or hide **Image Objects**.

Normal: The image objects are visible and can be edited, moved or deleted

Protect: The image objects are visible but cannot be selected, edited, moved or deleted.

Hide: The image objects are not visible.

Symbol Favorites



Show Symbol Favorites

Display the symbol favorites in symbol box.

Add To Favorites

Add the selected symbol(s) to symbol favorites.

Remove from Symbol Favorites

Remove the selected symbol(s) from symbol favorites.

Learn more about the **Symbol Favorites** functions on the **Symbol Box** page.

Symbol Tree



Show Symbol Tree

Display the symbol tree in symbol box.

Remove from Symbol Tree

Remove the selected symbol(s) from symbol tree.

Learn more about the **Symbol Tree** functions on the **Symbol Box** page.

[Back to Main Page](#)

Symbol Box

Sort Symbol Box

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Choose this command from the **Symbol** menu to sort the symbols in the symbol box. The other way to access these functions is to right click in the **Symbol Box** and the select this command.

This submenu provides multiple functions:

- **By Symbol Number:** The symbol box gets sorted by the symbol number, starting with the lowest number.
- **By Color:** The symbol box gets sorted by the order of the Map **Colors**. If an object uses multiple colors, the sort uses the first to be found color.
- **By Symbol Type:** The symbol box gets sorted by the symbol type. Starting with point objects, then line objects, area objects and as last text objects.
- **By Status (Normal, Protected or Hidden):** The symbol box gets sorted by the status of the symbols. Starting with **Normal**, then **Protected** and finally **Hidden**.
- **By Usage Frequency:** The symbol box gets sorted by how many times a symbol got used in the map, starting with the highest usage.

Select

Choose this command from the **Symbol** menu to select symbols in the symbol box. The other way to access these functions is to right click in the **Symbol Box** and the select this command.

In the submenu you can find the following functions:

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- **Used:** Select all symbols which are used in the map.
- **Unused:** Select all symbols which are not used in the map.
- **Invert:** Invert the selection. Selected symbols become unselected and unselected symbols become selected.
- **All:** Select all symbols.

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- **By Symbol Number:** Select a symbol by symbol number. Choose a symbol number in the **Select Symbol by Symbol Number** dialog box and click the **OK** button.
 - **By Symbol Type:** Select a symbol by symbol type. Choose one or multiple symbol types in the **Select Symbol by Symbol Type** dialog box and click the **OK** button.
 - **By Symbol Status:** Select a symbol by its status. Choose one or multiple status in the **Select Symbol by Status** dialog box and click the **OK** button.
 - **By Color:** Select symbols by color. Choose a color in the **Select by Color** dialog box and click the **OK** button. All symbols with the chosen color are selected.
 - **By Font:** Select symbols by font. Choose a font in the **Select by Font** dialog box and click the **OK** button. All text and line text symbols with the chosen font are selected.
-

Symbol Favorites



Show Symbol Favorites

Choose this command in the **Symbol** menu to display the symbol favorites above the symbol box.

You can add often used symbols to the favorites. The **Symbol Favorites** function makes the handling with large symbol sets easier.

Add to Symbol Favorites

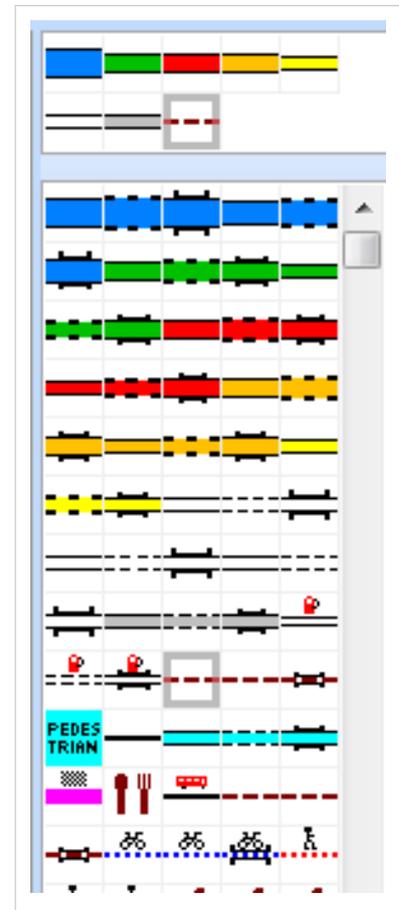
Select the symbol(s) in the symbol box and choose the **Add To Favorites** command in the **Symbol** menu. The **Show Symbol Favorites** function must be enabled to choose this command.

- 💡 - It is also possible to add multiple objects.
 - An easy way to add symbols to the favorites is to use the **Symbol** menu which appears by clicking a symbol with the right mouse button.

Remove from Symbol Favorites

Select the symbol(s) in the symbol favorites or in the symbol box and choose the **Remove From Favorites** command in the **Symbol** menu.

- 💡 - It is also possible to remove multiple objects.
 - An easy way to remove symbols from the favorites is to use the **Symbol** menu which appears by clicking a symbol with the right mouse button.



Symbol Tree



Show Symbol Tree

Choose this command in the **Symbol** menu to display the symbol tree above the symbol box. You can organize the symbols in groups (e.g. theme or colors). The symbol tree makes the handling of large symbol sets easier.

New subgroup

Click a group in the symbol tree with the right mouse button. Choose the **New subgroup** command from the popup menu. A new group is inserted as a subgroup of the selected group. Click on the group name, wait a second, and click again to rename the group.

Insert group

Click a group in the symbol tree with the right mouse button. Choose the **Insert group** command from the popup menu. A new group is inserted on the same level. Click on the group name, wait a second, and click again to rename the group.

Delete group

Click a group in the symbol tree with the right mouse button. Choose the **Delete group** command from the popup menu. The selected group is deleted and the symbols can be found in the group **Other**.

Add selected symbol

Select a symbol in the symbol box. Click the group, you want to add the symbol to, with the right mouse button and choose the **Add selected symbol** command from the popup menu. The selected symbol is added to this group.

Remove selected symbol

Select a group in the symbol tree and then a symbol in symbol box. Click this group in the symbol tree with the right mouse button. Choose the **Remove selected symbol** command from the popup menu. The removed symbol can be found in the group **Other** again.

Alternatively, you can use the **Remove from Symbol Tree** function of the **Symbol** menu to move the selected symbol to the group **Other**.

Move group

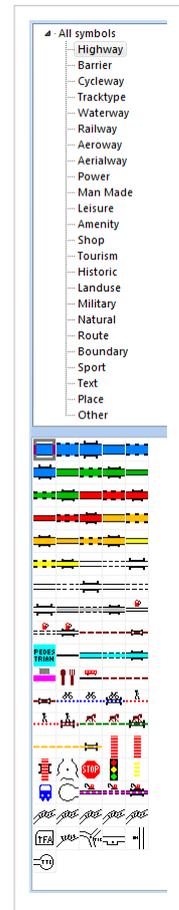
You can move a symbol tree group with drag and drop.

Change Symbol Status

You can change the symbol status of all symbols belonging to a group by choosing one of the following commands in the **Symbol Tree** popup menu (right click on a symbol group).

- **Normal**: Set all symbols of a group to **Normal** status.
- **Protect**: Protect all symbols of a group.
- **Hide**: Hide all symbols of a group.

Learn more about hiding and protecting symbols on the **Symbol Status** page.



 Use the small triangle before a group to expand or collapse all subgroups.

Remove from Symbol Tree

This function can be found in the **Symbol** menu and is an alternative to the **Remove selected symbol** function of the **Symbol Tree** menu (right click on a symbol group). Select a symbol which is arranged in a group and choose this function to remove the symbol from the symbol tree and move it to the group **Other**.

Selecting Symbols in the Symbol Box

To select one symbol, click the desired symbol.

To select a consecutive group of symbols:

1. Click the first symbol.
2. Press and hold down the Shift key on the keyboard and click the last symbol.

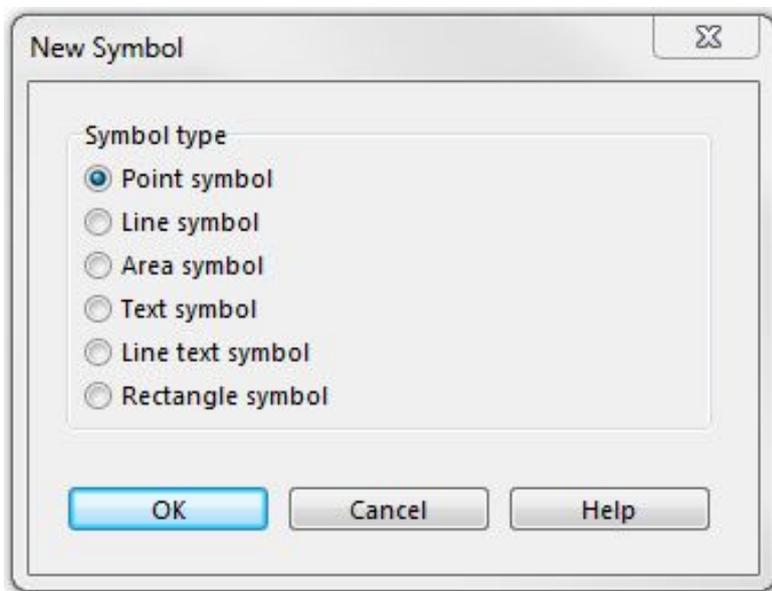
To select a non-consecutive group of symbols:

1. Click the first symbol.
2. Press and hold down the Ctrl key on the keyboard and click all the additional symbols.

Back to the **Symbol** page.

Create a New Symbol

New symbols can be created by choosing **New** in the **Symbol** menu. The **New Symbol** dialog box appears. Select one of the six different symbol types.



Create a New Point Symbol

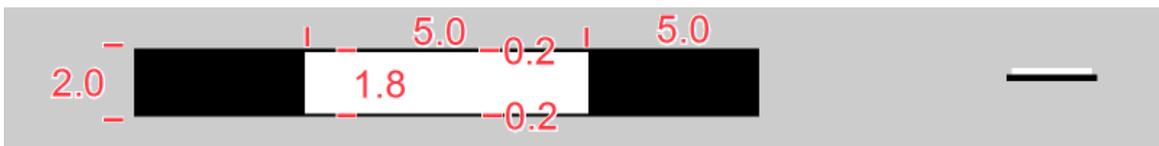
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Visit the [Create a New Point Symbol](#) page to learn more about this function.

Create a New Line Symbol

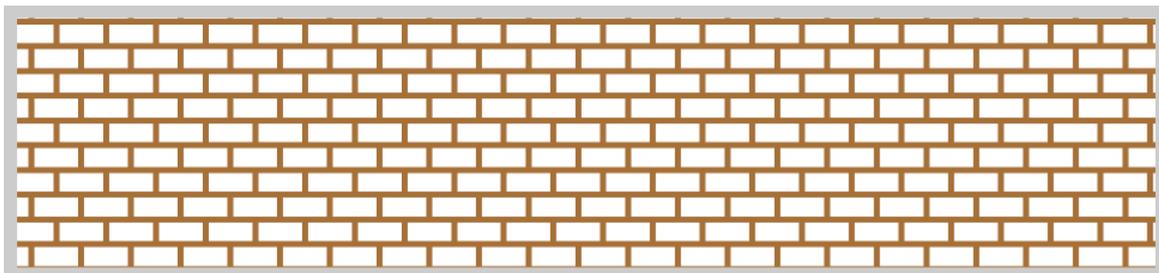
Mas Ori Sta CS



Visit the [Create a New Line Symbol](#) page to learn more about this function.

Create a New Area Symbol

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Visit the [Create a New Area Symbol](#) page to learn more about this function.

Create a New Text Symbol

Mas Ori Sta CS



Point S

Visit the [Create a New Text Symbol](#) page to learn more about this function.

Create a New Line Text Symbol

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Line Text Symbols

Visit the [Create a New Line Text Symbol](#) page to learn more about this function.

Create a New Rectangle Symbol

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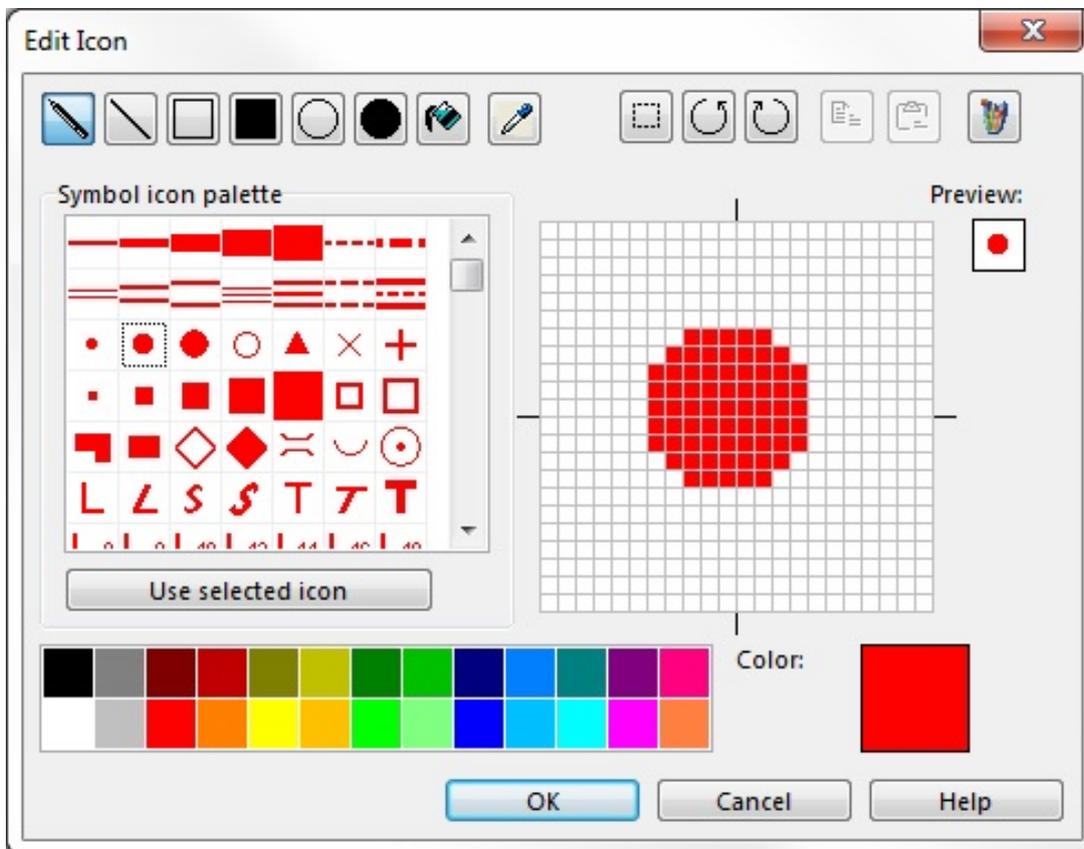
8	9	10	11	R	R	R
1	2	3	4	5	6	7

Visit the [Create a New Rectangle Symbol](#) page to learn more about this function.

Icon Editor

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Choose the **Icon** command in the **Symbol** menu to edit the icon of the selected symbol. Alternatively, you can click the symbol in the symbol box with the right mouse button and choose the **Icon** command. The **Icon Editor** dialog box appears.



Draw the icon in the 22x22 matrix. You can use different drawing tools:

-  **Pen:** Draw single pixels
-  **Line:** Draw a straight line
-  **Rectangle:** Draw a rectangle
-  **Filled Rectangle:** Draw a filled rectangle
-  **Ellipse:** Draw an ellipse
-  **Filled Circle:** Draw a filled ellipse
-  **Fill:** Fill an area (bordering pixels with the same color) with the selected color.

Before drawing choose one of the 26 colors.

Alternatively, you can choose a predefined icon from the **Symbol icon palette**. Choose one of the colors from the color palette to change the color of the symbol icons. Select an icon and click the **Use selected icon** button or double-click to overwrite the current one.

You can use the following editing tools:

-  **Pick Color:** Pick a color from the 22x22 drawing area
-  **Select:** With this tool you can select some pixels. After the selection you can move them or copy and paste them.
-  **Rotate Counterclockwise:** Rotate the whole icon counterclockwise
-  **Rotate Clockwise:** Rotate the whole icon clockwise
-  **Copy:** Copy a selection of pixels



Paste: Paste a selection of pixels



Open Paint: This button opens the **Paint** application of Windows. You can draw an icon in **Paint**. Make sure, your **Paint** document has the dimensions 22x22 pixels to get a satisfying result. When you are finished with drawing, select and copy the icon. Now you can paste it in the **Icon Editor** of OCAD.



There is an easy way to get an icon for a point object. Simply use the **Make screenshot for symbol icon** function in the **Symbol Editor**.

Define a New Color



Learn more about colors on the **Colors** page of this wiki. This article shows you, how to create intersections and overpasses for roads.

When displaying maps, OCAD uses the colors in the color table in a specific order; objects which use the lowest colors in the table are drawn first, objects which use the colors at the top of the table are drawn last. The advantage of this technique is that lines or areas can be omitted automatically. This is especially beneficial when drawing road junctions (cf. below).

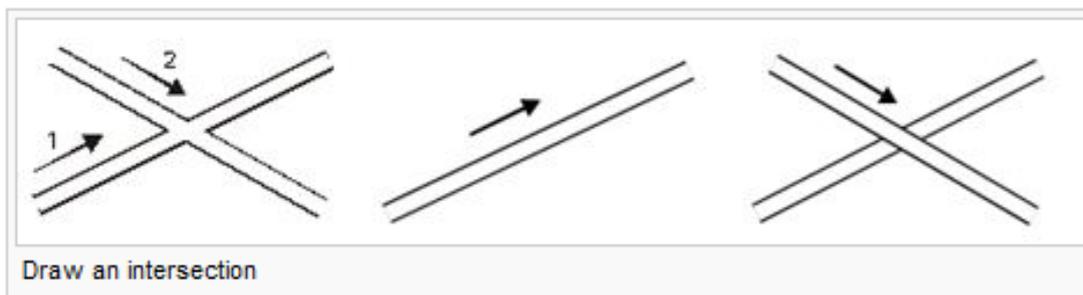
1. Select **New** in the **File** menu.
2. In the New Map dialog window, double-click empty Symbolset.ocd.
3. To edit the color table, select Colors in the **Map** menu.
4. To create a new color, select **Add** in the color table and enter the name (e.g. pictogram white foreground) and CMYK value (e.g. blue 0/0/0/0) of the color.
5. You can change the position of the colors in the color table by clicking the **Move up** and **Move down** buttons.



Roads are often displayed using two lines with a color filling between these lines. If two roads intersect, the side lines in the area where the roads cross each other must be omitted.

If two roads intersect at an under or overpass, only the lines of the lower road should be omitted. By moving the position of the color upwards or downwards, you will be able to influence these effects:

- **Intersections:** If the color of the filling is located above the color of the side lines in the color table, the side lines in the area where the roads cross each other will be omitted automatically.
- **Overpass:** To ensure the side lines are not omitted automatically, a new color must be defined for the side lines of the overpass. This color must be located above the filling color in the color table.



Learn more about colors on the **Colors** page.



If you would like to assign a color which does not yet exist, to the new symbol, a **New Color** will need to be defined.



Each symbol must have a unique symbol number between 0.001 and 999999.999.

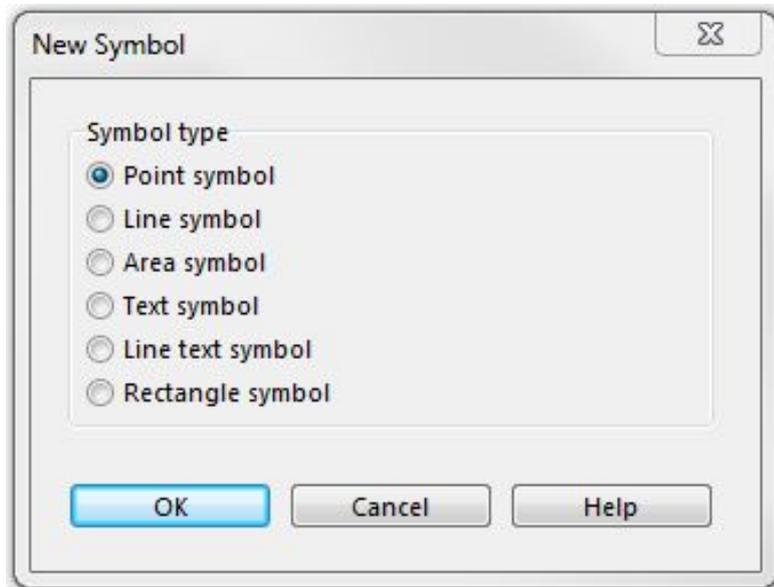
[Back to Main Page](#)

Create a New Point Symbol



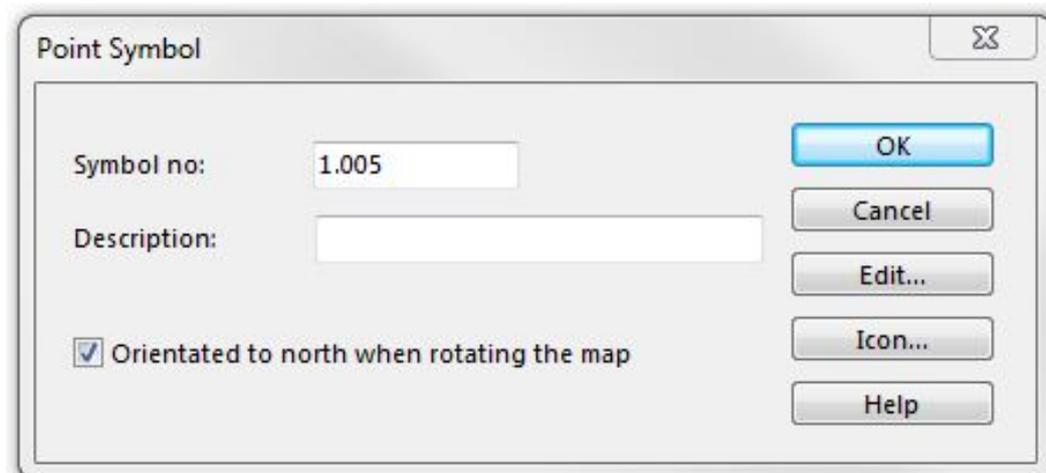
Mas Ori Sta CS

Select the **New** command in the **Symbol** menu. Choose the **Point symbol** option in the **New Symbol** dialog box to create a new point symbol.



Point Symbol Dialog

The **Point Symbol** dialog appears.



Enter a number between 0.001 and 999999.999 in the **Symbol number** field.

Enter a description of the new symbol in the **Symbol description** field.

Check the **Orientated to north when rotating the map** option if you want that the symbol always stays orientated to north when you use the **Rotate** function.

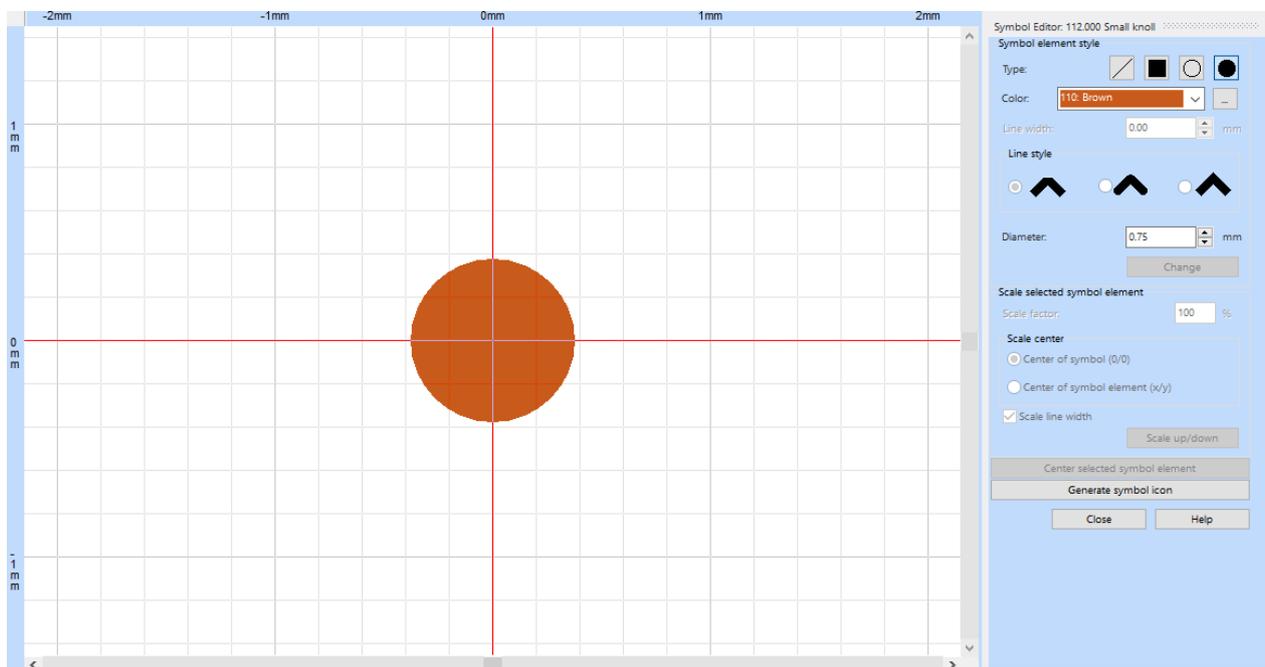
Click the **Edit** button to edit the object. The **Symbol Editor** appears.

Symbol Editor

The main window changes to the symbol editor...

- ... when you create or edit a point symbol.
- ... when you create or edit a symbol for a structured line.
- ... when you create or edit a symbol for a structured area.

When you change to the symbol editor, the magnification changes to 64x and the **Anti-Aliasing** is switched off. The coordinate (0,0) is in the center of the screen. A number of menu functions are disabled when working in the symbol editor. However, you can open and adjust a **Background Map** if you have a scanned image of the desired symbol.



Symbol Element Style

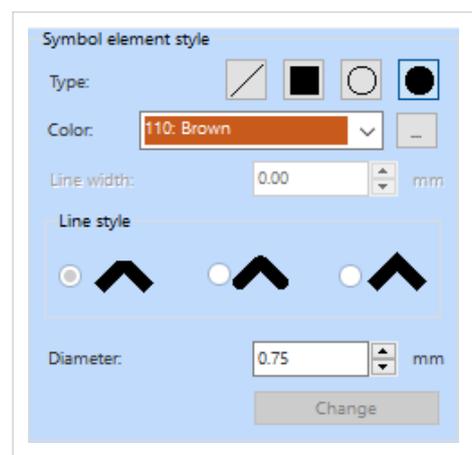
On the right side of the drawing area the **Symbol Editor** menu is displayed. In the **Symbol element style** part of this menu you can make drawing adjustments of symbol elements.

Type

You can choose between four symbol element types:  **Line**,  **Area**,  **Circle** or  **Dot (Filled Circles)**.

Color

Choose a color from the **Color** dropdown menu. These colors are the same colors as in the **Colors** dialog of the **Map** menu and have to be defined before opening the **Symbol Editor**. Learn more about defining and editing colors on the **Colors** page. If you draw a structure for an area and this area has a background color, you must choose a color



which is above the background color in the color table. Otherwise the element will be covered by it.

 Click on the **Open color dialog...** button in the right of the color box to open the color dialog directly from the symbol editor

Line width

If you have chosen a **Line** or a **Circle** as a symbol element type, enter a line width in mm in this field. Note that the **Line width** is set to zero by default and with a **Line width** of zero the drawn symbol element is invisible!

Line style

If you have chosen a **Line** as a symbol element type, you can choose here how the corners and line ends of the line symbol element shall appear.

Diameter

If you have chosen a **Circle** or a **Dot** as a symbol element type, enter here the diameter the symbol element is meant to have. For circles, this diameter includes the line width of the circle line.

Draw a Symbol Element

When you made all those adjustments you can start drawing the symbol element. You can draw any number of elements for one symbol. The number of vertices of all elements is limited by 32768.

Line: A line symbol element can be drawn with the regular drawing modes (curve, ellipse, circle etc.).

Area: An area symbol element can be drawn with the regular drawing modes (curve, ellipse, circle etc.) as well.

Circle: A circle symbol element have to be placed like a point object where the placement point is the middle of the circle.

Dot: A dot symbol element have to be placed like a point object where the placement point is the middle of the filled circle.

The center of the drawing area (0mm/0mm) is equal to the center of the point object.

You can change the drawn symbol elements by selecting them and making adjustments in the **Symbol Editor** menu. Click the **Change** button at the bottom of the **Symbol element style** field to apply all changes to the symbol elements. It is also possible to add or remove vertices (**Vertices**) or use nearly all editing functions (**Edit Object**).

Scale Selected Symbol Element

In the **Scale selected symbol element** part of the **Symbol Editor** menu you can scale the selected symbol element(s):

Scale factor: Enter a scale factor in percentage.

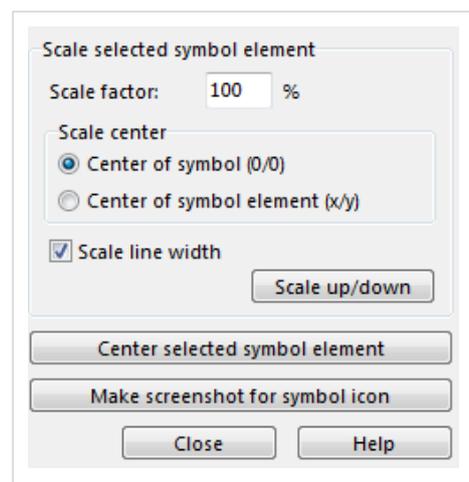
Scale center: Use either the center of the symbol (center of the drawing area (0/0)) or the center of the symbol element (x/y) as a scale center.

Scale line width: Check this option to extend or reduce also the line width.

Click the **Scale up/down** button to scale the selected symbol element(s).

Select a symbol element and click the **Center selected symbol element** button to move it to the center of the drawing area (equals center of the symbol).

Click the **Generate symbol icon** button to make a screenshot and use it as symbol icon.



Draw Symbols for Structured Lines

When drawing symbols for a line, imagine that the line goes from left to right on the x-axis. If you want a tag to point to the right side of the line, draw it downwards from the origin (0, 0); if it should point to the left side, draw it upwards.

Draw Symbols for Structured Areas

If the area symbol has a background color, this background color is also shown. Note that the background color must be below the color of any elements in the color table, otherwise these elements are covered by the background color. When you draw an element, it is also shown in gray in the neighboring fields to get a better impression of the structure.

Click the **Close** button when you are finished with drawing the symbol. The **Point Symbol** dialog box appears again. Click the **Icon** button to edit the icon manually in the **Icon Editor**. Click the **OK** button to save all changes and quit the dialog. The new symbol appears in the symbol box.

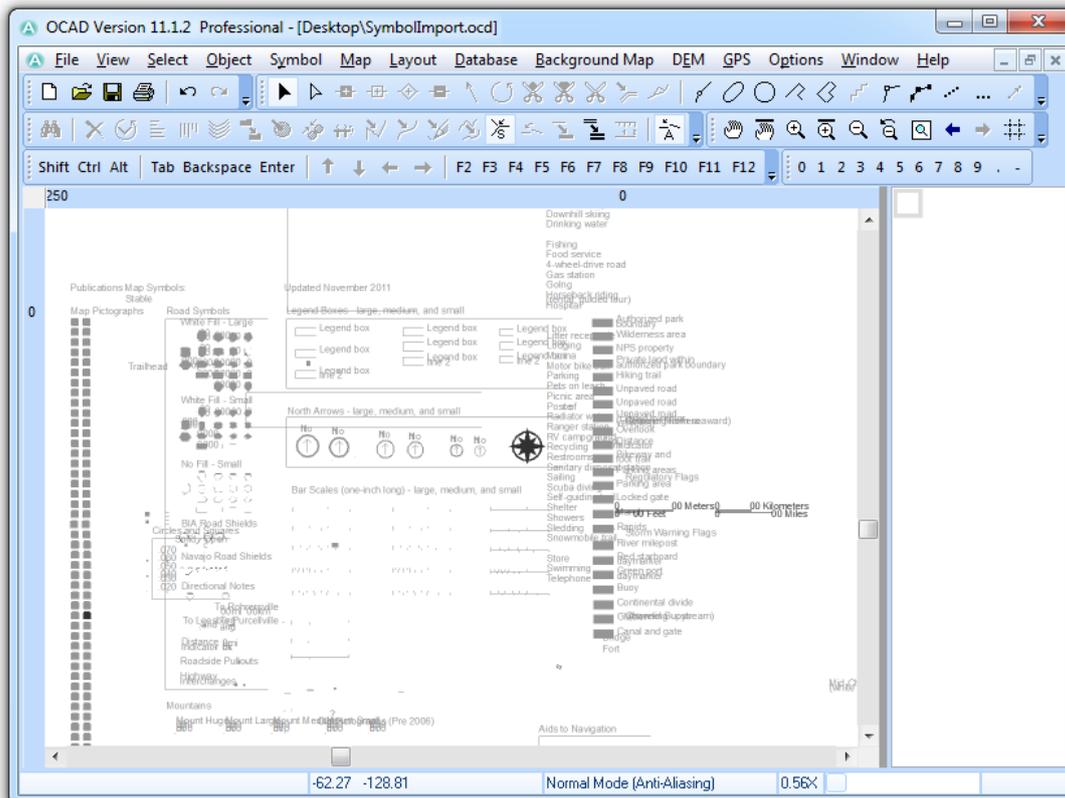
Examples

Create a Point Symbol out of Vector Data

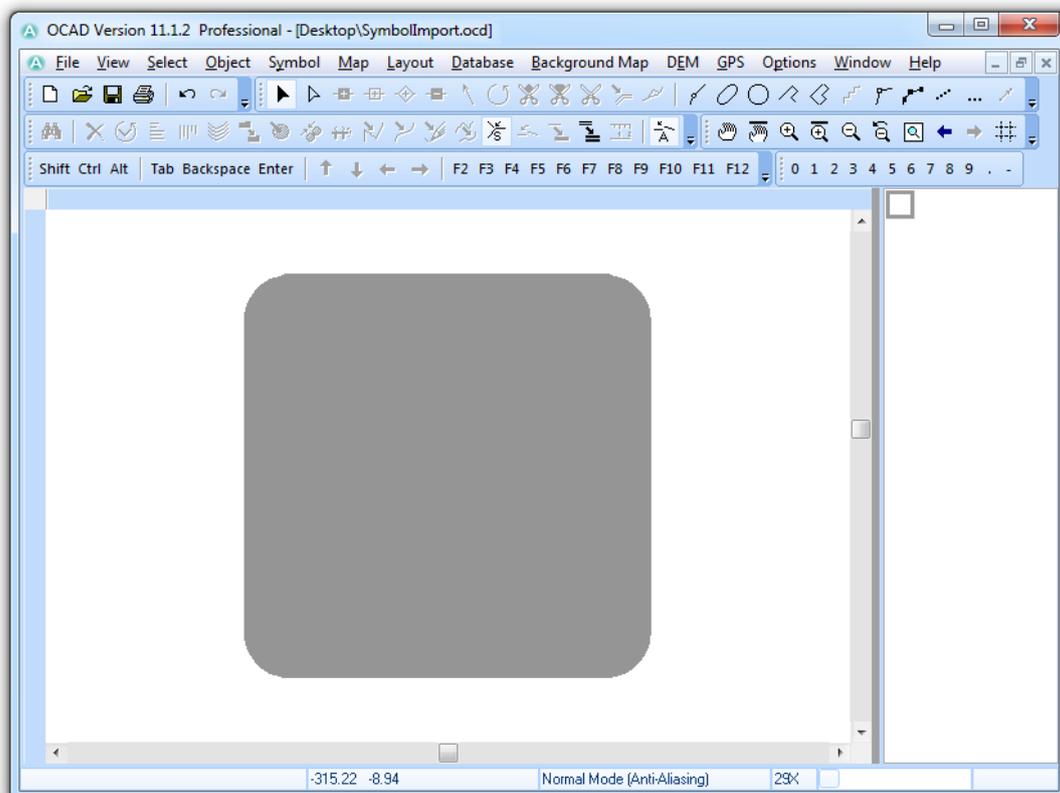
With OCAD it is possible to import a vector image (for example a logo or a pictogram) and convert it into a symbol. In this example the US National Park Service Pictograms are imported.

 Video on YouTube how to **Create a Point Symbol out of Vector Data** ^[1].

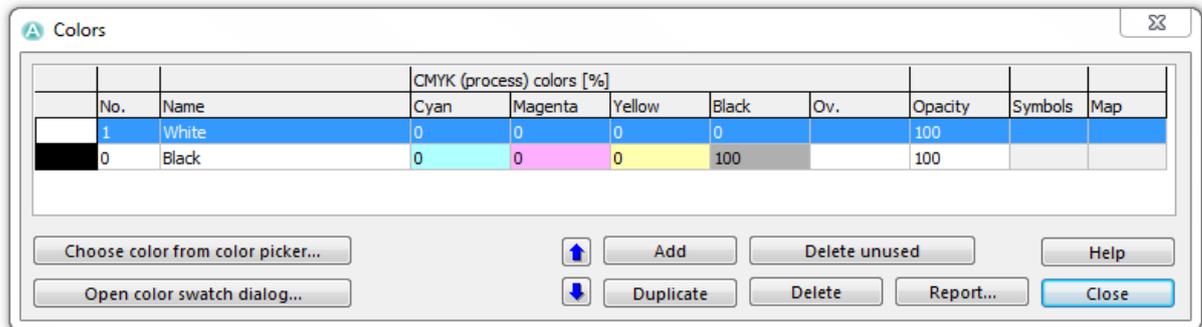
1. **Open** a project.
2. First we import the vector image. Choose the **Import** command from the **File** menu.
3. Browse the vector image file and click the **Open** button.
4. The **Save Cross Reference Table** dialog appears. It is not necessary to save one, therefore click the **Cancel** button.
5. OCAD imports the file. In this example a PDF-File is imported which contains exclusively vector data.
6. The PDF-File appears in the drawing area. The vector objects are displayed as **Image Objects**, which looks like a huge mess.



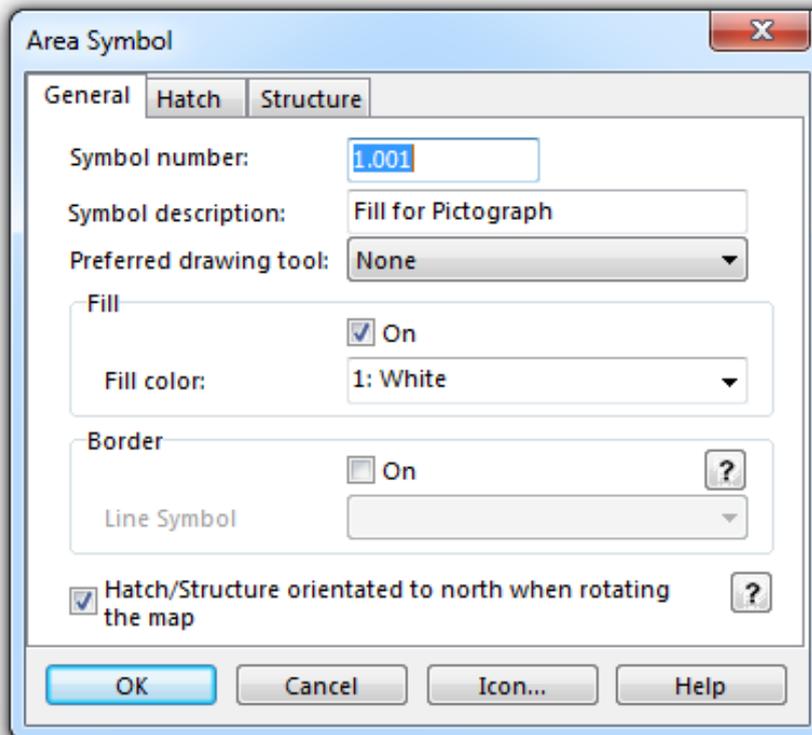
7. Search the pictograph in this chaos you want to create a symbol of. If you have troubles finding the desired pictograph, a look at the original PDF-File can probably help.
8. Select all pictographs you want to create symbols of and delete the other ones.
9. In this case the symbol for the airport was chosen, which looks still as follows:



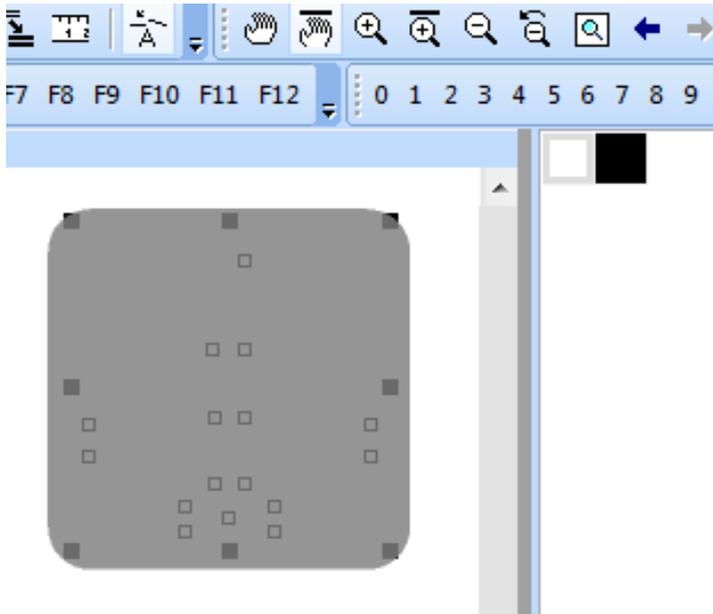
10. Now, it is time to define the **Colors**. Choose the **Colors** item from the **Map** menu and add two new colors: A white color for the plane and a black color for the background. Make sure that the white color is above the black one.



11. Click the **Close** button.
12. Area symbols have to be defined now. Click in the **Symbol Box** with the right mouse button and choose the **New** command.
13. In the next dialog, choose the **Area Symbol** item and click the **OK** button.
14. The **Area Symbol** dialog appears. Adjust all parameters as desired. At least, the **Fill** option must be checked and in the **Fill color** list, **White** must be chosen. Then click the **OK** button.



15. Repeat the last three steps for the **Black** color.
16. Select the fill of the pictograph and the symbol for the white area in the symbol box.



17. Click the  **Change Symbol (Selected Object)** icon in the **Edit Functions** toolbar.
18. Repeat this with the black color for the background.
19. Select the whole pictograph (**Select Multiple Objects**).
20. Copy the selection (Ctrl+C).
21. **Create a New Point Symbol.**
22. In the **Symbol Editor** paste the selection (Ctrl+V).
23. Scale the symbol, make a screenshot for the symbol icon and click the **Close** button.
24. Finished! The pictograph can be used as a point symbol now.

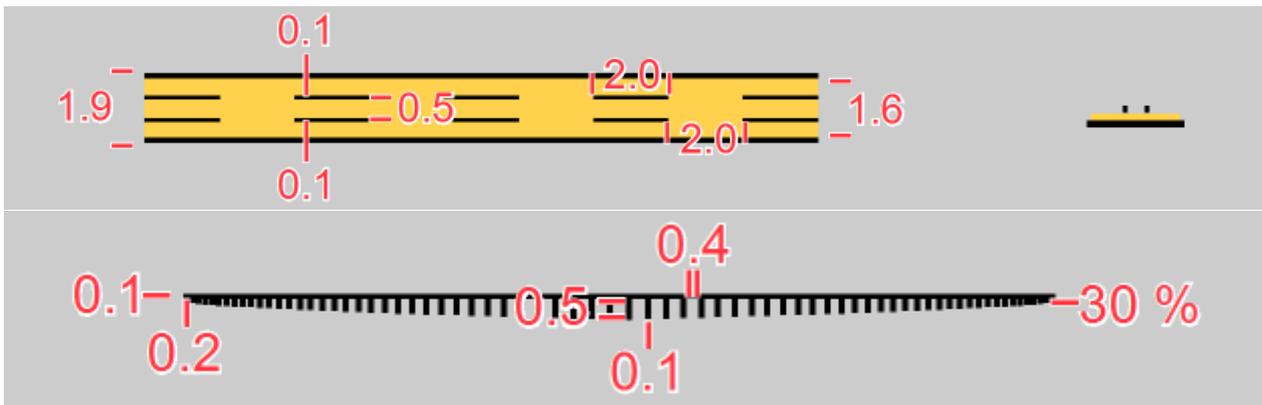


Back to the **Create a New Symbol** page.

References

- [1] <https://youtu.be/jPjEtQTPeOA>

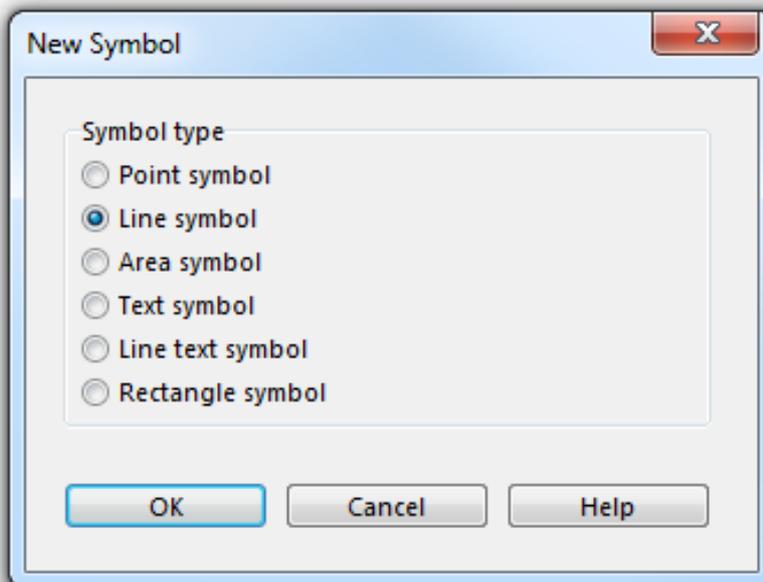
Create a New Line Symbol



Mas Ori Sta CS

You can create very complex line symbols with OCAD. In addition, the symbol editor can make use of nearly all the drawing modes and editing tools that are available for objects in the normal drawing window to make a line symbol even more unique.

Choose the **New** command in the **Symbol** menu. Then, choose the **Line Symbol** option in the **New Symbol** dialog to create a new line symbol.

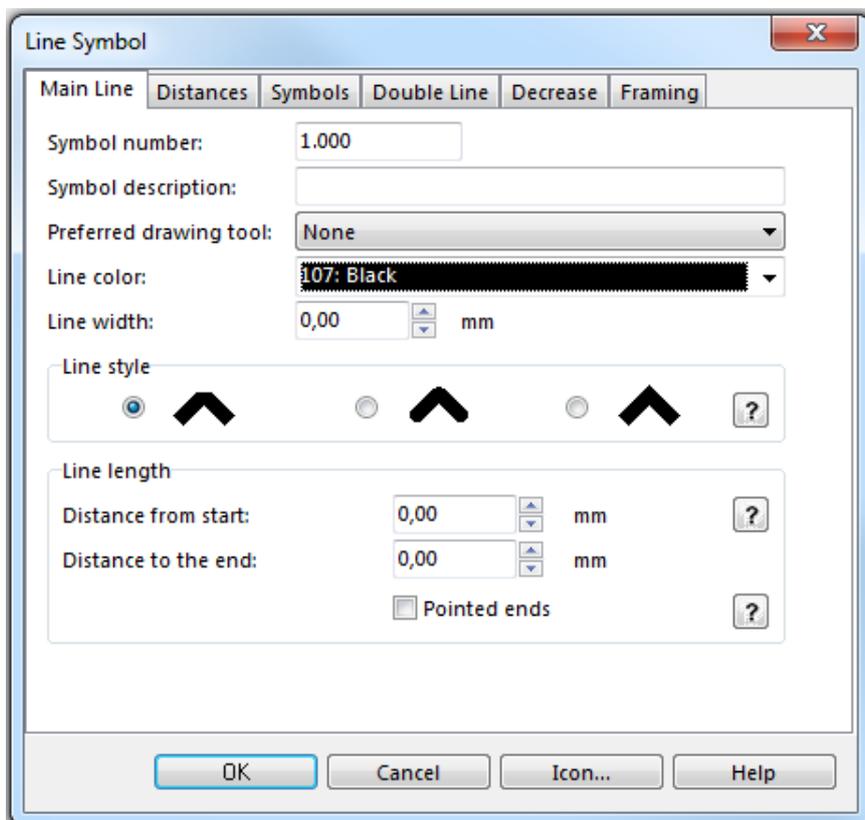


Line Symbol Dialog

The **Line Symbol** dialog appears. This dialog consists of six tabs:

- **Main Line:** Use this tab to define the color, line thickness and line type, generally the appearance of the main line.
- **Distances:** Use this tab to define the length of dashed lines and the distance between the dashes.
- **Symbols:** Use this tab to define the start, main, corner and end points.
- **Double Line:** Use this tab to define the line width, filling color, line thickness and line type of a double line.
- **Decrease:** In this tab a decreasing line type can be defined.
- **Framing:** With this tab you can use framing to cover other map objects if you use complex line symbols.

Main Line



In the **Main Line** tab you can make the following adjustments:

Symbol Number

Type a symbol number between 0.001 and 999999.999 in this field.

Symbol Description

Enter a symbol description in this field (e.g. Railway).

Preferred Drawing Tool

Choose a preferred drawing tool in the corresponding dropdown list. When the symbol is selected in the **Symbol Box** the drawing mode changes automatically to the chosen one. If **None** was chosen, the drawing mode remains the same as it was before.

Line Color

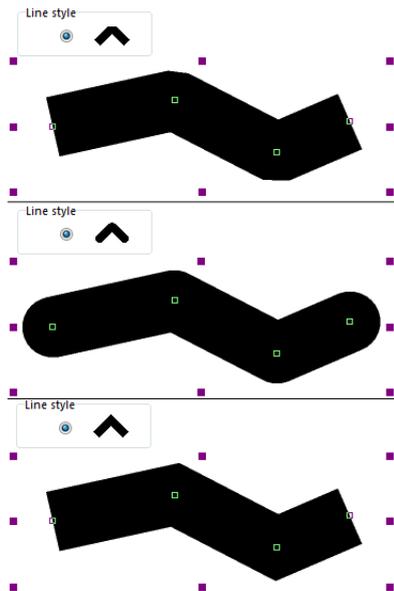
Choose a line color for the main line. The dropdown list contains all colors from the **Color Table**. If a main line is not used, it is not necessary to define a line color.

Line Width

If the symbol has a main line (full or dashed), enter a line width here. Type in **0.00** if you do not want to use a main line (e.g to create dotted lines).

Line Style

Choose between three line styles. The line ends and corners appear in each case differently.



Line Length

In this part of the dialog you can define two distances:

- **Distance from start:** This value defines the distance from the beginning of the line to the start of the main line (the start of the visible line).
- **Distance to the end:** This value defines the distance from the end of the visible line (main line) to the actual line end.

Line length

Distance from start: mm

Distance to the end: mm

Line length

Distance from start: mm

Distance to the end: mm

If you activate the **Pointed ends** option, the line gets pointed ends over the above mentioned distances.

Line length

Distance from start: mm

Distance to the end: mm

Pointed ends

Line length

Distance from start: mm

Distance to the end: mm

Pointed ends

Course Setting for Orienteering Options

There is an additional option in course setting projects to use the symbol as a marked route. Visit the [Add a Marked Route](#) article for further information.

Examples

► Example Full Line

This is an example for a full line.



► Example Dashed Line with Background

This is an example for the **Distances from start** and **Distances to the end** adjustments.



► Example Motorway

This is an example for the **Distances from start** and **Distances to the end** adjustments.

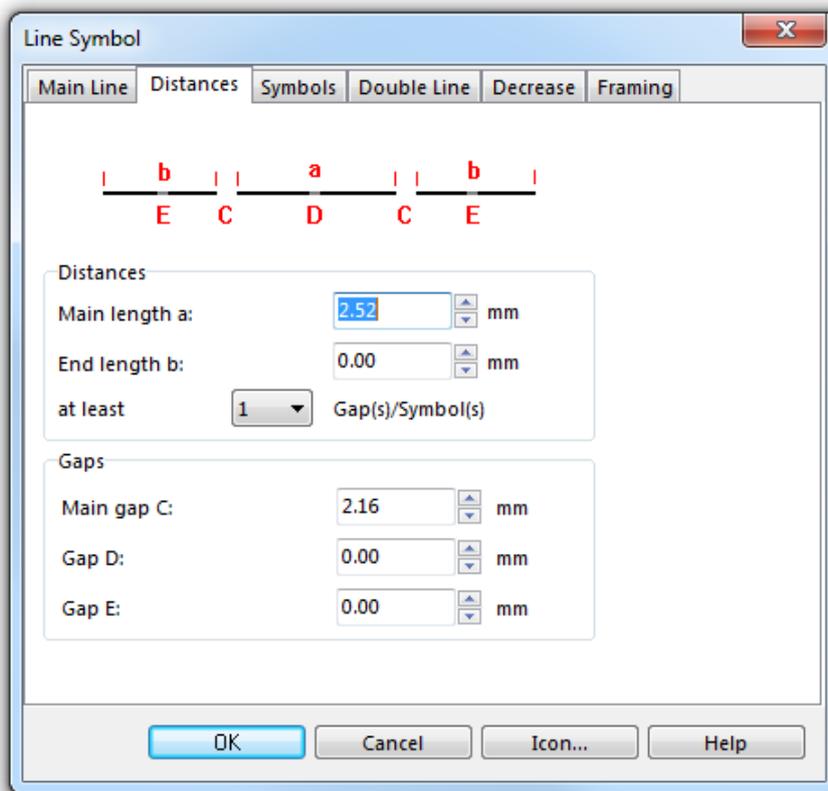


► Example Pointed Line

This is an example for a line with **Pointed ends**.



Distances



Use this tab to define the dashes for a dashed line.

Distances

Main length a

This length defines the length of the main dash (see figure at the top of the dialog, the main dash is indicated with the letter **a**). For a dotted line, enter here the distance between the dots.

End length b

This length defines the length of the start and end dashes (see figure at the top of the dialog, the end dashes are indicated with the letter **b**). For a dotted line, enter 0 in this field to make sure, that the line starts with a dot and not a gap. For lines with dots on it, enter here the distance from the start of the line to the first dot on the line.



The end length is also used before and after a corner of the line.

at least X Gap(s)/Symbol(s)

Here you can define a minimum number (max 2) of gaps or symbols (if a main symbol is defined) that a line should contain. If you want a dashed line to always have a gap (regardless how short it is) then choose a **1** here.

Gaps

Main gap C

The value entered here defines the length of the main gap (see figure at the top of the dialog, the main gaps are indicated with the letter **C**).

Gap D

You can add an additional gap to the main dash. Define a length for it in this field (see also figure at the top of the dialog, the Gap D is indicated with the letter **D**).

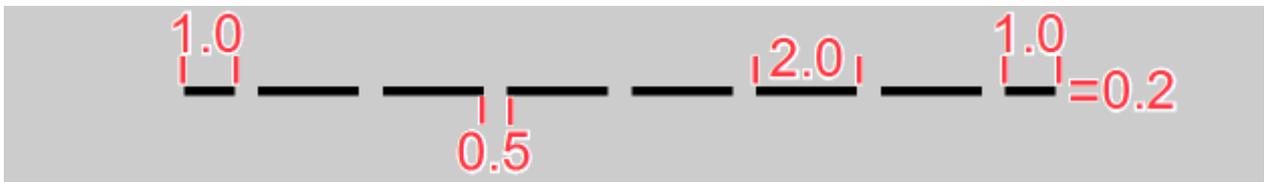
Gap E

You can add an additional gap to the end dashes. Define a length for it in this field (see also figure at the top of the dialog, the Gap E is indicated with the letter **E**). This is used rarely.

Examples

► Example Dashed Line

This is an example for a dashed line with a main length of 2.0mm, an end length of 1.0mm and a main gap of 0.5mm.



► Example Dotted Line

This is an example of a dotted line with a main length of 1.0mm.



► Example Dashed Line with Dots

This is an example for a dashed line with a dot in the middle of each dash.



Symbols

Add point symbols to your line symbol to make your symbol unique. This point symbol can be a simple dot, but it is also possible to add complex symbols.

Main Symbol

In the **Main symbol A** part of the dialog you can define a main symbol. The main symbol appears at every main gap defined in the **Distances** tab of this dialog.

No. of symbols

The main symbol may consist of more than one symbol. It can be formed of up to five equal symbols.

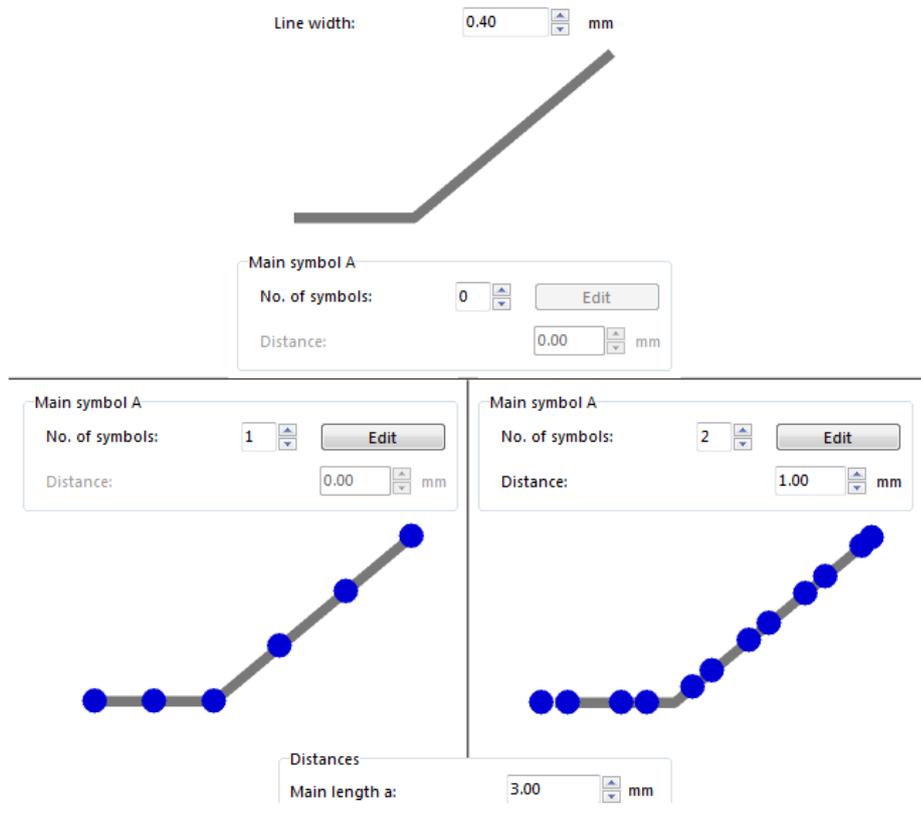
Edit button

To edit the symbols described in the paragraph above, click the **Edit** button. The **Symbol Editor** will appear, where you can draw a symbol with almost every drawing and editing function of OCAD. Visit the **Symbol Editor** article

for more information. In this article, there is also a specific paragraph for drawing symbols of structured lines.

Distance

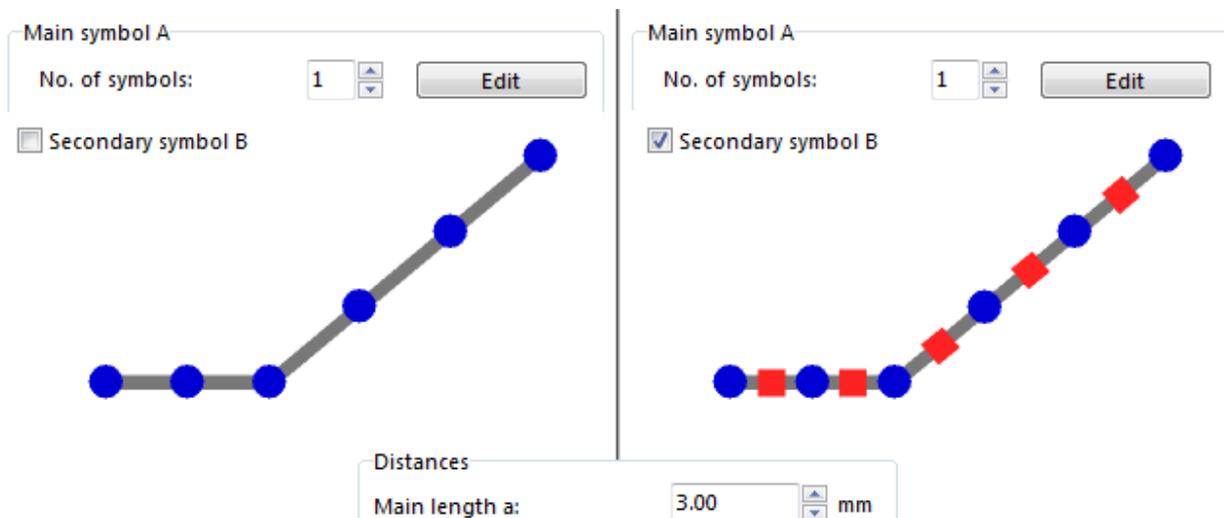
The value typed in the **Distance** field defines the distance between the individual symbols unless the number of symbols is 0 or 1.



Other Symbols

Secondary symbol B

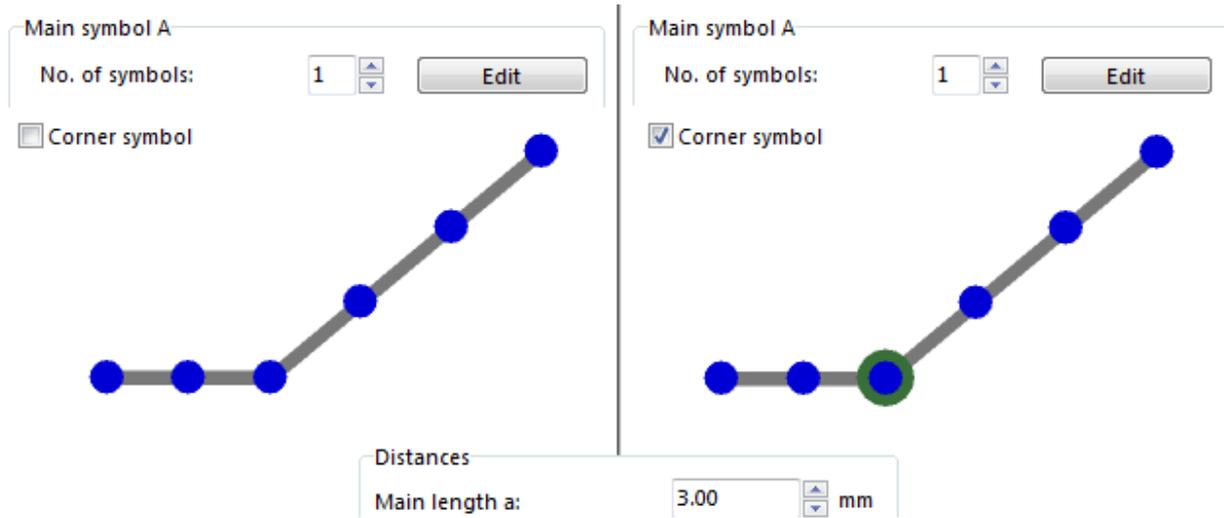
A secondary symbol appears at the position of the **Gap D** defined in the **Distances** tab of this dialog, therefore exactly in the middle of two main symbols. A secondary symbol does **not** appear if the **number of symbols** of the **Main symbol A** is 0. Click the **Edit** button to edit the symbol with help of the **Symbol Editor**.



Corner symbol

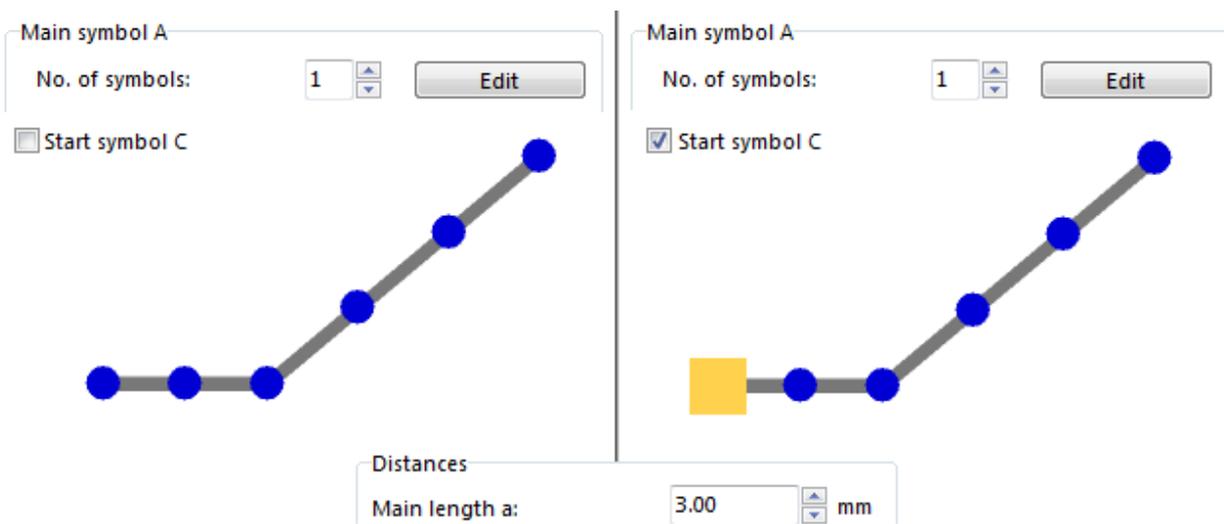
A corner symbol appears at every **Corner Vertex** of the line. Click the **Edit** button to edit the symbol with help of

the **Symbol Editor**.



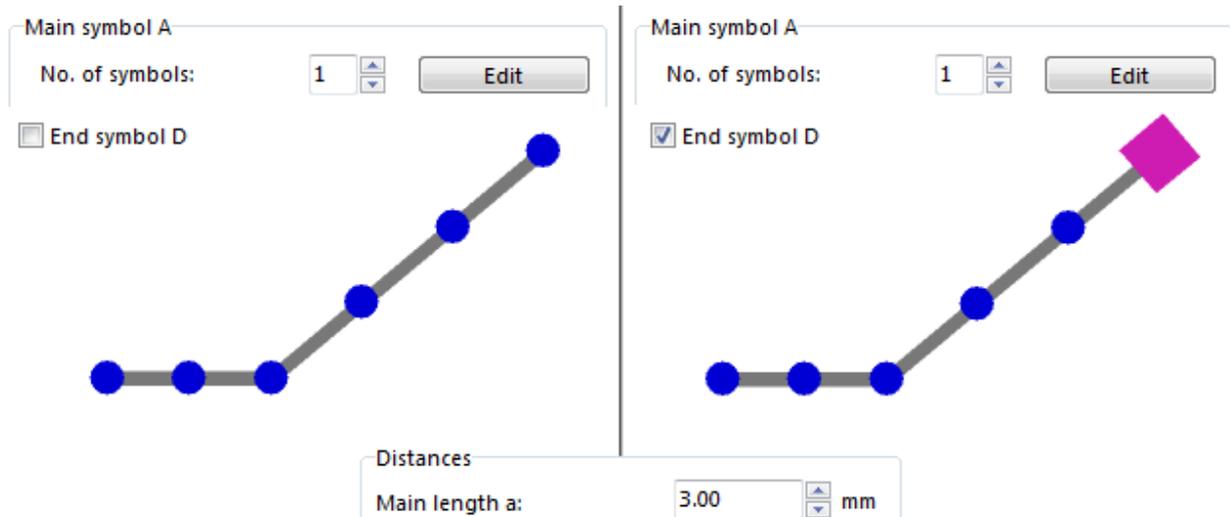
Start symbol C

The **Start symbol C** appears at the start point of a line. Click the **Edit** button to edit the symbol with help of the **Symbol Editor**.



End symbol D

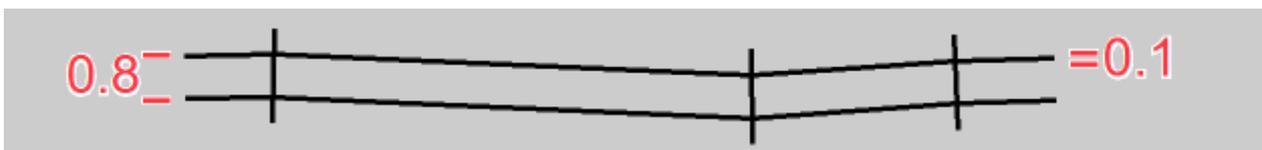
The **Start symbol C** appears at the end point of a line. Click the **Edit** button to edit the symbol with help of the **Symbol Editor**.



Examples

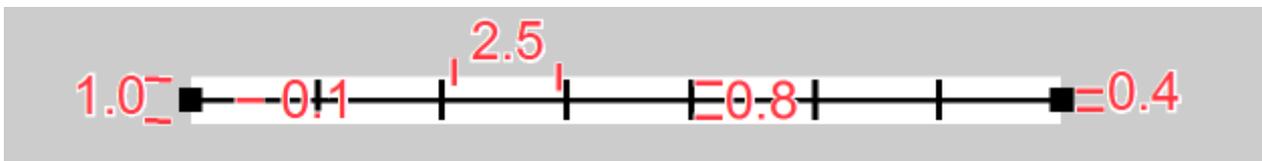
➤ **Example Power Line**

This is an example for a line symbol with corner symbols.



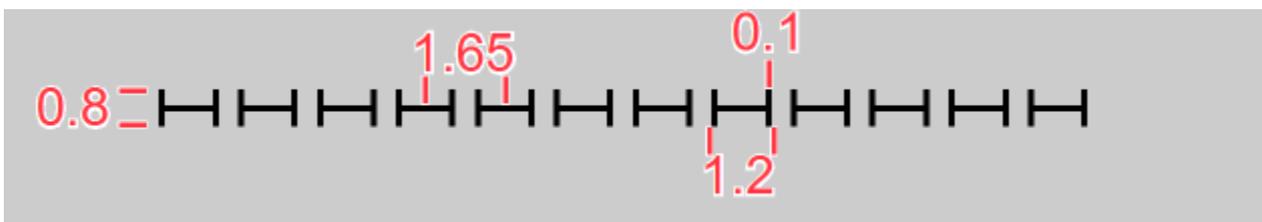
➤ **Example Cable Car**

This is an example for a line symbol with a main, a start and an end symbol.



➤ **Example Canton Boundary**

This is an example for a line symbol with a special main symbol.



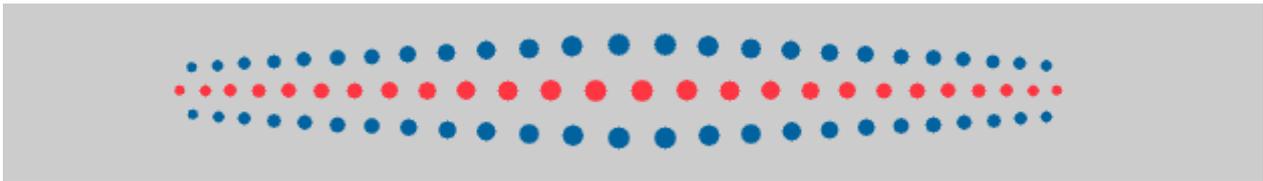
➤ **Example Area Boundary**

This is an example for a line symbol with a symbols between dashes.



➤ **Example Geological Line Symbol**

This is an example for a line symbol with a main and a secondary symbol.



► Example Dashed Line with Dots

This is an example for a dashed line with a dot in the middle of each dash.



Double Line

Double lines are primarily used for streets, where you have a left and a right border line filled or not filled with another color. If you need a center line (often used for highways) define a main line (note, that the color for the center line must be above the color for the infill in the **Color Table**).

Mode

Select the mode of the double line. You have the following options for a double line:

- **Off**: No double line is shown.
- **Full lines**: The two lines which form a double line are continuous.
- **Left line dashed**: The left line is dashed.
- **Both lines dashed**: Both lines are dashed.
- **All dashed**: Both lines and the filling are dashed.

Width

Enter the distance between the two double lines in this field. If you use a fill color, this is the width of the filling between the two border lines.

Fill Color

Check the **On** option, to activate the fill color. In the dropdown list a color of the **Color Table** can be chosen. The border of the filling is formed by the sidelines. The filling does not exceed those border lines, therefore there are often really small gaps between the sidelines and the filling. To avoid these gaps make use of the **Framing** which is described later on this page. The advantage of a fill color is that for example street crossings are automatically cleared. To get that effect you must choose a fill color which is above the color of the side lines in the **Color Table**. Otherwise the infill cannot erase the side lines in the street crossings.

Left and Right Line

Assign a color from the **Color Table** to the left respectively the right sideline. Those can be colored individually and the **Line width** can be chosen distinctly as well. Choose 0 as a line width if you want to show the sideline for example only on the left side.



Mode: Full lines

Width: 1.60 mm

Fill color: On 28: Yellow above

Left line: Color: 29: black below Line width: 0.40

Right line: Color: 29: black below Line width: 0.40

Dashed

If you chose the **Left line dashed**, **Both lines dashed** or **All dashed** option as a double line mode, you can enter the dash and gap lengths in this part of the dialog. The value entered in the **Distance a** field defines the dash length and the value entered in the **Gap** field stands for the gap length.

Examples

► Example Minor Road

This is an example for a simple double lined symbol.



► Example Motorway

This is an example for a simple double lined symbol with activated, dashed main line.



► Example National Park Boundary

This is an example of a line symbol with activated double line in the **Both lines dashed** mode and the left line set to 0.00.



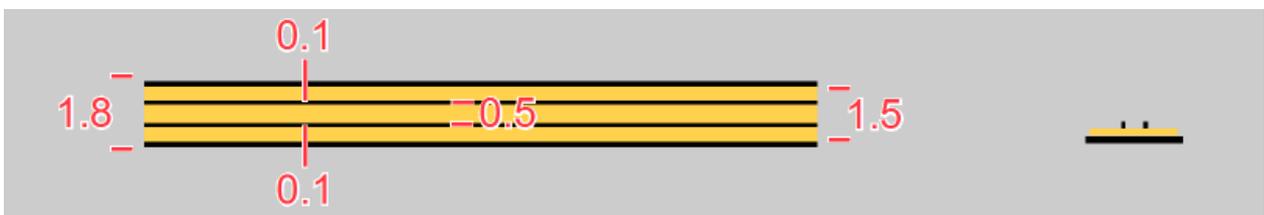
► **Example Dashed Minor Road**

This is an example of a line symbol with dashed double line.



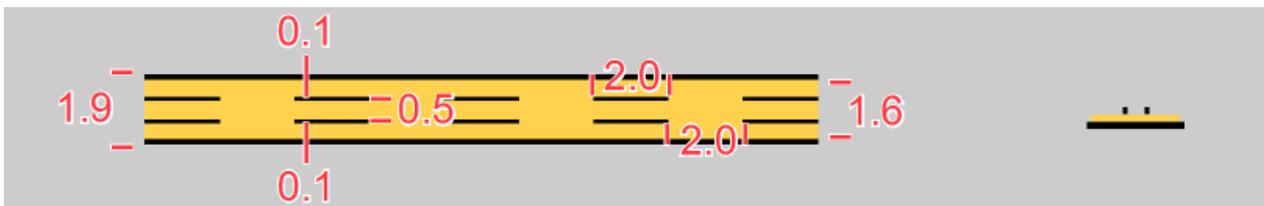
► **Example Three Lanes**

This is an example of a line symbol with a double line, which does not appear as a borderline.



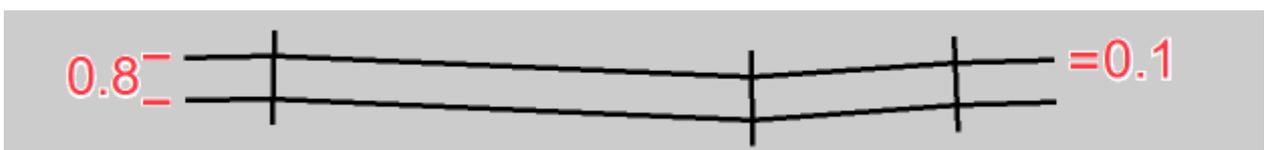
► **Example Three Lanes Dashed**

This is an example of a quite complex line symbol with a dashed double line, which does not appear as a borderline.



► **Example Power Line**

This is an example for a line symbol with a double line without filling.



Decrease

These features are primarily used for geological symbols with decreasing dots.

Decide if defined symbols shall only decrease at one end or at both ends in the **Decrease** part of the tab. In the **Last symbol** field enter a value in percentage how much the symbols shall decrease towards the ends. The distance between the symbols is also decreased. However, the dashes of dashed lines are not decreased. Therefore, you should not use the **Decrease** function together with dashed lines.

Decrease

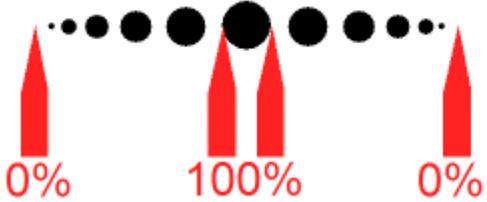
Off



Decrease



Last symbol: % of normal size



Decrease



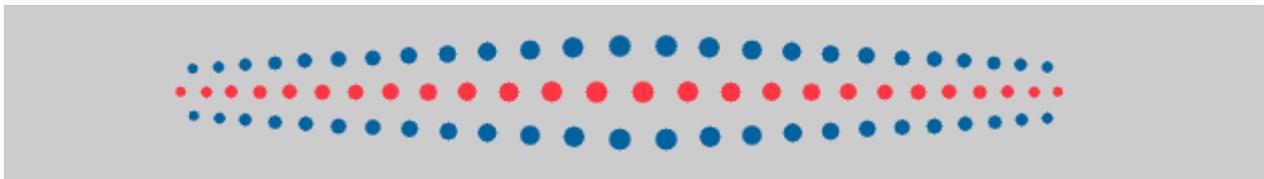
Last symbol: % of normal size



Examples

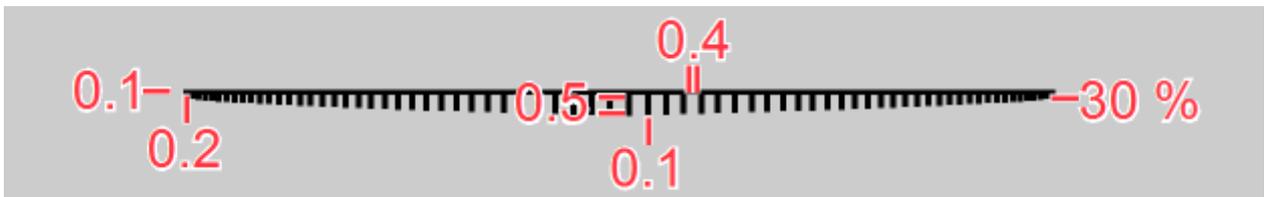
➤ **Example Geological Line Symbol**

This is an example for a line symbol with decreasing ends on both ends.



➤ **Example Stone Embankment Top Edge**

This is an example for a line symbol with decreasing ends on both ends.



Framing

Framing lines are normally used as a background to line objects. Often a framing line is used to block out (or cover) other objects. Note that the color of the framing line must be above the colors of the objects to be covered in the color table.

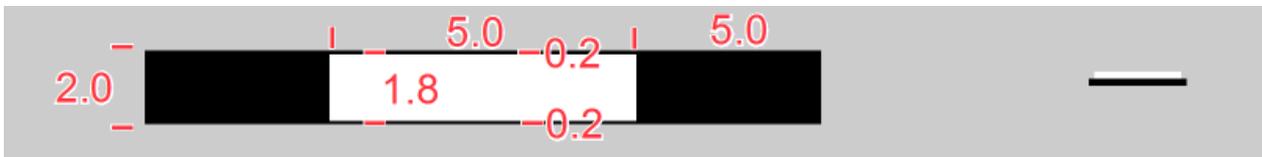
- **Line color:** Select the line color.
- **Line width:** Enter here the line width. Enter 0 here if no framing line should be drawn.
- **Line style:** Select one of the 3 line styles with different line ends and line joins.

Choose a framing if you want to avoid small gaps between sidelines and filling. These occur, when using a **Fill color** with double lines. The framing must have the same color than the filling but must be at a lower position in the **Color Table**. In addition, they must be wider than the filling (for example width of filling plus half width of the sidelines).

Examples

► Example Railway

This is an example for a line symbol black framing under a white main line.

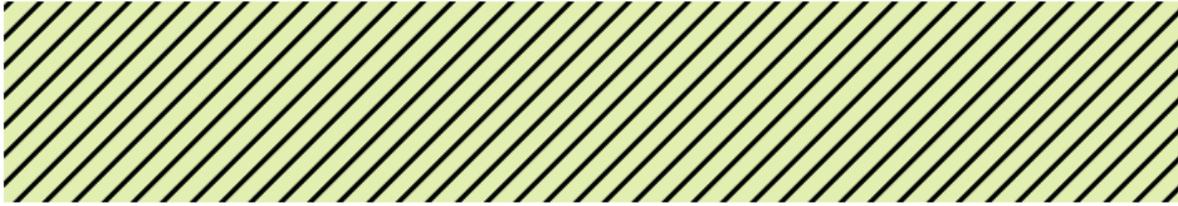


Icon

Click the **Icon** button in the dialog to create an icon for the symbol. The **Icon Editor** appears. Read more about this editor in the **Icon Editor** article.

Back to the **Create a New Symbol** page.

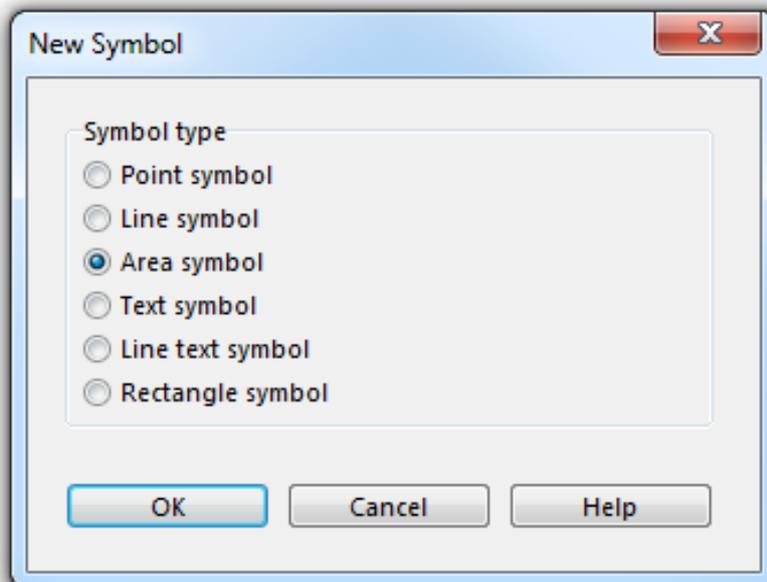
Create a New Area Symbol



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You can create quite complex area symbols with OCAD. In addition, the symbol editor can make use of nearly all the drawing modes and editing tools that are available for objects in the normal drawing window to make an area symbol even more unique.

Choose the **New** command in the **Symbol** menu. Then, choose the **Area Symbol** option in the **New Symbol** dialog to create a new area symbol.



The **Area Symbol** dialog appears. This dialog provides the following three tabs:

- **General:** Used to define the color and the borderline.
- **Hatch:** Used to define the line thickness, distance and orientation of the hatching.
- **Structure:** Used to define the structure symbol as well as the distances and orientation of the structure.

General

In this tab you can make general adjustments like those for the fill and borderlines.

Symbol Number

Type a symbol number between 0.001 and 999999.999 in this field.

Symbol Description

Enter a symbol description in this field (e.g. Lake).

Preferred Drawing Tool

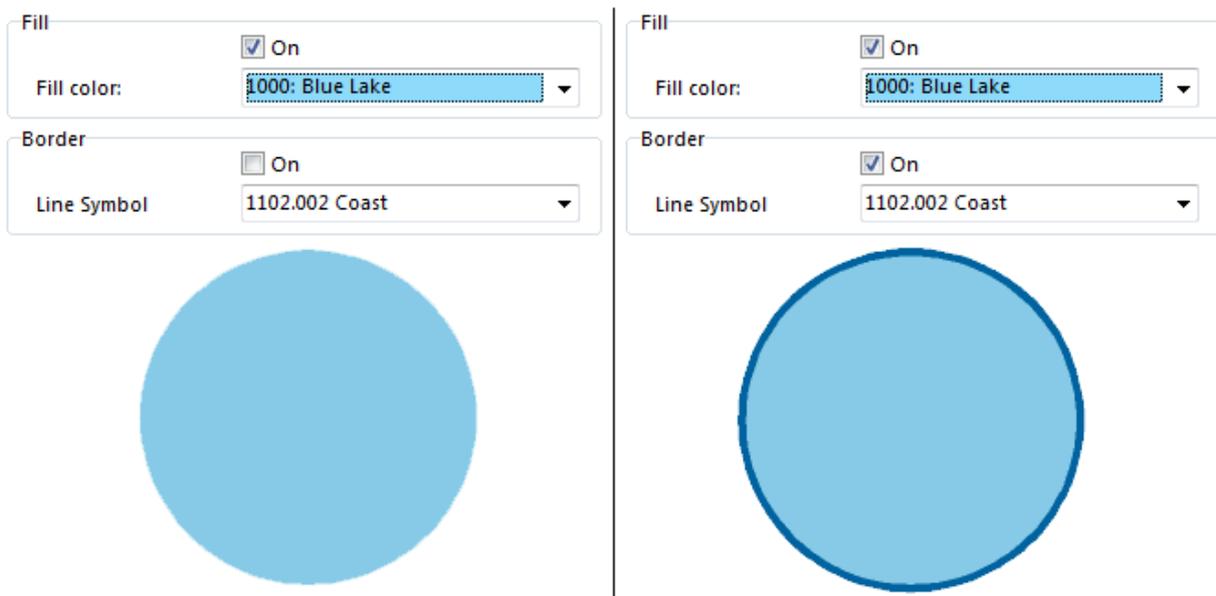
Choose a preferred drawing tool in the corresponding dropdown list. When the symbol is selected in the **Symbol Box** the drawing mode changes automatically to the chosen one. If **None** was chosen, the drawing mode remains the same as it was before.

Fill

Check the **On** field to activate the fill. Allocate a fill color from the dropdown list. All colors from the **Color Table** appear in this dropdown list. If you use borderlines or a structure, make sure that the fill color is below the borderline respectively the structure color in the **Color Table**. Otherwise, the fill covers the structure completely or the borderline is only shown with half the width.

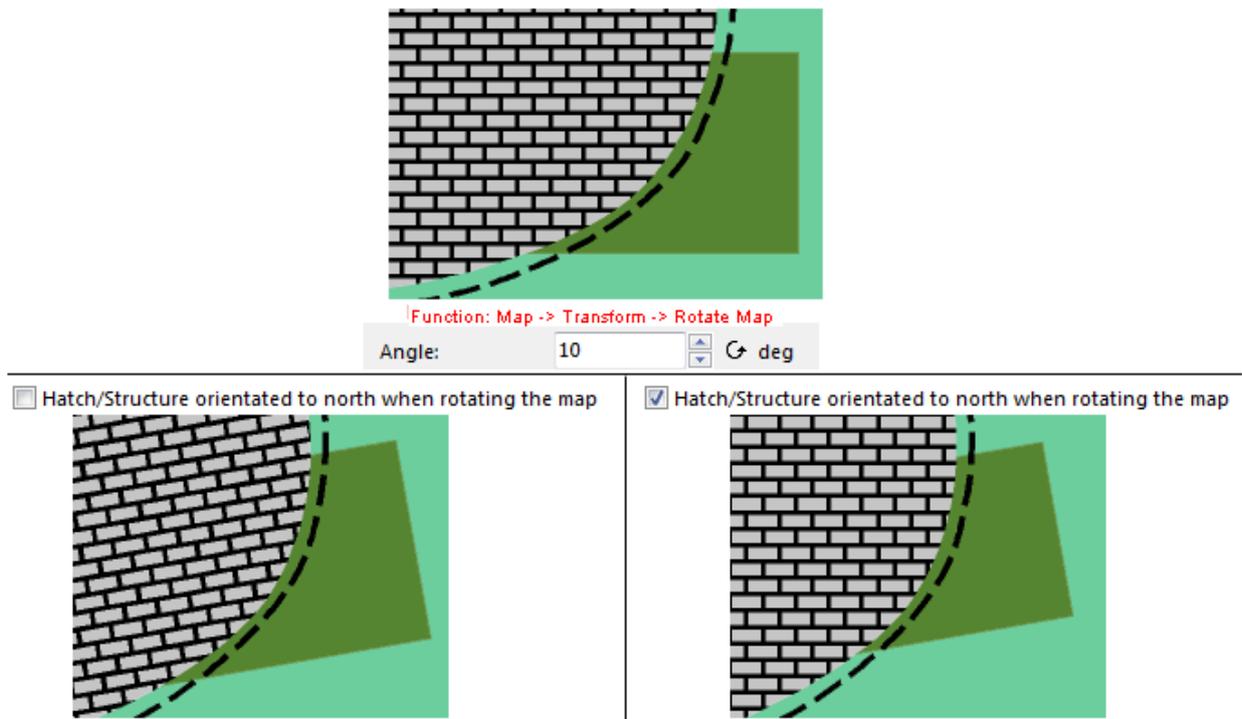
Border

Activate borderlines by checking the corresponding **On** checkbox. Then, select a line symbol in the dropdown list below. All line symbols in the **Symbol Box** are listed there. Make sure that the color of the line symbol is above the color of the fill in the **Color Table**, otherwise half of the line symbol will be covered by it.

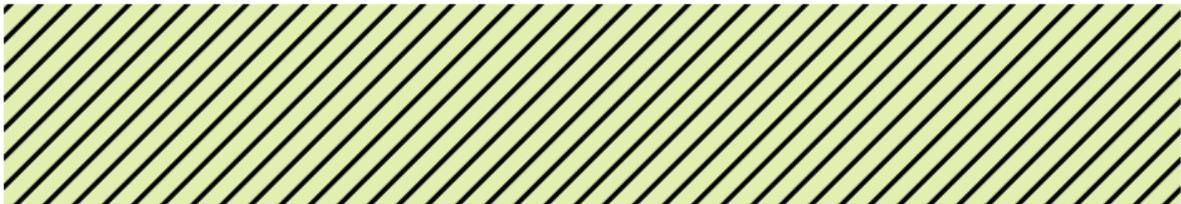


Orientation to North

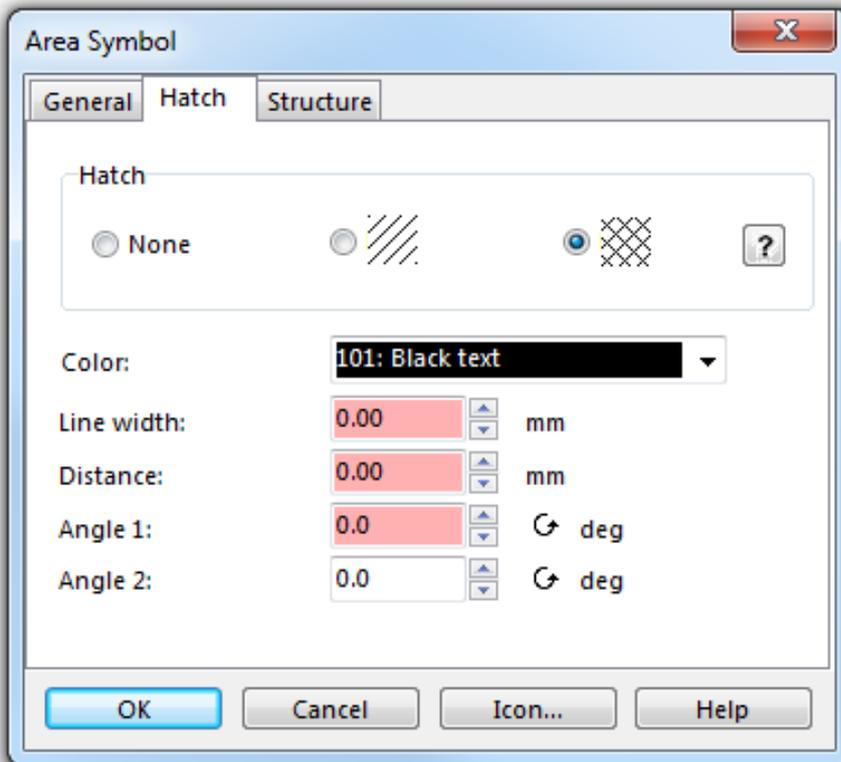
Check the **Hatch/Structure orientated to north when rotating the map** option if you want to keep a hatch or structure always orientated to north when rotating the map (**Rotate**).



Hatch

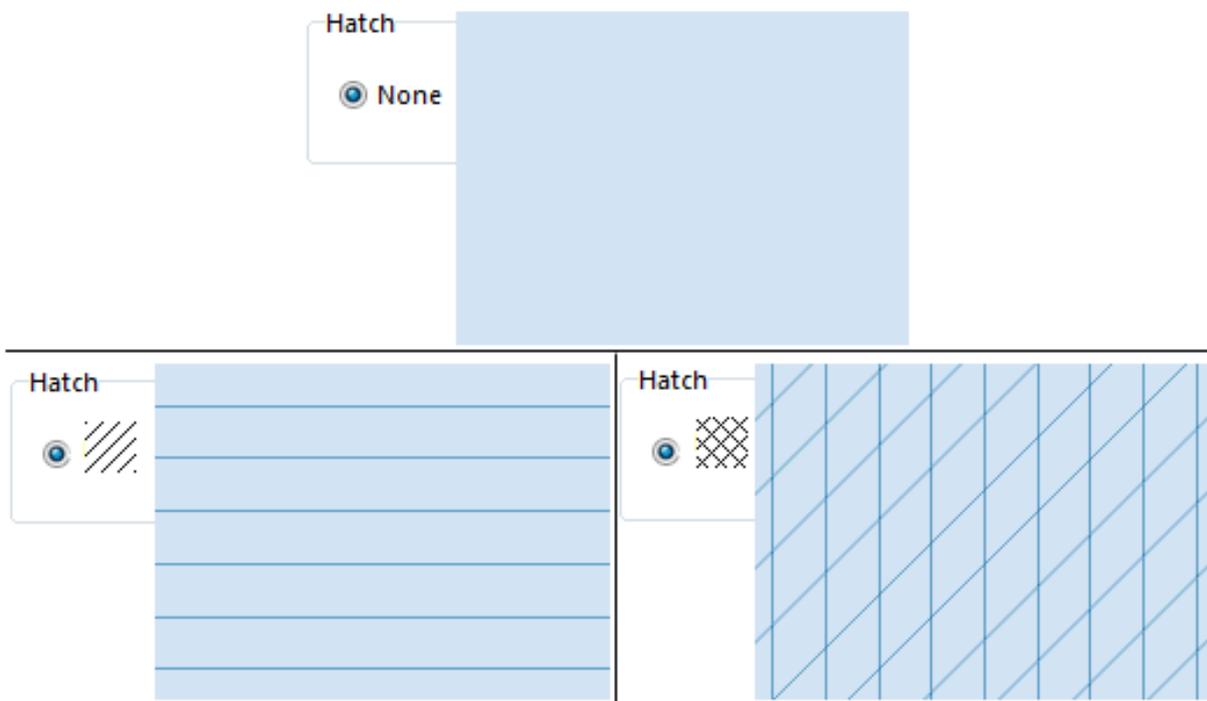


In this tab you can define the parameters for a simple hatch or a cross-hatch.



Hatch

Choose between **None** if you do not want a hatch, simple hatch or a cross-hatch.



Color

Choose a color for the hatch lines. Make sure that this color is above the background color of the area in the **Color Table**.

Line Width

Enter a line width in mm for the hatch lines in this field.

Distance

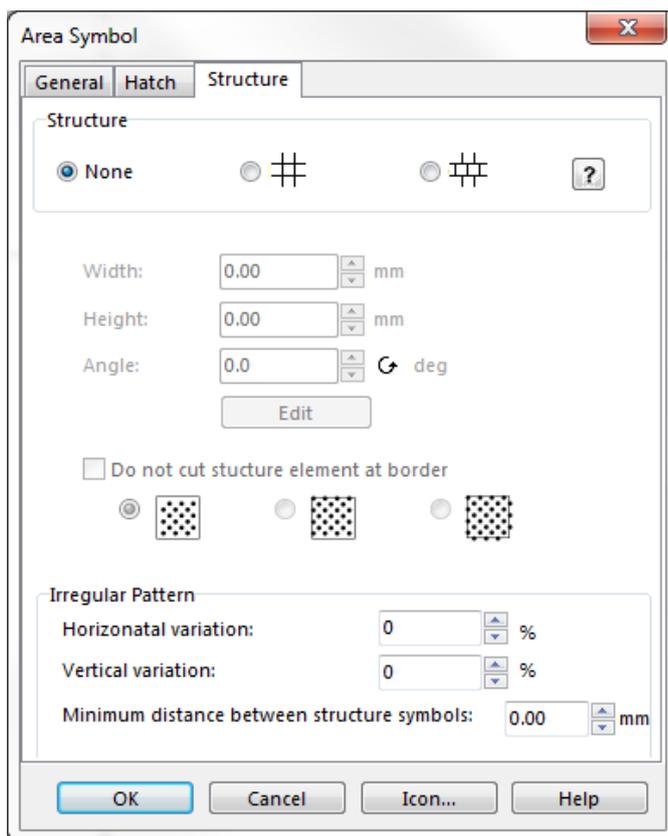
Enter the distance between the hatch lines in this field.

Angles

- **Angle 1:** Enter the angle for the hatch lines. 0 means that the lines are horizontal. For angles greater than 0, the lines are rotated counterclockwise.
- **Angle 2:** Enter the second angle for the hatch lines if you have defined a cross-hatch. Otherwise this value is ignored. 0 means that the lines are horizontal. For angles greater than 0, the lines are rotated counterclockwise.

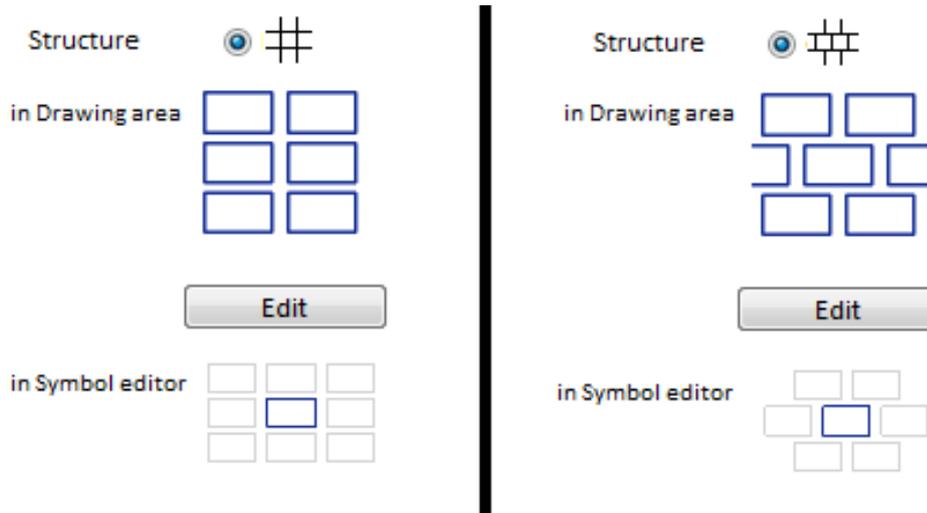
Structure

In this tab you can define the parameters for a structure.



Structure

Choose between **None** if you do not want a structure or one of the two layouts for structures.



Width

Enter the horizontal distance from one structure to the next (center to center). This distance is horizontal if the angle is 0, otherwise it is measured in the corresponding angle.

Height

Enter the vertical distance from one structure line to the next (center to center). This distance is vertical if the angle is 0, otherwise it is measured in the corresponding angle.

Angle

Enter here the angle of the structure. If this angle is 0 the structure is drawn as shown in the structure box. Otherwise it is rotated counterclockwise for positive angles.

Edit

Click this button to draw one structure element in the **Symbol Editor**. In the **Symbol Editor** the symbol will also appear (in gray) in the position of the neighboring structures in order to get an impression of the structured area. If you enter an angle other than 0, the structure will be rotated, but not the symbol. Read more about the **Symbol Editor** in the **Symbol Editor** article. This article contains also a paragraph for structured areas.

 It is possible to rotate the structure of individual objects drawn with that symbol with the **Indicate Direction of Area Pattern, Point or Text Object** button. In this case the structure and the structure symbols will be rotated.

Do not cut structure element at border

This option lets you decide how the elements get drawn, if the object would be cut off at border. You can pick either **Draw element if completely inside area**, **Draw element if center inside area** or **Draw element if partially inside area**.

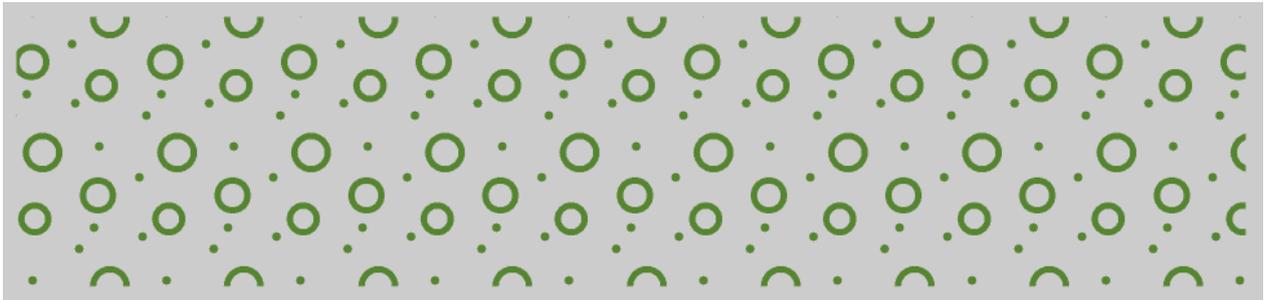
Irregular Pattern

This function allows to define the horizontal and vertical variation of objects inside the area (in %). It's also possible to push the elements inside the area apart with a defined minimum distance between symbols.

Examples

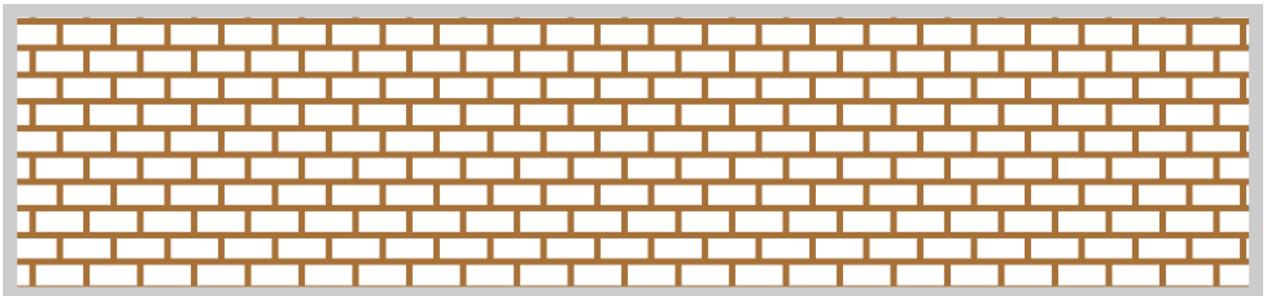
► Example Boulders with Shrubbery

This is an example for a structured area symbol.



► Example Dam

This is an example for a structured area symbol.



Icon

Click the **Icon** button in the dialog to create an icon for the symbol. The **Icon Editor** appears. Read more about this editor in the **Icon Editor** article.

Back to the **Create a New Symbol** page.

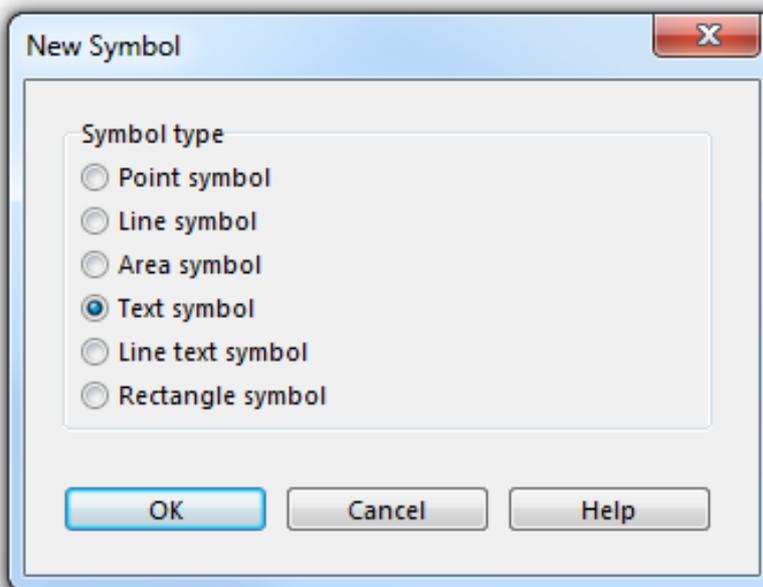
Create a New Text Symbol



Mas Ori Sta CS

You can create quite complex text symbols with OCAD.

Choose the **New** command in the **Symbol** menu. Then, choose the **Text Symbol** option in the **New Symbol** dialog to create a new Text symbol.

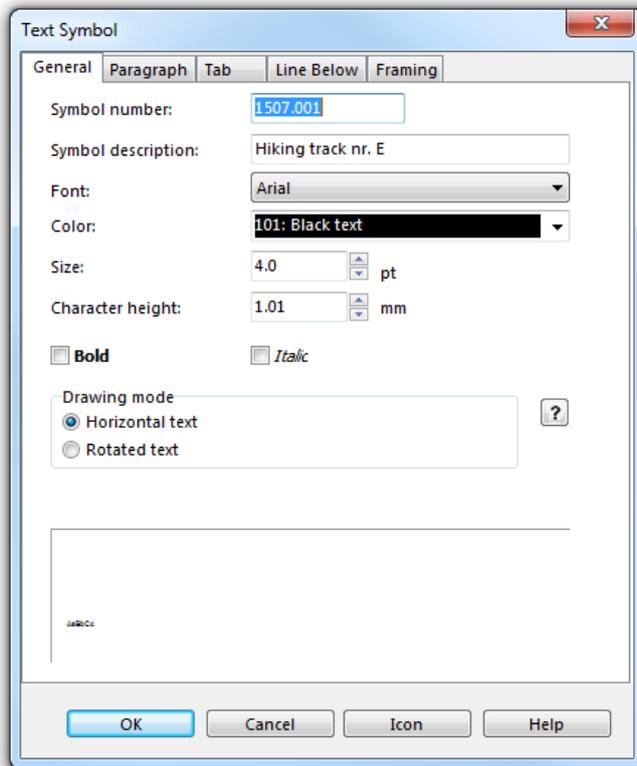


The **Text Symbol** dialog appears. This dialog provides the following five tabs:

- **General:** Used to define the font color, type and size.
- **Paragraph:** Used to define the paragraph attributes
- **Tabulator:** Used to define the tab attributes
- **Line Below:** Used to define the underscore attributes
- **Framing:** Used to define the framing and combination with point symbols

General

The **General** tab provides adjustment options for the font, color, size etc. of text symbols. At the bottom of the dialog a preview of the text is shown.



💡 For every text style, a separate symbol is required. If you modify the text symbol, then all text written with that symbol will change. 💡 The error message: "Font not found" appears if a font is chosen that is not installed on the PC. The font needs to be installed on the PC or another font must be chosen. Otherwise the font **Arial** is used.

Symbol Number

Type a symbol number between 0.001 and 999999.999 in this field.

Symbol Description

Enter a symbol description in this field (e.g. Hiking Track Label).

Font

Choose a font for the text symbol. All TrueType fonts installed in Windows are listed in the dropdown box. You cannot use raster fonts or Adobe Type Manager fonts.

- The error message: "Font not found" appears if a text object is linked to a font that is not installed on the PC. The font needs to be installed on the PC (restart OCAD after you installed the font) or another font must be chosen. Otherwise the font **Arial** is used.

Color

Choose the color for the text. All colors from the **Color Table** are listed in the dropdown list.

Size

Choose the size in points for the text. As an alternative you can enter the character height in millimeters in the **Character height** field.

Character Height

Enter here the height of the character 'B' in millimeters. Alternatively, you can enter the size of the font in points in the **Size** field.

Emphasis

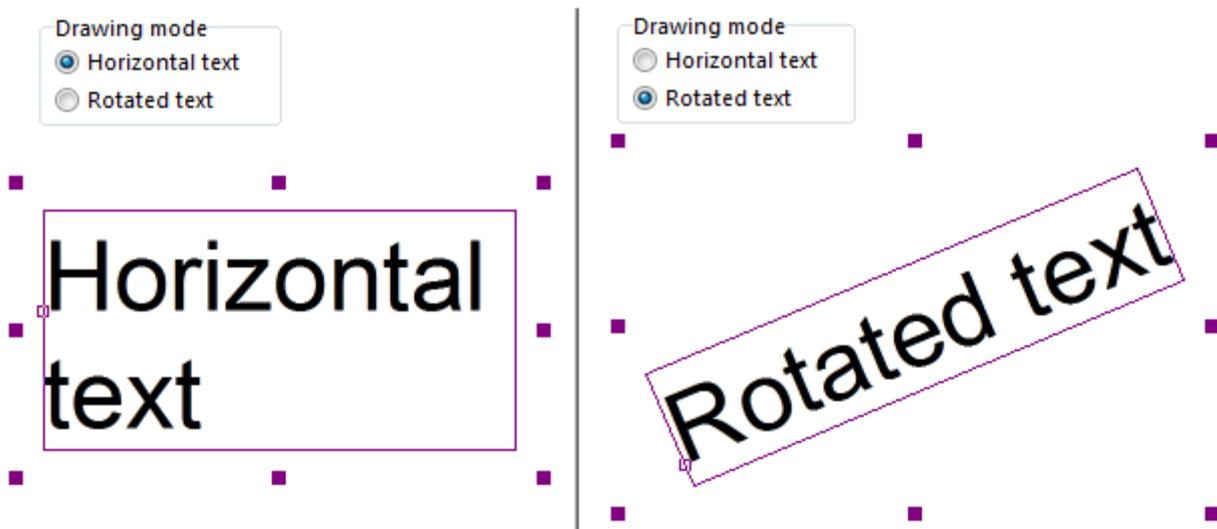
- **Bold:** Check this box for bold text.
- **Italic:** Check this box for italic text.

Drawing Mode

This setting is used if you drag the mouse in a specified direction when drawing or editing a text object or if you rotate the map with the **Rotate Map** command in the menu **Map**.

Horizontal text: Choose this option if the text shall be rendered horizontal after a rotation of the map.

Rotated text: Choose this option if the text shall rotate with the map after a rotation of the map.

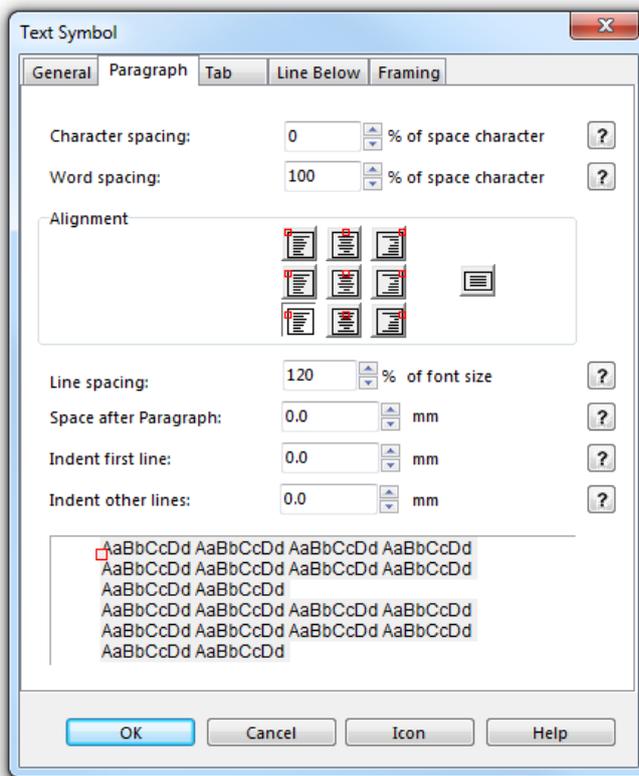


Course Setting for Orienteering Options

In **Course Setting for Orienteering** projects you have additional options for text symbols. Check the **Course setting symbol** box if you want to use this text symbol for the course title, code for variant or start numbers for relay courses. Read more about this topic on the **Add Course Setting Objects** page.

Paragraph

Choose this page to define parameters for text paragraphs. At the bottom of the dialog a preview of the text is shown.



Character Spacing

Enter here a distance to be inserted between characters. If you enter 100%, a space character is inserted between characters. The default value is 0%. Negative values can be inserted, too.

0 Character spacing: 0% of space character

50 Character spacing: 50% of space character

Word Spacing

Enter here the distance between words. 100% means that a normal space character is used between words. The default value is 100%.

Wordspacing:0% of space character

Word spacing: 50% of space character

Word spacing: 100% of space character

Alignment

Choose an alignment of the text. You have 10 options (from **Bottom** to **Top** and **Left** to **Right**, or select the **Bottom justified** option for left-aligned text which is **Fully Justified**). This last option only influences text draw as a text frame.

Line Spacing

Enter the distance from one line to the next within a paragraph in relation to the font size. The standard value is 120%.

Line spacing
120% of font size

20% of font size

Line spacing
300% of font size

Space after Paragraph

Enter the additional space after each paragraph.

Space after Paragraph: mm

Space after paragraph, space
after paragraph
Space after paragraph, space
after paragraph

Space after Paragraph: mm

Space after paragraph, space
after paragraph

Space after paragraph, space
after paragraph

Indent First Line

Enter the indent of the first line of each paragraph.

Indent first line: mm

Indent first line, indent first line
Indent first line, indent first line

Indent first line: mm

Indent first line, indent first
line
Indent first line, indent first
line

Indent Other Lines

Enter the indent of the other lines of each paragraph.

Indent other lines: mm

Indent other lines, indent other lines
Indent other lines, indent other lines

Indent other lines: mm

Indent other lines, indent other lines
Indent other lines, indent other lines

Tab

Choose this page to set the tabs for the text symbol. The tabs are left adjusted. A maximum of 32 tabs can be defined. If a text contains more tab characters than defined in the list, the distance to the last tab is repeated.

To add a new tab enter the position and click the **Add** button. The tab is added to the list.

To remove a tab select the tab to be deleted in the list. Then click the **Delete** button.

Line Below

On this page a line which is drawn below each paragraph can be defined. A paragraph is terminated by a hard return - the **Enter** key.

On

Check this box to get a line below the paragraphs.

<input type="checkbox"/> On Line color: <input type="text" value="0: Text black"/> Line width: <input type="text" value="0.20"/> mm Distance from text: <input type="text" value="0.20"/> mm	<input checked="" type="checkbox"/> On Line color: <input type="text" value="0: Text black"/> Line width: <input type="text" value="0.20"/> mm Distance from text: <input type="text" value="0.20"/> mm
<h1>Text Symbol</h1>	<h1><u>Text Symbol</u></h1>

Line Color

Choose a color for the line. The colors from the **Color Table** appear in this list.

Line Width

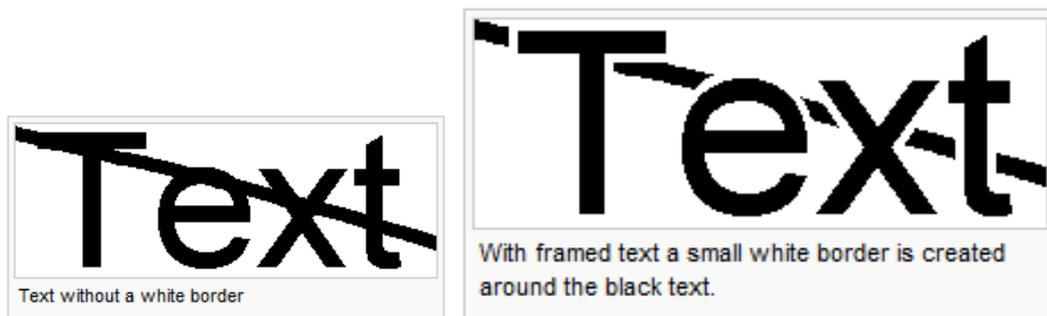
Enter a line width.

Distance from Text

Enter a distance from the baseline of the text to the upper edge of the line.

Framing

Choose this page to set the parameters for text framing. Text framing is a method to make text more readable on maps. If - for instance - you have black text on a map, it may interfere with black line objects. Text framing can also be used for decorative effects - giving the text a shadow, for instance.



For text framing you need to understand the **Color Table** and you should have some experience in creating new colors and new symbols.

Off

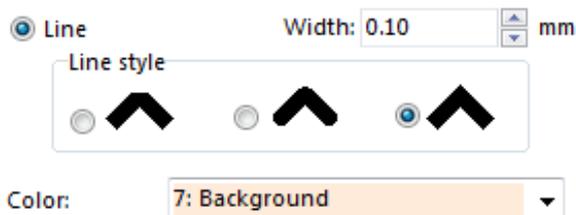
Activate this box if you don't want to use text framing.

Off

Framing Mode

Line

Enter here the **Width** (how much the framing extends outside the character) of the text framing as well as the **Line style** (how corners and line ends appear) and the **Color** at the bottom of the **Mode** part of the dialog (all colors from the **Color Table** are listed here). To get text framing, this color must be below the color of the main font in the **Color Table**, but above the colors of any objects which you wish to cover.



Framing Mode

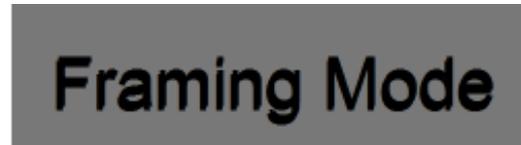
Shadow

Choose this option if a shadow to the text shall be rendered. Enter the **Horizontal** and **Vertical offset** of the shadow. Choose a **Color** at the bottom of the **Mode** part of the dialog (all colors from the **Color Table** are listed here). To get text framing, this color must be below the color of the main font in the **Color Table**, but above the colors of any objects which you wish to cover.

Shadow

Horizontal offset: mm

Vertical offset: mm



Rectangle

Choose this option to add a rectangular background. Enter the values **Left**, **Right**, **Bottom** and **Top** if the rectangle shall overlap the text. Choose a **Color** at the bottom of the **Mode** part of the dialog (all colors from the **Color Table** are listed here). To get text framing, this color must be below the color of the main font in the **Color Table**, but above the colors of any objects which you wish to cover.

Point Symbol

Check the **On** option if you want to attach a point symbol to the text symbol. Then, choose a point symbol, which are those from the **Symbol Box**.



Point Symbol



Text Symbol with allocated Point Symbol

Examples

Download-Links: [Example_Textframing.ocd](#)^[1] [Example_TextPointsymbol.ocd](#)^[2]

Creating a Line Text Frame



For text framing you need to understand the **Color Table** and you should have some experience in creating new colors and new symbols.

First you need two additional colors which are above the black color for symbols:

Black for text	■
White for text frames	■
Black	■

Then you can add the text framing to an existing text symbol:

1. Right click the text symbol and choose **Edit** from the context menu.
2. Choose the **General** page. Choose the **Black for text** item for the text color.
3. Choose the **Framing** page. Activate the **Line** option.
4. Enter the desired framing width.
5. Choose the **White for text frames** item in the **Color** dropdown list.

Selective Text Framing

Often text framing erases only the black color, but the other colors still come through. OCAD allows selective text framing for printing the map with spot colors (PMS or Pantone colors), by defining the appropriate spot colors. However, on the screen all colors below the framing color are erased. So beware: the appearance of the map on the screen and the printed map will be different. Selective text framing is also possible for CMYK printing. In this case you have to define your own **Spot Color** for CMYK. You cannot use the automatic CMYK color separations.

Icon

Click the **Icon** button in the dialog to create an icon for the symbol. The **Icon Editor** appears. Read more about this editor in the **Icon Editor** article.

Back to the **Create a New Symbol** page.

References

- [1] http://www.ocad.com/download/samples/Example_Textframing.ocd
- [2] http://www.ocad.com/download/samples/Example_TextPointsymbol.ocd

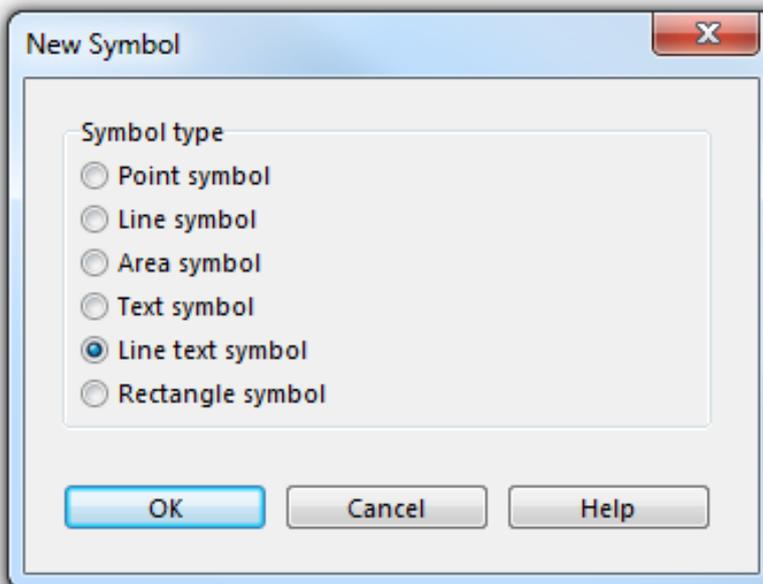
Create a New Line Text Symbol

Line Text Symbols

Mas Ori Sta CS

You can create different line text symbols with OCAD.

Choose the **New** command in the **Symbol** menu. Then, choose the **Line Text Symbol** option in the **New Symbol** dialog to create a new line text symbol.

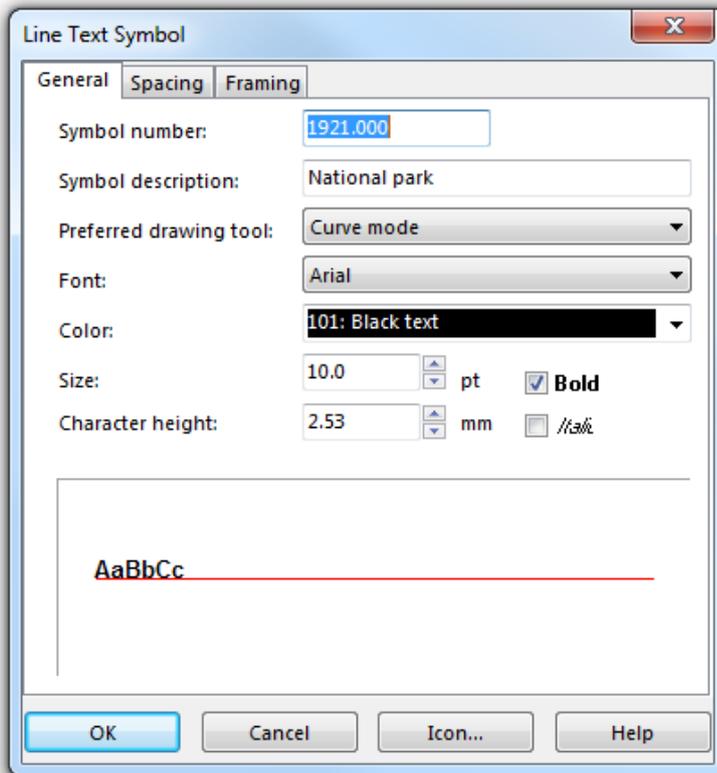


The **Line Text Symbol** dialog appears. The following options are available:

- **General:** Used to define the font color, type and size.
- **Spacing:** Used to define the letters, word spacing and text positioning.
- **Framing:** Used to define the framing

General

The **General** tab provides adjustment options for the font, color, size etc. of line text symbols. At the bottom of the dialog a preview of the text is shown.



💡 For every text style, a separate symbol is required. If you modify the line text symbol, then all text written with that symbol will change. 💡 The error message: "Font not found" appears if a font is chosen that is not installed on the PC. The font needs to be installed on the PC or another font must be chosen. Otherwise the font **Arial** is used.

Symbol Number

Type a symbol number between 0.001 and 999999.999 in this field.

Symbol Description

Enter a symbol description in this field (e.g. River Name).

Font

Choose a font for the text symbol. All TrueType fonts installed in Windows are listed in the dropdown box. You cannot use raster fonts or Adobe Type Manager fonts.

- The error message: "Font not found" appears if a line text object is linked to a font that is not installed on the PC. The font needs to be installed on the PC (restart OCAD after you installed the font) or another font must be chosen. Otherwise the font Arial is used.

Color

Choose the color for the text. All colors from the **Color Table** are listed in the dropdown list.

Size

Choose the size in points for the text. As an alternative you can enter the character height in millimeters in the **Character height** field.

Character Height

Enter here the height of the character 'B' in millimeters. Alternatively, you can enter the size of the font in points in the **Size** field.

Emphasis

- **Bold:** Check this box for bold text.
- **Italic:** Check this box for italic text.

Spacing

Choose this page to define spacing and alignment for a **line text** symbol.

Character Spacing

Enter here a distance to be inserted between characters. If you enter 100%, a space character is inserted between characters. The default value is 0%. Negative values can be inserted, too.

 Character spacing: 0% of space character

 Character spacing: 50% of space character

Word Spacing

Enter here the distance between words. 100% means that a normal space character is used between words. The default value is 100%.

 Wordspacing:0%ofspacecharacter

 Word spacing: 50% of space character

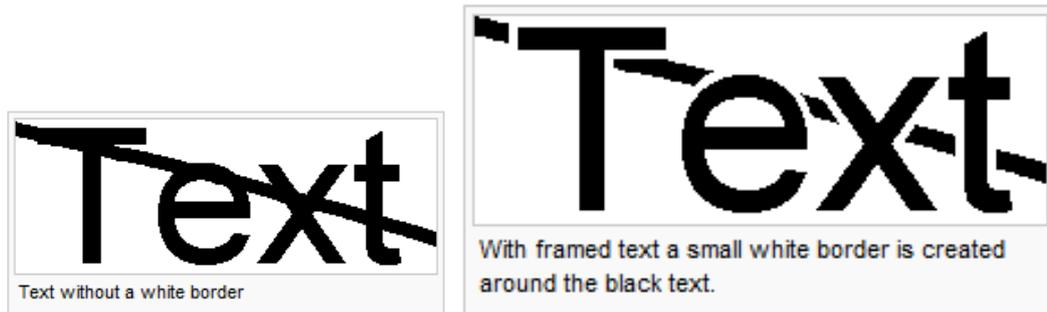
 Word spacing: 100% of space character

Alignment

Choose here how the text is aligned along the line. The **All line** options (Those three on the right side) mean that the text is distributed along the entire line. With this option the *letter-spacing* will be adapted to the length of the line text object. Choose the options from **Bottom** to **Top** and **Left** to **Right** for a normal alignment (not justified).

Framing

Choose this page to set the parameters for text framing. Text framing is a method to make text more readable on maps. If - for instance - you have black text on a map, it may interfere with black line objects. Text framing can also be used for decorative effects - giving the text a shadow, for instance.



For text framing you need to understand the **Color Table** and you should have some experience in creating new colors and new symbols.

Off

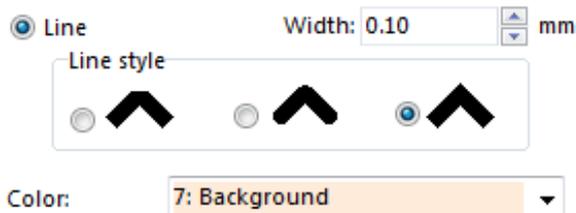
Activate this box if you don't want to use text framing.

Off

Framing Mode

Line

Enter here the **Width** (how much the framing extends outside the character) of the text framing as well as the **Line style** (how corners and line ends appear) and the **Color** at the bottom of the **Mode** part of the dialog (all colors from the **Color Table** are listed here). To get text framing, this color must be below the color of the main font in the **Color Table**, but above the colors of any objects which you wish to cover.



Framing Mode

Shadow

Choose this option if a shadow to the text shall be rendered. Enter the **Horizontal** and **Vertical offset** of the shadow. Choose a **Color** at the bottom of the **Mode** part of the dialog (all colors from the **Color Table** are listed here). To get text framing, this color must be below the color of the main font in the **Color Table**, but above the colors of any objects which you wish to cover.

Shadow

Horizontal offset: mm

Vertical offset: mm



Drawing a Line Text Symbol

Line text symbols are used for text along curved lines. Line text can be written along any line, including curved lines. To draw a line text object you must define a **line text symbol** and do the following steps:

1. Select the line text symbol.
2. Draw a line in any drawing mode (curve, ellipse, circle etc.).
3. After terminating the line, an insertion line appears and you can directly type the text on the keyboard.
4. If the text goes in the wrong direction, click the  **Reverse Object** icon in the **Edit Functions** toolbar.

Icon

Click the **Icon** button in the dialog to create an icon for the symbol. The **Icon Editor** appears. Read more about this editor in the **Icon Editor** article.

Back to the **Create a New Symbol** page.

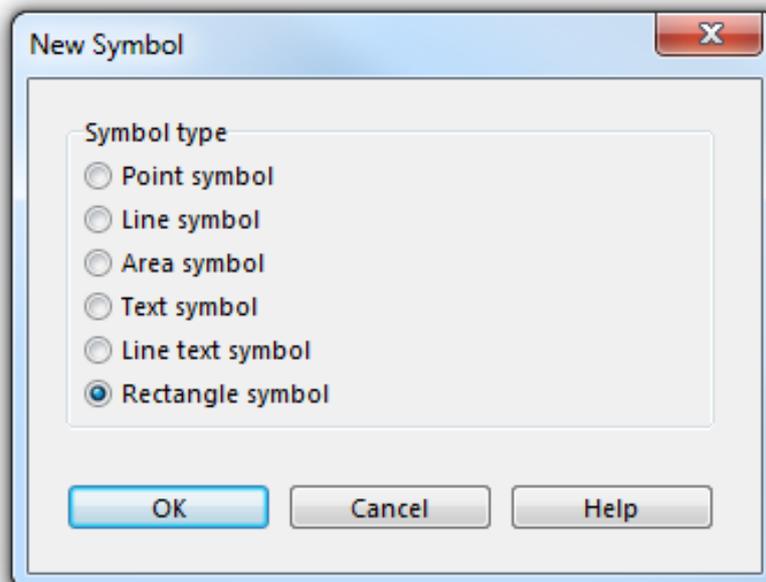
Create a New Rectangle Symbol



Mas Ori Sta CS

You can create rectangle symbols with OCAD.

Choose the **New** command in the **Symbol** menu. Then, choose the **Rectangle Symbol** option in the **New Symbol** dialog to create a new rectangle symbol.



The **Rectangle Symbol** dialog appears.

Rectangle symbol

Symbol number: 1.002 OK

Symbol description: Punch Fields Cancel

Line color: 0: Pikto orange Icon...

Line width: 0.20 mm Help

Corner radius: 0.50 mm ?

Drawing mode

Horizontal rectangle

Rotated rectangle (drag width and length)

Grid

On ?

Cell width: 3.0 mm

Cell height: 3.0 mm

Numbering

On

Numbered from the bottom

Text size: 2.0 pt

Unnumbered Cells

Number: 3

Text: R

Rectangle symbols are used to draw rectangular frames (around the entire map or around parts of the map). A special use for **Rectangle** symbols are punch boxes for orienteering maps.

Symbol Number

Type a symbol number between 0.001 and 999999.999 in this field.

Symbol Description

Enter a symbol description in this field (e.g. Punch Box).

Line Color

Choose the color for the frame. All colors from the **Color Table** are listed in the dropdown list.

Line Width

Enter a line width for the frame.

Corner Radius

If you want the frame to have round corners, enter the corner radius here (measured to the center of the line), otherwise enter 0 here.

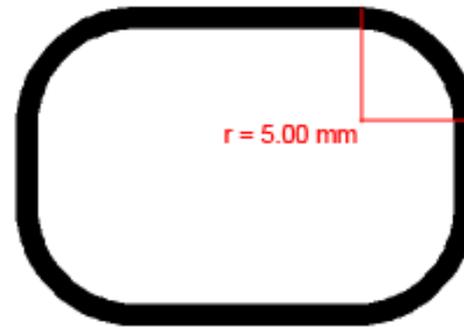
Line width: 1.00 mm

Corner radius: 0.00 mm



Line width: 1.00 mm

Corner radius: 5.00 mm



Line Style

Rectangle symbol

Symbol number: 950.000

Symbol description: Rectangle

Line color: 101: Black

Line width: 0.80 mm

Corner radius: 0.00 mm

Line style

Horizontal rectangle

Rotated rectangle (drag width and length)

Grid

On

Cell width: 0.0 mm

Cell height: 0.0 mm

Numbering

On

Numbered from the bottom

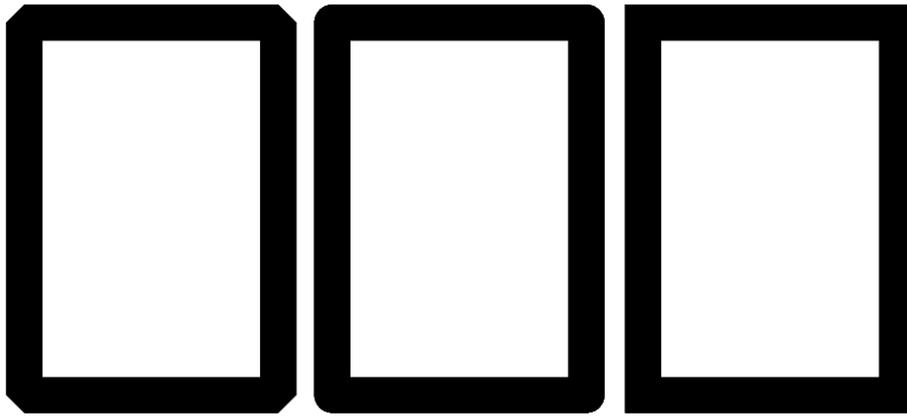
Text size: 1.0 pt

Unnumbered Cells

Number: 0

Text:

The **Line Style** option is only available, if the **Corner Radius** is set to 0. In this case you can choose between the three common line styles to define the appearance of corners and line ends.



Drawing Mode

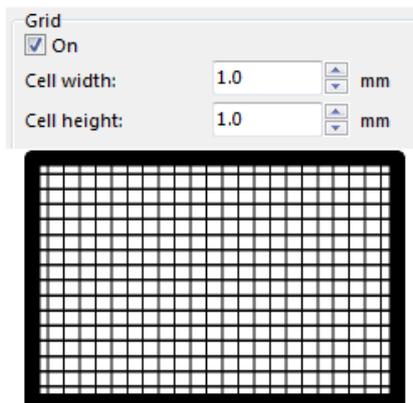
- **Horizontal rectangle:** Activate this option if you want to draw only horizontal rectangles.
- **Rotated rectangle:** Activate this option if you want to draw rotated rectangles.

Grid

The grid line width is not alterable. So this option is obsolete.

- **On:** Activate this field if you want to add a grid into the rectangle.
- **Cell width / Cell height:** Enter the desired width and height for the cells.

 The effective cell width and cell height are always a divider of the drawn rectangle's total size.



Numbering

On

Activate this field if you want to add numbers to the grid.

Numbered from the Bottom

Normally, the cells are numbered starting from the top row. Check this box to start numbering from the bottom row.

Text Size

Choose the size in points for the text.

Unnumbered Cells

Number: Enter here the number of cells used as reserved fields, if you want to create punch boxes. If you want all cells numbered enter here 0.

Text: Enter here up to 3 characters which appear instead of the number in the reserved fields.

Icon

Click the **Icon** button in the dialog to create an icon for the symbol. The **Icon Editor** appears. Read more about this editor in the **Icon Editor** article.

Back to the **Create a New Symbol** page.

Symbol Status Manager

Mas Ori

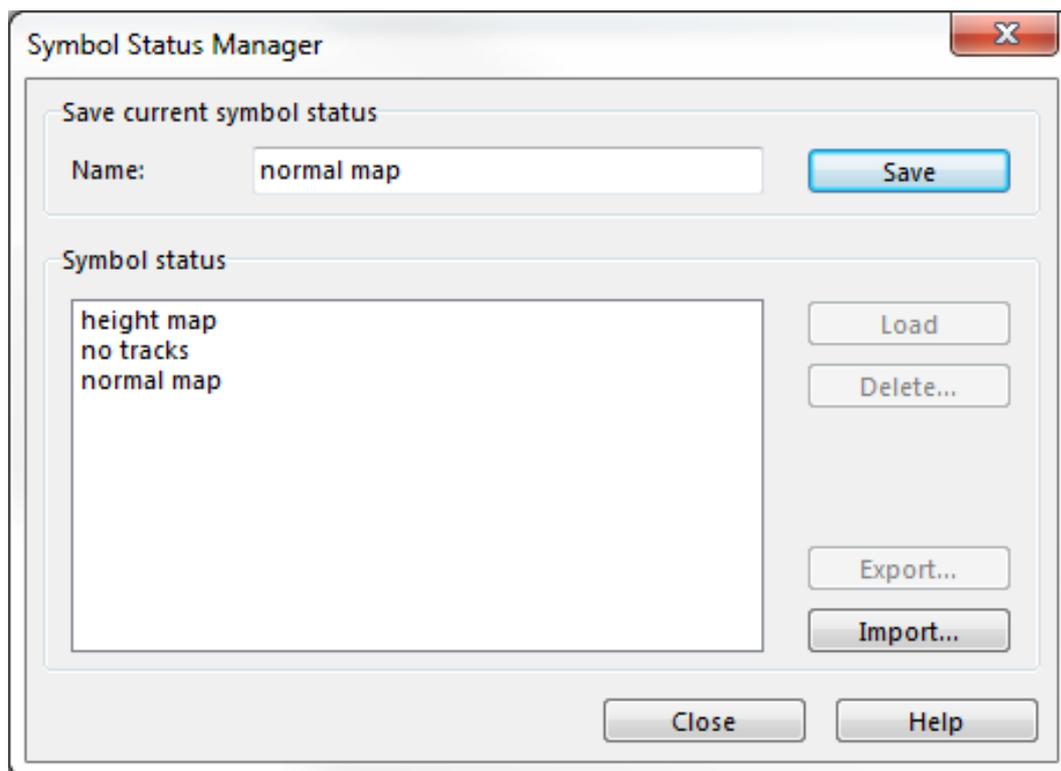
The **Symbol Status Manager** allows to easily get access to various status settings.

While the **Symbol Status Manager** dialog is open, the map can still be edited.

💡 --> See a [short video on Youtube](#)^[1], which explains you the basics.

Save current symbol status

1. Select **Symbol Status Manager** item in the **Standard Toolbar** or in the **Symbol** menu.
2. The **Symbol Status Manager** dialog opens.



3. Set the status of the symbols in the **Symbol Box** to *normal*, *protected* or *hidden* to get the map view you want.

💡 This can be done already before opening the dialog.

4. Enter a name and save the current symbol status settings by clicking on the **Save** button.

Load Symbol Status

1. Select a status in the **Symbol Status** box.
2. Either double click on the name or click on **Load** to activate this symbol status settings.

💡 Only one symbol status setting can be active.

💡 If multiple status are selected then only the one who's name is shown in the name box will be loaded.

Delete Status

1. Select a status in the **Symbol Status** box.
2. Click on the **Delete** button to delete this symbol status.

Export Symbol Status

1. Select a saved symbol status setting.
2. Click on the **Export** button.
3. Choose the destination folder and save the **.xml** file.

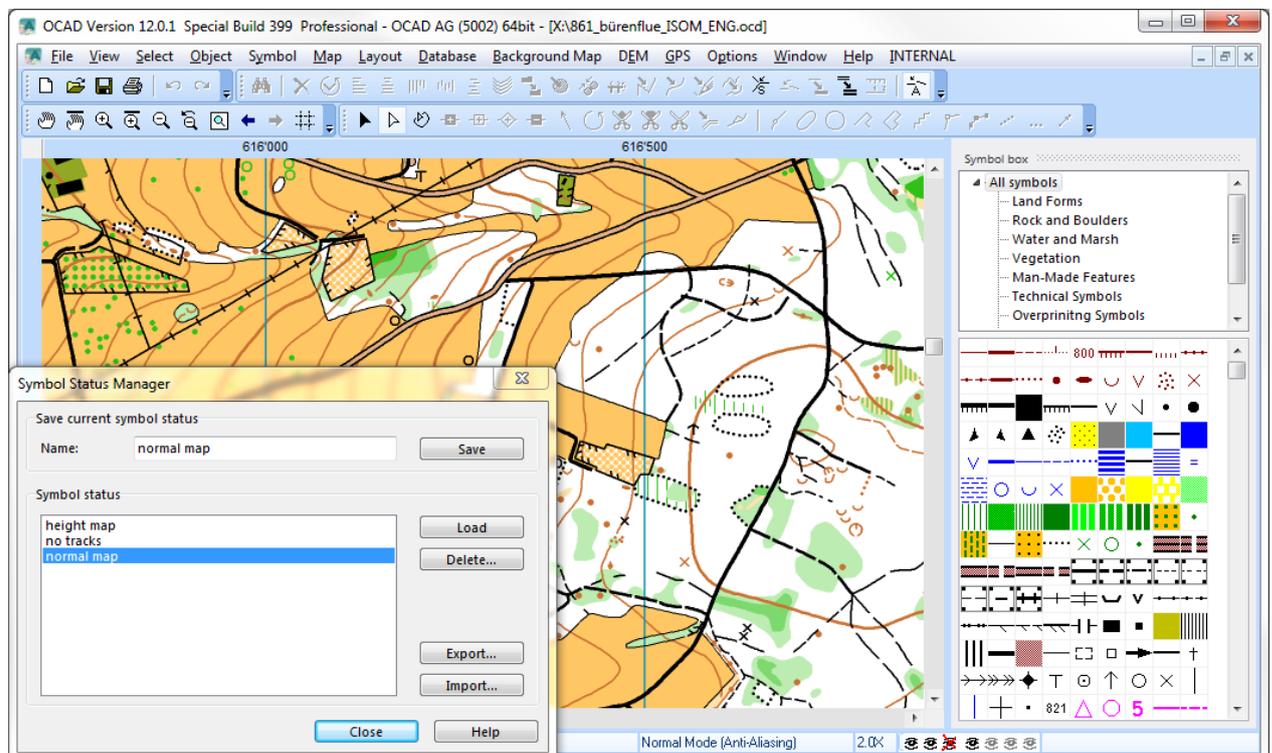
💡 If multiple settings are selected to be exported, they are saved in one **.xml** file.

Import Symbol Status

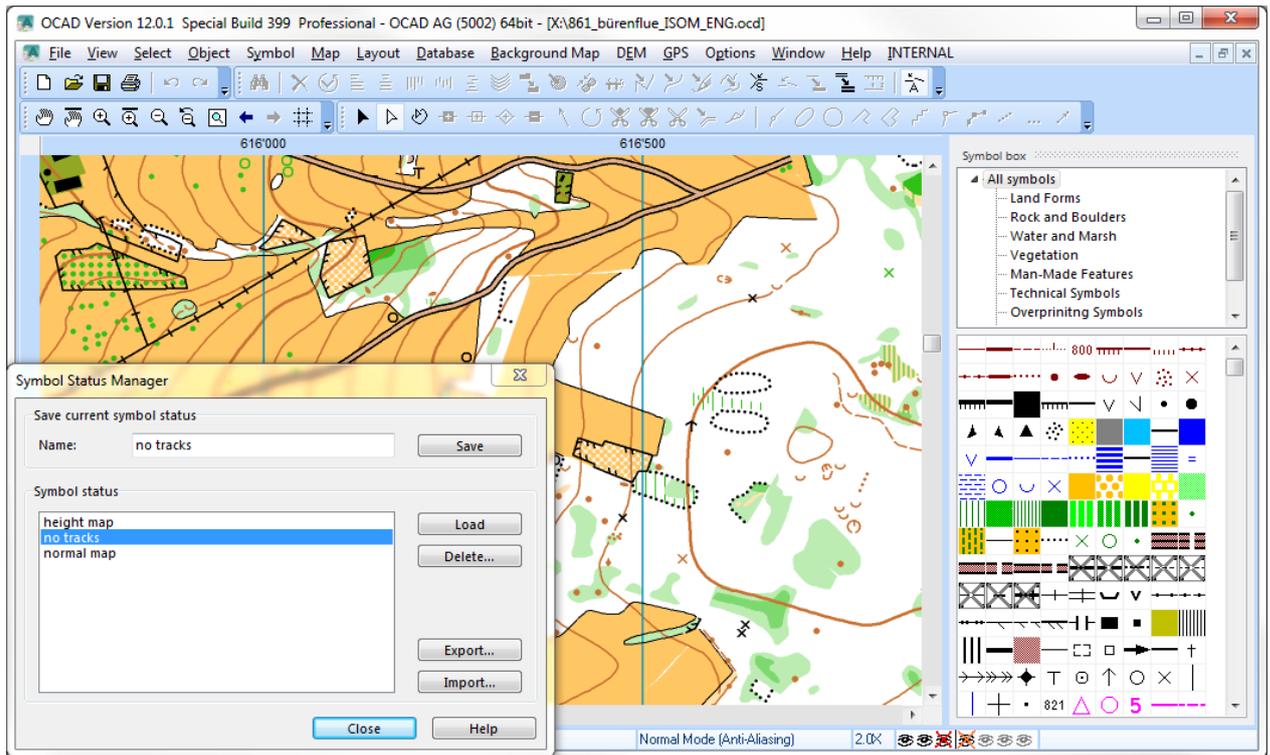
1. Click on the **Import** button.
2. Pick and load an symbol status setting(s) **.xml** file.
3. The loaded symbol status are shown in the **Symbol Status** box.

Examples

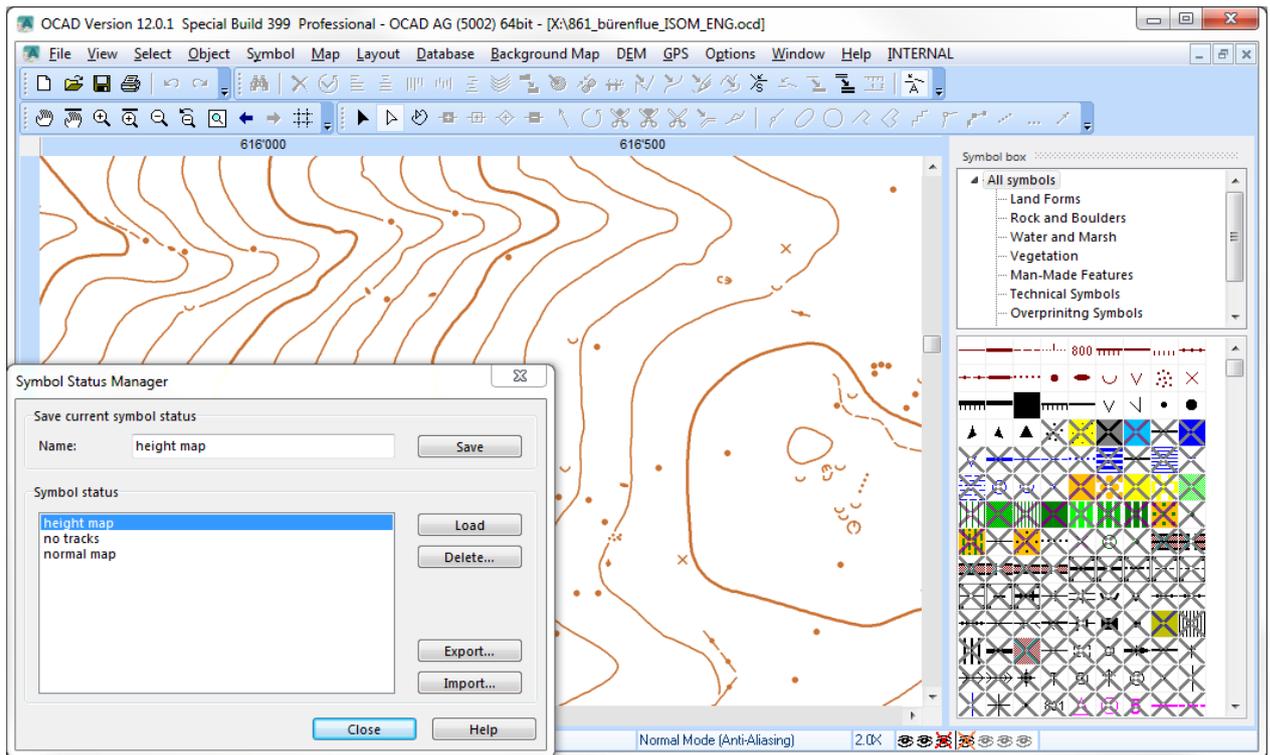
- normal map



- no tracks



- height map



Back to Symbol

References

- [1] <https://www.youtube.com/watch?v=vflwkqPiCH0>

Menu Map

Map

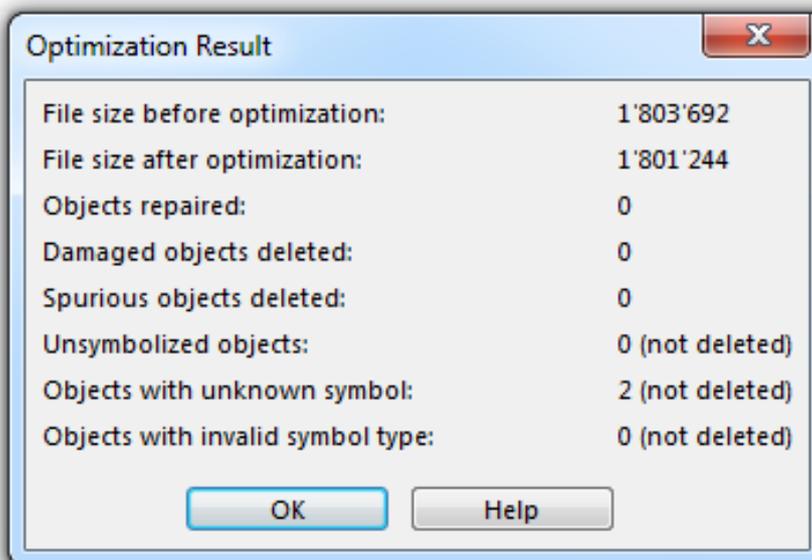
Optimize and Repair



Choose this command in the **Map** menu to optimize (reduce) the size of the map file and repair damaged objects. With edit operations such as deleting objects, empty space is created in the map file. This function removes this empty space and therefore reduces the size of the map file.

When OCAD encounters damaged objects it tries to repair them. If this is not possible, they are deleted.

After the optimization the **Optimization Result** dialog box is displayed with the following information:



- **File size before optimization** in bytes.
 - **File size after optimization** in bytes.
 - **Objects repaired**
 - **Damaged objects deleted**
 - **Spurious objects deleted:** Spurious objects are objects which are not visible. These may be text objects with no text and no line, line objects with only one point, or area objects with only 2 points.
 - **Unsymbolized Objects**
 - **Objects with Unknown Symbol**
 - **Objects with Invalid Symbol Type**
-

Set Scale and Coordinate System

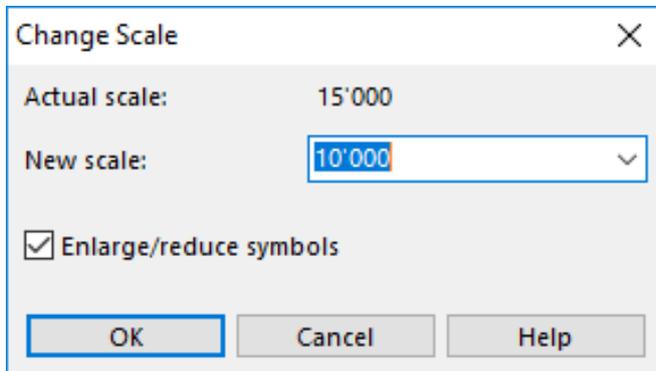
Mas Ori Sta CS

Visit the **Set Scale and Coordinate System** page to get some information about this function.

Change Scale

Mas Ori Sta CS

Choose this command in the **Map** menu to change the scale of the map. The map is enlarged/reduced according to the new scale. The **Change Scale** dialog box is displayed, where the new scale can be entered.



Actual scale

This line shows the current scale of the map. Choose the **Set Scale and Coordinate System** command from the **Map** menu to set the current scale.

💡 Setting the current scale with the **Set Scale and Coordinate System** function does not enlarge or reduce the map. It only changes a number in the map file.

New scale

Enter here the desired new scale of the map. You may choose one of the predefined scales or enter the scale on the keyboard.

Enlarge/reduce symbols

Check this box to enlarge/reduce the symbols with the same factor as the map. When the box is checked, the map is enlarged/reduced like a photographic enlargement. When this box is not checked, the map is enlarged/reduced, but the symbols are kept in the same dimension.

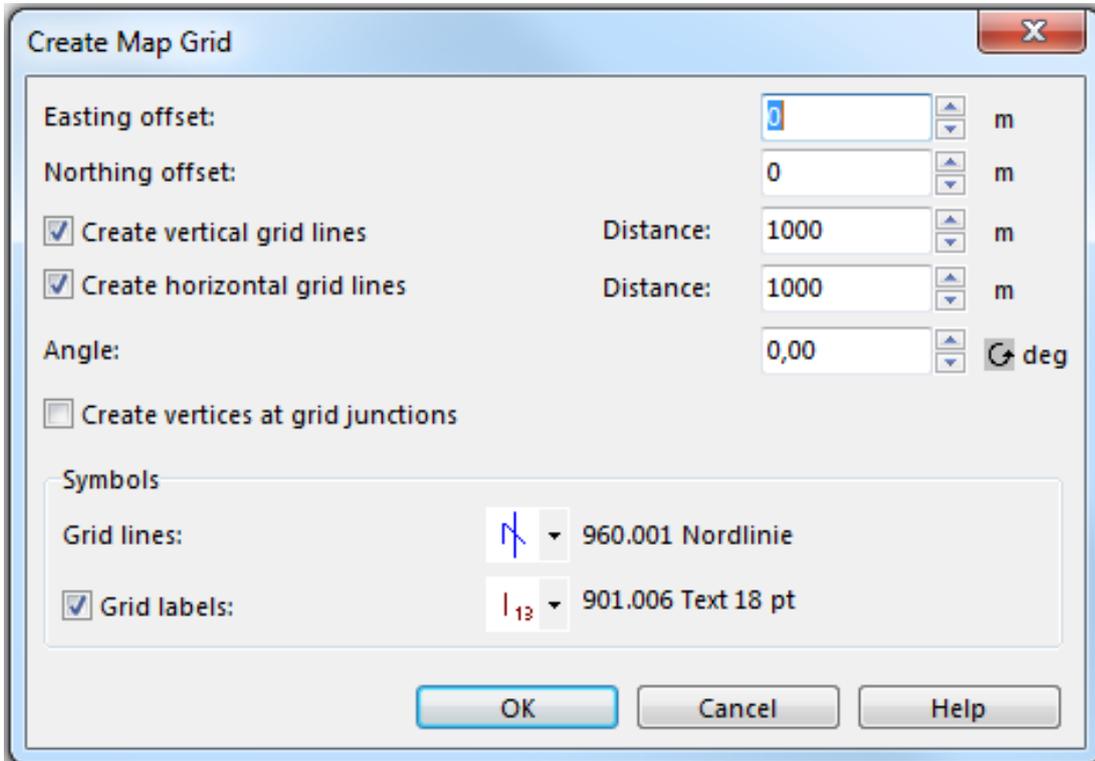
💡 Course Setting project: OCAD does not enlarge and reduce symbols with symbol numbers 0-100. That are usually the symbols for the control description.

Click the **OK** button to finish.

Create Map Grid

Mas Ori Sta

Choose this command from the **Map** menu to create grid lines on the map (e.g. it can be used to draw **Magnetic North** lines or the grid for a **Name Index**). The **Create Map Grid** dialog box is displayed.



Now, you have to make the following adjustments:

- **Easting offset:** Enter the easting offset to the defined map grid for the vertical grid lines.
- **Northing offset:** Enter the northing offset to the defined map grid for the horizontal grid lines.
- **Create vertical grid lines:** Check this option to create vertical grid lines and enter the distance .
- **Create horizontal grid lines:** Check this option to create horizontal grid lines and enter the distance .
- **Angle:** OCAD uses the real world angle.
- **Create vertices at grid junctions:** Check this option to create a vertex at every grid junction.
- **Symbols:**
 - **Grid lines:** Select a line symbol for the grid lines (map grid).
 - **Grid labels:** Select a text symbol for the grid labels.

Click the **OK** button when finished. The grid is drawn over the whole map. Therefore, remove background maps which are larger than the map before creating a grid.



Create Name Index is the corresponding function to create a name index based on a rectangular map grid.



The minimum and maximum grid line distance depends on the map grid distance. You can change this grid distance in **Set Scale and Coordinate System** dialog.

Create WGS84 Grid

Mas

Read more about this topic on the [Create WGS84 Grid](#) page.

Hide

Mas

Ori

Sta

Choose this command in the **Map** menu to hide the map on the screen.

Transform

Information about the transforming functions, which are **Move**, **Stretch/Shrink**, **Mirror**, **Rotate Map**, **Change Coordinate System**, **Affine**, **Rubbersheeting**, **Local Transformation** and **Center Map to Drawing Area**, can be found on the [Map Transform](#) page.

Convert Imported Layers to Symbols

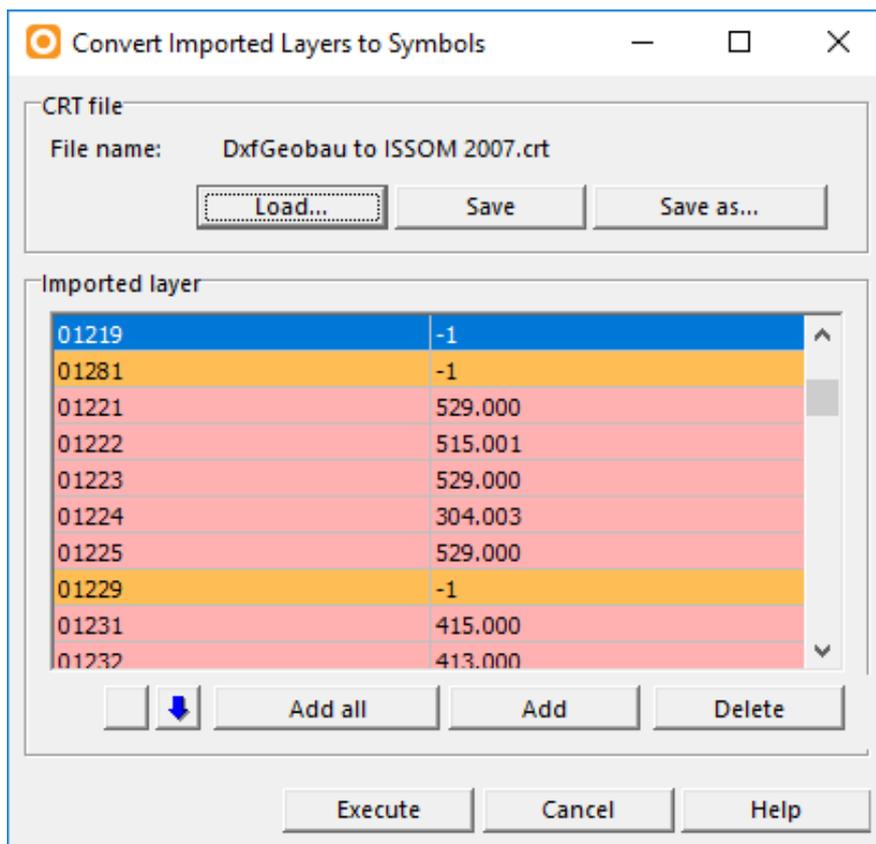
Mas

Ori

Sta

Choose this command from the **Map** menu to convert the layers of an imported DXF, Shape or AI file to symbolized objects. The **Convert Imported Layers to Symbols** dialog box appears.

In this dialog box you can create a list of references. A reference consists of a layer and the corresponding OCAD symbol. You can save the list to a cross reference (.crt) file for later use. You can load an existing cross reference file to modify or execute it.



Visit the [Cross Reference Table](#) page to get some information about CRT-Files and the CRT-File part in the dialog.

Click the **Execute** button when you are finished with editing the **CRT-File**. The conversion gets executed.

Click **Add all** to add all imported layers to the table.



- Please note that this CRT file does not work to **Import OCD Files!**

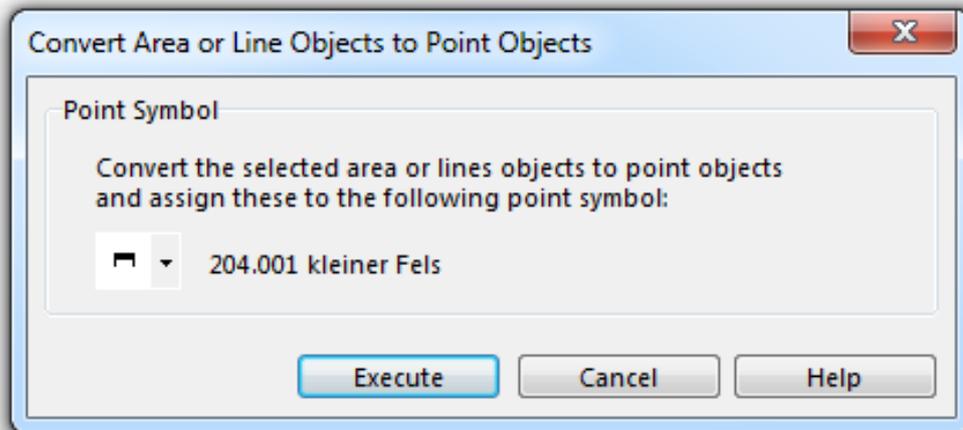
An imported layer can be converted manually. Visit the [Convert a Layer Manually](#) page to get more information.

Convert Area or Line Objects to Point Objects

Mas

Choose this function in the **Map** menu to convert area or line objects to point objects. This command is enabled if an area or line object is selected.

1. Select a line or an area object.
2. The **Convert Area or Line Objects to Point Objects** dialog appears.



3. Choose a point symbol. You may have to create a Symbol first that looks like the old one. Read **here** how to create a Point Symbol out of vector data.
4. Click the **Execute** button. The selected area or line object is converted to a point symbol and the chosen symbol is assigned to it.
5. You may need to **shift** the point symbol until it is at the right place.

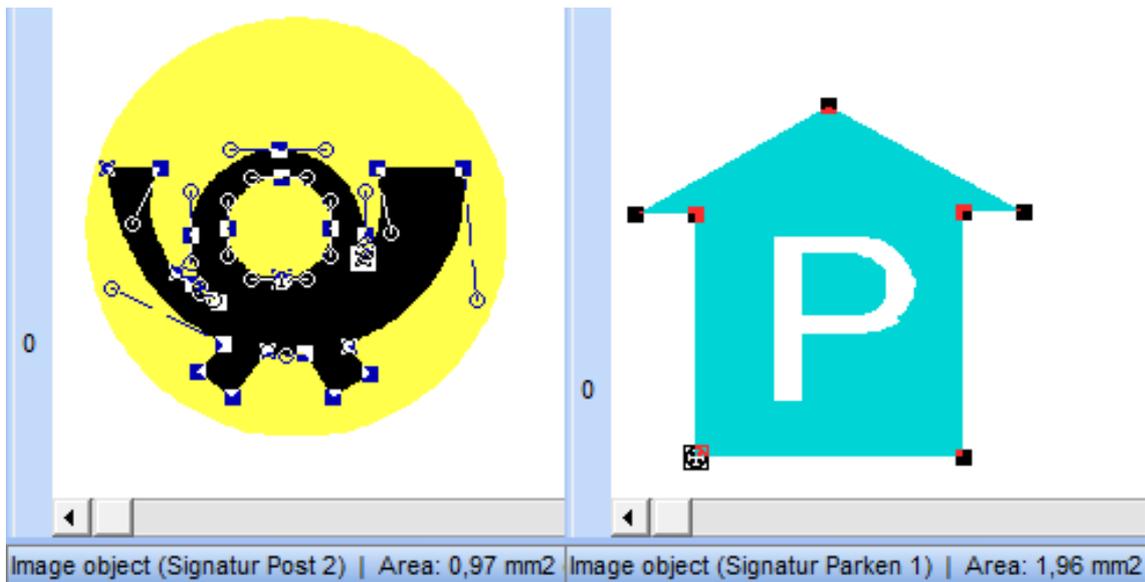
💡 The point symbol appears in the middle of the area or the line.

Examples

- **Import PDF and convert to symbol**

A typical example for this function would be the **import of a PDF**. Vector objects in PDF-Files are imported as Image Objects and can be converted to symbols.

In the image below, you see a symbol for a post office and a car park. However, each of these symbols consists of one or several area objects. Because of that, editing and moving around these symbols can get tedious. That's why it is an option **to create a new Point Symbol out of the Vector Data** and later convert the area objects to this new Point Symbol.



- **Convert a Line or Area Object to a Point Object**

In the next example the map contains a symbol for coniferous and deciduous forest and a symbol for heather. The animation shows how to convert them to point symbols.

- **Convert multiple Line Objects to a Point Object**

Here's the problem: We have a symbol consisting of 6 line objects, in our example the symbol for 'Heather', which appears 5 times. Now, if we select all six objects of these 5 symbols, we will get 30 Point Symbols, but only want to have 5. That's why we try to find a unique property of the objects we want to convert to identify only one specific object per symbol.

So, we first select all 30 objects and **select them by property** in a next step.

Now we only have one selected object for every symbol, which we can convert to a Point Object.

Shift the Symbols until they are at the right place.

Convert Text Objects to Point Objects

Mas

Choose this command from the **Map** menu to convert text to point objects. The **Convert Text Objects to Point Objects** dialog appears.

This function is used after import map drawn in DTP program. In a DTP program point symbols are often drawn with a character and a special symbol fonts. OCAD can convert this characters to a point symbol.

In the first part of the dialog you can decide wheter you want to convert the objects from all text symbols or only objects from a selected symbol.

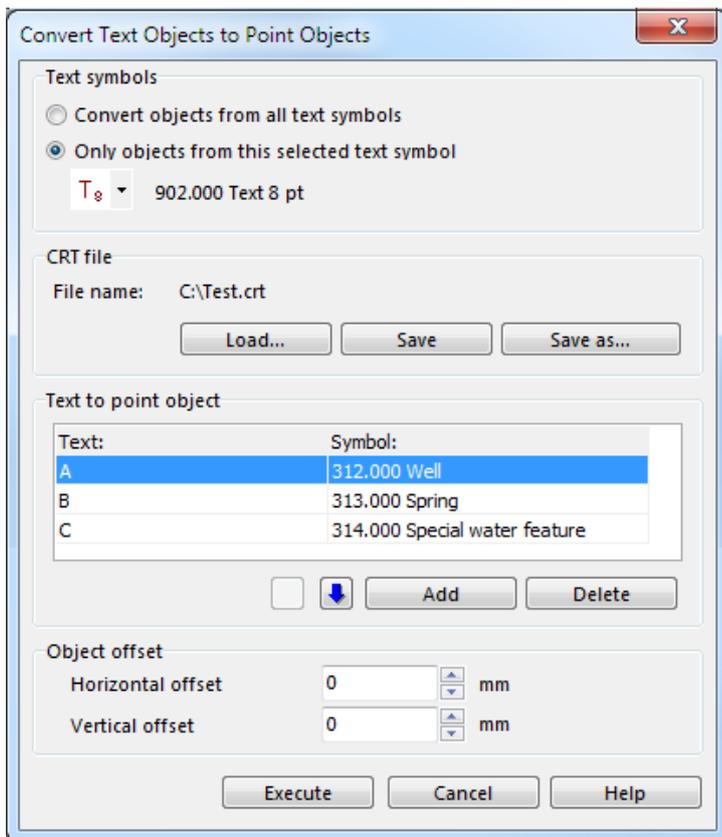
In the second part of the dialog box you can create a list of references. A reference consists of a layer and the corresponding OCAD symbol. You can save the list to a cross reference (.crt) file for later use. You can load an existing cross reference file to modify or execute it.

Visit the **Cross Reference Table** page to get some information about CRT-Files and the CRT-File part in the dialog.

Example of crt file:

```
312.000 A
313.000 B
314.000 C
```

The same data in the dialog:



Click the **Execute** button when you are finished with editing the **CRT-File**. The conversion gets executed.

Convert Text Objects from OEM to Unicode

Mas

Choose this command from the **Map** menu to convert text objects from OEM to Unicode.

This function can be used after importing geodata from non-Unicode compatible programs or open ocd files from older OCAD versions. OCAD 2019 is Unicode compatible.

In the first part of the dialog you can decide whether you want to convert the text from all text symbols or only objects from a selected symbol.

In the second part of the dialog box you can create a list of references. A reference consists of a layer and the corresponding OCAD symbol. You can save the list to a cross reference (.crt) file for later use. You can load an existing cross reference file to modify or execute it.

Visit the **Cross Reference Table** page to get some information about CRT-Files and the CRT-File part in the dialog.

Click the **Execute** button when you are finished with editing the **CRT-File**. The conversion gets executed.

Example: After opening OCAD 7 file in OCAD 2019 file some characters are invisible (e.g. the character Š from codepage Windows-1250^[1] to represent texts in Central European and Eastern European languages). Use this function to convert this character from OEM code '141' to the Unicode '356'.

Export Objects by Selected Symbols

Mas Ori Sta

With this function you can export objects with the selected symbol(s) in a new OCAD-Map. Select the desired symbol(s) before choosing this function (e.g. you can export all roads).

Choose this function from the **Map** menu. The **Export Objects by Selected Symbols** dialog opens. Browse a location and enter a name for the new file. Then, click the **Save** button to finish.

Export Selected Objects

Mas Ori

With this function you can export the selected object(s) in a new OCAD-Map. Select the desired object(s) before choosing this function.

Choose this function from the **Map** menu. The **Export Selected Objects** dialog opens. Browse a location and enter a name for the new file. Then, click the **Save** button to finish.

Delete Objects by Selected Symbols

Mas

Choose **Delete Objects by Selected Symbols** in the **Map** menu to select all objects with certain symbols or in a certain layer. As an example you can select all roads. The **Delete Objects by Selected Symbols** dialog box appears.

All objects with a selected symbol

Choose this option and click on the **OK** button to delete all objects with the selected symbol(s). Select the symbol(s) before you choose the **Delete Objects by Selected Symbols** command.

All objects in layer

If you import files like PDF, DXF, Adobe Illustrator or OpenStreetMap with layer information, the layer information does not get lost, though OCAD does not support layers as they are known in Adobe Illustrator or similar applications. Choose the **All objects in a layer** option to delete all objects which are in the same layer. Choose a layer in the dropdown list.

Unsymbolized objects

Choose this option and click on the **OK** button to delete all Unsymbolized Objects.

Objects with unknown symbol

Choose this option and click on the **OK** button to delete all Objects with Unknown Symbol.

Objects with invalid symbol type

Choose this option and click on the **OK** button to delete all Objects with Invalid Symbol Type.

Graphic objects

Choose this option and click on the **OK** button to delete all Graphic Objects.

Image objects

Choose this option and click on the **OK** button to delete all Image Objects.

Export Part of Map Mas Ori

With this function you can export a part of the current map in a new OCAD-Map.

Choose this function from the **Map** menu. The **Export Part of Map** dialog opens on the right side of the screen. The following adjustments can be made:

Boundaries

- **Rectangular boundaries:** Choose this option to export a rectangular part of the map. You can modify or move the boundaries using the mouse.

Click  **Setup** button to define the region to be exported with coordinates. The **Setup Part of Map (Export)** dialog box appears.

Click the  **Entire Map** button to export the entire map. The boundary rectangle adjusts to the entire map.

Click the  **To Current View** button to export the map which is currently displayed on the screen. The boundary rectangle adjusts to the current view.

- **Use selected object for boundaries:** Choose this option to export an irregularly shaped part of the map. Before choosing the **Export Part of Map** command, you must draw the shape with a line or area object.
 - **Export with selected object:** If you check this option the object which defines the boundary is exported as well.
 - 💡 To make this function faster convert this cutting object from a curve to a polyline (**Change to Polyline**).
 - 💡 The number of vertices of the cutting object has a big influence on the speed of this function.
 - 💡 This option may produce inverted area objects or other artefacts. Namely if the cutting object has self-intersections or if the cutting object crosses a hole of an area object.
 - 💡 We recommend to use the **Rectangular boundaries** option to export a rectangular part of the map.
- **Export database links:** This option is checked by default. If you do not want to export the database links, then uncheck this option. This will speed up the export significantly if the map has a lot of linked objects.

Click the **OK** button when finished. The **Export Part of Map** dialog opens. Browse a location and enter a name for the new file. Then, click the **Save** button to finish.

Colors Mas Ori Sta View CS

You can find all information about colors on the **Colors** page.

Define Spot Colors Mas Ori Sta View CS

Visit the **Define Spot Colors** page to get some information about this function.

Load Colors From Mas Ori Sta CS

Information about this function can be found on the **Colors** page.

Load Colors and Symbols From Mas Ori

Information about this function can be found on the **Colors** page.

Compare Symbols and Colors Mas Ori

Select this command in the **Map** menu to compare the symbol set of the open file with a reference OCAD map. The **Reference map** dialog appears. Choose a reference file and click the **Open** button. The **Compare Symbols and Colors** dialog box appears. You have the following options:

- **Compare colors:** Activate this check box if the color table shall be compared.
- **Compare symbols:** Activate this check box if the symbols shall be compared.
- **Used symbols only:** Activate this checkbox if only used symbols shall be compared.
- **List identical symbols:** Activate this check box if the identical symbols shall be listed, too. If this check box is deactivated, only the different symbols will be logged in the TXT-File.

Click the **OK** button to continue. OCAD saves a text file to the location of the currently opened OCAD-Map under the name *FILENAME.CompareResult.txt* and opens it. Make sure that the directory of the current OCAD-Map is not a read-only folder.

The **Logfile** shows the difference of the symbols and/or colors and if wanted also the identical symbols.

Load Symbol Descriptions From

Choose this command in the Map menu to load symbol descriptions from a text file. Choose the **Load Symbol Descriptions From...** item from the **Map** menu. The **Load** dialog box is displayed. Choose a text file what contains the symbol descriptions. Click the Open button to load the symbol descriptions. The text file needs to contain the symbol number followed by a SPACE or TAB as separator and the symbol description, ex:

```
101.000 Contour
102.000 Index Contour
```

Save Symbol Descriptions To

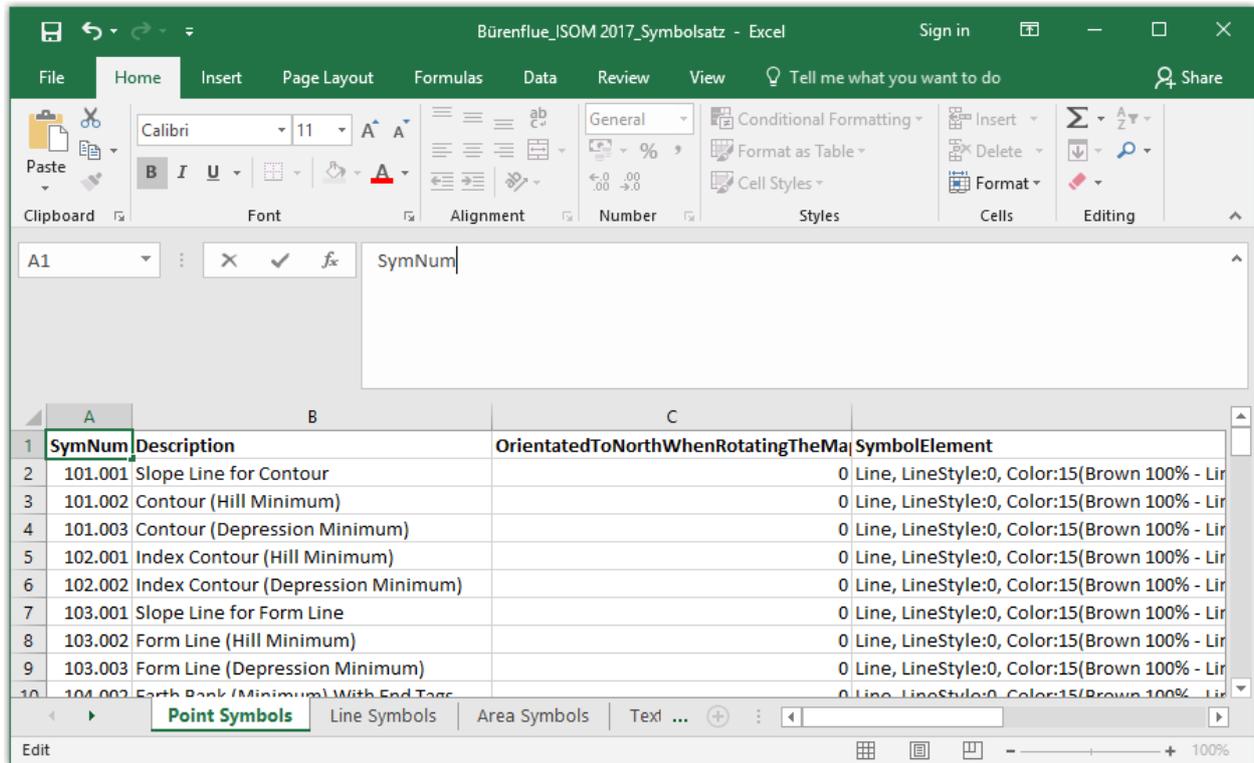
Choose this command in the Map menu to save the symbol descriptions to a text file. Select the **Save Symbol Descriptions From...** item from the **Map** menu. The **Save** dialog box is displayed. Choose a path and file name. Click the **Save** button to save the symbol descriptions. The text file contains the symbol number followed by a TAB as separator and the symbol description, ex:

```
101.000 Contour
102.000 Index Contour
```

Symbol Set Report

Mas Ori

Choose this command to save an Excel-file with a detailed description of all symbols in your file.



Symbol Set Conversion

Mas Ori

Visit the [Symbol Set Conversion](#) page to get some information about this function.

Update Symbol Set

Mas Ori

Use this function to update maps drawn with ISOM 2017 to the new ISOM 2017-2 standart.

Visit the [Update Symbol Set](#) page to get some information.

Renumber Symbols

Mas

Use this function to renumber symbols and objects with a crt file.

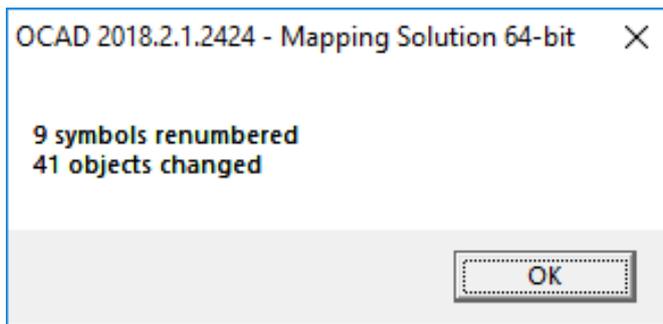
Example of a crt file: The first value is the old symbol number, the second the new one.

```
101 10101
102 10102
```

The new symbol number can't be any old symbol number, even if you change this number later on.

```
101 102
102 101
```

The result is shown in a info message.



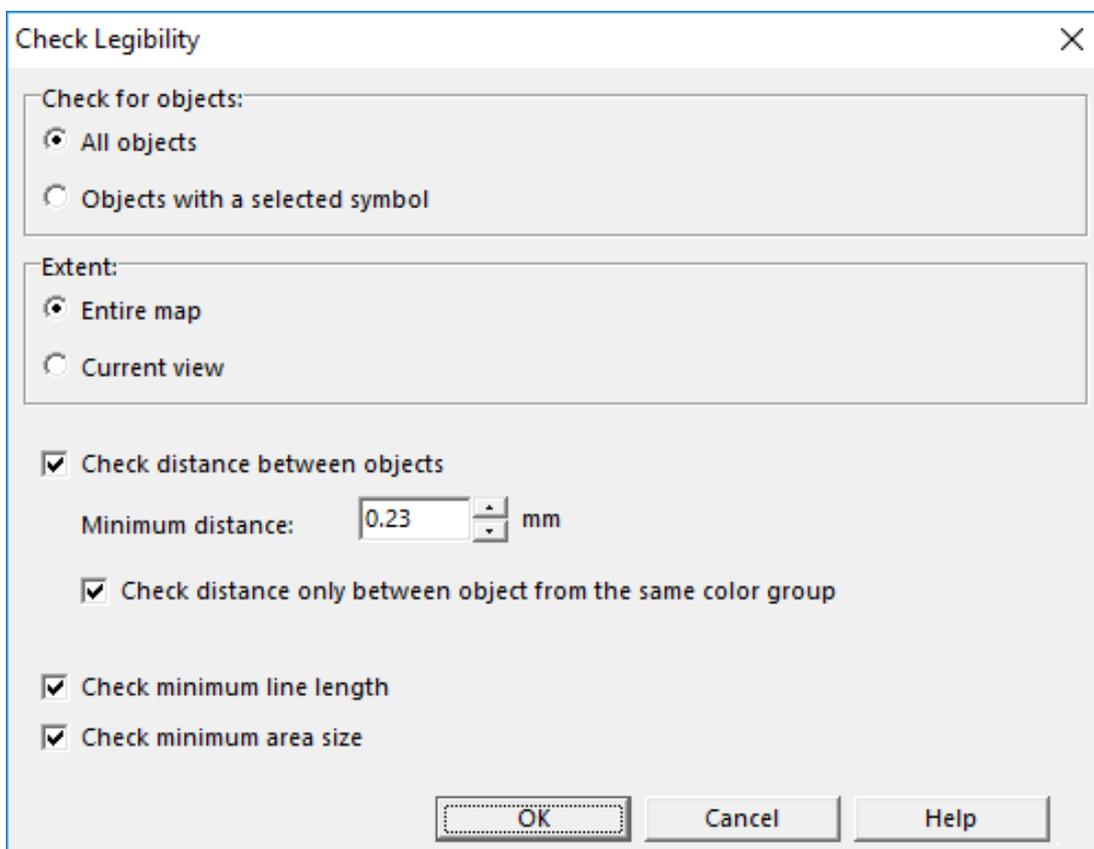
Use the function **Save Symbol Descriptions To** to get all symbol numbers as a text file.

Check Legibility

Mas Ori

Use this function to check minimum distances between objects, minimum length of line objects or minimum size of area objects according to ISOM 2017. This function will help map makers to find the right degree of generalisation. Furthermore, Event Advisers and Map Consultants have a tool to check the maps.

💡 --> See a **short video on YouTube** ^[2], which explains you the basics.



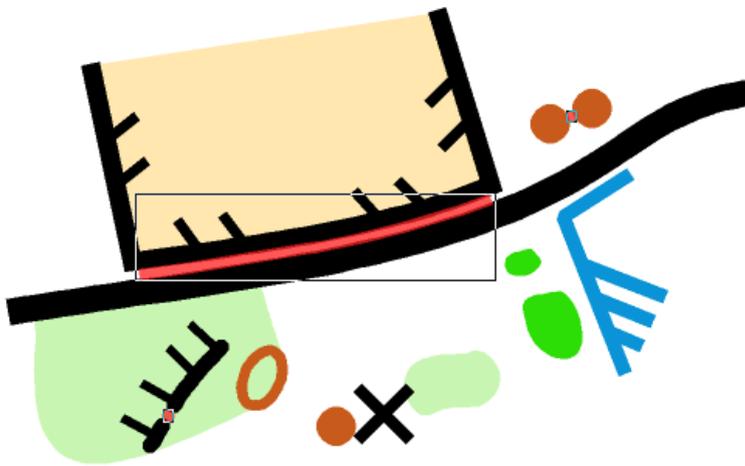
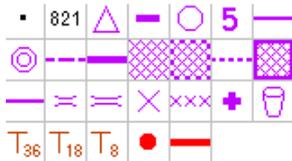
- **Check for objects:** Choose if you want to check all objects or only the objects with a selected symbol (they need to be selected before).
- **Extend:** Check entire map or only current view.
- **Check distance between objects:** Default value is 0.15 mm for map scale 1:15'000. The default value is adapted automatically for larger scales like 1:10'000 (0.23 mm).
 - **Check distance only between object from the same color group (black, brown, blue, green, yellow):** It is recommended to check this option for orienteering maps, as many objects of different colors overlap (e.g. brown contour line through green vegetation).
- **Check minimum line length:** Minimum length values from ISOM 2017 are checked.

- **Check minimum area size:** Minimum area size and width values from ISOM 2017 are checked.

Click the **OK** button. Three different selections will be stored (minimum distance conflict, minimum line length conflict, minimum area size conflict). Reload the selections under **Reload Selection** in the **Select** menu. The latest selections are at the bottom of the list. Once you have opened a selection, go through the conflicts by clicking on the corresponding objects in the table.

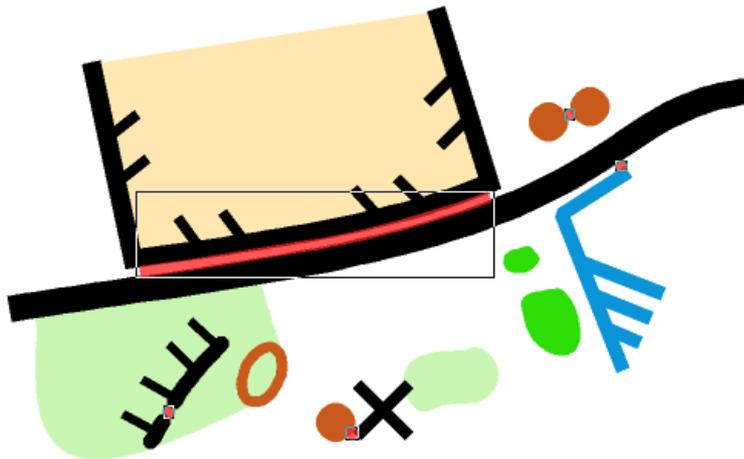
Minimum distance conflicts will not only be stored in a selection, but also shown with red dots or lines. Therefore, two new symbols will be added at the bottom of your symbol box.

💡 If you want to **delete** these red conflict dots and lines, select them by using **Reload Selection** in the **Select** menu or by right-clicking the symbol(s) in the symbol box and **Select objects by symbol...**



Object index	Object type	Symbol	Colors	Number of	Elevation [r]	Length [m]	Area [m]
21	Point Object	10600.001 Minimum Distance Conflict	C=0 M=255 Y=255 K=0	1	0.00	-	-
22	Line object	10600.003 Minimum line distance conf	C=0 M=255 Y=255 K=0	10	0.00	71.05	-
23	Point Object	10600.001 Minimum Distance Conflict	C=0 M=255 Y=255 K=0	1	0.00	-	-

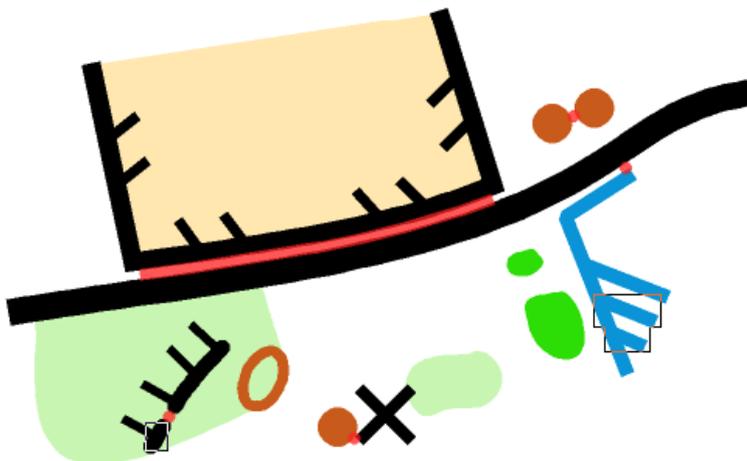
If you uncheck the option **Check distance only between object from the same color group (black, brown, blue, green, yellow)**, you will get more conflicts and the result will look like this.



Reload Selection: minimum distance conflict_2018-02-21 16.09.59 (5 Objects)

Object index	Object type	Symbol	Colors	Number of	Elevation [r]	Length [m]	Area [m]
25	Point Object	10600.001 Minimum Distance Conflict	C=0 M=255 Y=255 K=0	1	0.00	-	-
26	Point Object	10600.001 Minimum Distance Conflict	C=0 M=255 Y=255 K=0	1	0.00	-	-
27	Point Object	10600.001 Minimum Distance Conflict	C=0 M=255 Y=255 K=0	11	0.00	-	-
28	Line object	10600.003 Minimum line distance conf	C=0 M=255 Y=255 K=0	10	0.00	71.05	-
29	Point Object	10600.001 Minimum Distance Conflict	C=0 M=255 Y=255 K=0	1	0.00	-	-

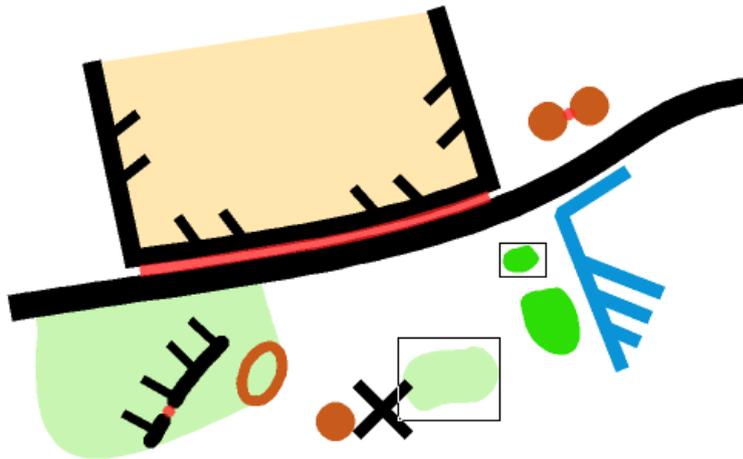
Selection for **minimum line length**.



Reload Selection: minimum line length conflict_2018-02-21 16.02.41 (3 Objects)

Object index	Object type	Symbol	Colors	Number of	Elevation [r]	Length [m]	Area [m]
12	Line object	202.000 Cliff	C=0 M=0 Y=0 K=255	4	0.00	4.58	-
16	Line object	305.000 Small Crossable Watercourse	C=242 M=76 Y=0 K=0	2	0.00	11.98	-
17	Line object	305.000 Small Crossable Watercourse	C=242 M=76 Y=0 K=0	2	0.00	7.52	-

For the option **minimum area size**, OCAD compares the area size of an object with its minimum dimension according to ISOM 2017. However, please be aware that most symbols do not only have minimum area sizes, but also a minimum width. OCAD does not check the minimum width.



Reload Selection: mininum area size conflict_2018-02-21 16.02.41 (2 Objects)

Object index	Object type	Symbol	Colors	Number of	Elevation [r]	Length [m]	Area [m]
7	Area object	410.000 Vegetation, Fight	C=204 M=0 Y=255 K=0	10	0.00	-	28.41
10	Area object	406.000 Vegetation, Slow Running	C=51 M=0 Y=76 K=0	16	0.00	-	178.99

Minimum area size dimension according ISOM 2017.

ISOM 2017: Minimum Area Sizes 1:15'000 and 1:10'000

Symbol Icon	Symbol Number	Min Area (m2) in Terrain	Min Dimensions (mm) on map for 1:15'000 (1.5 x larger for scale 1:10'000)
	113	163	Minumum number of dots is 3
	114	110	Minumum number of dots is 3
	208,209	225	Minimum of triangles is 2
	210,211,212	110	Minumum number of dots is 3
	213	225	Min. area: 1x1
	214	225	Min. area: 1x1
	301,302,307	110	Min. width: 0.3
	308	45	Min. area: 0.5x0.4
	310	315	Min. area: 2x0.7
	401	110	Min. area: 0.55x0.55
	402	900	Min. width: 1.5
	403	225	Min. area: 1x1
	404	1406	Min. width: 1.5
	405	225	Min. area: 1x1
	406	225	Min. width: 0.4
	407	338	Min. area: 1.5x1
	408	110	Min. width: 0.3
	409	225	Min. area: 1x1
	410	68	Min. width: 0.25
	411	144	Min. width: 0.35
	412	2025	Min. area: 3x3
	520	225	Min. area: 1x1
	521	56	Min. area: 0.5x0.5
	522	81	Min. width: 0.3
	523	144	Min. area: 0.8x0.8
	709	900	Min. area: 2x2

Show Impassable Features Mas Ori Sta CS

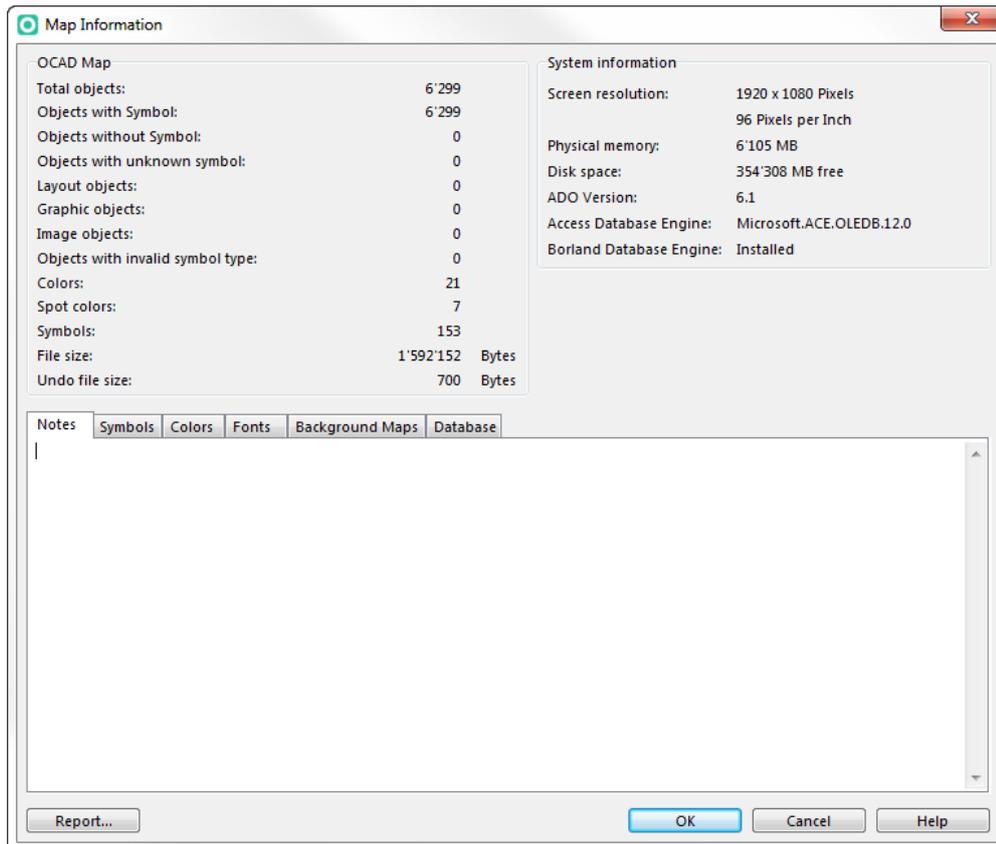
Visit the **Show Impassable Features** page to get some information about this function.

Routing Mas

Visit the **Routing** page to get some information about this function.

Map Information Mas Ori Sta View CS

Choose this command from the **Map** menu to get some information about the current map and about the Windows system. The **Map Information** dialog box is displayed.



The dialog box provides the following information:

- **Total objects:** The total number of objects on the map.
- **Objects with symbol:** The total number of symbolized objects on the map.
- **Objects without symbol:** The total number of **Unsymbolized Objects** on the map.
- **Objects with unknown symbol:** The total number of **Objects with Unknown Symbol** on the map.
- **Layout objects:** The total number of **Layout Objects** on the map.
- **Graphic objects:** The total number of **Graphic Objects** on the map.
- **Image objects:** The total number of **Image Objects** on the map.
- **Objects with invalid symbol type:** The total number of **Objects with Invalid Symbol Type** on the map.
- **Colors:** The total number of **Colors**.
- **Spot Colors:** The total number of **Spot Colors**.
- **Symbols:** The total number of **Symbols**.
- **File size:** The size of the map file on the disk in Bytes.
- **Undo file size:** The size of the undo file in the *temporary OCAD folder* in Bytes. The undo file is used for Undo/Redo.

In addition, you can choose between six tabs with detailed information:

- **Notes:** Enter information about the map here. This feature was called **File information** until OCAD 9. The text you type in here will show up in the **New File** dialog under **Map notes** if you use the map as a symbol template.
- **Symbols:** This tab shows a tree view of all **Symbols** in the **Symbol Box**.
- **Colors:** This tab shows a tree view of all **Colors** in the color table and in which symbols they are used.
- **Fonts:** This tab shows a tree view of all used fonts and in which symbols they are used.
- **Background Maps:** This tab shows a tree view of all **Background Maps** loaded.
- **Database:** This tab shows a tree view of all connected **Databases** in the map.

Click the **Report** button to save a report of the selected tab as a XLS or TXT File.

The right part of the dialog is the **System information** part with the following information:

- **Screen resolution:** Number of dots in horizontal and vertical direction on the screen. The resolution is determined by the currently installed screen driver. In addition, the **Pixels per Inch** are given.
- **Physical memory:** Size of the physical memory (RAM).
- **Disk space:** Available disk space on the drive where OCAD is installed in Megabytes.
- **ADO Version:** The current version of the **ActiveX Data Objects (ADO)** ^[3] is displayed here.
- **Access Database Engine:** The **Access Database Engine (32-bit)** ^[4] is displayed here.
- **Borland Database Engine:** Shows if **Borland Database Engine** ^[5] is installed or not.

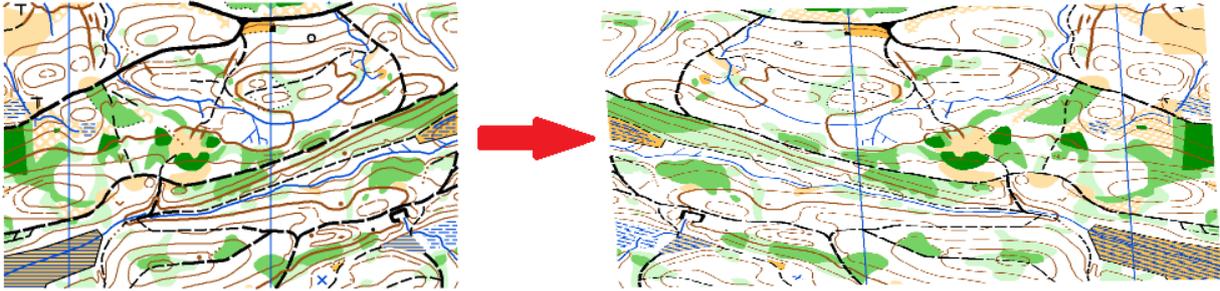
Click the **OK** button to save and quit.

[Back to Main Page](#)

References

- [1] <http://en.wikipedia.org/wiki/Windows-1250>
 - [2] <https://youtu.be/s0oOP18Wrw8>
 - [3] http://en.wikipedia.org/wiki/ActiveX_Data_Objects
 - [4] <http://www.microsoft.com/download/en/details.aspx?id=13255>
 - [5] http://en.wikipedia.org/wiki/Borland_Database_Engine
-

Map Transform



Move

Mas Ori Sta

Select the **Transform** item in the **Map** menu and choose **Move**.

The **Move Map** dialog appears. Depending on whether you are using paper coordinates or real world coordinates (**Set Scale and Coordinate System**) you can enter different values.

With set paper coordinates enter a **X** and a **Y** value in mm. By clicking the **OK** button the map is moved in the desired direction.

With set real world coordinates enter a value in m for easting and northing. By clicking the **OK** button the map is moved in the desired direction.

Check the corresponding option to move also **Background Maps**, **Layout Objects** and **Bookmarks**.

 Do not use this dialog to change the real world coordinate offset if the map is georeferenced. To move a georeferenced map, use the **Center Map to Drawing Area** function in the **Transform** submenu of the **Map** menu and enter the new offset.

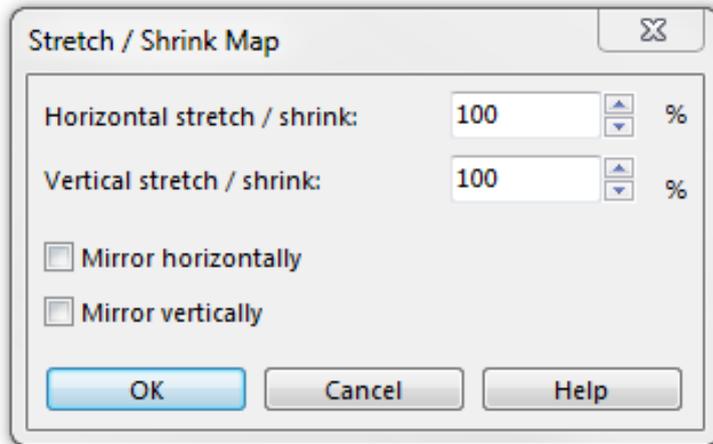
Stretch or Shrink

Mas Ori Sta CS



Select the **Transform** item in the **Map** menu and choose **Stretch/Shrink**.

The **Stretch/Shrink Map** dialog opens.

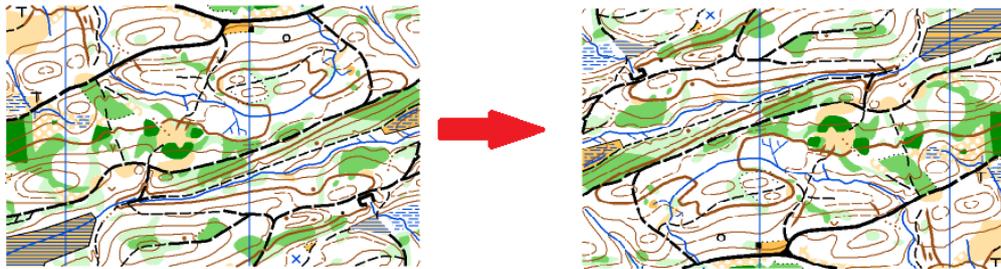


Enter a percentage value for the horizontal stretch/shrink and the vertical stretch/shrink. If both values are the same, the proportions of the map are kept.

Check the corresponding boxes if you want to reflect the map horizontally or vertically.

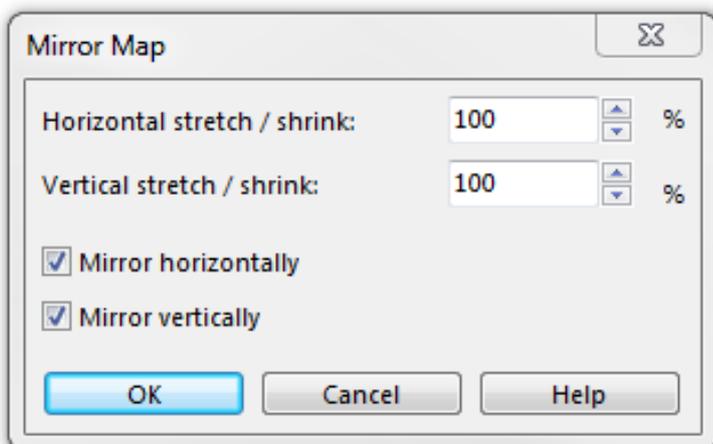
Click the **OK** button when you are finished.

Mirror



Select the **Transform** item in the **Map** menu and choose **Mirror**.

The **Mirror Map** dialog opens, which is the same as the **Stretch/Shrink Map** dialog.



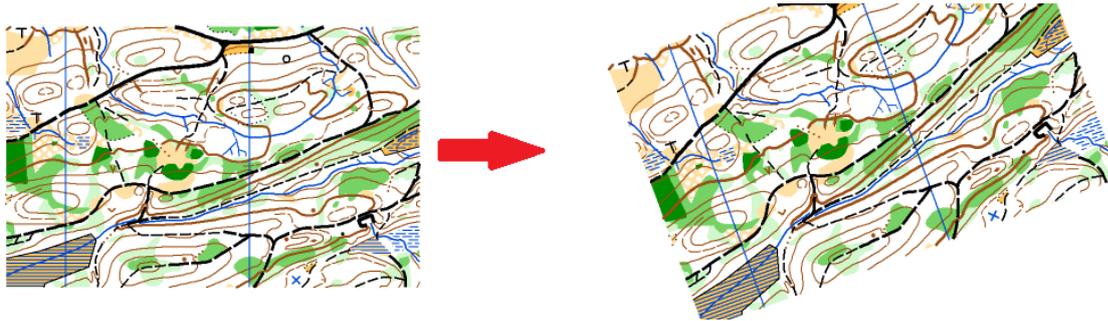
Enter a percentage value for the horizontal stretch/shrink and the vertical stretch/shrink. If both values are the same, the proportions of the map are kept.

Check the corresponding boxes if you want to reflect the map horizontally or vertically.

Click the **OK** button when you are finished.

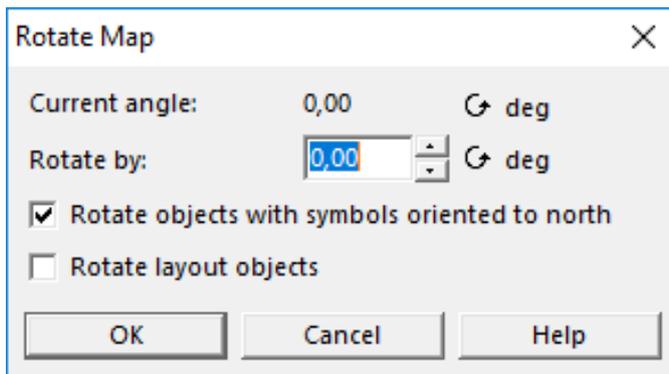
Rotate Map

Mas Ori Sta CS



Select the **Transform** item in the **Map** menu and choose **Rotate Map**.

The **Rotate Map** dialog opens.



Enter an angle in degrees and check the option **Rotate objects with symbols orientated to north** if you want the symbols stay orientated to north when you use the Rotate function.

💡 To consider the declination and rotate map to magnetic north, use the function **Rotate Map to Magnetic North**, which is more sophisticated than the function **Rotate Map**.

💡 Select a Point or Line Symbol and go to the symbol dialog (**Symbol>Edit**) and see that the option **Orientated to north when rotating the map** is checked for that particular symbol.

Check **Rotate layout objects** and your layout objects will be rotated as well.

Layout images will not be rotated.

Click the **OK** button to finish.

Rotate Map to Magnetic North

Mas Ori Sta

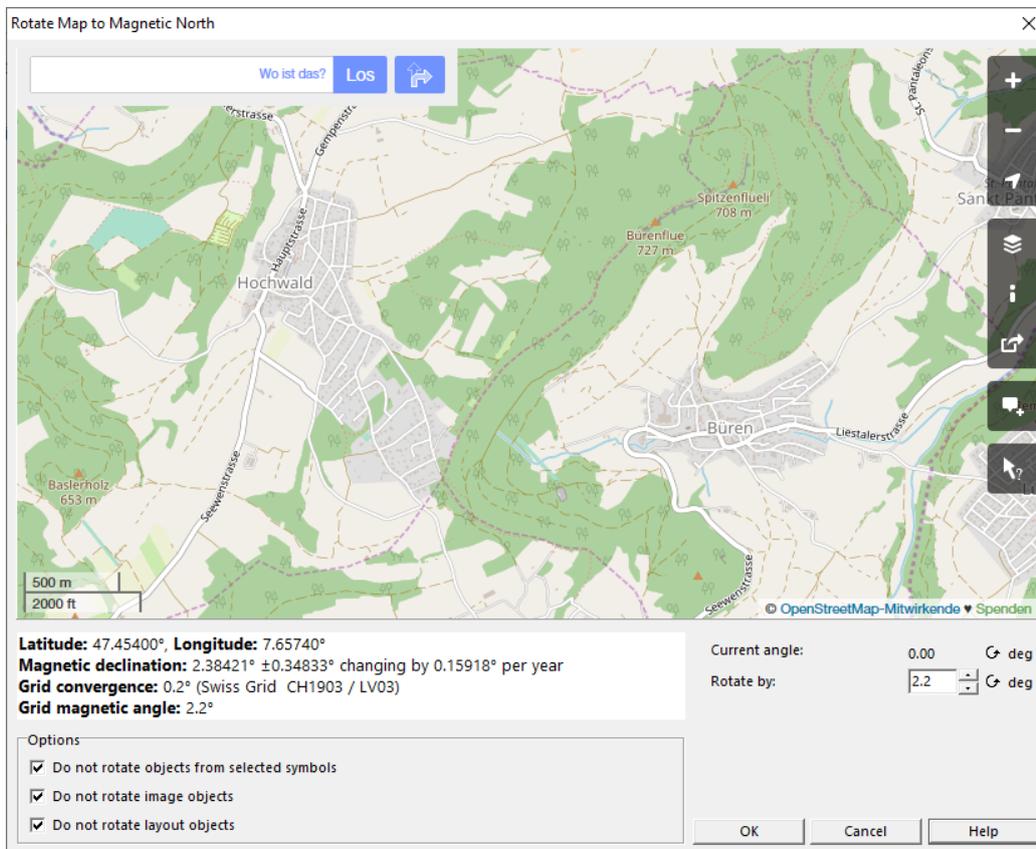
This function opens Open Street Map at your current position. It takes two values into consideration:

- **Magnetic declination:** The angle between the direction of the magnetic meridians and the direction to the geographic North Pole at the observation site.
- **Grid convergence:** The angle at the observation site between true north and grid north.
- **Grid magnetic angle:** The sum of the two values above, by how much the map should be rotated.
- **Current angle:** The current angle of your map.
- **Rotate by:** By default, it is the value from the **Grid magnetic angle** field. You can adjust it manually if you wish.

Example: Current angle of your map is 0° , Grid magnetic angle is 2.1° and is supposed to change $+0.12^\circ$ per year. It would be an option to rotate the map by 2.6° . In this case, the deviation of your map would not be more than 0.5° for the next 8 years.

Options

- **Do not rotate objects from selected symbols:** You may not want to rotate certain objects, e.g. texts or symbols you use for the layout. Select these symbols beforehand in the Symbol box. Hold the **Shift** and/or **Ctrl** key for multiple selection.
 - **Do not rotate image objects:** Set this option active, if you do not want to rotate image objects.
 - **Do not rotate layout objects:** Set this option active, if you do not want to rotate layout objects.
- 💡 Your map has to be georeferenced and a Coordinate System has to be set to use this function.
- 💡 In the **Map Menu**, there are two more functions where you could rotate your map:
- **Set Scale and Coordinate System:** Do not edit the Angle in the function **Set Scale and Coordinate System**. Only change the angle there, if you start a new map and haven't drawn any objects yet.
 - **Rotate Map:** The function **Rotate Map** is basically the same as **Rotate Map to Magnetic North**, but not that sophisticated.

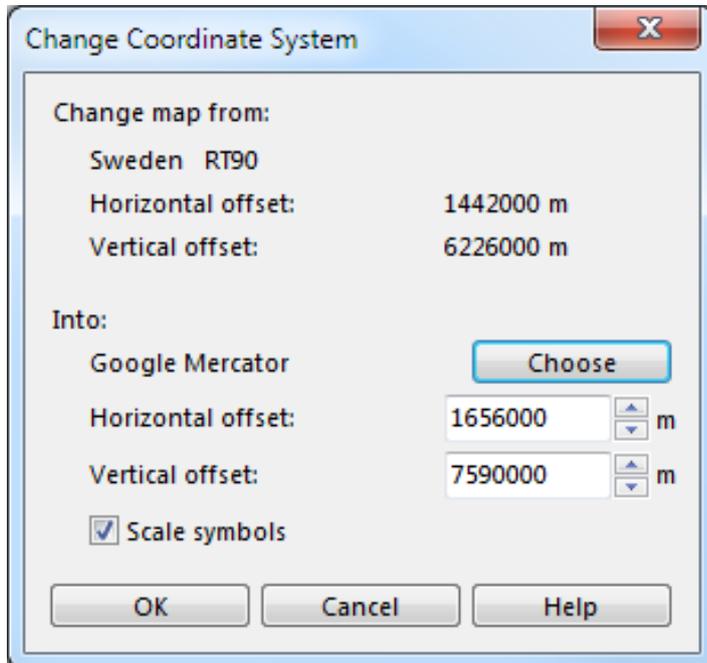


Change Coordinate System

Mas Ori

Select the **Transform** item in the **Map** menu and choose **Change Coordinate System**.

The **Change Coordinate System** dialog opens.



The current coordinate system is displayed in the **Change map from** part of the dialog.

Click the **Choose** button in the **Into** part to choose a new coordinate system. Select the system in the **Coordinate System** dialog and click the **OK** button.

The new offset is displayed in the **Horizontal offset** and **Vertical offset** fields and can be edited there, too.

The option **Scale symbols** is only enabled when Google Mercator^[1] coordinate system is chosen. If this option is checked then OCAD scales all symbols according to the new scale in the center of the map. The map looks similar as before the transformation.

Click the **OK** button when finished. OCAD converts every vertex' coordinate to UTM and then (if necessary) to the desired coordinate system. Due to different origins of the coordinate systems the map gets transformed (stretched/shrunk and rotated).

Affine

Mas Ori

Select the **Transform** item in the **Map** menu and choose **Affine** to adjust the whole map on background map or on grid. With this function you can geo-reference the map. The **grid button** must be pressed to see the grid. You can use 1 to 12 points for the adjustment. For each point you do the following:

1. Mark a point on map.
2. Mark the same grid point on reference (background map or grid).

When you have adjusted enough points, press the **Enter** key on the keyboard. The map is rotated and stretched (Affine transformation) to get the best fit for the adjustment points. You can achieve a precise adjustment with 4 adjustment points arranged in a rectangle. In this way you can compensate rotation and distortion. The horizontal and vertical scales will be adjusted individually.

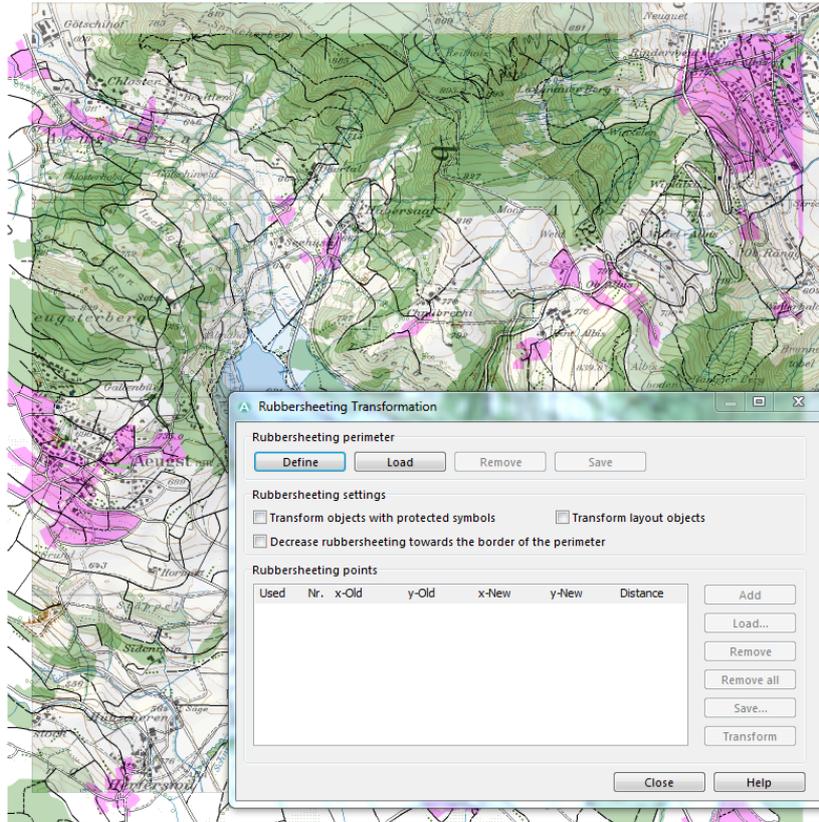


This function works in the same way as the **Adjust a Background Map** function, but it is for the map.

Rubbersheeting



Select the **Transform** item in the **Map** menu and choose **Rubbersheeting** to adjust the map or a part of the map to a geo-referenced background map. The **Rubbersheeting Transformation** dialog appears.



Rubbersheeting perimeter

The **Rubbersheeting perimeter** is an area in which the **Rubbersheeting Transformation** is carried out. Objects outside of the rubbersheeting perimeter are not transformed.

Click the **Define** button and define the perimeter by drawing a polyline on the map (one corner per click). To define a new rubbersheeting perimeter click the **Remove** button to remove the actual one. Click the **Load** button to load an exported rubbersheeting perimeter (txt-File). Click the **Save** button to save the current perimeter.

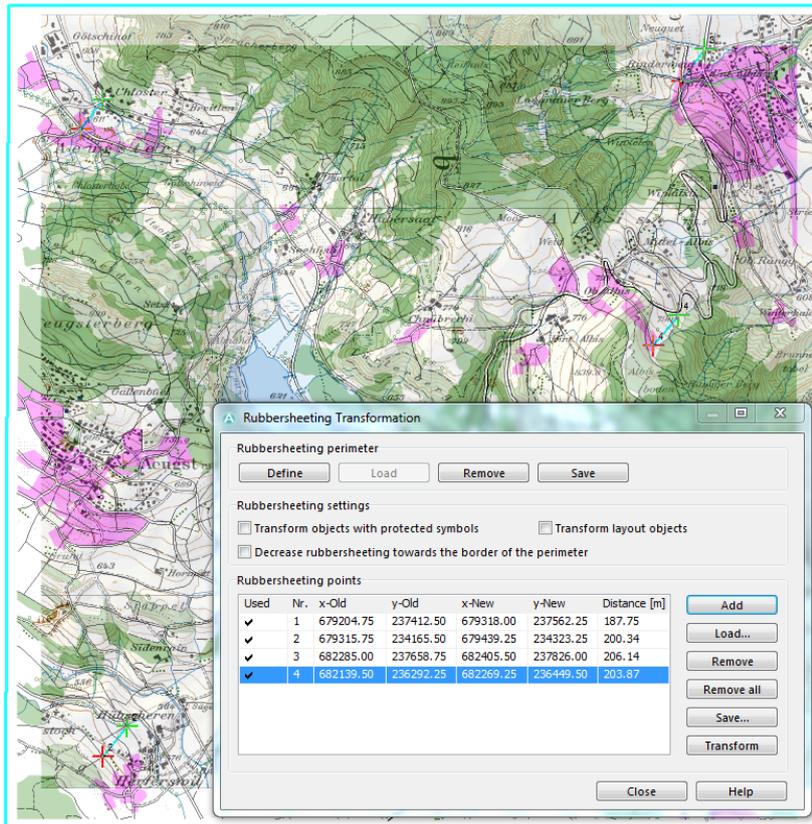
Rubbersheeting settings

Check the corresponding boxes if you want to transform objects with protected symbols, transform layout objects or decrease rubbersheeting towards the border of the perimeter.

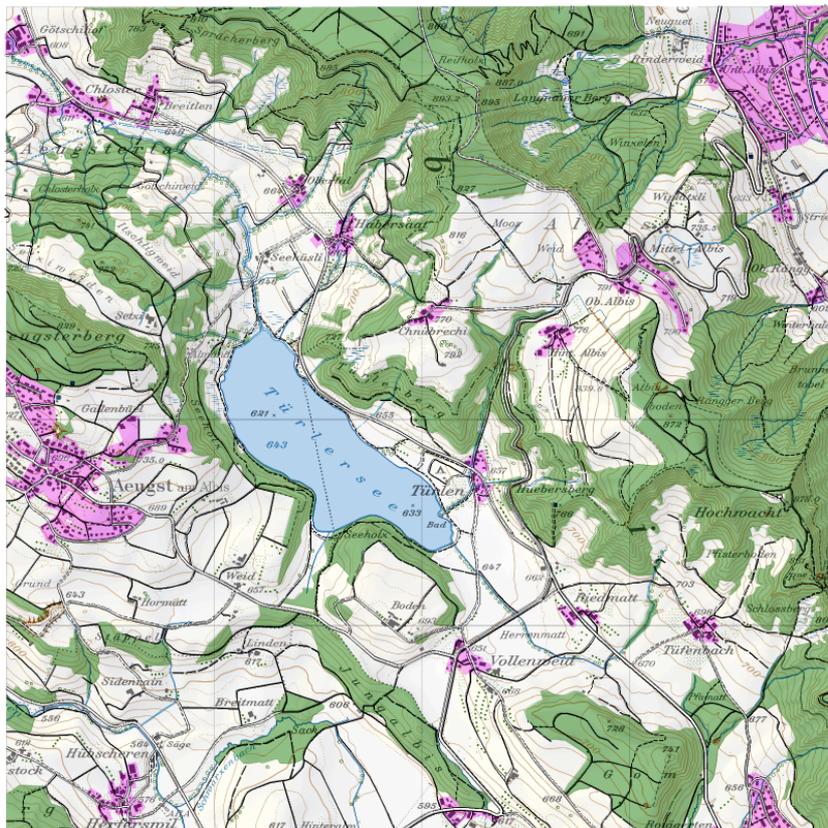
Rubbersheeting points

Click the **Add** button and do the following steps:

- Click a point on the map.
- Click the same point on the reference map (grid or background map). The rubbersheeting points are shown on the map by a red and a green cross and a connection line.
- Do the same procedure for other points.
- Click the **Transform** button to transform the map. Click the **Save** button to save the rubbersheeting points. Click the **Remove** button to remove the selected rubbersheeting point. Click the **Remove all** button to remove all rubbersheeting points. Click the **Load** button to load a saved selection of rubbersheeting points.



Click the **Close** button when finished.



- 🔦 -Click the **Undo** button in the Standard Toolbar if you are not satisfied with the rubbersheeting transformation.
- Uncheck rubbersheeting points in the **Used** column if they should not be included in the transformation. Unchecked rubbersheeting points appear in gray color on the map.

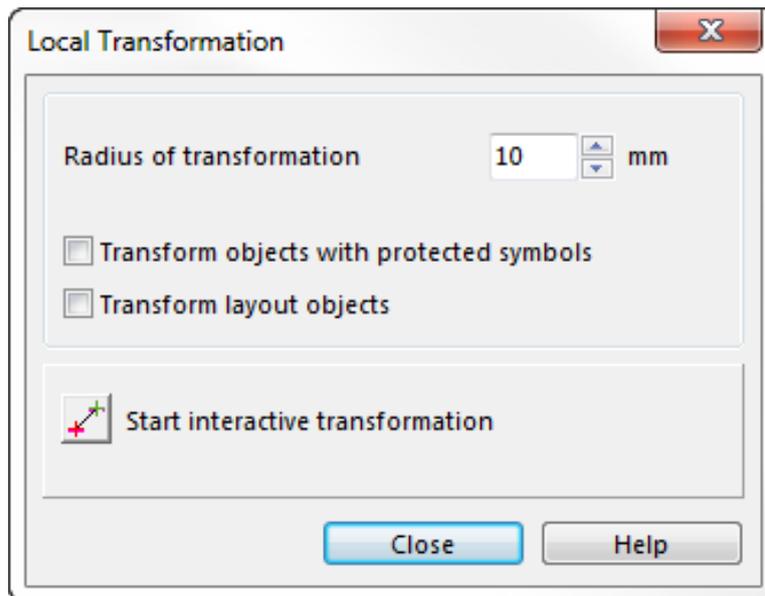
-The rubbersheeting perimeter defines that only objects or vertices of objects within this perimeter are transformed. But it is possible that objects or vertices of objects are moved out of the perimeter by the transformation! Place rubbersheeting point pairs with the same position on the perimeter border to avoid this.

-The **Affine** function is much easier to handle and gives more or less the same result.

Local Transformation

Local Transformation is an *interactive* tool to **eliminate local distortions**. This tool makes the adjustment of existing maps to geo-referenced base maps (hillshading, orthophotos etc.) easier and more accurate too.

Select the Transform item in the **Map** menu and choose **Local Transformation** to open the **Local Transformation** dialog.

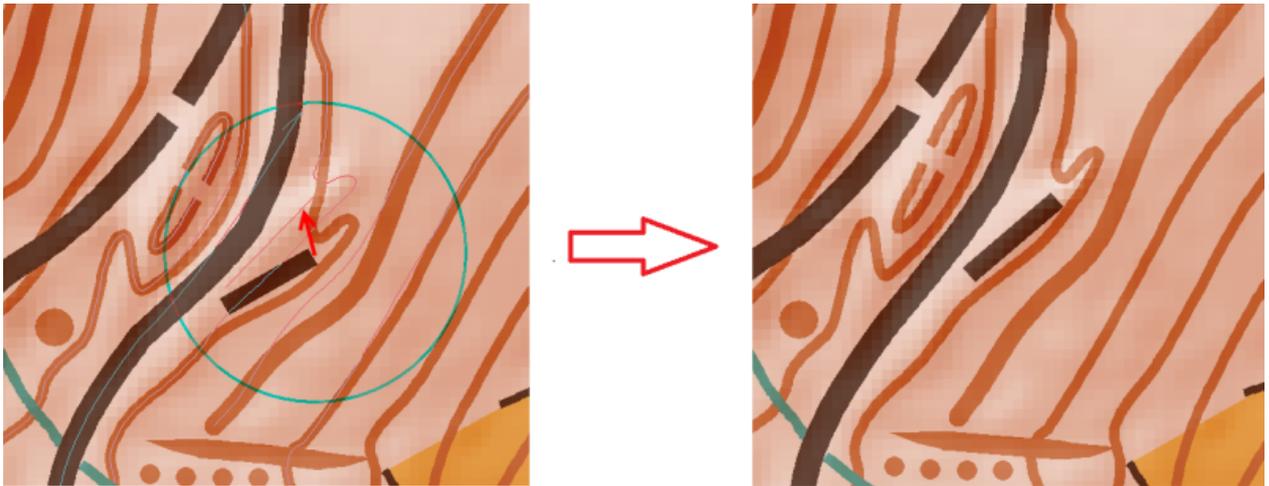


1. Define the *Radius* of transformation.
2. Choose if objects with *protected symbol* and *layout objects* shall be transformed as well.
3. Click on the **Start the interactive transformation** button.
4. Press the left mouse button at the transformation center and move the mouse meanwhile to transform. The mouse up needs to be within the circle.

💡 While pressing the left mouse button, the beforehand defined transformation radius will be shown with a blue circle.

💡 Each vertex inside the circle will be transformed. Thus the transformation doesn't stop exactly at the border of the circle for line and area objects that are partially within the circle. They get transformed until their first vertex out of the circle.

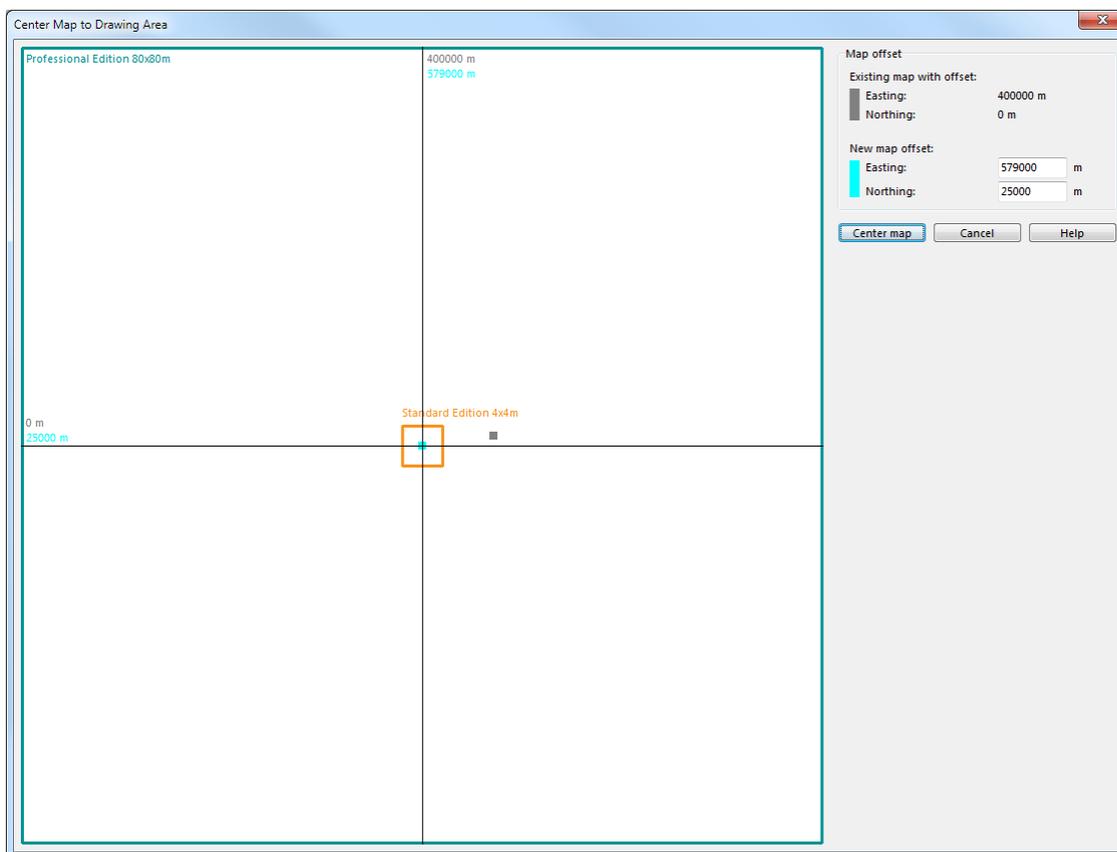
💡 It is possible to edit the map while having opened the non-modal **Local Transformation** dialog.



Center Map in Drawing Area

Mas Ori

Select the **Transform** item in the **Map** menu and choose **Center Map in Drawing Area**. The **Center Map in Drawing Area** dialog appears.



This function is often used to center a map drawn in OCAD Mapping Solution edition into the smaller drawing area from OCAD Orienteering, Starter or CS edition. OCAD moves the map offset, all objects, all background maps and all bookmarks. After this function the map is still geo-referenced. In the dialog the extent with the existing map offset is shown in grey, the extent with the new offset in blue. The green rectangle shows the drawing area of OCAD Mapping Solution edition (80x80m), the orange the drawing area from Orienteering, Starter and CS edition (4x4m). If a map should be visible in all OCAD editions then the entire map must fit in the 4x4m drawing area.

The proposed new map offset is displayed in the **New map offset** fields and can be edited there. This new map offset is calculated from the map and his visible background maps. If the background maps are hidden then OCAD calculates the new map offset only from the map.

Click the **Center map** button to move the map to the center of the drawing area.

The geo-reference of the map is not changed.

Back to the **Map** page.

References

[1] http://en.wikipedia.org/wiki/Mercator_projection

Colors

Colors

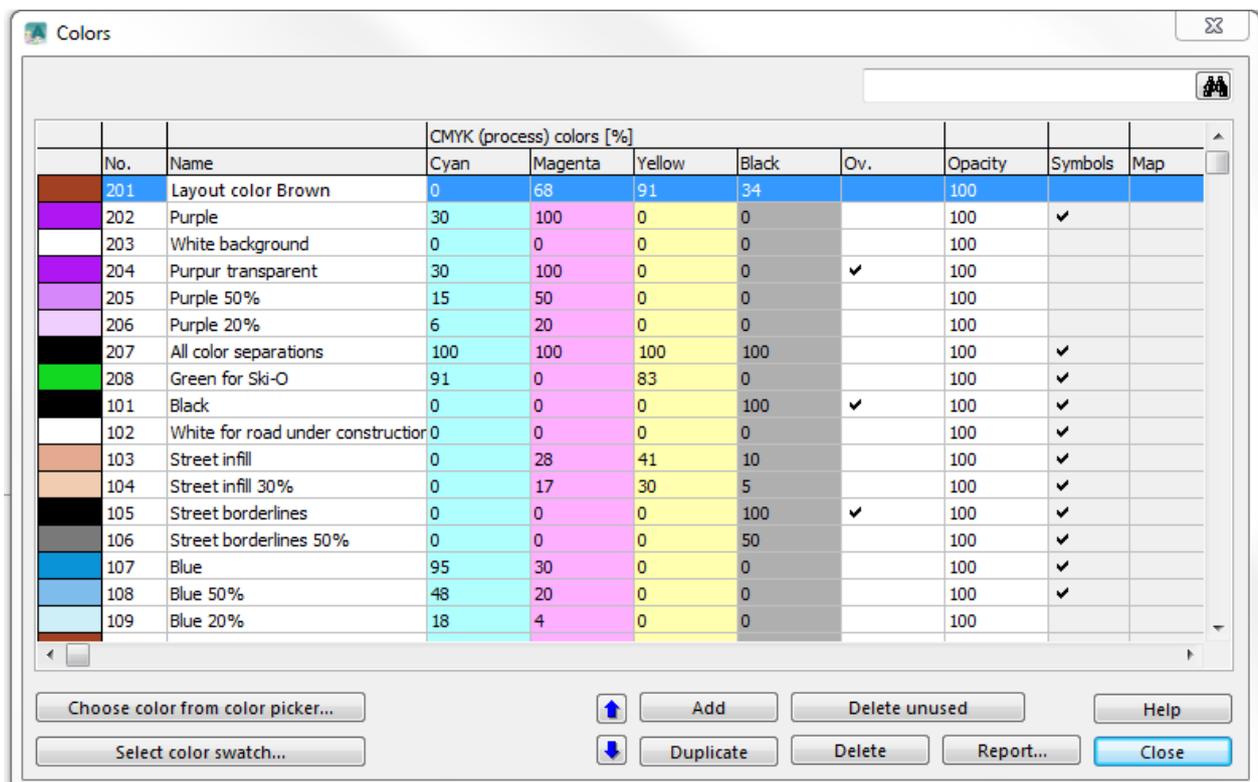


This function has limitations in the OCAD Viewer

Choose this command in the **Map** menu to define the colors and spot colors of the map. The **Colors** dialog box is displayed. In this dialog all colors which you can use for the map are listed, can be edited, created or deleted.



In the top right corner is a color **search** field.



The colors are rendered on the screen and on the printer from the bottom up. The color on the bottom is rendered first and the color on the top is rendered last. Therefore, an object A with a color, which is below the color of another object B, appears behind object B on the map.

The table contains 18 columns:

Number and Name

The first column provides you with a preview of the color defined in the corresponding row. The second and the third column are defined as follows:

- **No.:** In this column the color number is displayed. Each color must have a number between 0 and 32000. This number can be changed by clicking on it.
- **Name:** In this column a name with up to 45 characters must be given to each color. This name can be changed by clicking on it.

CMYK (process) colors

The CMYK (Cyan, Magenta, Yellow, Key (Black)) values of the color are displayed in those 4 columns. These values can be changed by clicking on it. The color preview will be updated immediately.

Overprint

In the **Ov.** column you can check the **Overprint** option. When overprinting is chosen for a color, the CMYK separations are not omitted (i.e. the CMYK separations are printed/rendered under the color you overprint). This makes this color appearing darker when it is printed on another color. The following example should illustrate this:



In the figure on the left side, overprinting for brown and black colors is active. In contrast, on the right side, overprinting is disabled for those colors. You can see that the brown contour lines appear darker in the green areas. Furthermore, there is a similar effect when the black path crosses the contour lines.

It is noticeable that the contour lines do not appear darker when crossing the yellow area. This is due to the fact that the brown color as well as the yellow color have a cyan value of 0. Overprinting has therefore only an effect, if the upper color has at least one CMYK value which is 0 and, at the same time, this value is greater than 0 in the lower color.

In OCAD the overprinting effect is not shown. Overprinting affects only Color AI, EPS and PDF files as well as CMYK separations. Overprinting is also supported by some PostScript printers.

💡 To show overprinting effect when printing PDF files from Adobe Acrobat Reader: Activate the **Simulate overprint** option in the **Advanced Printer Settings** .

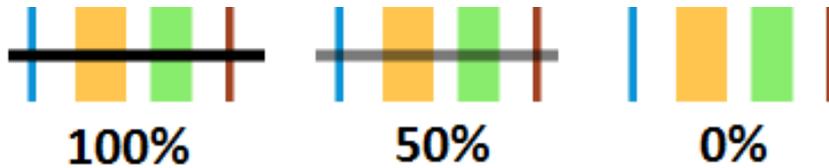
Opacity

In this column the opacity of the color in percentage can be entered by clicking the value.

An opacity value of 0 means that the color is not visible.

An opacity value from 1 to 99 means that the color is transparent with the corresponding intensity.

An opacity value of 100 means that the color is opaque.



Black with 100%, 50% and 0% opacity.

Usage

If the **Symbol** column is checked, the color is used in at least one symbol.

If the **Map** column is checked, the color is used in at least one map object, including **Image** and **Graphic Objects**.

Spot Colors

Spot colors are used if the map is printed with PMS (Pantone) colors. If the map is printed with 4 colors (CMYK), spot colors needn't be defined.

You can define a spot color value for each color. Click in the corresponding field and enter a value in percentage.

- A value of 100 means that the color appears black on the separation.
- A value of 0 means that the color appears white on the separation and erases any black color.
- An empty field means that the color has no effect on the separation.



The colors are rendered on the separation from the bottom up. The lowest color in the list is drawn first and the color on top of the list is drawn last. Therefore if you put 0 in one row, only colors below this row are erased.



Putting a 0 is especially important for streets in order to enable automatic cleaning up of crossings. The color of the street infill must be above the color of the street sidelines. And in the row of the infill there must be a 0 for the spot color of the sidelines.

To create, edit and delete spot colors choose the **Define Spot Colors** item in the **Map** menu.

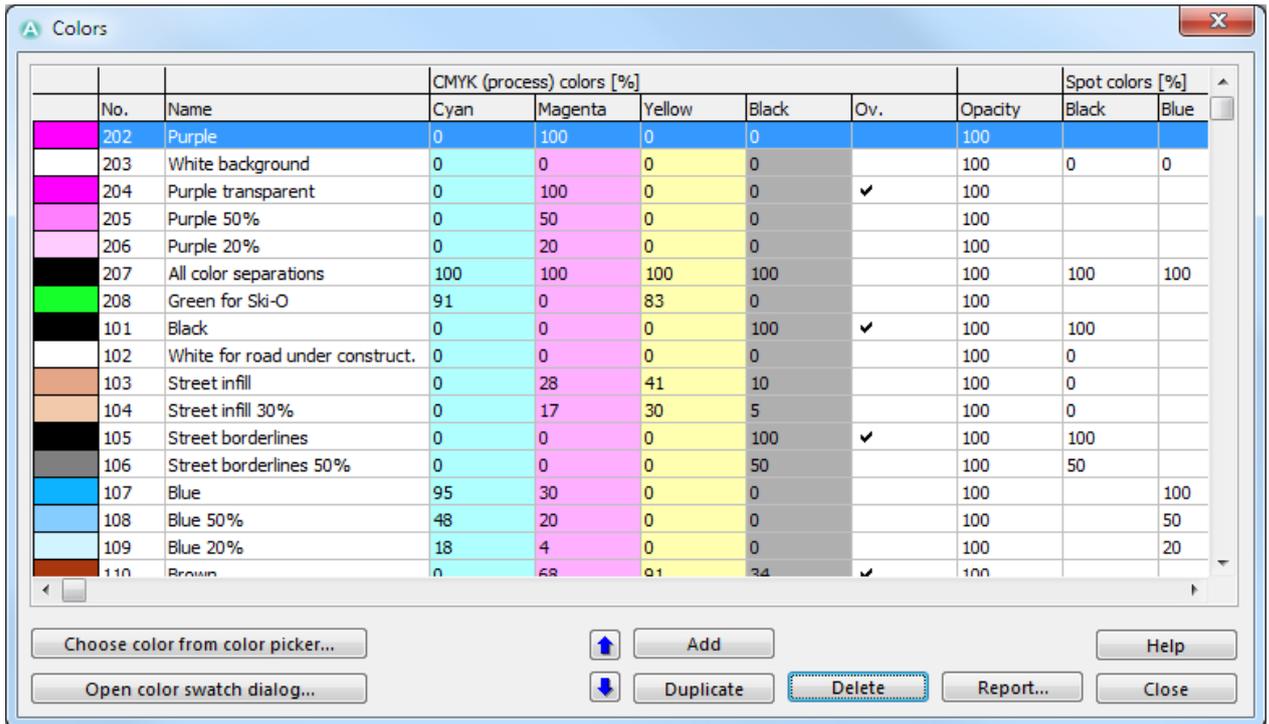
Functions

- **Redraw screen when changing a color:** OCAD redraws the map after changing a color. If the map has a lot of objects this takes some seconds. Uncheck this option to avoid the automatical redrawing of the screen.
- **Move Up:** Click the **Move Up** icon to move the selected color one row upwards in the color table.
- **Move Down:** Click the **Move Down** icon to move the selected color one row downwards in the color table.
- **Add:** Click this button to add a new color.
- **Duplicate:** Click this button to duplicate the selected color. The duplicated color is inserted below the selected color.
- **Delete unused:** Click this button to delete all colors that are neither used in any symbol nor any map object.
- **Delete:** Click this button to delete the selected color.
- **Report:** Click this button to save a report of the colors as a Word, Excel, Html or Text file. Open the report with the **Open Recently Exported Documents** command from the **File** menu.



If you have a map with a lot of objects, it may take some seconds until the **Color** dialog appears. OCAD is checking through all objects to find all colors used in the symbols and in the map. If you want OCAD to display the **Colors** dialog immediately, press the **Shift** key when choosing **Colors** in the **Map** menu. OCAD opens the dialog

instantly and hides the **Symbol** and **Map** columns as well as the **Delete unused** button. This dialog looks as follows:



Choose Color from Color Picker

Click the **Choose color from color picker** button to edit the selected color in the **Color Picker** dialog.

Select Color Swatch

Click the **Select color swatch** to compare the colors from the current opened OCAD file with a color swatch from a reference file in the **Color Swatch** dialog.

Blend Mode

Click the **Blend Mode** button to set the blend mode for each color in PDF export in **Blend Mode** dialog.

Load Colors From



Choose this command in the **Map** menu to load a color table from a different OCAD-File. The **Load Colors From** dialog box is displayed. Choose a map file which the color table shall be loaded from. Click the **Open** button to continue. Another **Load Colors From** dialog box appears. You have two options:

- **Replace existing colors:** Choose this option to overwrite the existing color table of the current map with the new one.
- **Add to existing colors:** Choose this option to add the new colors to the existing color table.

Click the **OK** button to finish.

Load Colors and Symbols From Mas Ori

Choose this command in the **Map** menu to load a symbol set from a different OCAD-File. The **Load Colors and Symbols From** dialog box is displayed. Choose a map file which the symbol set shall be loaded from. Click the **Open** button to continue. Another **Load Colors and Symbols From** dialog box appears. You have two options:

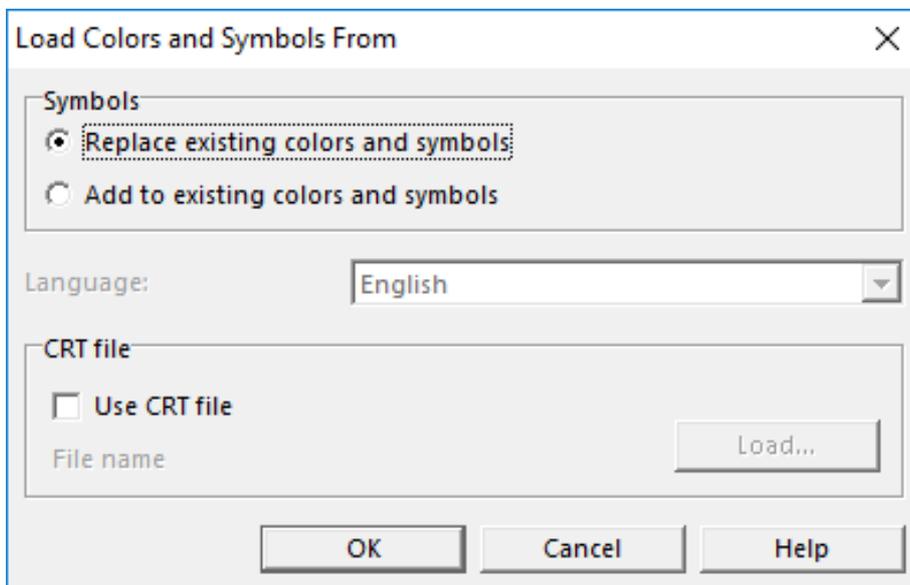
- **Replace existing colors and symbols:** Choose this option to overwrite the existing symbol set and color table of the current map with the new ones.
- **Add to existing colors and symbols:** Choose this option to add the new symbols and colors to the existing ones.

Language: If available, choose the language for the symbol description.

You have the option to use a **CRT-File** to import the symbol set. In the first column of the cross reference table the symbol numbers of the current map are listed. In the second column symbol numbers of the other OCAD-File are listed, namely those numbers of symbols, which the current symbol has to be replaced with. As an example, a CRT row which is defined as 526.000 813.001, means that the symbols of all objects with the symbol number 526.000 will get the symbol of the other OCAD-File with the number 813.001.

Visit the **Cross Reference Table** page to get detailed information about using CRT-Files. Click the **Load** button to load a CRT-File.

Click the **OK** button to finish.



💡 OCAD opens the File Dialog in the folder of the last imported file. Press the **Shift** key to open a file from the *Symbol* folder. The *Symbol* folder is a subfolder of OCAD program folder (e.g. *C:\Program Files\OCAD\OCAD 20xx Mapping Solution\Symbol*).

💡 The error message "Cannot import symbol" appears if OCAD was not able to load a symbol. The **Load Colors and Symbols From** process is aborted.

Example

[Back to Main Page](#)

Blend Mode

Click the **Blend mode** button in the **Colors** dialog to open the **Blend Mode** dialog.

The blend mode affects only the pdf export. The blend mode controls how the underlying color of an object interacts with the blend color of the overlaying object.

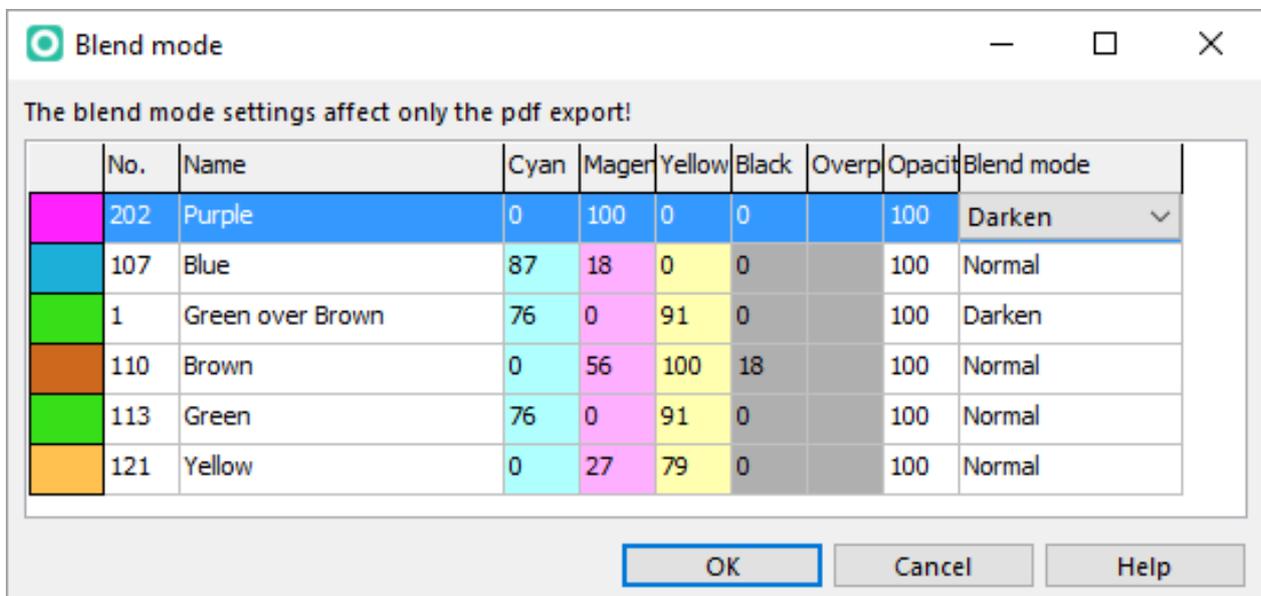
OCAD supports the blend modes **Darken** und **Multiply**. The blend mode is only visible in the exported pdf file, not in OCAD!

More about blend modes in Wikipedia ^[1].

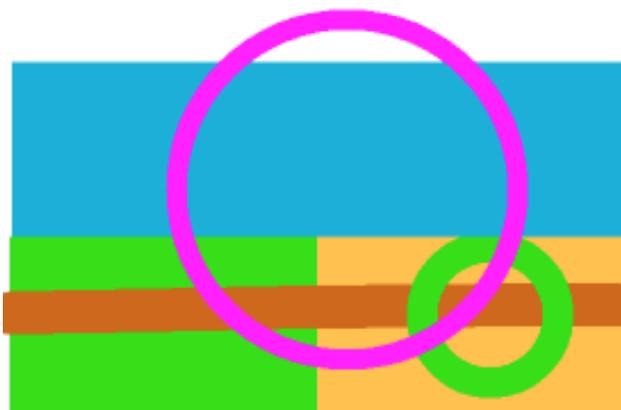
For digital printed Orienteering maps we recommend to set the *Purple* and *Green over Brown* to the blend mode *Darken*.

Example

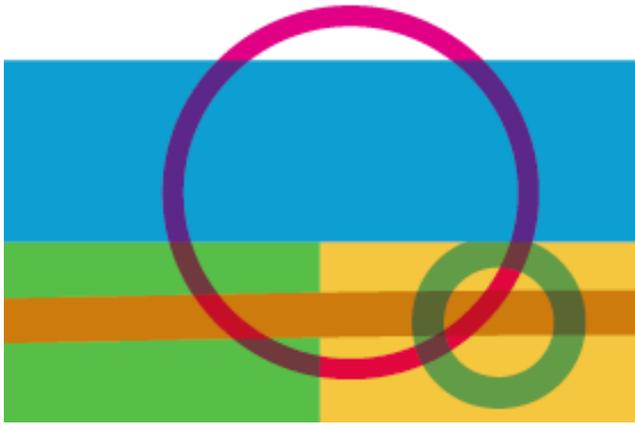
The Darken blend mode is set for the colors *Purple* and *Green over Brown*.



The blend mode is not visible in OCAD.



After exporting pdf file the blend mode is visible when opening this pdf file in Adobe Reader. The colors *Purple* and *Green over Brown* are transparent.



References

[1] https://en.wikipedia.org/wiki/Blend_modes

Color Swatch

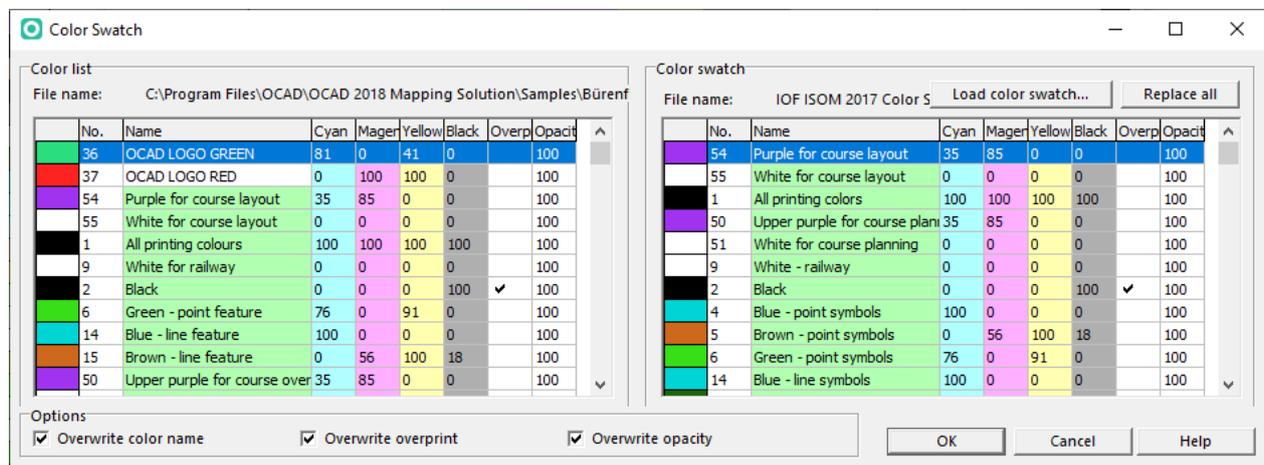
Mas Ori

Click the **Open color swatch dialog** button in the **Colors** dialog to open the **Color Swatch** dialog.

Functionality

Use this function to compare the color values from the currently opened OCAD file with a color swatch from a reference file.

Additionally, it is possible to replace colors by those from the color swatch.



On the left part of this dialog the color table of the currently opened OCAD file is displayed. On the right side, a color table of your choice is shown. Click the **Load color swatch** button to load a different color swatch.

Compare Colors

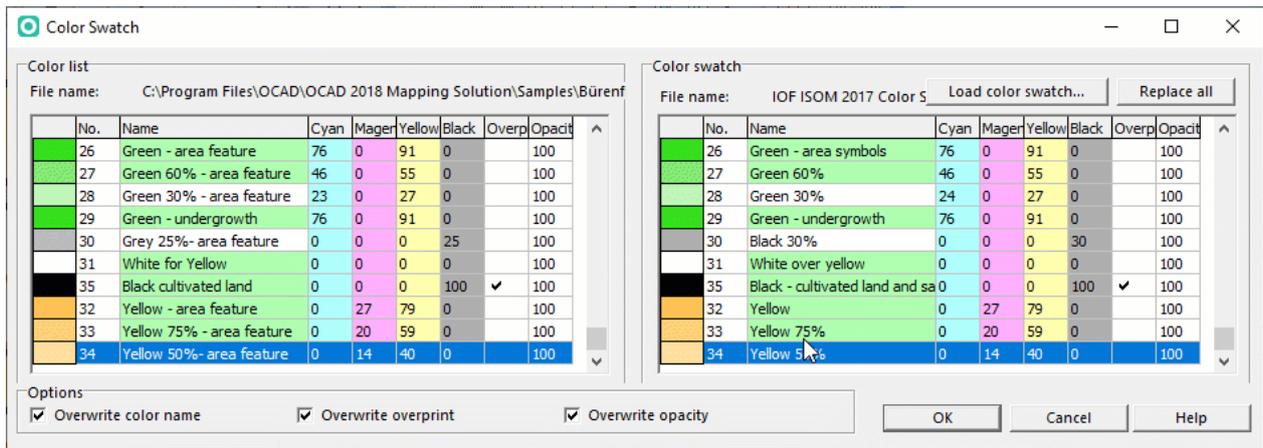
Colors with identical CMYK values in the color table of the currently opened file and in the loaded color swatch are highlighted green.

It is not possible to compare **Spot Colors** with the help of this dialog.

Replace Colors

To replace a color in the color list click on the corresponding color in the color swatch and drag and drop it to the color which is supposed to be replaced in the color table.

 if you want to add, remove or move the color up/down in the color table, you need to do so in the **Colors** dialog box.



OCAD overwrites always the CMYK values, but not changing the color number. Optionally OCAD overwrites also the *Color name*, the *Overprint* flag and the *Opacity*. Check the corresponding options at the bottom of the dialog.

Replace All Colors

Click the *Replace all* button to replace all colors from the list by the colors from the color swatch if they have the same color number.

Color Swatch File

The data of the color swatch are saved in a semicolon or tab separated text file with the extension *.txt*.

To create a color swatch file from an existing OCAD file click the **Report** button in the **Colors** dialog and choose *Text* as a file type. Save the file in the OCAD program subfolder *Color Swatch*.

The last used color swatch file name is saved in the Windows Registry. When reopening this **Color Swatch** dialog OCAD reloads the last used color swatch.

Move the mouse cursor over the file name to see the full file name with file path.

Back to the **Colors** page.

Create Color Gradient

Mas Ori

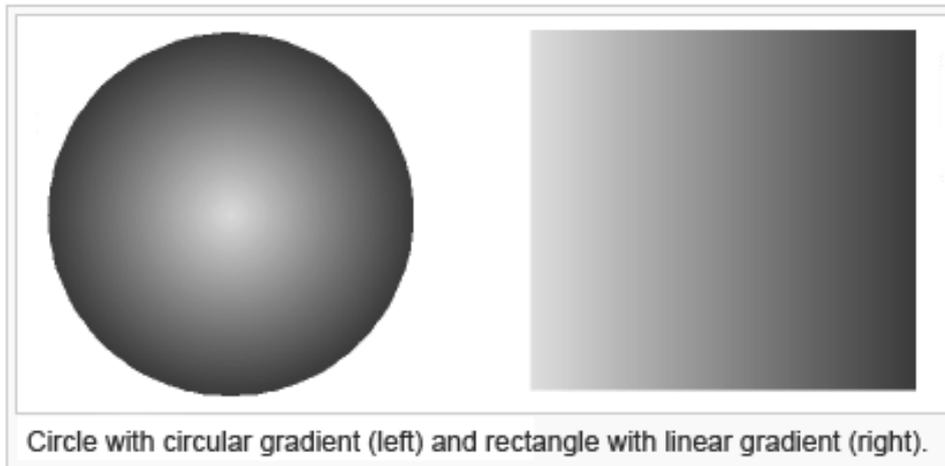
There are two types of gradients:

- **Linear gradient**

To create a linear gradient select an area object from your drawing area which is drawn in the straight line or rectangular mode.

- **Circular gradient**

To create a circular gradient select a circle object from your drawing area.

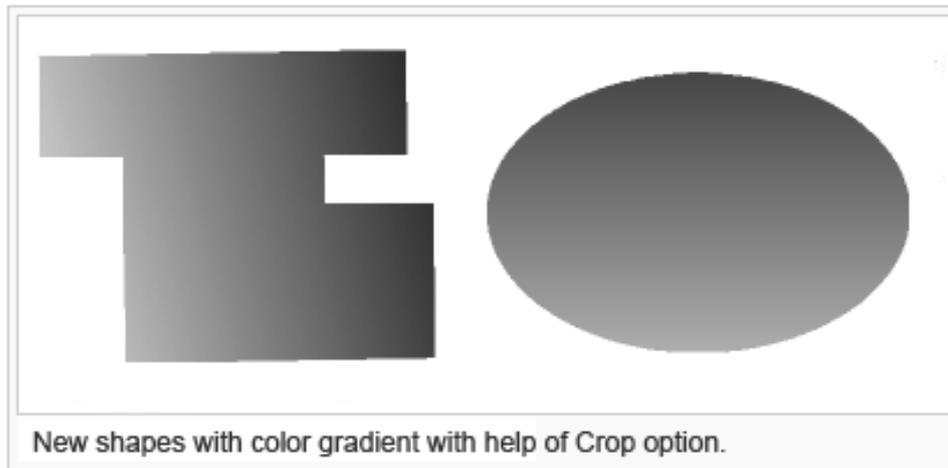


1. Select an area symbol.
2. Choose the straight line or circle drawing mode.
3. Draw an object. OCAD uses only the first four vertices to create a linear gradient.
4. Select the **Create Gradient** function from the **Object** menu.
5. Choose the first color:
 - Linear gradient means the left color is the first color.
 - Circular gradient means the color in the middle of the circle is the first color.
6. Choose the second color.
7. Choose a one of the following options:
 - **Do not add the new image objects to a selection:** The image objects are selected but the selection is not saved.
 - **Add the new image objects to an existing selection:** The selection of the image objects is saved in an existing selection. Choose the existing selection in the dropdown menu. Visit the **Select** page to get more information about saving selections.
 - **Add the new image objects to a new selection:** The selection of the image objects is saved in a new selection. Enter a name for the new selection in the field on the right. Visit the **Select** page to get more information about saving selections.
8. When clicking **OK** OCAD generates 100 **Image Objects** in different colors.
 - 💡 -Choose an new selection for the gradient to select and move it easily with **Reload Selection** in the **Select** menu.
 - The recently created gradient is always on top of the image objects.

Use the **Crop** function in **Object** menu to cut the image objects to a new shape:

1. Create an object with required gradient.
2. Draw an object on it with the desired shape.
3. Choose **Crop Objects** from the **Object** menu.

4. Select the gradient (100 image objects) and choose in the **Objects to crop** field the **Only chosen objects** option. Then click the **Add selected objects** button.
5. Select the drawn object with the desired shape and choose the **Chosen line or area object** option in the **Line or area crop object** field. Then click the **Choose selected crop object** button.
6. Click **OK** to finish.



Back to the **Edit Object** page.

Define Spot Colors

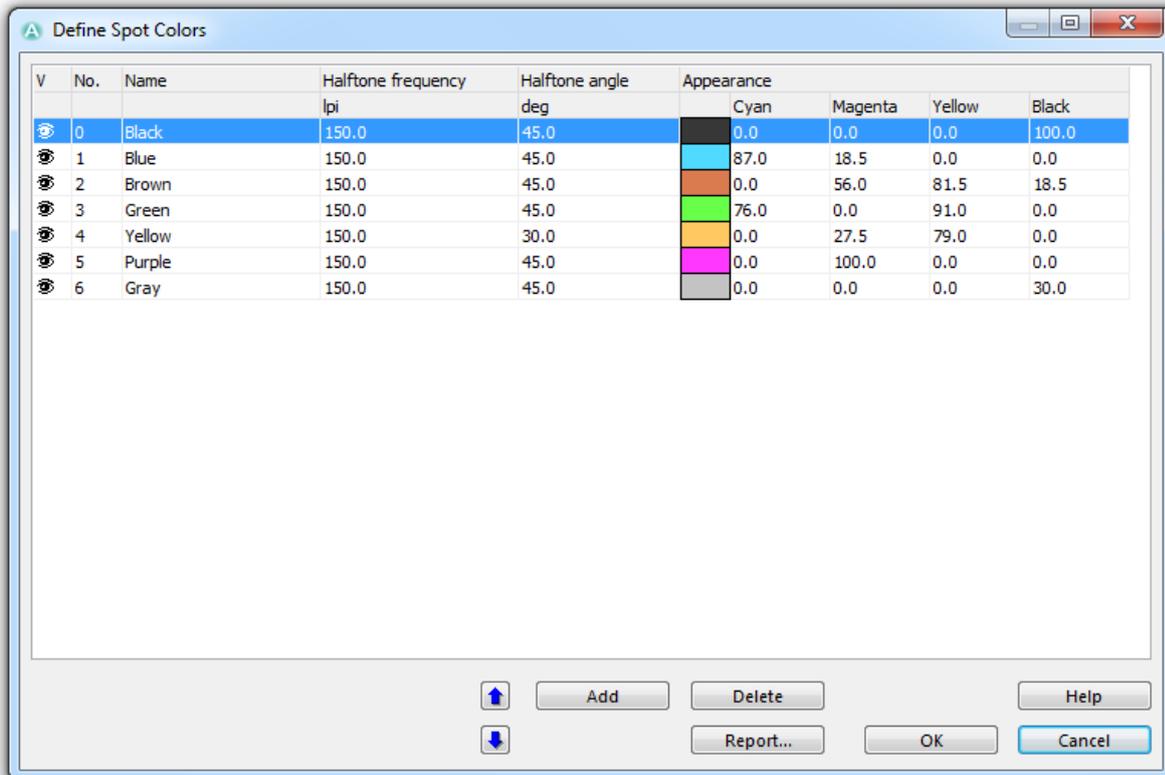
Mas Ori Sta View CS

Choose this command from the **Map** menu to create, edit and delete spot colors. Read the **Wikipedia Article** ^[1] to get an impression what spot colors are.

High quality maps are often printed with spot colors. Spot colors are also referred as **PMS (Pantone matching system)** ^[2] colors.

Choose the **Spot Colors** command in the **View** menu to get a preview of the spot color print.

If you choose the **Define Spot Colors** command in the **Map** menu, you will get to the **Define Spot Colors** dialog:



A table shows all currently defined spot colors. The columns provide the following information:

- **V (Visible):** If you click the eye icon in this column you can hide or display a spot color.
- **No. (Number):** Enter here a number for the spot color.
- **Name:** Enter here a name for the spot color.
- **Halftone Frequency:** This column determines how fine the typesetter will present halftone screens. The standard value is 150 lines per inch (lpi). Read more about this topic in the [Wikipedia Article](#) ^[3].
- **Halftone Angle:** This determines the angle of halftone screens. The standard value is 45°. Read more about this topic in the [Wikipedia Article](#) ^[3].

If dotted areas are rendered as a halftone screen, then the halftone screen angle should be different from the angle of the dots to avoid Moiré effects on the printed map.

- **Appearance:** These values are used for the spot color view (the spot color view is a simulation of the map printed with spot colors). They are also used when exporting the map in the AI and PDF format with spot colors.

In addition, you have the following functions:

- **Move up:** Click the **Move up** button to move up the selected spot color.
- **Move down:** Click the **Move down** button to move down the selected spot color.
- **Add:** Click this button to create a new spot color.
- **Delete:** Click this button to delete the currently selected spot color.

Click the **Report** button to save the table as a XLS, TXT, HTM or DOC-File.

Click the **OK** button to save all changes and quit the dialog.

Back to the **Map** page.

To the **Colors** page.

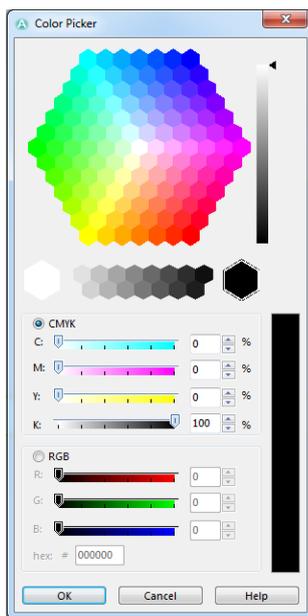
References

[1] http://en.wikipedia.org/wiki/Spot_color

[2] http://en.wikipedia.org/wiki/Pantone_Matching_System#Pantone_Color_Matching_System

[3] <http://en.wikipedia.org/wiki/Halftone>

Color Picker



The **Color Picker** dialog helps to find a suitable color (e.g. if you want to define a new **Color**).

1. Choose the **Colors** command in the **Map** menu to open the **Colors** dialog.
2. Select a color or add a new one, then click the **Choose color from color picker** button to open the **Color Picker** dialog.
3. The **Color Picker** dialog appears. You can either choose...
 - ...a color from the color hexagon. Adjust the brightness of the colors with the slider on the right of the color hexagon.
 - ...a grey level from right below the color hexagon.
 - ...a color defined in the CMYK color model if you enable the **CMYK** option.
 - ...a color defined in the RGB color model if you enable the **RGB** option.

The chosen color is displayed on the bottom right side of the dialog.

If you choose a color in the color hexagon, either the CMYK or RGB values are updated depending on whether color model is enabled.

4. Click the **OK** button to accept the color, click the **Cancel** button to quit the **Color Picker** dialog without saving any changes.

Back to the **Colors** page.

Symbol Set Conversion

Mas Ori

This function is not available in the **TRIAL** version of OCAD!

Choose this command from the **Map** menu to replace the symbol set by a new one.

This function was developed to convert easily orienteering maps in ISOM 2000 to the new map specifications ISOM 2017 ^[1] or sprint orienteering maps in ISSOM 2007 to ISSPrOM 2019 ^[2].

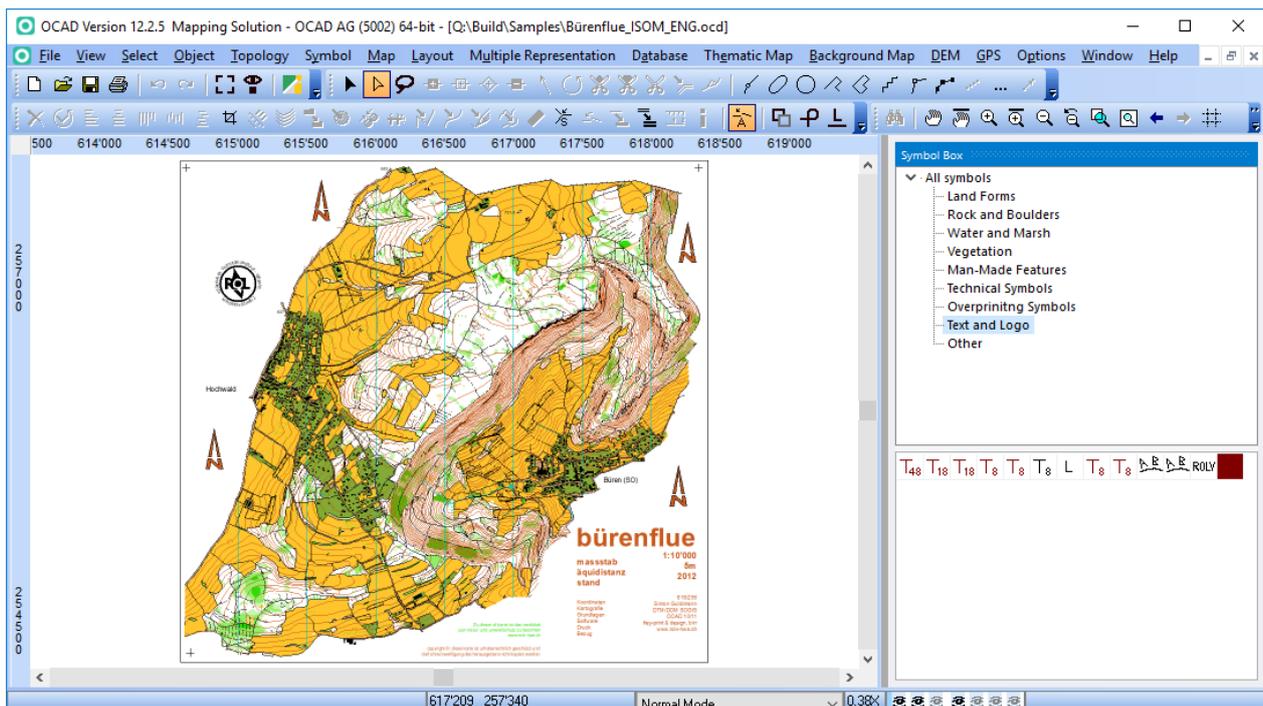
Check out the **Symbol Set Overview** page to find out, which symbol set you are using.

But the function can also be used to convert all other types of maps. The advantage of this function is that you can select which symbols (e.g. club logos, layout symbols) of your current symbol set should additionally converted to the new symbol set. This function deletes also the unused colors of the current symbol set.

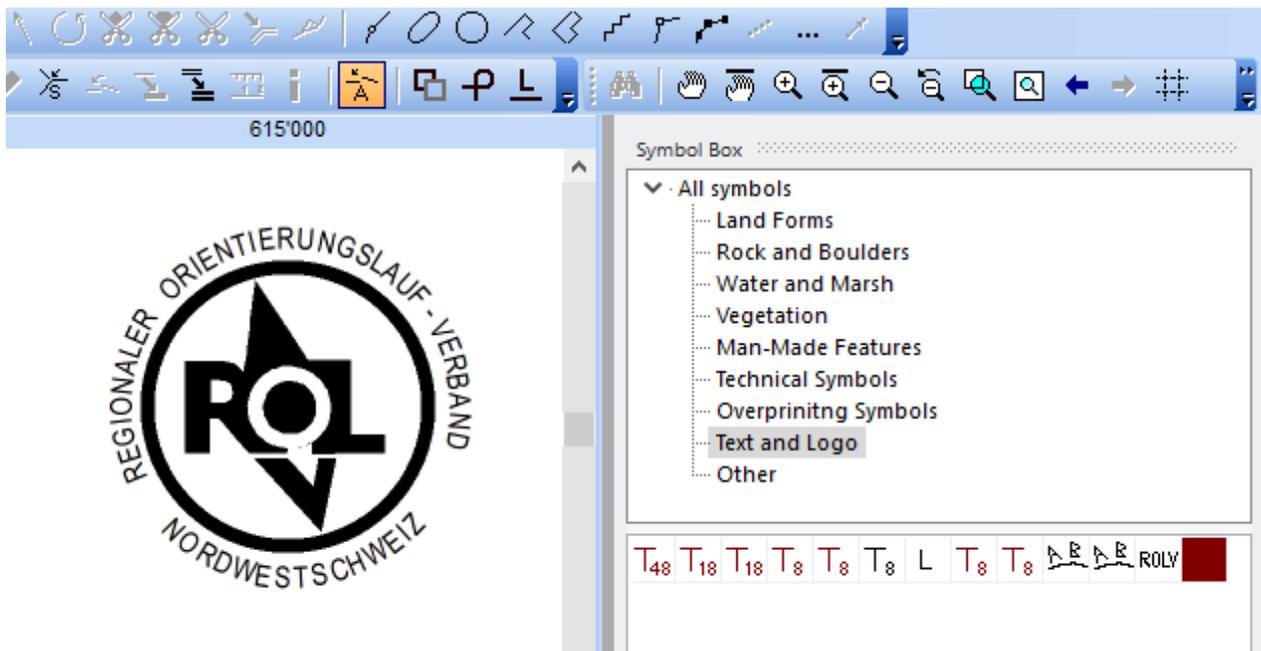
- **File name:** The New Symbol Set, to which you want to convert your current map.
- **Language:** For some Symbol Sets, you can choose the language.
- **CRT File:** Select a CRT table.
- **ISOM 2000 to ISOM 2017 adjustments:** Activate this checkbox to
 - Change last vertex of objects with symbol *516.000 Power line* to Corner vertex to keep the pylon
 - Change last vertex of objects with symbol *517.000 Major power line* to Corner vertex to keep the carrying mast
 - Rotate boulder field objects (*208.000* and *208.001*) because Boulder field symbol is rotated too

Example

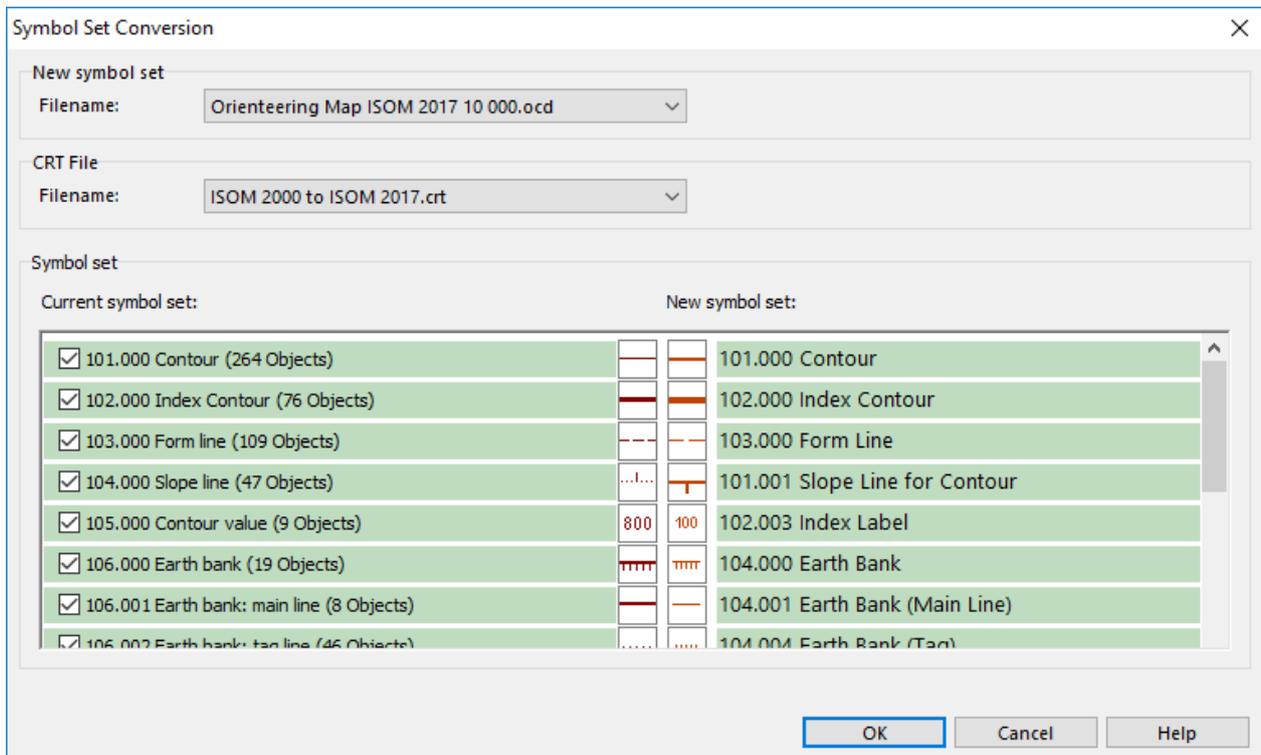
The following **example** shows how to convert the ISOM 2000 OCAD sample map to ISOM 2017. You can find the sample map (Bürenflue_ISOM_ENG.ocd) in the OCAD program subfolder *Samples*.



The map contains additional symbols for the club logo in the symbol tree group 'Text and Logo'.



Click **Symbol Set Conversion** in the the **Map** menu to open the **Symbol Set Conversion** dialog form.

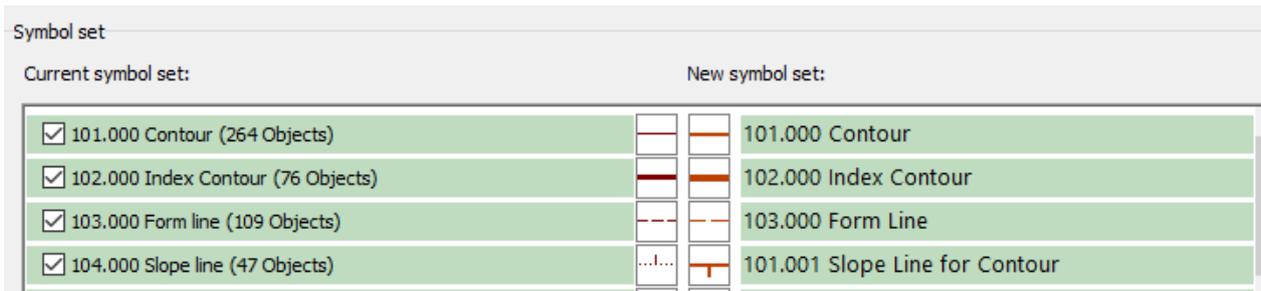


Choose the **New symbol set**. OCAD loads all files from the OCAD program subfolder *Symbol*. Because the sample map is in the scale 1:10'000 OCAD loads the corresponding ISOM 2017 symbol set by default.

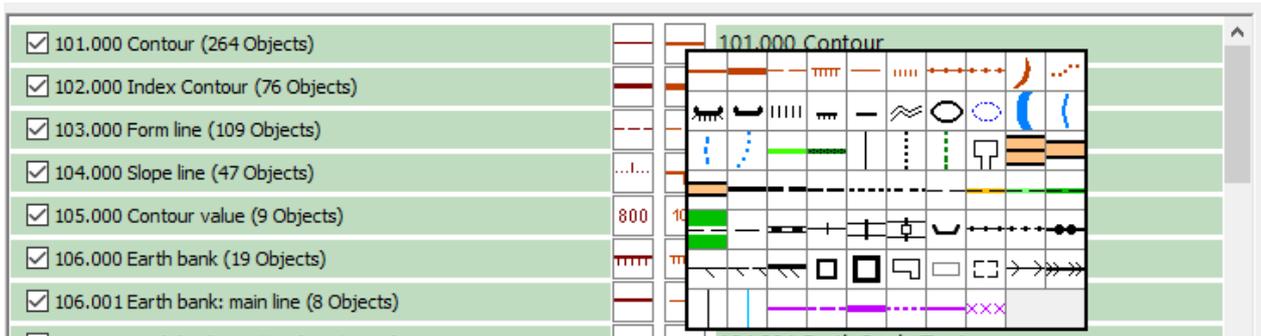
Choose the **CRT file** (Cross Reference Table). OCAD loads all files from the OCAD program subfolder *crt*.

When changing the **New symbol set** or the **CRT file** then OCAD updates the list.

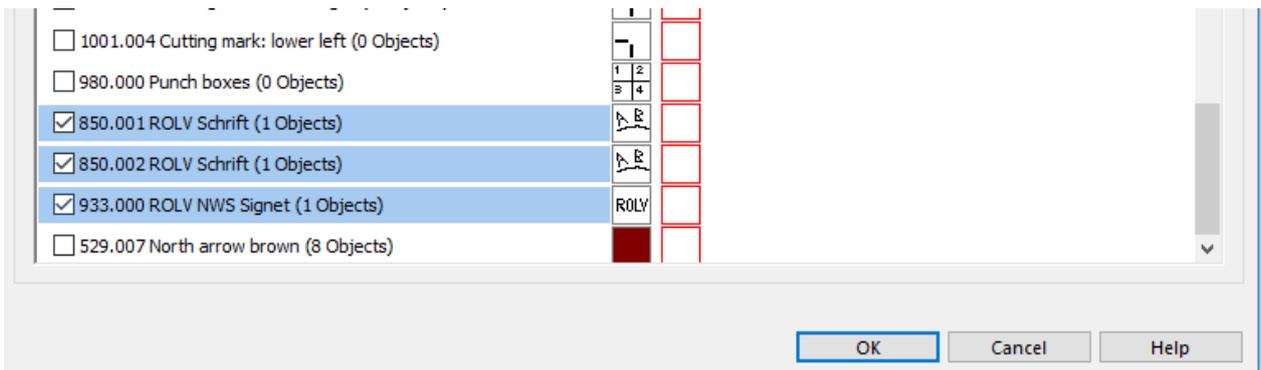
The left side of the list shows the symbols from the current file, on the right the symbols from the chosen new symbol set. A line in green color means that OCAD assign all objects of this symbol to the new one. OCAD has this information from the CRT file. For example all objects form the current symbol 104.000 will be convert to the new symbol 101.001.



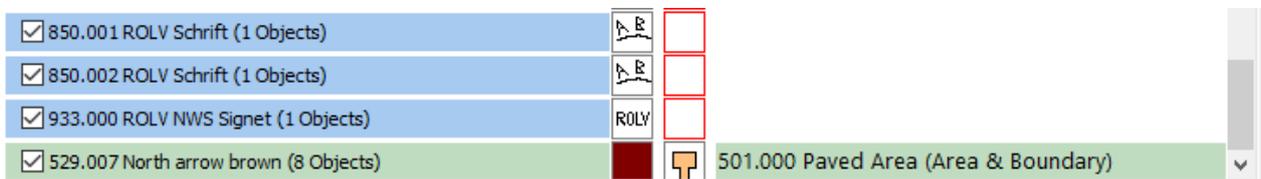
You can click on the symbol icon to choose another symbol. It is only possible to choose a symbol from the same symbol type (e.g. line symbol to line symbol).



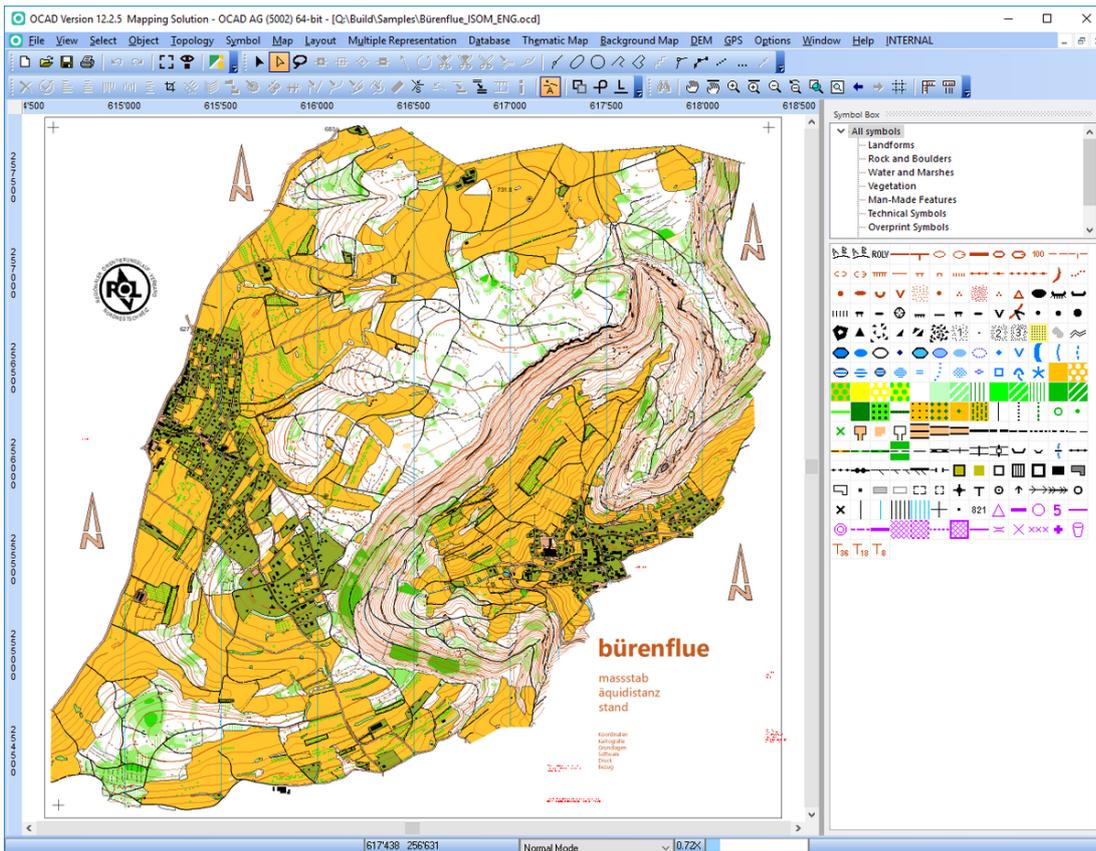
The three symbol for the club logos are not assigned to a new symbol in the CRT file. So check these three symbols. The three lines appears in blue color. This means that OCAD copy these symbols with the used colors to the new symbol set.



A white line means that OCAD deletes this symbol, but not the objects. So the objects will be *Objects with unknown symbol*. You can click on the red rectangle to assign these objects to a new symbol. For example the brown filling color for the north arrow (symbol number 529.007) will be changed to light brown (501.000).



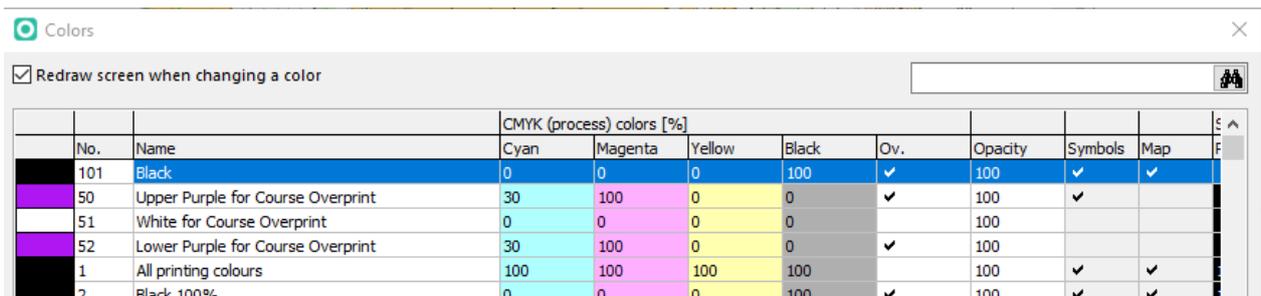
Click **OK** to convert the map. OCAD replaces the symbols and colors.



The three copied symbols are at the top in the symbol box.

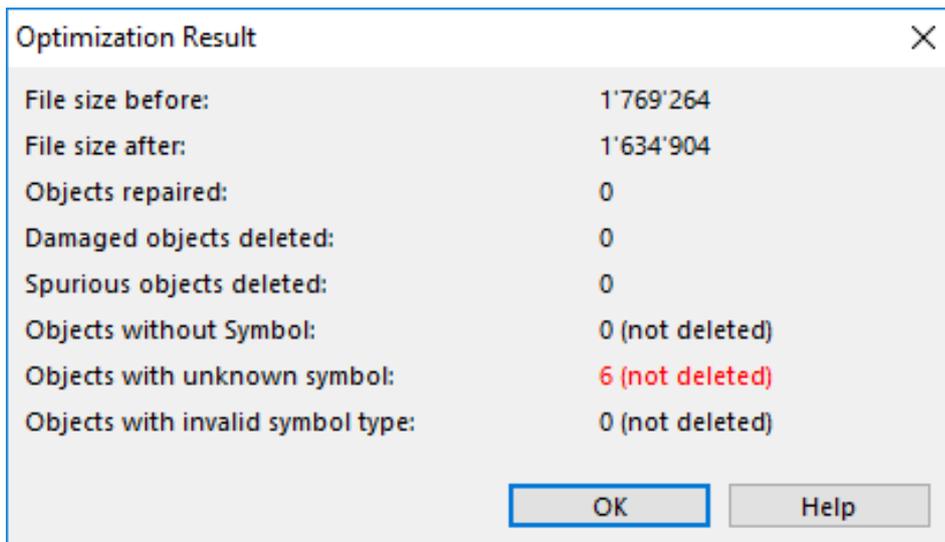


Also the used color (101 Black) from these three symbols is at the top in the color table. All other unused colors from the old symbol set are deleted.



Use the **Replace Color** function in **Symbol** menu to replace this black color in these symbols by another one (e.g. 2 *Black 100%*).

Choose the function **Optimize/Repair** in **Map** menu to verify the map. 6 Objects still have a unknown symbol. You have to assign these objects to symbols manually.



Known Issues

Spot Colors

Spot colors have often different names in the current and new symbol set. In this case OCAD lose the spot color values for the added colors. if you want to print the map in spot colors you have to enter it again.

In the example below the added color *101 Black* has no spot color values. You have to enter *100* in the *Process Black* column.

No.	Name	CMYK (process) colors [%]				Ov.	Opacity	Symbole	Map	Spot colors [%]							
		Cyan	Magenta	Yellow	Black					Process Bla	PMS299_Bl	PMS471_Br	PMS361_Gr	PMS136_Ye	Purple	PMS428_Gr	
101	Black	0	0	0	100	✓	100	✓	✓	100							
50	Upper Purple for Course Overprint	30	100	0	0	✓	100	✓							100		
51	White for Course Overprint	0	0	0	0	✓	100								0		

Reverse Object Direction

Line and point objects can be reversed after the conversion. It occurs if the symbol definition in the old and new one are different.

Use the Reverse Object function function to reverse the direction of line objects.

Use the Rotate an Object by Angle function to rotate point objects by 180°.

References

- [1] <http://orienteering.org/resources/mapping/international-specification-for-orienteering-maps-isom-2017/>
- [2] <https://orienteering.sport.iof/resources/mapping/>

Update Symbol Set

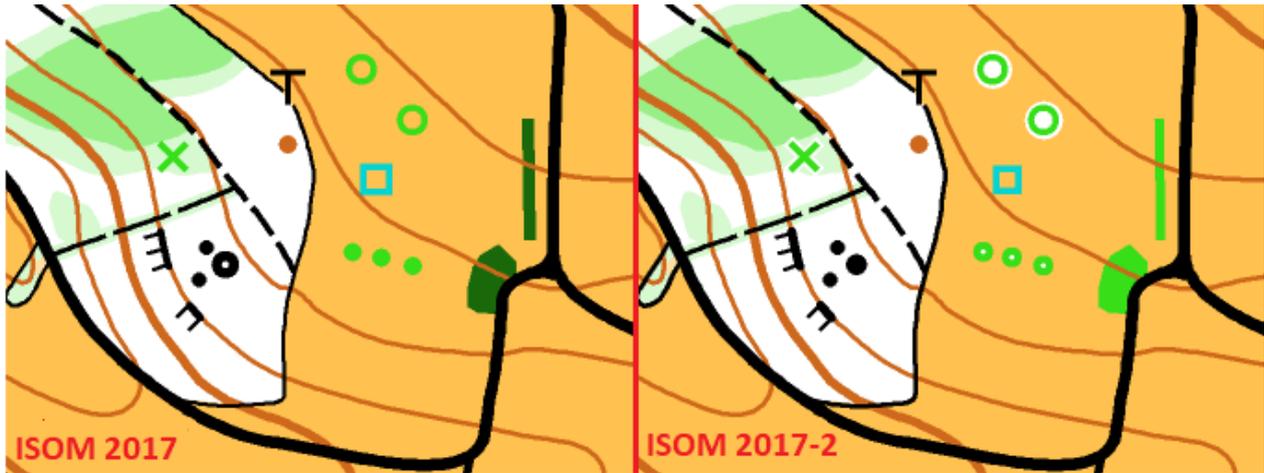
This function helps you to update your map to the latest **ISOM 2017-2** ^[2] standart. There will be approximately 15 changes to your Symbol Set.

Check out the **Symbol Set Overview** page to find out, which symbol set you are using.

Update Symbol Set

Mas Ori

1. Choose **Update Symbol Set** in the **Map** menu. The **Update Symbol Set** dialog box appears.
2. Click on **Update**



Template Symbol Set

The template is called Orienteering *Map ISOM 2017 15000.ocd*

You can't edit this field.

Symbol Scaling

The template symbol set is in 15'000 scale.

If you update a 10'000 map, you need to scale the symbols by 150%.

If you update a 15'000 map, you leave the value at 100%.

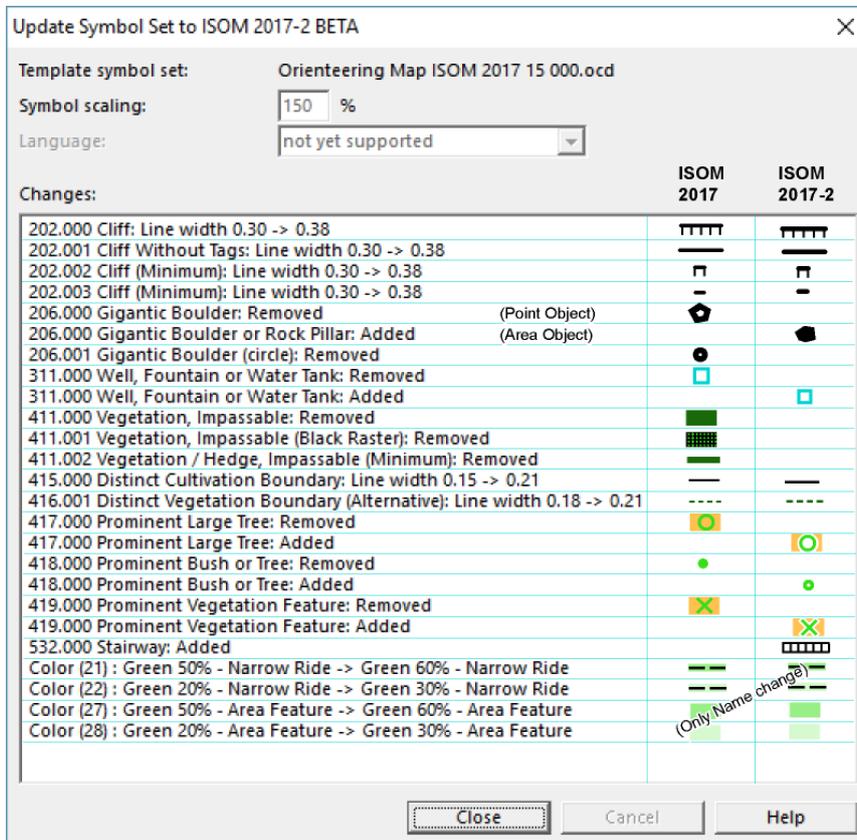
Language

not yet supported

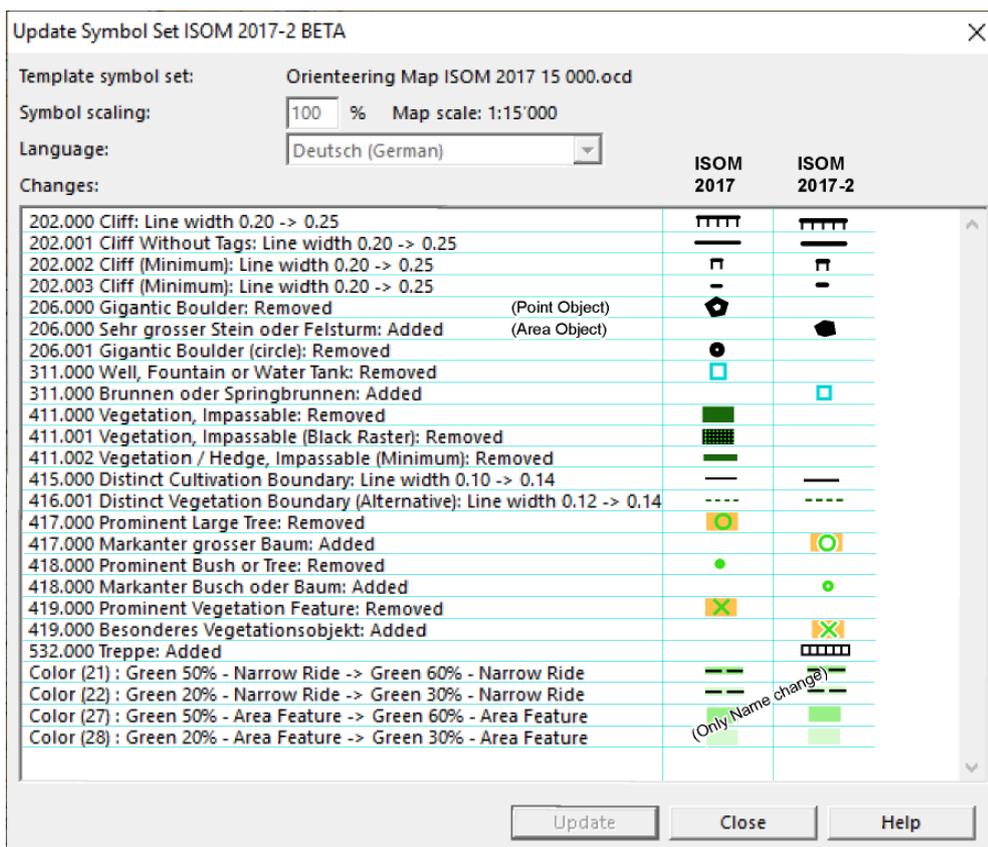
That means, the updated symbols will be in English.

Changes

A list of changes will be shown after the update.



Dialog box after updating a 1:10'000 map from ISOM 2017 to ISOM 2017-2



Dialog box after updating a 1:15'000 map from ISOM 2017 to ISOM 2017-2

Show Impassable Features

Mas Ori Sta CS

This function is available for **orienteering maps** or **course setting projects** according ISOM 2017, ISSOM 2007, ISSprOM 2019, ISSkiOM 2019 and ISMTBOM 2010.

This function shows a black/white image with all impassable features (incl. course overprint out-of-bounds features).



Click the **Save As...** button to save a the image as TIFF file. The default path is your map's folder.

Routing

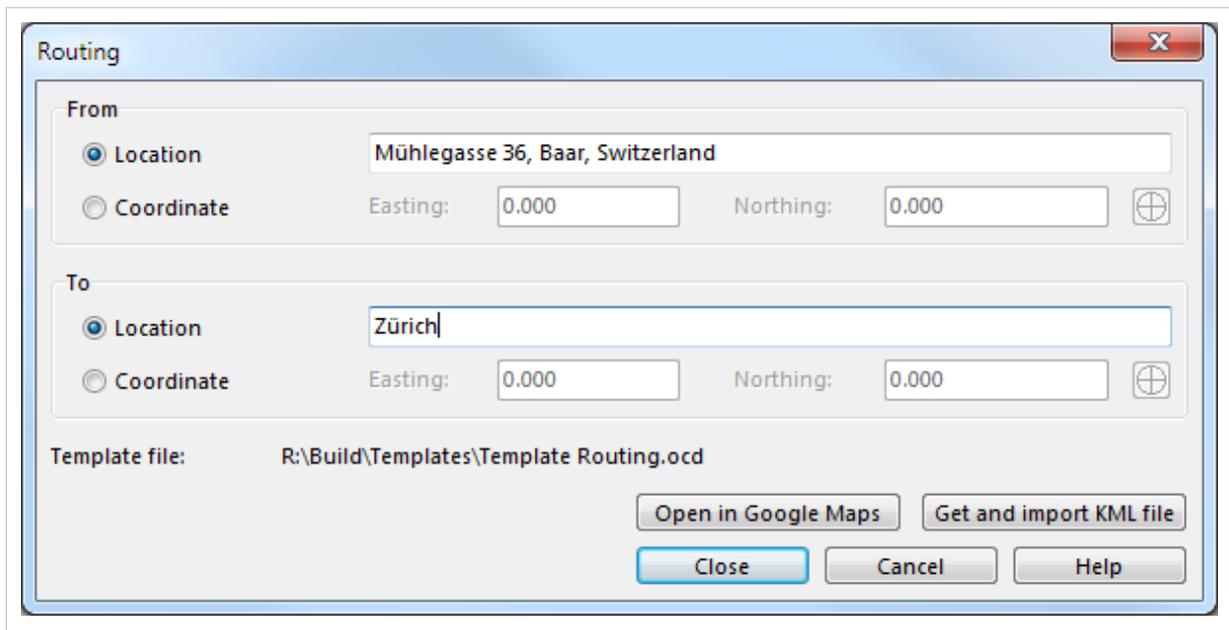
Mas

This command is only available if the map is georeferenced and a **Coordinate System** is set.

This command can be used to find the fastest way by car between two arbitrary points by downloading and importing the vector data from Google Maps.

Routing by Entering a Location

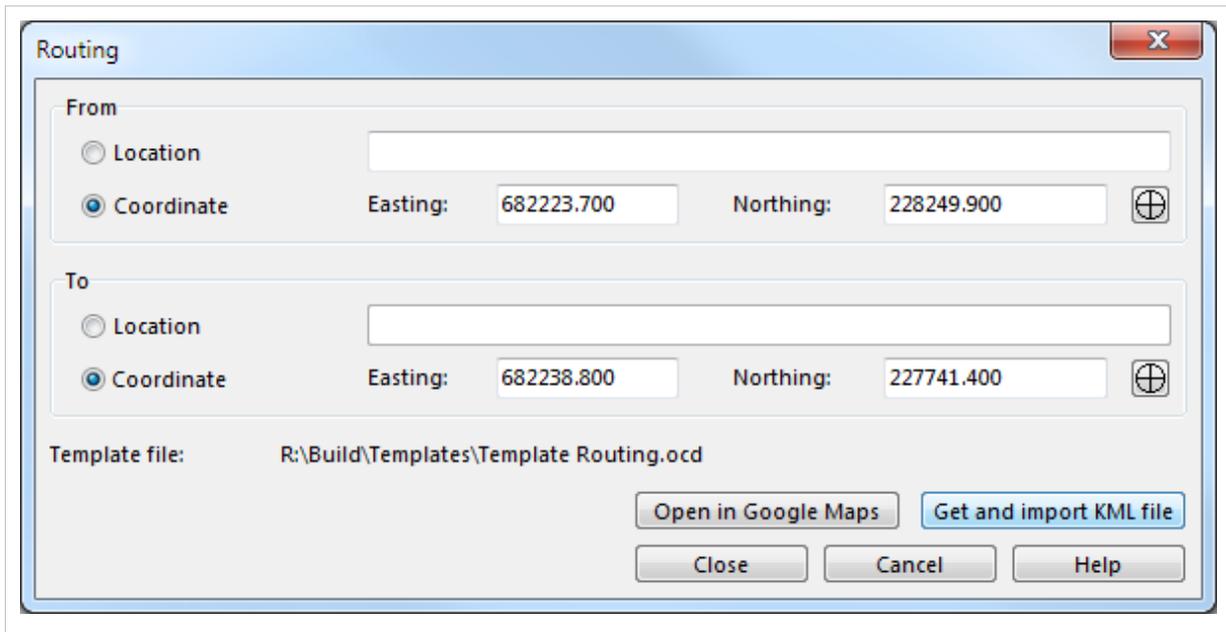
1. Select **Routing** in the **Map** menu to open the **Routing** dialog.
2. Enter the name of the start and end location.



Routing by Entering Coordinates

Instead of entering the name of the start and end point you can also simply click on these locations on the map.

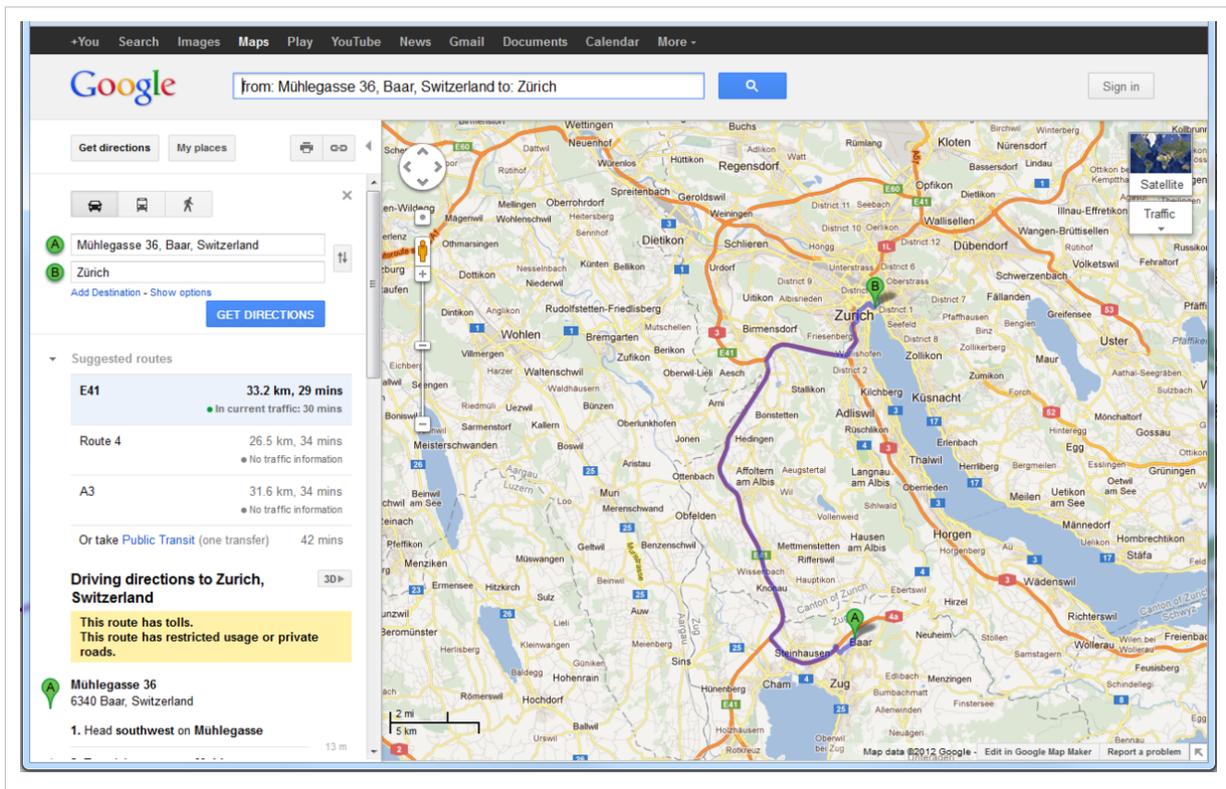
1. Activate the **Coordinate** option in the **Routing** dialog.
2. Click on the **Get Coordinate from Drawing Area** button  , then click on the start location on your map. OCAD displays the coordinate in the **Routing** dialog. Optionally you can enter the coordinate manually.
3. Do the same for the end location.



💡 Please note that the function **Get and import KML file** does not work anymore.

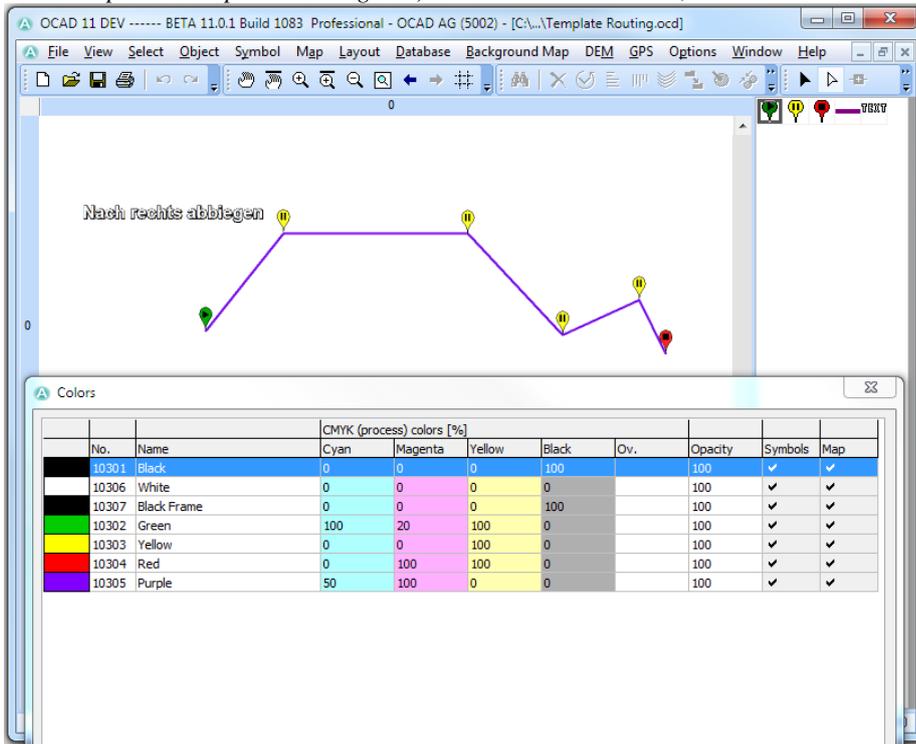
Show Route in Google Maps

Click on the **Open in Google Maps** button to see the route on Google Maps.



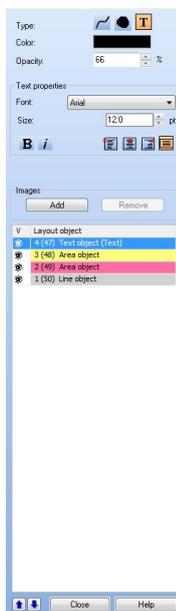
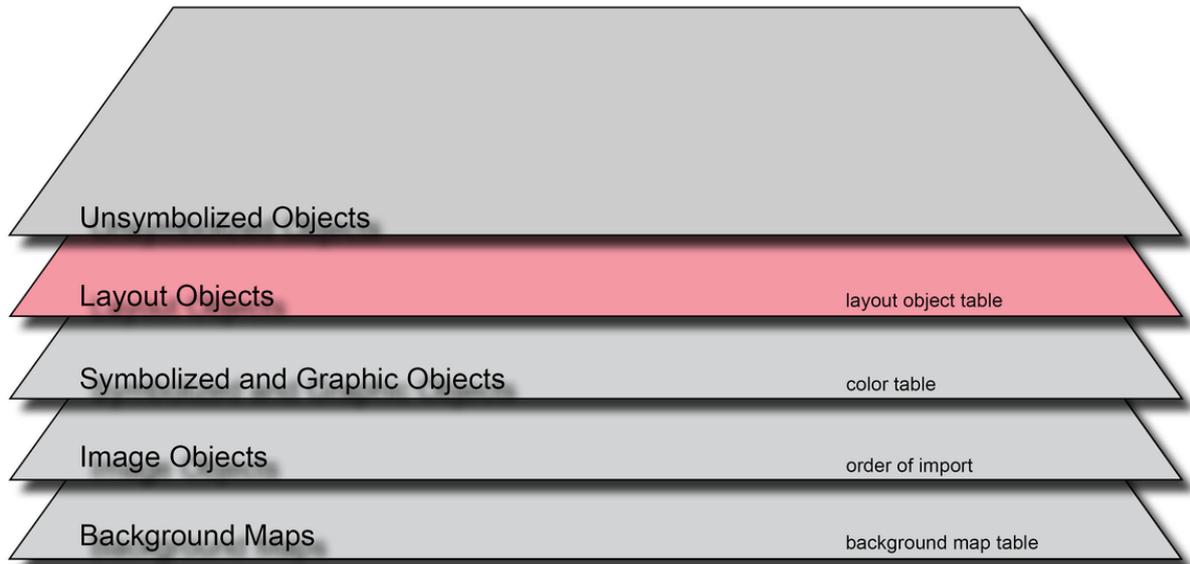
Template File

The symbols and colors used for routing are saved in a template file (usually *C:\Program Files\OCAD\OCAD 20xx\Templates\Template Routing.ocd*) and can be edited there, too.



Menu Layout

Layout



Since Ocad 11, it's possible to add layout layers in the map. This layer may contain raster images and vector objects like lines, areas or text. The vector layout objects color model is CMYK. The layout images' one is RGB. PNG transparency is not supported. Spot colors are not supported by the OCAD layout layer.

Layout objects cannot be selected, moved, removed or changed unless you choose the **Edit Layout Objects** command in the **Layout** menu.

Edit Layout Objects



Use this function in the **Layout** menu to add, remove or edit layout objects and define their properties. The **Edit Layout Objects** dialog appears on the right side of the window. Now you can move, edit or remove layout objects in the drawing area like normal objects.

Add a line, area or text layout object:

1. Click the **Line**, **Area** or **Text** icon in the **Edit Layout Objects** dialog as a **Type**.
2. Choose a **Color**. Click the color field to define the color with the **Color Picker**.
3. If you have chosen a line, define the **Line width** in the **Line properties** category in mm. If you have chosen a text, choose a **Font** and a **Text size** in the **Text properties** category.
4. The **Opacity** can be defined for each object.
5. Draw the layout object with the regular drawing tools.



To edit the drawn layout object select it and change the properties (color, line width etc.) in the **Edit Layout Objects** dialog or use the editing functions of OCAD (**Edit Object**).



The error message: "Font not found" appears if a layout object is linked to a font that is not installed on the PC. The font needs to be installed on the PC (restart OCAD after you installed the font) or another font must be chosen. Otherwise the font Arial is used.

Add an image:

1. Click the **Add** button in the **Images** category of the **Edit Layout Objects** dialog.
2. The **Add Layout Image** dialog opens and you can browse an image. The supported image files are .bmp, .gif, .jpg, .png, .tiff. Click the **Open** button to add the image.
3. Move and resize the image objects by using the **Select and Edit Object** Tool. They can be moved with arrow keys as well.
4. Remove a layout image by selecting it in the layout objects list and clicking the **Remove** button in the **Images** category of the **Edit Layout Objects** dialog.

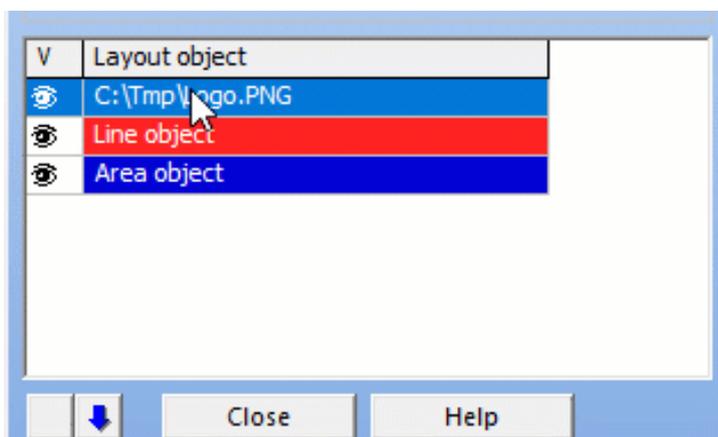


If your map contains Layout images and your pass you file forward to another person, you need to send the Layout images as well, as they are not part of the OCAD file.

Layout Objects List:

All Layout objects are listed in the layout objects list. It is possible to set them visible or hidden and to move them by drag and drop or the arrow keys.

The error message "The maximum allowed entries of layout objects is reached" appears if the list contains the maximum of 256 entries.



Parameters

Object Type	Parameter	Properties
Line Object	Color Opacity Line width	Color Picker in [%] in [mm]
Area Object	Color Opacity	Color Picker in [%]
Text Object	Color Opacity Text properties	in [%] Font Size in [pt] Bold Italic Bottom left Bottom center Bottom right Fully justified
Images	Add Remove	

Import Layout

Mas Ori

Choose this command in the **Layout** menu to import the layout objects from another OCAD map. The layout objects are placed in the center of the actual drawing area. This command is only available if you are in the **Edit Layout Objects** mode.

Save Layout

Mas Ori

Choose this command from the **Layout** menu to save the layout objects to a separate OCAD file. This command is only available if you are in the **Edit Layout Objects** mode.

Delete Layout

Mas Ori

Choose this command from the **Layout** menu to delete all the layout objects. This command is only available if you are in the **Edit Layout Objects** mode.

Hide

Mas Ori

Select **Hide** in the **Layout** menu to hide all layout objects.

Add North Arrow or Scale Bar

Mas Ori

You can add predefined north arrows or scale bars to the Layout.

1. Choose **Edit Layout Objects** in the **Layout** menu.
2. Choose **Add North Arrow or Scale Bar** in the **Layout** menu.
3. The **Add North Arrow or Scale Bar** dialog appears and you can choose between different north arrows and scale bars from the *Templates* folder of the OCAD directory (Usually *C:\Program Files\OCAD\OCAD 20xx Edition\Templates*).
4. Click the **Open** button to add the selected object to the layout objects.

💡 - In the OCAD directory you can find a PDF-File with an overview of all predefined north arrows and scale bars (Usually *C:\Program Files\OCAD\OCAD 20xx Edition\Templates*).

- North arrow and scale bar templates are black. You can change the color after adding them by choosing a color from the color field in the **Edit Layout Objects** dialog.

Add Map Legend

Mas Ori

Choose the **Add Map Legend** function from the **Layout** menu to create a **Map Legend**. The **Add Map Legend** dialog appears.

Legend Icon

Define values for the legend icon in this part of the dialog. You have to set a value for the **Icon height**, the **Icon width** and the **Line spacing**. If you want that only used symbols are shown in the legend, check the corresponding box. In the same way, you can decide whether hidden symbols are shown in the legend or not.

Symbol type

Only the checked symbol types are taken into consideration for the map legend. Click the **All** button to check or click the **None** button to uncheck all symbol types.

Legend Text

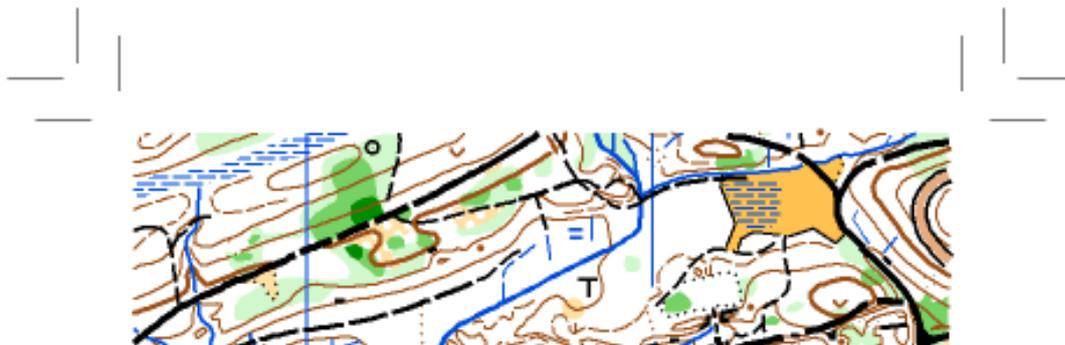
Choose a symbol for the legend text. This must be a text symbol of course. If you want that the symbol number is shown in the legend text, check the corresponding option.

Click the **OK** button to add the map legend.

💡 This function creates symbolized map objects, not layout objects. Use the function **Convert to Layout Object** to convert them into layout objects.

Add Trim and Bleed Marks

Mas Ori



This command adds trim and bleed marks as layout objects to the map.

1. The easiest way to add trim and bleed marks is when you set the ruler guides to the border of the map and the map layout (e.g. A4 landscape format) first. Learn how to use the ruler guides on the **Ruler Guides** page. If you do not want to use **Ruler Guides** skip this step.
2. Choose the **Add Trim and Bleed Marks** function in the **Layout** menu.
3. The **Add Trim and Bleed Marks** dialog opens.

Add Trim and Bleed Marks [X]

Existing ruler guides

Top: Left:

Bottom: Right:

Trim marks

Top: mm Left: mm

Bottom: mm Right: mm

Width: mm

Height: mm

Style:  

Bleed marks

Top: mm Left: mm

Bottom: mm Right: mm

Style:  

- If you are using **Ruler Guides**, click the **Get ruler guides coordinates** button in the **Trim marks** part of the dialog, select a style (see below) and then click the **Add** button. Trim marks with the coordinates of the ruler guides are added. If you are not using **Ruler Guides**, enter the paper coordinates for the trim marks manually before clicking the **Add** button.
- Enter the offset for the bleed marks in the **Bleed marks** part of the dialog if you want to add them and select a style (see below). Then click the **Add** button.



- Click the **Close** button to apply all adjustments and quit the dialog.

Trim and Bleed Marks are layout objects and can be edited and removed like other layout object.

 With adding trim and/or bleed marks, OCAD adds automatically a **print and export rectangle** with the corresponding extent including the marks.

Create Graticule Name Index

Mas

This command is only available if the map is georeferenced and a coordinate system is set. The command calculates a name index based on the WGS84 graticule.

Select one or more symbols in the symbol box before choosing the command. All text objects and line text objects with these symbol(s) are included to the index.

Create Graticule Name Index Dialog

- **Index origin of longitude/latitude:** Enter index origin coordinates.
- **Horizontal/vertical distance:** Enter the distance between the grid lines.
- **Angle:** Enter the angle of the grid. This angle is zero, if the grid is not rotated.
- **Style:** Choose a numbering style. One axis is always numbered "A, B, C..." and the other "1, 2, 3...". Alternatively, you can choose the WGS84 style.
- **Symbol:** Choose a text symbol. It is used as a symbol for the name index text objects.

After clicking the **OK** button a text object with the index will be added in the center of the drawing area and can be moved to the desired position.

💡 This function creates symbolized map objects, not layout objects. Use the function **Convert to Layout Object** to convert the index to layout objects.

💡 **Create WGS84 Grid** is the corresponding function to create a graticule.

💡 Define a **Tab** in the name index text symbol therewith the indices are written in a column.

Error Message *Text is too long*

Each text object in OCAD is limited by 32000 characters. This error message appears when the text has more characters. OCAD copies the full text string in the Windows Clipboard. In this case we recommend you to split the text string from Windows Clipboard in a Text editor and paste it into OCAD.

Create Name Index

Mas

Make sure you have selected one or more text or line text symbols in the symbol box before choosing **Create Name Index** in the **Layout** menu. The **Create Name Index Dialog** appears.

Create Name Index

Name index range

Entire map

Part of map:

Grid

Horizontal offset: m

Vertical offset: m

Horizontal distance: m

Vertical distance: m

Angle: deg

Style

1 A B

1 2 A B

2 A B

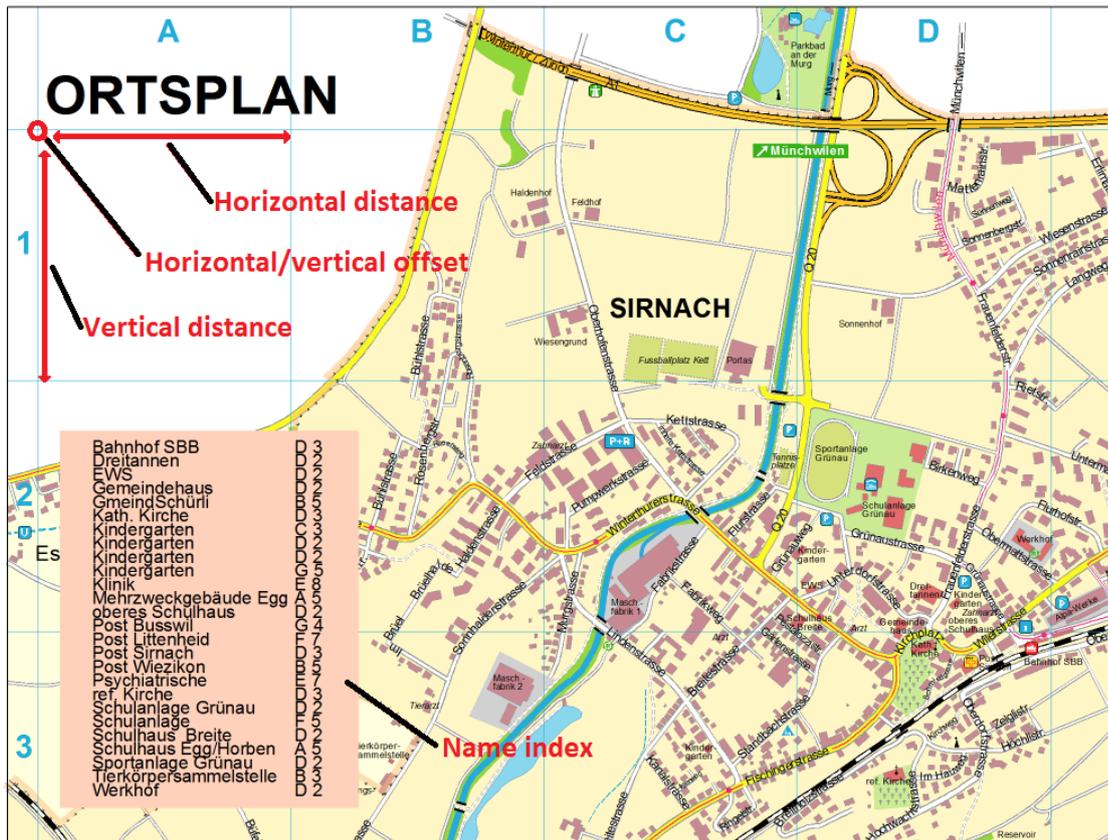
2 1 A B

Symbol

Text Symbol: 902.000 Text 8 pt

OK Cancel Help

OCAD creates the name index from all objects from the selected text or line text symbols. For example, if you want to list all street names, select all symbols for street names in the symbol box.



- **Name index range:** Choose **Entire map** to create the index for the entire map or choose **Part of map** for a desired part. OCAD uses the part of maps defined in the print and export dialogs.
- **Horizontal/vertical offset:** Enter the coordinate of the upper left or lower left corner where the numbering of the grid starts (in this example the origin of the A1 square). The coordinate can be easily found out by reading them in the **Status Bar** while hovering with the mouse over this point.
- **Horizontal/vertical distance:** Enter the distance between the grid lines (in this example the distance from A to B square respectively from 1 to 2 square).
- **Angle:** Enter the angle of the grid if it is rotated. Usually, namely in the case of exactly horizontal and vertical grid lines, the angle is zero.
- **Style:** Choose a numbering style. One axis is always numbered "A, B, C..." and the other "1, 2, 3..."
- **Symbol:** Choose a text symbol. It is used for the text objects, building the name index.

After clicking the **OK** button a text object with the index will be added in the center of the drawing area and can be moved to a desired position.

💡 This function creates symbolized map objects, not layout objects. Use the function **Convert to Layout Object** to convert the index to layout objects.

💡 **Create Map Grid** is the corresponding function to create a rectangular map grid. OCAD does not create a map grid with the **Create Name Index** function.

💡 Define a **Tab** in the name index text symbol therewith the indices are written in a column.

Error Message *Text is too long*

Each text object in OCAD is limited by 32000 characters. This error message appears when the text has more characters. OCAD copies the full text string in the Windows Clipboard. In this case we recommend you to split the text string from Windows Clipboard in a Text editor and paste it into OCAD.

Convert to Layout Object

Visit the **Convert to Layout Object** page to get some information about this function.

[Back to Main Page](#)

Menu Multiple Representation

Multiple Representation

What is Multiple Representation in OCAD? Mas

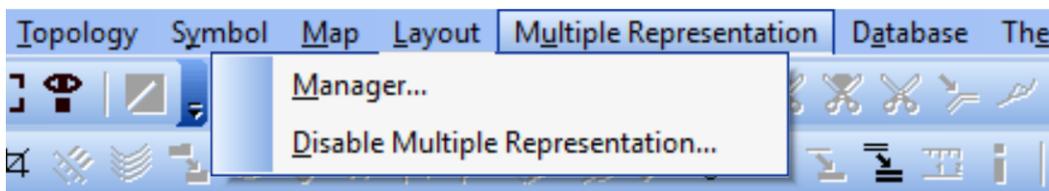
Multiple representation enables the ability to store different states of objects in one single OCAD file. To show these different states of objects, you need to create multiple representations. After you created a new representation and set it active, you start with the original map and can alter objects or add new ones. The original map won't be changed, but just your representation. This can be helpful for example when you want to translate a city map to another language. Just add a new representation where you translate the labels. If you need to change objects in the original map, these changes are automatically assumed to the new representation. For more examples see Examples: How OCAD Multiple Representation is meant to work.

The multiple representation is available in OCAD Mapping Solution. OCAD maps with an active multiple representation can only be opened with this edition.

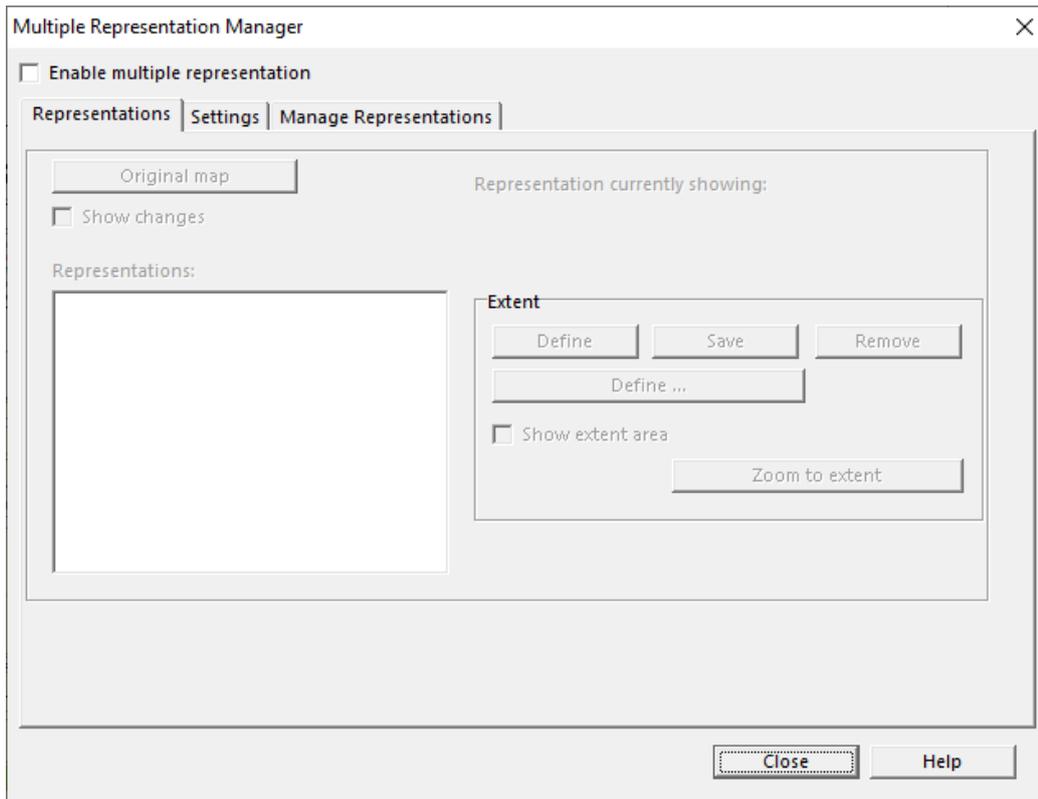
 [Anleitung OCAD Multi-Repräsentation \(deutsch\)](#) ^[1]

Multiple Representation Manager

Click on **Multiple Representation** -> **Manager...** to open the manager. The multiple representation manager serves for the activation and management of the representations. You can only activate the multiple representation in the multiple representation manager.

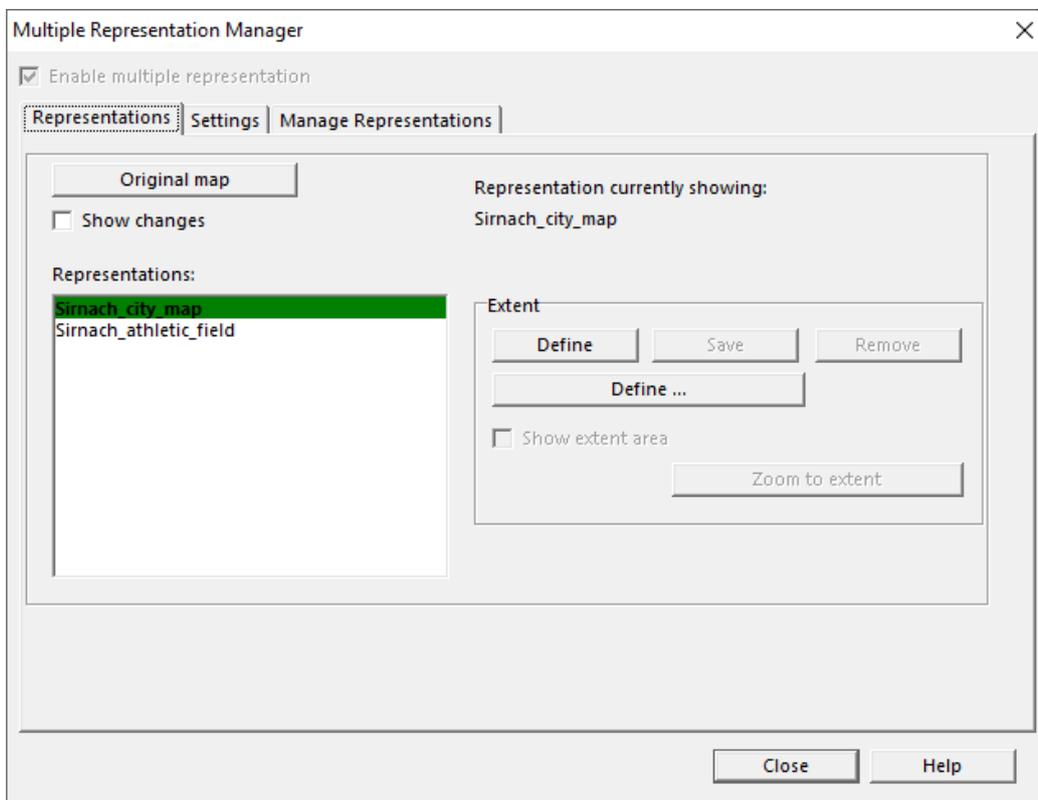


Click in the head of the dialog on **Enable multiple representation** to activate the multiple representation. The multiple representation manager is a non-modal dialog, you can edit the map while the dialog is open.



Representations

After the activation of the multiple representation and the creation of two representations "Sirnach_city_map" and "Sirnach_athletic_field" in the **Manage Representations** tab, the dialog looks like this:



Extent

In the section **Extent**, you have the possibility to define the border of a representation. Click on the **Define** button and define the extent of the representation with the black rectangle in the map window. Click on **Save** and activate **Show extent area**. The extent gets shown with a red frame in the map window. You can remove the extent, if you click on **Remove** or you can overwrite it by defining and saving a new one.

💡 You don't need to define an extent, but it makes it easier for you to keep the overview. Furthermore, you can use the defined extent as an input, when you like to export or print the representation.

If you have defined an extent for the currently showing representation, you can click on the button **Zoom to extent** to zoom to the extent of this representation.

Representations

The currently showing representation is in this example the `Sirnach_city_map`. With a click on the favored representation in the box, you can change between the representations. You see the **Representation currently showing** in the top right of the dialog.

Original Map

If you click on the button **Original Map**, the original map is shown in the map window.

Show Changes

If a representation is shown, you can activate the option **Show changes**. All objects, that have been moved, changed or deleted compared to the original map, are shown in the Keyline modus, like the label „Ortsplan“ in following example:

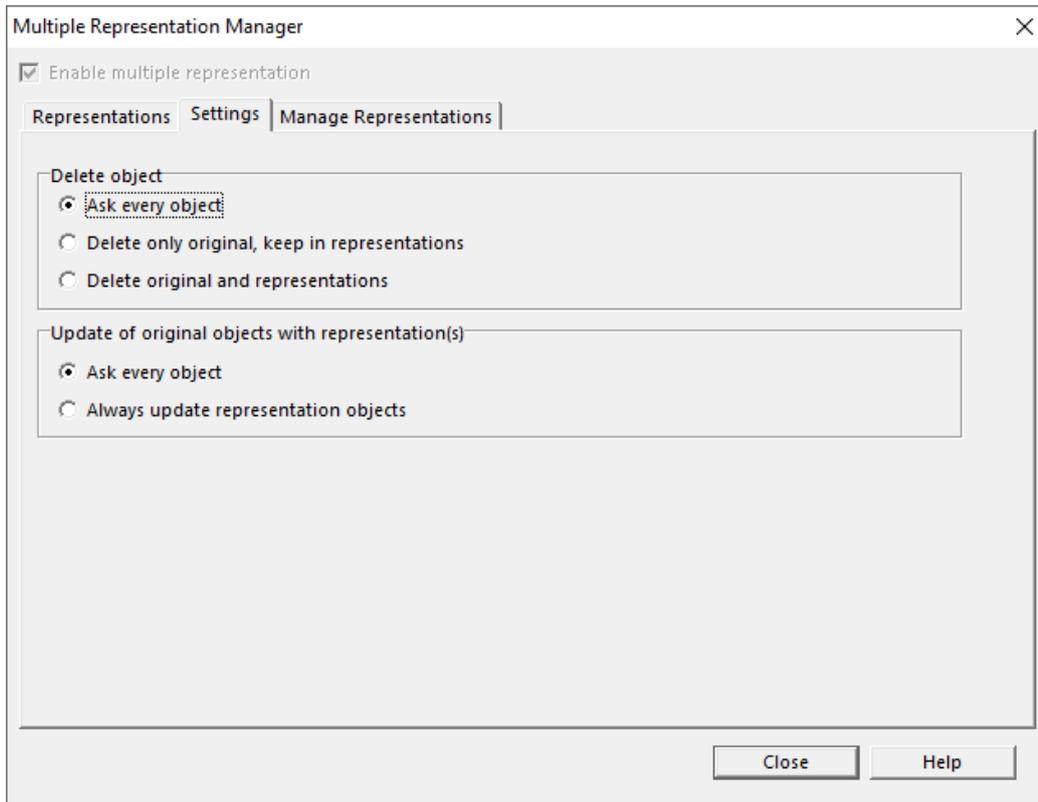


The red frame in the map is the defined extent of the currently showing representation. The label “City map” would be missing in the `Sirnach_athletic_field` if it wouldn't have been moved to a new position within in the representation extent.



Settings

You can manage the properties for deleting or updating objects of the original map in the **Settings** tab.



Delete Objects

Ask every object

If an object is deleted in the original map, a dialog appears and asks, if you also want to delete the object in the representations or if you want to keep it there. This dialog appears once per object and representation.

Delete only original, keep in representations

If an object is deleted in the original map, it is kept in the representations.

Delete original and representations

If an object is deleted in the original map, it is also deleted in the representations.



If an object is deleted in the representation, there are no effects to the original map and the other representations. To delete an object in all representations, you have to delete it in the original map.

Update of original objects with representation(s)

Here you can define what will happen, if an object is changed in the original map, that has already been changed in a representation before.

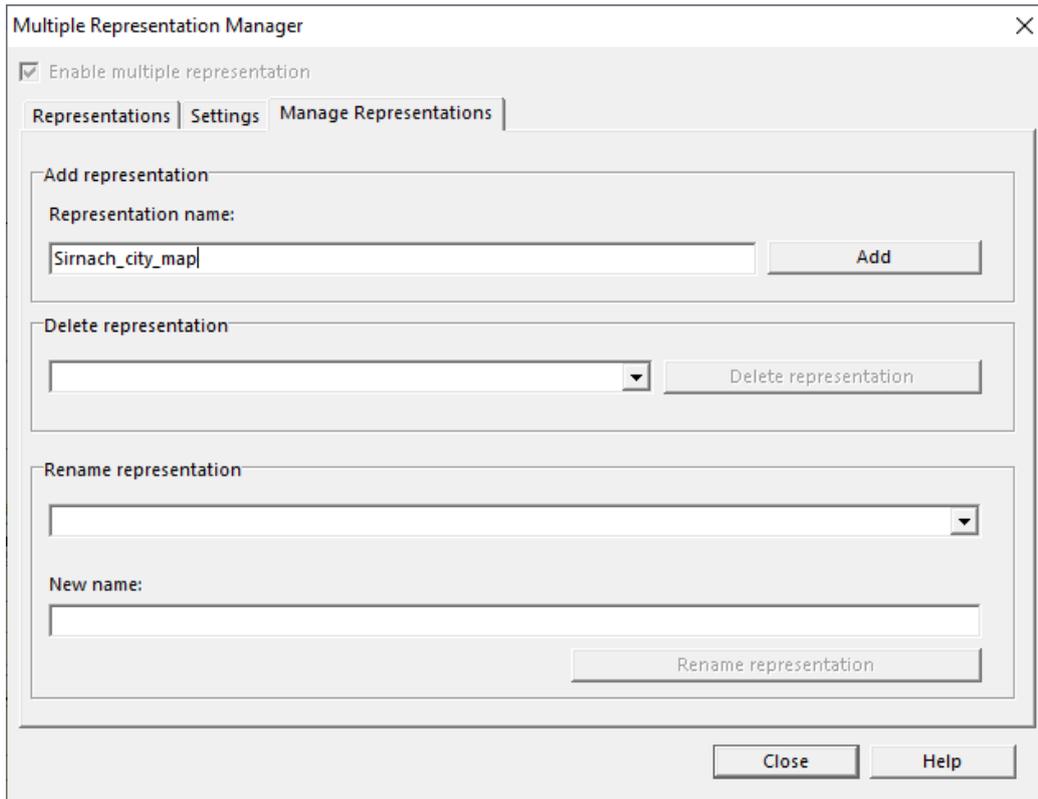
Ask every object

If an object is changed in the original map, a dialog appears to ask if the changes should be assumed to each representation. This dialog appears once per object and representation.

Always update representation objects

If an object is changed in the original map, the changes are automatically assumed to all representations.

Manage Representations



The screenshot shows a dialog box titled "Multiple Representation Manager" with a close button (X) in the top right corner. At the top, there is a checked checkbox labeled "Enable multiple representation". Below this, there are three tabs: "Representations", "Settings", and "Manage Representations", with "Manage Representations" being the active tab. The dialog is divided into three main sections:

- Add representation:** This section contains a label "Representation name:" followed by a text input field containing the text "Sirnach_city_map|". To the right of the input field is an "Add" button.
- Delete representation:** This section contains a dropdown menu (currently empty) and a "Delete representation" button.
- Rename representation:** This section contains a dropdown menu (currently empty), a label "New name:" followed by a text input field, and a "Rename representation" button.

At the bottom of the dialog, there are two buttons: "Close" and "Help".

Add Representation

Enter the name of the representation in the field **Representation name** and click on the button **Add**. You see the added representation in the list of the **Representations** tab.

Delete Representations

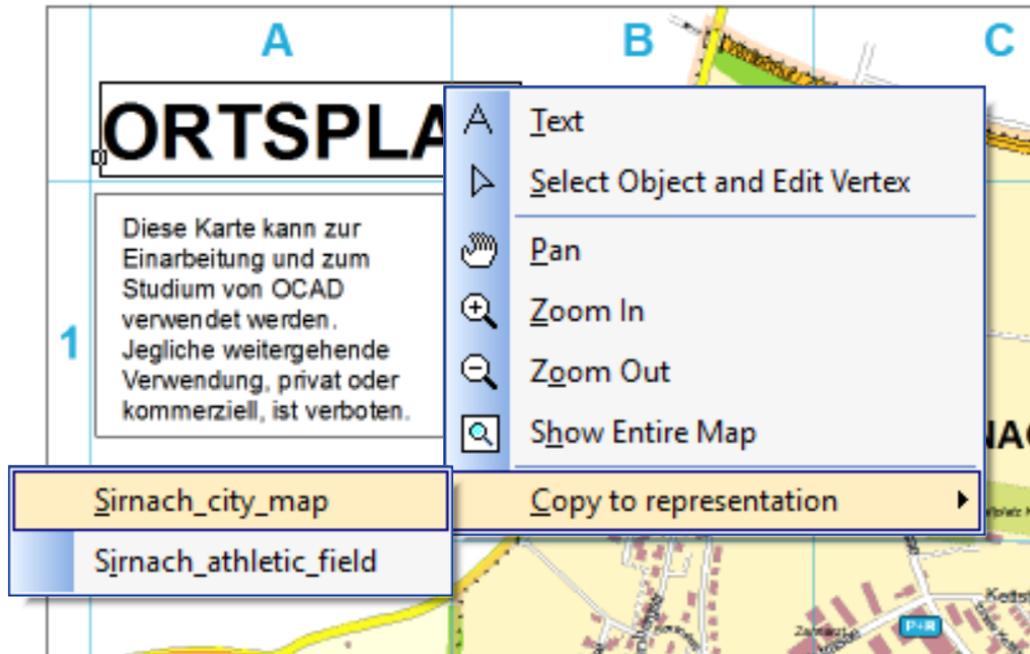
A representation can be deleted, if it isn't the currently showing representation. Click (once, no double click) on the representation in the list and click on the button **Remove**.

Rename Representations

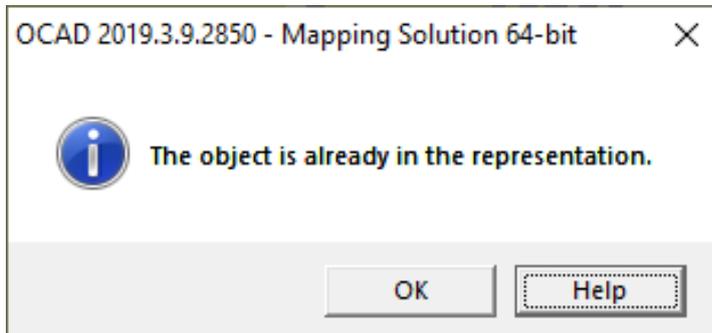
A representation can be renamed. Chosse an existing representation from the dropdown-list, enter a new name and click on **Rename representation**.

Copy Objects from the Original Map to the Representation

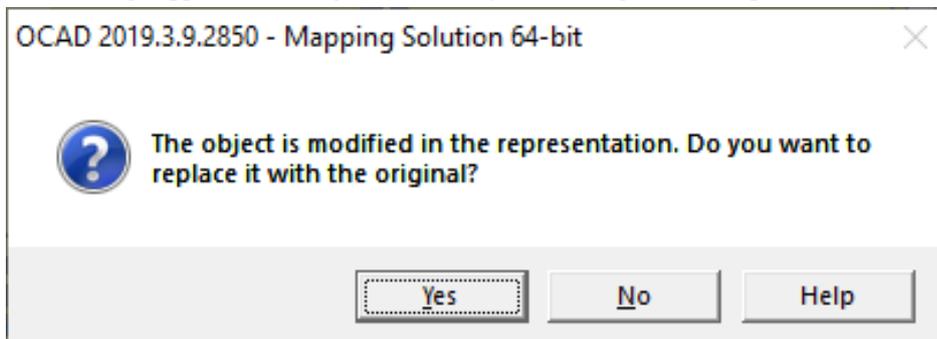
If you have deleted (e.g. by mistake) one or several objects in a representation, you can undo this action. Go to the original map, right-click on a selected object, click on **Copy in representation** and choose in which representation you want to copy the object.



This message appears if the object is already in the representation:



This message appears if the object has already been changed in the representation:



Disable multiple representation

The multiple representation can be disabled in an OCAD map by going to **Multiple Representation -> Disable multiple representation...**

The contents of the representations get lost.

Print and Export

If you print or export the map, the currently showing representation/original map is printed or exported.

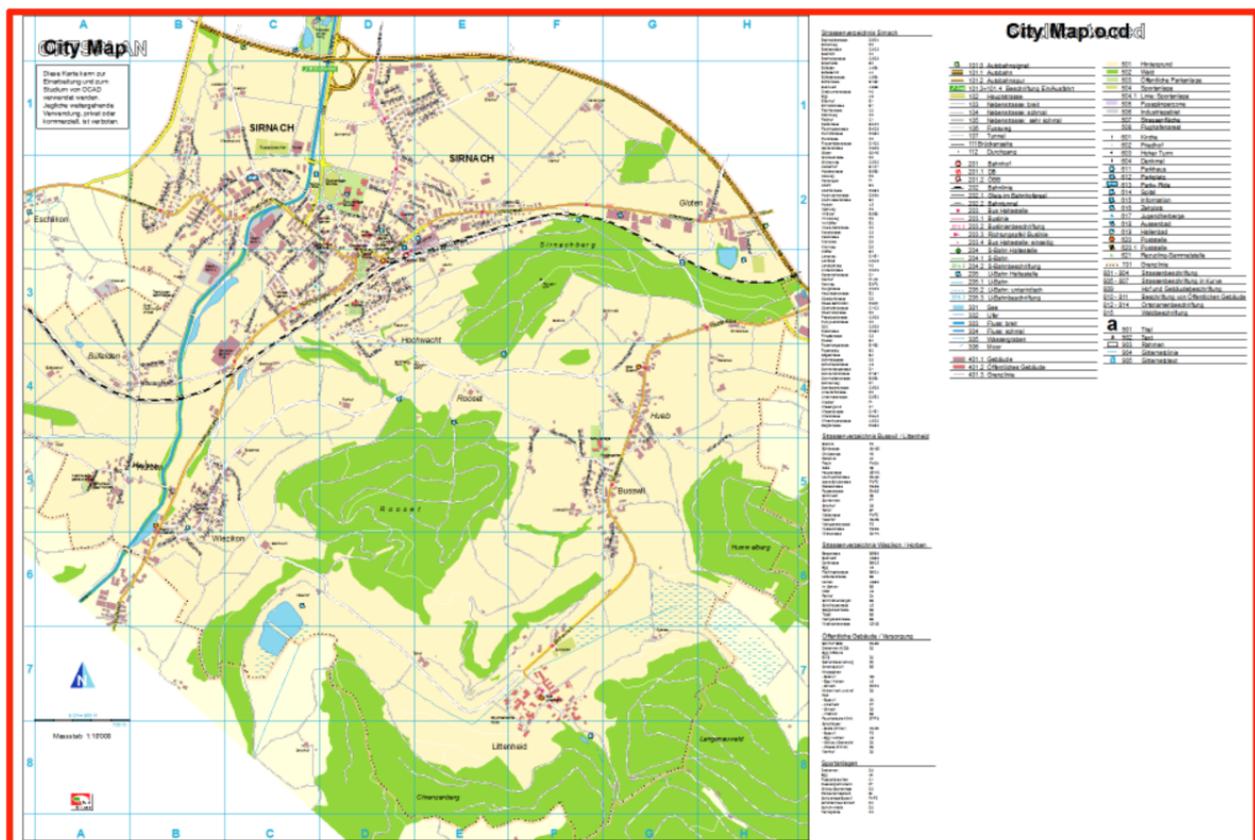
Restrictions

The function in the menu **Thematic Map** can't be used, if the multiple representation is activated. Following functions are only available, if the original map is shown:

- Import files
- Functions in the menus **Map**, **Database**, **DEM** and **GPS**

Examples: How OCAD Multiple Representation is meant to work

The representation "Sirnach_city_map" is an English translation of the original German map. Just the labels are different, the content of the map is the same.



For the representation "Sirnach_athletic_field" an approach plan was created. It contains additional labels and arrows.



[Back to Main Page](#)

References

- [1] http://www.ocad.com/docs/Anleitung_OCAD_Multirepraesentation.pdf

Menu Database

Database

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Introduction to Database Connection

In OCAD information which is stored in a database can be added to an object (e.g. position of the object, name of the place, URL-Link, length of the object etc.). A database is structured as follows:

General Structure of a Database

Table

A database usually consists of several tables. There are different forms of databases: In a flat file database like **dBase** ^[1], each table is a file and all tables in a folder form the database. In other databases like **Microsoft Access** ^[2] or in spreadsheet programs like **Microsoft Excel** ^[3] all tables of the database are in the same file.

Record

A table consists of records. A record is a row in the table and contains the information about an OCAD object.

Field

A record consists of fields. Each field contains a single information of an OCAD object, which is described by the corresponding record. Normally this information is a number, but can also be text. For example the x-coordinate of the objects' position. Each record has a key field, which is used to identify the record. This is mostly a number.

Example

The following table contains three records. Each record describes an area object in OCAD which describes real estate and consists of six fields: **ID**, **SIZE**, **OWNER** and **XCOOR**, **YCOOR**, **TYPE**. The **ID** is the key field, which is used by OCAD to identify the record. The **SIZE** describes the magnitude of the area. In the **OWNER** field, there is a number which links to a **Secondary Table**. The fourth and the fifth field contain the coordinate and in the last field, the type of the area is indicated.

ID	SIZE	OWNER	XCOOR	YCOOR	TYPE
1	724	29	754870	233386	Private Building Area
2	702	12	754900	233442	School
3	422	13	754815	233505	Private Building Area

In OCAD a record is displayed as follows when the corresponding object is selected:

Dataset: Dataset_1		
Link	Find	SQL query
ID	K	1
SIZE	S	724
OWNER	*	29
XCOOR	S	754870
YCOOR	S	233386
TYPE		Private Building Area

Dataset

To connect to a table OCAD uses a dataset. The dataset contains the link to the database, the name of the table, the name of the key field and information about other special fields. You can have several datasets for the same OCAD map.

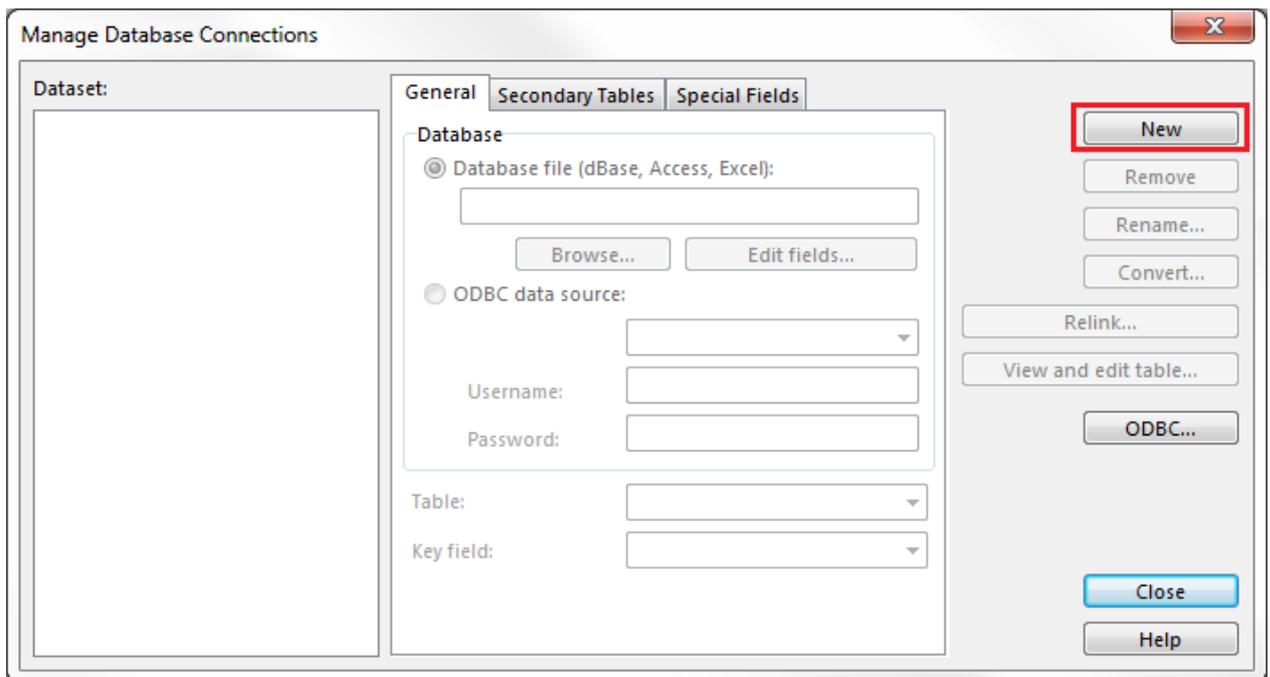
Manage Database Connections

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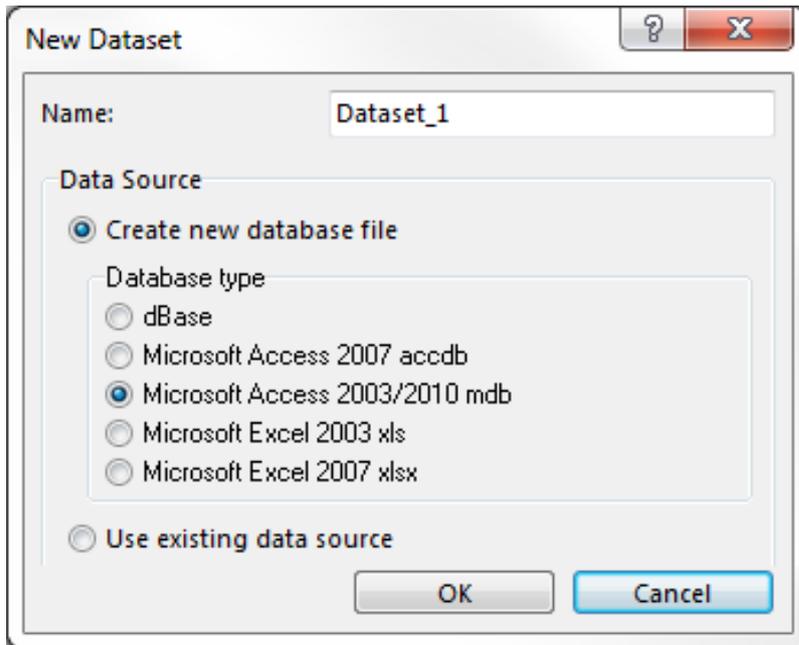
Create a New Database Connection

You have to create a dataset, which can be done by following these steps:

1. Choose the **Manage Database Connections** command in the **Database** menu.
2. The **Manage Database Connections** dialog opens.



3. Click the **New** button.



4. The **New Dataset** dialog appears. Choose the **Create new database file** option and select a **Database type** or choose the **Use existing datasource** option. Note that the **Access Database Engine** has to be installed if one of the **Microsoft Access** or **Microsoft Excel** database type options is chosen. See at **Map Information** in the **Map** menu if the Access Database Engine is installed.
5. If a new database file is created, the **Save Database File** dialog appears. If an existing datasource is used, the location of the datasource has to be specified by clicking the **Browse** button or connecting via ODBC in the **Manage Database Connections** dialog.
6. The dataset is created. Your OCAD map is now connected to the database.

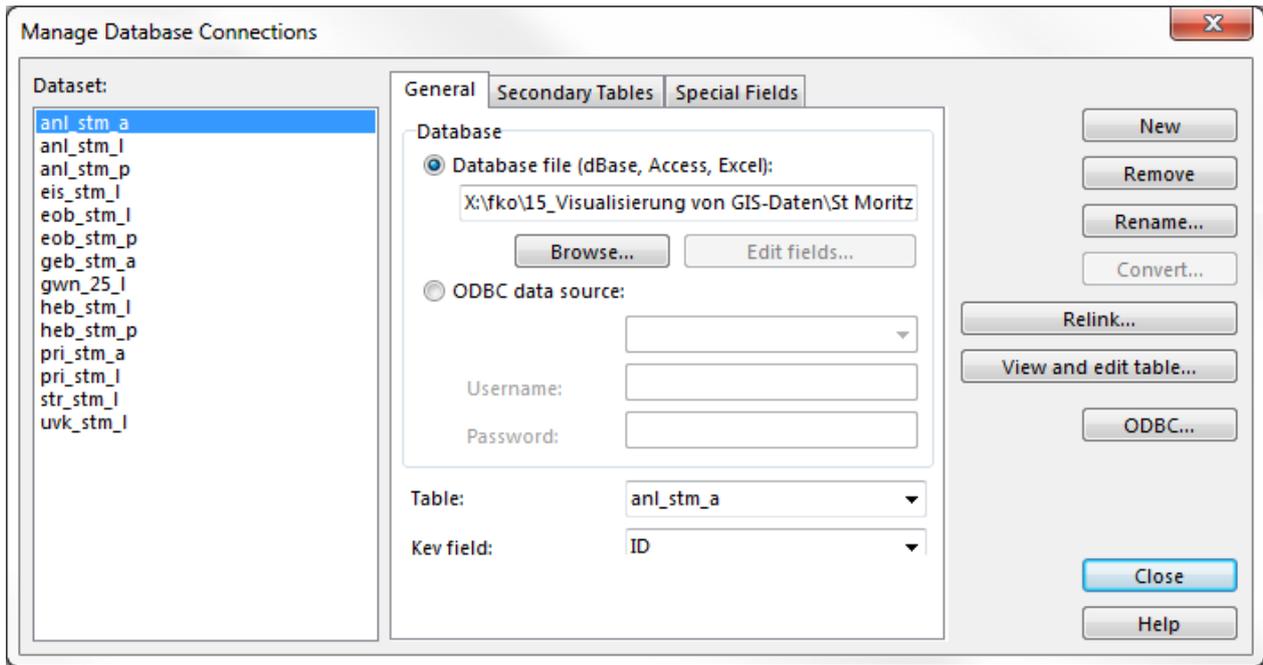
When a database connection is newly created, OCAD displays a dialog after closing the **Manage Database Connections** dialog. You can check two options in this dialog:

- **Delete Database Record when Deleting Object**
- **Create Database Record when Cutting Object**

General Settings for the Selected Dataset

The first of the three tabs in the **Manage Database Connections** dialog is about general settings of the currently selected dataset. In the first part the source of the database is given. It can be either a **Database file** or an **ODBC data source**. Click the **Edit Fields...** button to edit the fields of the selected dataset (only available for dBase format).

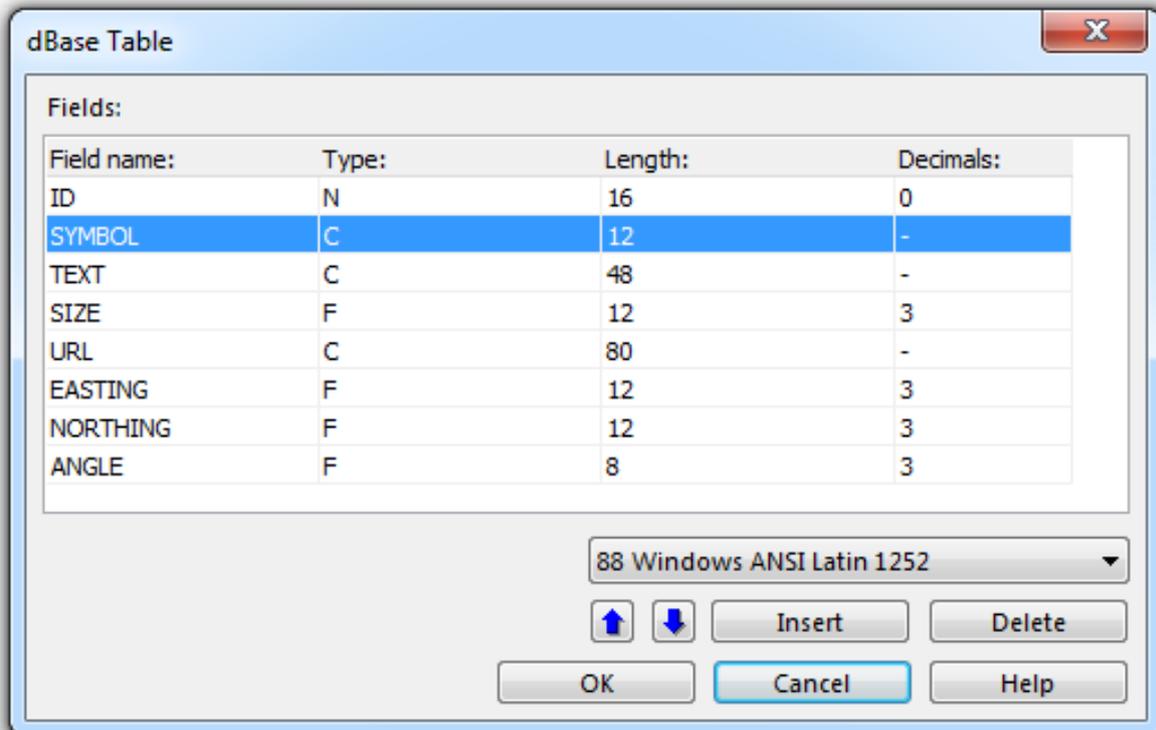
In the lower part of this tab, the **Table** which contains the desired information can be chosen. Define a **Key field** so that OCAD can identify the record. This field is mostly named **ID**.



dBase

When OCAD is connected with a dBase table there are additional functions available. In dBase each table is a file. It is possible to edit field settings within OCAD. If a dBase table is loaded, the **Edit fields** button is enabled in the **General** tab of the **Manage Database Connections** dialog. Click it to open the **dBase Table** dialog.

- 💡 OCAD can only link dBase files in the 32 bit version. In 64 bit version a warning appears when opening the ocd file. The warning can be switched on/off in the Preferences in the submenu **Warnings**.
- 💡 You can convert these databases to Microsoft Access in the **Manage Database Connections** dialog with convert or open this ocd file in OCAD in 32 bit version.



This dialog box lists the fields of the dBase table. Each field is displayed in a line. There are several functions available:

- **Name:** Enter here the name for the field. The name must start with a letter and may contain up to 10 letters and numbers. Letters are converted to capital letters.
- **Type:** Choose either **Character (C)**, **Number (N)** or **Float (F)** as a field type.
- **Length:** Enter here the number of characters for the field.
- **Decimals:** This field is only active if the data type is **Float**. Enter the number of decimals.
- **Move Up:** Click this icon to move the selected field one line upwards.
- **Move Down:** Click this icon to move the selected field one line downwards.
- **Insert:** Click this button to add a field. After adding the new field, the dBase table is restructured. Existing information is preserved.
- **Delete:** Click this button to delete the selected field.
- **Character encoding:** A character encoding type can be chosen in the corresponding dropdown list.

💡 If you do not have installed the **Borland Database Engine (BDE)**, only filenames with less than 8 characters are allowed (Example: 'test5678.dbf'). Click the **Map Information** command in the **Map** menu to see, if the **Borland Database Engine** is installed or not. It can be downloaded from the internet for free.

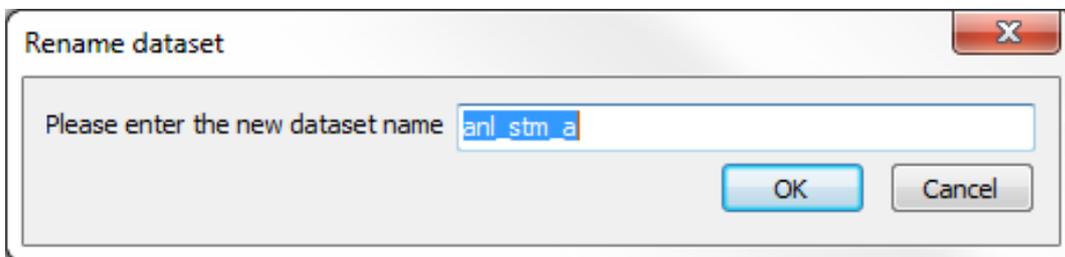
Remove

With this function, you can remove the selected dataset.

Rename

This function allows you to change the selected dataset name.

1. Choose your dataset, which you want to rename.
2. Click on the "Rename..." Button.

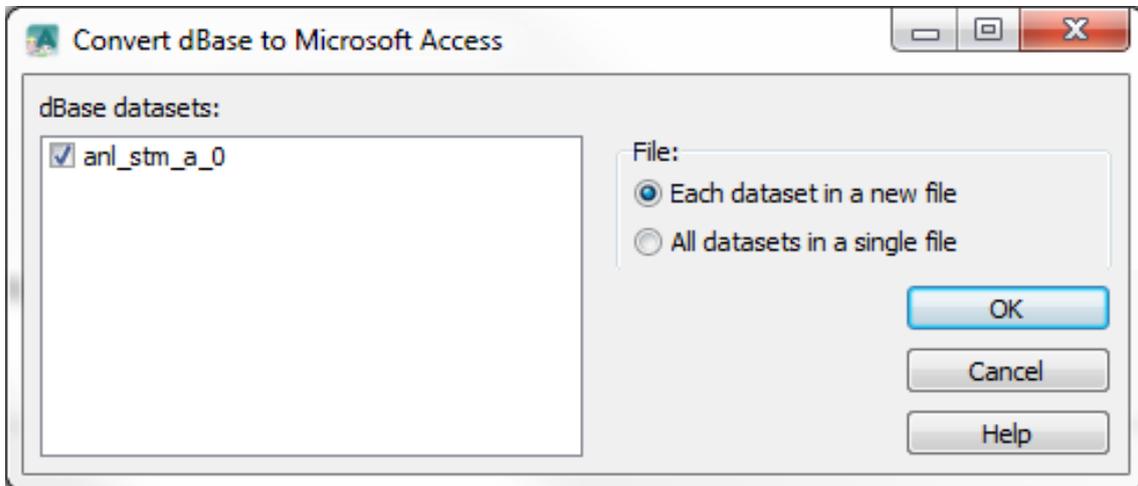


3. Enter the new dataset name.
4. Click on the "OK" Button.

Convert

It allows you to convert your datasets to Microsoft access either each as single file or all datasets in one file. This works only if your datasets are in dBase (*.dbf).

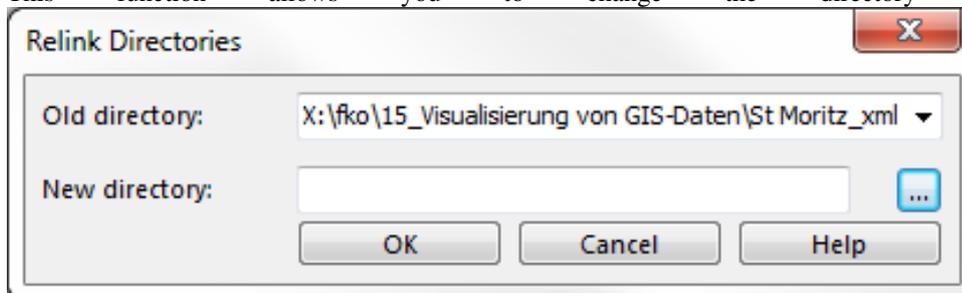
1. Get to **Manage Database Connections** in Database.
2. Click on the **"Convert"** Button and the Convert dBase to Microsoft Access dialog opens.



3. Pick your datasets, which shall get converted and if each dataset shall be in a new file or all datasets in a single file.
4. Click on "OK" to end the process.

Relink

This function allows you to change the directory of your datasets.



- All dataset paths from the **Old directory** are relinked to the **New directory**.
- Dataset paths that are different from the **Old directory** are *not* changed.

View and edit table

This function shows you the elements of the dataset and allows you to edit them.

ID	AREA	PERIMETER	OBJECTID	OBJECTORIG	OBJECTVAL	YEAROFCHAN
1	5783687048	0213399845	9069576	LK25	Z_BhArea	1991
2	0246263444	1519301814	10906530	LK25	Z_BhArea	1998
3	5985515915	4513404563	9069583	LK25	Z_BhArea	1991

ODBC

You can access to databases via **ODBC** ^[4] (Open Manage Database Connection). This is an interface to connect to all kind of databases.

Click the **ODBC** button in the **Manage Database Connections** dialog to create a new ODBC data source or to modify an existing data source. The **ODBC Data Source Administrator** is started. This is a Microsoft program and contains its own online help. Here are just some hints: Normally you create a new User DNS.

For a connection to an **Excel** file, you select the Excel driver and the Excel (*.xls) file.

For a connection to an **Access** database, you select the Access driver and the Access (*.mdb) file.

For a connection to a **flat file** database like dBase you do not select the dBase file. Instead you select the folder where the dBase file is.

Create and Edit Secondary Tables

Secondary tables are tables which are linked to a field in the primary table. This is especially useful, when additional information is added. For example, imagine a map with all real estates of a village. Then, each owner would get a number, which is stored in the primary table. The secondary table would be linked to this number and would contain all names, addresses and contact information of the owners. If an owner changed his contact information, you would update the changes in the secondary table, which would have an effect on all his real estates.

In OCAD, secondary tables can be managed in the **Secondary Tables** tab of the **Manage Database Connections** dialog. Click the **Add** button to add a new one. The **Secondary Table** dialog appears. First, you have to define the **Reference field in the primary table**, which is the field, the secondary table is linked to. Then, choose the secondary table which must be in the same dataset. Finally, define a **Key field** for the secondary table and click the **OK** button.

Click the **Edit** button to change the settings of the secondary table.

Click the **Remove** button to remove the selected secondary table.

Fields which are linked to a secondary table are indicated with an asterisk (see below).

Dataset: Dataset_1			
	Link	Find	SQL query
ID	K	1	
SIZE	S	724	
OWNER	*	29	
XCOORD	S	754870	
YCOORD	S	233386	
TYPE		Private Building Area	

Click the asterisk to display the secondary table:

Secondary Table - Address

ID	3
STREET	Sample Street
NUMBER	12
TEL	24
MOBILE	0041790000000
EMAIL	john@ocad.com
NAME	Sample
PRENAME	John

OK Cancel

Dataset: Dataset_1

	Link	Find	SQL query
ID	K	1	
SIZE	S	723	
OWNER	*	3	
XCOORD	S	754870	
YCOORD	S	233386	
TYPE		Private Building Area 1	
URL			

Define Special Fields

Open this tab to define special fields. Special fields are automatically updated in the database when a modification to the object in the map is made. However, it does not work in the other direction. If you change such a field in the table, the object is not updated.

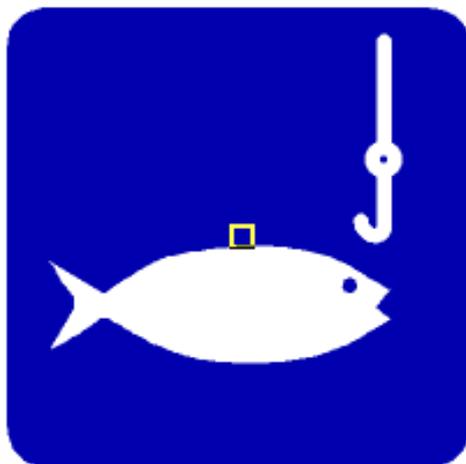
OCAD provides the following special fields:

- **Symbol field:** The symbol number of the object is automatically copied to the database field which you have chosen in the dropdown list. It is possible to let new symbols get assigned, when the field value is changed.
- **Assign new symbol when changing field value:** When changing the symbol number in the database field then OCAD change the symbol of the linked object.
 - Example:
 - Object is assigned to symbol number 900.002.



Dataset: Dataset_1		
ID	K	1
SYMBOL	S	900.002
TEXT	S	
SIZE	S	0
URL		
EASTING	S	14.28
NORTHING	S	5.87
ANGLE	S	0

- When changing the symbol number to 900.003 in the database box then OCAD changes the symbol.



Dataset: Dataset_1		
ID	K	1
SYMBOL	S	900.003
TEXT	S	
SIZE	S	0
URL		
EASTING	S	14.28
NORTHING	S	5.87
ANGLE	S	0

- **Text field:** For text and line text objects, the text of the objects is automatically copied to the database field which you have chosen in the dropdown list. For multiline text, only the first line is copied.
- **Size field:** The size of the object is automatically copied to the database field which you have chosen in the dropdown list. For line objects the length and for area objects the area is taken. Adjust the units in the corresponding fields as well as the number of decimals.
- **Easting:** For point objects the horizontal coordinate is copied to the chosen database field. For line, area and text objects it is the horizontal coordinate of the start point.

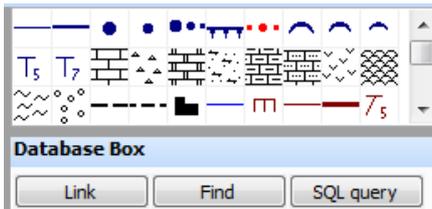
- **Nothing:** For point objects the vertical coordinate is copied to the chosen database field. For line, area and text objects it is the vertical coordinate of the start point.
- **Angle:** For point and text objects the angle is copied to the chosen database field.
- **Date:** The date of the object is automatically copied to the database field which you have chosen in the dropdown list. It's value get's adjusted, whenever you change the object.

Database Box

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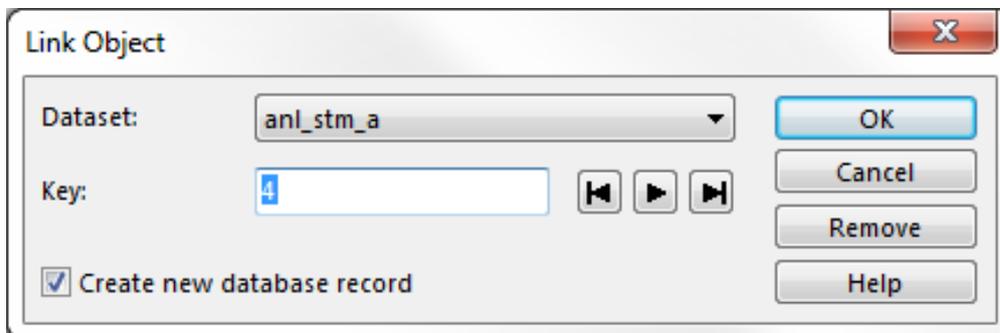
Link Object

When the map was connected to a database, the **Database Box** appears below the **Symbol Box**.



 The **Database Box** is shown right below the **Symbol Box** by default. Only one row of the **Symbol Box** is visible. To move the **Database Box** down, simply click and drag the grey bar between symbol and database box down. To link an object:

1. Select the object which you want to link to a record. (Note: To select an object, it must not be protected or hidden.)
2. Click the **Link** button in the **Database Box**.
3. The **Link Object** dialog appears.



4. Select the dataset which contains the desired record.
5. Enter a key. This number is used for the key field. Unless you make any changes, OCAD takes always the next free integer.
6. Check the **Create new record** option. If the object is to be linked to a record which already exists, uncheck this option and enter the key of the record.
7. Click the **OK** button.
8. The **Record** is shown in the **Database Box** now.

To remove a link:

1. Select the object which the link is to be removed from.
2. Click the **Link** button in the **Database Box**.
3. The **Link Object** dialog appears.
4. Click the **Remove** button.
5. The link is removed from the object but the record is not deleted from the table.

Learn how to link multiple objects to records in the **Create and Update Records** article.

Records in OCAD

This is how a record looks in the **Database Box**:

Dataset: Dataset_1		
Link Find SQL query		
ID	K	1
SIZE	S	724
OWNER	*	29
XCOORD	S	754870
YCOORD	S	233386
TYPE		Private Building Area
URL		http://www.ocad.com

The **Key field** is indicated with a **K** behind the field name. A **S** means, that this is a **Special Field**. A link to a **Secondary Table** is indicated with an asterisk. If no sign appears in this column, it is just a normal field.

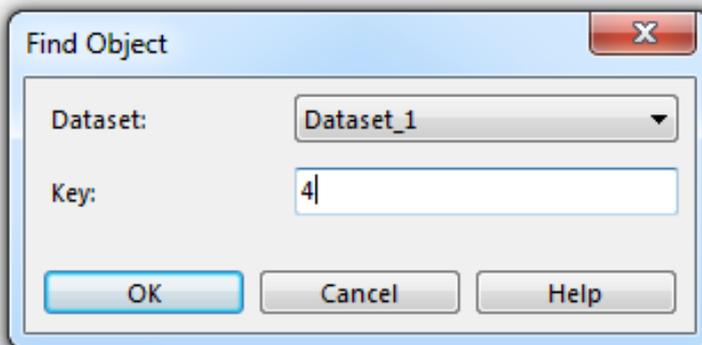
It is possible to open an URL directly from the **Database Box**. Press the **Ctrl** key and click the field. OCAD opens the URL in the web browser. This works for local files (for example a picture), too:

Dataset: Dataset_1		
Link Find SQL query		
ID	K	2
SIZE	S	702
OWNER	*	12
XCOORD	S	754900
YCOORD	S	233442
TYPE		School
URL		D:\tmp\School.JPG

OCAD opens the file in the default program.

Find Object

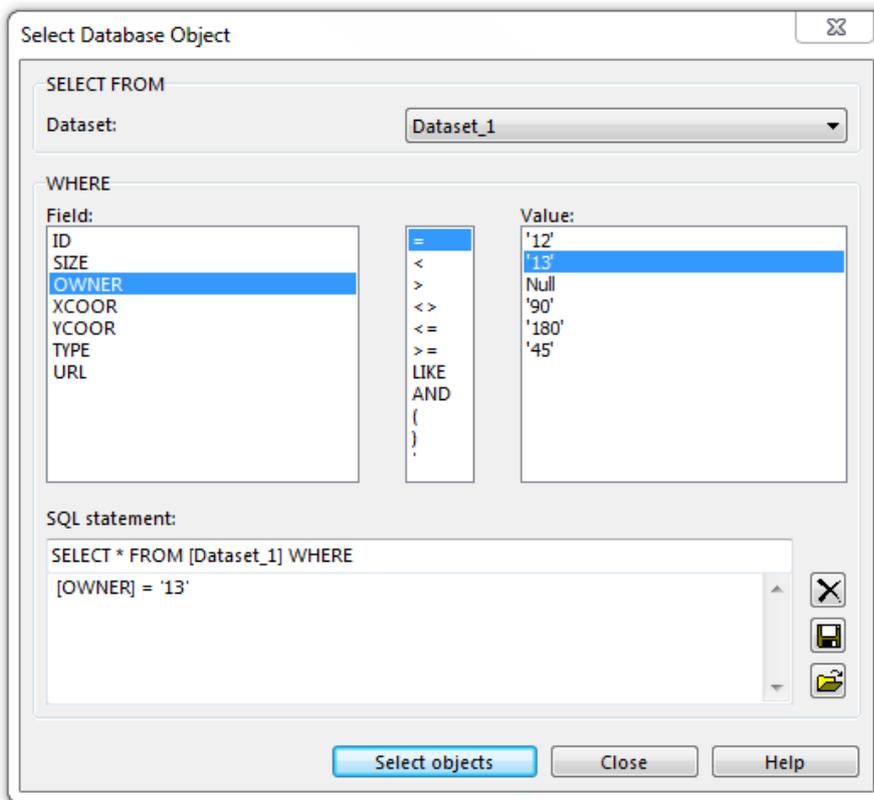
Find an object with help of the key by clicking the **Find** button in the **Database Box**. The **Find Object** dialog appears.



Select a dataset and enter the key. Click the **OK** button. OCAD will display the record in the **Dialog Box** and will move the view to the corresponding object. Furthermore, the object will be selected.

SQL Query

Click the **SQL Query** button to select database objects by a certain criteria. The **Select Database Object** dialog appears.



In the **SELECT FROM** part of the dialog, choose a dataset.

In the **WHERE** part you can give a condition:

Field: Choose a field of the selected dataset. When you double-click a field name it is added to the **SQL statement** box.

Operator: Select an operator. When you double-click an operator it is added to the **SQL statement** box.

Value: Select a Value. When you double-click a value it is added to the **SQL statement** box.

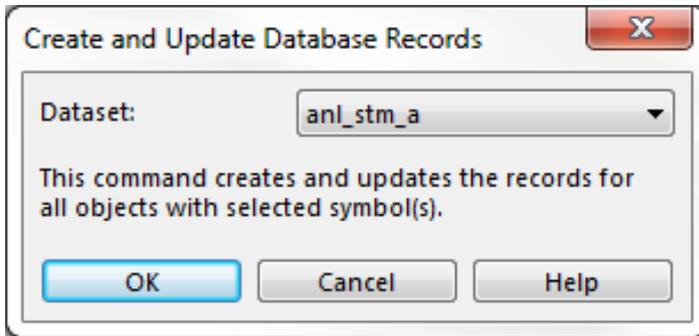
The **SQL statement** should always contain the components FIELD - OPERATOR - VALUE (example: Length > 430). An **SQL statement** can be **cleared**, **saved** or **loaded** by clicking the corresponding button to the right of the **SQL** statement box.

Click the **Select** button to start the database query. The found objects are selected and the corresponding records are displayed in a table.

Create and Update Database Records Mas

With this function, new records can be created or updated for all objects with the selected symbol:

1. Choose the **Create and Update Database Records** command in the **Database** menu.
2. The **Create and Update Database Records** dialog appears.



3. Select the **Dataset** the records are to be created in and click the **OK** button.
4. New records are created and linked to all objects with the selected symbol(s). The next free integers are used for the key fields. If they are already linked to records, the records are updated. **Special Fields** are updated automatically.

As an example, assume that you want to create an **OCAD Internet Map** with a street find function. All street names must be linked to the database. OCAD provides a simple way to create these links.

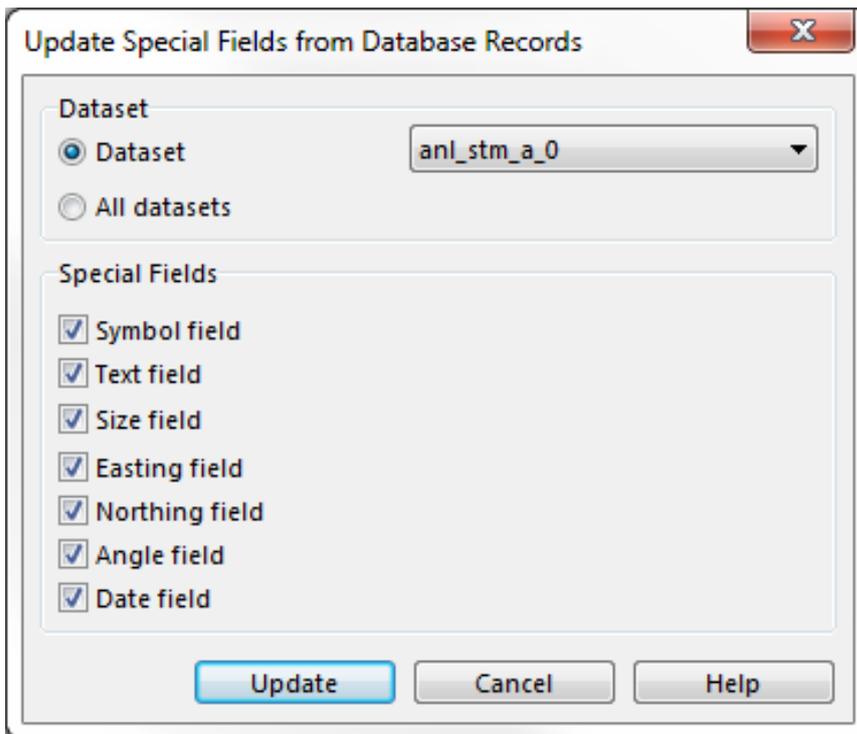
1. Make sure you have enabled the **Special Fields** for text.
2. Select all symbols which are used for street names.
3. Choose the **Create and Update Records** command from the **Database** menu.
4. Select the dataset and click **OK**.

Now all street names are linked to a record which contains the street name itself as a field.

Update Special Fields from Database Records Mas

Special Fields are only updated automatically when the linked object is edited. When objects are linked to a database and the database is edited with another program, the **Special Fields** are not updated, until you use the **Update Special Fields from Database Records** function in the **Database** menu. The same applies for fields which were edited manually in OCAD.

1. Choose in the **database** pannel **Update Special Fields from Database Records** and the dialog opens.

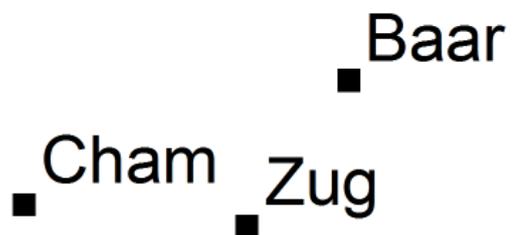


2. Select a dataset or choose the **All datasets** option.
3. Then, check all special fields you want to update and click the **Update** button.

Create Objects from Database Records

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	A	B	C	D
1	ID	NAME	XCOOR	YCOOR
2		1 Cham	677840	226000
3		2 Zug	681670	224700
4		3 Baar	682500	228000



With this option, objects can be created with location and text data from the database.

1. Select the symbol the new objects shall get. This must be a point or a text symbol.
2. Choose the **Create Objects from Database Records** command in the **Database** menu.
3. The **Create Objects from Database Records** dialog appears.

4. Select the dataset which contains the information the object is to be created with.

5. Select the field for the **Easting** and **Northing** which determines the position of the new object.

If the dataset is a line text object with two points (P1,P2), P1 has the coordinates of the Easting and Northing fields. The length of the line text is added to the P2 easting coordinate.

1. Choose between **m**, **km** and **deg** as a unit of measure.

2. If a text symbol was selected in the beginning, you have to select a text field. The content of the text field is used as the text of the OCAD object.

3. Enter a condition. This condition must be an **SQL statement**: FIELDNAME OPERATOR VALUE (Examples: SIZE > 500, City='Baar'). If this field is empty, all records in the table get an object on the map.

4. You can give a horizontal and vertical offset. This is useful for example when you want to import city names. First create a point object for each city, then create a text object with the city name with an offset, so that the name does not overlap with the point object.

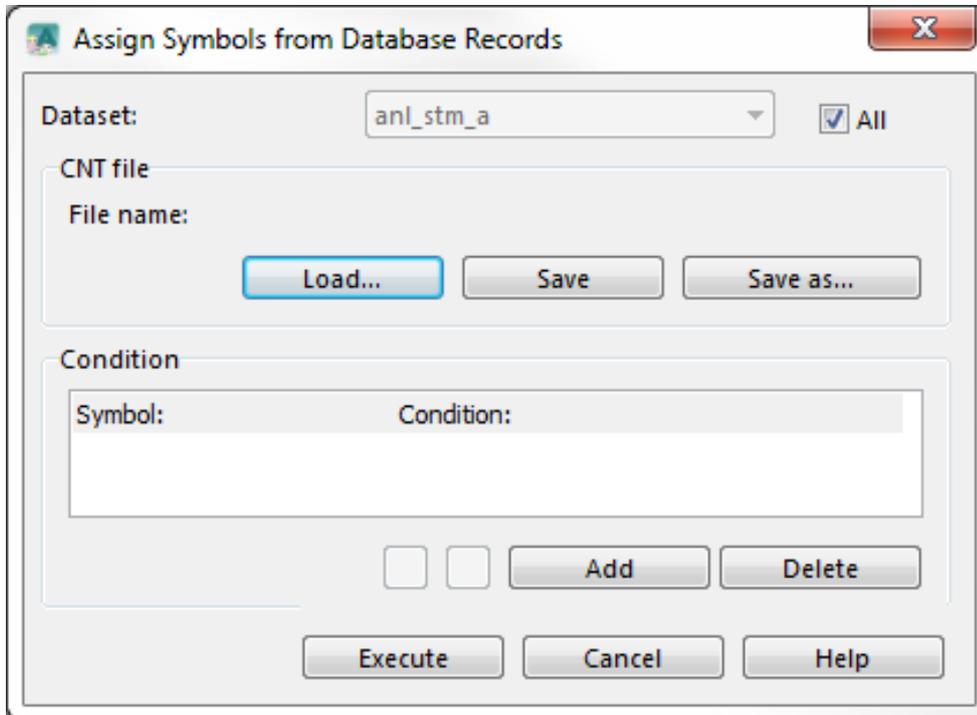
5. Finally, click the **OK** button.

Assign Symbols from Database Records

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After importing for example a Shape file the objects have no symbol assigned and appear as **Unsymbolized Objects**. With this command you can use the information in the database table to assign OCAD symbols to the objects.

Choose the **Assign Symbols from Database Records** command in the **Database** menu. The **Assign Symbols from Database Records** dialog appears.



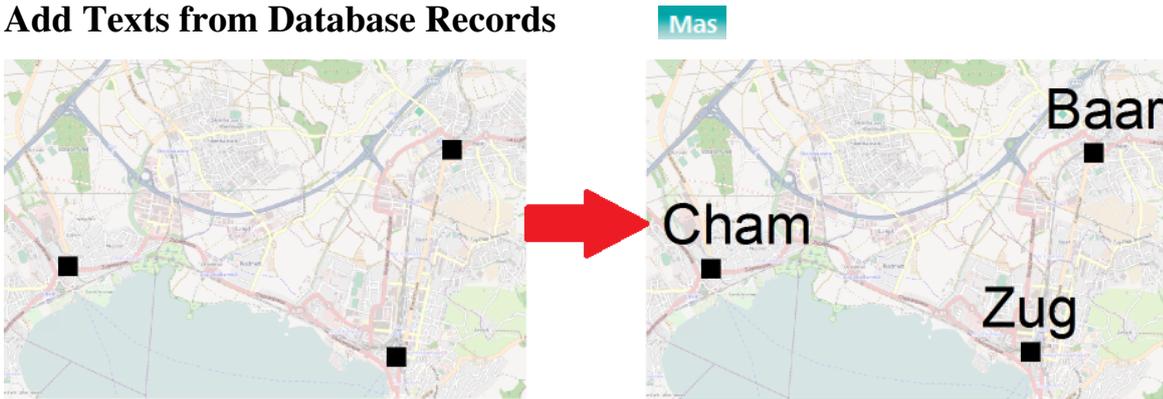
In this dialog box you can create a list of conditions. You can save the list to a condition file (*.cnt) for later use. You can load an existing condition file to modify or execute it. You have the following possibilities in the **Assign Symbols by Records** dialog:

- **Dataset:** Select here the dataset which should be used to assign symbols. Check **All** to execute the condition for all datasets.
- **Load:** Click this button to load an existing condition file (*.cnt).
- **Save:** Click this button to save the changes to a condition file (*.cnt).
- **Save as:** Click this button to save the changes to a different condition file (*.cnt).
- **Symbol:** Select here a symbol. For those objects the condition is true, the symbol number will be assigned.
- **Condition:** Enter the condition here. This must be a **SQL statement**: FIELDNAME OPERATOR VALUE (Example: TYPE = 'BUILDING').
- **Move up:** Click this button to move up the selected condition.
- **Move down:** Click this button to move down the selected condition.
- **Add:** Click this button to add a condition to the list.
- **Delete:** Click this button to delete the selected condition.
- **Execute:** Click this button to execute the assignment.

💡 **Assign Symbols from Database Records** might make slow progress for big datasets. There is an alternative for shape files by choosing the option **Use layer information from field** in the **Import Shape File** dialog and **Convert Imported Layers to Symbols...** afterwards.

💡 If there is an apostrophe in the value then you have to add an addition apostrophe. For example: *'RIVERNAME LIKE ' 'Avançon'*

Add Texts from Database Records



With this function it is possible to add a text which is written in a field of a record to an OCAD object.

1. Choose the **Add Texts from Database Records** command in the **Database** menu.
2. The **Add Texts from Database Records** dialog appears.

3. Choose a **Dataset** or check the **All** option to take all datasets into consideration.
4. Choose the field which contains the **Text** to be added.
It's possible to assign a parameter condition for the text.
5. Assign a text or line text symbol. If no symbol is assigned, the text appears as **Unsymbolized Objects**.
6. You can either replace the existing objects or add new objects.
7. Enter an **Object offset** if you want to have the text slightly displaced from the existing object.
8. Click the **OK** button.

Set Object Direction from Database Records

Mas

With this function the object direction can be defined by an angle (in degrees) from a field of the database.

Choose the **Define Object Directions from Database Records** command from the **Database** menu. A dialog appears. Choose a **Dataset** in the dropdown list or check the **All** option to take all datasets into consideration. The define the **Angle field**.

Mathematical function: Optionally you can define a mathematical function. To convert Radians to Degrees enter **180/3.14159*.

Click the **OK** button when finished.

The following things are rotated according to the angle field:

- Text objects
- Point objects
- The pattern of area objects

OCAD does not rotate line or line text objects!

Merge Objects from Database Records

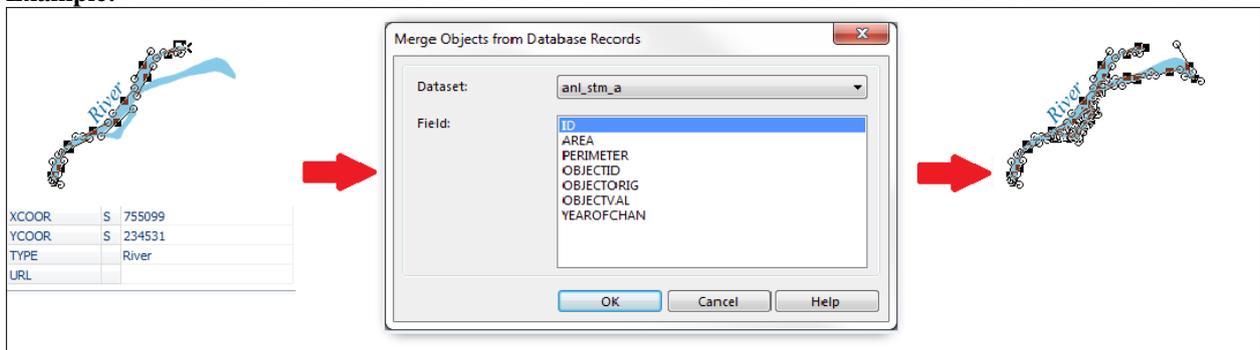
Mas

With this function, objects with the same value on a specified database field are merged. They also must have the same symbol.

Choose the **Merge Objects from Database Records** command in the **Database** menu. A dialog appears. Choose a **Dataset** or check the **All** option to take all datasets into consideration. Then choose the field with the value to be used for merging the objects. Click the **OK** button when finished.

The merged objects have to be linked again to the database.

Example:



You have different river segments on a map. Each river segment have the same river name. With the **Merge Objects from Database Records** function, they can easily be merged to one object.

Select Linked Objects Mas

Select Objects with Good Database Record Links

Choose this function in the **Database** menu to select all objects with a link to an existing record.

Select Objects with Broken Database Record Links

Choose this function in the **Database** menu to select all objects which are linked to a record but the record was not found.

Select Objects without Database Record Link from Selected Symbols

Choose this function in the **Database** menu to select all objects which are not linked to a record. OCAD checks only if a record link exists. OCAD does not check if the record link is broken or not. To check if the record links are broken choose **Select Objects with Broken Database Record Links**.

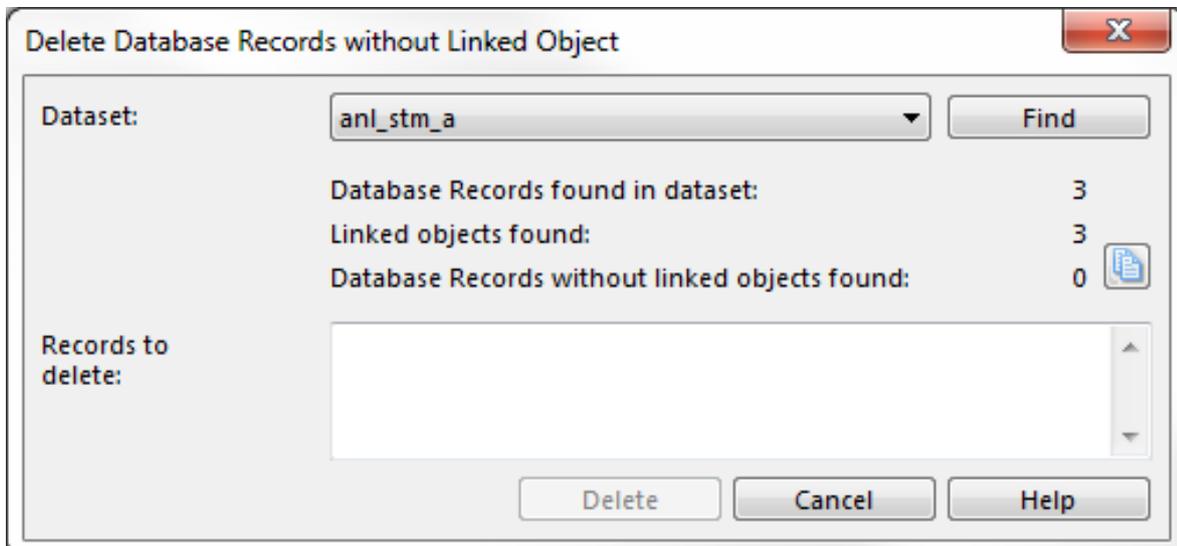
Select Objects Linked to the same Database Records

Choose this function in the **Database** menu. By choosing this function, multiple objects which link to the same record are selected.

Delete Database Records without Linked Object Mas

Use this function to delete unused database records for example after using the Part of Map function.

Choose **Delete Records without Linked Object** in the **Database** menu. The **Delete Records without Linked Object** dialog appears.



Select the dataset and click the **Find** button. OCAD checks for

- records in the selected dataset
- links to OCAD objects found. OCAD does not check if the objects also exists.
- records in the selected dataset without a link to an OCAD object

The ids of the records without a link to an OCAD object are shown in the *Records to delete* field. Please note that only the first 100 ids are shown. For the complete list of ids please use the *Copy report to Clipboard* function.

Click the **Copy report to Clipboard** icon to copy a list with the record ids to the Windows Clipboard. You can paste this list into a text document.

Example of this report:

```
*** Records found in dataset: (35982)
198
199
200
...

*** Linked objects found: (818)
199
18421
202
...

*** Records without linked objects found: (35165)
49535
49536
49537
...
```

Click the **Delete** button to delete the records according the list from the *Records to delete* field. The number of the deleted records are shown in the left status bar during the deleting process. Press the ESC key to abort this process.

 Please note that is not possible to undo this process. So please backup your database before starting the deleting process.

Options Mas

Delete Database Record when Deleting Object

If this option is checked in the **Database** menu, the corresponding record is deleted when you delete a linked object in OCAD.

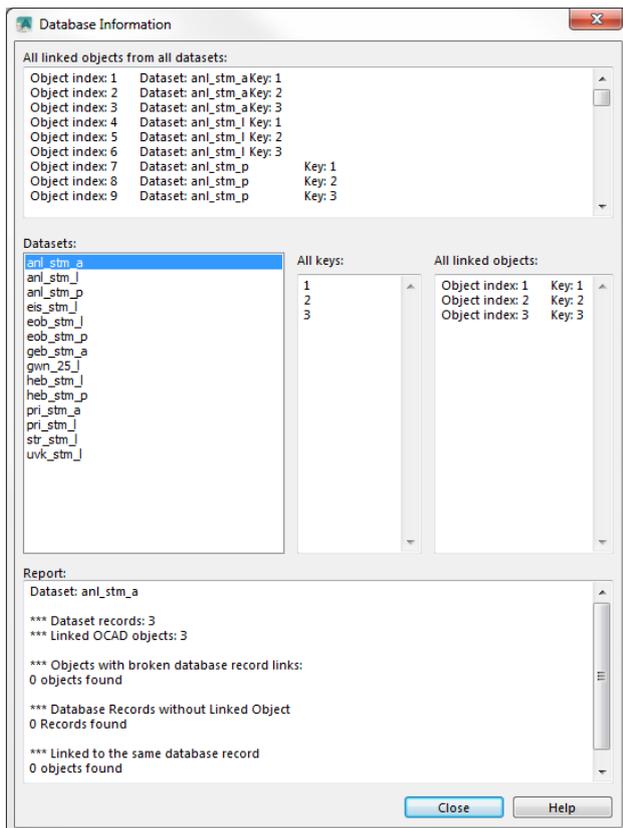
Create Database Record when Cutting Object

If this option is checked in the **Database** menu, a second database record is created when a linked object is cut.

Database Information Mas

Allows you to see all the information about each dataset.

OCAD checks for invalid database links and shows these in the **Report** field when opening the dialog.



All linked objects from all datasets: Shows all objects which have link to a database records. OCAD does not check if this record really exists (broken database record links).

Datasets: Shows all datasets. Click on a dataset to load the data for this dataset.

All keys in database: Shows all keys from the chosen dataset. This list shows also keys from database records which are not linked with OCAD objects.

All linked objects: Shows all objects which are linked with the chosen dataset. OCAD does not check if this record really exists (broken database record links).

Report: Shows a report about the chosen dataset.

Database Compatibility

OCAD checks the compatibility of the dataset. OCAD 2019 exists in a 32 bit and 64 bit version.

Microsoft Excel/Access

OCAD 64 bit version cannot connect to Microsoft Excel/Access if the 32 bit version of Microsoft Access Database Engine is installed. The same with 64 bit Microsoft Access Database Engine and OCAD 32 bit version.

In this case use the same OCAD version as installed Microsoft Access Database Engine.



You can switch on/off this warning in the Preferences in the submenu **Warnings**.

[Back to Main Page](#)

References

- [1] <http://en.wikipedia.org/wiki/DBase>
 - [2] http://en.wikipedia.org/wiki/Microsoft_Access
 - [3] http://en.wikipedia.org/wiki/Microsoft_Excel
 - [4] <http://en.wikipedia.org/wiki/ODBC>
-

Menu Thematic Map

Thematic Map

OCAD ThematicMapper has been developed in a joint project of the OCAD Inc. and the Institute of Cartography and Geoinformation at ETH Zurich. As a core of the new application a **step-by-step wizard guides - considering established cartographic rules - through the process of creating thematic maps**. The wizard supports the user from the data analysis to the thematic symbolization and visualization. The OCAD ThematicMapper opens the OCAD software for the broad scope of thematic statistical maps ^[1].

OCAD ThematicMapper supports **numerous visualization methods for point-like, linear and area-based representations** like proportional symbols, lines and arrows as well as choropleths ^[2] or various types of charts such as bar charts, pie charts ^[3] and wing charts. These can be divided into groups for example, to make comparable the consumption of different energy sources of two years.

Create a Thematic Map



You can get access to the **Thematic Map Wizard** by opening a **New File** with choosing **Thematic Map** as a **map type** (this is done silently in the OCAD ThematicMapper edition) or by clicking **Create with Wizard...** in the **Thematic Map** menu. It opens the *Welcome page* of the wizard with an overview of the **six steps** to create a thematic map.

Requirements

OCAD ThematicMapper module requires the **Borland Database Engine** ^[4] and the **Microsoft Access Database Engine** ^[4]. See also system requirements.

Welcome Page

Add a new theme

Choose the **Add new theme to the map** option and enter a name for the theme (ex. population change). It is possible to load the wizard settings with the **load settings from xml file** option if you have already created thematic maps with the Thematic Map Wizard. The xml file can be chosen with the **...** button.



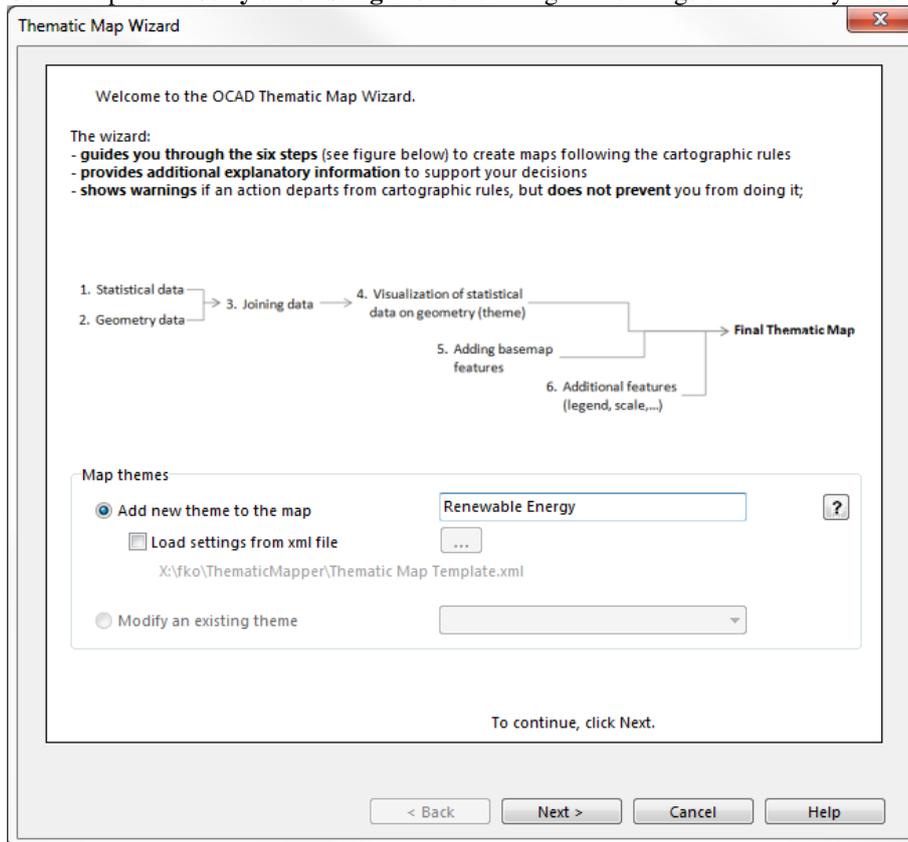
A map can have more than one theme (ex. choropleths + proportional symbols).



The next button is only active if a theme name is set.

Modify an existing theme

Use the option **Modify an existing theme** to change the settings of an already existing theme in your map file.



Step 1 - Statistical Data

1. Load statistical data from a file (*.xls, *.csv, *.dbf or *.txt).



The statistical data should be complete and accurate.



Select a table (sheet) if an Excel file is loaded.



It's possible to view the table with the lense icon.



The statistical data should have a common field with the attribute table of the geometry data, in order to be joined later.

2. Select attributes to visualize either by double click, drag and drop or selecting them and pressing the [>]-button.



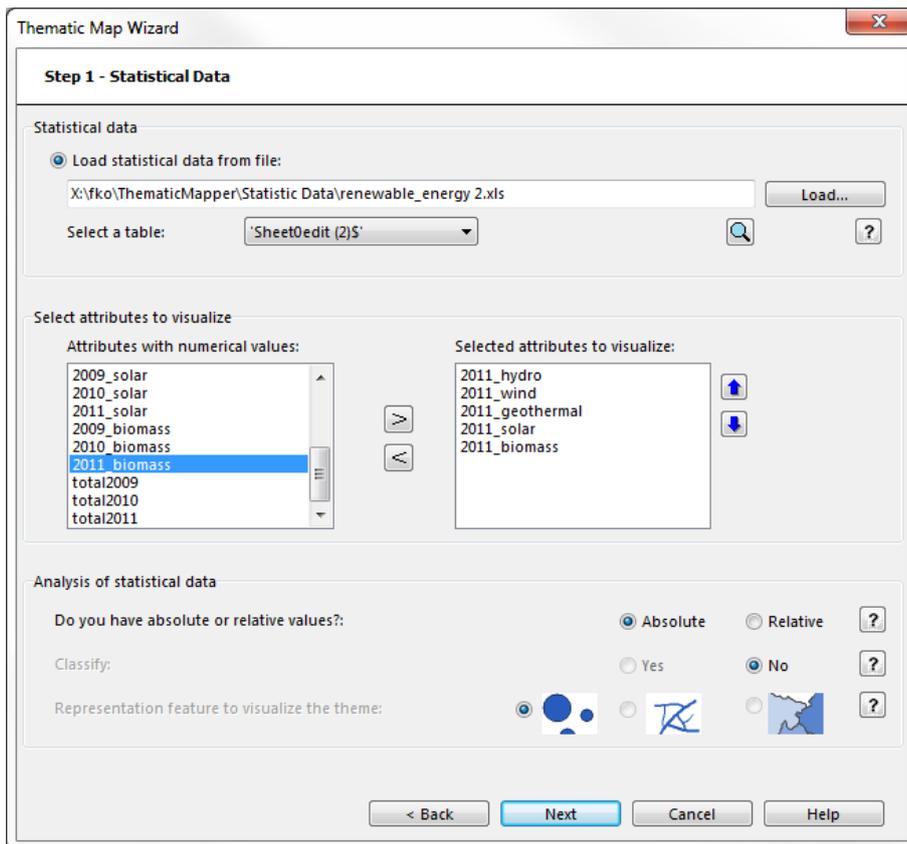
Remove attributes from the selection by double click (in the box *Selected attributes to visualize:*), drag and drop or selecting them and pressing the [<]-button.

3. Define if the attribute values are *absolute* or *relative* and if they shall be *classified* and choose the *representation feature* to visualize the theme.



The *Classify* and the *representation feature* option are disabled if more than one attribute is chosen.

4. Click the **Next** button to go on with Step 2.



Step 2 - Geometry

1. Load the geometry data from shape (*.shp) file.

💡 It's possible get a data preview. The *Geometry Data Viewer* is opened by clicking on the 🔍 lense icon. Switch between the *Geometry* and the 'attribute(s) tab to view the map or the attribute table.

2. Set map scale and map size.

💡 The map scale and the map size are linked by default. Click the **Keep ratio between map scale and map size**  button to disable the ratio fixation.

3. Select a coordinate system.

💡 By default the coordinate system of the template file (loaded during the *New File* process) is set.

The template file is loaded from: OCAD program path -> *symbols\Thematic Map.ocd*. Select another one by clicking on the **Choose** button.

1. Click the **Next** button to go on with Step 3.

Thematic Map Wizard

Step 2 - Geometry

Geometry data
Based on the representation feature selected in step 1, geometry data with **point or polygon features** should be

Load geometry data from file

X:\fko\ThematicMapper\Geometry\europa.shp

Attribute table: europe.dbf

Easting extent: -2781973 .. 4868105 (7650 km)

Northing extent: 3548449 .. 11917287 (8369 km)

Map scale

Map scale 1 : 10'000'000

Map size

Width 765 mm

Height 837 mm

Preserve width/height ratio

Coordinate system

Pseudo-Mercator

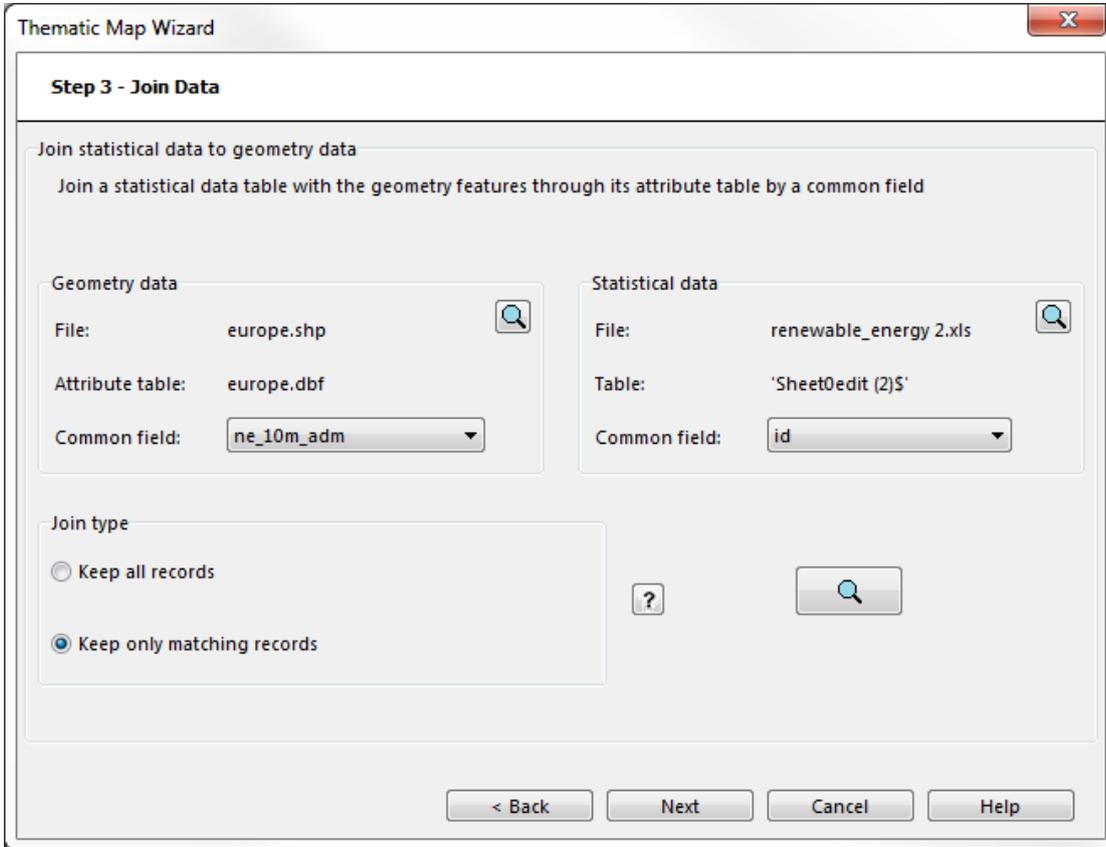
< Back Cancel Help

Step 3 - Join Data

1. Choose a common field in both tables.

 Click on the  lense icons to view the tables, if you are not sure which fields have common values.

2. Decide between the options **Keep all records** (Left outer join) or **Keep matching records** (inner join).
3. Click the **Next** button to go on with step 4.



Step 4 - Visualization of map's theme

Step 4.1: Choose a Visualization Method

1. Choose a visualization method that is suitable for the chosen data. The wizard suggests the most appropriate method(s) according to the choices done in **Step 1**.
2. Click the **Next** button to go on with step 4.

Step 4.1.1: Select the Chart Properties (Only for charts)

1. **Grouping:** Choose if the attributes shall be divided into groups.

 The grouping option is only enabled if the number of selected attributes allows to create groups with a constant number of attributes.

Select the **Divide attributes to several groups** option if they attributes should be divided to several groups.

Click on the ... button to open the **Define groups with drag and drop** window.

Select a number of groups and divide the attributes to the corresponding number of columns. Each column represents one group. Keep attention that have the same order of attributes.

Enter the group names in the first row.

Click **Close** to hide the **Define groups with drag and drop** window.

2. Proportionality

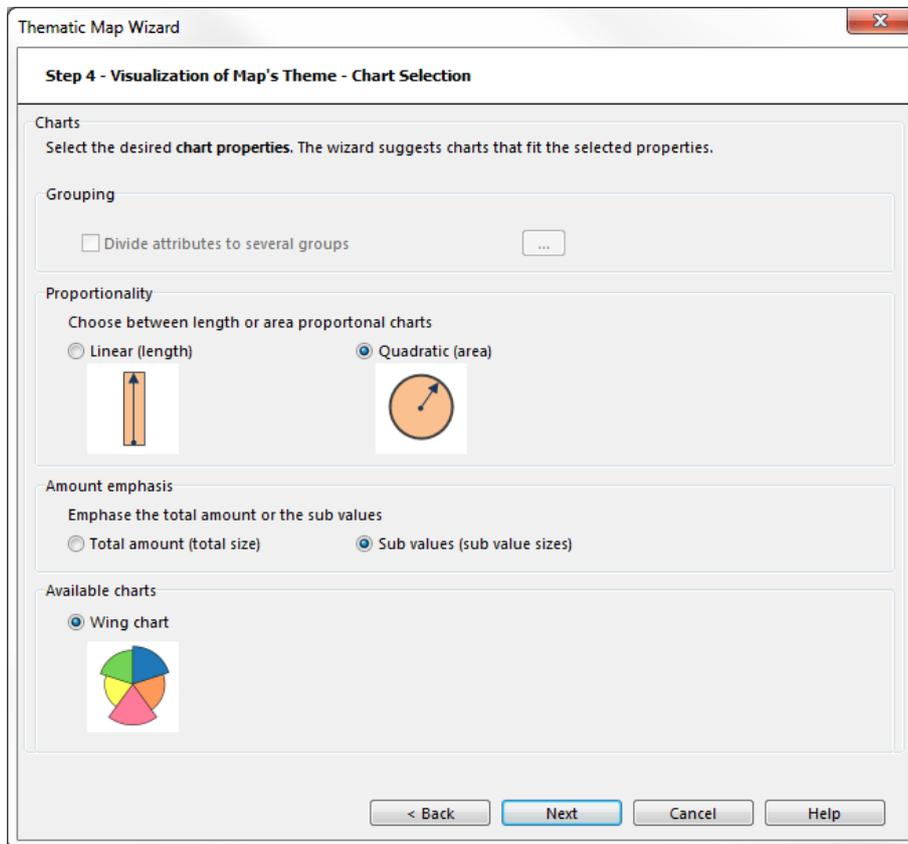
Choose if the chart size should be *Linear (length)* or *Quadratic (area)* proportional to the data values.

3. Amount emphasis

Choose between emphasizing the *Total amount (total size)* or the *Sub values (sub value sizes)*.

4. Choose one of the available charts.

5. Click the **Next** button to go on.



Step 4.2: Visualization Properties



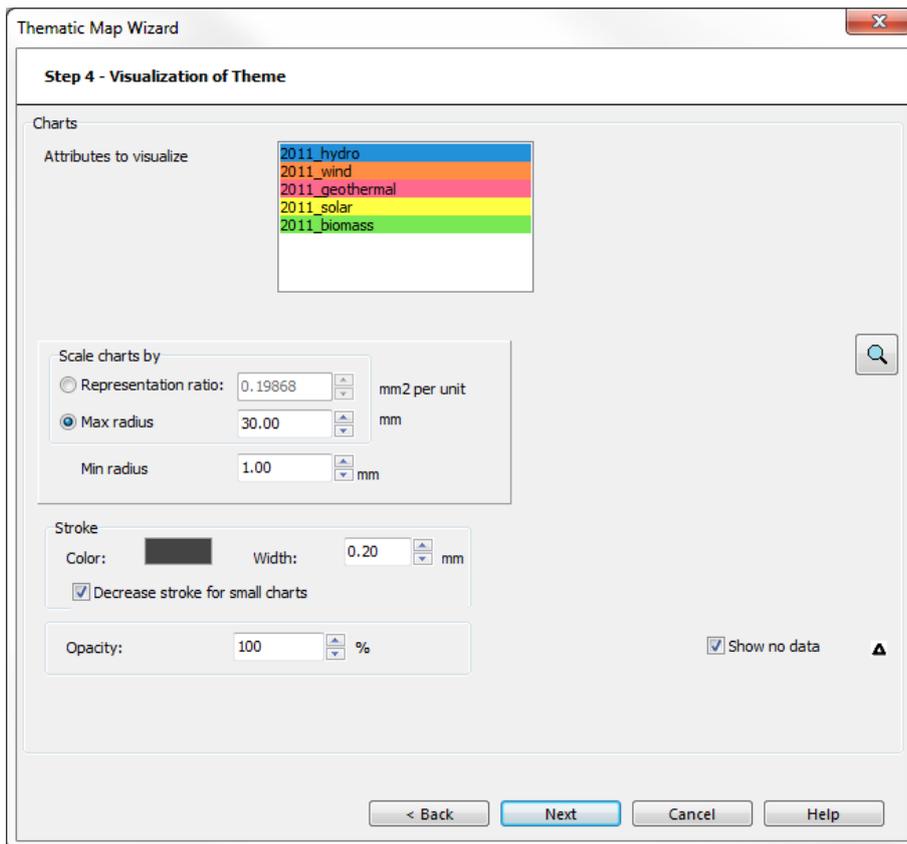
The available visualization properties depend from the visualization method chosen in step 4.1.



Click the  lense icon to show/hide the preview on the right side of the wizard.

Proportional Symbols

1. Choose a **Visualization type** like **Proportional bar**, **Proportional circle** or **Proportional square**.
2. Define the symbol color by double-clicking on the attribute(s). The color picker opens and allows to define the color either with CMYK or RGB.
3. Scale the symbol size by a **Representation ratio** or a **Maximum size** (height, radius, side length etc.). Define also a minimum size (height, radius etc.)
 1. Define a **Bar width** for the visualization type *Proportional bar*.
4. Define the **Stroke color** and **Stroke width** and if the stroke width shall **decrease** for smaller symbols.
5. Define the **Opacity** in a value range between 0 and 100%.
6. Decide if **0 values** and **no data** shall be shown.
7. Click the **Next** button to go on.



Step 5 - Visualization of Basemap

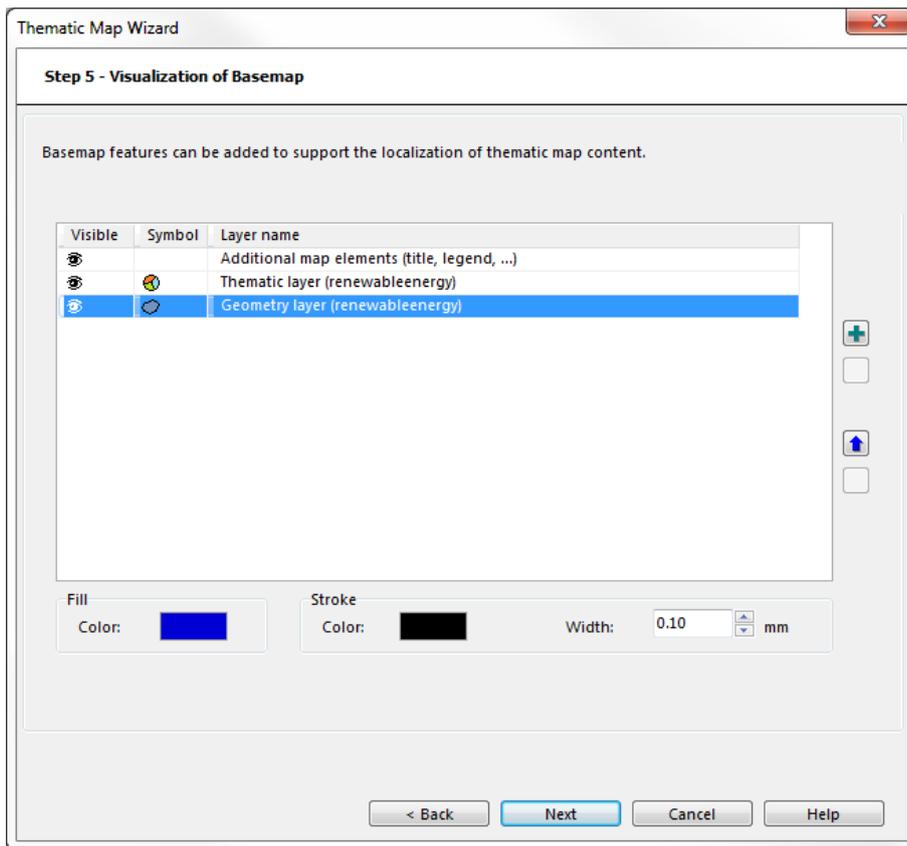
The different layers are listed in the table.

Additional basemap layers can be added  and layers can also be removed . Make sure that the basemap features are suitable for this scale.

The layer order can be changed by clicking the  and  button.

Define the visualization properties (fill color, stroke color and width) for the *geometry layer* and the *basemap layer(s)*.

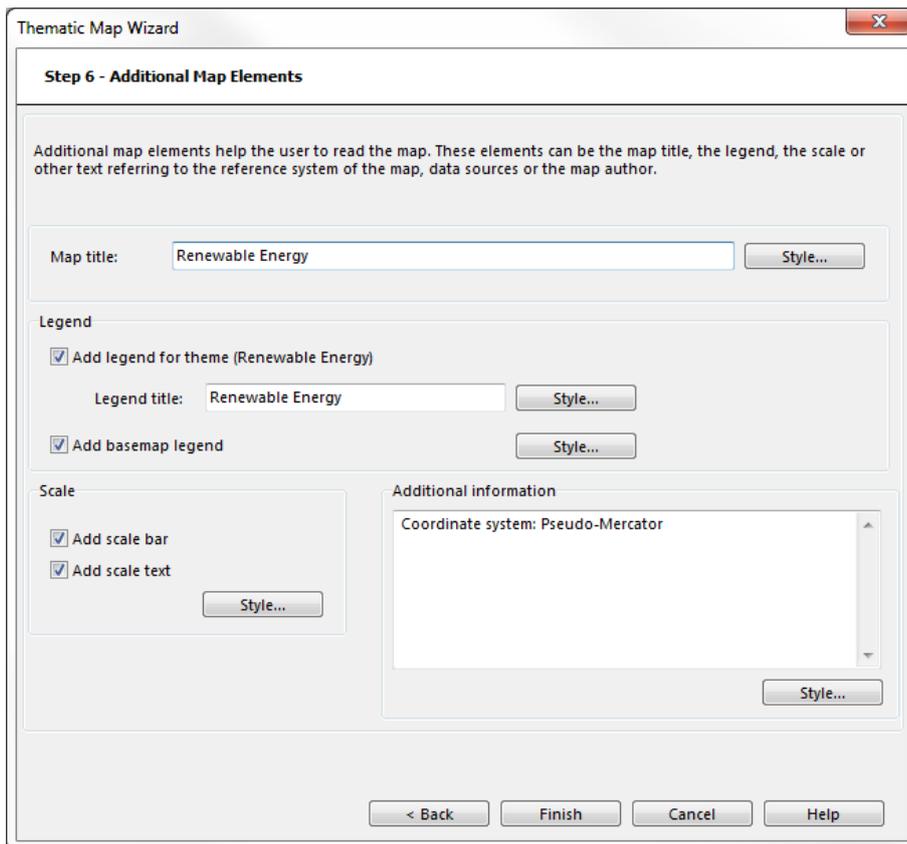
Click the **Next** button to go on.



Step 6 - Additional Map Elements

Additional map elements help the user to read the map. The elements can be moved and edited directly on the map.

1. Enter a **Map title** and define its style.
2. Choose if a **Legend for the theme** shall be added, define its title and the style.
3. Choose if a **Basemap legend** shall be added.
4. Choose if a **Scale bar** and/ or a **Scale text** shall be added.
5. Decide if you want to add any **Additional text information** by typing the text into the box.
6. Click on the **Finish** button to create the final map.



Create Thematic Maps with XML Script

OCAD XML scripts functionality does also support to **create thematic maps with xml script**

Thematic Map Samples

There are several sample maps available in the OCAD program subfolder *Samples\ThematicMapper* (usually *C:\Program Files\OCAD\OCAD 20xx\Samples\ThematicMapper*) as well as statistic data samples, geometry data samples and XML script samples.

💡 Open the *sample maps* by using **Open Sample Map...** in the **File** menu.

💡 Execute the *XML scripts* by using **Execute XML Script** in the **File** menu.

Thematic Map Tutorials

- Visualisierung von Einwohnerdaten mit proportionalen Symbolen: Download as a PDF file ^[5]. (Visualization of population data with proportional symbols)
- Visualisierung von Migrationsdaten mit proportionalen Pfeilen: Download as a PDF file ^[6]. (Visualization of migration data with proportional arrows)
- Visualisierung von Daten zur Produktion erneuerbarer Energie mit unterteilten Flügeldiagrammen: Download as a PDF file ^[7]. (Visualization of renewable energy production data with divided wing charts)

Thematic Map Videos

Link to **Youtube Video Playlist** ^[8]

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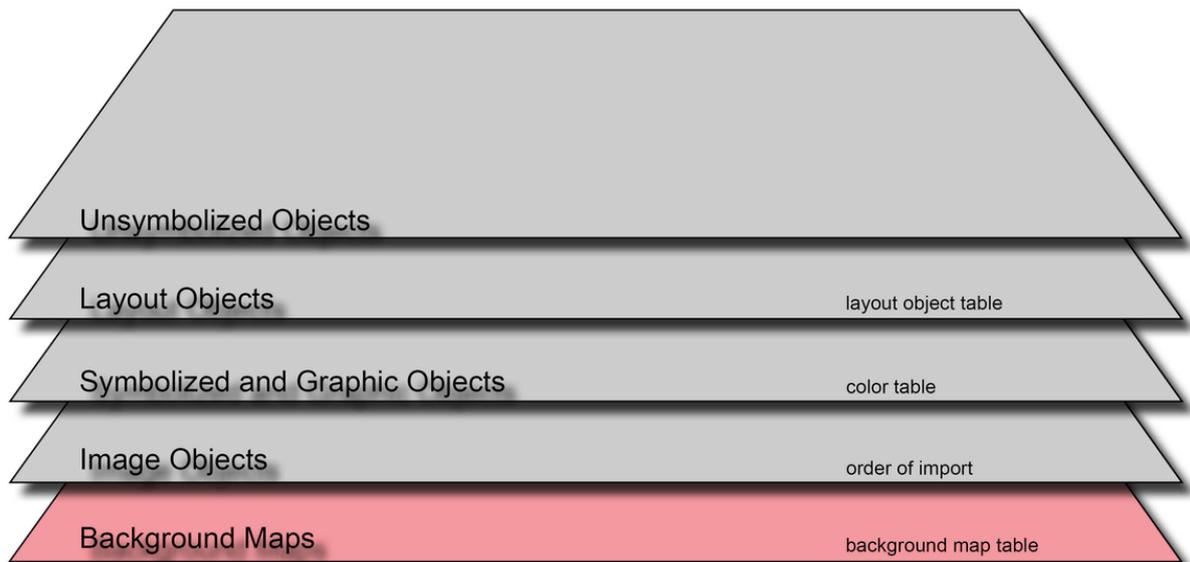
References

- [1] https://en.wikipedia.org/wiki/Thematic_map
 - [2] https://en.wikipedia.org/wiki/Choropleth_map
 - [3] https://en.wikipedia.org/wiki/Pie_chart
 - [4] <http://www.ocad.com/download/bde.exe>
 - [5] http://ocad.com/tutorials/Tutorial_ThematicMapper_Visualisierung_von_Einwohnerdaten.pdf
 - [6] http://ocad.com/tutorials/Tutorial_ThematicMapper_Visualisierung_Migrationsdaten.pdf
 - [7] http://ocad.com/tutorials/Tutorial_ThematicMapper_Visualisierung_Produktion_erneuerbarer_Energie.pdf
 - [8] <https://www.youtube.com/playlist?list=PLRHQMImIeqEwoZ4g5IsWS9FRfg7VcAME>
-

Menu Background Map

Background Map

Background map refers to a raster map or OCAD file used as a background. It serves as a drawing template or background image. Examples include scanned draft maps, satellite pictures, orthophotos or relief shadings. OCAD cannot be used to edit background maps.



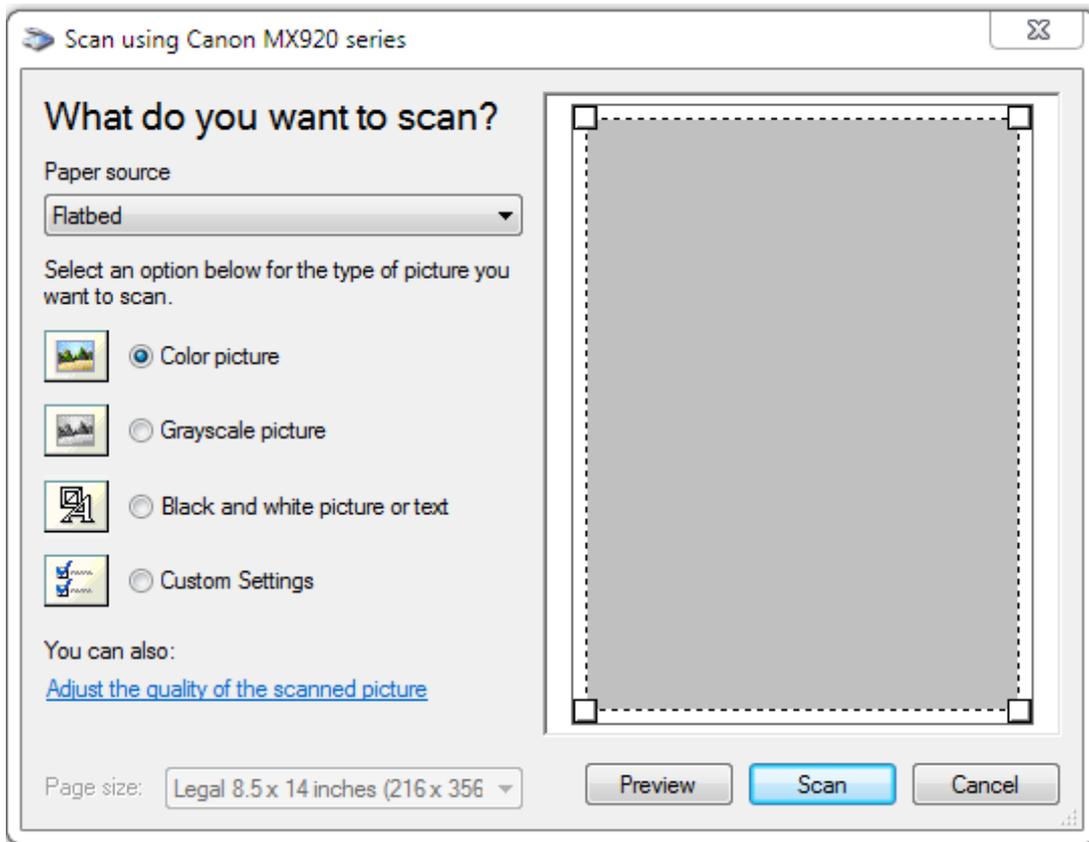
Scanning a Background Map



It is recommendable to keep with the following two things:

- **Use a grid:** In most cases you cannot scan the entire draft map (the background map). You are either limited by Windows (which limits the maximum size of background maps), by the available memory, or by the size of the scanner (A4). In these cases, it is strongly recommended that you should draw a grid on the draft map. In many cases there is already a kilometer grid which can be used. If this does not exist, you should draw a precise grid of vertical and horizontal lines (perhaps at a distance of 10 cm). Then the scanned pieces can be easily joined together in OCAD.
- **Resolution:** It is recommendable to scan the map with 300 dpi.

OCAD supports only WIA compatible scanners. Click **Scan** in the **Background map** menu. The Scan dialog opens.



Choose the extent and click **Scan**. You have the option to save file in jpg, bmp or png file format. Then the scanned background map is opened.

Open a Background Map



Choose this command from the **Background Map** menu to open a background map which is displayed as a background picture on the screen. OCAD can open *BMP, GIF, PDF, PNG, TIFF, JPEG, JPG2000* and *TIFF* files. In addition, OCAD maps (*.ocd) or **Encrypted OCAD maps** (*.eocd) can be loaded as a background map, too. The **Open Background map** dialog appears. Choose a file and click the **Open** button.

Note: In the **OCAD Starter Edition**, **OCAD** (.ocd) and **Encrypted OCAD Maps** (.eocd) are only available to use as a background map in course setting projects.

💡 OCAD 2019 can load only encrypted OCAD files exported from OCAD 2019. Encrypted OCAD 10, OCAD 11 or OCAD 12 files are not compatible with OCAD 2019.

💡 OCAD loads the background map hidden when pressing the **Shift** key while clicking the **Open** menu item.

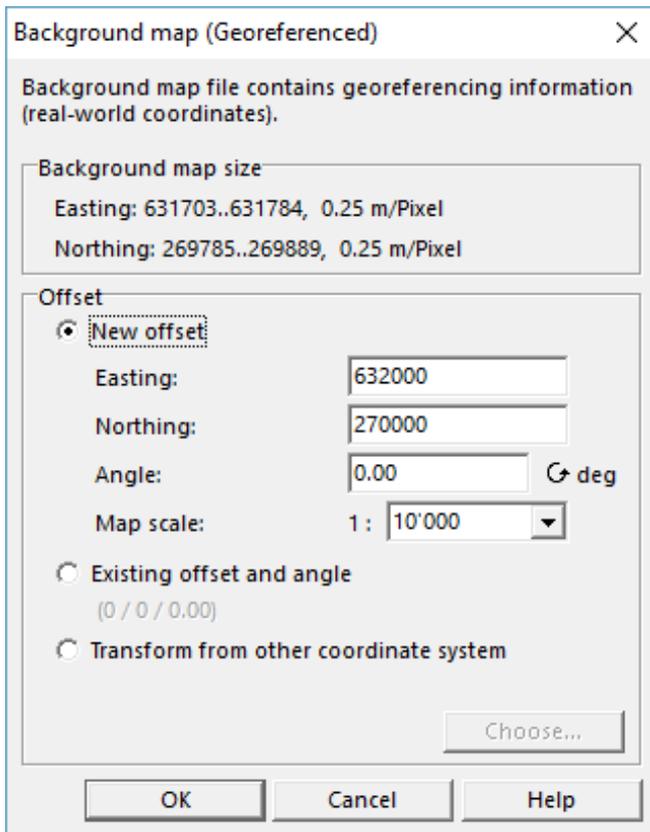
Use a Georeferenced Raster Map as Background Map

If your map is georeferenced and you want to use a georeferenced map as background map:

1. Select the **Open** command in the **Background Map** menu. The **Background Map** dialog box opens.
2. Select a file and click the **Open** button.
3. The **Background Map (Georeferenced)** dialog appears and shows the georeferencing of the selected map.
 - Select the **New Offset** option to create a new map offset. The center of the map will be moved to the offset you typed in the **Eastings** and **Northing Offset** fields and rotated with the angle entered in the **Angle** field. In addition, the scale can be changed.
 - Select the **Existing Offset and Angle** option to leave the map as it is. The background map will be placed at the correct position with reference to the existing map offset and angle. If you choose this option, the

background map may be placed outside the map range. In this case, an error message will appear.

- Select the **Transform from other coordinate system** option to transform the background map from another coordinate system when opening the aerial image.



4. Click the **OK** button to finish.

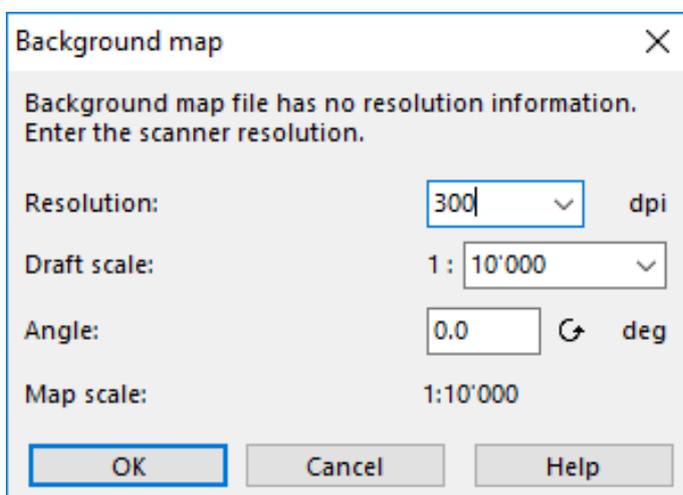


- Click the **Entire Map** button to display the entire background map.
- The **Draft Mode** option in the **View** menu can be used to dim map objects and the background map itself.
- Ocad files can also be loaded as background maps.

Use a Non Georeferenced Raster Map as Background Map

If your map is georeferenced and you want to load a non-georeferenced map:

1. Select the **Open** command in the **Background Map** menu. The Background Map dialog box opens.
2. Select a file and click the **Open** button.
3. Enter a resolution for the background map (if a raster map is loaded) and click the **OK** button.

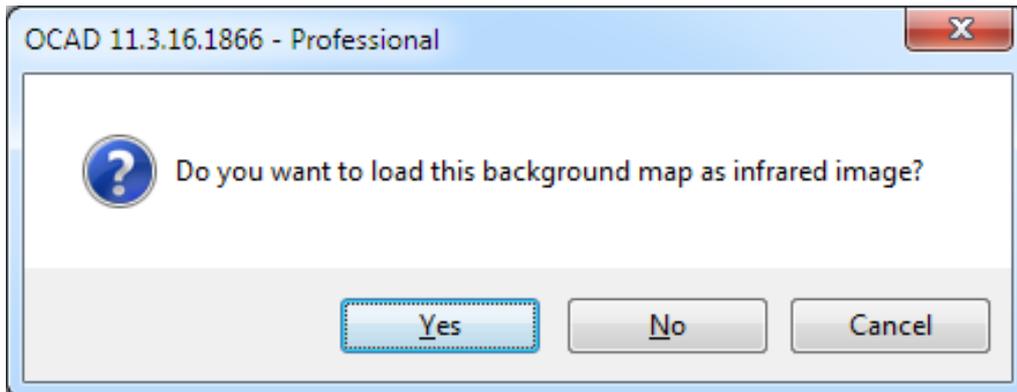


The background map is displayed at the center of the current drawing area. The raster map (background map) now needs to be adjusted with the map (**Adjust a Background Map**). In other words, it needs to be referenced with the map coordinate system.

 You can scan a raster map to use it as a background map directly in Ocad: Select **Scan** in the **Background Map** menu and then choose the **Acquire** submenu. Your scanner's dialog box will open (**Scanning a Background Map**).

Infrared Images

OCAD supports 32-bit infrared tiff images. When opening an infrared image Ocad shows the following message box:



Click **Yes** to show the background map as false-color image using the infrared, red and green spectral bands mapped to RGB.



Click **No** to show the background map as true-color image.



Error or Warning Messages

Error Message Not enough memory for the background map

This error message appears if Windows cannot provide the memory needed to load the whole background map. For uncompressed background map files the size of memory needed is about the file size. Compressed background map files have to be expanded in memory and therefore need more memory than their file size.

💡 If Ocad 64-bit version is used, background map files bigger than 2.1GB can be loaded.

Error Message TIFF variant not supported

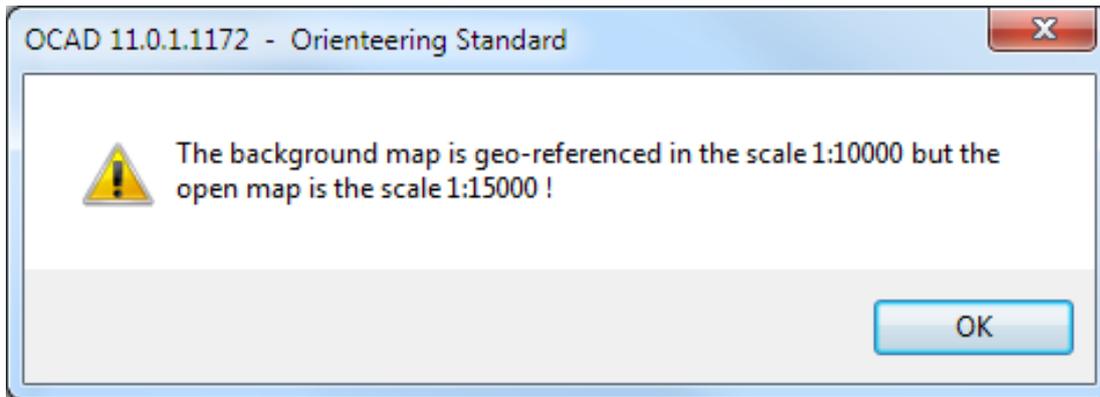
This error message appears if the TIFF variant is not supported by the current version of OCAD.

Error Message This TIFF file contains tiles. OCAD does not support TIFF files with tiles

This error message appears if the TIFF contains tiles which OCAD does not support. Please convert this file into an untiled TIFF format.

Error Message Compression type not supported

This error message appears if the compression in the opened TIFF file is not supported by the current version of Ocad.

Warning The background map is geo-referenced in the scale 1:x but the open map is in the scale 1:y

This warning appears if the OCD background map is geo-referenced and has an other scale than the currently opened map. Ocad opens the map but ignores the georeferencing (no scaling and no offset) and uses the paper coordinates.

To avoid this warning message, open the OCD-File you want to load as a background map and use the **change the map scale** function.

Limitations for Georeferenced ocd Background Maps

OCAD supports different real world offsets and real world angles. The offset and angle can be set in the **Set Scale and Coordinate System** dialog. In some cases, OCAD has a redrawing problem with different real world angles.

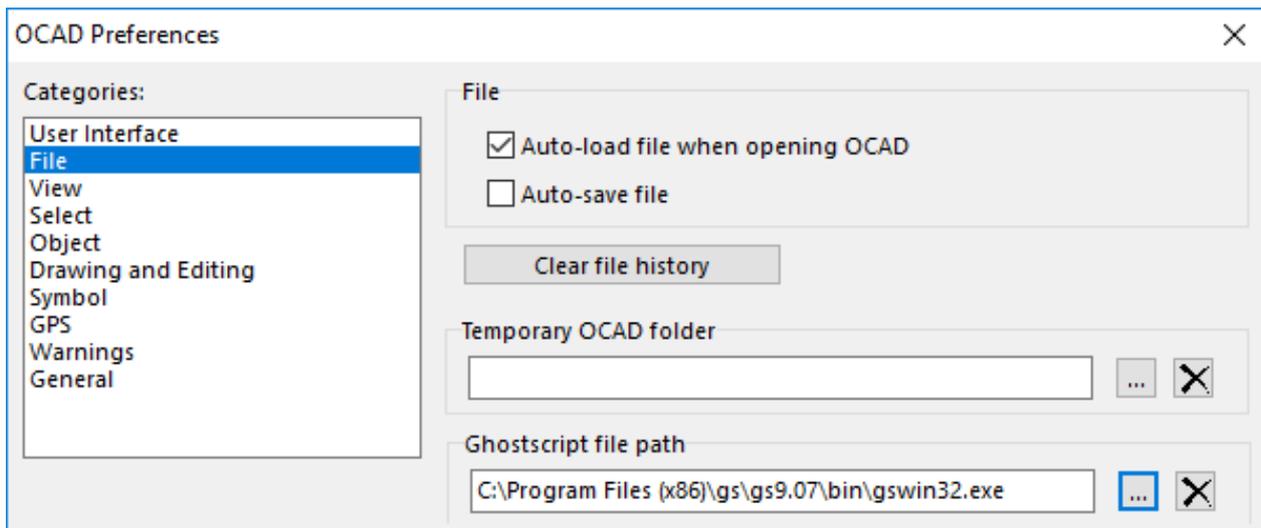
Open pdf as Background Map

OCAD cannot load pdf files as background maps. OCAD uses the software Ghostscript^[1] to convert the pdf to jpg and load this jpg file.

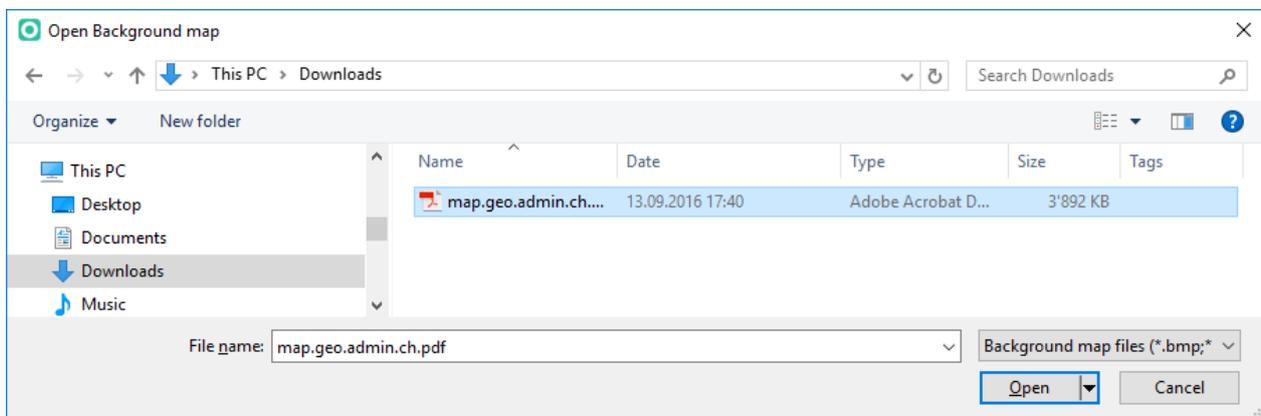
To open pdf files you have to install the software Ghostscript^[1] and set the Ghostscript path in the OCAD Preferences.

Example:

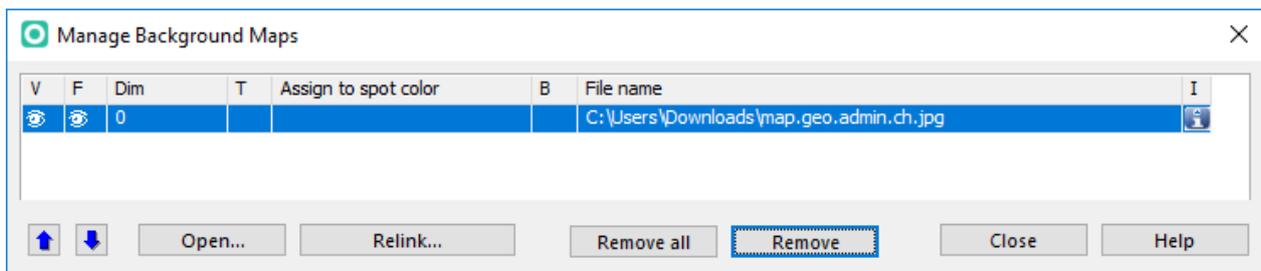
- Set Ghostscript file path in Ghostscript file path in the OCAD Preferences



- Open pdf as background map



- Ghostscript converts the file to a not georeferenced jpg. So you have to adjust this background map. The loaded jpg images is in the list of the background maps.

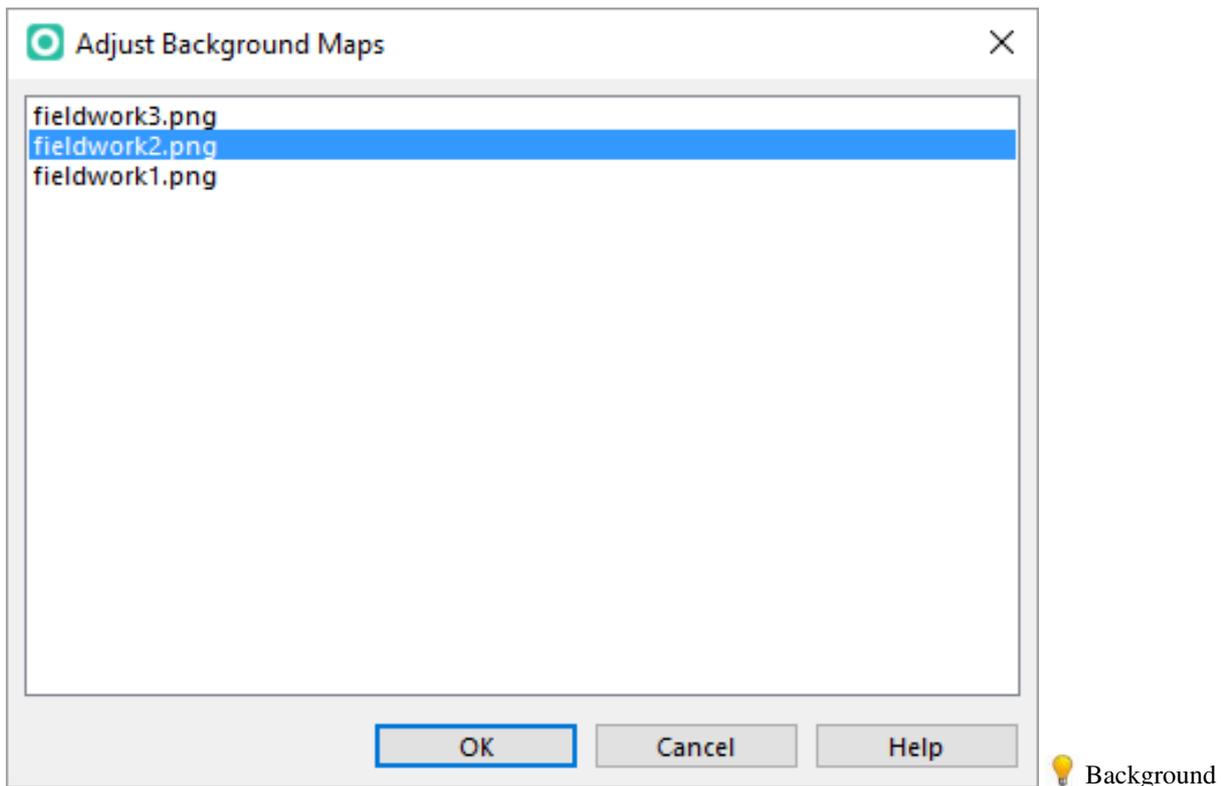


Adjust a Background Map

Mas Ori Sta CS

Choose this command in the **Background Map** menu or press the **F9** button (**Shortcut** by default) to adjust the background map. This command is active when one or more raster background maps are loaded.

If more than one background map is loaded, you will have to choose a map in a dialog box:



maps from online WMS are not shown in this dialog box.

A background map can be adjusted to the grid or to the map. A grid on the background map makes it easier to adjust it. The grid crossing points can be used for the adjustment (however, any points can be used).

It is possible to use 1 to 12 points for the adjustment. After choosing the **Adjust** command the cursor changes to a cross line with a black and white squared pattern. You are now in the **Adjust** mode. Do the following steps for each adjustment point:

1. Mark a point on the background map (e.g. grid point or a surface reference point) by clicking it.
2. Mark the same point on the map by clicking it.

In the bottom left part of the **Status Bar** you can always see, which point you have to mark at the moment, when you are in the **Adjust** mode.

When having adjusted enough points, execute the adjustment by pressing the **Enter** key. The background map is rotated and stretched to get the best fit for the adjustment points.

If the adjustment is not good use the **Undo** function to cancel the new adjustment.

 - If the size of the raster map corresponds exactly with that of the map scale and has not been rotated, it is possible to adjust it with the map using a single point pair. OCAD will correctly reposition the raster map without changing the scale or angle.

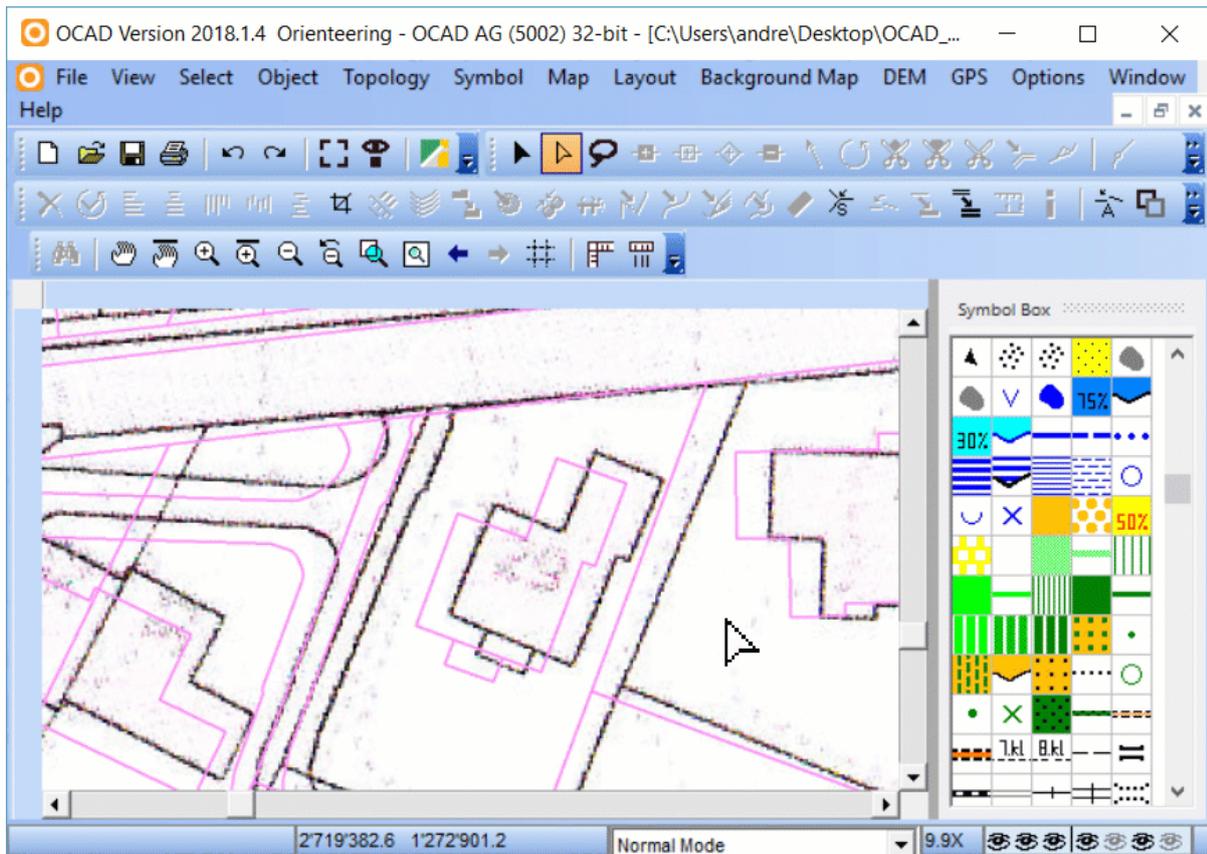
- If the raster map is contorted, rescaled or rotated, you will need to use between 3 and 12 point pairs to adjust the image with the map. OCAD repositions the raster map by transforming it (affine transformation) and adjusts the scale and angle accordingly. The point pairs should be distributed equally across the map.

- If the adjustment point pairs lie outside of the drawing window, you can move the map section between the adjustment point pairs during the adjustment process.

Error **Adjustment points too close**: When using several points for adjusting a background map, the outermost points must be separated by at least 2 mm on the background map.

Note: OCAD Background Maps cannot be adjusted. The **Georeferencing** is used to place the map or, if the map is not georeferenced, the origin of the background map (middle of the map, point (0/0)) is displayed on the origin of the current map.

Once you have completed the map adjustment, the raster map can be saved as a georeferenced raster map. The advantage of this is that the raster map will be loaded in the correct position the next time it is opened.



Export Georeferenced Raster Map

To save the raster map as a georeferenced raster map:

1. Select the **Export** command in the **File** menu.
2. Select a desired raster format (TIF, JPG, GIF or BMP)
3. Select a **Resolution** (300 dpi is recommended for printing maps)
4. Select the **Create World file** option
5. Click the **OK** button.

Hide all Background Maps



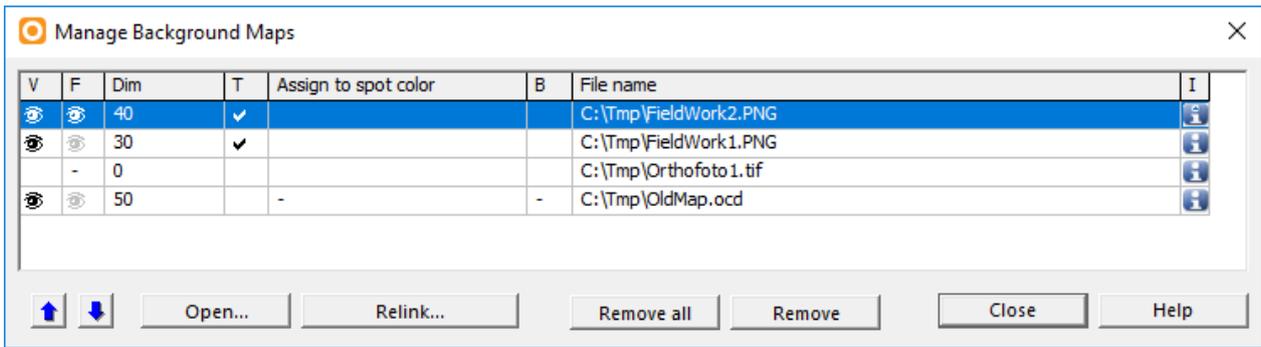
Choose the **Hide All** command in the **Background Map** menu or press the **F10** key (**Shortcut** by default) to hide all background maps temporarily or make them visible when they are hidden. This command is active if one or more background maps are loaded.

If you want to hide only single background maps, choose the **Manage** command from the **Background Map** menu.

Manage Background Maps



Choose the **Manage** command from the **Background Map** menu to set options for displaying and printing the background maps. The **Manage Background Map** dialog box is displayed. This is a non-modal dialog box. It is possible to switch between the dialog box and the map window without closing the dialog. Changes are directly updated on the map.



In the **Manage Background Map** dialog a table is displayed. In this table all loaded background maps are listed. The table consists of the following columns:

Visibility options



- **V (Visible):** You can make a background map visible or hide it by clicking the corresponding cell in this column. An eye icon in this column means that the background map is visible.

To hide all background maps temporary use the **Hide All** command in the **Background Map** menu.

- **F (Visible in Background Favorites view mode):** You can make a background map visible or hide it in the **Background Favorites** by clicking the corresponding cell in this column. An eye icon in this column means that the background map is visible in the **Background Favorites**.
- **Dim:** In this column you can enter a value in percentage to make the background map appear brighter, i.e. to dim it. 0% means the background map is displayed in its original colors. 100% means the background map appears completely white. Dimming is used to get a better distinction between the background map and the map.
- **T (Transparent):** If more than one background map is opened you can set them transparent so that both are visible. Activate this option by clicking the corresponding cell in this column.

Assign to Spot Color



This feature is used in a special production process, namely to update old hand drawn or scribed maps. The printing plates for each spot color are scanned (black and white or gray-scale) and then used as background maps. When such a background map is assigned to a spot color, it is displayed with this color. In addition, when the **Spot Color View** is activated the background map is displayed together with the corresponding spot color.

Visit the **Define Spot Colors** page to learn more about spot colors.

Note: This feature is intended for black and white or gray-scale background maps. If a color background map is assigned, the resulting colors are undefined.

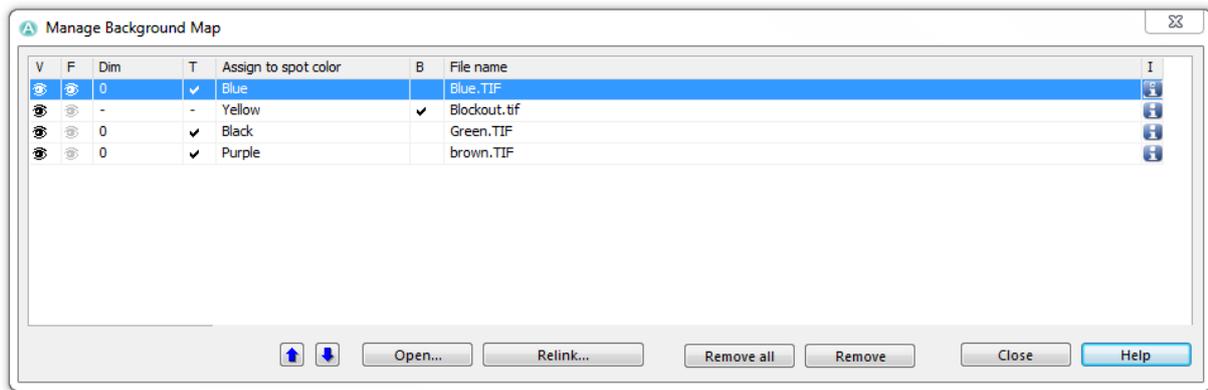
Blockout



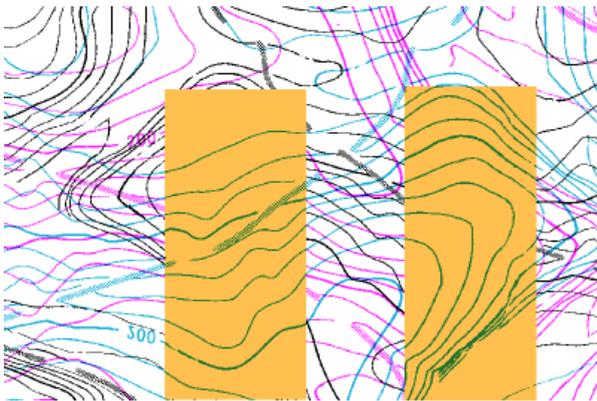
This column is labeled with a **B** and is only available for raster background maps. Click a cell in the **Blockout** column to use the corresponding background map as a block out mask.

If you have several black and white or gray-scale background maps which are transparent and assigned to a spot color, you can use this function to hide some background maps in a certain area of a different background map.

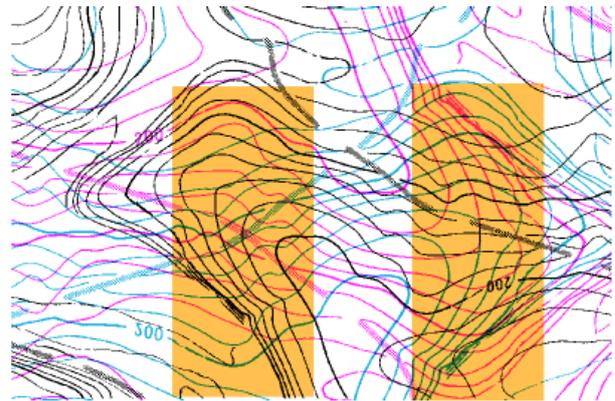
In the following example, there are four black and white or grey-scale background maps loaded. Each background map was assigned to a spot color. There are the purple, the black and the blue lines. The fourth background map was assigned to the yellow color. The **Manage Background Map** dialog looks as follows:



The yellow background map is used as a **Blockout** mask. The result looks as follows.



with Blockout



without Blockout

The black and the purple background maps are hidden behind the yellow areas when using **Blockout**. The blue background map is drawn over the yellow areas because it is over the blockout mask in the order of the background maps.

File name



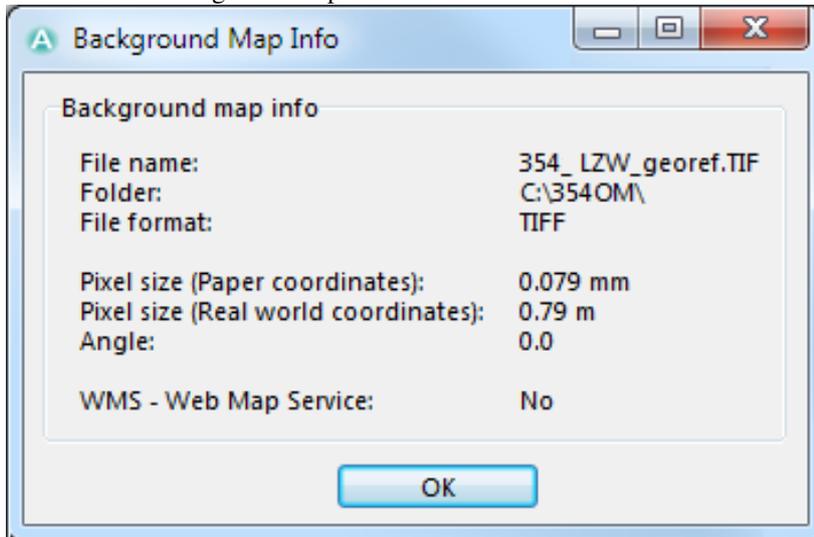
The file name of the background map is displayed in the **File name** column.

I (Information)

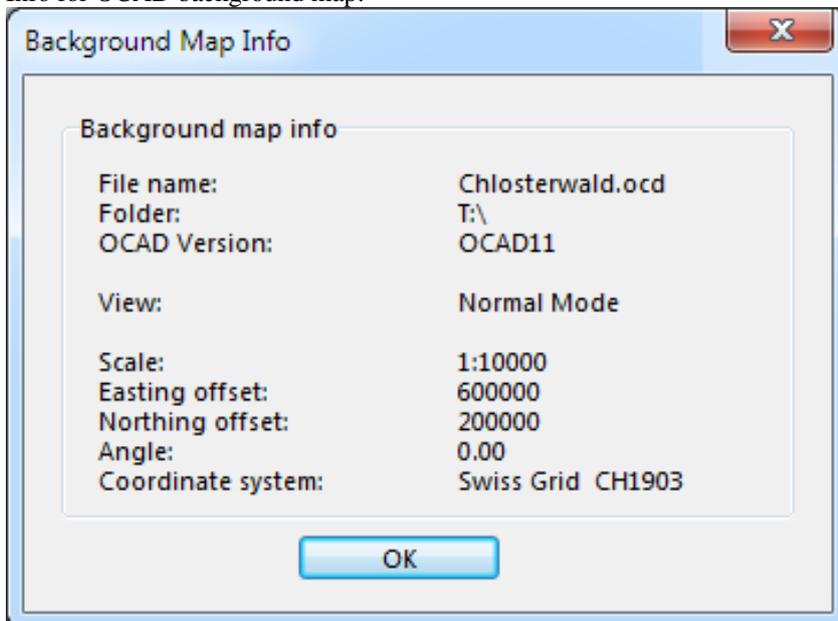


Click on the  information icon to get more information about the corresponding raster background map. The **Background Map Info** dialog box appears with additional information. The given information varies depending on the file type.

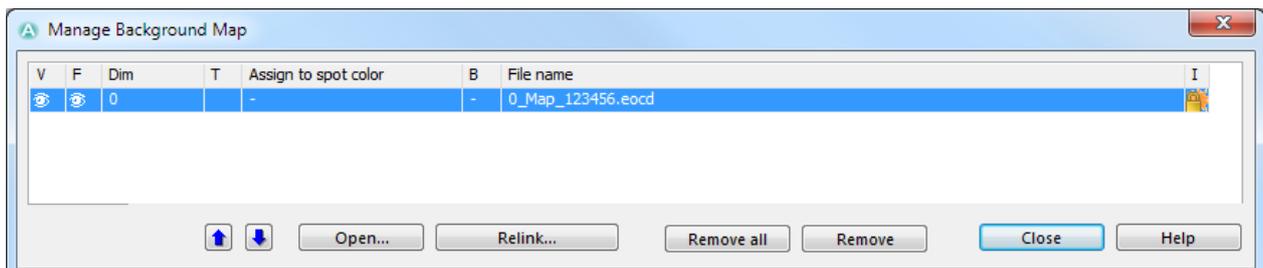
Info for raster background map:



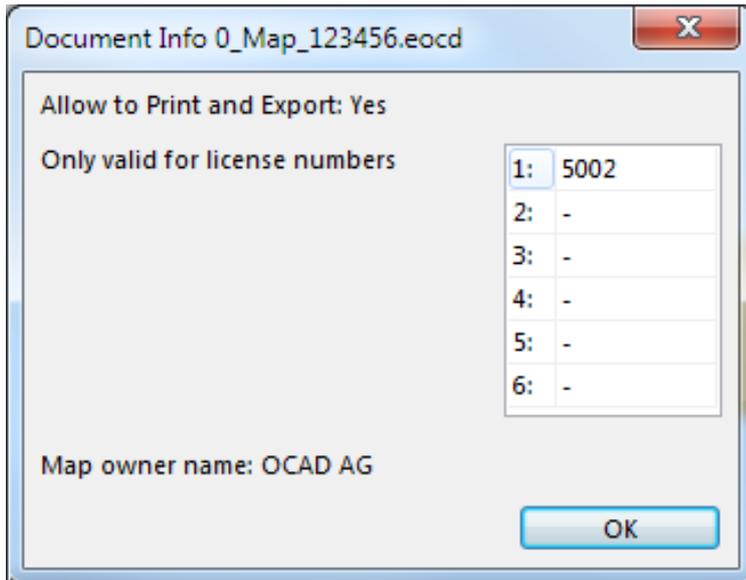
Info for OCAD background map:



If an encrypted background map is load then a  lock icon is displayed in the information column.

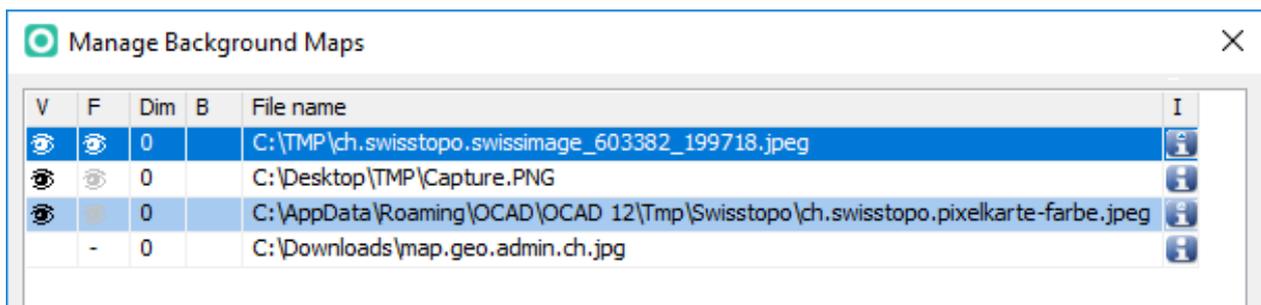


Click on the  lock icon to get more information about the encrypted background map.



WMS

Background maps from online WMS are displayed with light blue color.



Other Functions



- **Move Up:** Click the **Move Up** icon to move the selected background map one line upwards. Background maps which are listed in a upper position in the **Manage Background Map** table are displayed in the foreground.
- **Move Down:** Click the **Move Down** icon to move the selected background map one line downwards. Background maps which are listed in a lower position in the **Manage Background Map** table are displayed in the background.
 - 💡 The selected background map can also be moved up and down with *drag and drop* on the **file name** column.
- **Open:** Click this button to open a new background map (**Open a new Background Map**).
 - 💡 OCAD loads the background map hidden when pressing the *Shift* key while clicking the **Open** button or menu item.
- **Relink:** **Relink** background maps to another directory.
- **Remove all:** Click this button to remove all background maps. This command does not delete the background map files.
- **Remove:** Click this button to remove the selected background map. This command does not delete the background map file.
- **Close:** Click the close button to quit the dialog.

Web Map Service - WMS



Visit the **Web Map Service** page to get some information about this function.

Online Map Services

Visit the **Online Map Services** page to get some information about this function.

Download Georeferenced Satellite Images

Visit the **Download Georeferenced Satellite Images** page to get some information about this function.

[Back to Main Page](#)

References

[1] <http://www.ghostscript.com/download/gsdnld.html>

WMS

A Web Map Service (WMS) is a standard protocol for serving georeferenced map images over the Internet. The images are generated by a map server using data from a GIS database. (*taken from the **Wikipedia Article*** ^[1].)

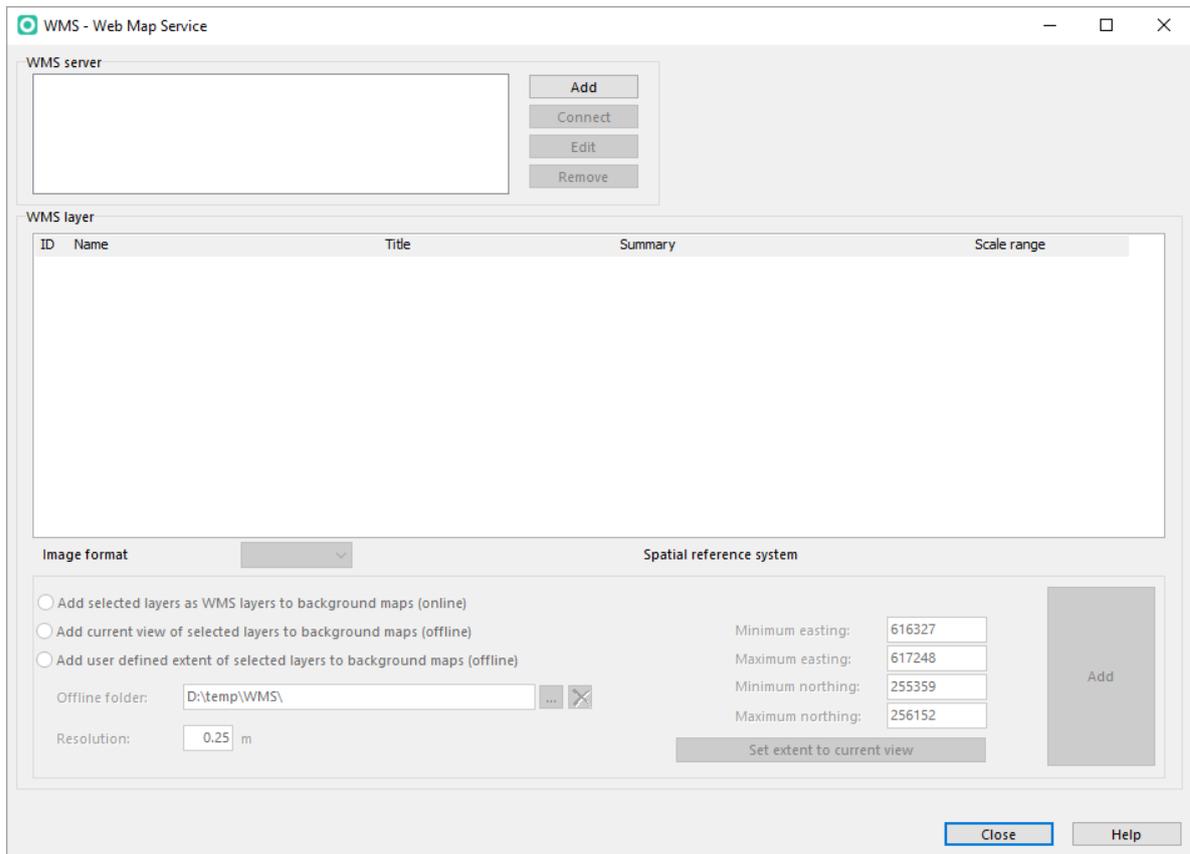
 WMS requires a georeferenced map. Choose the **Scale and Coordinate System** command from the **Map** menu to set the map scale and a coordinate system. Real world coordinates do not have to be necessarily defined. They can be left at (0/0) for example.

To set up a map from a WMS server choose the **WMS - Web Map Service** command from the **Background Map** menu. The **WMS - Web Map Service** dialog appears.

WMS Server

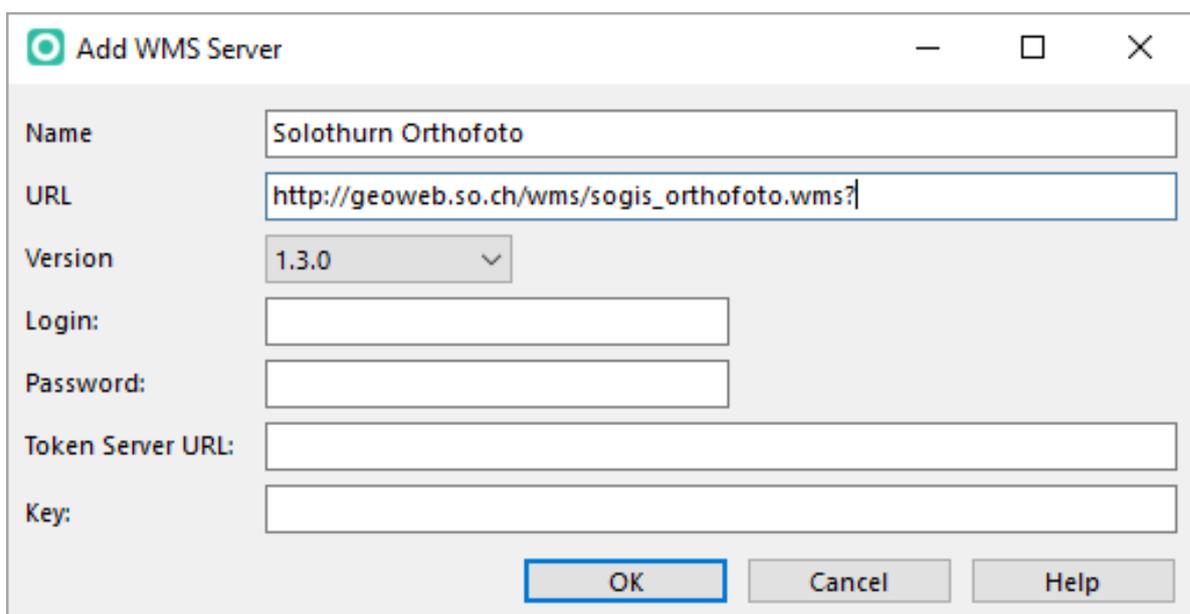
Mas Ori

The WMS servers are listed in the upper box of the **WMS - Web Map Service** dialog.



Add a WMS Server

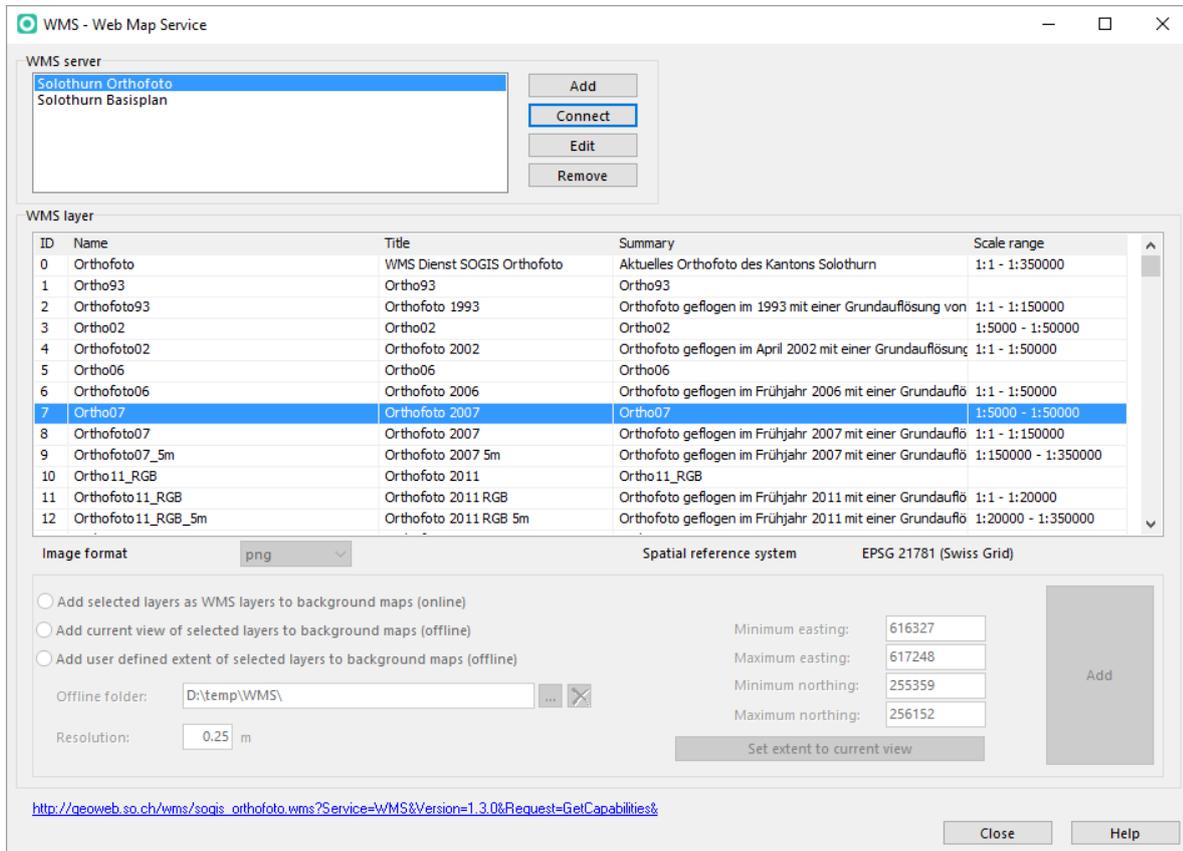
1. Click the **Add** button.
2. The **Add WMS Server** dialog appears.
3. Enter the **Name** of the server, the **URL**, the **Version** and, if required, a **Login** with **Password**, the **Token Server URL** and a **Key**.



4. Click the **OK** button when finished.
5. The WMS server appears in the WMS server box.

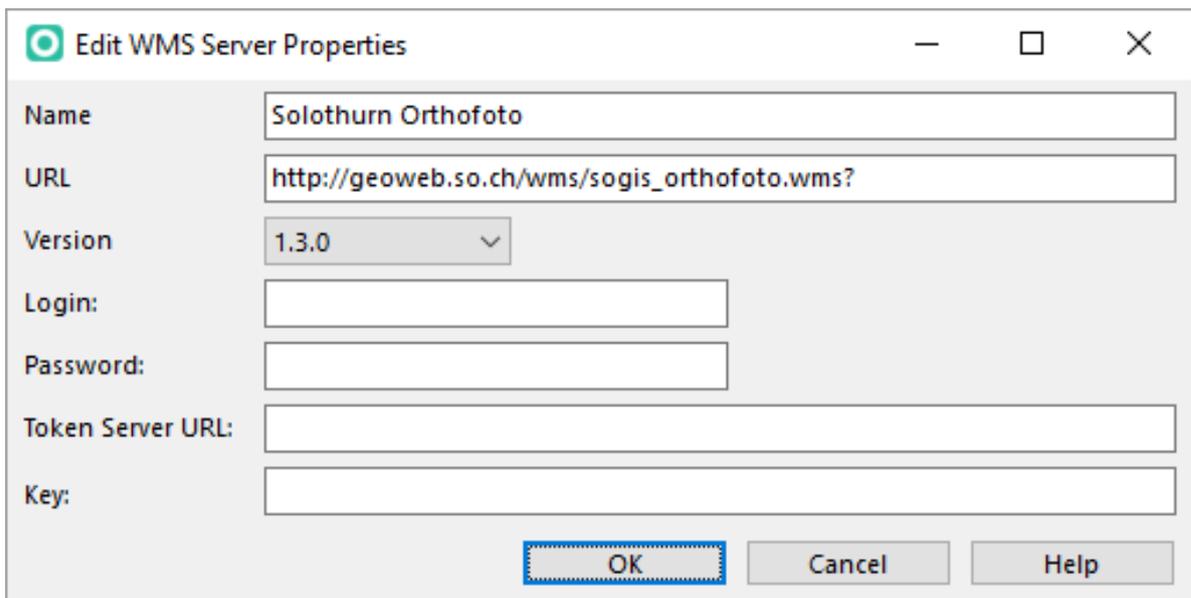
Connect to a WMS Server

Select a WMS server from the list and click **Connect**. If the connection was successful, OCAD gets a list from the server with the available layers. These layers are listed in the WMS layer table of the **WMS - Web Map Service** dialog. Read the **WMS Layer** article to learn how to use layers as **Background Maps**.



Edit WMS Server Properties

Select a WMS server and click the **Edit** button to edit its properties. The **Edit WMS Server Properties** dialog appears which is equal to the **Add WMS Server** dialog.

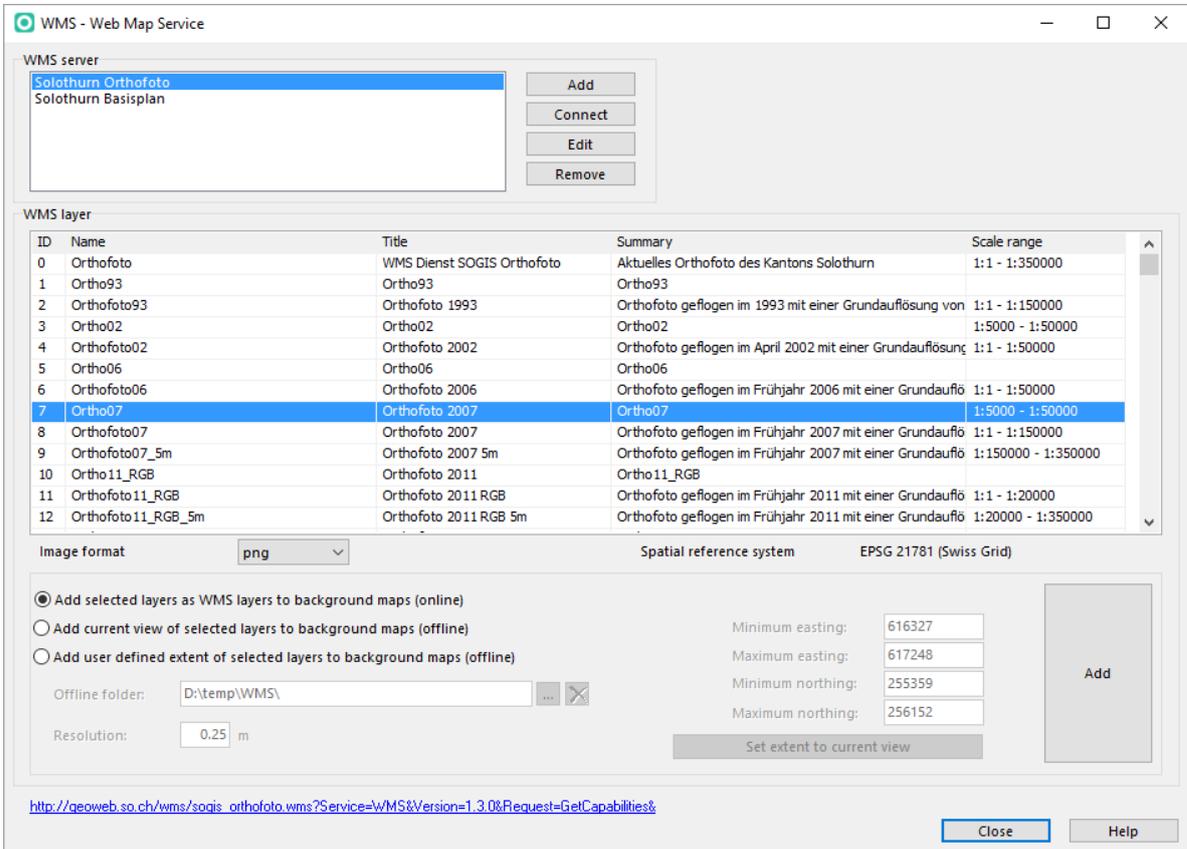


Remove a WMS Server

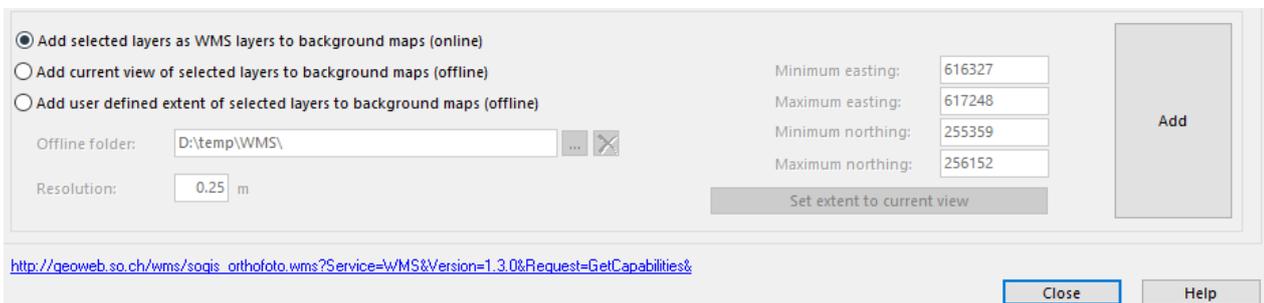
Click the **Remove** button to remove the selected WMS server from the list.

WMS Layer

After connecting to a WMS server the available WMS layers are listed in the WMS layer box.



1. Select a WMS layer in the list and choose an **Image format** from dropdown list (those formats are provided by the WMS server).
2. Choose an option how to add the selected layers:
 - **Add Selected Layers as WMS Layers to Background Maps (Online)**



This is an online **Background Map** . It is updated by the WMS Server by each change of the map view. This can take a moment. Choose the *online* option only if you are using a fast WMS server and work with high speed internet connection. As an alternative, you can add the layer as an offline background map.

- **Add current view of selected layers to background maps (Offline)**

Add selected layers as WMS layers to background maps (online)
 Add current view of selected layers to background maps (offline)
 Add user defined extent of selected layers to background maps (offline)

Offline folder: ...
 Resolution: m

Minimum easting:
 Maximum easting:
 Minimum northing:
 Maximum northing:

http://geoweb.so.ch/wms/soqis_orthofoto.wms?Service=WMS&Version=1.3.0&Request=GetCapabilities&

- Define the **Offline folder**. The current map folder is set as default.

With this offline option an image of the chosen WMS layer of the current view is downloaded from the WMS server and added as a custom background map to the map. It does not get updated when changing the view.

- **Add User Defined Extent of Selected Layers to Background Maps (Offline)**

Add selected layers as WMS layers to background maps (online)
 Add current view of selected layers to background maps (offline)
 Add user defined extent of selected layers to background maps (offline)

Offline folder: ...
 Resolution: m

Minimum easting:
 Maximum easting:
 Minimum northing:
 Maximum northing:

http://geoweb.so.ch/wms/soqis_orthofoto.wms?Service=WMS&Version=1.3.0&Request=GetCapabilities&

- Define the **Offline folder**. The current map folder is set as default.
- Define the **Resolution**.
- Define the **Extent** (minimum easting, maximum easting, minimum northing, maximum northing). The current view extent is set as a default when opening the WMS dialog but the entries are not updated automatically by changing the view. The extent can be updated by clicking the **Set extent to current view** button.

With this offline option an image of the chosen WMS layer of the defined extent is downloaded from the WMS server and added as a custom background map to the map. It does not get updated when changing the view.

3. Click the **Add** button.

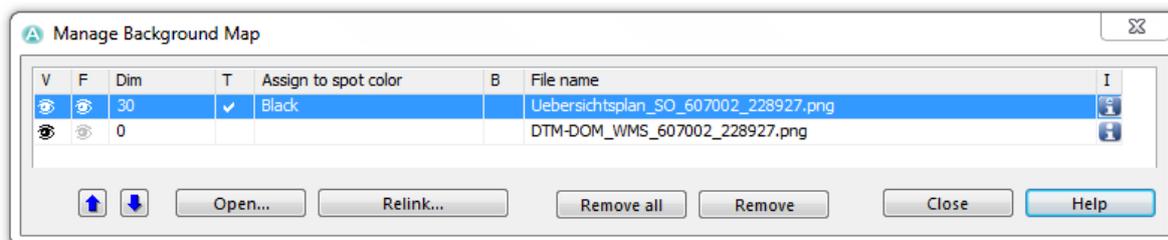
The WMS layer appears in the table of the **Manage Background Map** dialog which can be displayed in the **Background Map** menu.

The **Background map (Geo-Referenced)** dialog appears if no real world coordinates offset is set. Choose an offset and click the **OK** button.

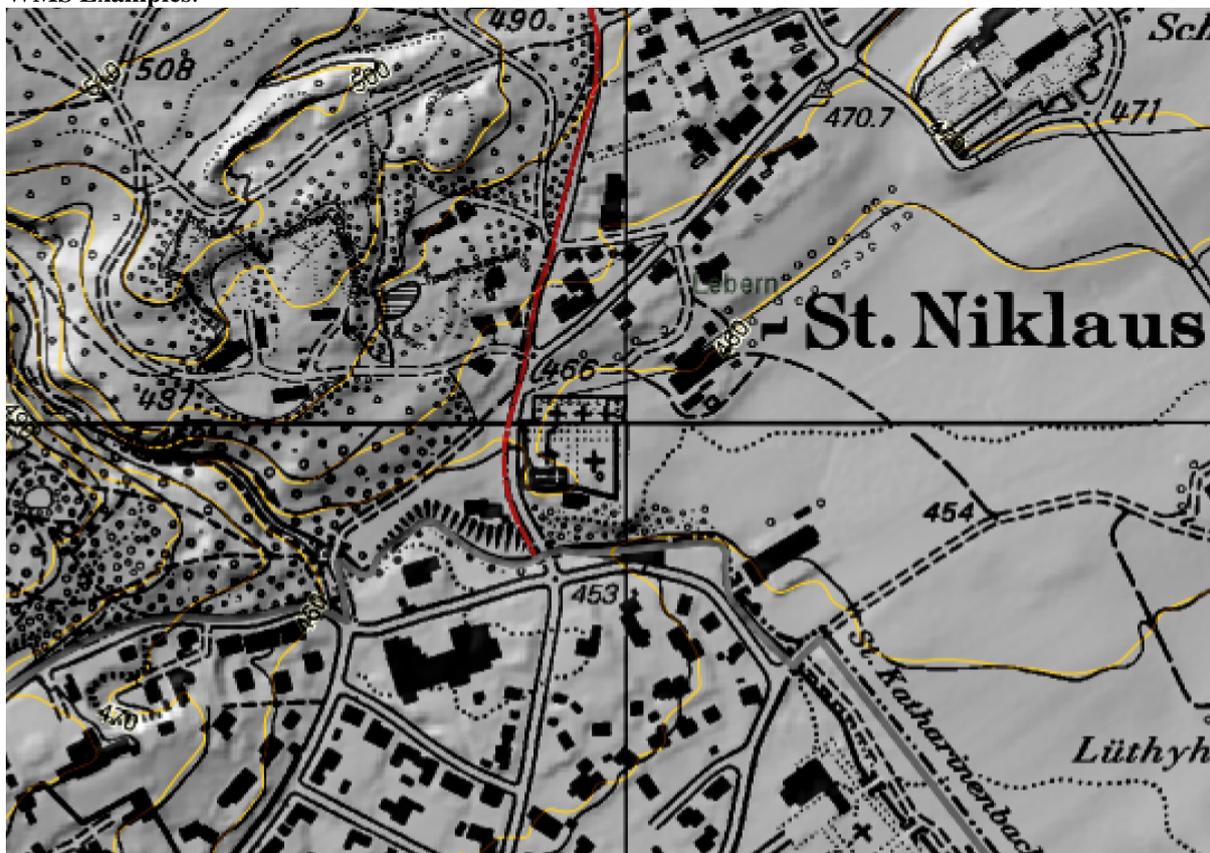
Web Map Services generally provide their images in multiple spatial reference systems. OCAD can only access to WMS if the OCAD maps' coordinate system (ex. Swiss Grid CH1903+/LV95) is supported by the WMS. Then the **Spatial reference system** is automatically set to the corresponding EPSG code. If the chosen coordinate system is not compatible with the WMS, the **Spatial reference system** caption in the WMS dialog remains empty.

Click the **Close** button when finished.

Manage the view or remove the WMS maps by choosing the **Manage** command from the **Background Map** menu:



WMS Examples:



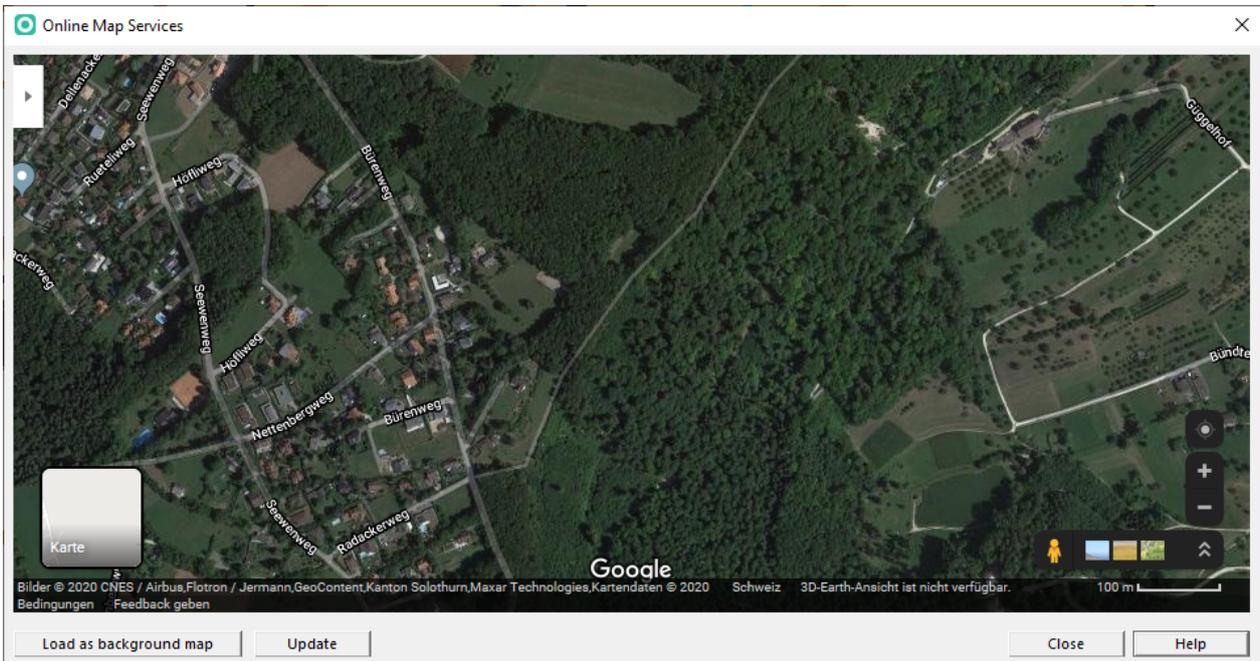
Back to the **Background Map** page.

References

- [1] http://en.wikipedia.org/wiki/Web_Map_Service

Online Map Services

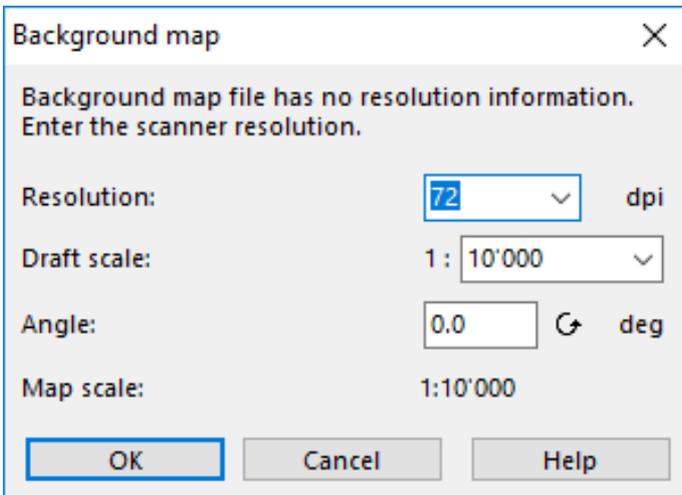
Choose this command from the **Background Map** menu to load temporary a screenshot from Google Maps as background map.



If the map is geo-referenced, OCAD opens Google Maps at the same location. Move and zoom in Google Maps to the desired location. You can also enlarge the **Online Map Services** dialog by clicking and dragging a corner.

Click on the **Update** button to move Google Maps to the center of the drawing area.

Click **Load as background map** to make a screenshot and load this map as background map. The **Background Map** dialog appears. The screenshot is not geo-referenced.



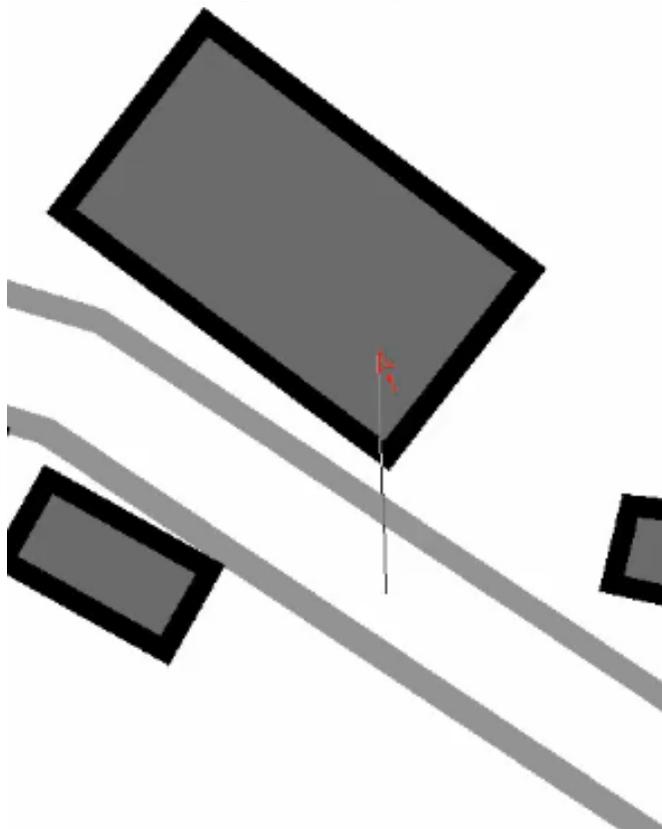
Click **OK**. OCAD loads this screenshot and change to Draft mode.

Open Google Street View

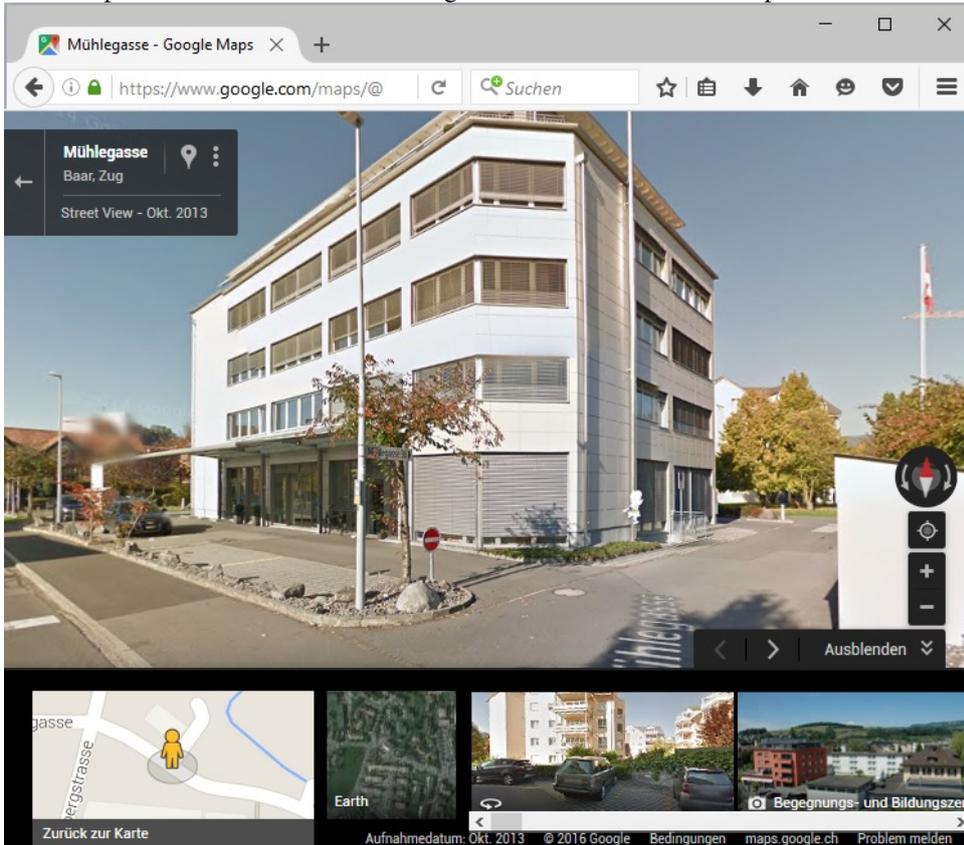
Open Google Street View

Mas Ori

1. Select the **Open Google Street View** icon in the toolbar. The cursor changes to an arrow.
💡 The toolbar icon is disabled if the map is not georeferenced.
2. Click into the drawing area and drag a direction.



3. OCAD opens the web browser with Google Street View at the chosen position and direction.

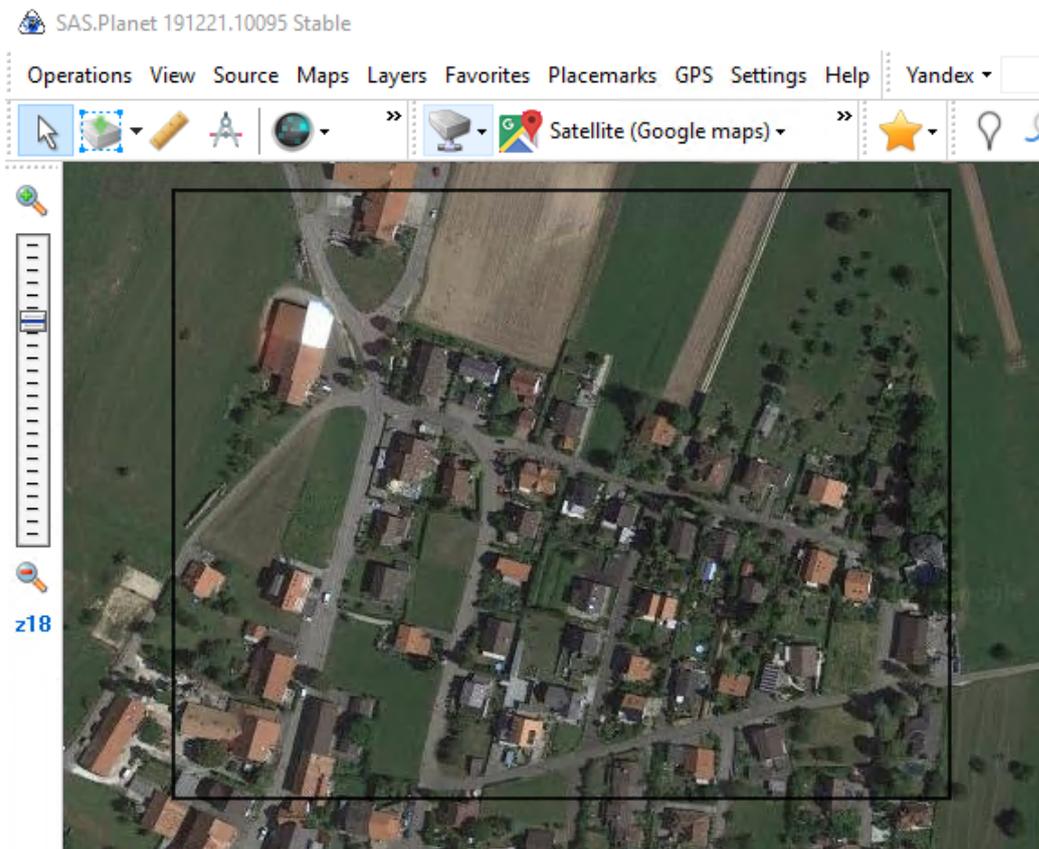


Download Georeferenced Satellite Images

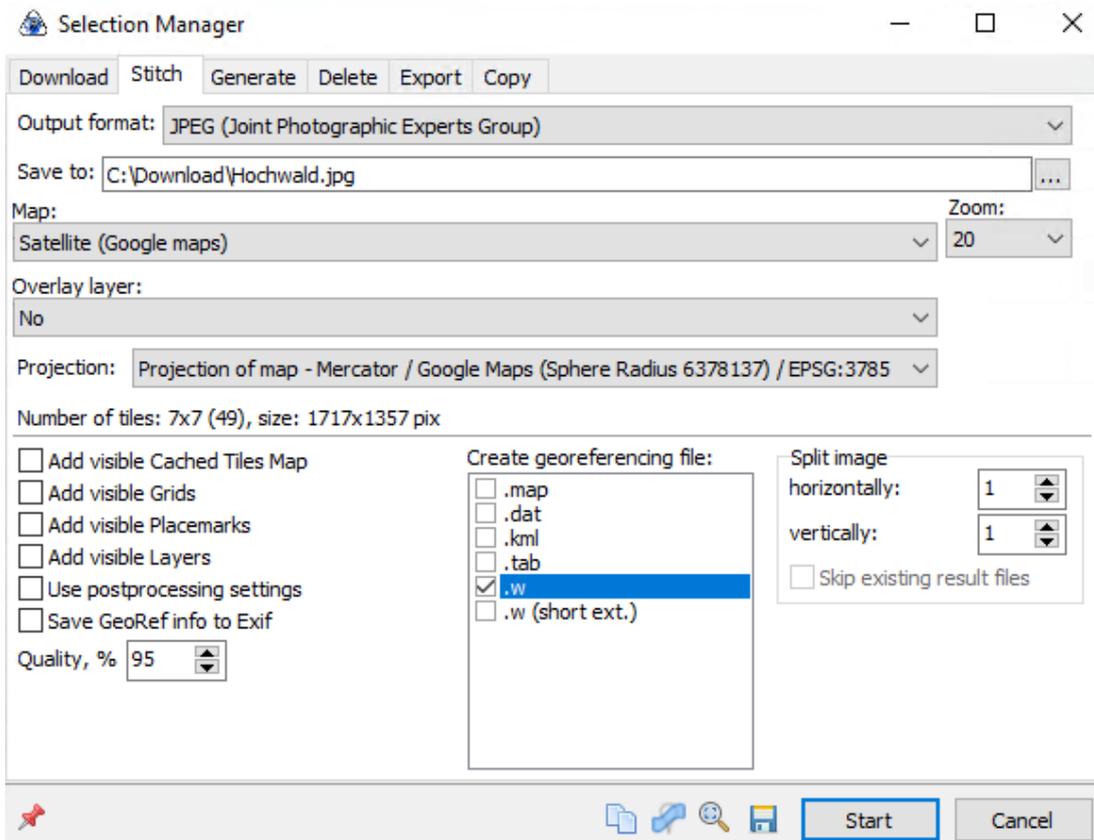
SAS.Planet is a free application used to view and download satellite maps submitted by such services as Google Maps, Bing Maps, Yandex.maps, Yahoo! Maps and many more. **The satellite maps can be downloaded and then loaded into OCAD as georeferenced background maps.**

We can recommend the following workaround:

1. Download SASPlanet from the web and open the application.
2. Zoom to your desired location and select an extend.



3. Open the Selection Manager and edit the tab Stitch. Don't forget to create a file for georeferencing. We've chosen the settings as follows.

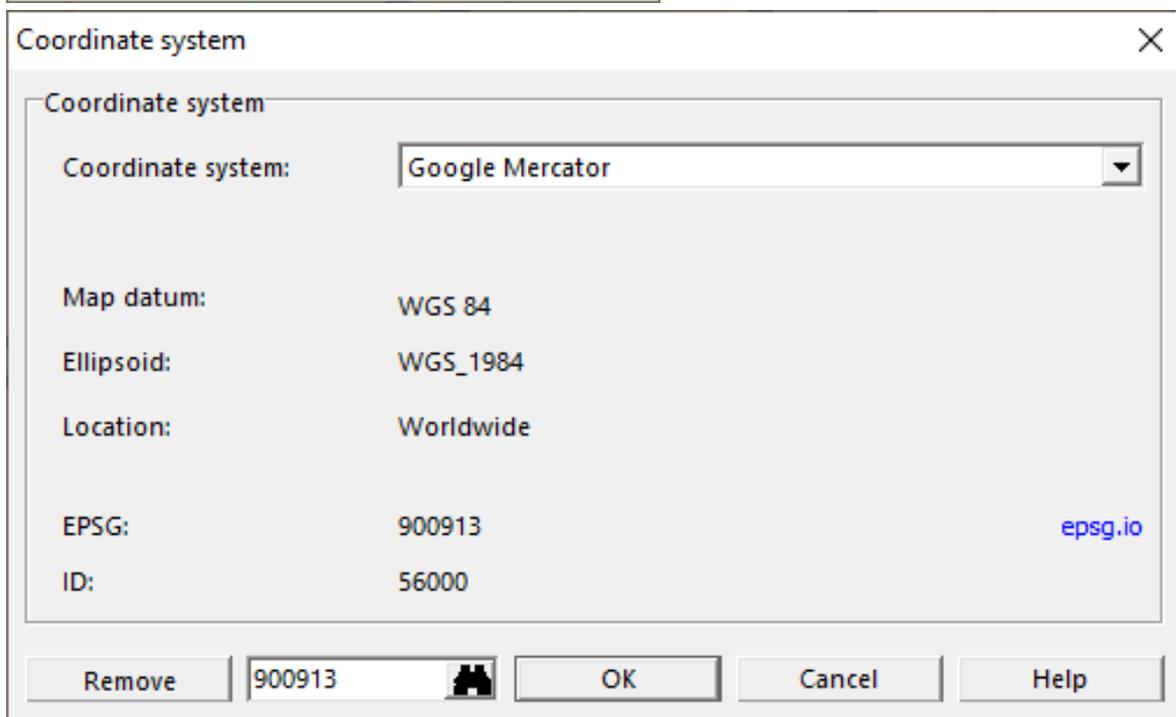
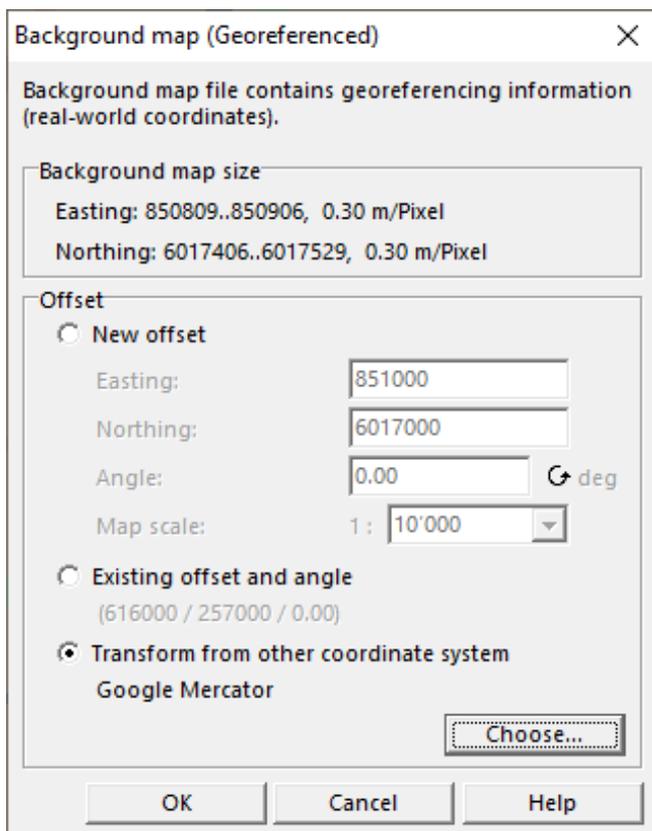


4. Start the download.

5. Open a map project in OCAD. Your map needs to be georeferenced.

6. Go to Menu **Background>Manage>Open**.

7. Choose your downloaded satellite maps. As they most probably do not have the same coordinate system as your map project, you need to transform the satellite maps. Choose Google Mercator as coordinate system.



8. Click OK and the satellite maps appear as georeferenced background maps.



Menu DEM

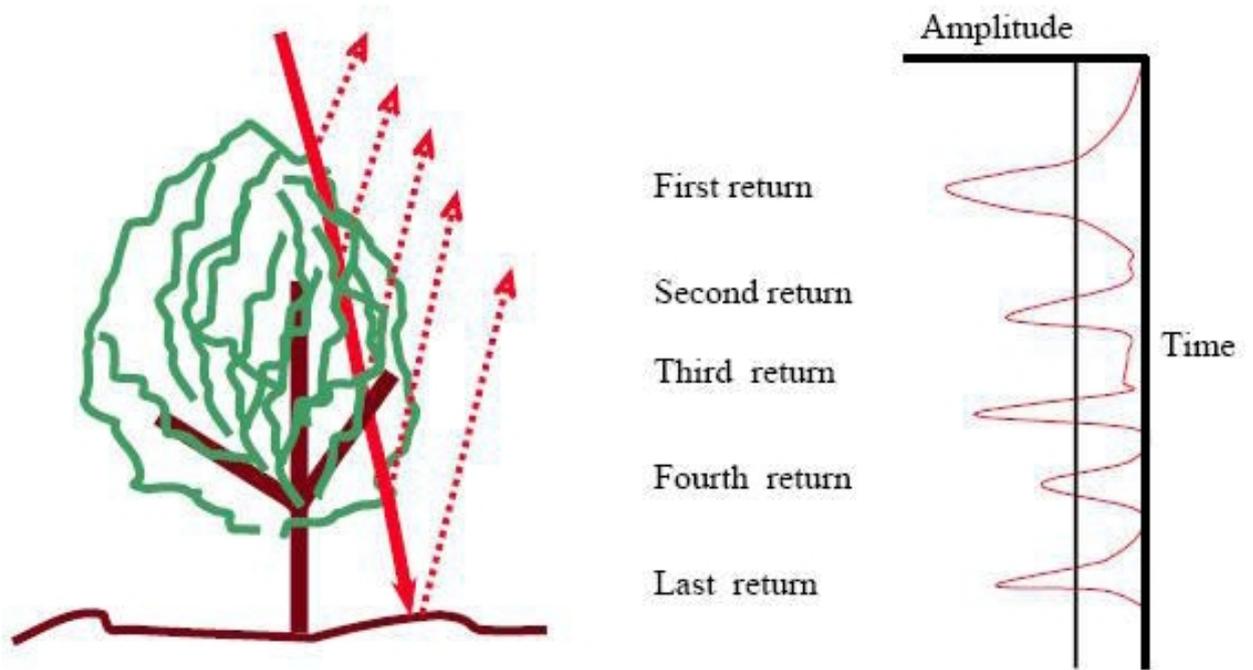
DEM

A DEM (Digital Elevation Model) contains points with elevation data. DEM Data are based on LIDAR (Light Detection and Ranging) technology measurement, also known as Airborne Laser Scanning. There are DEM with point data arranged in a regular grid with a constant distance between the points. This distance is called cell size. Other DEM contain data points arranged irregularly (cloud-model).

Read more about this topic: http://en.wikipedia.org/wiki/Digital_elevation_model



A laser beam splits as it hits objects. The result are multiple returns. The difference between first and last return can show object height. The last return doesn't always reach the ground.



Source: Lohani, Bharat. Airborne Altimetric LiDAR: Principle, Data Collection, Processing and Applications.

DEM Import Wizard

Mas Ori

Read more about importing DEM file on the page [DEM Import Wizard](#).

Open

Mas Ori Sta CS

Open an OCAD DEM file (*.ocdDem). OCAD 2019 can also open ocdDems created in OCAD 11 and OCAD 12.

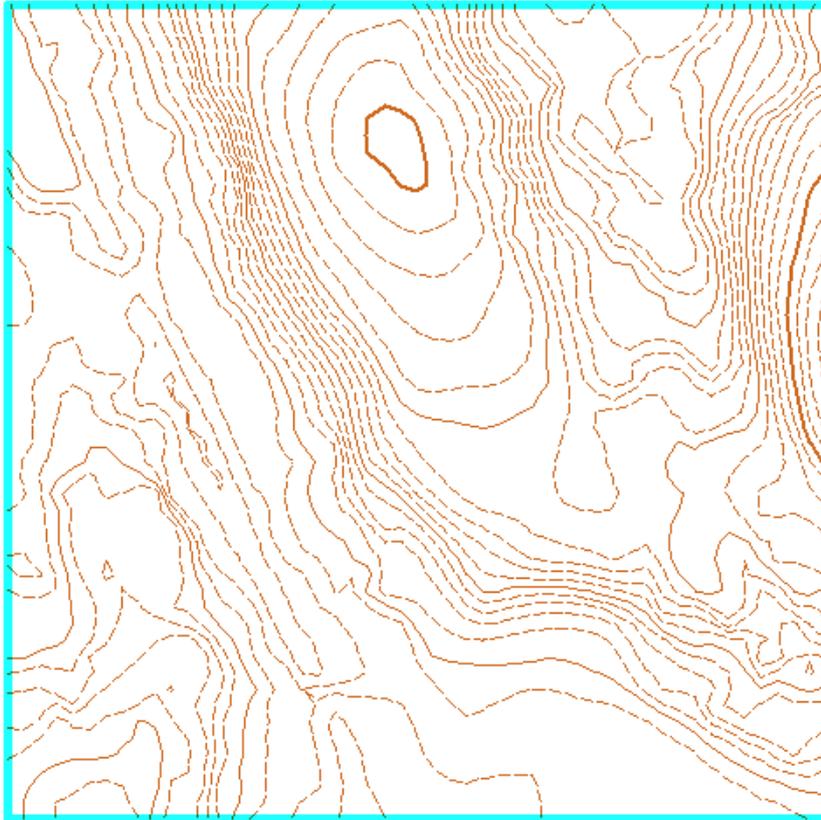
The OCAD DEM file is a DEM grid in an OCAD internal file format created in the DEM Import Wizard. This file is optimized for fast access to the height values.

For more information (e.g. cell size) about this file open the DEM Information dialog.

Show Frame



Shows blue rectangle with the extent of the loaded DEM.



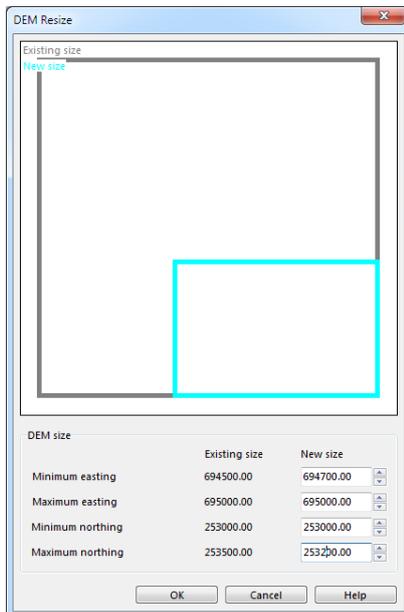
When moving the mouse cursor inside the frame the height values is show in the status bar together with the coordinate.



Resize

Mas Ori

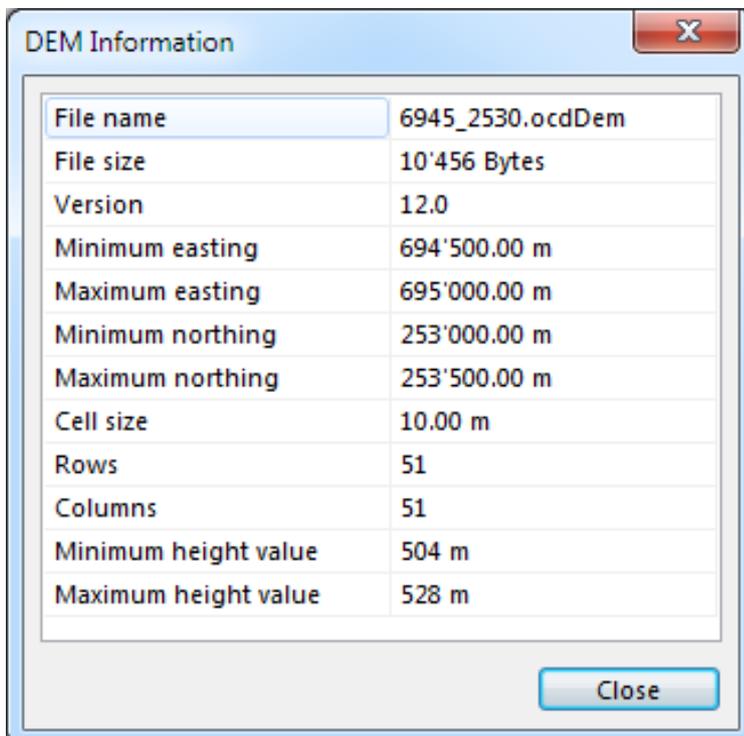
Resize the loaded OCAD DEM file (make a subset) and save it as a new OCAD DEM file or overwrite the existing one.



Info

Mas Ori Sta CS

Shows information about OCAD DEM file.



When moving the mouse cursor over the file name then the file name with path appears.

Close

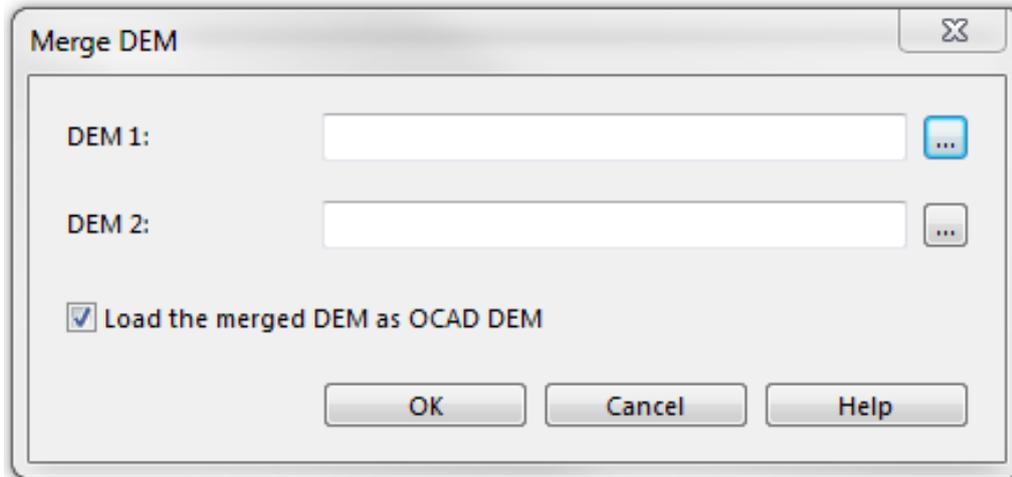


This function closes OCAD DEM file.

Merge DEM



Choose **Merge** from **DEM** menu to merge two different DEMs.



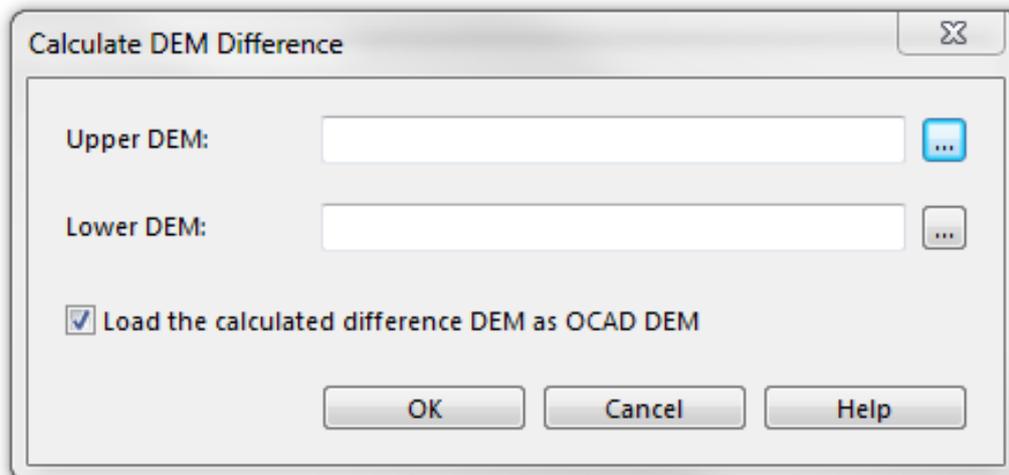
- **DEM 1:** Choose the first DEM.
- **DEM 2:** Choose the second DEM.

The two DEMs must have the same cell size.

Calculate DEM Difference



Choose **Calculate DEM Difference** from **DEM** menu. The **Calculate DEM Difference** dialog box appears.



Usually it is the difference between a terrain model and a surface model.

- Add *Upper DEM* = DSM data file
- Add *Lower DEM* = DTM data file
- Click **OK**.

In the DEM Import Wizard it is possible to import DTM and DSM and create the DEM difference in one step.

To visualize the DEM difference choose **Classify Vegetation Height**



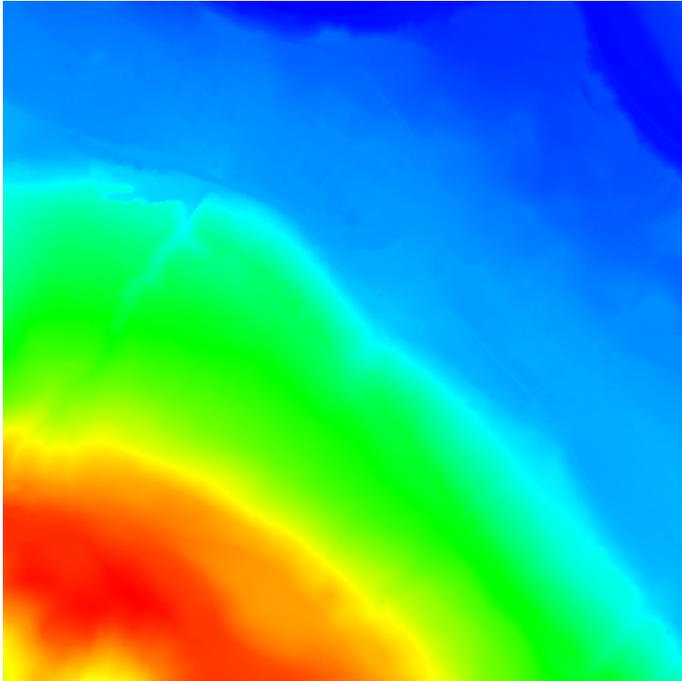
The extent of the *Upper DEM* and *Lower DEM* can be different. OCAD takes the overlapping area for the new DEM.

💡 The cell size of *Upper DEM* and *Lower DEM* can be different. OCAD takes the cell size of *Upper DEM* for the new DEM.

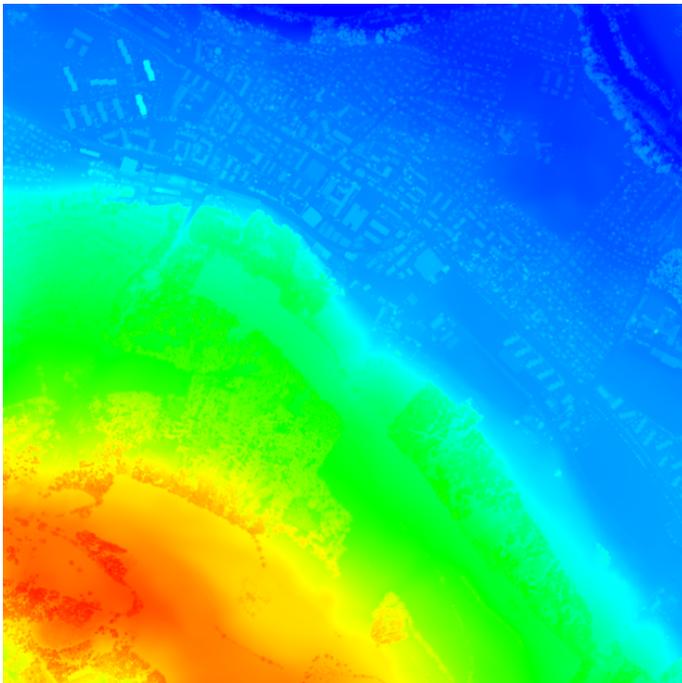
Example

This is an example to show what can result from the **Calculate DEM Difference** function.

This is a DTM (Digital Terrain Model) with a cell size of 5m shown as hypsometric map:



The next picture shows the DSM (Digital Surface Model) of the same area with a cell size of 2m as hypsometric map. The buildings (northern part) and forest (south western part) are slightly visible.



The next picture shows a **Difference DEM** with a cell size of 2m shown as raster background map after calculating the **DEM Difference**. In addition, heights were colored using the **Classify Vegetation Height** function.



- The area with no difference of the DTM and the DSM are displayed white.
- A height difference up to 15m appears red.
- The greater the difference, the greener an area appears.

When moving the mouse cursor over the map the difference is shown in the **Status Bar**.

Data source: Test data Wabern from swisstopo.

Create Contour Lines

Mas Ori

Choose **Create Contour Lines** from **DEM** menu. The **Create Contour Lines** dialog box appears.

Read more about this function on the page DEM Import Wizard.

Create Hypsometric Map

Mas Ori

Choose **Create Hypsometric Map** from **DEM** menu. The **Create Hypsometric Map** dialog box appears.

Read more about this function on the page DEM Import Wizard.

Create Hill Shading

Mas Ori

Choose **Create Hill Shading** from **DEM** menu. The **Create Hill Shading** dialog box appears.

Read more about this function on the page DEM Import Wizard.

Calculate Slope Gradient

Mas Ori

Choose **Calculate Slope Gradient** from **DEM** menu. The **Calculate Slope Gradient** dialog box appears.

Read more about this function on the page [DEM Import Wizard](#).

Classify Vegetation Height

Mas Ori

Choose **Classify Vegetation Height** from **DEM** menu. The **Classify Vegetation Height** dialog box appears.

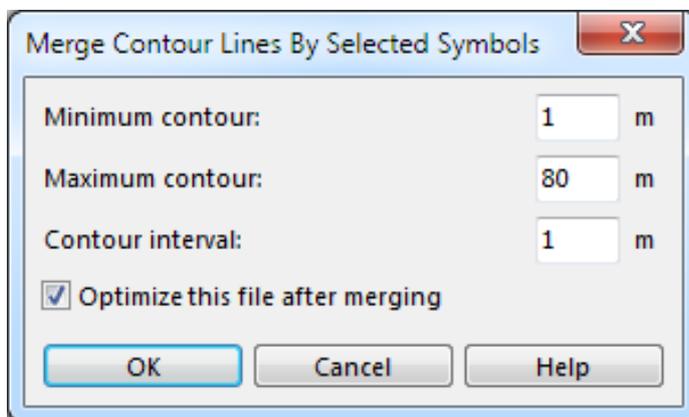
Read more about this function on the page [DEM Import Wizard](#).

Merge Contour Lines By Selected Symbols

Mas Ori

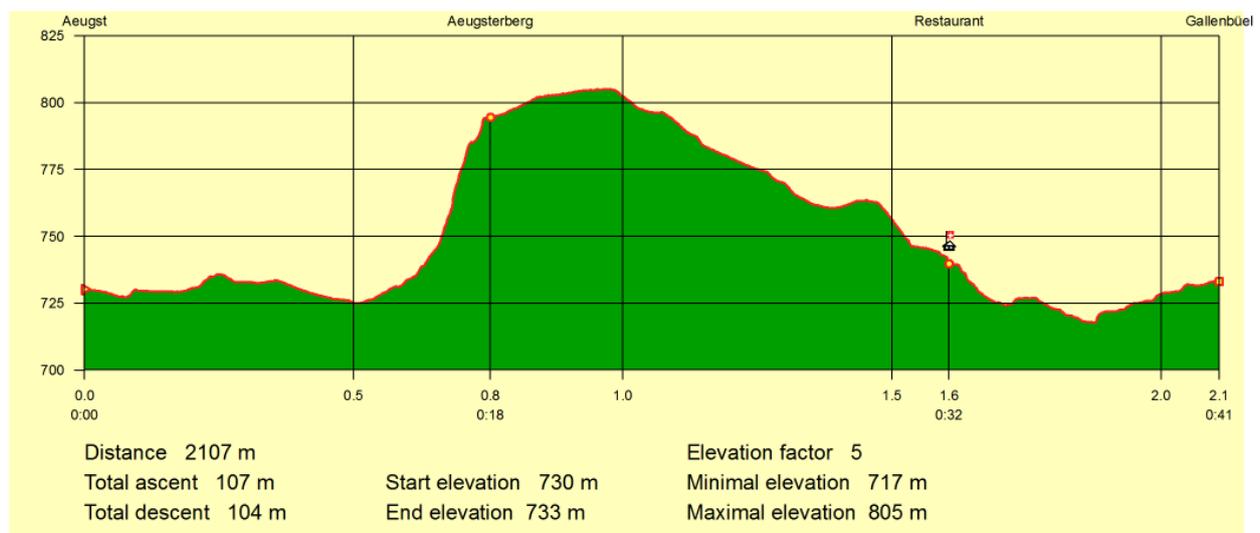
This is an obsolete function. It is still in the latest OCAD version due to compability issues. OCAD merges the contour lines automatically.

- Select the contour line symbols
- Choose **Merge Contour Lines By Selected Symbols** from **DEM** menu.
- The **Merge Contour Lines By Selected Symbols** dialog box appears.



Create Profile

Mas Ori Sta CS

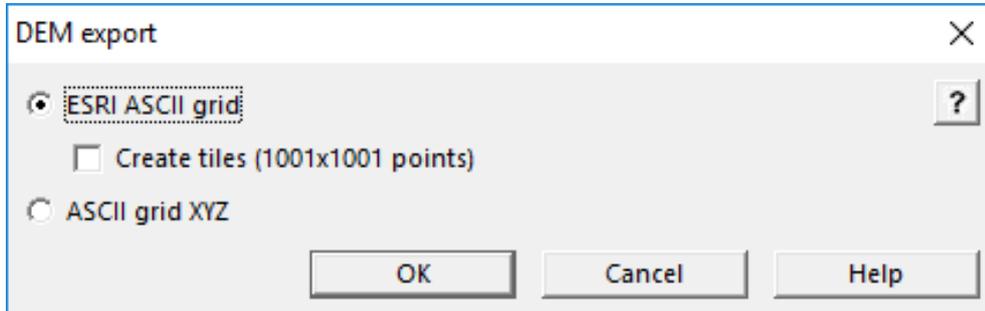


Find more information about this function on the [DEM Profile](#) page.

Export

Mas Ori

- Choose **Export** from DEM menu.
- The **DEM Export** dialog box appears.



The function exports the loaded DEM file to the following formats:

- ESRI ASCII Grid
 - Select **Create tiles** for large DEMs to create tiles from 1001x1001 points.
- ASCII Grid XYZ

LiDAR Point Cloud Manager

Mas Ori

The **LiDAR Point Cloud Manager** analyzes the vegetation within the forest and creates a vegetation raster map. Learn more on the **LiDAR Point Cloud Manager** page.

[Back to Main Page](#)

DEM Import Wizard

With the **DEM Import Wizard** you can import DEM data and create different outputs like Contour lines, a Hill shading map or a Vegetation height map. The main purpose of the DEM Wizard is to create base maps for orienteering map making.

 There is a tutorial which shows a possible way to **proceed and use LiDAR data in OCAD for orienteering sport**.

DEM Import Data

Mas Ori

The DEM Import Wizard is able to import files with regular and irregular DEM data. Supported DEM data formats are:

las, laz and zLas Files

The LAS format (*.las) is a file format designed for the interchange and archiving of lidar point cloud data.

The *.laz and *.zLas files are compressed LAS file.

OCAD uses the laszip.exe ^[1] and LASliberator ^[2] tools from Martin Isenburg ^[3] to decompress the laz and zLas files.

ASCII Grid XYZ file and Raw data ASCII XYZ file

File format *.xyz

ESRI ASCII Grid

File format *.asc

SRTM Files

This is a world wide available DEM data set from the Shuttle Radar Topography Mission (SRTM). SRTM data (*.hgt) import requires that a coordinate system set in the OCAD map file.

Link: <https://lta.cr.usgs.gov/SRTM1Arc>

rar Files

Please note that OCAD can not handle file names with Non-ASCII character like Å.

File format *.rar

GML file

File Format *.gml or *.xml

TIFF file

File Format *.tif

Please note that normally a *.tif file is a raster image that is used as background map. However, some *.tif files can store DEM data and can therefore be imported and processed in the DEM Import Wizard.

Start Import DEM Wizard

Open the **DEM Import Wizard** in the **DEM** Menu. The DEM Import Wizard appears. Otherwise you can also drag and drop an DEM file from Windows File Explorer onto the OCAD drawing area.

DEM Import Wizard

DEM Wizard

Choose DEM import files

Importable files

DSM import files:

Coordinate system

DEM files: Choose...

Map:

Convert height values from feet to meters

Convert height values from mm to meters

Shift elevations below sea level

Extent

All points

Only points within this extent

Minimum easting: 0

Maximum easting: 0

Minimum northing: 0

Maximum northing: 0

< Back Next > Cancel Help

Importable Files

First use **Add** button to add at least 1 DEM to the **DEM Import Wizard** dialog.

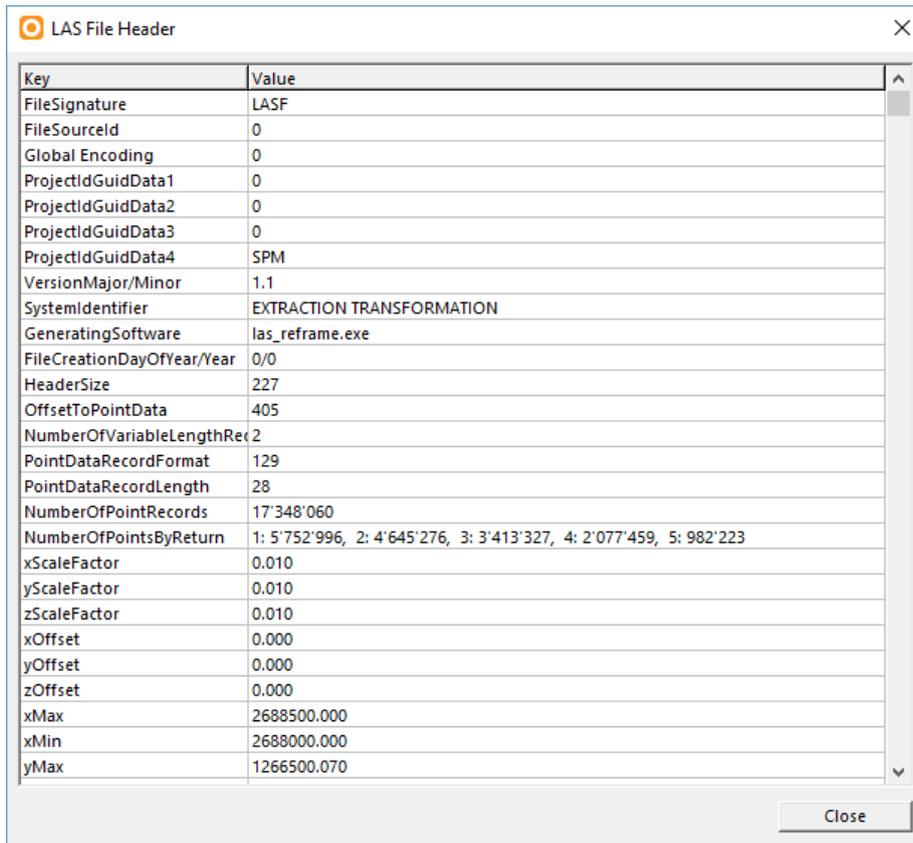
Alternatively, just drag&drop the files into the drawing area

You have three different options:

- Choose a las files which often contain both DTM and DSM data
- Choose only DTM data
- Choose DTM and DSM data

Choose las Files

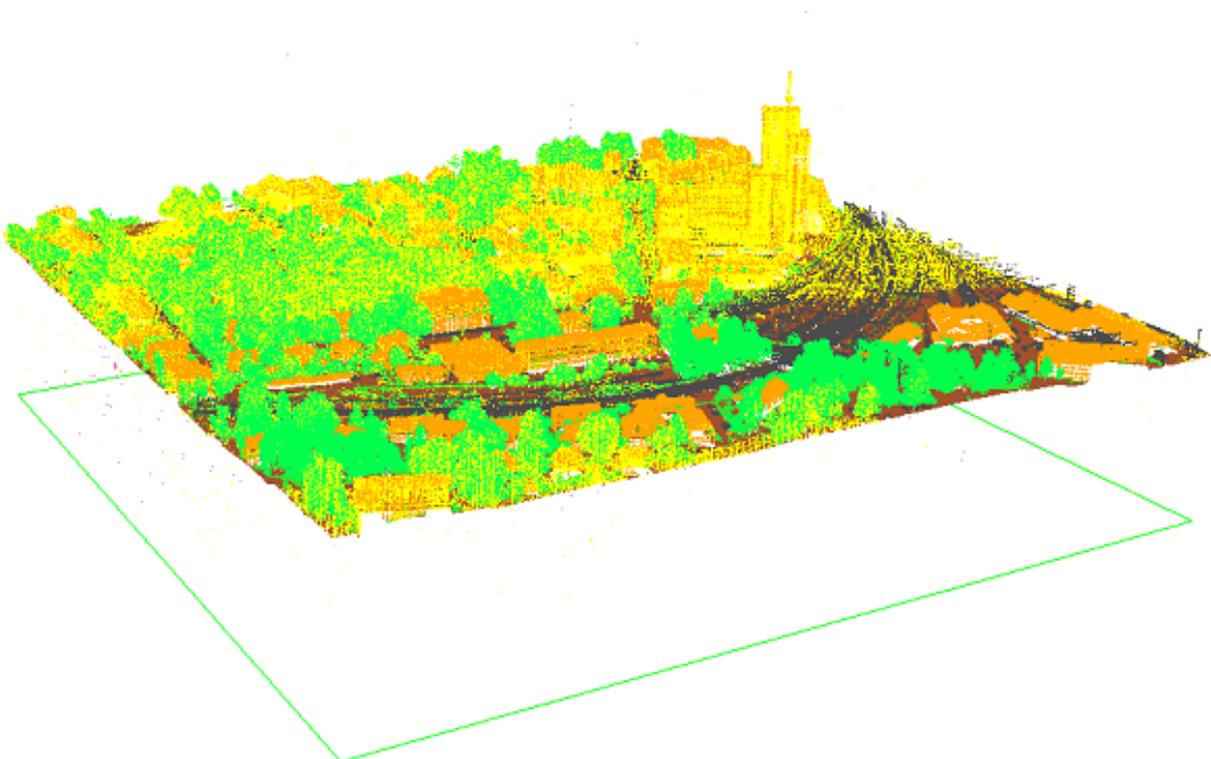
- After adding a las file you can select the item and click the **LAS Info** button. The **LAS File Header** dialog opens which shows the information from the file header like the *Number of Points by Return* or the *Extent*.



The screenshot shows the 'LAS File Header' dialog box with a table of metadata. The table has two columns: 'Key' and 'Value'. The data is as follows:

Key	Value
FileSignature	LASF
FileSourceId	0
Global Encoding	0
ProjectIdGuidData1	0
ProjectIdGuidData2	0
ProjectIdGuidData3	0
ProjectIdGuidData4	SPM
VersionMajor/Minor	1.1
SystemIdentifier	EXTRACTION TRANSFORMATION
GeneratingSoftware	las_reframe.exe
FileCreationDayOfYear/Year	0/0
HeaderSize	227
OffsetToPointData	405
NumberOfVariableLengthRecords	2
PointDataRecordFormat	129
PointDataRecordLength	28
NumberOfPointRecords	17'348'060
NumberOfPointsByReturn	1: 5'752'996, 2: 4'645'276, 3: 3'413'327, 4: 2'077'459, 5: 982'223
xScaleFactor	0.010
yScaleFactor	0.010
zScaleFactor	0.010
xOffset	0.000
yOffset	0.000
zOffset	0.000
xMax	2688500.000
xMin	2688000.000
yMax	1266500.070

- Click on **Show** to see the tile in LasView.



Choose DTM Data

Add only the DTM file(s).

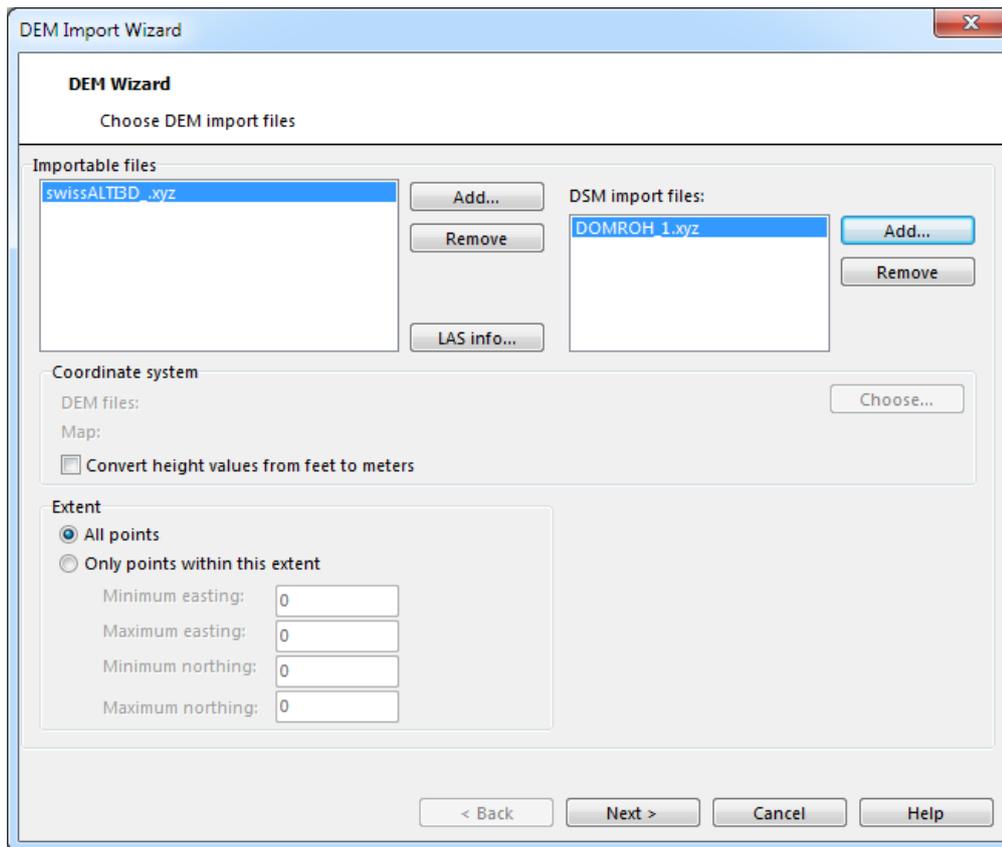
Please note that not all functions (e.g. vegetation height) are available if only DTM data are available.

The screenshot shows the 'DEM Import Wizard' dialog box with the following sections:

- DEM Wizard**
Choose DEM import files
- Importable files**: A list box containing 'geogr_swissalti3d_av.xyz'. To its right are 'Add...' and 'Remove' buttons. Below the list box is a 'LAS info...' button.
- DSM import files:** An empty list box with 'Add...' and 'Remove' buttons to its right.
- Coordinate system**: 'DEM files:' and 'Map:' labels with a 'Choose...' button to the right. A checkbox labeled 'Convert height values from feet to meters' is checked.
- Extent**: Two radio buttons: 'All points' (selected) and 'Only points within this extent'. Below the second radio button are four input fields: 'Minimum easting: 0', 'Maximum easting: 0', 'Minimum northing: 0', and 'Maximum northing: 0'.
- At the bottom are four buttons: '< Back', 'Next >', 'Cancel', and 'Help'.

Choose DTM and DSM Data

Add the DTM file(s) on the left side and the DSM file(s) on the right.

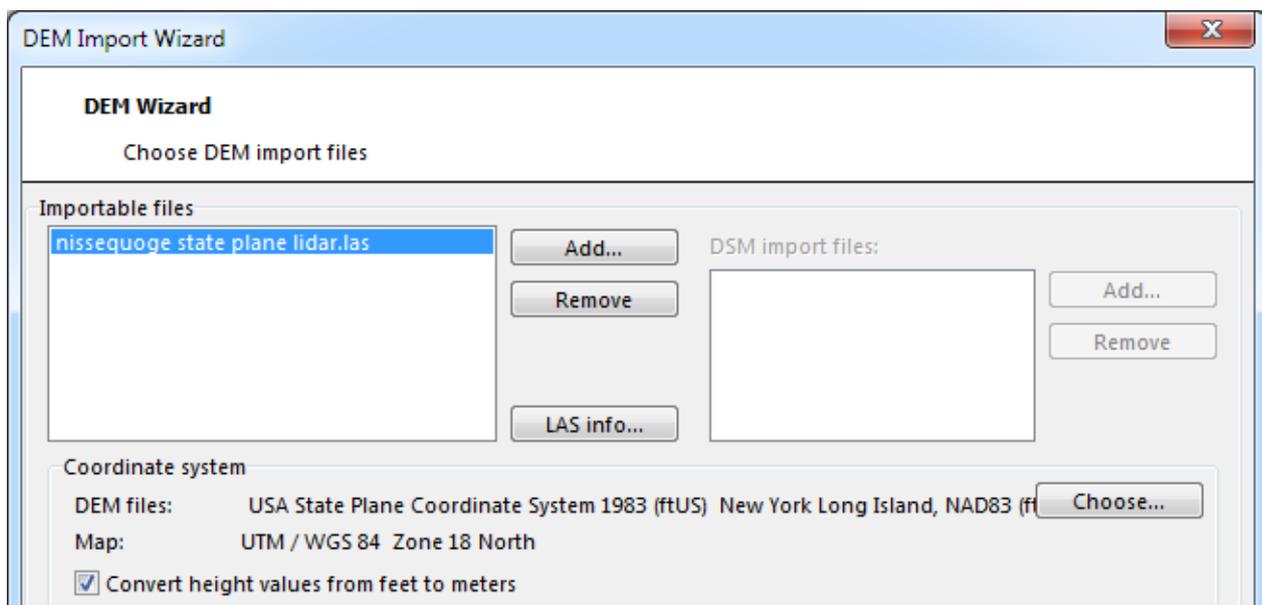


If the DSM have an other extent than the DTM then OCAD cuts to the DSM to the extent of the DTM or the chosen extent.

Coordinate System

Usually the DEM data are in the same coordinate system as the OCAD map. So no transformation is necessary.

OCAD supports the transformation during the DEM import. Click the **Choose** button to select the coordinate system of the DEM data.



In this example OCAD transforms the DEM data from *US State Plane (Feet)* to the metric UTM Zone 18 North.

- **Convert height values from Feet to Meters:** Optional it is possible to convert also the height values from Feet to Meters. Some DEM data in USA are provides in Feet.
- **Convert height values from mm to Meters:** Optional it is possible to convert also the height values from Millimeters (mm) to Meters. Some DEM data in UK are provides in mm.
- **Shift elevations below sea level:** OCAD cannot work with elevations below the sea level. OCAD shifts them to 0m when importing the data. This option is a temporary workaround. If the option is checked then OCAD shifts all elevations by 1000m. So check this option if you have terrain below the sea level.

Extent

DEM data are often big. So the calculation needs a lot of time and memory. If you do not need the whole extent of DEM data you can enter here the used extent.



The extent is in terms of the Map Coordinate System, not the Input Coordinate System.

Please note that when an object is selected in the drawing area and you open the DEM Import Wizard, OCAD uses the extent of the selected object as default extent.

Extent

All points

Only points within this extent

Minimum easting: 2740400

Maximum easting: 2740700

Minimum northing: 1271000

Maximum northing: 1271400

< Back Next > Cancel Help

Click the **Next** button. OCAD imports the file(s). Depends on the file size of data this step can takes some minutes. The **Settings** dialog appears.

Settings

This dialog shows the information about the DEM data.

Analyze Files

OCAD shows here the information about the map extent and the average number of point per square meter.

If the source file is a regular grid (data type of import files = grid), the **Cell size** box is set to read only. OCAD sets the same cell size for the imported DEM. For irregular DEM data source (data type of import files = raw) the cell size can be set in the 'cell size' box. For these DEM's OCAD interpolates a regular grid with the specified cell size during the import. The cell size depends on the import data and the further usage of the DEM.



The **Cell size** range is between 0.01 and 650 m. A resolution of 1 m is appropriate for orienteering base maps.

File Name

During the import procedure the imported DEM must be saved in the OCAD DEM file format (*.ocdDem) and it is loaded to the OCAD map.

Choose here the file name of this DEM file.

If only one import file is chosen OCAD uses by default the file name of the import file. Otherwise the filename of the ocd map.

If the ocd file is untitled OCAD exports the DEM files in the temporary user directory (C:\Users\XXX\AppData\Roaming\OCAD\OCAD 20xx\Tmp).

Options

OCAD can create different outputs depending on the chosen import data type (DTM and DSM or only DTM).

- Create Contour Lines
- Create Hypsometric Map
- Create Hill Shading
- Calculate Slope Gradient
- Classify Vegetation Height
- Extract features
- Create Raw Data Points Map
- Create ocdLas File for LiDAR Point Cloud Manager
- Create vegetation base map

Check or uncheck these outputs. OCAD shows for each output a page with options later in the **DEM Import Wizard**.

LAS Settings

The LAS Settings dialog is only visible when importing las/laz/zlas files.

DEM Import Wizard

DEM Wizard

LAS Settings

Digital Terrain Model (DTM)

Create DTM

LAS Settings

Classification

- Unclassified (0)
- Ground (1'002'153)
- Low vegetation (10'126'271)
- Mean vegetation (0)
- High vegetation (0)
- Building (0)
- Low point (Noise) (0)
- Water (0)
- Overlap points (0)
- Other (0)

Return Number

- First return (5'625'592)
- Last return (5'594'955)
- All returns (11'128'424)

Choose DTM

Load intensity map and classification map as background map

Digital Surface Model (DSM)

Create DSM

LAS Settings

Classification

- Unclassified (0)
- Ground (1'002'153)
- Low vegetation (10'126'271)
- Mean vegetation (0)
- High vegetation (0)
- Building (0)
- Low point (Noise) (0)
- Water (0)
- Overlap points (0)
- Other (0)

Return Number

- First return (5'625'592)
- Last return (5'594'955)
- All returns (11'128'424)

Choose DSM

Load intensity map and classification map as background map

< Back Next > Cancel Help

On the left side OCAD shows the information about the DTM, on the right to the DSM. If is possible to create both DEMs in one step or only one DEM.

Each point is classified. The value in the round brackets is the number of points for this classification.

- Click the **Choose DTM** button to reset the Classification and Return Number option to the default values.
- Click the **Choose DSM** button to reset the Classification and Return Number option to the default values.

Usually the default settings are right. But in some cases it makes sense to uncheck the overlap point for the DSM. It depends on the used data. Change also these settings if the data are not classified.

Create Intensity and Classification Map

Check the option **Create intensity and classification map** to create these maps. If created OCAD loads these raster maps as background maps.

Intensity Map

Each data point has an intensity of the returned laser beam. This intensity is shown in a grayscale map.

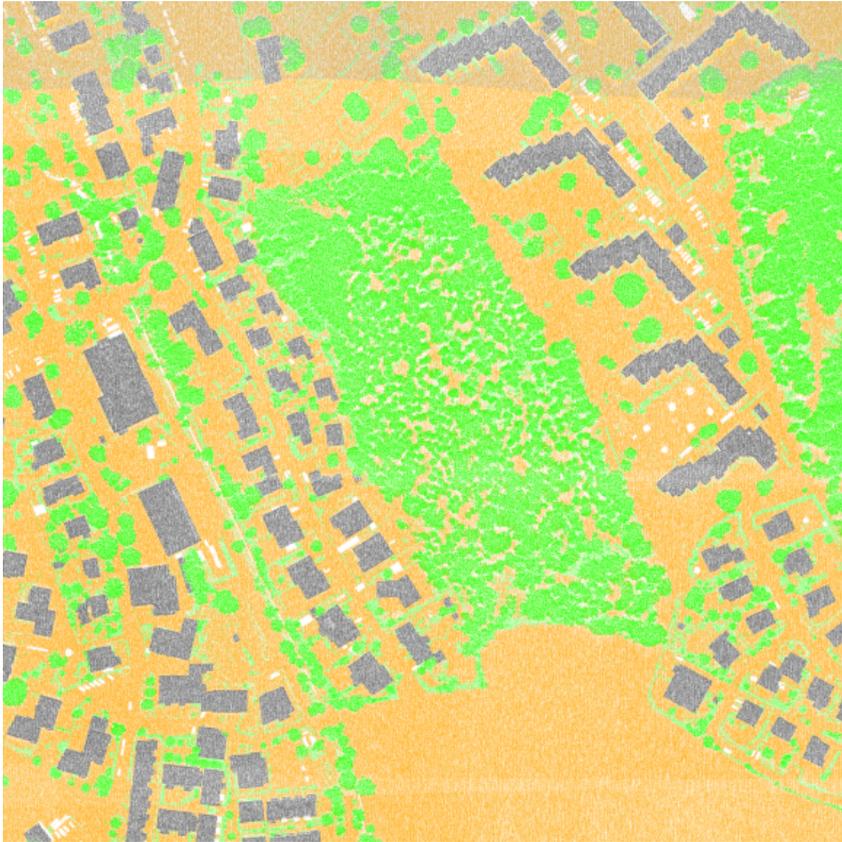
Example:



Classification Map

Each data point has a classification or is unclassified. This classification is shown in a colored map.

Example:



The classification tiff image has the following color index:

- 0 Created, never classified (light gray)
- 1 unclassified (red)
- 2 Ground (yellow)
- 3 Low Vegetation (light green)
- 4 Medium Vegetation (green)
- 5 High Vegetation (dark green)
- 6 Building (Generic) (gray)
- 7 Low point (noise) (gray)
- 9 Water (blue)
- 10 Bridge (brown)
- 11 Road (brown)
- 12 Overlap pointd (gray)

Create Contour Lines



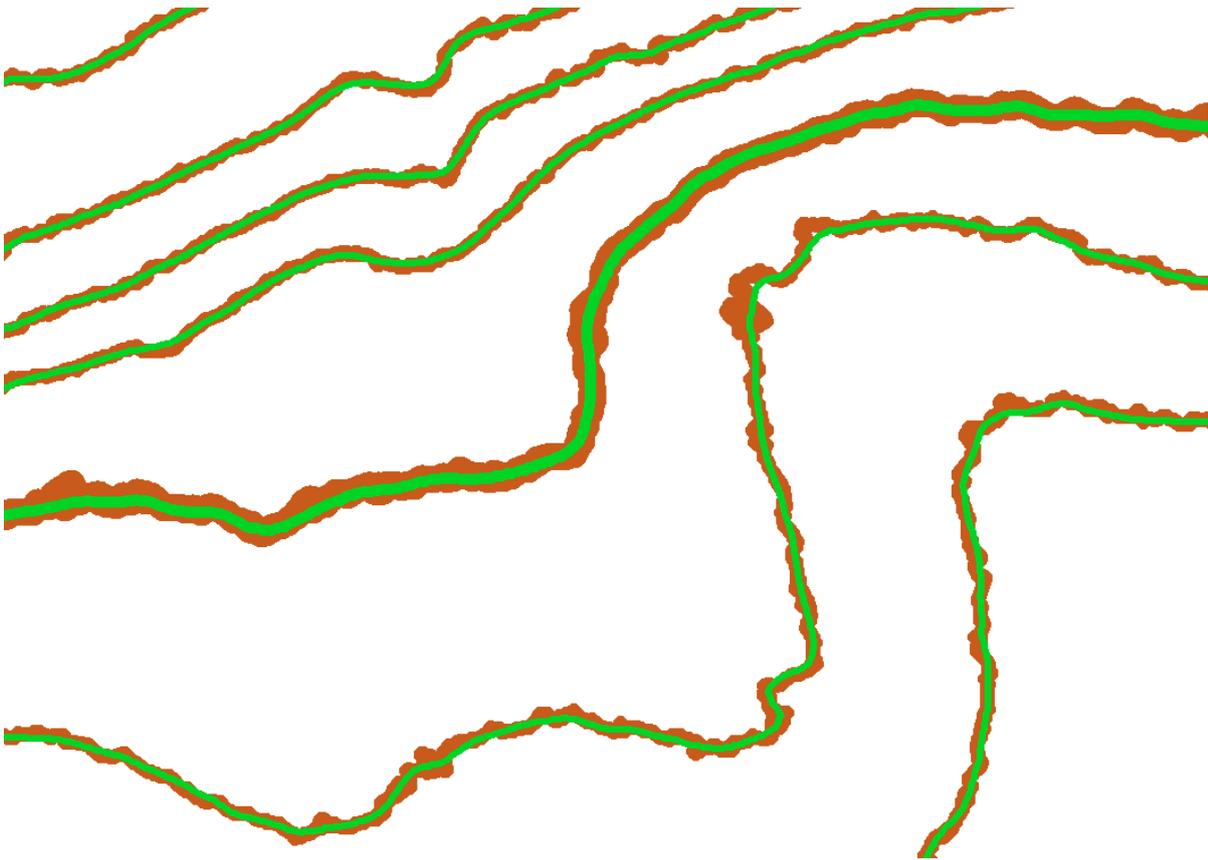
Choose **Create Contour Lines** from **DEM** menu or from **DEM Import Wizard**. The **Create Contour Lines** dialog box appears.

This function calculates contour lines based on the DEM.

- Choose between *Custom contours* and *Smoothed contours*.

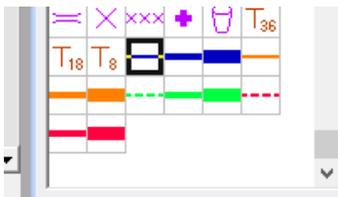
Create custom contours (no smoothing): Creates custom contour lines as you are used from older OCAD versions. There will be no smoothing. Use these contours for your fieldwork. You will see every terrain detail on it, provided you chose contour interval small enough.

Create smoothed contours using TPI: TPI stands for Topographic Position Index, which is defined as the difference between a central pixel and the mean of its surrounding cells. Choosing this option, OCAD first creates a smoothed DEM using TPI and calculates contours afterwards. Some details may get lost, but results are very satisfying in constant slopes. Use these contours, if you want to adopt the calculated contour lines directly to your map.

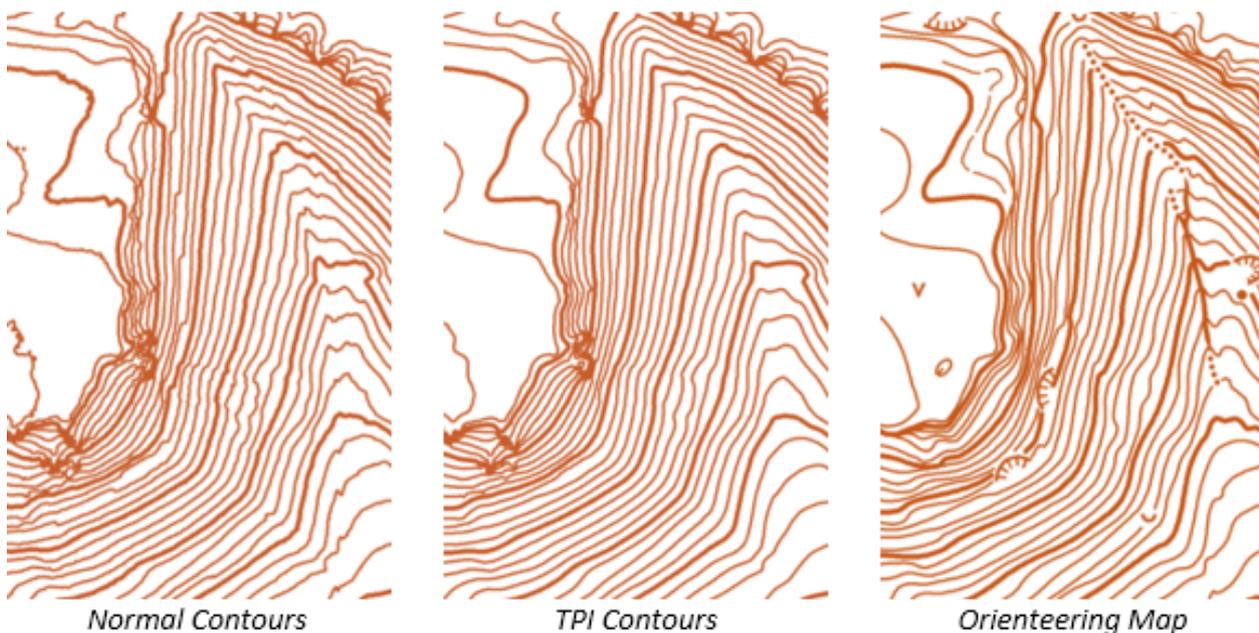


Custom contour lines in brown, smoothed contour lines using TPI in green.

- Define 1-3 contour intervals (for example 1m, 5m, 25m) for custom and/or smoothed contour lines.
 - 💡 Contour interval values can be entered manually or chosen from the list.
- Choose a line symbol for each type appears. By default, the first three line symbols in the settings are pre-selected. **Load symbols from template** to get 12 line symbols at the bottom of your symbol box, which you can use for the settings.



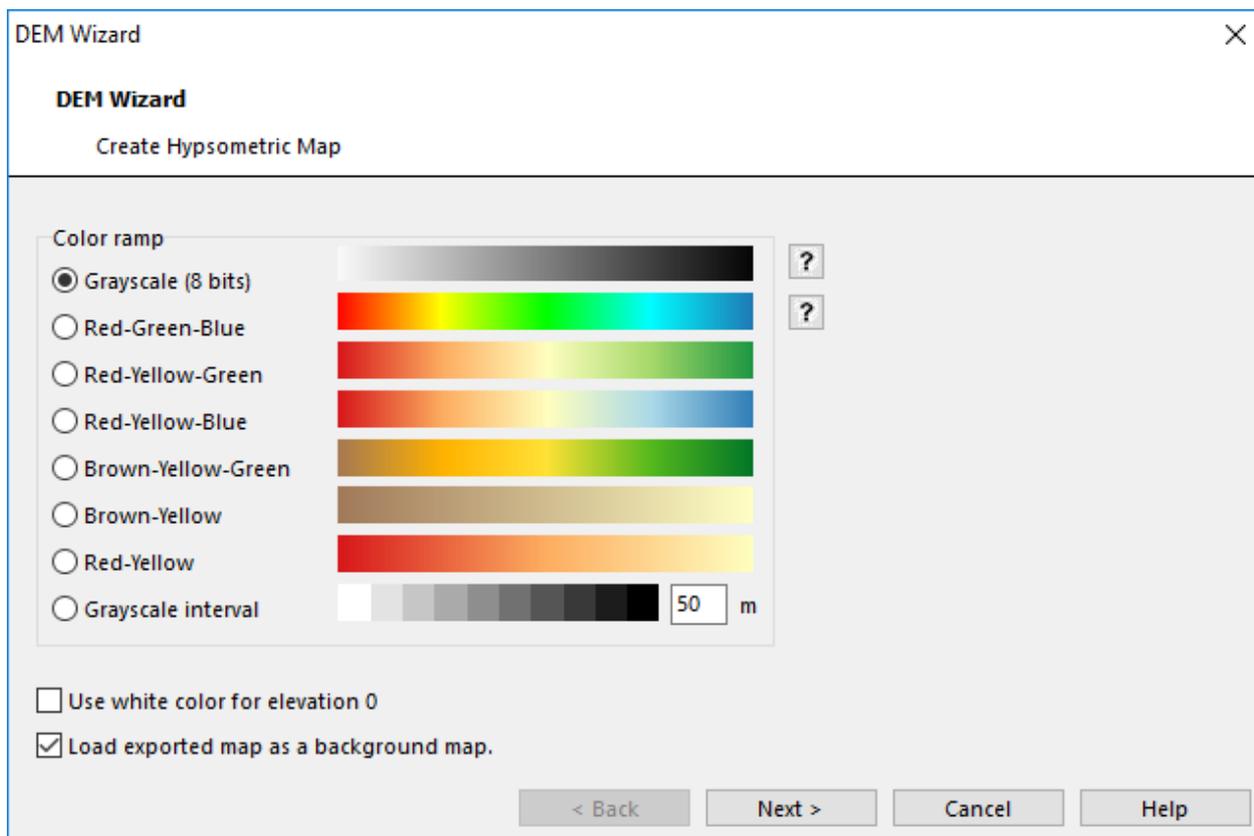
- Choose **Use different symbols for depression** to distinguish depressions from hills.
- Specify the minimum (lowest) and maximum (highest) contour for the calculation.



Create Hypsometric Map

Choose **Create Hypsometric Map** from **DEM** menu or from **DEM Import Wizard**. The **Create Hypsometric Map** dialog box appears.

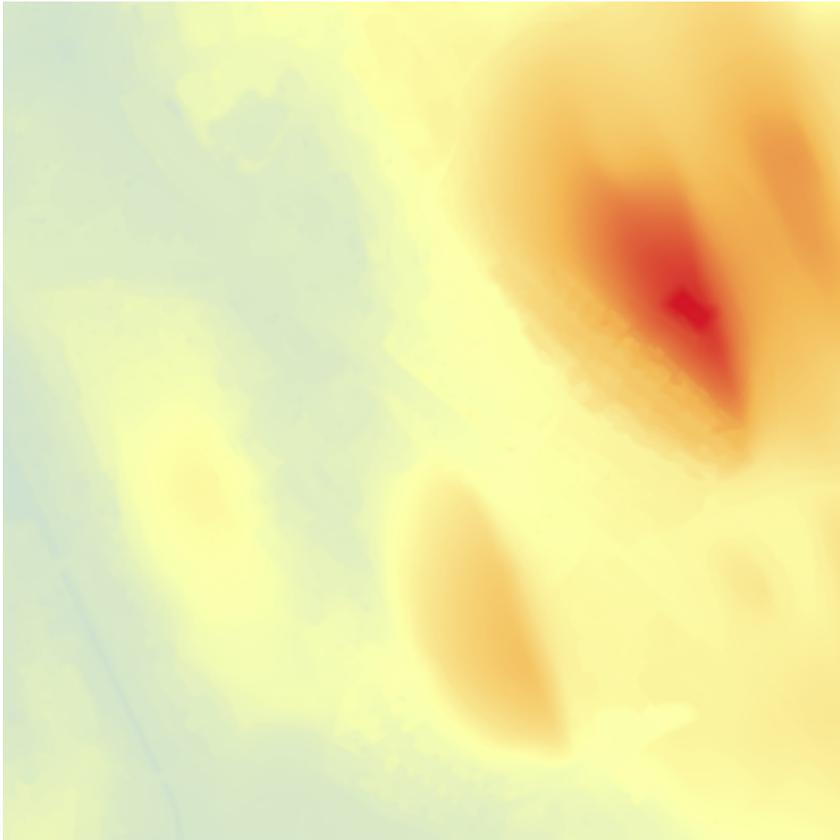
The progression is from highest at left to lowest at right.



This function calculates a grayscale or colored hypsometric map as GeoTIFF file. Choose one of the color ramps.

Optionally you can set white color for areas with no data.

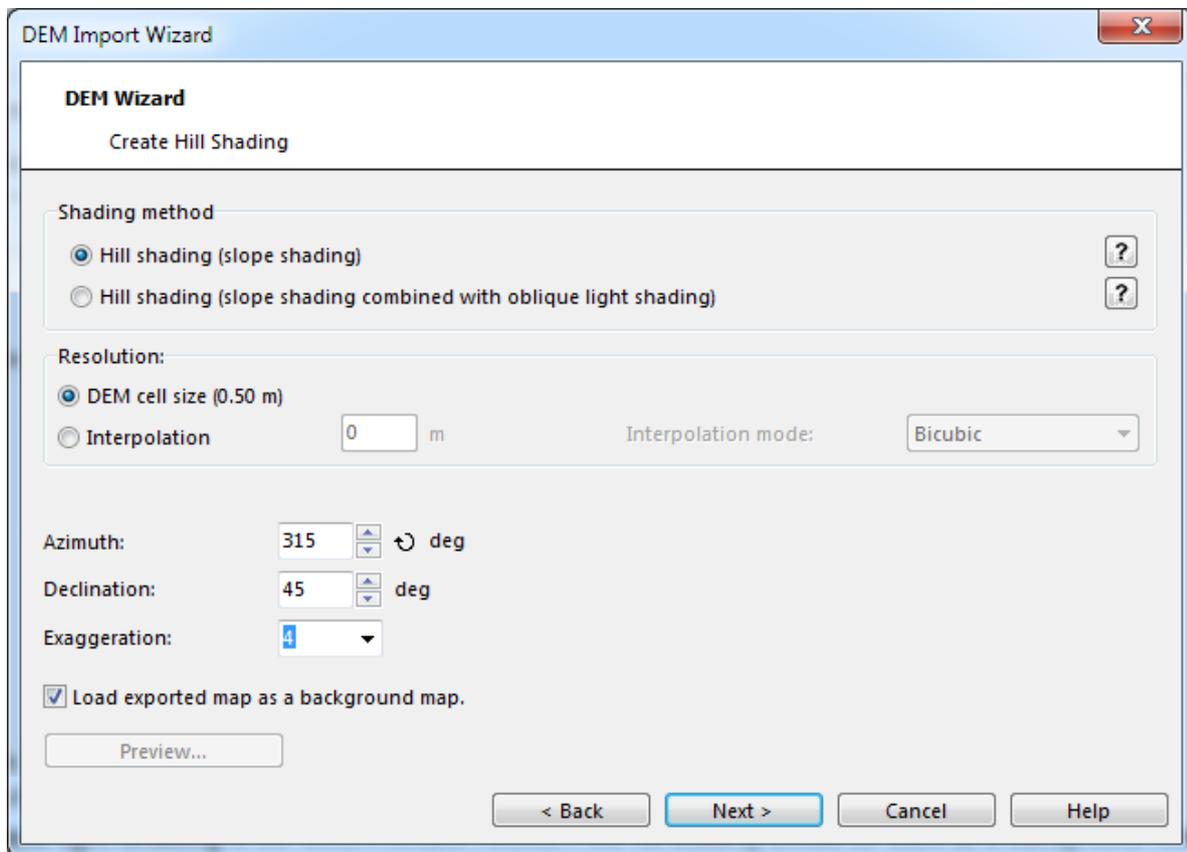
Optionally the created raster file is directly loaded as background map.



Create Hill Shading

Choose **Create Hill Shading** from **DEM** menu or from **DEM Import Wizard**. The **Create Hill Shading** dialog box appears.

This function calculates a shaded relief picture (hill shading).



Shading method

There are two calculation methods available:

- **Slope shading** is optimized to see outlines of features like paths in a slope.
- **Slope shading combined with oblique light shading** is the recommended method if the hill shading should be used as a background relief of a map.

Optionally the calculated hill shading is directly loaded as background map.

Resolution

Aside from the chosen method, there is to define the **Resolution** and the **Interpolation** mode if chosen. The default interpolation mode is Bicubic, but there are 7 other algorithm.

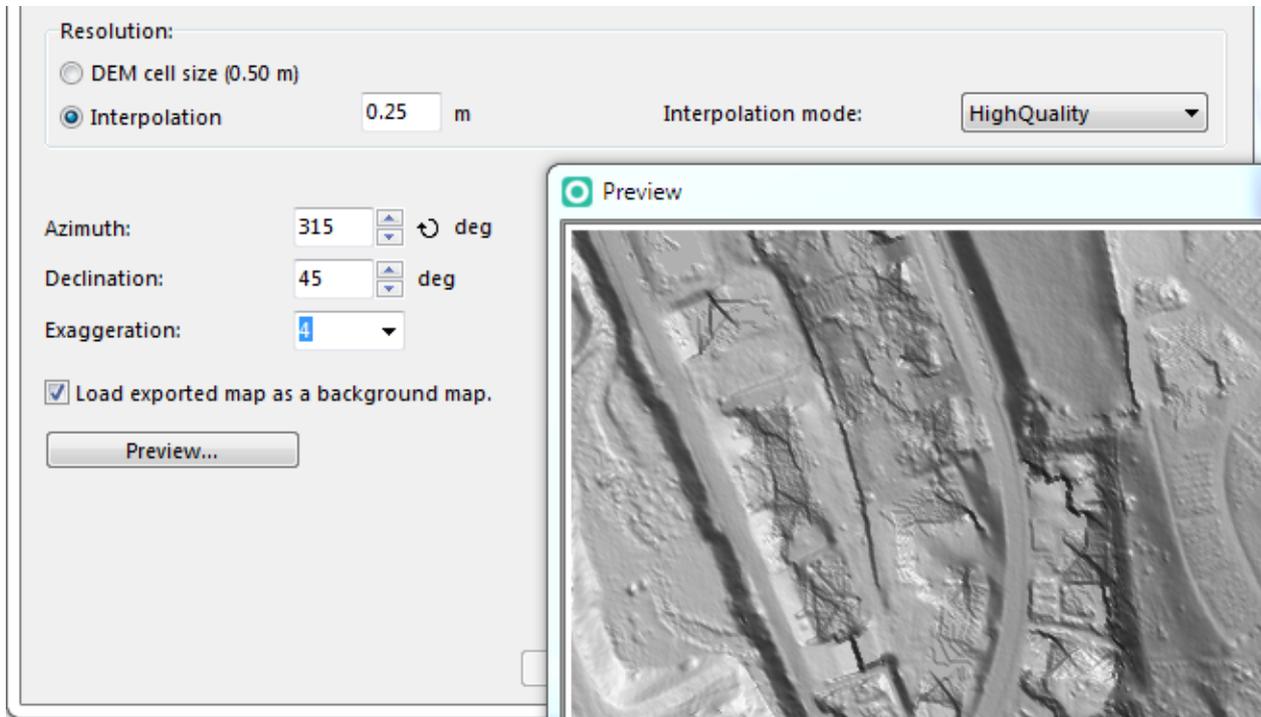
Additionally an **Azimuth** and a **Declination** of the light source has to be set. Standard settings are 315° (north-west) and 45°.

An **Exaggeration** factor of 4 is pre-selected and can be altered.

Preview

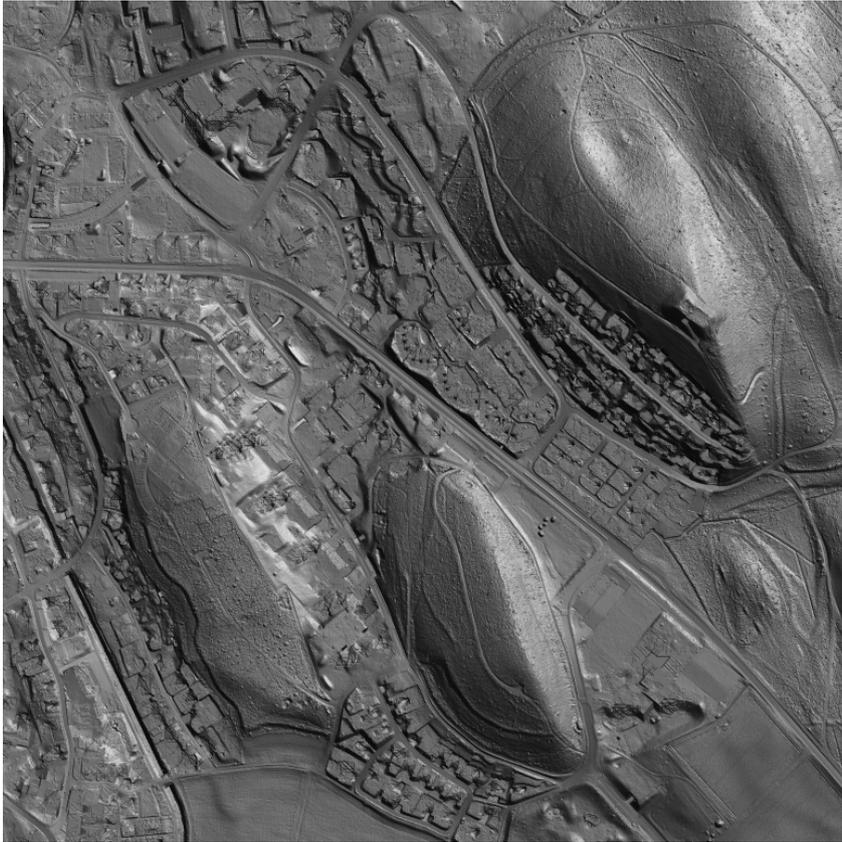
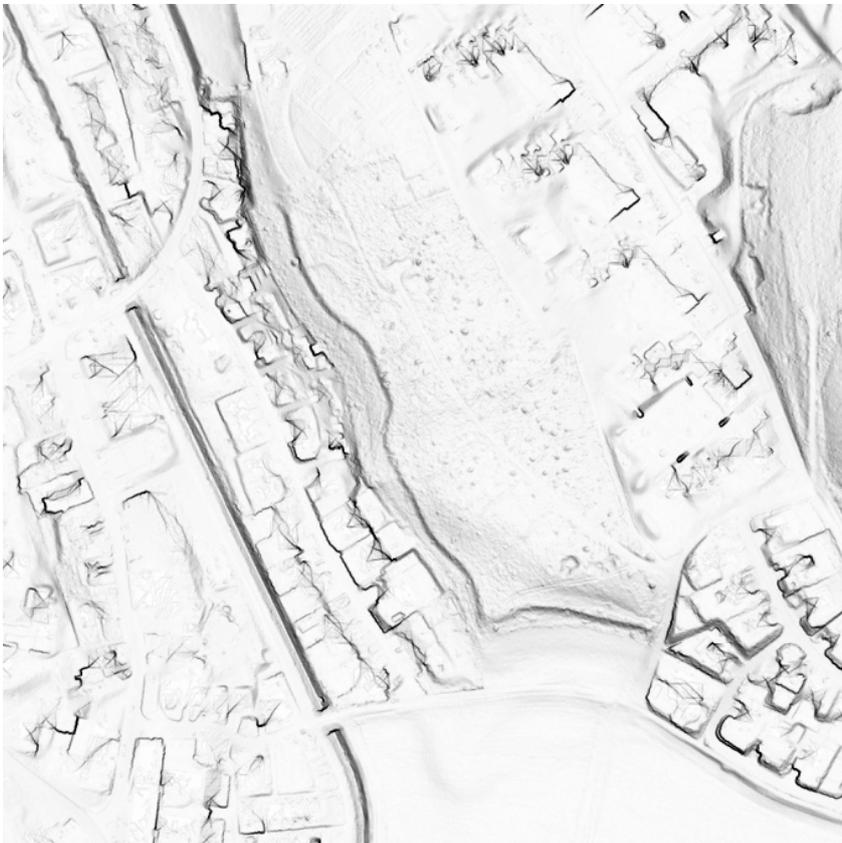
The **Preview...** button allows you get a first impression of the current setting for your hillshading and can be use to optimize it. Click and move with the left mouse button allows to pan the current view.

The **Preview...** button is only enabeld when importing a dem grid file or an ocddem is already loaded. This function is disabled when importing las/laz files.



💡 To detect point and line objects like paths or watercourses from DEM we recommend using the same resolution as the DEM. To create a relief and if the DEM cell size isn't high then we recommend to set a smaller resolution.

💡 The default export file format is JPEG and creates an 8 bit JPEG with in grayscale and a world file with the geo reference. If you decide to export the file in TIFF-format, only with resolution option 'DEM cell size' then OCAD creates an 8 bit grayscale tiff with color palette. Otherwise a 24 bit RGB tiff.

Hillshading (slope shading)**Hillshading (slope shading combined with oblique light shading)**

Error Message *Bitmap is too big*

The size of the hill shading image is limited. If this error message appears please enter a bigger value for the interpolation.

Calculate Slope Gradient

Choose **Calculate Slope Gradient** from **DEM** menu or from **DEM Import Wizard**. The **Calculate Slope Gradient** dialog box appears.

DEM Wizard

DEM Wizard

Calculate Slope Gradient

Slope gradient method:

Continuous (<x° = grayscale / >x° = black) 45 deg ?

Black/white (<x° = white / >x° = black) 45 deg ?

Load exported map as a background map.

Extract cliff features from black pixels:

Cliff minimum area: 3 pixel

Cliff minimum length: 3 pixel

< Back Next > Cancel Help

Slope Gradient Method

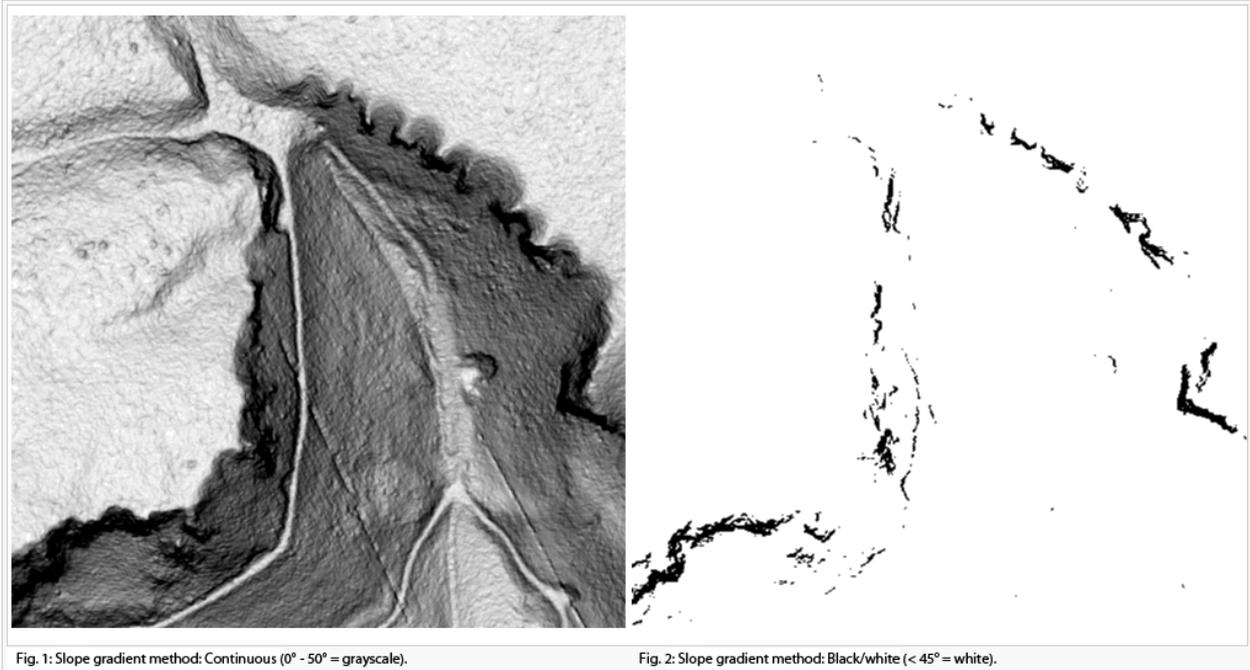
Select one of two different methods:

- Continuous (<x° = grayscale / >x° = black)
- Black/White (<x° = white / >x° = black)

Enter the slope gradient threshold. Slope gradient values over this threshold will be displayed with black pixels.

The resulting picture can be used to identify cliffs and rock faces. The result can sometimes be significantly improved with a slight adjustment of the gradient threshold (between 42-45 degrees).

Slope gradient also shows paths or relief features independent from an azimuth like the Hill Shading.

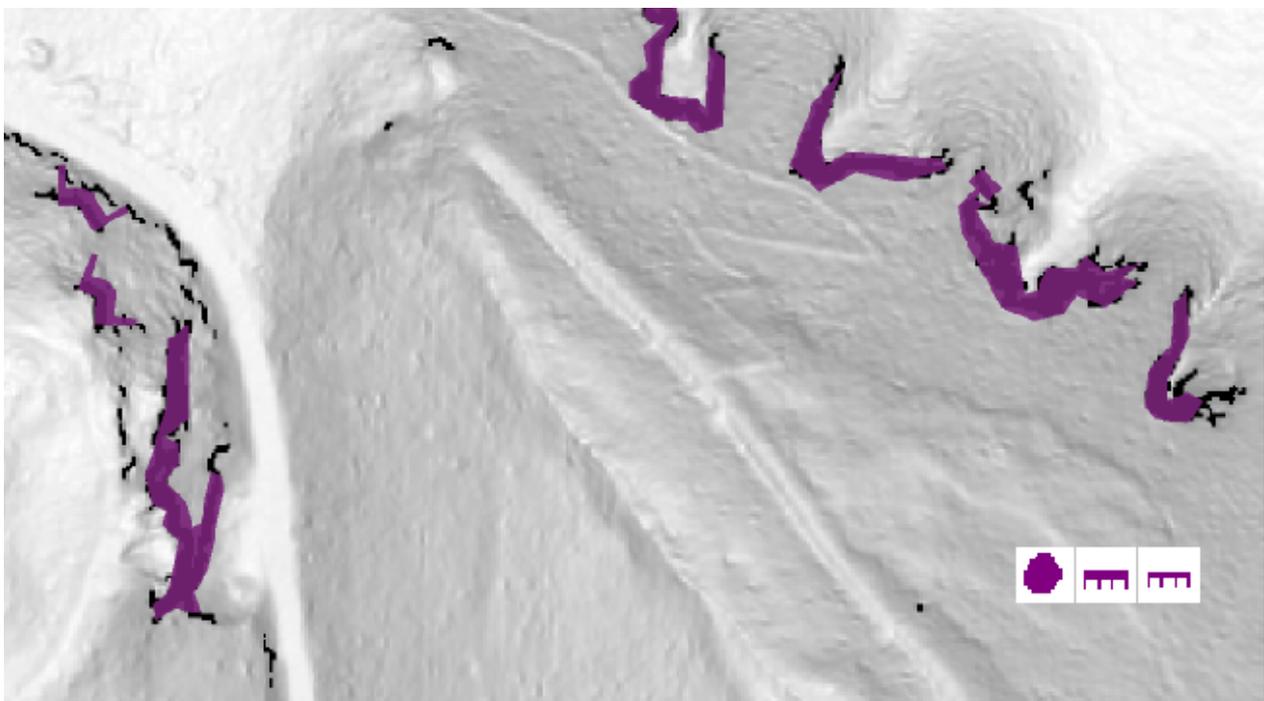


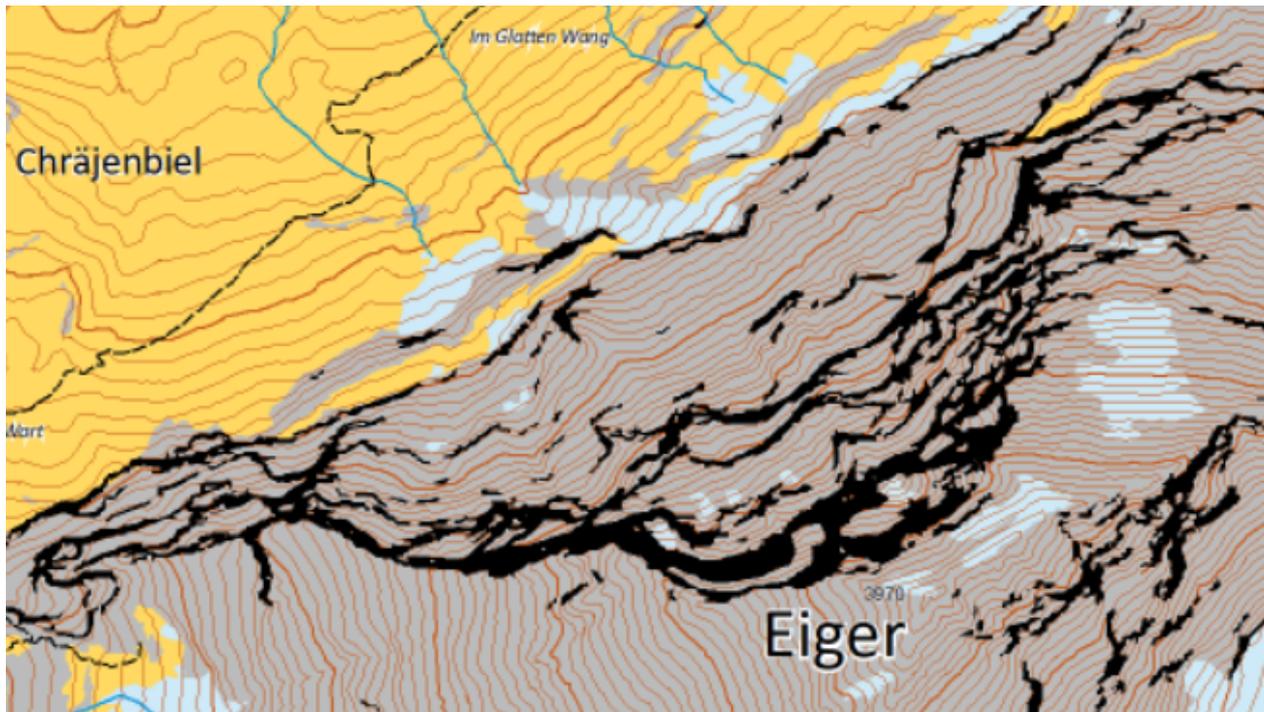
Extract Cliff Features From Black Pixels

Choose this option to automatically convert cliffs into vector symbols. OCAD vectorizes the black pixels from the slope gradient calculation. By adjusting the gradient threshold, you can influence the number of cliffs.

You can also adjust the **Cliff minimum area** and the **Cliff minimum length** in pixel. The higher this value is, the more distinctiv your cliffs need to be before OCAD vectorizes them.

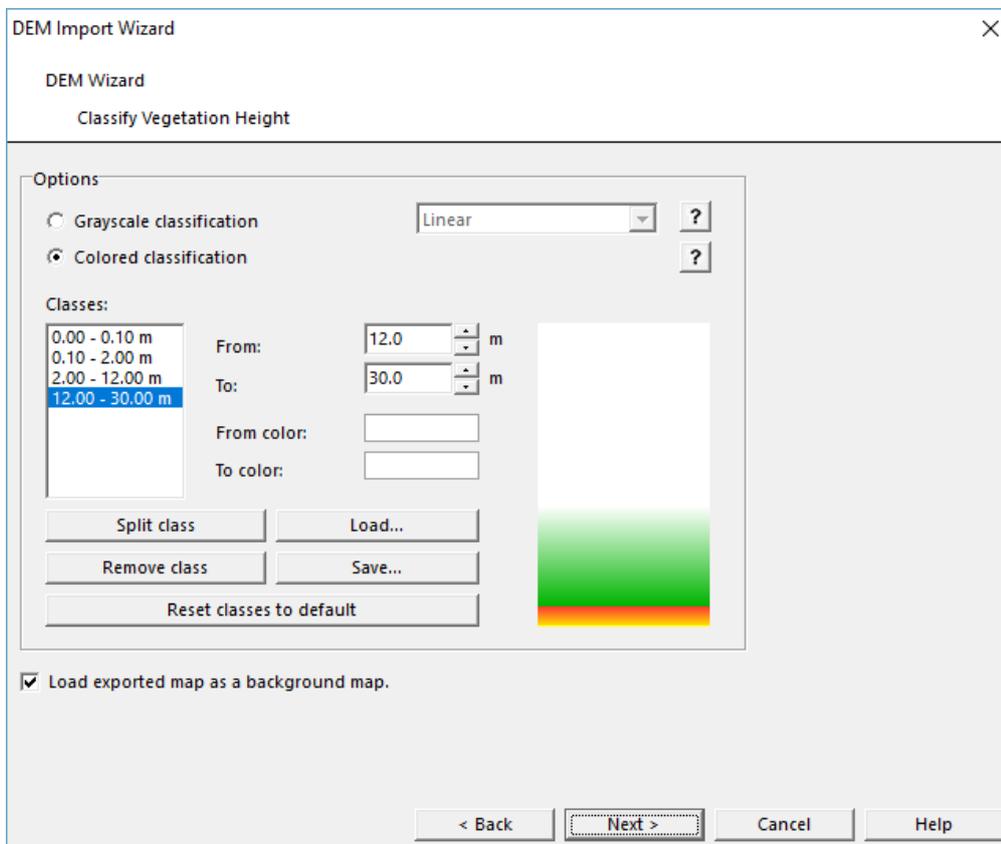
Three symbols will be added automatically to your Symbol Box when choosing this option: One area symbol for bigger cliffs and two line symbols for smaller cliffs. Select the cliffs and change their Symbol if desired.





Classify Vegetation Height

Choose **Classify Vegetation Height** from **DEM** menu or from **DEM Import Wizard**. The **Classify Vegetation Height** dialog box appears.



There are two different options to show vegetation height classification:

- Gray scale classification with options: Linear, Quadratic negative, Quadratic positive
- Colored classification: Define classes with a height and color range

- Split a class into two classes by clicking the **Split class** button
- Remove a class by clicking the **Remove class** button
- Load the settings from a text file by clicking the **Load** button
- Save the settings to a text file by clicking the **Save** button
- Reset the classes and colors to the default settings by clicking the **Reset classes to default** button



Extract Features

Choose **Extract features** from **DEM Import Wizard**. The **Extract features** dialog box appears.

This function extracts automatically landform and vegetation features from your data. The function is computationally intensive and may take a while.

- **Extract landform features:** Choose this option to extract landform features. Define symbols for *knoll* and *small depression*.
- **Extract vegetation features:** Choose this option to extract vegetation features. Define the *tree symbol*.

For both landform and vegetation features, you can adjust the **Minimum height**.

The chosen symbols will be loaded directly to your map.

DEM Import Wizard

DEM Wizard

Extract features

Extract landform features

Knoll symbol: 109.000 Small Knoll

Minimum height: 1.0 m

Small depression symbol: 111.000 Small Depression

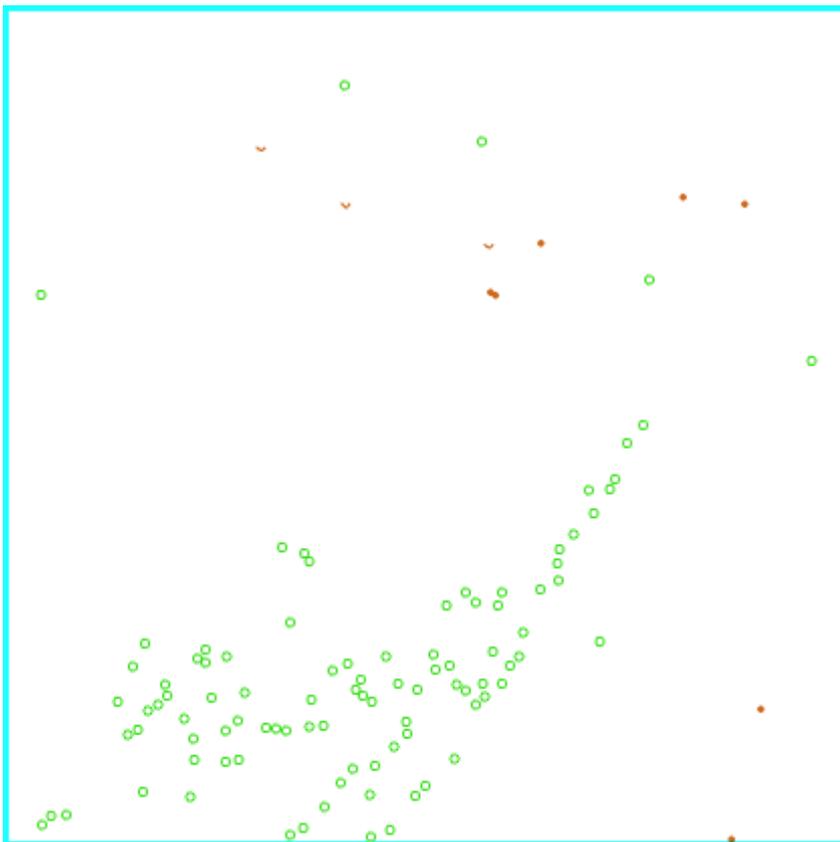
Minimum depth: 1.0 m

Extract vegetation features

Tree symbol: 418.000 Prominent Bush or Tree

Minimum height: 5 m

< Back Next > Cancel Help

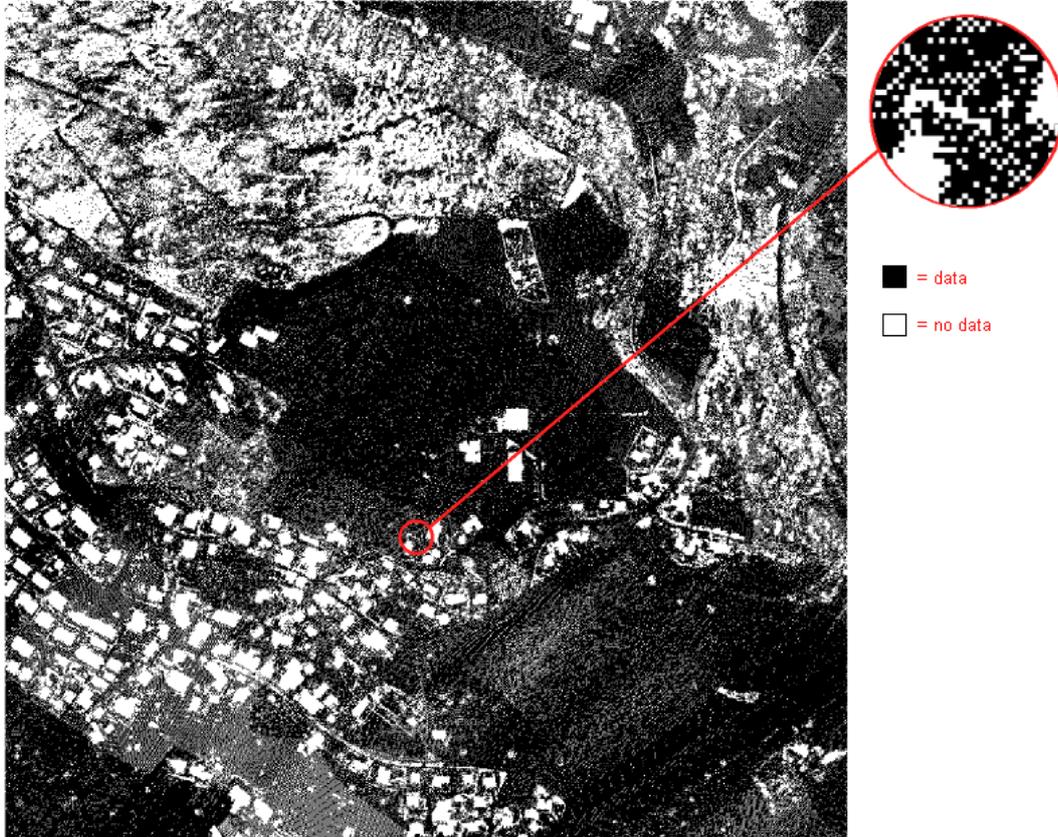


Note: This function is (1) very dependent on the quality of the data and (2) the results should be treated with caution. In terms of LiDAR data, a small knoll looks very similar to a cluster of branches, a tree stump or a small fir tree. However, the results can give you a hint, which places you should check carefully during fieldwork.

Create Raw Data Points Map

The Raw Data Points Map shows you where there are data and not.

There is no further dialogue for this option.



Create ocdLas File for LiDAR Point Cloud Manager

There is no further dialogue for this option.

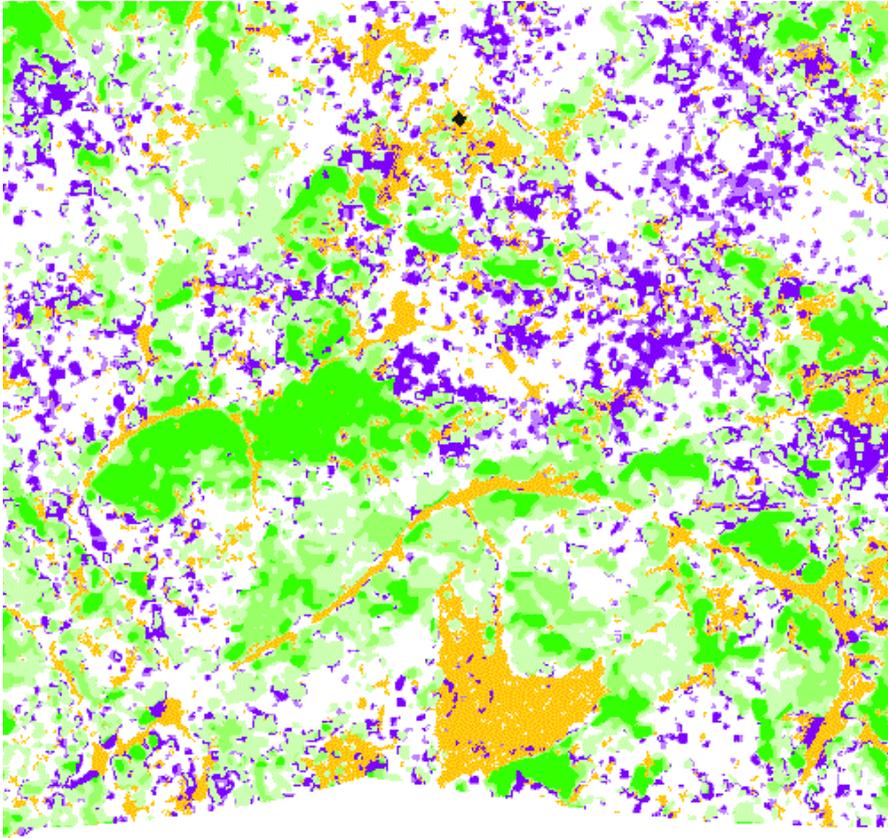
The output is an ocdLas file, which contains all points of the LiDAR point cloud and it is optimized for the use with OCAD.

This file is used to analyze the vegetation. This file is often very big (> 1 GB).

Learn more about the ocdLas file functions on the [LiDAR_Point_Cloud_Manager](#) page.

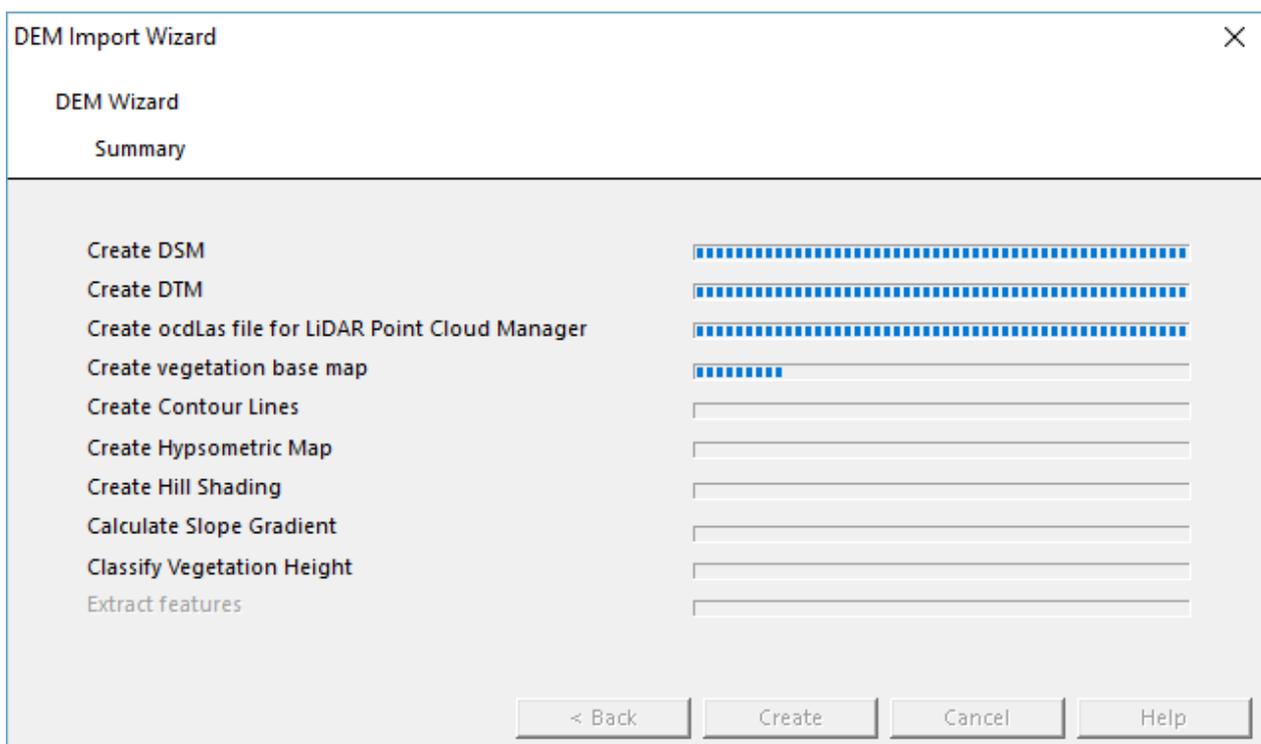
Create Vegetation Base Map

If you checked this option in the **DEM Settings**, a Vegetation Base Map will be calculated with default values. To adjust the settings, you need to run the **LiDAR Point Cloud Manager**.



Summary

This dialog is only visible in **DEM Import Wizard**. It shows the progress of the different functions.



After finishing the process the dialog closes automatically.

References

- [1] <http://www.cs.unc.edu/~isenburg/lastools/>
- [2] <http://rapidlasso.com/2015/04/20/new-lasliberator-frees-lidar-from-closed-format/>
- [3] <http://www.cs.unc.edu/~isenburg/>

DEM Profile

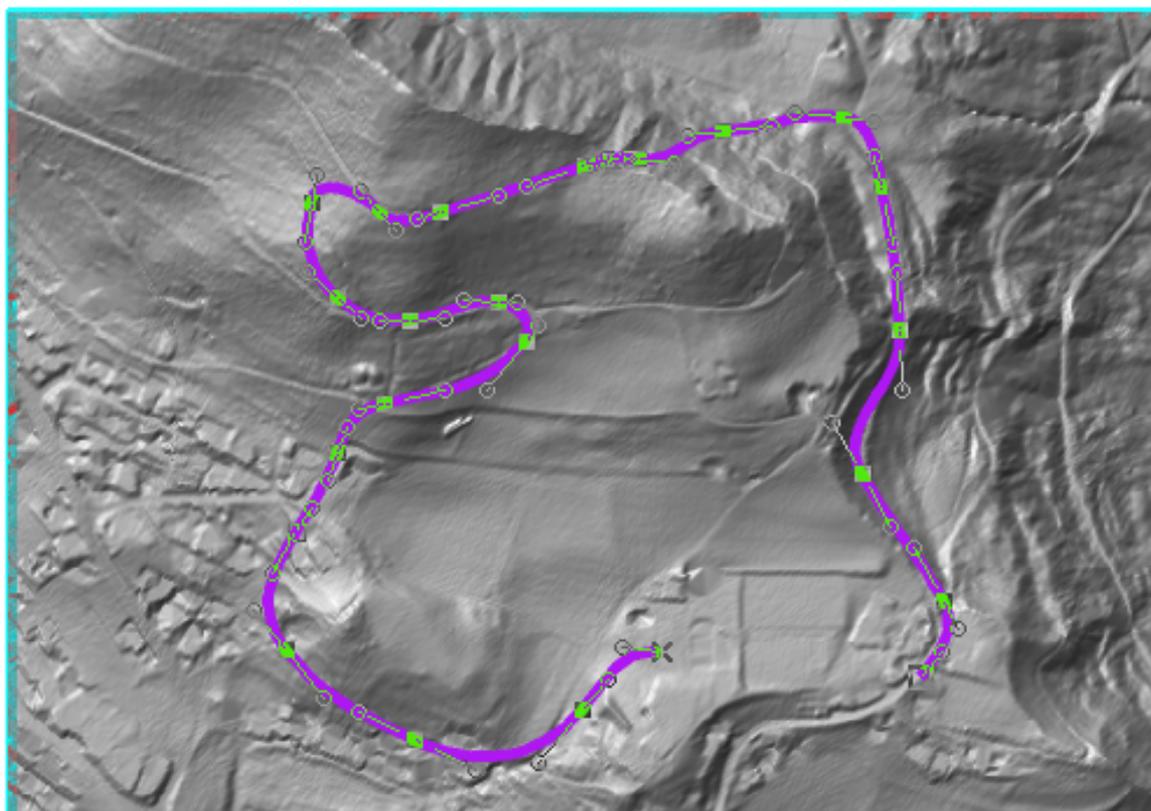
To use this function a **DEM** has to be loaded.

Create a Profile

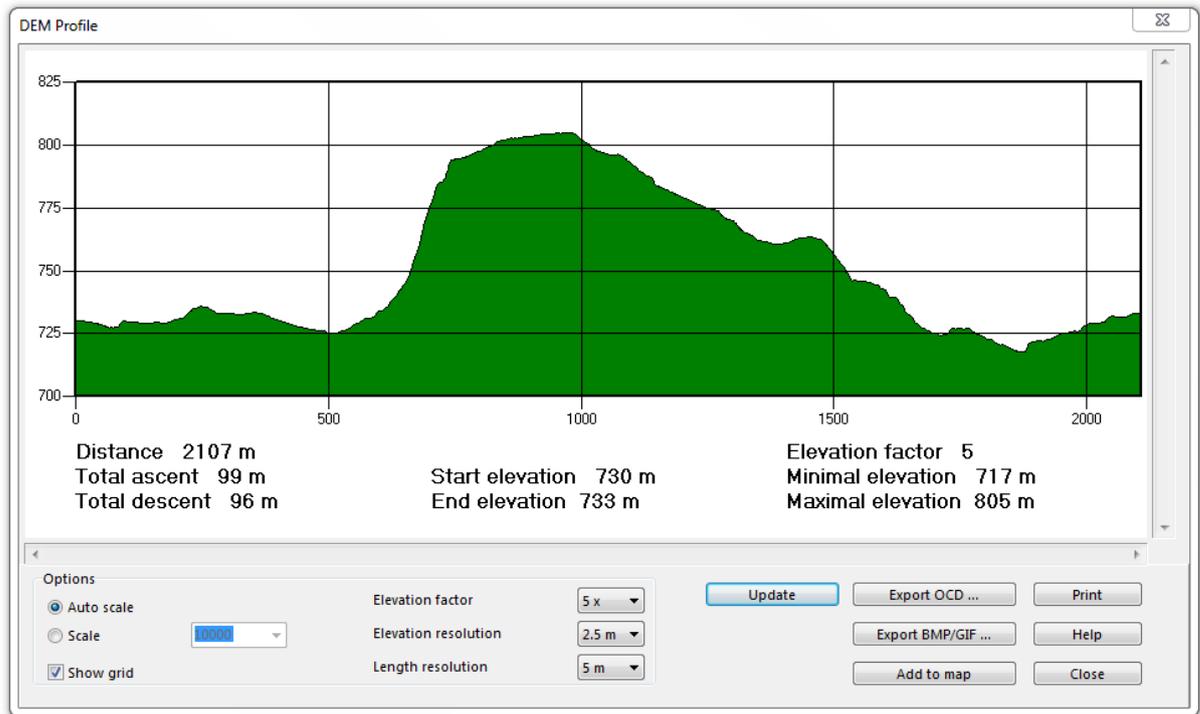


To create a profile:

1. Select a line object within the **DEM** data. Add a **Corner Vertex** to the line to create a stopover. Stopovers are visible in the profile after exporting an OCD-File or adding it to the map.



2. Choose the **Create Profile** command from the **DEM** menu.
3. The **DEM Profile** dialog appears and the profile is shown.



You have several options now:

- **Auto scale:** If this option is enabled, OCAD takes a scale which fits best to the dialog box.
- **Scale:** Choose the desired scale of the profile in the dropdown list.
- **Show grid:** If this box is activated, a grid is shown in the profile.
- **Elevation factor:** Choose an elevation factor in the dropdown list. This is the scale factor for the horizontal profile axis (height).
- The **Elevation resolution** and the **Length resolution** are filters that influence the calculation of the total ascent and total descent. These resolution values should not be more accurate than the elevation resolution and cell size of the DEM.

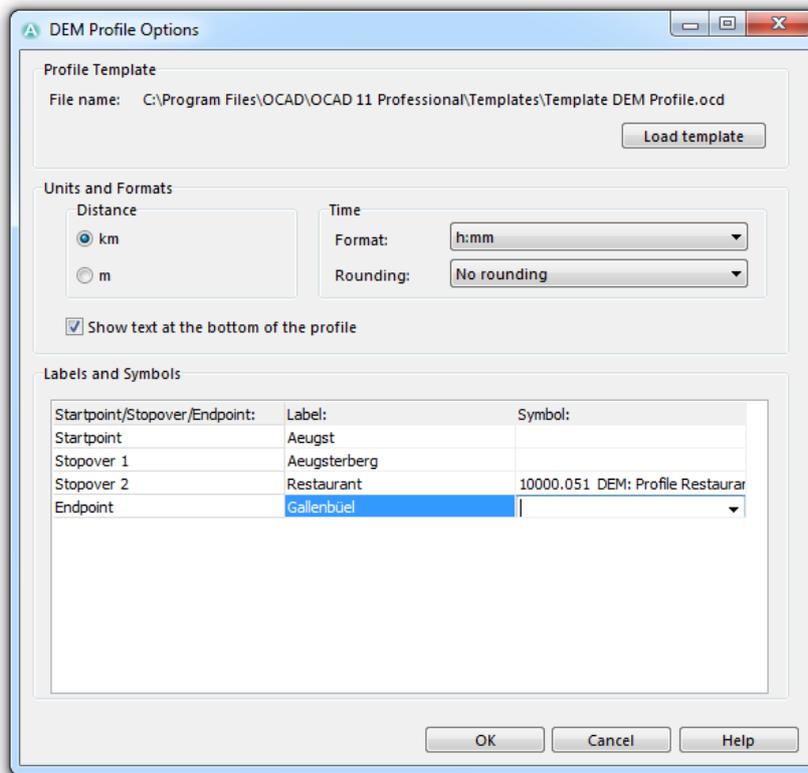
 **DEM Profile** dialog is a non-modal dialog. The user can switch to the OCAD map window. It is possible to edit the selected line object in the OCAD map. Click the **Update** button in the **DEM Profile** dialog to see the profile for the edited or newly selected object.

Export Profile



Export OCD

Click the **Export OCD** button to export the profile to a new OCD-File. The **DEM Profile Options** dialog appears.



The *Template DEM Profile.ocd* file in the *OCAD*-directory is chosen as a template file (for the symbol set, colors etc.) by default. You can choose an own template by clicking the **Load template** button.

Symbol Number	Description	Symbol Type	Color(s)
10000.001	DEM: Elevation Text	Text symbol	10000: UPPER BLACK DEM PROFILE
10000.002	DEM: Distance Text	Text symbol	10000: UPPER BLACK DEM PROFILE
10000.003	DEM: Text	Text symbol	10000: UPPER BLACK DEM PROFILE
10000.004	DEM: Horizontal Grid Line	Line symbol	10006: LOWER BLACK DEM PROFILE
10000.005	DEM: Profile Frame	Line symbol	10000: UPPER BLACK DEM PROFILE
10000.006	DEM: Profile Line	Line symbol	10005: LOWER RED DEM PROFILE
10000.007	DEM: Profile Area	Area symbol	10003: GREEN DEM PROFILE
10000.008	DEM: White Background	Area symbol	10002: WHITE DEM PROFILE
10000.009	DEM: Horizontal Tag	Point symbol	10000: UPPER BLACK DEM PROFILE
10000.010	DEM: Vertical Tag	Point symbol	10000: UPPER BLACK DEM PROFILE
10000.011	DEM: Time Text	Text symbol	10000: UPPER BLACK DEM PROFILE
10000.012	DEM: Label Text Stopover	Text symbol	10000: UPPER BLACK DEM PROFILE
10000.014	DEM: Label Text Start- and Endpoint	Text symbol	10000: UPPER BLACK DEM PROFILE

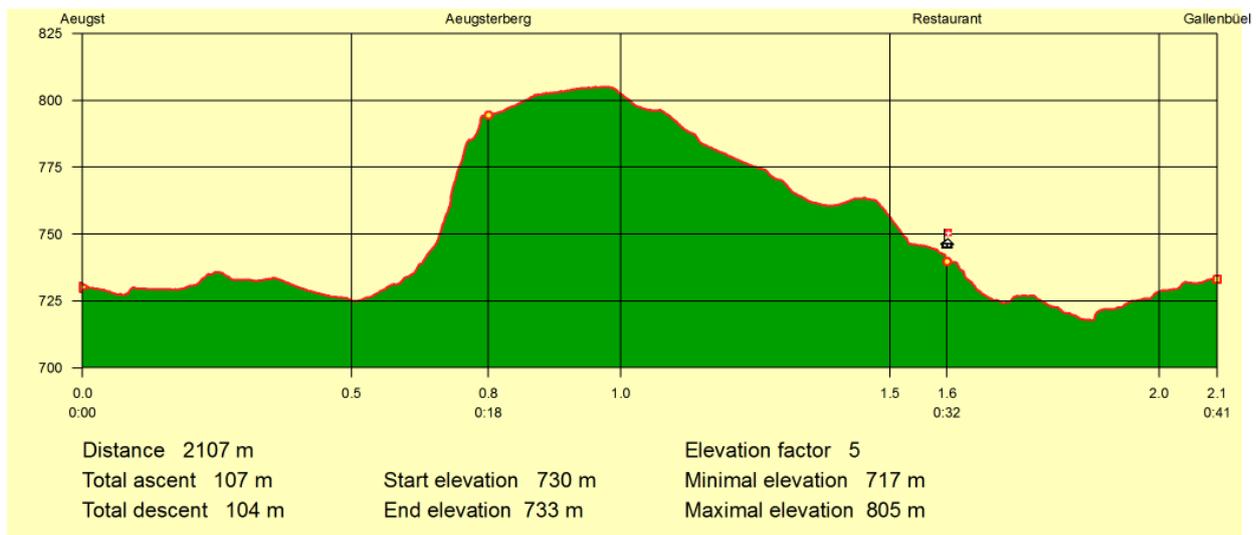
10000.020	DEM: Profile Startpoint	Point symbol	10001: UPPER RED DEM PROFILE, 10004: YELLOW DEM PROFILE
10000.021	DEM: Profile Stopover	Point symbol	10001: UPPER RED DEM PROFILE 10004: YELLOW DEM PROFILE
10000.022	DEM: Profile Endpoint	Point symbol	10001: UPPER RED DEM PROFILE 10004: YELLOW DEM PROFILE
10000.041	DEM: Vertical Grid Line	Line symbol	10006: LOWER BLACK DEM PROFILE
10000.051	DEM: Profile Restaurant	Point symbol	10000: UPPER BLACK DEM PROFILE 10001: UPPER RED DEM PROFILE 10007: UPPER WHITE DEM PROFILE

In the **Units and Formats** category, you can choose, whether the distance is to be shown in **km** or in **m**. In addition, you can set the time format (at the moment only **h:mm** is available) and the rounding (**no rounding, 5 minutes, 10 minutes**). Uncheck the **Show text at the bottom of the profile** option if you do not want any text under the profile.

In the **Labels and Symbols** category, labels and symbols can be allocated to the start- and endpoint or a stopover. Enter a label in the corresponding field (for example the name of a place) and choose a symbol from the dropdown list. These symbols are defined in the template file. Add a **Corner Vertex** to the line which defines the profile to create a stopover.

💡 Click into one of the columns on the left or right after typing a label text to make OCAD saving this entry.

Click the **OK** button when finished. In the next dialog you have to save the profile at the desired location. To open the document, use the **Open Recently Exported Documents** function in the **File** menu. The profile can be edited (e.g. change colors or add objects) there.



Stopovers are marked with a dot on the profile line and a vertical line to the x-axis. At the start- and endpoints as well as the stopovers the covered distance and the walking time are indicated.

Export PNG

Mas Ori

Click the **Export PNG** button to export the profile as a raster image. The **Save Picture** dialog box appears. Browse a location and enter a name for the new file. Choose the file type in the **Save as type** drop down list. Click the **Save** button to finish. The exported profile looks the same as the profile shown in the **DEM Profile** dialog.

Add to map

Mas

Note: This function is similar to the **Export OCD** function. For more information and illustrations visit the corresponding article.

Click the **Add to map** button to add the profile to the currently opened map. The **DEM Profile Options** dialog appears.

The *Template DEM Profile.ocd* file in the *OCAD*-directory is chosen as a template file (for the symbol set, colors etc.) by default. You can choose an own template by clicking the **Load template** button.

In the **Units and Formats** category, you can choose, whether the distance is to be shown in **km** or in **m**. In addition, you can set the time format (at the moment only **h:mm** is available) and the rounding (**no rounding**, **5 minutes**, **10 minutes**). Uncheck the **Show text at the bottom of the profile** option if you do not want any text under the profile.

In the **Labels and Symbols** category, labels and symbols can be allocated to the start- and endpoint or a stopover. Enter a label in the corresponding field (for example the name of a place) and choose a symbol from the dropdown list. These symbols are defined in the template file. Add a **Corner Vertex** to the line which defines the profile to create a stopover.

Click the **OK** button when finished. The symbols and colors from the template file are added to the current symbol set and the profile is displayed.

Print

Click the **Print** button to print the profile. The profile is printed exactly as it is displayed in the dialog box.

Back to the **DEM** page.

LiDAR Point Cloud Manager

The LiDAR Point Cloud Manager analyzes the vegetation within the forest and creates a vegetation raster map. The analysis is based on a ocdLas file created when importing las files in the **DEM Import Wizard**.

Load

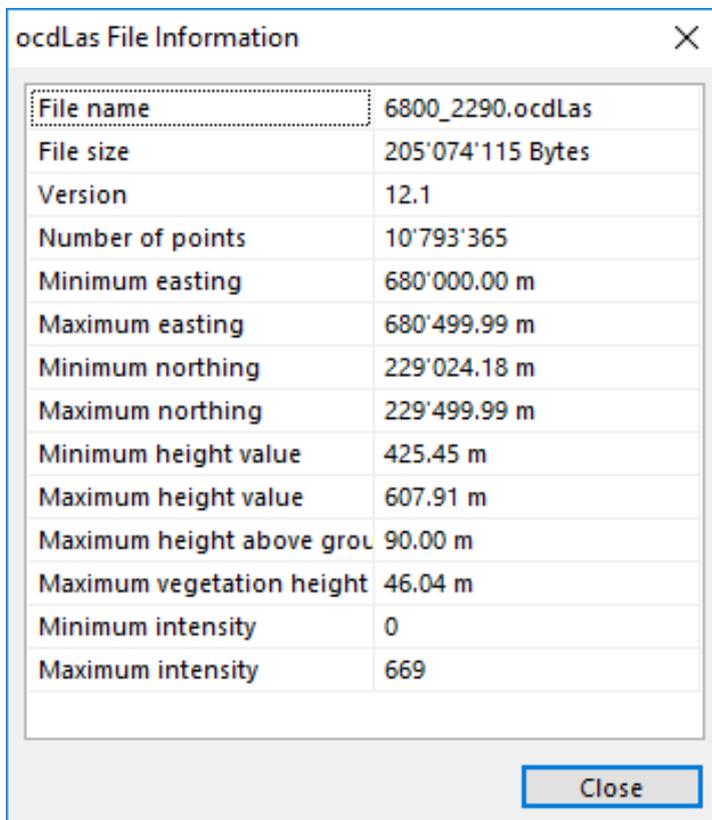
This function loads an OCAD LAS file (*.ocdLas) and opens the **LiDAR Point Cloud Manager**.

The OCAD LAS file is a LiDAR point cloud in an OCAD internal file format created in the DEM Import Wizard. This file is optimized for fast access to the LiDAR points.

For more information about this file open the Information dialog.

Info

This function shows information about the ocdLas file.

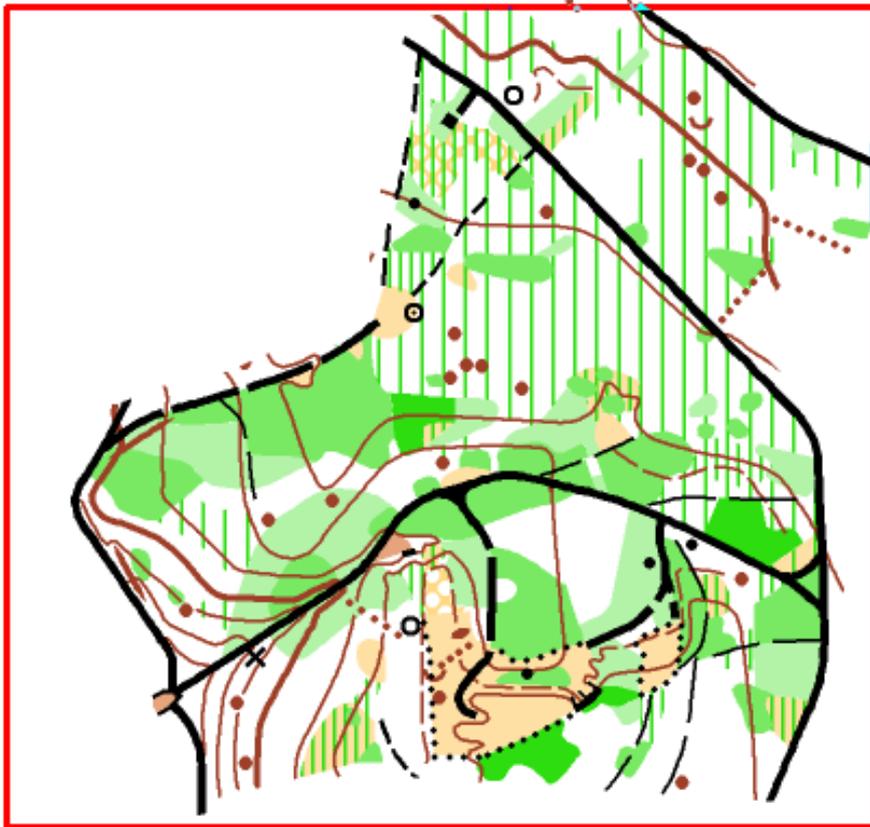


ocdLas File Information	
File name	6800_2290.ocdLas
File size	205'074'115 Bytes
Version	12.1
Number of points	10'793'365
Minimum easting	680'000.00 m
Maximum easting	680'499.99 m
Minimum northing	229'024.18 m
Maximum northing	229'499.99 m
Minimum height value	425.45 m
Maximum height value	607.91 m
Maximum height above ground	90.00 m
Maximum vegetation height	46.04 m
Minimum intensity	0
Maximum intensity	669

When moving the mouse cursor over the file name then the full file path appears.

Show Frame

This function shows a red rectangle with the extent of the loaded ocdLas file.



Close

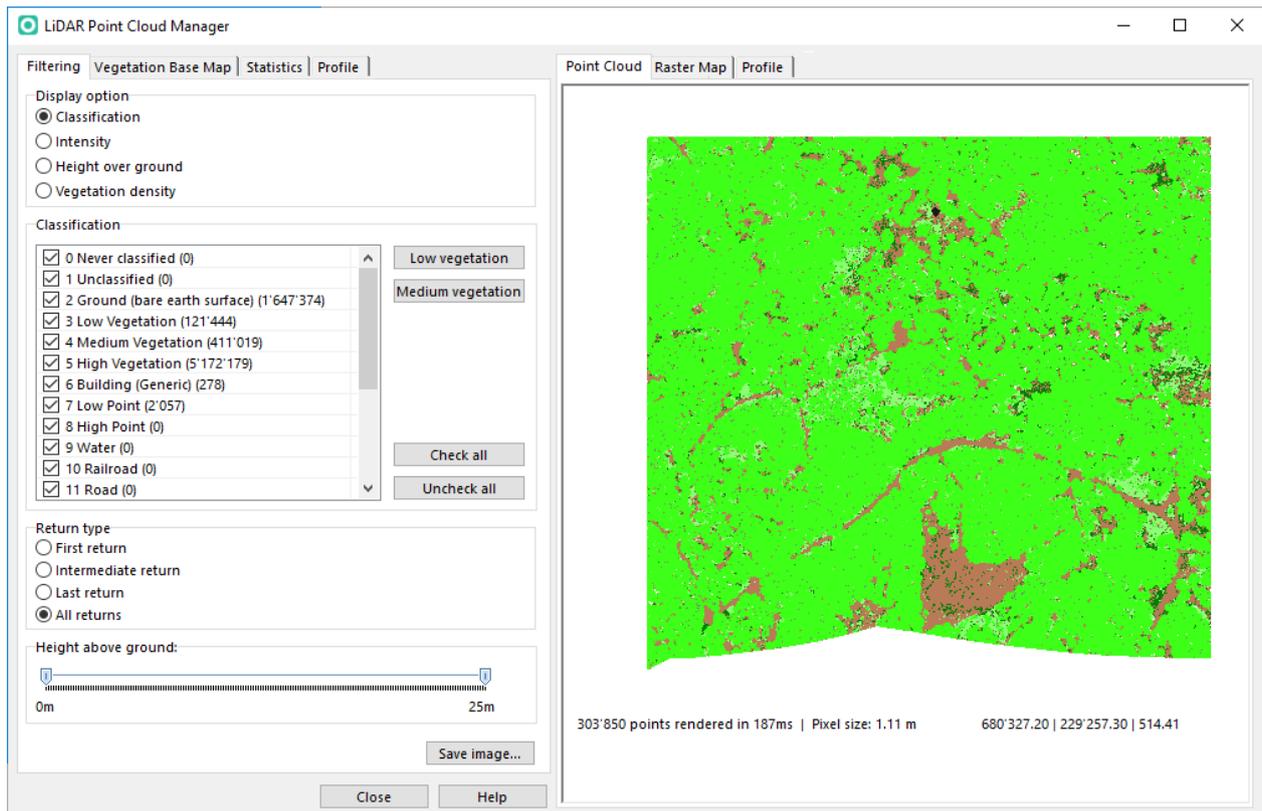
This function closes ocdLas file.

Manage

This function reopens the **LiDAR Point Cloud Manager** with the already loaded ocdLas file.

Filtering

This function shows the LiDAR point cloud as image according to the settings in filtering options.

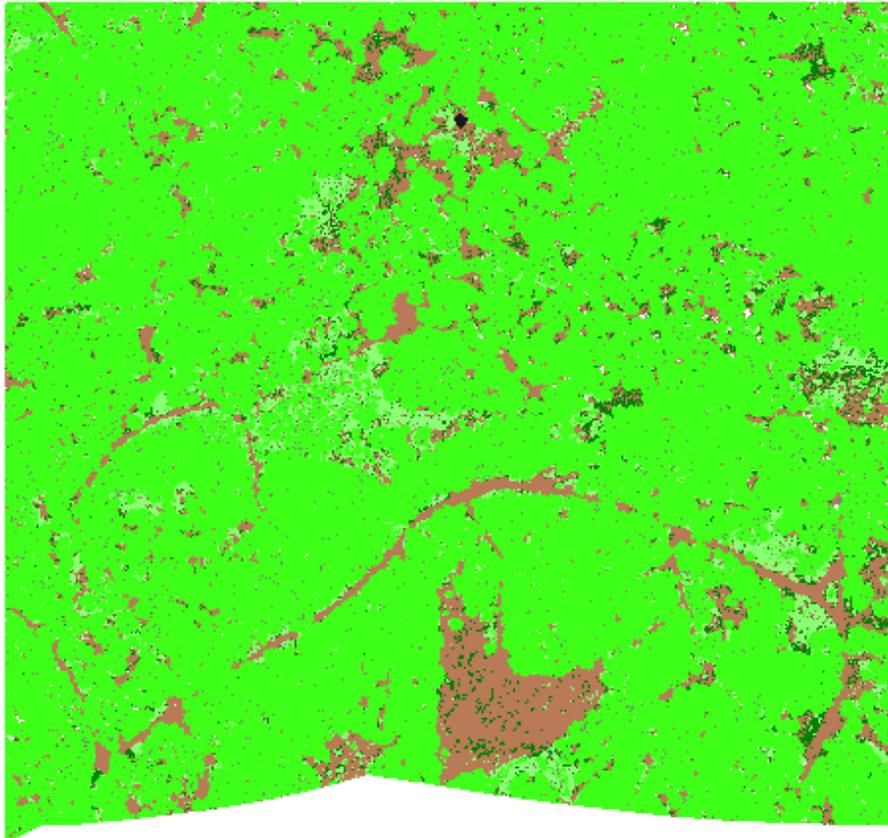


It is the same extent as on the drawing area in the OCAD File. The pixel size depends on the zoom level in the drawing area. When moving the cursor over the point cloud image the coordinate of the mouse cursor is shown in the status bar.

In the *Filtering* tab there are four different display options: Classification, Intensity, Height over ground and Vegetation density.

Display Option Classification

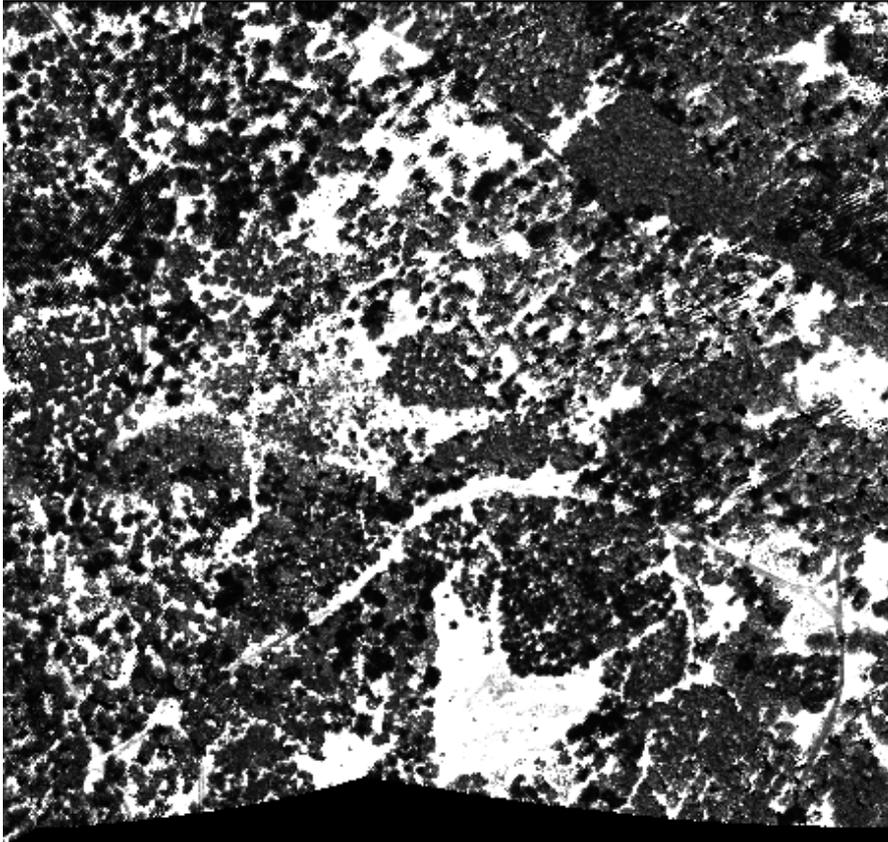
This option shows the classification of the LiDAR points. If more than one point is inside one cell then the point with the higher priority is shown. For example, the class *Building* has higher priority than *Vegetation* and *Ground* has the lowest priority.



Ground = Brown, Low Vegetation = Dark Green, Medium Vegetation = Light Green, High Vegetation = Green, Building = Black, Low Point = Grey

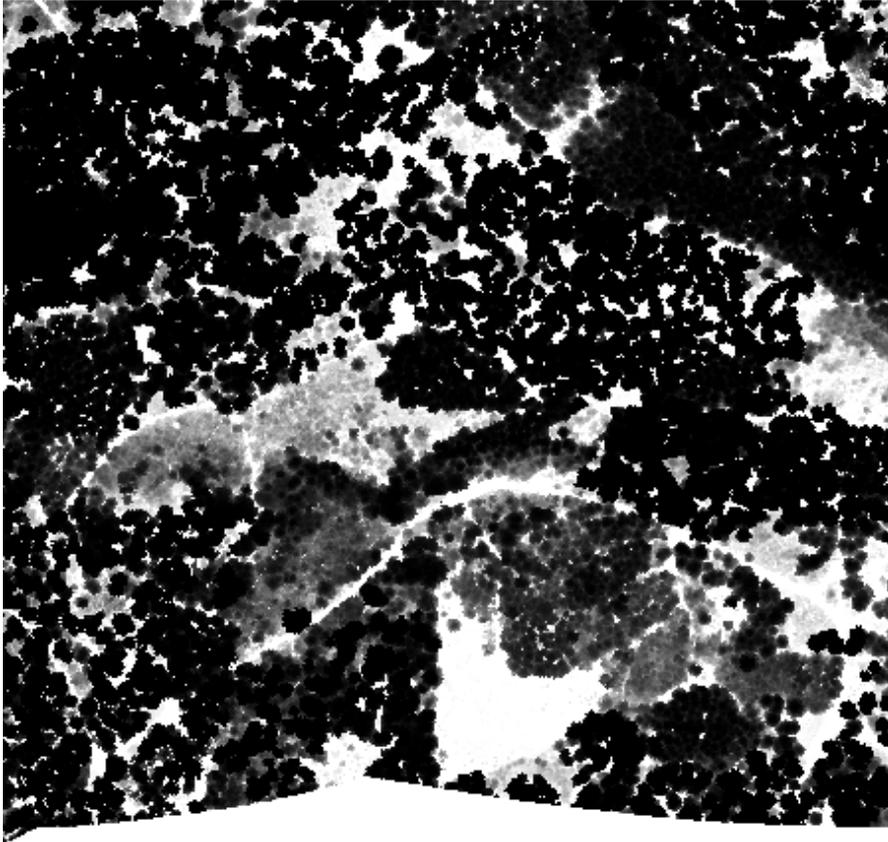
Display Option Intensity

This option shows the intensity of the LiDAR points. Lower intensity is drawn with darker color. In this image the different types of vegetation (deciduous and coniferous forest) and the vegetation boundaries are visible.



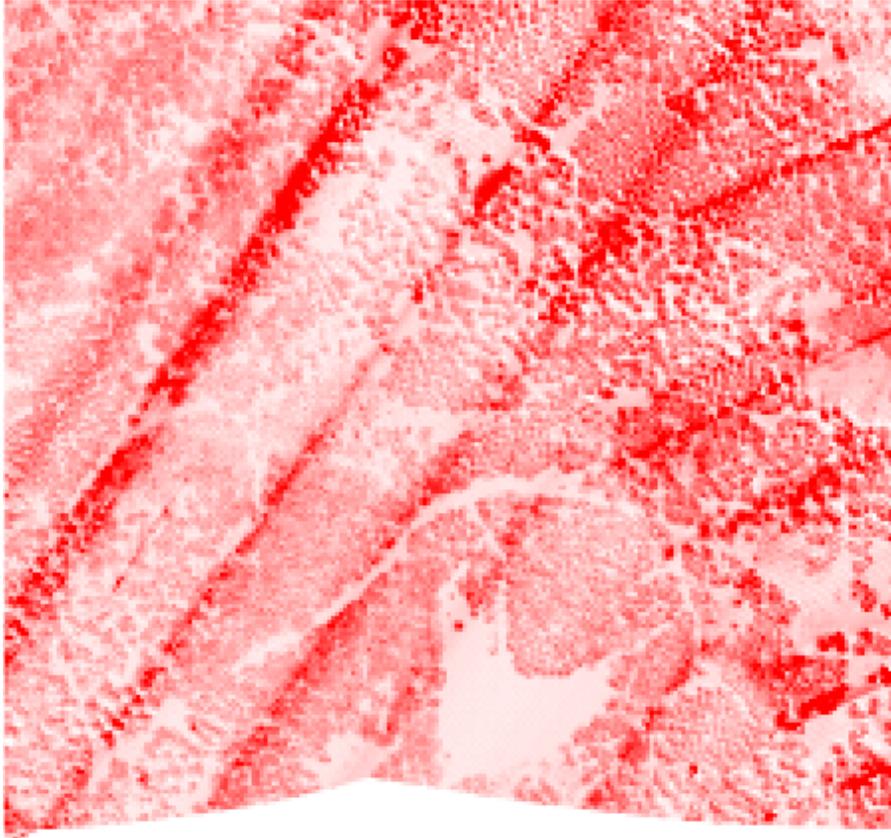
Display Option Height Over Ground

This option shows the maximum height above ground for each cell. In this image, high trees and vegetation boundaries can be detected. The structure of the forest can be seen clearly.



Display Option Vegetation Density

This option shows the number of LiDAR points for each cell. Cells with more points are shown in darker red. Open areas have often less return points and appear therefore in lighter red.



Click the **Save image** button to create a geo-referenced png file from the current point cloud image and load it as new background map. The file is automatically saved in the same folder as the ocd file.

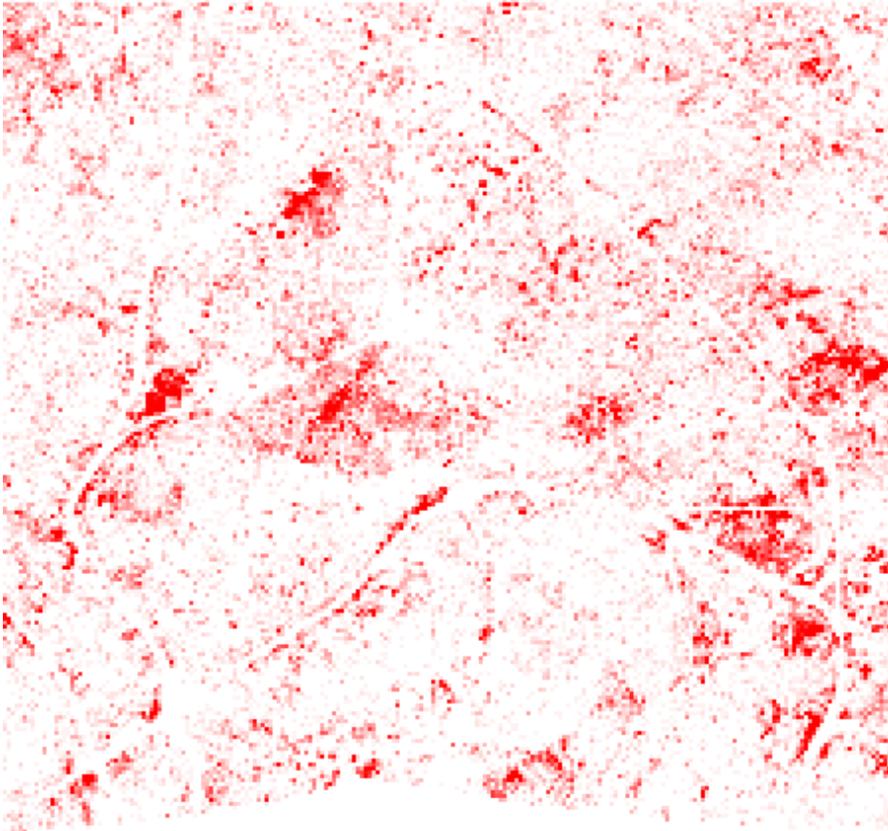
Classification

A list with the different classifications is shown. The value in parentheses is the number of points for this class. In some cases it is recommended to uncheck the *Overlap* points. The overlapping points come from the different flight lines.

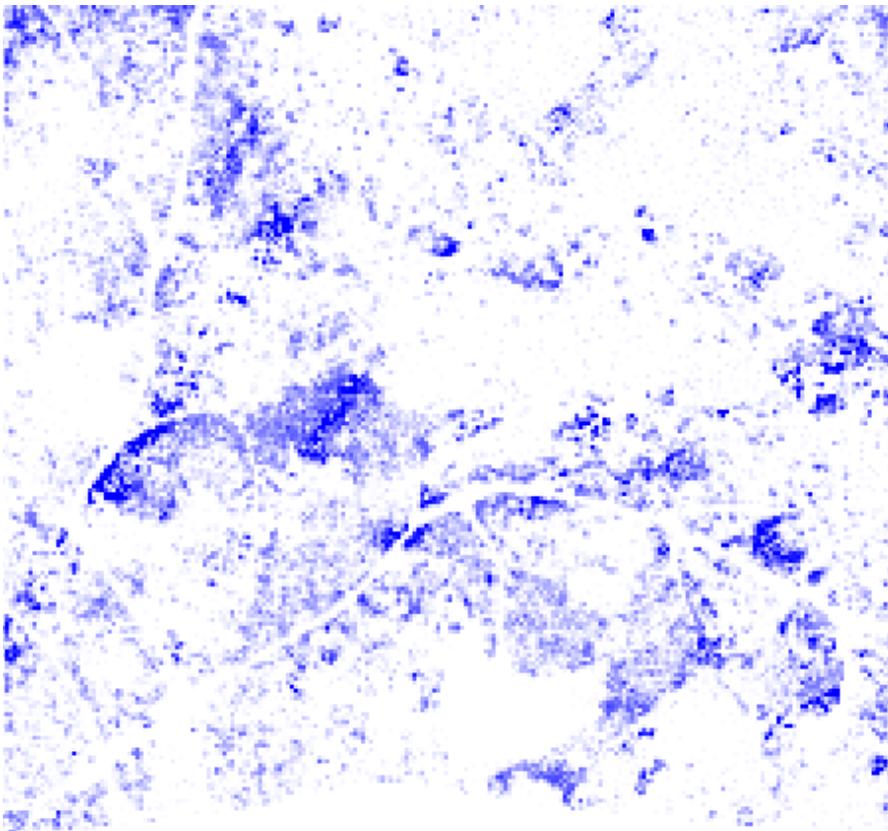
Classification

<input checked="" type="checkbox"/>	0 Never classified (0)		Low vegetation
<input checked="" type="checkbox"/>	1 Unclassified (0)		Medium vegetation
<input checked="" type="checkbox"/>	2 Ground (bare earth surface) (1'647'374)		
<input checked="" type="checkbox"/>	3 Low Vegetation (121'444)		
<input checked="" type="checkbox"/>	4 Medium Vegetation (411'019)		
<input checked="" type="checkbox"/>	5 High Vegetation (5'172'179)		
<input checked="" type="checkbox"/>	6 Building (Generic) (278)		
<input checked="" type="checkbox"/>	7 Low Point (2'057)		
<input checked="" type="checkbox"/>	8 High Point (0)		
<input checked="" type="checkbox"/>	9 Water (0)		
<input checked="" type="checkbox"/>	10 Railroad (0)		
<input checked="" type="checkbox"/>	11 Road (0)		
<input type="checkbox"/>	12 Overlap (3'439'014)		
<input checked="" type="checkbox"/>	13 Wire - Guard (0)		
<input checked="" type="checkbox"/>	14 Wire - Conductor (0)		
<input checked="" type="checkbox"/>	15 Transmission Tower (0)		
<input checked="" type="checkbox"/>	16 Wire-structur Connector (0)		
<input checked="" type="checkbox"/>	17 Bridge (0)		Check all
<input checked="" type="checkbox"/>	18 Other (0)		Uncheck all

Click the **Low vegetation** button to choose only the *Low vegetation* points and set the *Height above ground* filter to 0.1 - 1.0 m.



Click the **Medium vegetation** button to choose only the *Medium vegetation* points and set the *Height above ground* filter to 1.0 - 3.0 m.



Return Type

Choose which return types are shown. By default 'All returns' is chosen.

Return type

First return

Intermediate return

Last return

All returns

Height Above Ground

This function filters the points with the height above ground. To show only near-ground vegetation points move the left slider to 0.0 and the right to 3.0.

Height above ground:



0m 25m

Vegetation Base Map

This function creates an *Orienteering base map* with user-defined information about the near-ground vegetation. Near-ground means between ground and 3m above. When using this function the first time default values are set. The default values are optimized for Steinhauserwald ^[1] in Switzerland and LiDAR data from Canton Zürich. The settings depend on the forest type and the LiDAR data.

LiDAR Point Cloud Manager
— □ ×

Filtering
Vegetation Base Map
Statistics
Profile

Cell size m

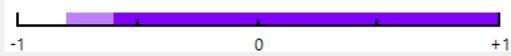
Undergrowth

Range from m To m above ground

Neighborhood kernel:

Thresholds:

Value 1: Value 2:



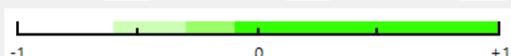
Vegetation

Range from m To m above ground

Neighborhood kernel:

Thresholds:

Value 1: Value 2: Value 3:

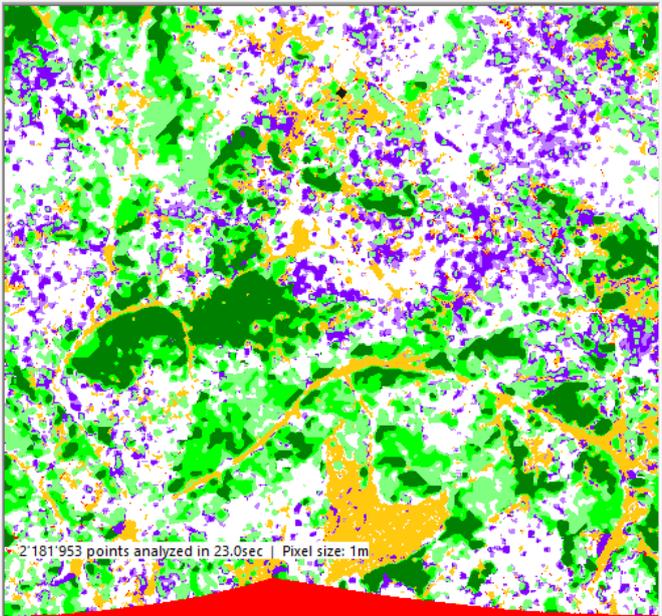


Overlap points from m above ground

Use filter

Show area with no data in red color

Point cloud
Raster Map
Profile



2 181'953 points analyzed in 23.0sec | Pixel size: 1m

Cell size

Choose the cell size.

Undergroth and Vegetation

Range From

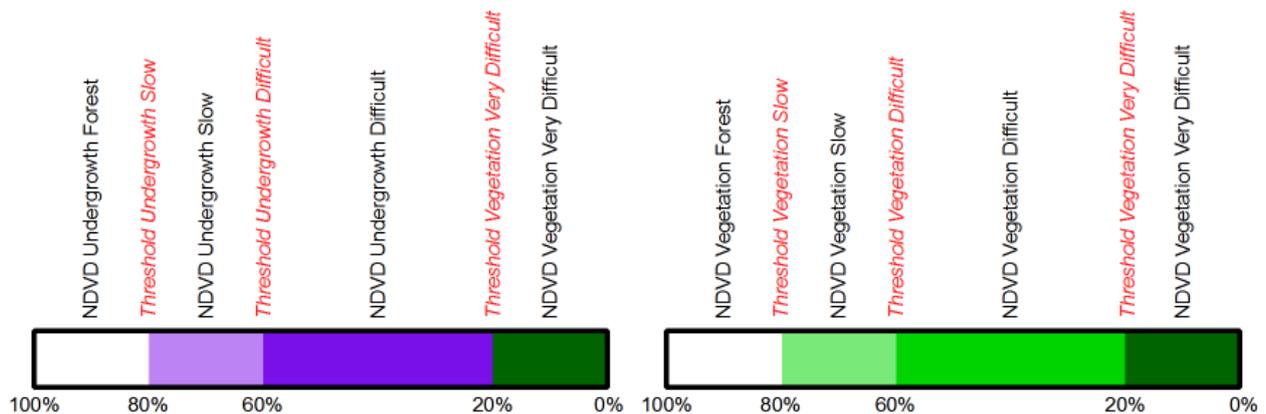
Choose the range in which points should be considered as Undergrowth and Vegetation.

Neighborhood kernel

Choose the amount of neighbouring cells for the calculation.

Thresholds

The calculation based on the NDVD (Normalized Difference Vegetation Density). The thresholds for the undergrowth and the vegetation shall be between -1.0 and +1.0. The thresholds can be calculated with samples in the **Statistics** function. The meaning of the thresholds is visible in the image below.



Overlap Points from

Overlap points is a classification type of LAS file format. These unclassified overlap points come from different scans (flight lines). Choose the lower threshold in which points should be considered as Undergrowth and Vegetation. If this as value is too low, ground points are used as undergrowth and vegetation points.

Use filter

Use filter to generalize the map.

Show area with no data in red color

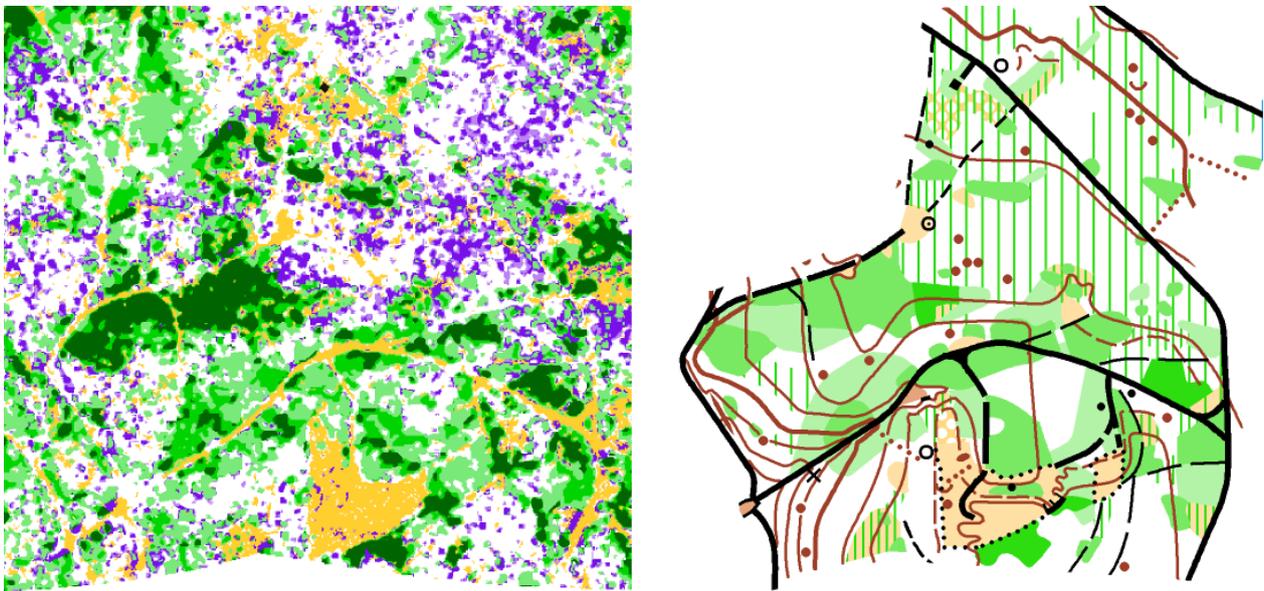
Area with no data are shown in red color if the value is set to *True*. Otherwise the cells are white and not specifiable from the forest cells. The filter option generalizes the raster map.

Click the **Create** button to calculate and show the *Orienteering base map*. The map is drawn with the following colors:

ISOM 2017 Number	Description	Color
405	Forest, easily runnable	
407	Vegetation, slow running, good visibility	Light purple
409	Vegetation, walk, good visibility	Dark purple
406	Vegetation, slow running	Light green
408	Vegetation, walk	Bright green
410	Vegetation, fight	Dark green
521	Building	Black
401	Open land	Yellow
	No data	Red

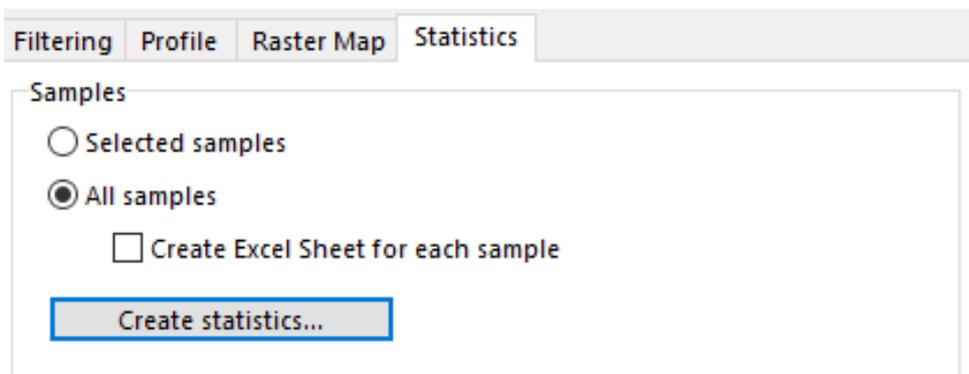
Click the **Save image** button to create a geo-referenced png file and load it as new background map. The file is automatically saved in the same folder as the ocd file.

The example below shows the *Orienteering base map* (left) and the map from field work (right).

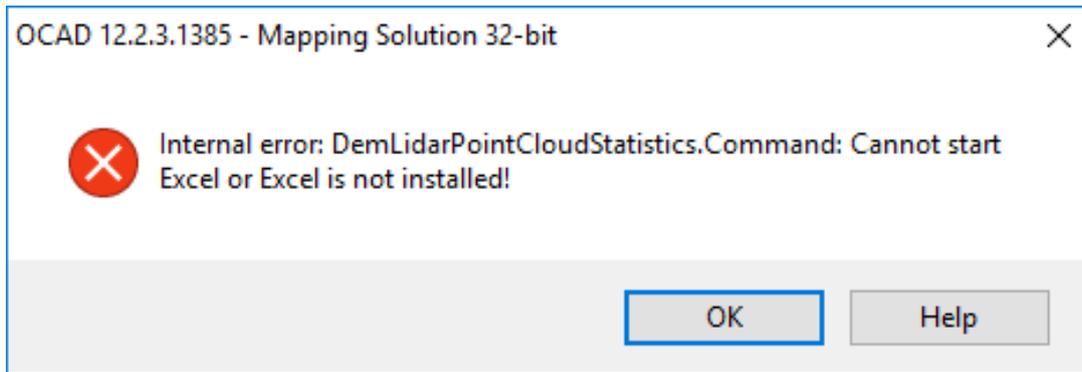


Statistics

The statistics function can calculate the vegetation thresholds from samples.



OCAD uses Microsoft Excel for this function. If Excel is not installed the following error message appears.

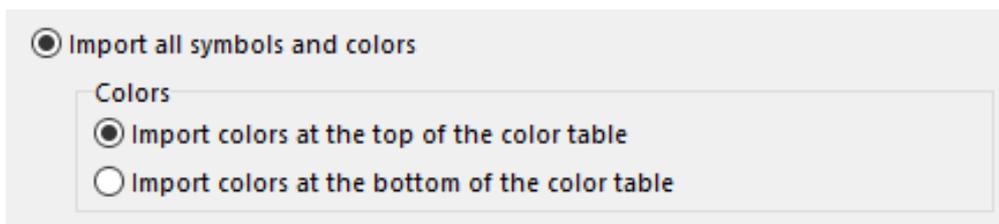


The following steps are to do:

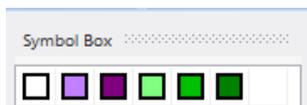
1. Import Symbol from Template File
2. Draw Samples
3. Create Statistics

Import Symbol from Template File

Press the **Shift** key and click **File** -> **Import**. The file chooser opens in the *Template* subfolder of the OCAD program folder. Choose the *Template Vegetation Samples.ocd* file and click **Open**. In the *Import OCAD Map* dialog choose the option to *Import all symbols and colors* and *at the top of the color table*.



Click OK. The 6 imported symbols are in the symbol box.



The symbol are for the vegetation samples and have the following meaning:

- Forest, easily runnable
- Vegetation, slow running
- Vegetation, walk
- Vegetation, slow running
- Vegetation, walk
- Vegetation, fight

Draw Samples

Use these 6 symbols and draw samples for the expected vegetation. We recommend to draw totally more than 100 samples for the desired area.



Create Statistics

Click the **Create statistics** button to create an Excel file. The file opens automatically if Excel is installed. The 5 thresholds (marked in yellow color in the images bellow) can be inserted in the Raster map settings.

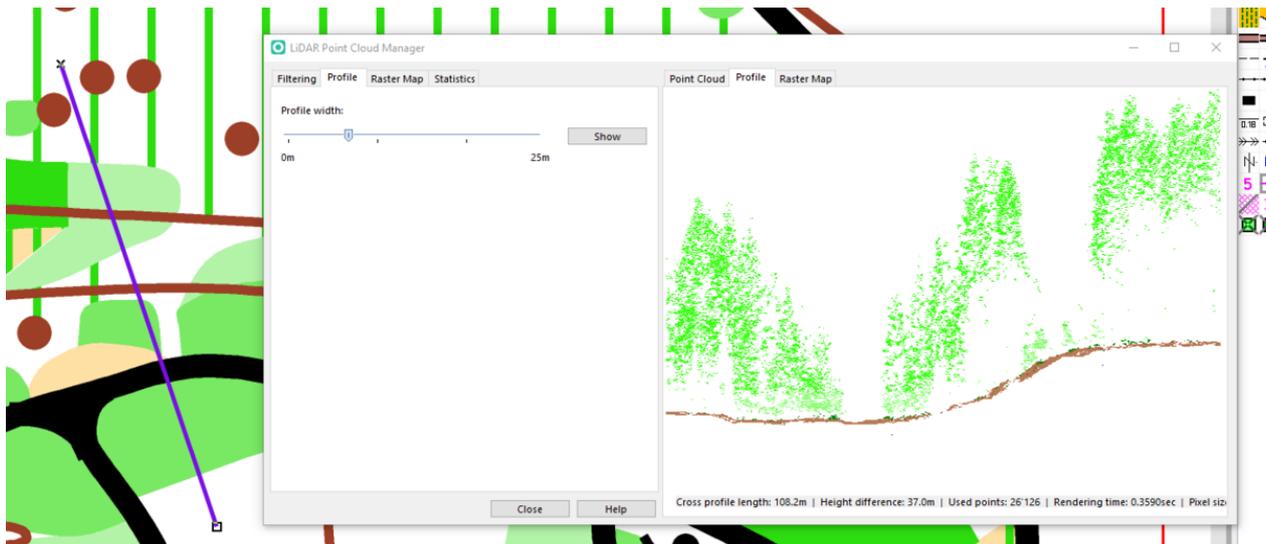
Samples Overview				
Class	NDVD Undergrowth Kernel AVE	NDVD Vegetation Kernel AVE	Points Total	Threshold
Forest	-0.91	-0.81	32	
Undergrowth Slow	-0.84	-0.77	43	-0.88
Undergrowth Difficult	-0.81	-0.7	11	-0.83
Vegetation Slow	-0.84	-0.52	16	-0.67
Vegetation Difficult	-0.66	-0.16	58	-0.4
Vegetation Very Difficult	-0.57	0.09	12	0.01

Profile

The profile shows the vegetation structure.

In the OCAD window, choose any line symbol and draw a straight line inside the loaded ocdLas file and select the line object afterwards.

In the LiDAR Point Cloud Manager window, choose the profile width and click the **Show** button. OCAD draws the profile according to the filter settings in the **Filtering** tab.

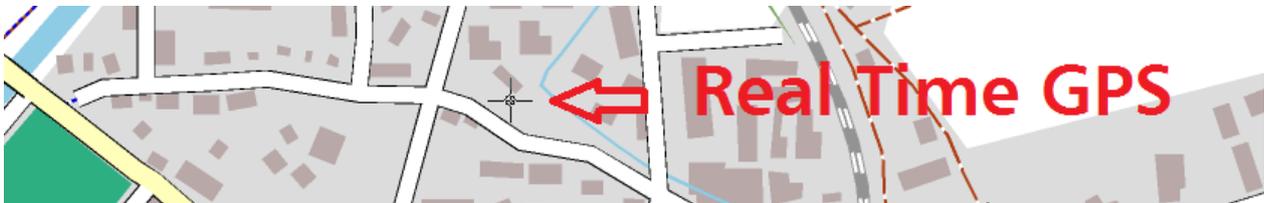


References

- [1] https://map.geo.admin.ch/?lang=en&topic=ech&bgLayer=ch.swisstopo.pixelkarte-farbe&layers=ch.swisstopo.zeitreihen,ch.bfs.gebaeude_wohnungs_register,ch.bav.haltstellen-oev,ch.swisstopo.swisstm3d-wanderwege&layers_visibility=false,false,false,false&layers_timestamp=18641231,,,&X=229174&Y=680276&zoom=10&crosshair=marker

Menu GPS

GPS



Real Time GPS

Mas Ori

Choose this command from the **GPS** menu for mobile mapping with GPS. The GPS device must be connected to the computer via the COM interface with Bluetooth. If your GPS device is connected via an USB port, please install a software like **GpsGate Splitter** ^[1] to transfer the data to a virtual COM port.



It is important that the coordinate system on the GPS device is WGS84 or a UTM zone. Otherwise, OCAD cannot analyze the data correctly and the position is wrong (some 100 meters)!

When you choose the **Real Time GPS** command from the **GPS** menu, the **Real Time GPS Settings** dialog appears.

Real Time GPS Settings

Real-Time GPS Settings
✕

Connection settings

Interface

COM

Windows Location API

HTTP (Smartphone)

Port:

Baud rate: bps

Requirements

DGPS, RTK, Float RTK

Minimum of 4 satellites **Otherwise**

HDOP <

Options

Filter

Accuracy circle

Auto-scroll (map moves)

Subtract antenna height from Z value m

GPS positions tail (BETA)

Show tail

Cut tail by length m

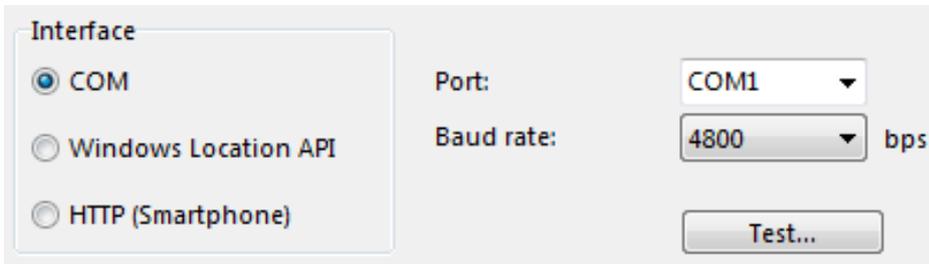
Coordinate system

Swiss Grid CH1903+ / LV95

Connection Settings

There are three Connection Settings. The COM interface works only in OCAD 32-bit version!

COM



Choose this option to connect your GPS device with a COM port.

1. **Port:** Choose the COM port where the GPS device is connected. The GPS device must send the **NMEA 0183 Format** ^[2].
2. **Baud rate:** Choose the baud rate the serial port. NMEA 0183 defines 4800 bps but some devices may send data at a different speed.
3. **Test:** Click the **Test** button to open the **Test GPS** dialog box. The NMEA messages received from the GPS device are displayed there and you can verify the connection of the GPS device. Read more about this dialog in the **Test GPS** article on this page.

Windows Location API



Internal or external GPS devices can be connected using the Windows Location API ^[3]. This options is recommended if the Windows computer does not anymore support COM ports.

The **Location service** must be activated in the Windows settings. For Windows 10 you can find this option in the **Privacy** settings -> **Location**. Switch on the **Location service** and switch on the app **App connector**.

Choose a sensor from the **sensor list** and click the **Test** button to test the connection settings. The real time GPS works still in the habitual way.

 The GPS must be manually activated as a location sensor in the **Windows settings**.

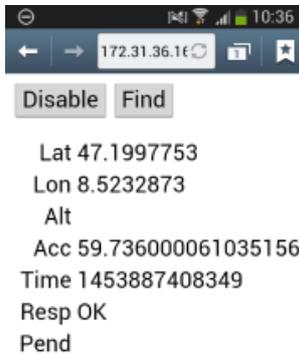
HTTP (Smartphone)



Choose this option to connect your smartphone as a GPS device. Please note that the **GPS must be activated on your smartphone**.

1. **Port:** Enter a port for the IP address. The default port is 8088 and does not necessarily have to be changed.

2. **IP address:** This is the IP address to connect your smartphone to your computer.
3. Activate the connection by clicking the **Test** or **Connect** button.
4. Enter the **IP address** with the **port** (separated by a colon, ex. 192.168.1.37:8088) in a browser. It should look like the image below. Click on the left button if it is called **Enable** (the button will change to *Disable*) to start sending the GPS positions from your smartphone to your computer.



- 💡 Make sure that the address in your browser does not have a `https://` prefix.
- 💡 Due to restrictions some Smartphones do not allow to access the ip address in their browser. In such cases we recommend to use an app (ex. Share GPS) to map the GPS position to bluetooth and to set up the connection via COM interface.
- 💡 OCAD does not show the GPS cursor if the accuracy is too bad (state: *GPS: No fix*).

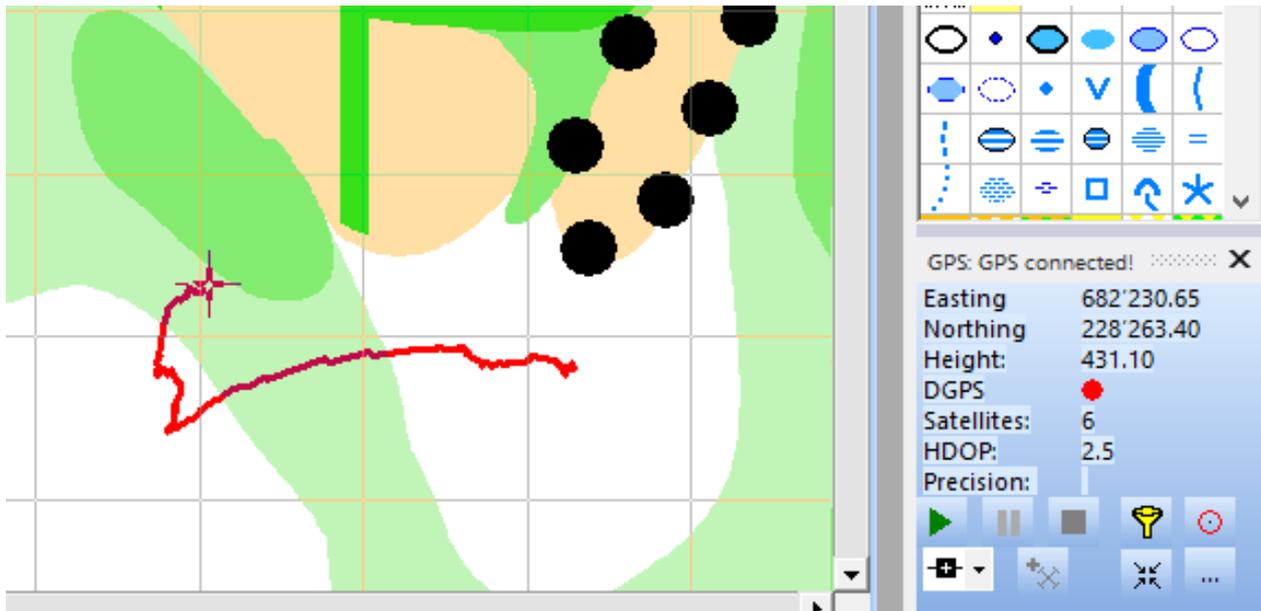
Requirements

The following requirements can be given:

- **DGPS, RTK, Float RTK:** Check this option to use DGPS, RTK, Float RTK and define if the positions calculated without **DGPS** ^[4], **RTK** ^[5], **Float RTK** are **not saved** or **not saved and not shown**.
 - 💡 This option has only an effect if OCAD receives the **GGA Message** ^[6]. Click the **Test** button to see what type of message is sent from the device.
- **Min. 4 satellites:** Check this option as a kind of precision requirement and define if the positions calculated from less than 4 satellites are **not saved** or **not saved and not shown**.
- **HDOP:** Check this option to define an upper limit for the **HDOP (Horizontal Dilution of Precision)** ^[7] value and define if the positions calculated with a higher HDOP are **not saved** or **not saved and not shown**.

Options

- **Filter:** Check this option to activate a filter and specify how many GPS positions are averaged. This results in a more stable position, but the update is slower.
- **Accuracy circle:** This option is enabled when the **Filter** option is checked. Check this option to show the accuracy circle. This shows the accuracy of the last 5 measurements with a circle around the GPS marker.
- **Auto scroll (moving map):** Check this option to move the map automatically with the GPS marker.
- **Subtract antenna height from Z value:** Check this option to define a correction for the Z value. The entered value gets subtracted from the measured height value.
- **GPS Connection tail:** Check this option to show GPS positions tail.
 - You can also choose the length of the tail.
 - The tail color is the same as the **mark color**, which can be set in the OCAD Preferences.



Coordinate system

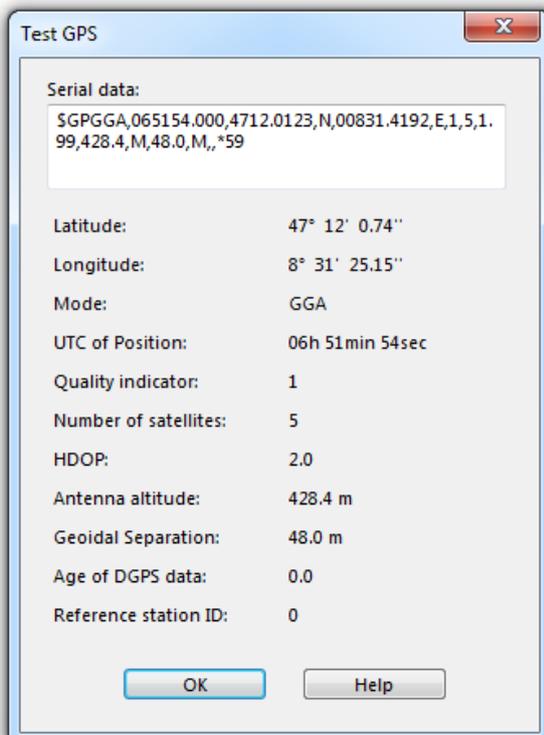
Click the **Change** button to change the coordinate system. The **Coordinate System** dialog box appears.

Click the **Connect** button to turn on the real time GPS mode. The **GPS** box is displayed in the lower right corner if the connection to the GPS device was successful.

Close the **Real Time GPS Settings** dialog or click the **Disconnect** button to turn off real time GPS.

Test GPS

Click the **Test** button in the **Real Time GPS Settings** dialog to open the **Test GPS** dialog.



If OCAD receives **GGA Messages** ^[6], those messages are displayed in the **Serial data** field. Characters 4 to 6 show the abbreviation GGA (e.g. \$XXGGA...). **RMC Messages** ^[8] are displayed if OCAD does not receive any GGA messages. RMC messages contain no information about DGPS and the number of satellites. However, the position can still be used in OCAD. The serial data box remains empty, if the GPS device is sending neither of the two messages or if there is a connection problem. Check that you have selected the right port in the **Real Time GPS Settings** dialog box and that the GPS device is connected correctly to the PC.

GGA message example:

```
$GPGGA,092750.000,5321.6802,N,00630.3372,W,1,8,1.03,61.7,M,55.2,M,,*76
```

RMC message example:

```
$GPRMC,092750.000,A,5321.6802,N,00630.3372,W,0.02,31.66,280511,,A*43
```

OCAD takes the serial data apart and displays it in a bit more user-friendly view below the **Serial data** box.

Mapping with Real Time GPS

The **GPS** box is displayed in the lower right corner if OCAD is successfully connected to a GPS device.



The following information is given in this box:

- **Easting:** In this field the easting value of the coordinate is displayed. If the **Filter** is activated, then it is the averaged value.
- **Northing:** In this field the northing value of the coordinate is displayed. If the **Filter** is activated, then it is the averaged value.
- **Height:** In this field the height is displayed. If the **Filter** is activated, then it is the averaged value.
- **DGPS:** A green or red dot shows if a **DGPS** ^[9] signal is received.
- **Satellites:** In this field the number of received satellites is displayed. A **Red number** means that the requirements defined in the **Real Time GPS Settings** are not fulfilled.
- **HDOP:** The **HDOP (Horizontal Dilution of Precision)** ^[10] is displayed in this field. HDOP is a quality indicator for the position of the useable satellites on the local sky. HDOP values less than 4 are very good, HDOP greater than 8 are bad. A **Red number** means that the requirements defined in the **Real Time GPS Settings** are not fulfilled.
- **Precision (x Val):** In this field the accuracy (root mean square) of specified number of the last measurements is displayed. The **Filter length** can be specified in the **Real Time GPS Settings** dialog.

Below the information part of the box, there are several icons:

 **Start GPS Measurement:** Click this icon to create an OCAD object with the receiving GPS information. A symbol must be selected. Choose a point symbol and click the **Start GPS Measurement** icon to create an object at the position of the GPS marker. If a line or area symbol is selected, OCAD starts with the measurement and draws a vertice for every received position. The object is represented with a thin black line.

 **Pause GPS Measurement:** Click this icon to interrupt the GPS measurement without finishing the object. Click the icon again to continue with the measurement.

 **Stop GPS Measurement:** Click this icon to finish the line or area object. The object is displayed with the assigned symbol.

 **Find GPS Marker:** Click this icon to move the view to the GPS marker. Enable the **Auto Scroll** option to always move the view, when the GPS marker is leaving the current view.

 **Filter:** Turn on or off the filter by clicking this icon. The filter can be adjusted in the **Real Time GPS Settings** dialog.

 **Accuracy Circle:** Turn on or off the accuracy circle by clicking this icon. This shows the accuracy of the last 5 measurements with a circle around the GPS marker. This option is only available when the **Filter** is enabled.

Select Vertex Type: In this dropdown list you can select between two types of **Vertices**:

Choose the **Normal Vertex** option when a point should be added to the object for every position received from the GPS device.

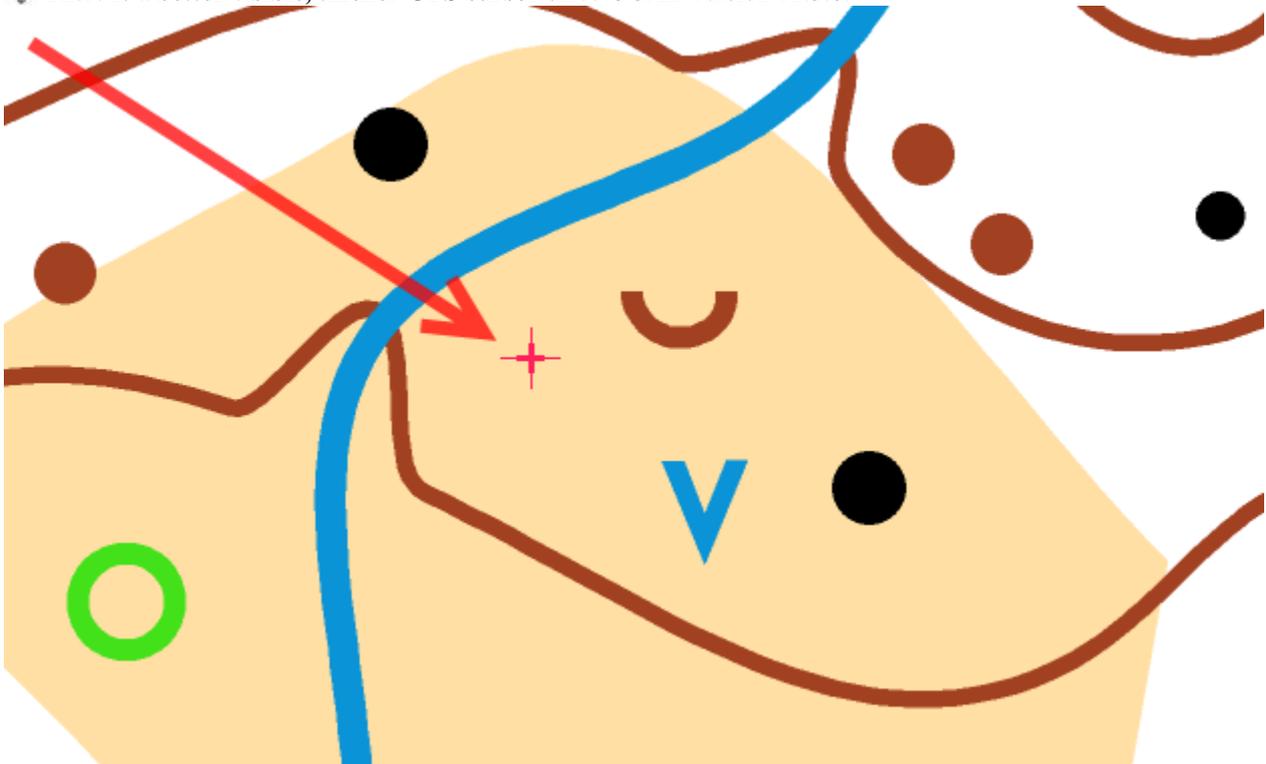
Choose the **Corner Vertex** option when a position should be manually added to the object by clicking the  **Start GPS Measurement** button. This option is typically used to draw objects with straight parts and corners like a fence. If a point or text object is selected, the vertex type cannot be changed.

 **Add GPS Position to Calculate Average:** Click this button for every position you want include into an average calculation. The number of added positions is shown in the button hint. Click the  **Start GPS Measurement** icon to create the object at the calculated average position. This function is only available when a point symbol is selected. This is especially useful when the GPS position of an uncrossable feature (e.g. small house, deep hole, huge tree etc.) is to be measured. Some points around the feature have to be recorded and by clicking the  **Start GPS Measurement** icon, the average point can be found.

 **Open Real Time GPS Settings:** This icon opens the **Real Time GPS Settings** dialog box.

 The GPS cursor is drawn with the mark color. Change the **Mark Color** in the **Drawing and Editing** part of the **OCAD Preferences**.

 There is a **better visible, thicker GPS cursor** since OCAD version 11.3.0:



Import Data from GPS Device

Mas Ori

This function is obsolete! If you want to import GPS data from GPS devices, import the waypoints and tracks with the corresponding software of the GPS device to the computer. Then use the **Import from File** function in OCAD. As an alternative, for fieldwork, use the **Real Time GPS** function.

Choose this command to import tracks or waypoints from a **GPS Garmin eTrex** device. The GPS device must be connected to the PC with a serial data cable or Bluetooth.

- **GPS:** In this field the information about the GPS device is displayed.
- **Status:** In this field the status between OCAD and GPS is displayed.

Connection

- **Connect GPS:** Click this button to connect OCAD with the GPS device. After a successful connection the GPS information and the status are displayed.
- **Settings:** Click this button to change the GPS settings. The **Import from GPS Settings** dialog is displayed.

GPS data

- **Get waypoints:** Click this button to load all waypoints. Each waypoint is displayed with in a row in the GPS data field.
- **Get tracks:** Click this button to download all tracks. Each track is displayed with in a row in the GPS data field. Only the start point is displayed.



This command can take several minutes!

OCAD objects

- **Set labels:** Check this option to create also text objects with the name of the waypoints and tracks.
- **CRT:** Use a **Cross Reference Table** to assign symbols to the waypoints and tracks. OCAD creates **Unsymbolized Objects** if no **Cross Reference Table** is selected.

Each line of the cross reference table contains the OCAD symbol number and the Garmin symbol name.

Example of a cross reference table:

```
535.0 waypoint dot
536.0 campground symbol
540.0 scenic area symbol
```

- **Create:** Select the waypoints and tracks in the GPS data field and click this button to create OCAD objects from the selected GPS data.



A popup menu appears when clicking the list with the GPS data with the right mouse button. In this popup menu you have the option to **Select all**, **Unselect all** and **Clear list**. With the **Clear list** command all waypoints and tracks are removed. In addition, you can **Make an OCAD object**. By clicking this command, an OCAD object of the selected track or waypoint is created.

Import from GPS Settings

In this dialog box you can make the setting for the GPS data import. Verify also your settings on the GPS device (e.g. data format: GARMIN)!

- **Port:** Choose the port where the GPS device is connected.
- **Speed data import:** Choose the speed of the serial port. Garmin defines 9600 bps.
- **Coordinate system:** Click the **Change** button to select or change the coordinate system. The **Coordinate System** dialog box appears.

Import from File



Choose this command from the **GPS** menu to import a GPS data file to the current map. The **Load GPS data from files** dialog box is displayed. Initially all importable GPS data files are listed. The following file types can be imported:

- GPX files
- FRWD files
- NMEA files

The **Import from File** dialog appears, where all available waypoints and tracks from the imported file are listed. There are several options in the **OCAD objects** part of the dialog:

- **Set label:** Check this option to create also text objects with the name of the waypoints and tracks.
- **Assign Symbols:** Check this option to assign a specified symbol to the imported objects. Otherwise OCAD will create **Unsymbolized Objects**.



A popup menu appears when clicking the list with the GPS data with the right mouse button. In this popup menu you have the option to **Select all**, **Unselect all** and **Clear list**. With the **Clear list** command all waypoints and tracks are removed. In addition, you can **Make an OCAD object**. By clicking this command, an OCAD object of the selected track or waypoint is created.

Click the **Import** button to import all selected tracks or waypoints in the list.

GPS Map Offset

This dialog box appears if the GPS coordinates are out of the maximum map size. Adjust the following parameters:

- **Coordinate system** If you work with GPS you must select a coordinate system. Click the **Change** button to select or change the coordinate system. The **Coordinate System** dialog box appears.
- **Offset** Choose here whether you want to change the OCAD real world coordinates or to keep the existing ones.
- **New offset:** Choose this option if no real world coordinates are defined for the map. OCAD already proposes reasonable values. You can leave them unchanged.
- **Existing offset and angle:** Choose this option if the map already has real world coordinates and you want to fit the imported objects to the existing coordinates.

Laser Rangefinder



Read more about using the "TruPulse 360/360B" Laser Rangefinder on the [Laser Rangefinder](#) page

[Back to Main Page](#)

References

- [1] https://gpsgate.com/products/gpsgate_client
- [2] https://en.wikipedia.org/wiki/NMEA_0183
- [3] <https://msdn.microsoft.com/en-us/library/windows/desktop/dd464636%28v=vs.85%29.aspx>
- [4] <https://en.wikipedia.org/wiki/DGPS>
- [5] https://en.wikipedia.org/wiki/Real_Time_Kinematic
- [6] <https://www.gpsinformation.org/dale/nmea.htm#GGA>
- [7] https://en.wikipedia.org/wiki/Dilution_of_precision_%28GPS%29
- [8] <https://www.gpsinformation.org/dale/nmea.htm#RMC>
- [9] https://en.wikipedia.org/wiki/Differential_GPS
- [10] <https://en.wikipedia.org/wiki/HDOP>

Laser Rangefinder



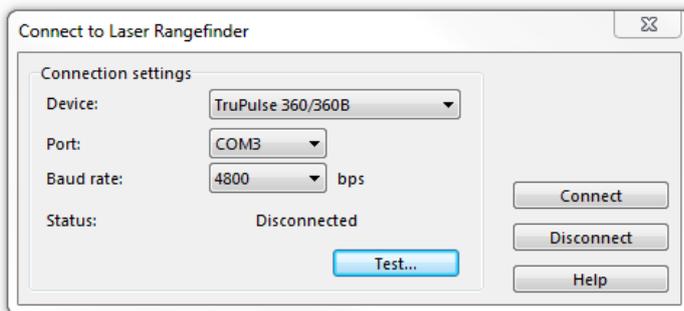
Connect to Laser Rangefinder

A connection to Laser Rangefinder can be setup via a serial COM port. Use bluetooth for the data transfer from the Laser Rangefinder to the computer.

1. Switch on the Laser Rangefinder
2. Choose **Connect to Laser Rangefinder** from the **GPS** menu.
3. Set device, port and speed.
4. Click the **Test...** button to test the connection.
5. Click the **Connect** button to start the connection.

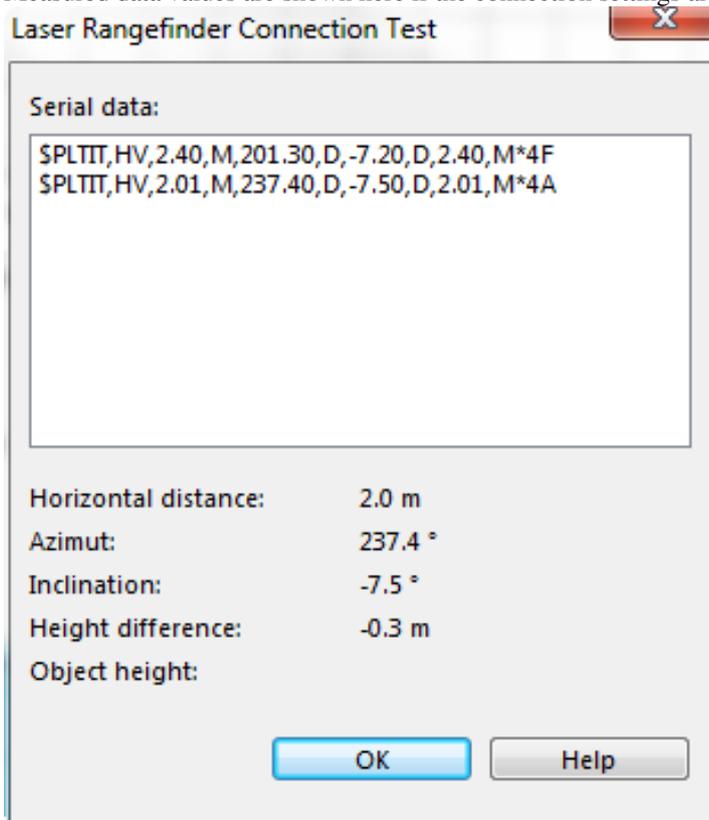


TruPulse 360°B



Laser Rangefinder Connection Test

Measured data values are shown here if the connection settings are correctly.



Laser Rangefinder Drawing Tool

Choose the  Laser rangefinder drawing mode. The Laser Rangefinder dialog appears.

Drawing options

Settings for different working processes can be done in the **Options** tab.

Direction: Choose between foresight and backsight.

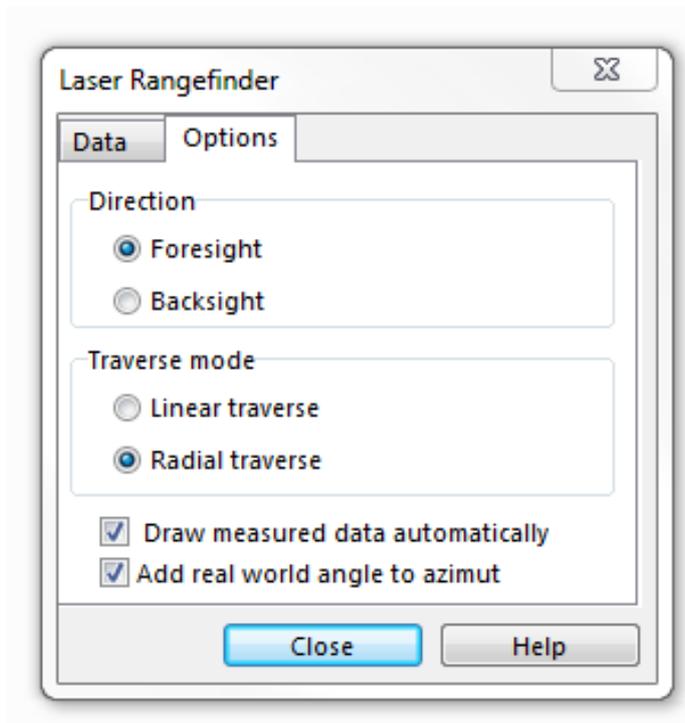
- Foresight: Measure forwards from your known position to a place with unknown position.
- Backsight: Measure backwards from a place with known position to your unknown position.

Traverse mode: Choose between linear traverse and radial traverse

- Linear traverse: Measure a series of points. A measured point is the start position for the next measurement.
- Radial traverse: Measure a series of points. The start position is always the same.

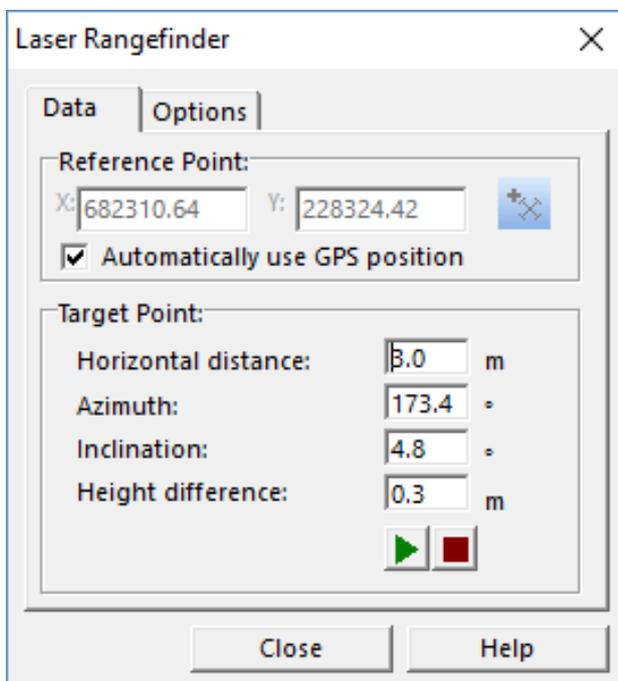
Draw measures data automatically: Turn on this option if measured positions should be added to the map automatically. Otherwise each position must be confirmed by the user.

Add real world angle to azimuth: Turn off this option if declination is already corrected by the laser range finder.



Drawing

1. Set a reference point: Set it by clicking on the map, get the GPS position by clicking on the button or select the option **Automatically use GPS position**.
2. Measure the features position. Depending on the **Draw measures data automatically** option the positions are added to the map automatically or they must be confirmed.
3. Finish a feature by clicking the **Stop** button.



[Back to GPS](#)

[Back to Drawing an Object](#)

[Back to Main Page](#)

Menu Options

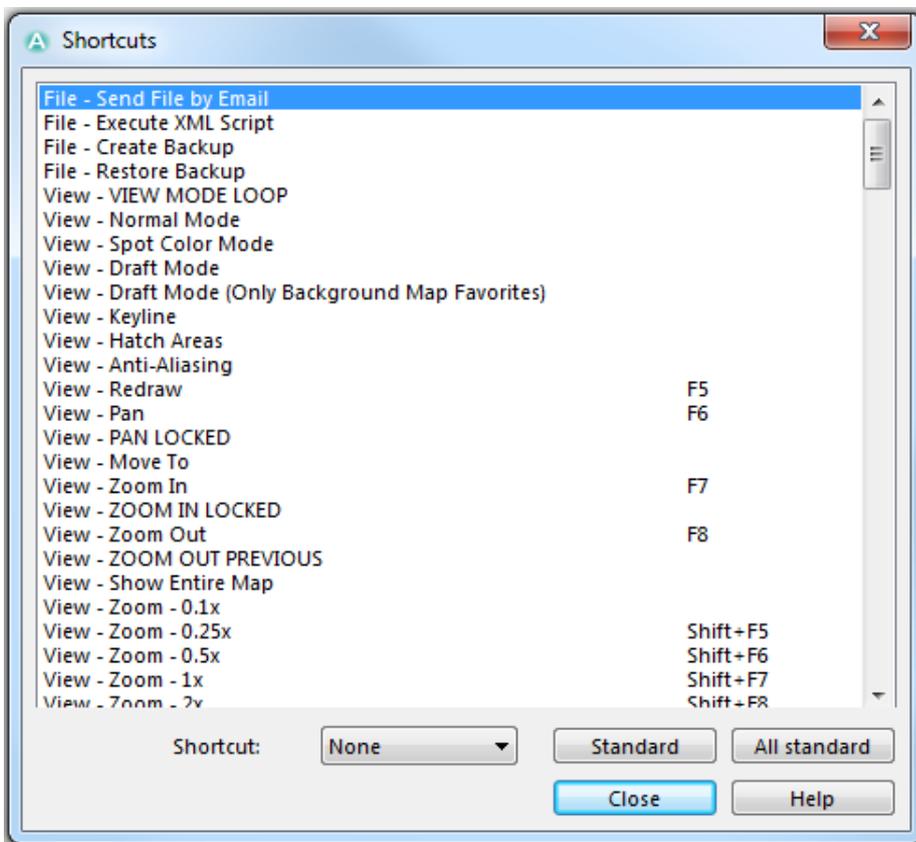
Options

OCAD Preferences

Please see the **OCAD Preferences** Page for your individual working methods.

Shortcuts Mas Ori

Choose **Shortcuts** from the **Options** menu to edit and define shortcuts. The **Shortcuts** dialog box opens.



Define a Shortcut

1. Select a function (e.g. View - Normal Mode) in the dialog box.
2. Choose a shortcut in the **Shortcut** dropdown list.
3. Click the **Close** button. Now you can use the shortcut.

Reset a Shortcut to Standard

1. Select a function (e.g. View - Normal Mode) in the dialog box.
 2. Click the **Standard** button to set a single shortcut to default or click the **All standard** button to set all shortcuts to default.
 3. Click the **Close** button to save and quit the dialog.
-

Default Shortcuts

The following shortcuts are set by default:

- F2: Symbol -> Normal
- F3: Symbol -> Protect
- F4: Symbol -> Hide
- F5: View -> Redraw
- F6: View -> Pan
- F7: View -> Zoom In
- F8: View -> Zoom Out
- F9: Background Map -> Adjust
- F10: Background Map -> Hide All
- F11: Background Map -> Manage
- Shift+F5: View -> Zoom -> 0.25x
- Shift+F6: View -> Zoom -> 0.5x
- Shift+F7: View -> Zoom -> 1x
- Shift+F8: View -> Zoom -> 2x
- Shift+F9: View -> Zoom -> 4x
- Shift+F10: View -> Zoom -> 8x
- Shift+F11: View -> Zoom -> 16x
- Shift+F12: View -> Zoom -> 32x
- Shift+Ctrl+F12: View -> Zoom -> 64x

Additional Shortcuts

The following shortcuts are unchangeable Windows shortcuts:

- F1: Help (Opens the OCAD Wiki)
- Ctrl+C: Copy Object
- Ctrl+X: Cut Object
- Ctrl+V: Paste Object
- Ctrl+Z: Undo

The following shortcuts are unchangeable drawing and editing shortcuts:

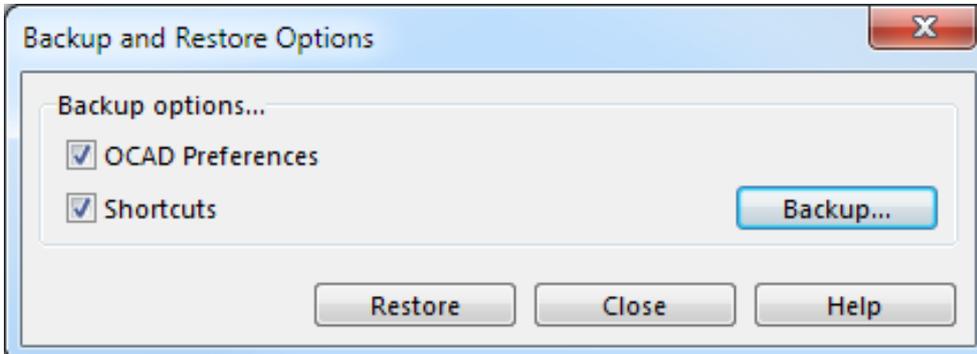
- V: Select and edit object
 - A: Select object and edit vertex
 - P: Select last used drawing mode
-

Tips with Keyboard and Mouse

For tips using the keyboard and the mouse visit the **Tips with Keyboard and Mouse** page.

Backup and Restore Options Mas Ori

Choose the **Backup and Restore the OCAD Options** command in the **Options** menu to save or restore the OCAD Options. The **Backup and Restore the OCAD Options** dialog appears.



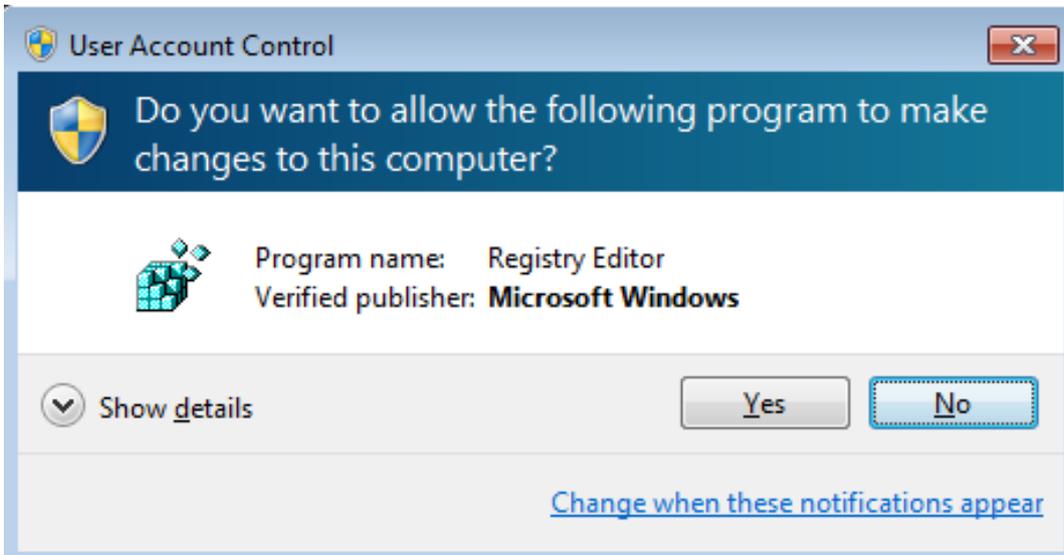
Backup

You can either save the **OCAD Preferences**, the **Shortcuts** or both of them. Check the desired options. When you click the **Backup** button, you can save the **OCAD Preferences** and **Shortcuts** stored in Windows Registry in a reg file (Windows Registry File).

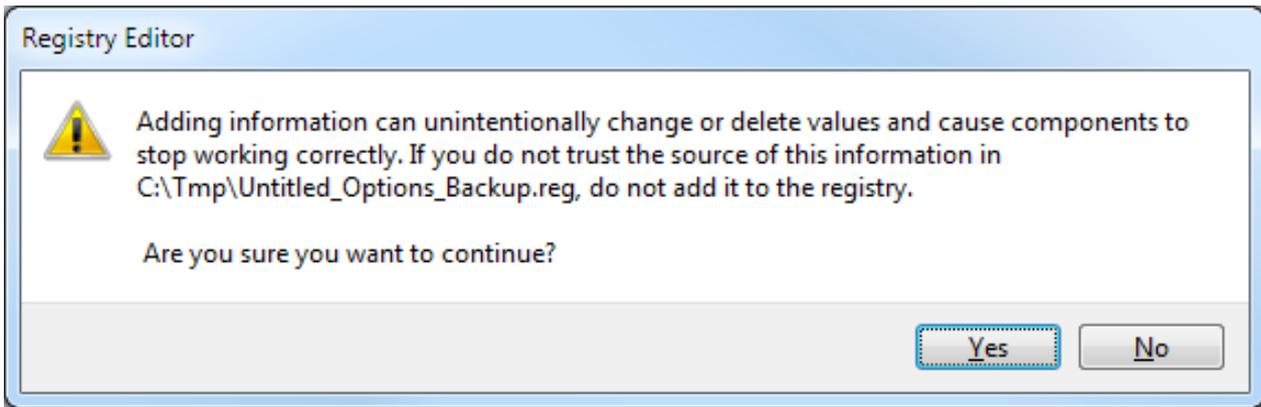
Restore

Restore the backedup **OCAD Preferences** and **Shortcuts** from the reg file by clicking the **Restore** button. Select the reg file and click the **Open** button in the **Restore** dialog.

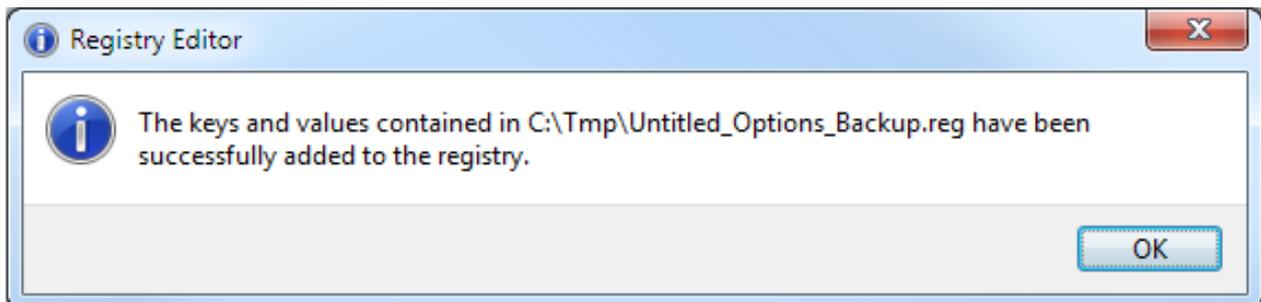
Windows shows the following 3 messages. Close the dialog not before clicking through these 3 messages.



Click the **Yes** button.

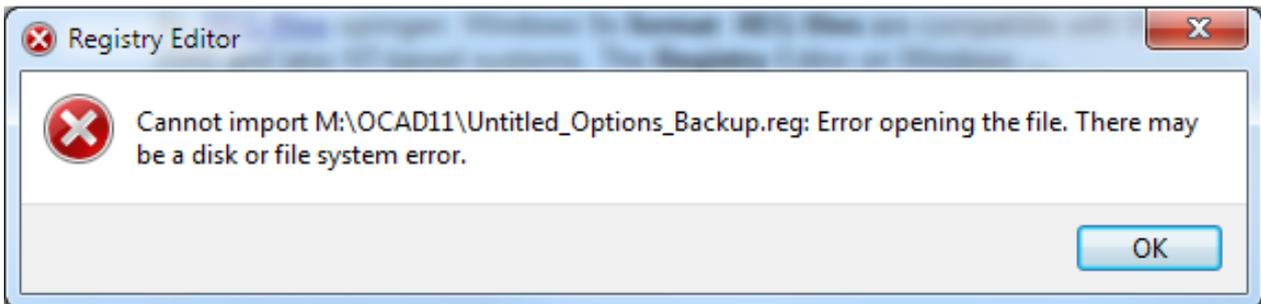


Click the **Yes** button.



Click the **OK** button.

 The reg file must be saved on the local disk (not network). Otherwise the Registry Editor shows the following error message:



Language Mas Ori Sta View CS

Choose the **Language** submenu in the **Options** menu to change the language. OCAD supports the following languages at the moment:

- English
- Catalan
- Czech
- German
- Spanish
- French
- Italian
- Hungarian
- Norwegian
- Polish
- Portuguese
- Russian

- Finnish
- Swedish
- Turkish
- Japanese
- Traditional Chinese



Changing the language has no effect on the language of symbol and color descriptions of the template files. The language you choose during the installation process defines which template files are installed and therefore which language they have.

OCAD Preferences

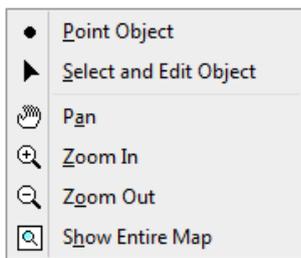


Some preferences are not available in the *OCAD Starter* and *OCAD Course Setting* editions.

GUI (Graphical User Interface)

Right click in drawing area opens context menu

If enabled, the context menu is shown by clicking on the drawing area with the right mouse button.



In the upper part of the **Context** menu, you can switch between the current **Drawing Mode**, the  **Select and Edit Object** mode and the  **Select Object and Edit Vertex mode**.

In the lower part of the **Context** menu, you can change the view either with the  **Pan**,  **Zoom In**,  **Zoom Out** or the  **Show Entire Map** tool.

If disabled, you can switch between the current **Drawing Mode** and the  **Select Object and Edit Vertex mode** by clicking on the drawing area with the right mouse button.

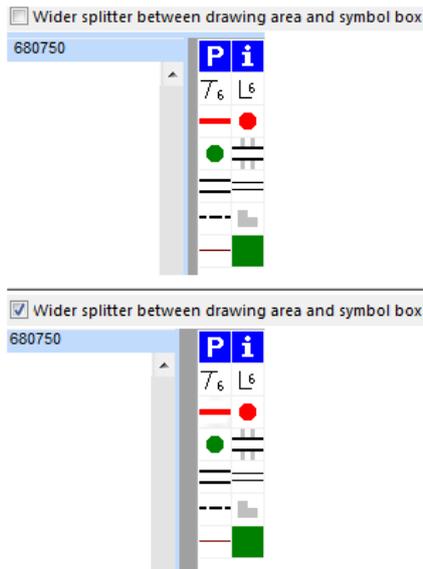
Right mouse click change between drawing and editing

This option is only activated if the **Context menu in drawing area** option is deactivated.

We recommend to deactivate this option when drawing on a tablet with a pen. In this case OCAD ignores the right click during drawing.

Wider splitter between drawing area and symbol box

If this option is enabled, the splitter between the symbol box and the drawing area appears wider as usual. This feature may improve the user-friendliness.



Toolbars

Show or Hide the following toolbars in this field:

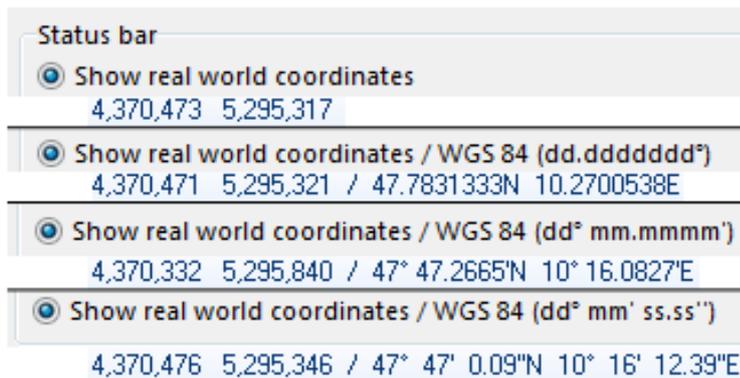
- **Editing and Drawing Toolbar**
- **Edit Functions Toolbar**
- **Mobile Toolbar**
- **Numeric Keypad Toolbar**
- **Standard Toolbar**
- **View Toolbar**

Click the **Reset** button to reset the toolbar positions to the default settings. Please restart OCAD for the changes to take effect. This function is sometimes used if an undocked toolbar outside the screen.

Click the **Customize** button to add or remove icons to/from the toolbars.

Status bar

Choose the format of the coordinates appearing in the Status Bar in this box.



Style

Change the virtual appearance of the GUI by choosing one in the dropdown list.

Reset docking panels

Reset the docking panels (symbol box, GPS box and database box). OCAD restart needed to take effect.

Use this function if the symbol box is hidden.

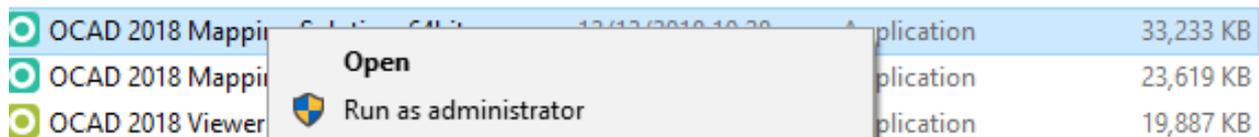
File

Auto file load when opening OCAD

Check this box to load the last map you worked on automatically when OCAD is started. Otherwise no map will be loaded.

Create ocd file association

Click this button to associate the running OCAD edition with .ocd files. OCAD must run as administrator to execute this function (change file association in Windows Registry).



Confirm to run as administrator.



Alternatively, go to **Settings>Apps>Default apps** and **Chosse default apps by file type**.

 Normally, default file type for .ocd files is set during installation. However, if you run OCAD in the Cloud, the default file type is not set.

Clear file history

Click this button to clear the file history from Recently Exported Documents and Recently Used OCAD Files. If a drive from the file history files does not exist anymore, e.g. disconnected network drives, it may need more time to open the File menu. This function solves the problem.

Temporary OCAD Folder

While working on an open file OCAD is saving all changes to temporary file(s) in a tmp folder. This folder can be changed here. By default it is C:\Users\[USERNAME]\AppData\Roaming\OCAD\tmp.

OCAD saves the WMS images in this folder.

Ghostscript File Path

OCAD uses Ghostscript to convert a pdf background map to a jpg file when opening the pdf file.

Download ^[1] and install Ghostscript.

Click the **Choose** button to set the file path of the Ghostscript exe file (e.g. C:\Program Files (x86)\gs\gs9.08\bin\gswin32.exe).

Auto-backup

Activate the checkbox **Create auto-backup when opening OCAD file** and every time you open an .ocd-file, OCAD will save a backup of this file. You can also create a backup manually by using the **Create Backup** function in the **File** menu.

Click the **Choose** button to set a file path for the auto-backup.

Activate **Compress file** to save disk space.



Remember to clean out the auto-backup directory from time to time.

Default coordinate system

Set here the default coordinate system for your template files.

View

User defined zoom in menu item

Enter a value to specify the User Defined Zoom. Choose **User Defined** in the **View** menu to apply the specified zoom to the map.

View mode loop

With the **View mode loop** tool you can easily switch between different view modes. Select the view modes you want to switch between in the **View mode loop** box in the **View** category of **OCAD Preferences**.

To use the **View mode loop** you have to define a **Shortcut** for **View - View Mode Loop**. Afterwards you can switch between the set view modes using the **Shortcut**.

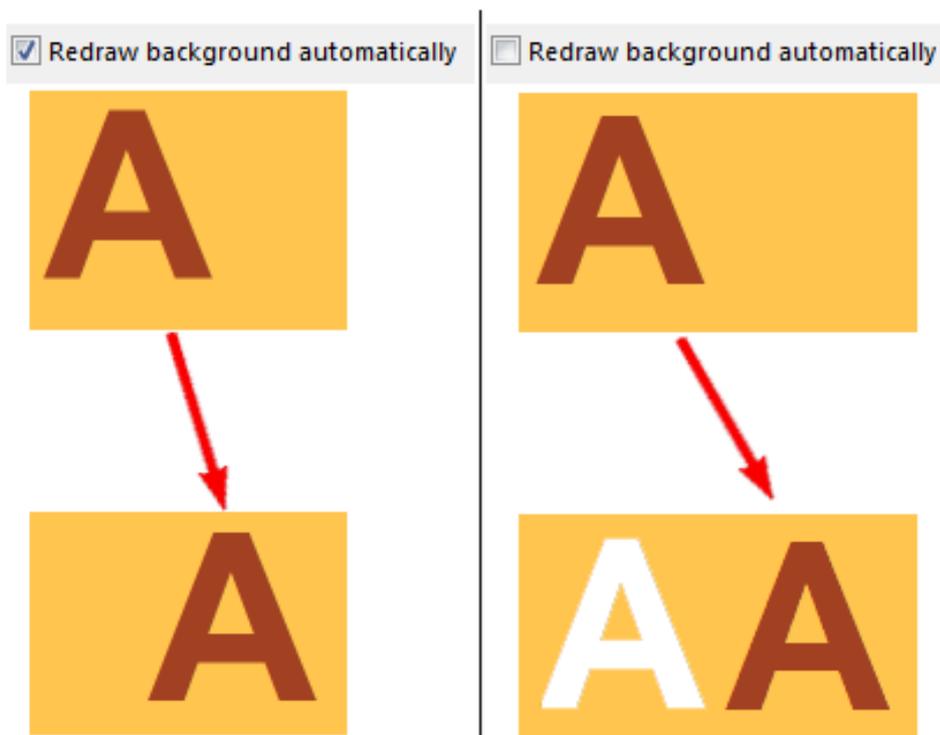
Visit the **View Mode Loop** article to get more information about this function.

Color Correction

On some monitors colors and gamma of the map are not displayed correctly. Use the controller to regulate the color and gamma manually. Click on the **Standard** button to set the **Color Correction** back to default.

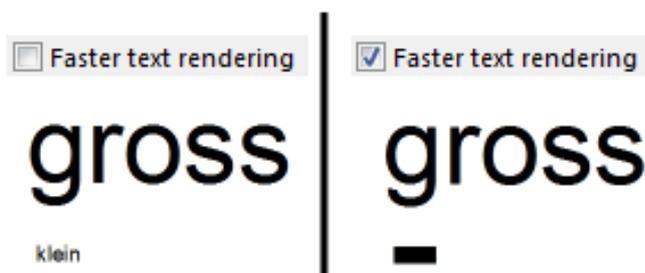
Redraw background automatically

If this option is enabled, the map is redrawn after every single modification of the map (This may reduce the performance of OCAD). Otherwise you have to press the **F5** key or select **Redraw** in the **View** menu to redraw the map.

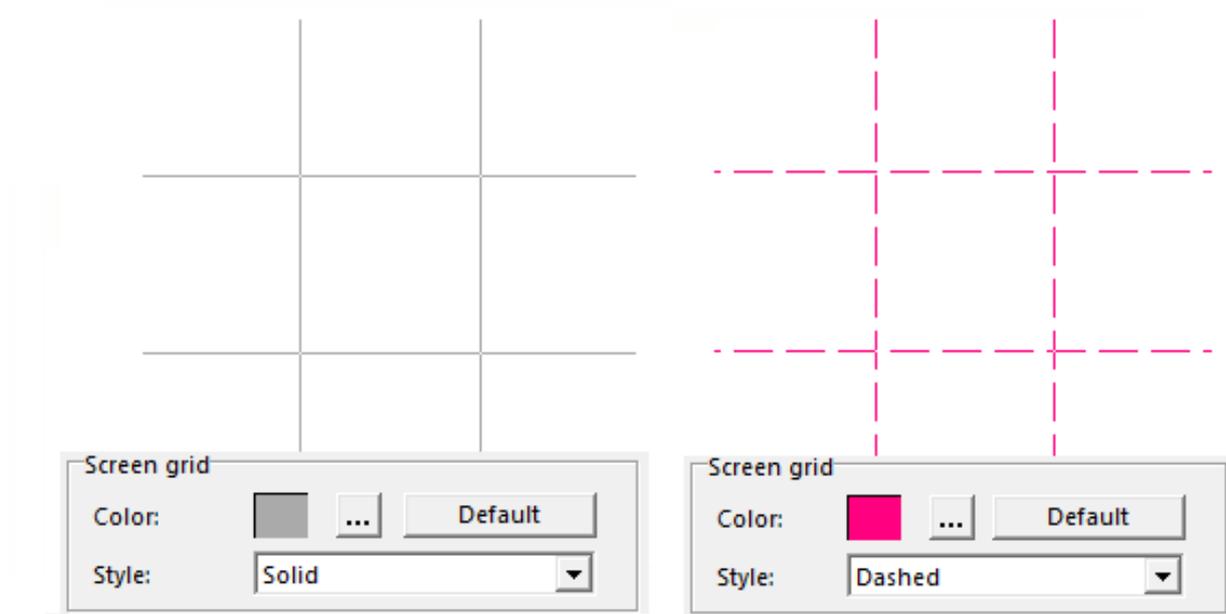


Faster text rendering

Enable the **Faster text rendering** option to render text faster and less precisely. This may increase the performance of OCAD.



Screen Grid



In this section of the **OCAD Preferences** the color and the appearance of the **Screen Grid** can be changed.

Change the **Color** by clicking the  **Setup** icon.

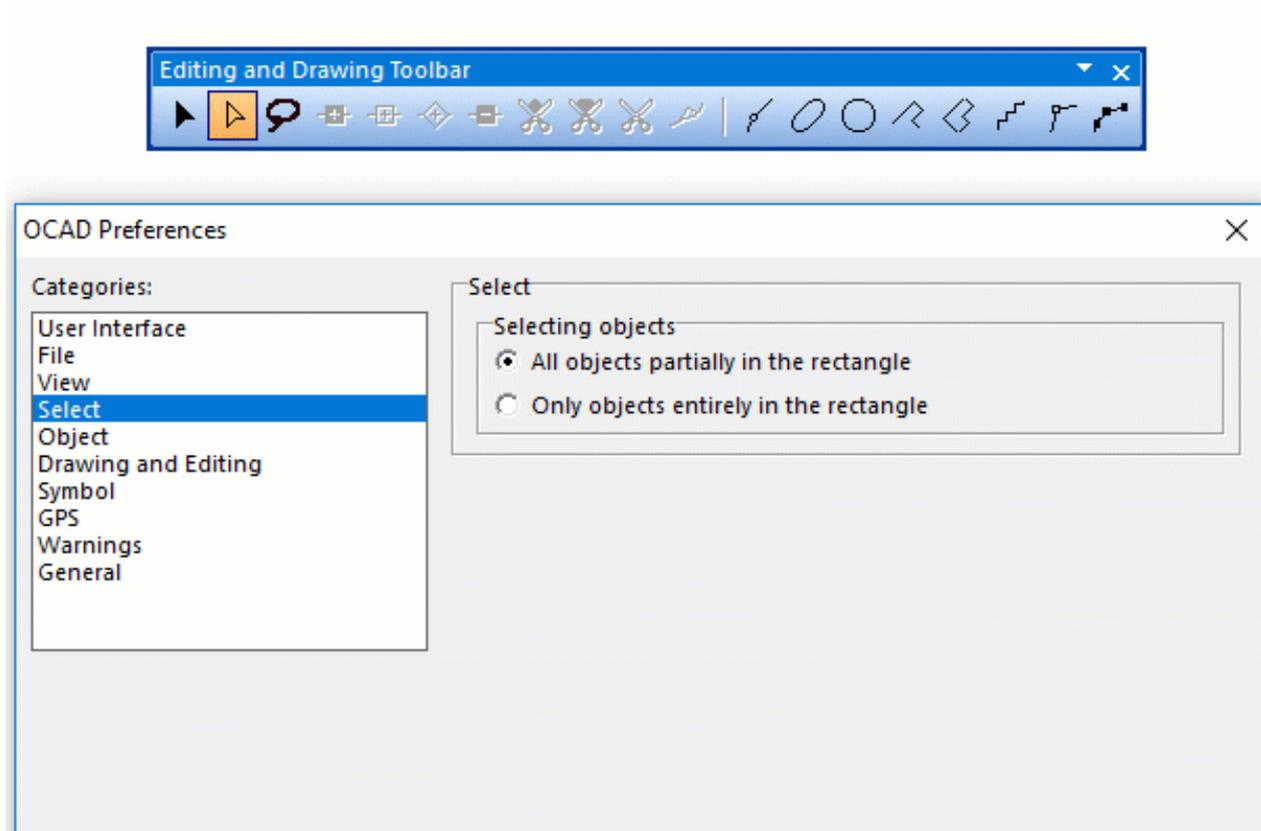
Click the **Default** button to reload the default gray color.

Choose a **Style** from the dropdown menu. The **Screen Grid** can either be **Solid**, **Dashed** or **Dotted**.

Select

You can choose between two modes to select multiple objects:

- All objects must be with at least one vertex in the selection.
- All objects must be completely in the selection.



You can find more information about selecting multiple objects on this page: [Select and Edit Multiple Objects](#).

Object

Object stretching

If this option is activated, you are able to stretch objects in the  **Select and Edit Object** mode.

You can find more about stretching objects on this page: [Select and Edit Object](#).

Unsymbolized objects

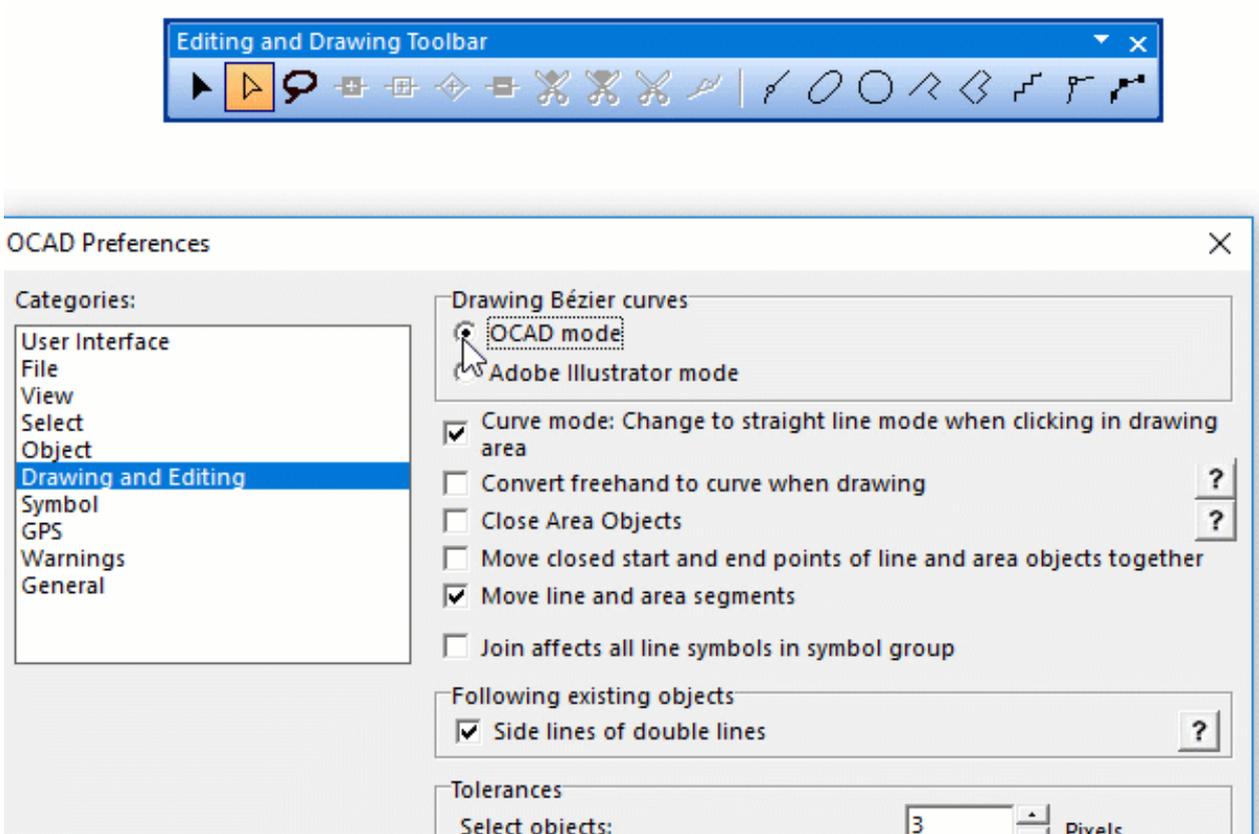
Choose a color for Unsymbolized Objects by clicking on the **Setup**  icon. The **Color Picker** dialog appears and you can configure the color.

Drawing and Editing

Drawing Bézier curves

Choose the preferred mode for drawing curves.

- In OCAD mode, only the direction of a dragged tangent is used. The distance from the normal vertices to the curve vertices is calculated automatically. This is the recommended mode.
- In Illustrator mode, the length of the dragged tangent is used to calculate the distance of the curve vertex.



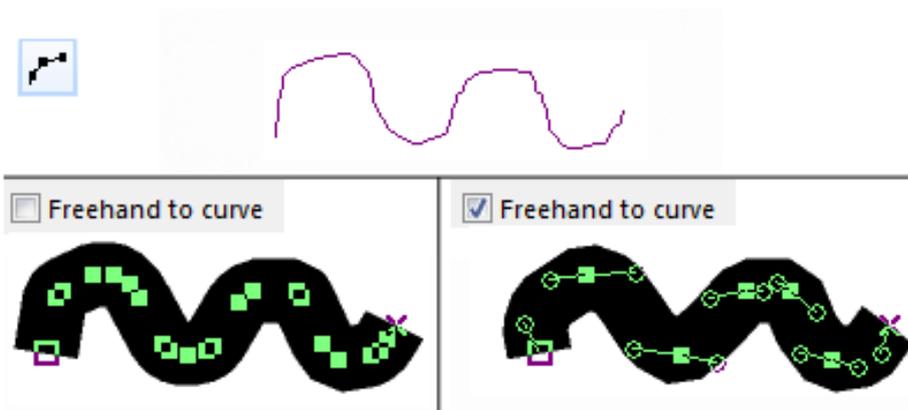
You can find more about drawing curves on the following page: [Draw a Curve](#)

Curve mode: Change to straight line mode when clicking in drawing area

Check this box to draw straight lines also in curve mode. See more in [Change to Straight Line Mode](#)

Convert freehand to curve when drawing

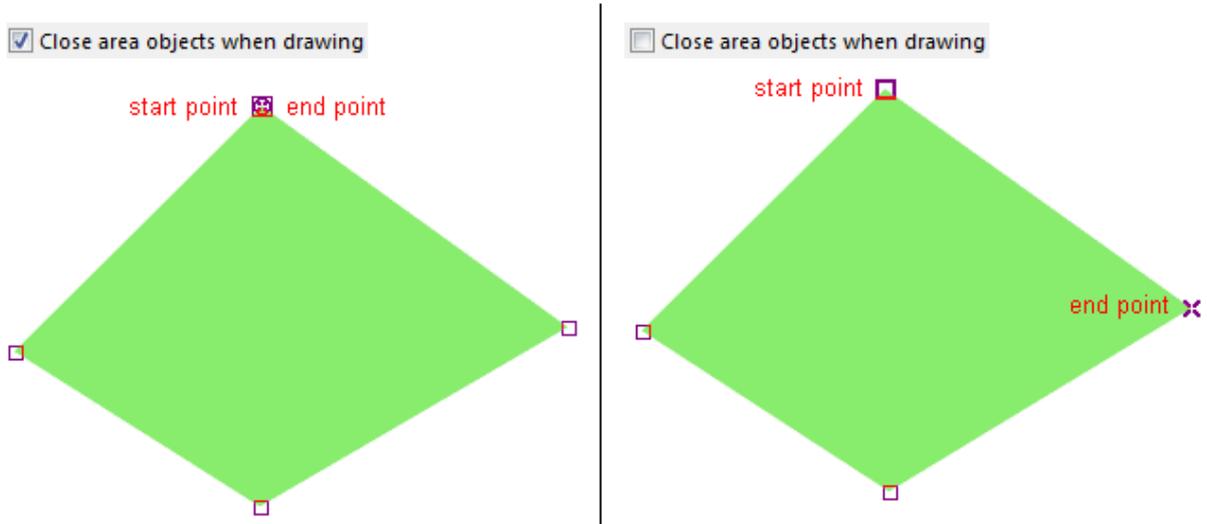
Check this box to convert lines and areas to curves when drawing in freehand mode. Otherwise they remain as polygons. The settings made in the **Smooth when drawing freehand** dropdown list of the **Tolerances** field determine the smoothing level.



Close area objects when drawing

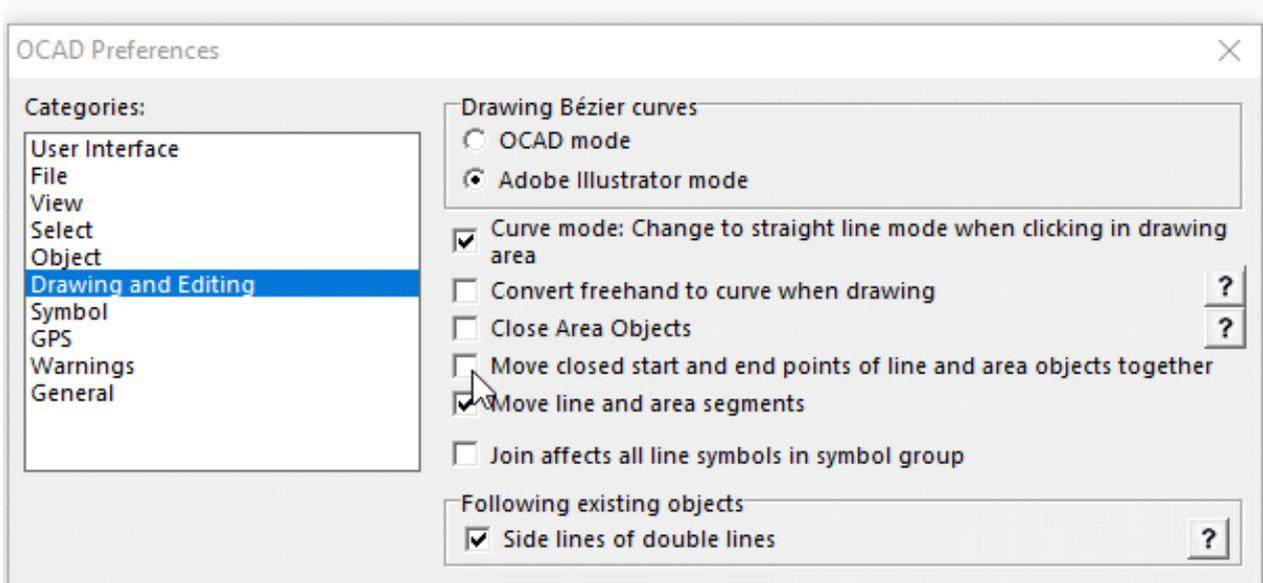
OCAD closes area objects automatically if this option is checked. If the start and end point are different, OCAD adds an end point with the same position as the start point.

Choose **Close Area Objects** in the **Topology** part of the **Object** menu to close already drawn area objects.



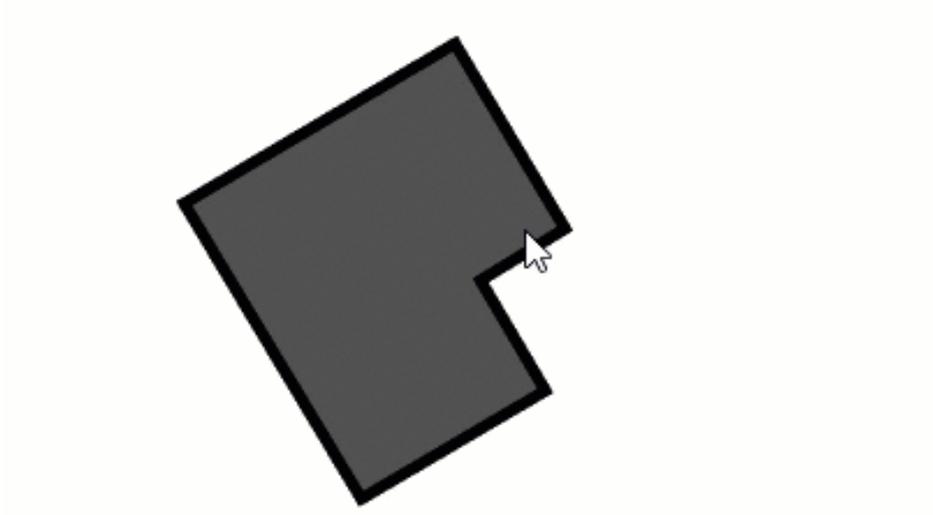
Move closed start and end points of line and area objects together

When this option is switched on, and the start and end points of a line or area object coincide (the line is closed), they are moved together during editing. If you move the start point, then the end point will also move.



Move line and area segments

Activate this option to be able to move line and area segments.



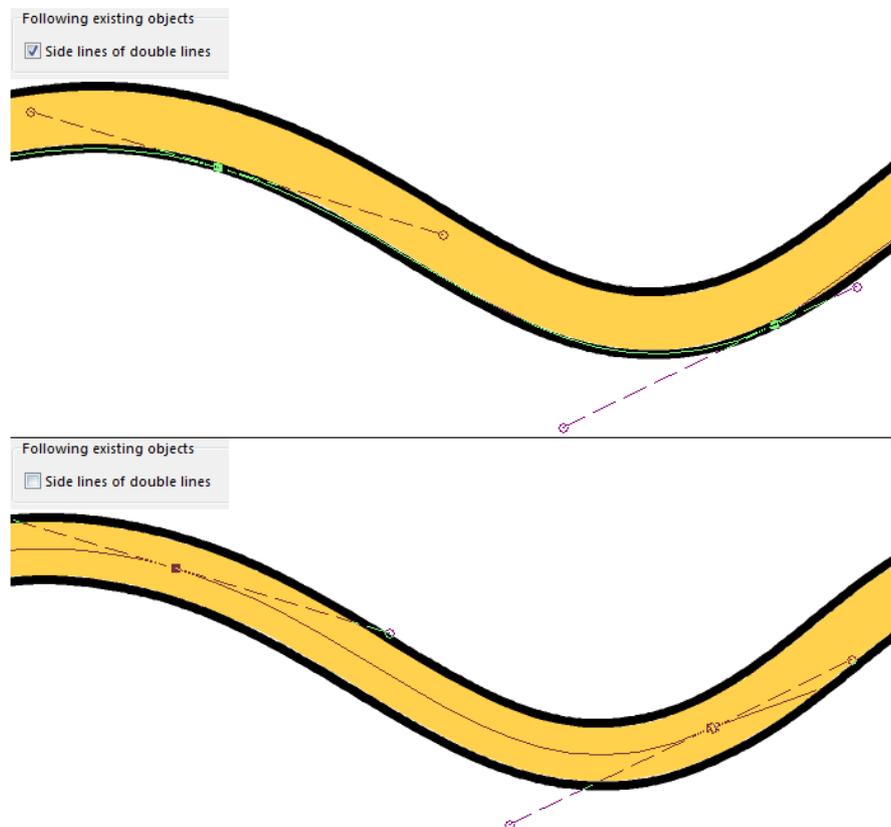
Join affects all line symbols in symbol group

When this option is switched on, OCAD joins the ends of selected line objects that are in the same symbol group (symbol tree). If deactivated, OCAD only joins if the line objects have the same symbol.

The option affects the  Join function and  Automatic Joining during drawing.

Following existing objects

Uncheck the **Side lines of double lines** option if side lines of double lines should not be traced when you are following existing lines. You can find more about this topic on the [Following Existing Objects](#) page.



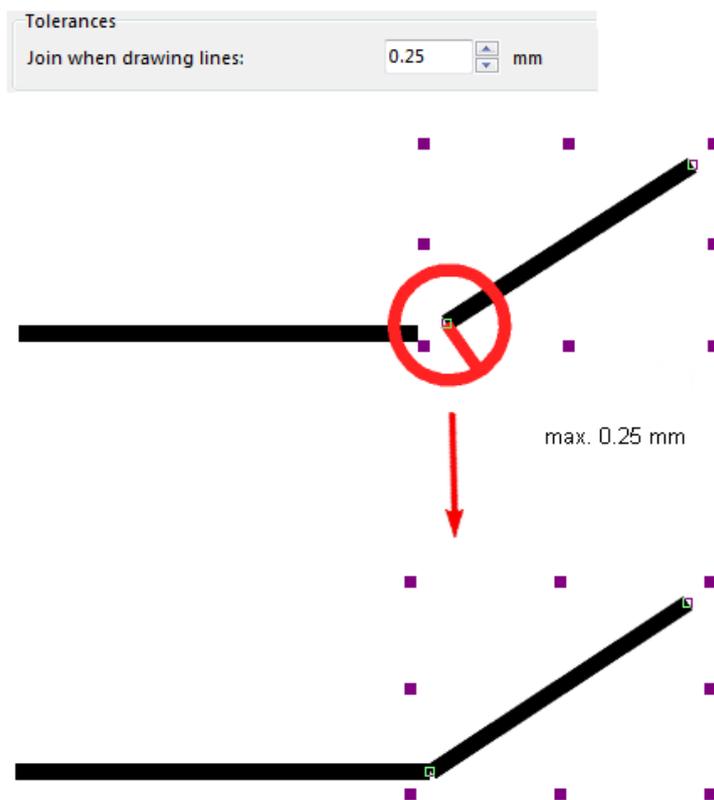
Tolerances

- **Select objects:** This tolerance defines the maximum distance on each side of a thin line where you can click to select it. Objects with a thicker main line than the tolerance level can be selected by clicking on the entire line width. The default value is 3 pixels.

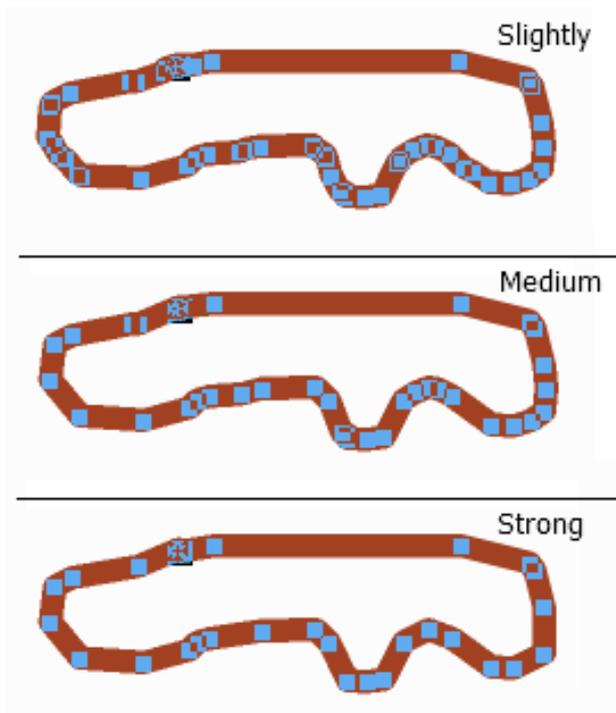


This tolerance is further used in multiple tools like **Cut lines**, **Cut areas**, **Following existing objects**, **Reshape**, **Add Vertex**, **Remove Vertex**, **Change Vertex Type**.

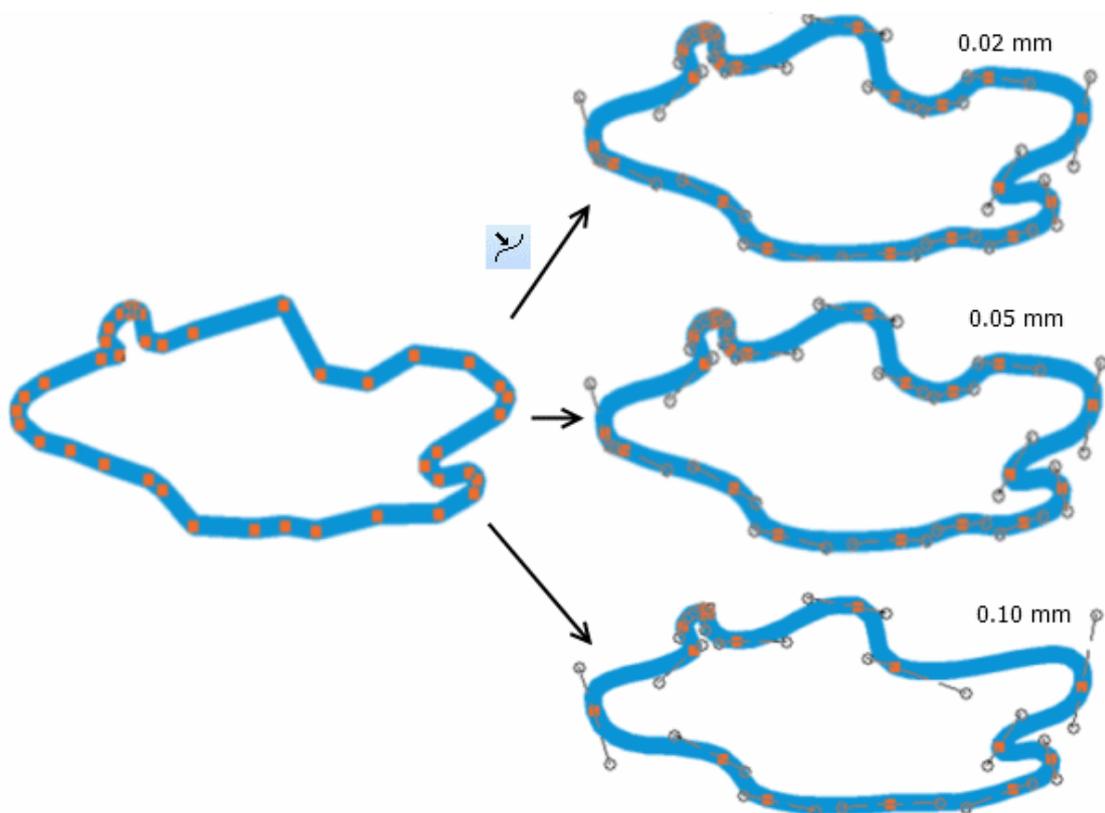
- **Snapping:** If you activate the **Snapping** tool, moving a vertex close to an objects has a snapping effect. This tolerance defines the maximum distance you have to approach to the object, so that the vertex snaps to it. The default value is 5 pixels.
- **Join when drawing lines:** This tolerance defines the maximum distance a vertex has to approach to another line end to join it. The default value is 0.25 mm. If the line width is bigger than this tolerance then OCAD takes the line width as the tolerance. This tolerance is used for lines and areas



- **Merge lines:** This tolerance defines the maximum distance two line ends can be apart to still get merged.
- **Smooth when drawing freehand:** There are three smoothing levels for freehand drawing mode: slightly, medium and strong. They correspond to 0, 1 and 2 in earlier OCAD versions.

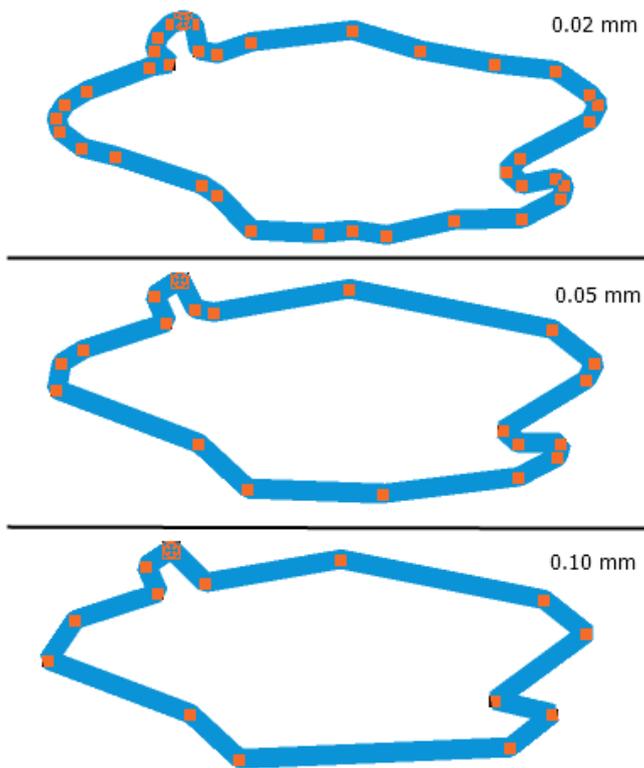


- **Change to Bezier curve:** This tolerance defines the maximum distance the vertices can move away from the original position by changing from polyline to Bezier curve. The default value is 0.10 mm. Note that the distance between the curve and the polyline can be greater between the vertices.



- **Smooth (generalization):** This tolerance is used by the Douglas-Peucker smoothing algorithm. Vertices that are closer to the direct line between the previous and the next vertex are removed. The default value is 0.05 mm.

This smooth tolerance is also used in the 'Change to Polyline' function.



Cursor color

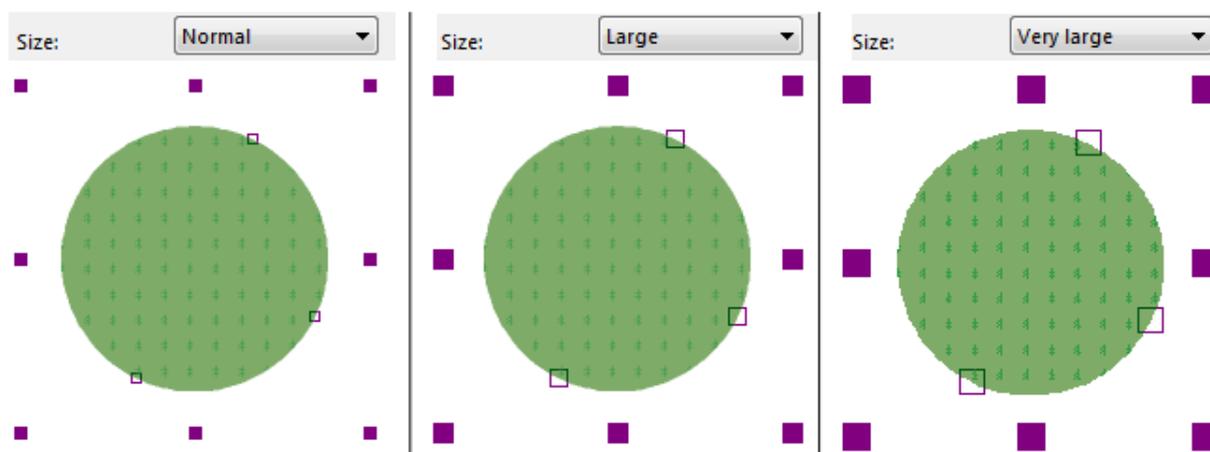
You can change the cursor color to black, red, blue, purple or yellow by selecting a color in the dropdown list.

Scale Cursor Size

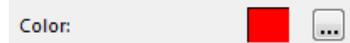
Check this option to enlarge the cursor to the default size on high-DPI monitors with Windows 10 Creators Update.

Mark

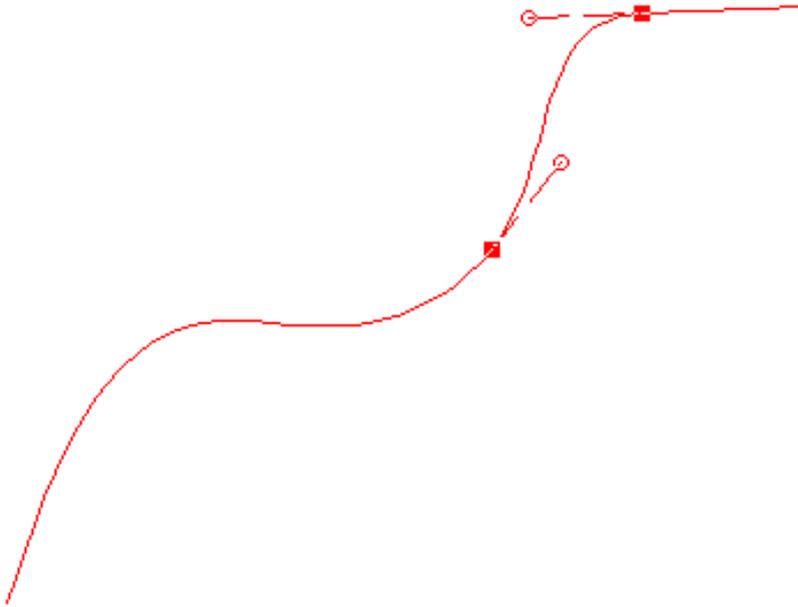
Set the mark size to normal, large or very large.



Choose a mark color by clicking the  Setup icon.



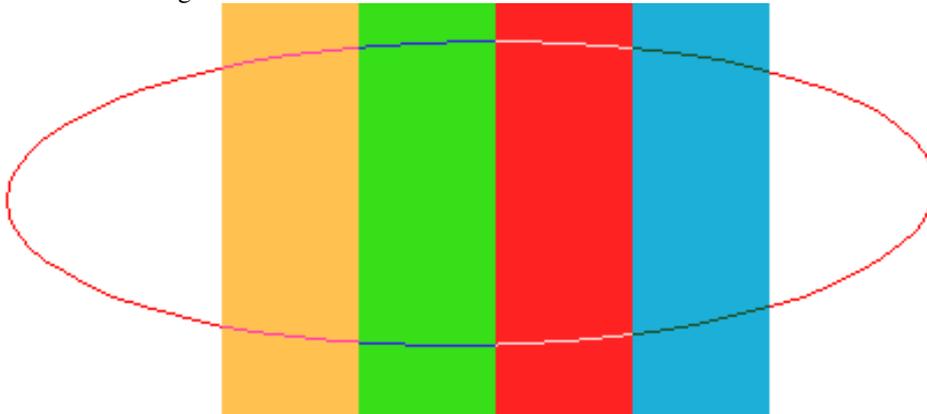
The mark color is used during drawing and to mark the selected objects.



The GPS cursor in GPS Real Time mode is also drawn with the chosen mark color.



 OCAD uses the chosen mark color only on white background. Otherwise OCAD choose a color with high contrast to the background color.



Enable live preview

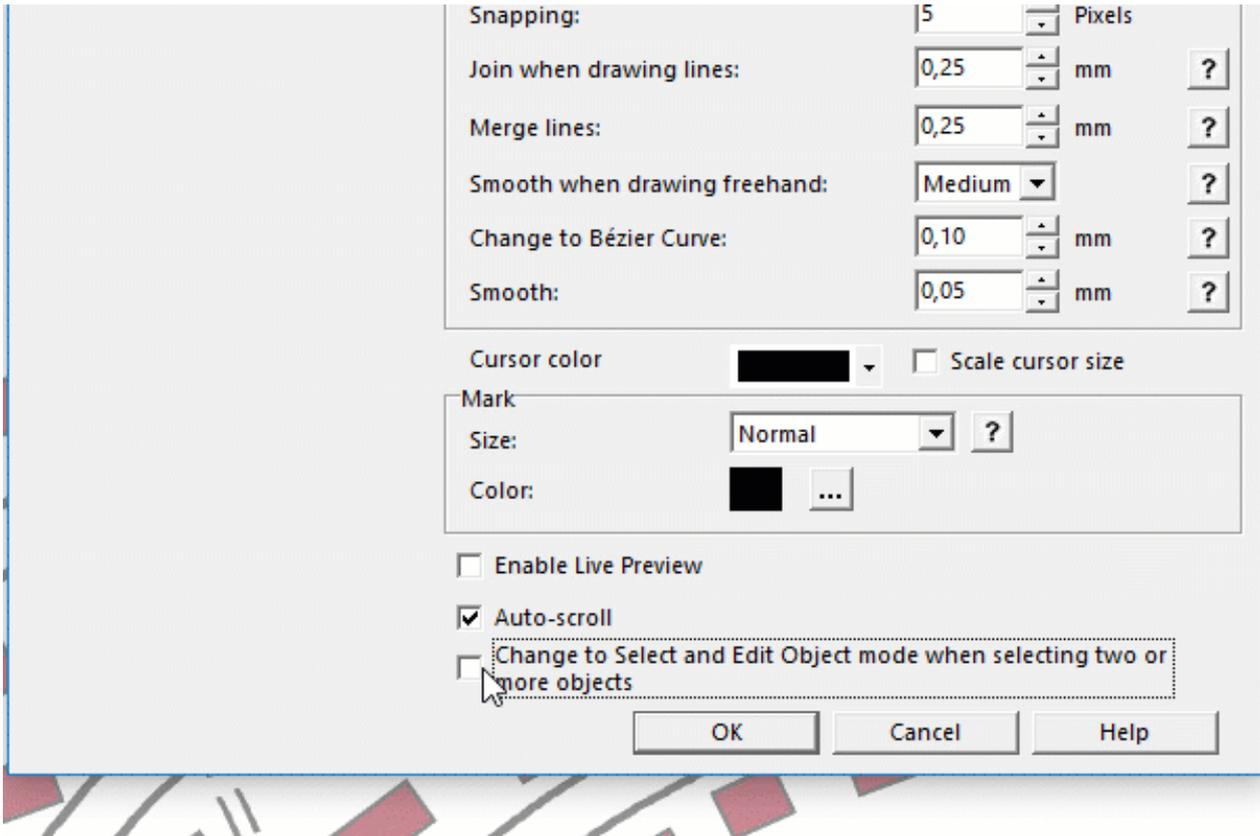
Enable this option to show the real line width when drawing line objects.

Auto scroll

Check this option if the map view should automatically scroll if you drag out of the drawing area. Disable **Auto scroll** if you have a slow PC.

Change to Select and Edit Object mode when selecting two or more objects

Check this option to automatically get the Select and Edit Object mode when selecting two or more objects.



Symbol

Default symbol folder

You can change the default symbol folder by clicking on the **Browse** icon. Choose a folder as *default symbol folder* which you want to load symbols from when you create a new map. Click on the **Delete** icon to clear the current folder path. If no folder is selected, OCAD loads symbols from the *Symbol* folder in the *OCAD program directory* (usually: *C:\Program Files\OCAD\OCAD 20xx\Symbol*) when you want to create a new map.

Symbol

- **Selected symbol blinks in symbol box:** If you check this option, the selected symbol blinks in the symbol box. This makes it easier to recognize the selected symbol.
- **Lock symbol positions in symbol box:** If you check this option, you are not able to drag and drop a symbol to a new position in the symbol box.
- **Auto select symbol when selecting object:** If you check this option, the corresponding symbol is automatically selected when you select an object. This does not work when you select multiple objects.

- **Change to drawing mode when selecting a symbol:** If you check this option, OCAD change to a drawing mode when selecting a symbol in the symbol box. If the symbol has a preferred drawing mode then OCAD change to this drawing mode.
- **Set symbol status visible when changing to Protected:** Check this option if you prefer to have the same behaviour as in earlier OCAD versions. In this case OCAD always sets the symbol status Visible when changing to Protected.

GPS

GPS Log File

Check the **Log all positions sent from gps** option to save all position sent from a GPS device in real time to a log file (Text-File). Click the  **Browse** icon to choose a folder, the log files are saved to. The log files are named with the date and time the real time GPS is enabled.

Warnings

Warnings for hidden symbols

These warnings can be activated when you either print, export or import a map. If you check those options, you will get a warning message if you have hidden symbols on the map and you are trying to carry out one of mentioned operations.

Moving warnings

Enable the **Move multiple objects** option to get a warning message when you move multiple objects. Use this option in order to guard against moving multiple objects accidentally.

Database warnings

Check these options to show Database Compatibility warnings about 32/64bit and dBase.

General

Updater

Disable the option **Check for Service Updates when you start OCAD** to not check for new free **Service Updates** when you start OCAD. In some cases this check takes too long.

Known bugs are corrected in Service Updates. Additionally, new functions are added constantly with the subscription model. Therefore, we recommend using OCAD software always with the most recent Service Update to benefit from the quality improvements. The latest Service Update is also available on our website in the Download ^[1] section.

OCAD Blog

If this option is activated, new OCAD blog posts are shown when you start OCAD.

Google API Key

Enter here your Google API Key. This key is used in the New Map Wizard to create a DEM via the Google Maps API.

Link: [Get API Key](#) ^[2]

References

[1] <https://www.ocad.com/en/service-update/>

[2] <https://developers.google.com/maps/documentation/javascript/get-api-key>

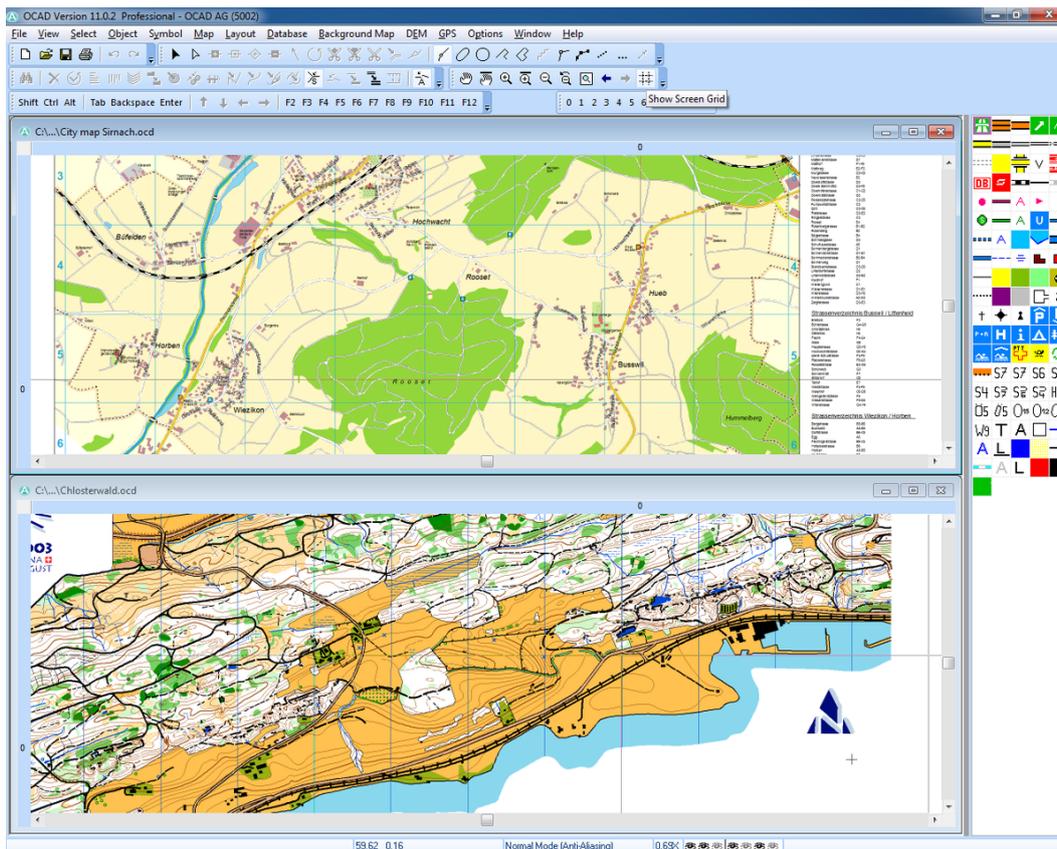
Menu Window

Window

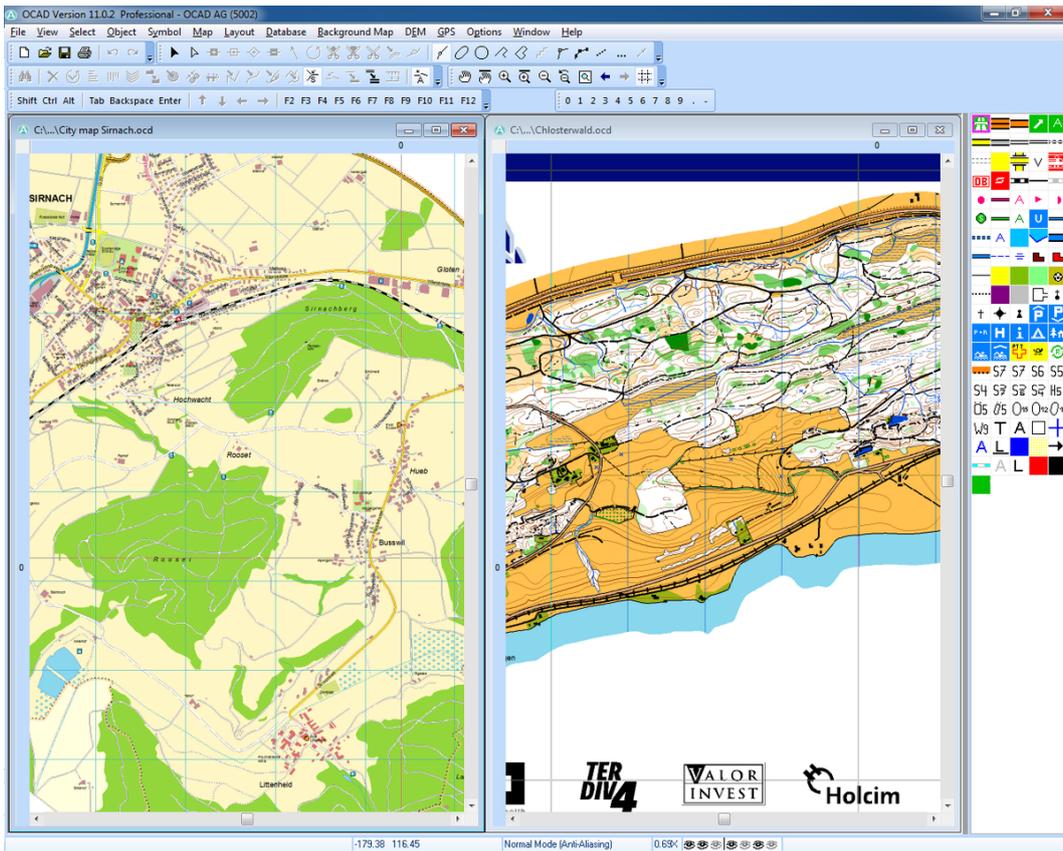
Tile



Choose the **Horizontally** command in the **Tile** submenu of the **Window** menu to arrange all opened OCAD projects horizontally in the OCAD window.



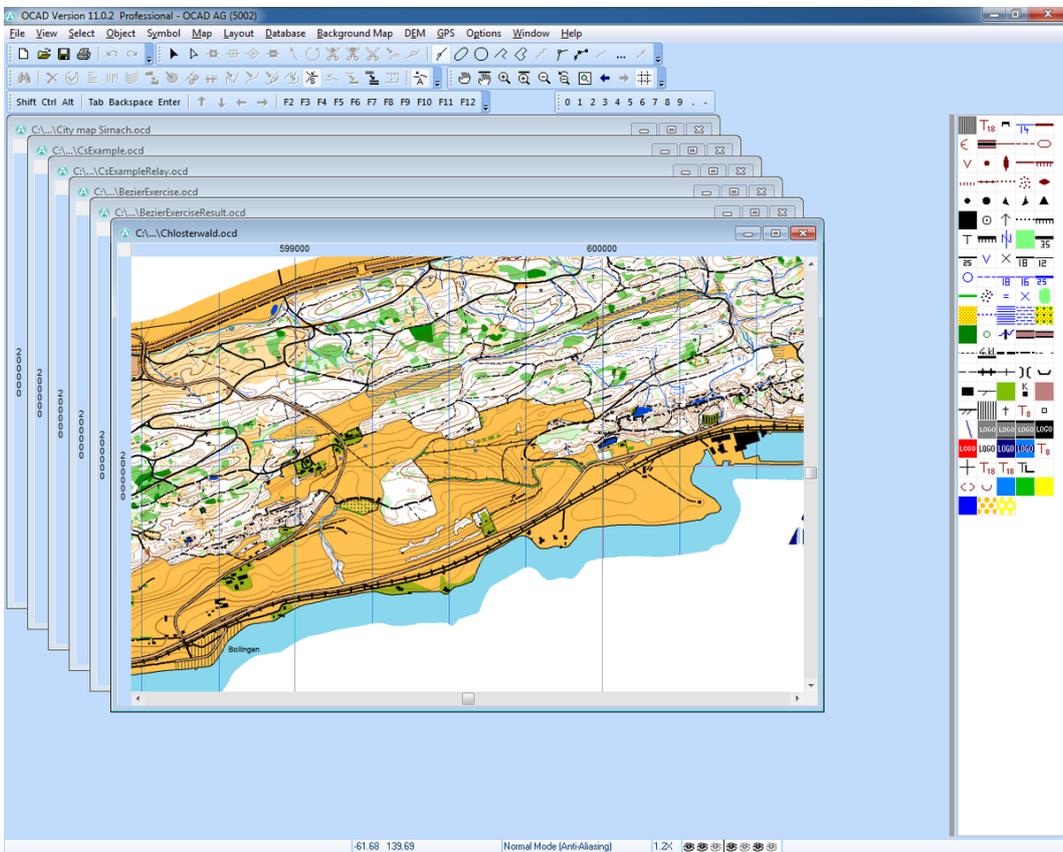
Choose the **Vertically** command in the **Tile** submenu of the **Window** menu to arrange all opened OCAD projects vertically in the OCAD window.



Cascade



Choose the **Cascade** command in the **Window** menu to cascade all opened OCAD projects.



Switch to Opened OCAD Window

In the lowermost part of the **Window** menu, all opened OCAD projects are listed. Choose a project to put it to the foreground.

Menu Help

Help

Help Menu

Contents: The contents of this help file.

Menu: Help for menu commands.

Toolbar: Help for toolbar buttons.

Tutorials: Link to the OCAD Tutorials.

What is New: Click on this menu item to open the **What is New** page.

OCAD Home page ^[1]: Connect to the OCAD homepage on the Internet.

Download Update: Download the current Service Update from the OCAD website.

YouTube Channel ^[2]: OCAD Youtube Channel

Getting Started with OCAD: Open the pdf file 'Getting Started with OCAD'. For different languages see **here** ^[3].

OCAD Blog ^[4]: Show the newest posts from OCAD Blog.

License Transfer Utility: Deactivate this license and transfer it to a new user.

License Manager: Overview about the licenses from your organization.

About OCAD: General Information about OCAD.

License Transfer Utility

This function is only available when all ocd files are closed in the OCAD program. Otherwise this function is disabled in the **Help menu**.

This function deactivates the OCAD license on your computer (User A) and allows you to install this license on another one (User B).

After the deactivation, User A can open OCAD files in OCAD Viewer but not edit maps.

License Transfer Utility

Current user

Name: * My Name

Email: * MyName@MyCompany.com

New user

Name: * Another Employer

Email: * anotherEmployer@MyCompany.com

Remarks:

I would like to transfer this license to another employer

(* Required fields)

Transfer

Close Help

Click the **Transfer** button. You will read **License unblocked for new user**.

OCAD sends a confirmation email to the entered email addresses of User A and User B. The license can now get activated by User B.

For the first activation, User B needs the order email from User A with the installation information.

OCAD for Single User: The request will be proceeded manually at the latest within 2 working days.

OCAD for Teams: The request will be proceeded automatically and the license can be activated immediately by the new user. The license can only be transfered once within 24 hours.

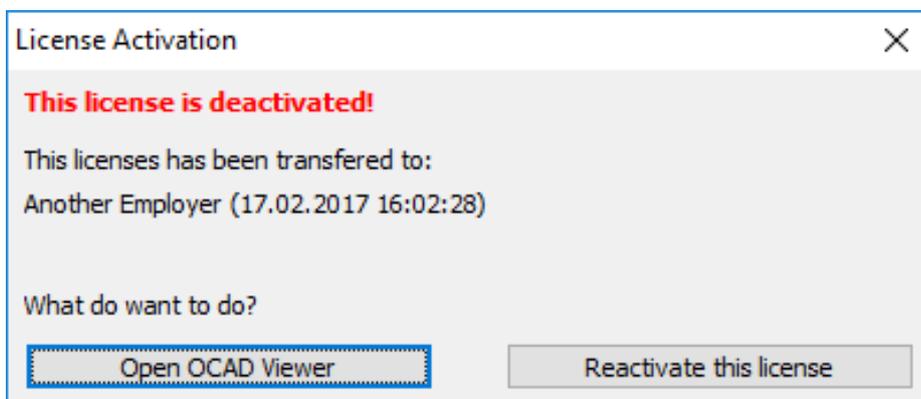
If you don't know the new user then enter your name also in the new user fields.

Click the **Close** button. OCAD closes.

Until now, it's not possible that an administrator is doing the License Transfer. The Users with the activated license need to transfer their licenses by their own.

License Activation

When the license is deactivated and User A or User B starts OCAD, for both of them the **License Activation** dialog appears.



You have two options:

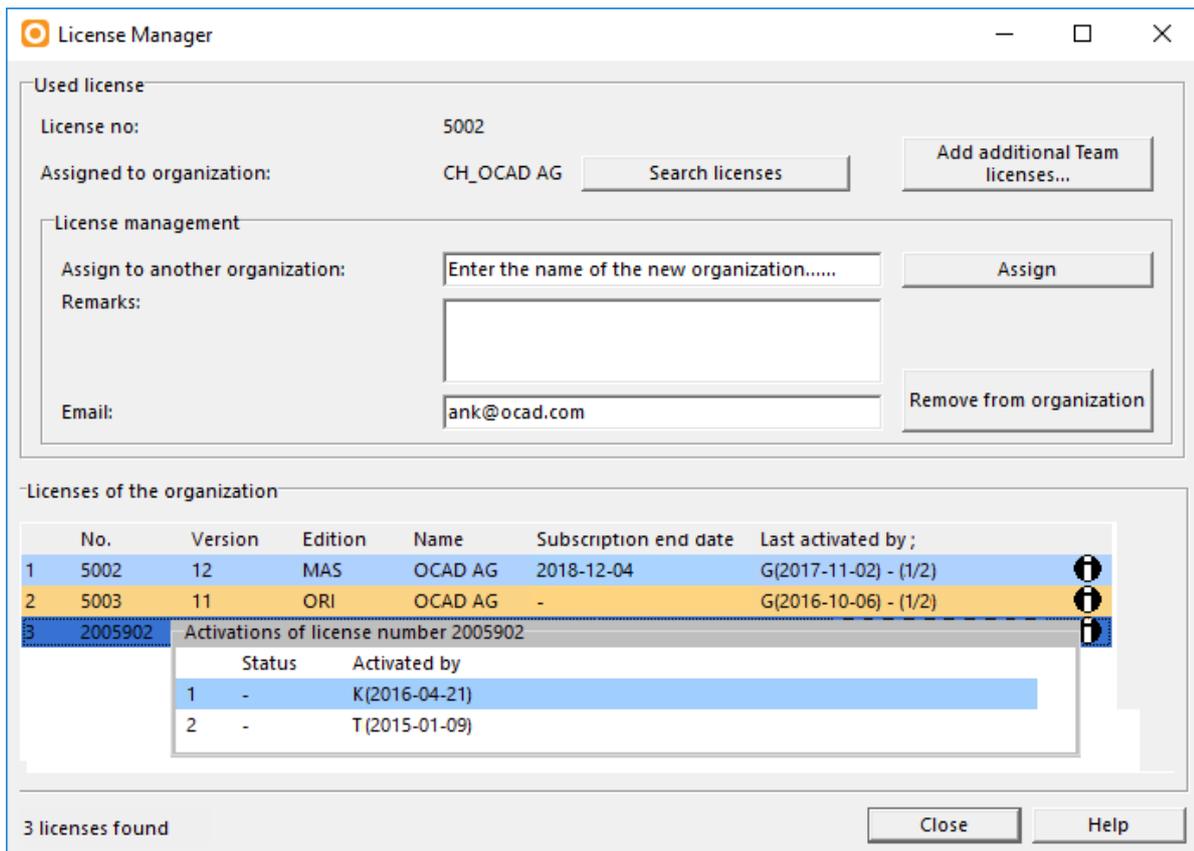
- Click **Open OCAD Viewer** to open the OCAD Viewer. It is possible to view and print map, but not to edit. This is what User A is supposed to do.
- Click **Reactivate this License** to start the **Activation Wizard**. This is what User B is supposed to do.

License Manager

Choose this command from the **Help** menu.

The **License Manager** tool shows an overview about the OCAD licenses which are assigned to your organization (company or association).

The allocation of thousands of licenses to an organization was done manually. If a license has been misallocated then report it to OCAD.



Used License

- **Search licenses:** Click on this button to get all licenses assigned to this organization.
- **Assign:** If the license is not assigned or assigned to a wrong organization, enter the name of the organization and click on the **Assign** button to send an email to OCAD.
- **Add Additional Team Licenses:** When you have several Team licenses, you can install OCAD on a Cloud service like Dropbox and add additional licenses. See the **OCAD as Cloudable App** page for more information.
- **Remove from organization:** Click this button to remove this license from the assigned organization. An email will be send to OCAD.

Licenses of the organisation

- **No.:** License number
- **Version:** OCAD version (2019, 12, 11, ...)
- **Edition:** OCAD Edition (Mapping Solution, Orienteering, Starter, Course Setting)
- **Name:** License Name
- **Subscription end date:** End date for OCAD subscription licenses. Earlier versions (OCAD 12 and earlier) are life-time licenses.
- **Last activated by:** See the user, who activated OCAD the last time. Numbers in brackets indicate how many time the license has been activated.
- **Info button:** Click on the **Info** button to see all activation from the selected license.

Status 1 means license is activated

Status 2 means license is deactivated by user

Status 3 means license is deactivated by OCAD AG

About OCAD

Choose this command from the **Help** menu.

It contains general Information about OCAD like license information and current version of OCAD.



Copyright (C) 1988-2018 OCAD AG, CH-6340 Baar.

OCAD AG
Mühlegasse 36
CH-6340 Baar / Switzerland
<http://www.ocad.com> | info@ocad.com

License

License number: 5002
Name: OCAD AG
Subscription start date: 27.02.2018
Activation date: 27.02.2018
Last verification: 17.08.2018
Pending verification: 16.09.2018
Subscription end date: 27.02.2020

Software

OCAD 2018.1.4.2204 - Build Date 2018-06-25
Expiration date software version (Build 2204): 2019-06-30

License terms...

OK

License

See here your license information like...

License number: The number of your license.

Name: How the license is named.

Subscription start date: The date your Subscription has started.

Activation date: The date you have activated OCAD.

Last verification: The date your license was verified the last time.

Pending Verification: The date after that OCAD will verify again, if your license is still valid.

Subscription end date: When your Subscription will end. After this date, OCAD will not run anymore.



Due to the subscription model OCAD needs to check, if your license is valid. If you have no internet connection (e.g. during fieldwork), this can't be done. That's why there is a **Pending Verification** date. After the Pending Verification Date, you need to start OCAD once within 30 days with an internet connection, so OCAD can verify the license again (will be done automatically at the startup). Then, the date for the Pending Verification will be shifted backwards. If you do not verify the license again in these 30 days, you can't use OCAD anymore offline until you reactivate OCAD online.

Software

See here your exact **Software Version**.

Expiration date software version: It means that after this date, the software cannot be installed and opened anymore. This is for security reasons. When you install a new **Service Update**, the Expiration date of the software version will be extended.

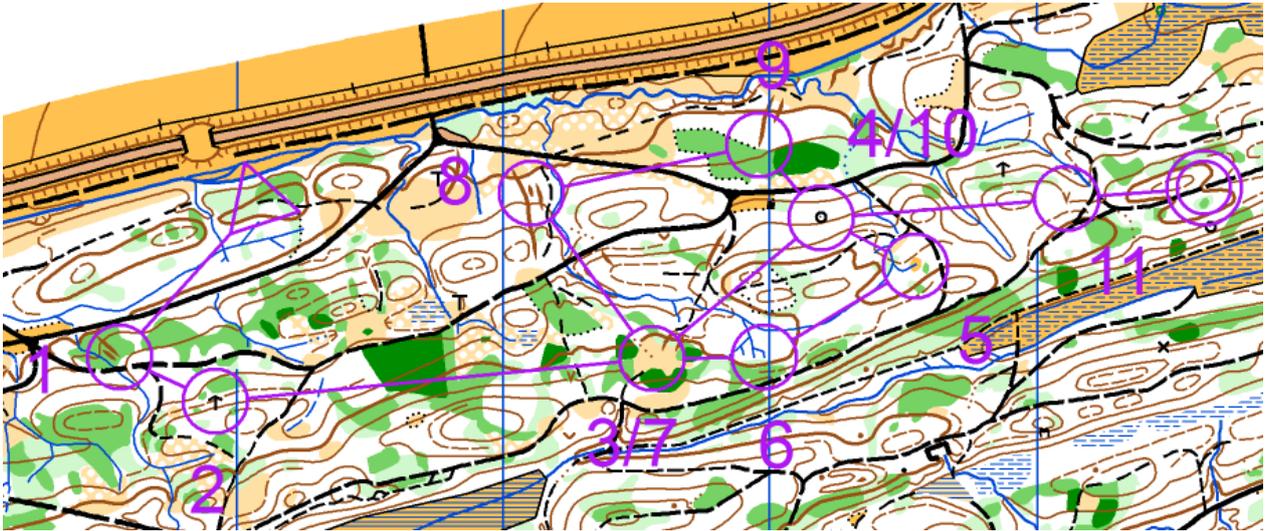
License Term

Click here to see the License Terms.

Course Setting

Course Setting for Orienteering

Mas Ori Sta CS



(The Course Setting functions are only available in course setting projects!)

OCAD provides completely integrated functions for course setting in orienteering.

O-training with OCAD

You want to learn how to create Normal Courses, Relay Courses or Multitechnique Trainings?
Visit the **O-training with OCAD** page for more information.

Start a New Course Setting Project

For a Course Setting Project, you need two OCAD files:

- A **[Course Setting File]**

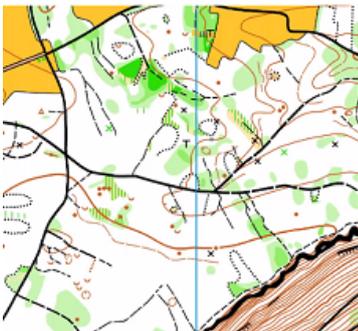
This is the file where manage your Course Setting Project, set courses and load a Background Map.

Like map files it has the extension **.ocd**, but it has a special internal mark to identify it as a course setting file.

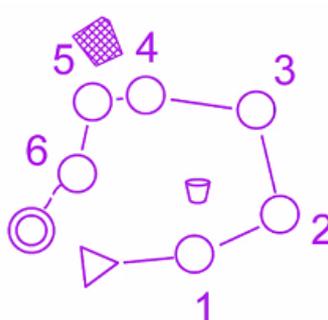
- A **[Map File]**

This is your OCAD map which will be loaded as Background Map in your **[Course Setting File]**.

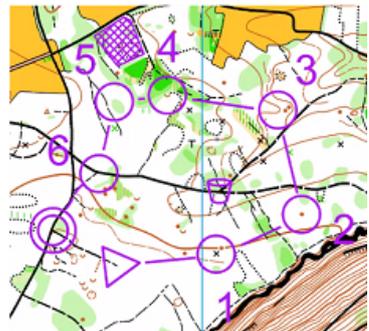
[Map File]



[Course Setting File]



[Course Setting Project]



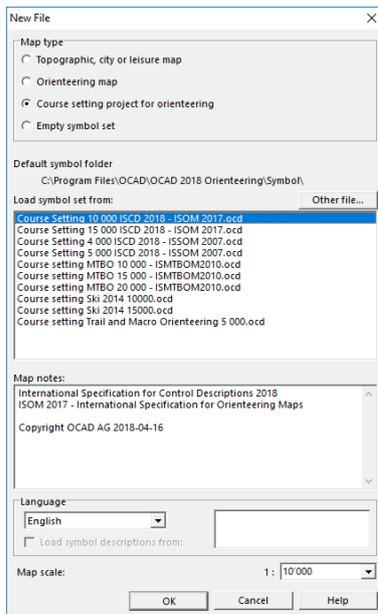
To start a New Course Setting Project, you must create a new *[Course Setting File]*. You have two options to do so:

A) New Course Setting Project Wizard

Choose the **New Course Setting Project Wizard** command from the **File** menu. This wizard guides you through the first steps like setting an event title and loading a map file in the background layer.

B) New Course Setting Project

1. Choose the **New** command from the **File** menu or click the **New** button. The **New File** dialog box is displayed.



2. In the **Map type** box select the **Course setting project for orienteering** item.
3. Select a symbol set from the **Load symbol set from** box. For a course setting project in a scale where no symbol set is available please choose one of the available symbol sets.
4. Choose the desired **Language** (not available for all Symbol Sets) and set the map scale to the correct value. It is important to do this before starting with course setting because the calculation of the courses length depends on the map scale.



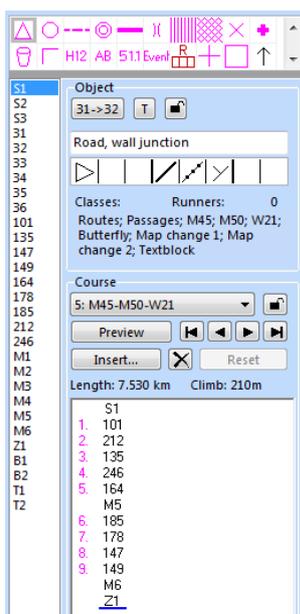
You can also create own Symbol Sets and save them in your default symbol folder which is usually *C:\Program Files\OCAD\OCAD 20xx Orienteering\Symbol*

5. Click the **OK** button.
6. Choose the **Save** command from the **File** menu or click the  **Save** button. The **Save As** dialog box appears. Enter a file name for the *[Course Setting File]*.

You can save your course setting project as OCAD 10, OCAD 11, OCAD 12 or OCAD 2019 file. Please note, that some features may be lost according to the **Compatibility Check**.

Pay attention to open/save Course Setting Files from OCAD 11 in OCAD 12 and vice versa, as many symbols and colors has changed between these two versions.

7. Choose the **Open** command from the **Background Map** menu to open a *[Map File]* as a Background Map. The Background Map is normally an .ocd file, but you can also load a raster image (PNG, JPG, ...) as Background Map.
8. Choose the **Entire Map** command from the **View** menu to show the whole map on the screen.



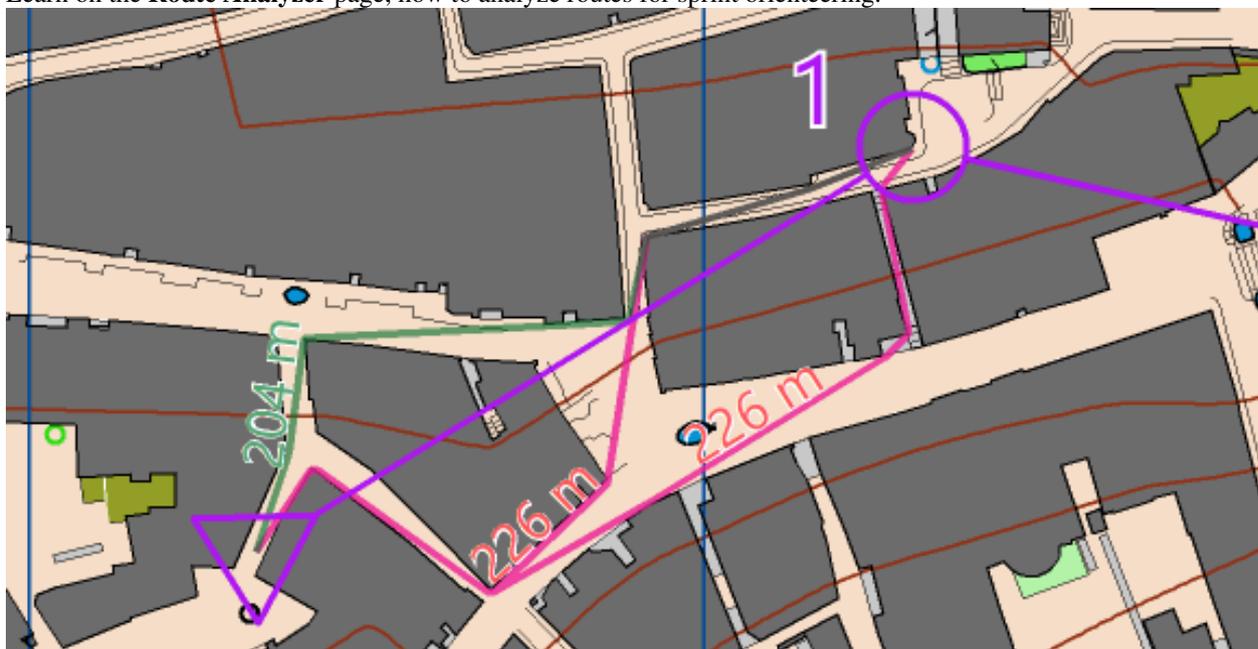
The **Course Setting Box** is displayed on the right side of the OCAD window. This **Course Setting Box** provides a lot of functions and options. Visit the [Edit Course Setting Objects](#) page to get more information.

Compose Course

Learn on the **Compose Course** page, how to create and edit orienteering courses easily. This tool is very intuitive and fast.

Route Analyzer

Learn on the **Route Analyzer** page, how to analyze routes for sprint orienteering.



Add Course Setting Objects

The **Add Course Setting Objects** page goes deeper than the **Compose Course** page. Read the following articles:

1. **Add Start, Controls and Finish**
2. **Add a Marked Route**
3. **Add the Map Issue Point**
4. **Add a Control Description**
5. **Add a Course Title**
6. **Add Variant for Relay Courses.** Learn how to create relay courses on the **Create Relay Courses** page.
7. **Add Start Numbers for Relay Courses.** Learn how to create relay courses on the **Create Relay Courses** page.
8. **Add Other Objects**, like the event title, logos, corrections on the map etc.
9. **Course Setting Dialog Box**

Edit Course Setting Objects

Information about all functions which are provided by the course setting box on the right side of the window can be found on the **Edit Course Setting Objects** page.

Most important functions:

Change Code of Course Objects

Insert a Text Block

Lock or Unlock Course Objects

Edit Control Description

Add, Edit or Remove Course Objects

Preview Mode

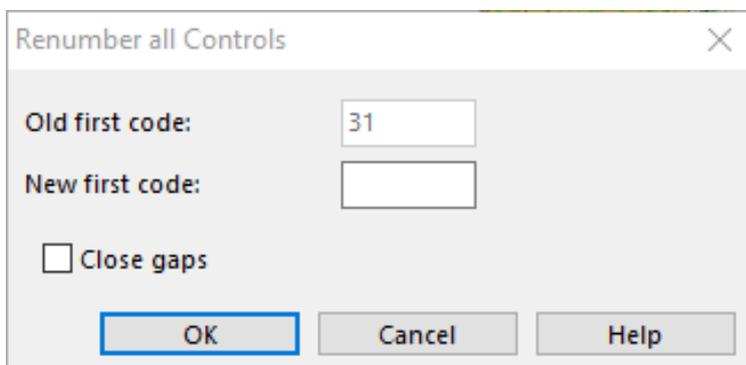
Controls

The following two functions can be found in the **Controls** submenu of the **Course Setting** menu:

Renumber all Controls

This function is useful if you did not know the available control numbers for your event when starting to plan the courses.

Choose the **Renumber all Controls** command in the **Controls** submenu of the **Course Setting** menu to display the **Renumber all Controls** dialog.



1. Enter a **New first code** to shift all control codes. All codes are shifted with the difference between the **New first code** and the **Old first code**.
2. Check the option **Close numbering gaps** if gaps with not used numbers should be closed.
3. Click the **OK** button when finished.

Control Elevation

Visit the **Control Elevation** page to find more information about this function.

Courses

As a next step you can **Create a New Course**. A course is basically a list of the start, controls, marked route(s) and the finish. You may want to **Insert Other Course Objects** like mandatory crossing point, mandatory passage through out of bound area, map exchange, relay team or leg variation.

OCAD supports:

- **Individual Courses** with symbol sets for foot-o, ski-o, mtb-o and trail-o
- **Relay Courses**
- **One-Man Relay Courses**
- **Score Orienteering**

All information about courses can be found on the **Create a New Course** page.

Classes

In OCAD you can either work with courses only or you can use classes and courses. Different classes may use the same course, e.g. **Course A** -> Class W18, W16, M16; **Course B** -> W14, M14, Open Short.

Visit the **Create a New Class** page for more information.

Insert Course Object to Courses

Choose this function from the **Course Setting** menu. Learn more about this function on the **Add a Course Object to Courses** page.

Delete Course Object from Courses

This is the inverse function of the **Insert Course Object to Courses** function.

Read more about this function on the **Delete Course Object from Courses** page.

Make Graphic Modifications

Often it is necessary to **Make Graphic Modifications** to the courses generated by OCAD.

Move Control Number for All Courses

To move the control number for all courses (for example if it covers important map information):

1. Change to **Preview** mode.
2. **Move** a control number and keep it selected.
3. Choose the **Move Control Number for all Courses** command from the **Course Setting** menu.
4. The control number is moved for all other courses, too.

Edit Connection Line for All Courses

To edit a connection line for all courses (for example if it covers important map information):

1. Change to **Preview** mode.
2. **Edit** the connection line and keep it selected.
3. Choose the **Edit Connection Line for all Courses** command from the **Course Setting** menu.
4. The connection line is edited in all other courses which use it, too.

Edit Text Control Description

Choose the **Edit Text Control Description** command in the **Course Setting** menu to edit the text control description. Visit the **Edit Text Control Description** page for more information.

Auto Control Description

OCAD provides an **Auto Control Description** tool that recognizes map objects, where controls are placed, and sets the corresponding IOF symbol to the control description. Visit the **Auto Control Description** page for more information.

Punching Unit IDs

Choose the **Punching Unit IDs** command in the **Course Setting** menu to enter the punching unit IDs. Visit the **Punching Unit IDs** page for more information.

Course Statistic and Event Statistic

Choose the command **Course Statistic and Event Statistic** from the **Course Setting** menu to display a course and event statistic. Visit the page **Course Statistic and Event Statistic** for more information.

Consistency Check Report

Choose the command **Consistency Check Report** from the **Course Setting** menu to display the consistency check report. Visit the page **Consistency Check Report** for more information.

Compare Course Setting Files

The function **Compare Course Setting Files** is only enabled if no ocd file is open.



The *Course Setting* menu is not visible by default for OCAD Mapping Solution. Open and close a course setting file to make it visible.

1. Add the files that should be compared to the **files** box.
2. Click the **Compare files** button.
3. The differences are shown in the dialog.
4. Click the **Save As...** to save the text as html file.

The function shows the following differences between course setting files:

- Different Course Objects
- Different Courses
- Different Preview Objects
- Different Course Setting Options

Print

In the **Print** submenu of the **Course Setting** menu you have the option to print the **Courses** or the **Control Descriptions**.

Courses can be printed together with the map or on an already printed map. OCAD provides adjustment functions to adjust the course to the already printed map. In addition EPS files can be created to make plates for offset printing. Visit the **Print Courses** page for more information.

To get more information about printing control descriptions, visit the **Print Control Descriptions** page.

Control descriptions can be printed together with the course on the map: **Add a Control Description Object**.

Import

It is possible to import an **OCAD Map**, **IOF XML Files** or to import courses from **ORware** ^[1]. Visit the **Course Setting Import** page for more information.

Export

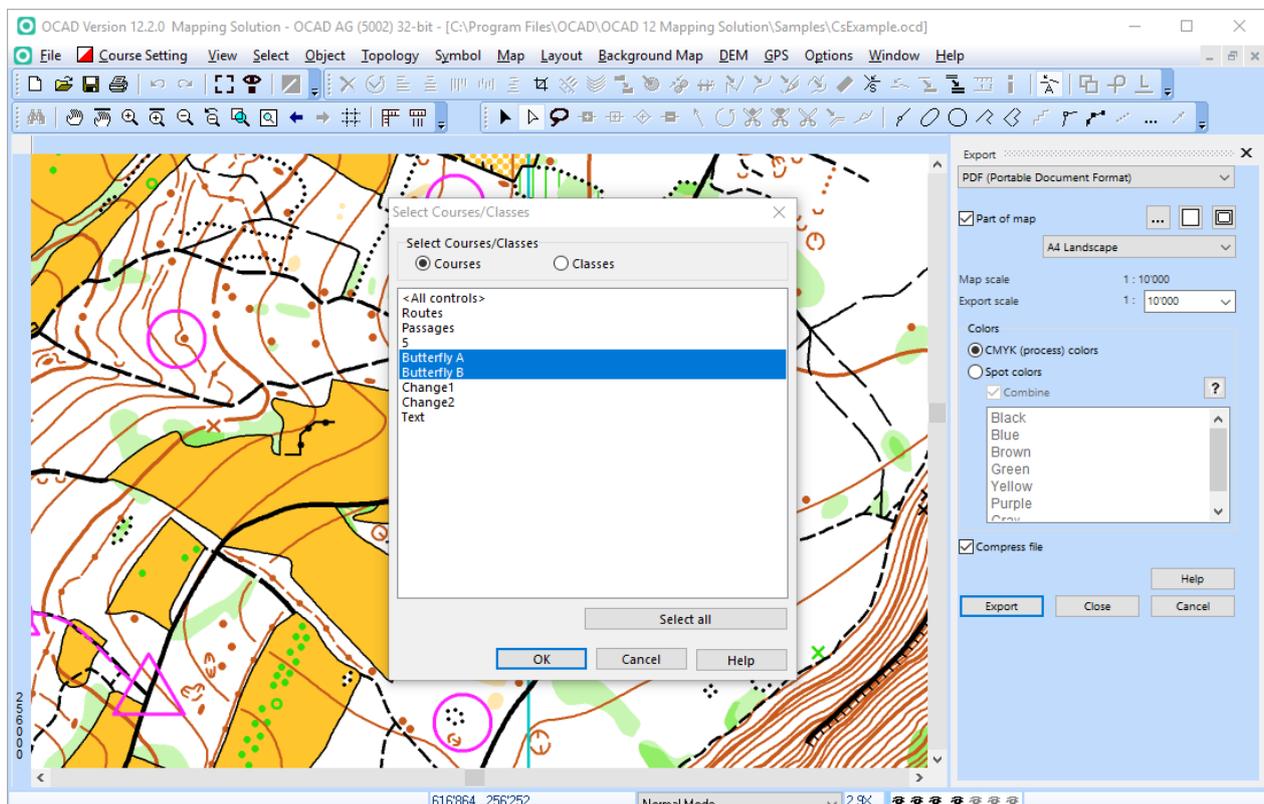
OCAD provides different export options of course data for event software, courses as gpx file, course maps etc. Visit the **Course Setting Export** page for more information.

Create PDF Files for Printing

Please use **Export** from the **File** menu if you want to create **PDF files** from the courses to provide them to the printery.

Please select the courses/classes in the **Select Courses/Classes** dialog that appears after clicking the **Export** button in the Export panel.

💡 You can also export the PDF files from exported **Course Maps**. In that case the **Select Courses/Classes** dialog does not appear since a course map file contains only graphics.



Options

Choose the **Options** command from the **Course Setting** menu to get some **Course Setting Options**.

References

[1] <http://www.picotiming.ch/indexsoft.html>

O-training with OCAD



Lern how to start with an easy Course Setting Project.

Discover new sophisticated o-technical excercises.

Get background information for Course Setting.

Tutorials

The following PDF's contain the basic workflow of a Course Setting Project and can be used for workshops.

- Getting Started with Course Setting in OCAD ^[1] (PDF )
Einführung in die Bahnlegung mit OCAD ^[2] (PDF )

Preparation

Set up a Course Setting Project

For a Course Setting Project, you need two OCAD files:

- A **[Course Setting File]**

This is the file where manage your Course Setting Project, set courses and load a Background Map.

Like map files it has the extension **.ocd**, but it has a special internal mark to identify it as a course setting file.

- A **[Map File]**

This is your OCAD map which will be loaded as Background map in your **[Course Setting File]**.

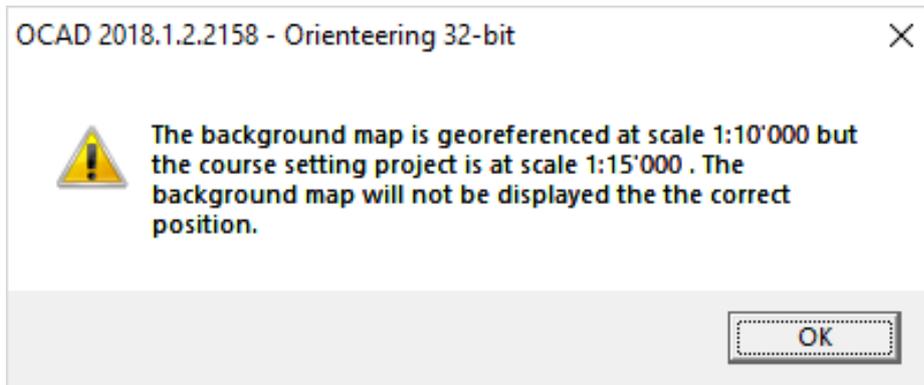
 You can also load a raster image (PNG, JPG, ...) as Background Map. However, for the trainings described below, you need to modify your Background Map, so you need a OCAD file.

Now start a **New Course Setting Project**. Make sure the map scale of your **[Course Setting File]** is the same as your **[Map File]**.

Correct Scale

It sometimes happens, that your course setting project and your background map have different scales without noticing it.

Generally, OCAD checks if the Background Map comes in the same scale as the course setting project and in case the scales are different, there will be an Error Message.



Check the scale of your course setting project under **Map>Set Scale and Coordinate System**.

Check the scale of your background map under **Background Map>Manage**. Click on the **Information Icon** behind the Background Map.

To be really sure that the scale is correct:

- Measure a line in OCAD and Google Maps and compare them.
- If your background map is georeferenced, you can **export your courses in KMZ format** and open them in Google Earth (**File>Open Recently Exported Documents**). There you see if your map corresponds with the terrain.

10'000 and 15'000

In the ISOM 2017, the 1:10'000 map is defined as a 150% magnification of the 1:15'000 map. This applies to all objects including course setting objects (e.g. control circles are 7.5mm for 10'000 and 5mm for 15'000; in the past all control circles were 6mm).

If your *[Map File]* is 1:15'000, you should start with the **Course Setting 15 000 ISCD 2018 - ISOM 2017.ocd** symbol set. For a *[Map File]* in 1:10'000, use the **Course Setting 10 000 ISCD 2018 - ISOM 2017.ocd** symbol set.

Let's assume our Background Map has the scale 1:10'000:

- Open the **Course Setting 10 000 ISCD 2018 - ISOM 2017.ocd** symbol set.
- When both 1:10'000 and 1:15'000 maps need to be printed, the entire course setting shall be done in a 1:10'000 project and only the print and/or export scale needs to be adjusted.
- The exact size of the **Control Description** is not defined according to ISCD 2018. It must be between 5-7mm. If a Control Description is printed on the map, it is recommended to change the size of the Control Description (Course setting>Options) before exporting 1:15'000 maps, e.g. to 7.5mm, which results in 5mm. Otherwise, the Control Description is only 4mm on the 1:15'000 print, as it is set to 6mm for 1:10'000 by default.

The same works, if your *[Map File]* and your *[Course Setting File]* have the scale 1:15'000 and you want to export a map in scale 1:10'000. This time, reduce the size of the Control Description (Course setting>Options) before exporting to 4mm. Doing so, the Control Description will be 6mm wide on the 1:10'000 map.

- If the scale appears on the map (in our assumption 1:10'000), it should of course be changed before exporting 15'000 maps in the *[Map File]*.

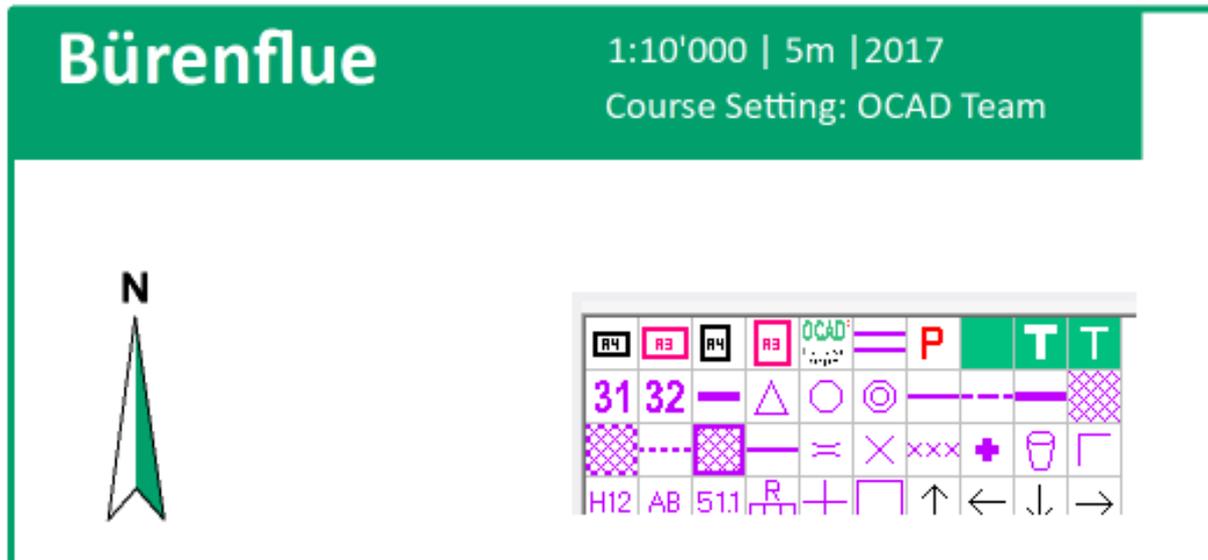


Important: Only change the font and not the scale itself in the *[Map File]*. Save the *[Map File]* still in 1:10'000 under a new name and reload it as background map in the *[Course Setting File]*. Alternatively, simply specify the scale in the *[Course Setting File]* with a font.

Pimp your Symbol Set

Are you regularly setting courses for your club? Shall all trainings have a common layout, similar to Corporate Identity?

So, why not create your own Symbol Set and save it in the folder *C:\Program Files\OCAD\OCAD 2018 Orienteering\Symbol?* The Symbol Set will be on the list *Load symbol set from:*, if you open a new *Course setting project for Orienteering.*



Example of the OCAD Symbol Set. A4/A3 frames, OCAD Logo, Corridor Symbol, Symbol for Parking, different Text Symbols.

Tips and Tricks

- Use the **Compose Course** tool for fast and easy course setting.
- Learn on the **Route Analyzer** page, how to analyze routes for sprint orienteering.
- Click on **Add** in the Course box to add a new course.
- To check your courses, use the **Consistency Check Report** under **Menu>Course Setting>Consistency Check Report**
- Enter Text into the Text field of the **Marked Route** and make the Text Control Description smaller.
- Read **here** how to export all relay variations to one file.
- Pay attention to open/save Course Setting Files from OCAD 11 in OCAD 12 and vice versa, as many symbols and colors has changed between these two versions.
- Press **Shift** while adding a new control and you will skip the course object dialog box.
- Add Control by **moving the connection line** between two existing controls.
- When you select controls for courses by double-clicking on them, **lock their position** beforehand in order not to shift them.

Course Setting functions

See the **Course Setting for Orienteering** page to get information about all functions of the Course Setting module.

O-trainings

Simple Course

This **short video** ^[3] shows you how to start a simple course, using the **New Course Setting Project Wizard** and the **Compose Course** tool.

Relay Courses

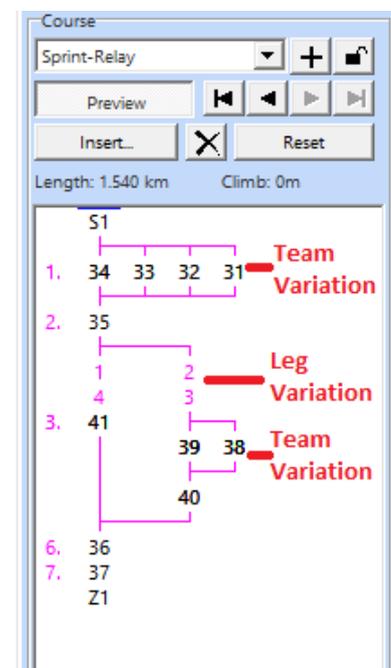
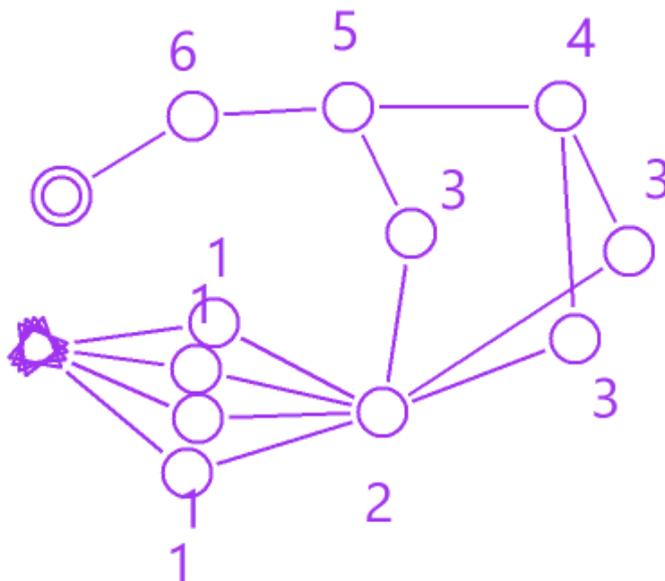
Learn all about Relays on the **Create Relay Courses** page.

Sprint Relay

For a Sprint Relay with four different legs, you have to create only one course with different Leg Variation and Team Variation.

- Open a new *[Course Setting File]*, load your *[Map File]* as a Background Map.
- Go to the **Course Setting Menu** -> **Courses** and add a new Course. Choose **Relay** as Course type and enter the number of legs (typically 4 for Sprint Relays).
- Add controls to your project and choose your Course afterwards in the **Course Box**.
- Insert a **Team Variation**: Each runner of the team gets a different variation, for example for the first control.
- Insert a **Leg Variation**: A leg variation means that there is a variation of the legs within the same team. In a Sprint Relay, Women are running typically the 1st and 4th leg, whereas Men are running the 2nd and 3rd leg. To make the Men legs longer, use a Leg Variation.

Learn all about Relays in general on the **Create Relay Courses** page.



Course:	Length:	Extra length:	Climb calculated:	Climb used:	Number of controls:	Course type:	Legs:
	[km]	[km]	[m]	[m]			
Sprint-Relay	1.54	0.00	0	0	5	Relay	4

Corridor

- Open a new *[Course Setting File]* and load your *[Map File]* as a Background Map.
- Choose **New** in the **Symbol** Menu and create a new **Line Symbol**.
 - In the **Main Line** tab, activate **Course setting symbol: Marked route**.
 - In the **Double Line** tab, choose the desired width of the corridor (e.g. 4mm) and the border lines.

Line Symbol [X]

Main Line | Distances | Symbols | Double Line | Decrease | Framing

Symbol number: 1.000

Description:

Preferred drawing tool: None

Line color: 50: Upper Purple for Course Overprint

Line width: 0.00 mm

Line style:

Line length

Distance from start: 0.00 mm

Distance to end: 0.00 mm

Pointed ends

Course setting symbol: Marked route

Line Symbol

Main Line | Distances | Symbols | Double Line | D

Mode: Full lines

Width: 4.00 mm

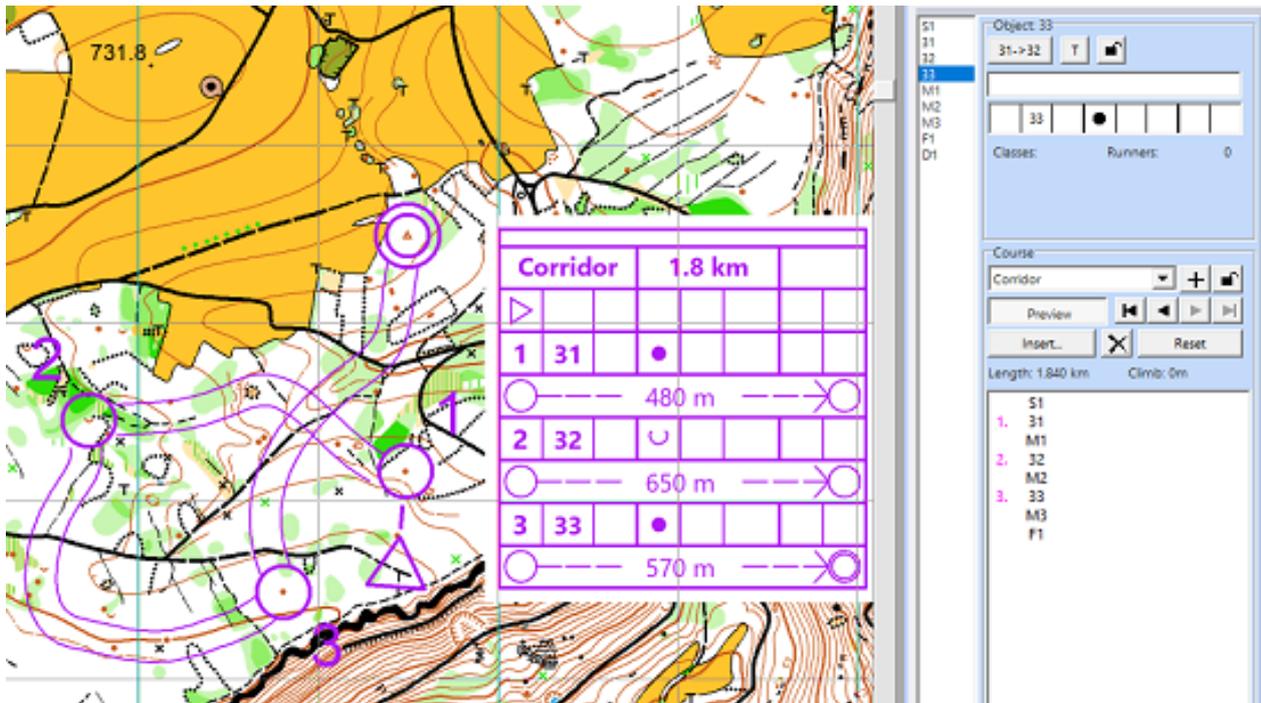
Fill color: On 50: Upper Purple for Course

Left line: Color: 50: Upper Purple for Course

Right line: Color: 50: Upper Purple for Course

Dashed: Distance a: 0.00 Gap

- Draw your corridor. Each corridor will appear as a Marked Route in the Course Setting Box. Insert the corridors in your course.



- Edit your corridor in a next step.
 - If needed, **Cut** overlapping parts.
 - Insert additional vertices in sharp turns.



- Cover the remaining parts with white.
 - Use the **White background** (Symbol 760) to cover the remaining parts of the map.
 - Activate **Follow existing objects** under **Options> OCAD Preferences> Drawin and Editing** to enable **line following** for double lines (hold the Ctrl button).
 - Instead of using **White background** (Symbol 760) for covering, first define a new white color (**Map>Colors>Add**) and then create a new area symbol (**Symbol>New>Area Symbol**) where you use this color as **Fill Color**. Like this you can set the **Opacity** of the white color to e.g. 90%, so you are not completely lost when leaving the corridor.

Area Symbol

General | Hatch | Structure

Symbol number: 1.018

Description: White for Corridor Cover

Preferred drawing tool: None

Fill: On

Fill color: 1: Corridor

Border: On

Line Symbol:

Hatch/Structure oriented to north when rotating the map

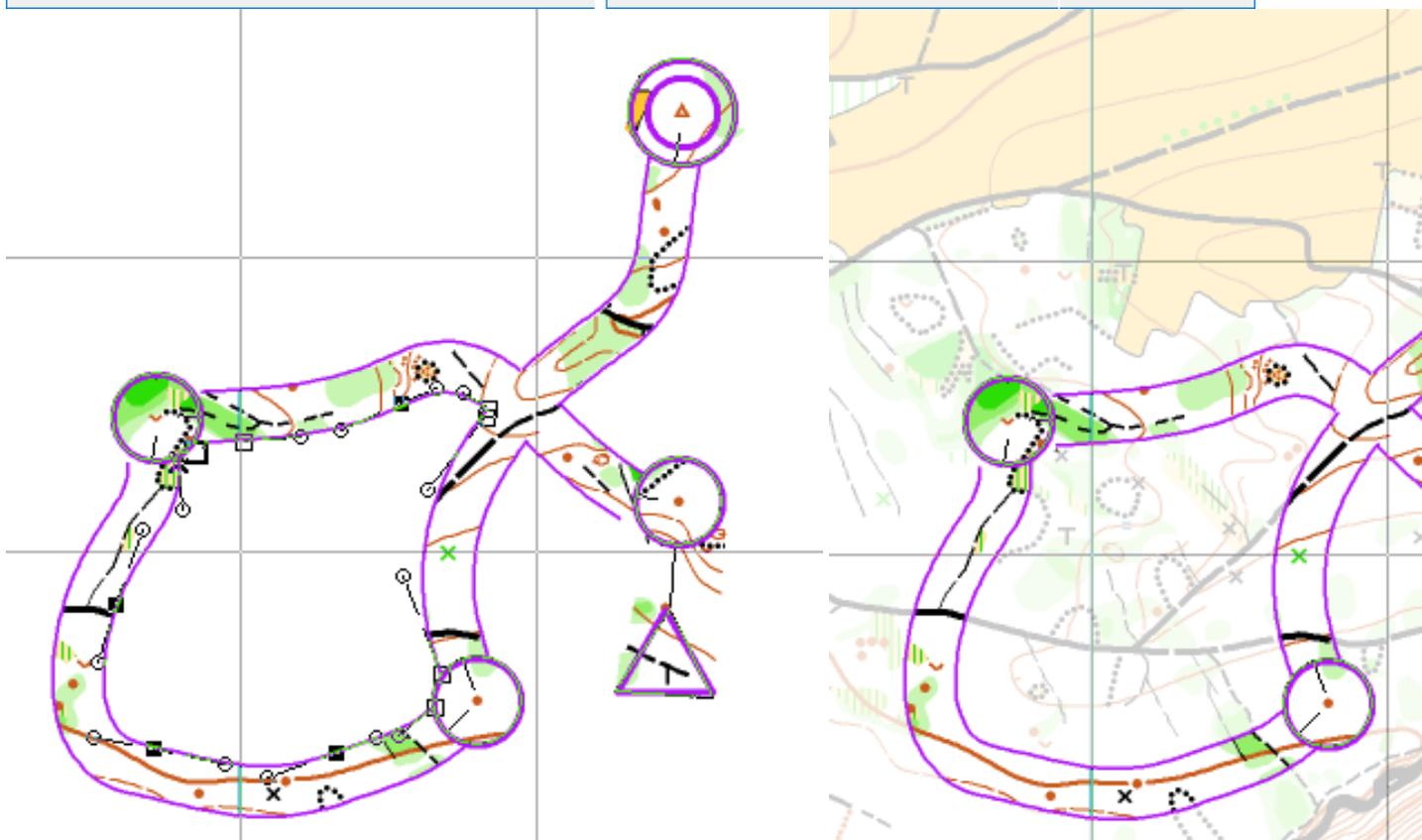
Colors

Redraw screen when changing a color

No.	Name	Opacity	Symbol
50	Upper Purple for Course Overprint	100	✓
51	White for Course Overprint	100	✓
1	Corridor	90	✓
52	Lower Purple for Course Overprint	100	✓

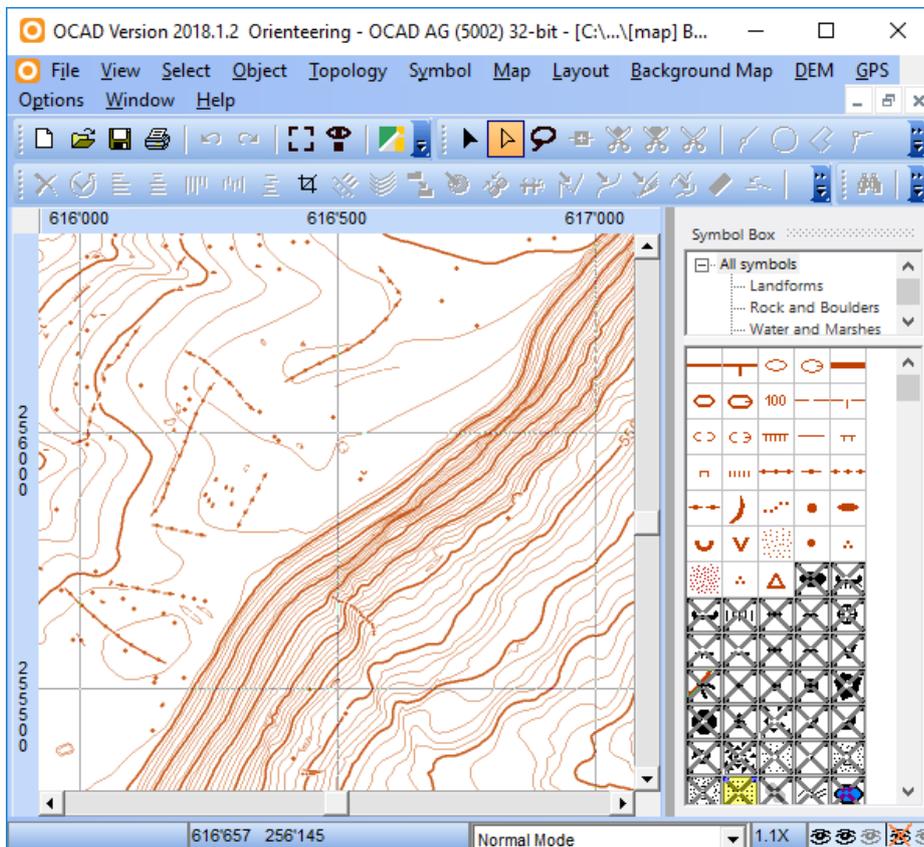
Choose color from color picker... Blend Help

Select color swatch... Close



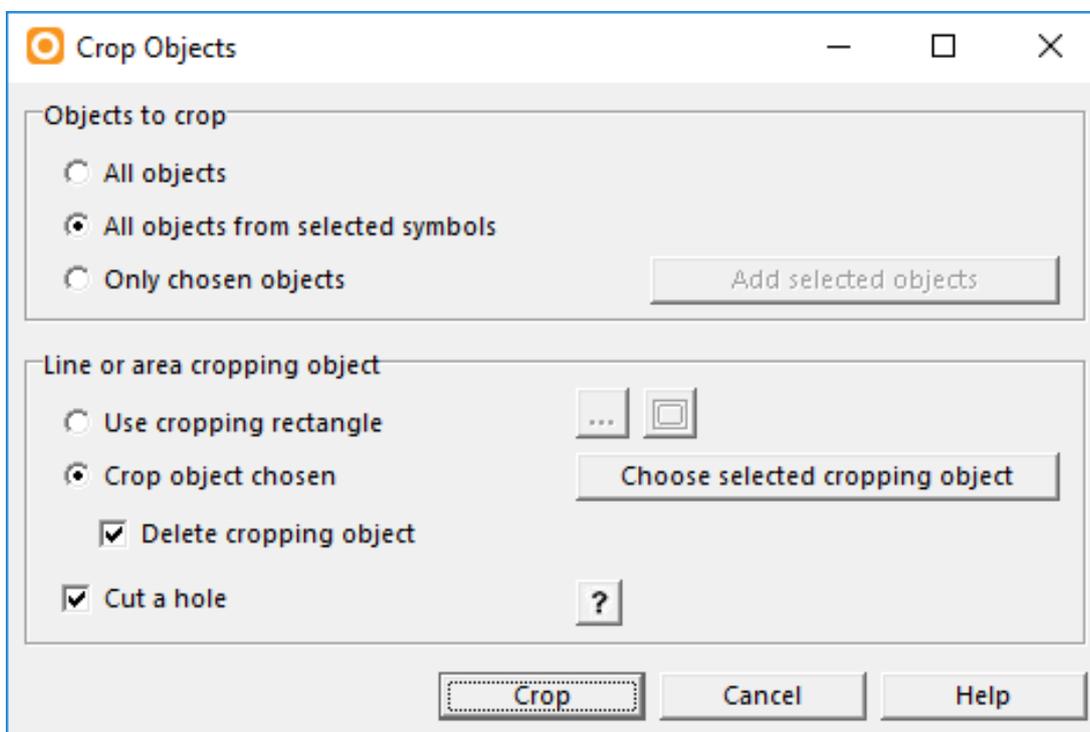
Reduce Map

- Open your *[Map File]*.
- Select the symbols you want to hide in the Symbol Box and go to **Symbol>Hide Object** or simply press **F4**.
- Save the map, load it as Background Map in your *[Course Setting File]* and set courses.

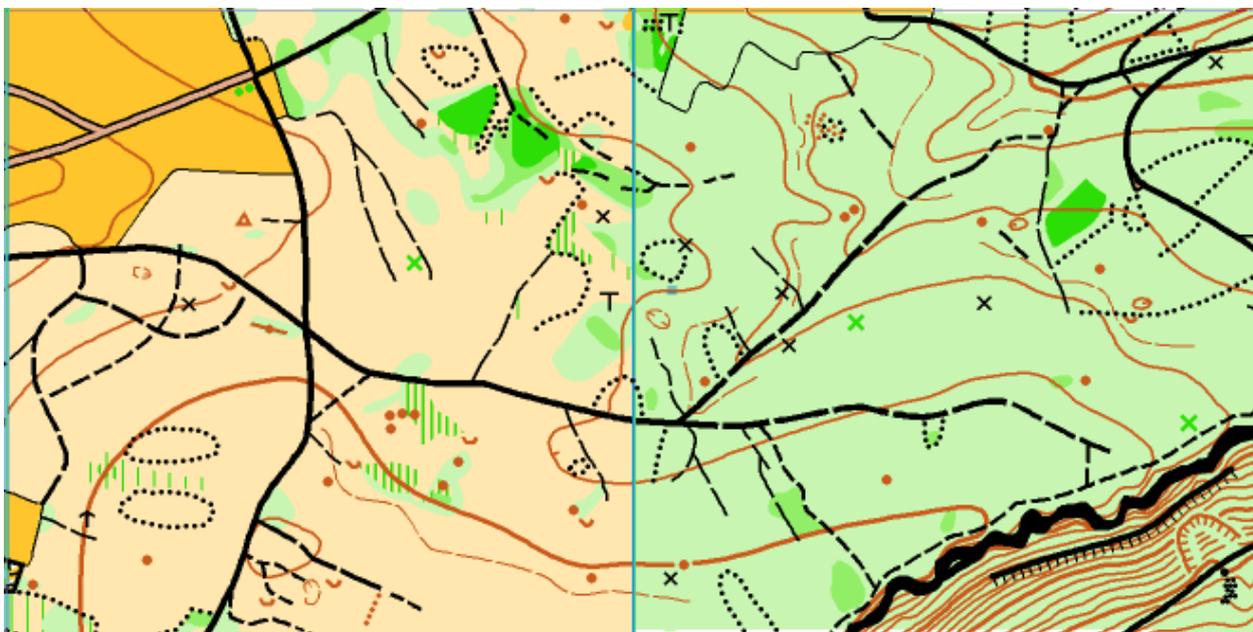


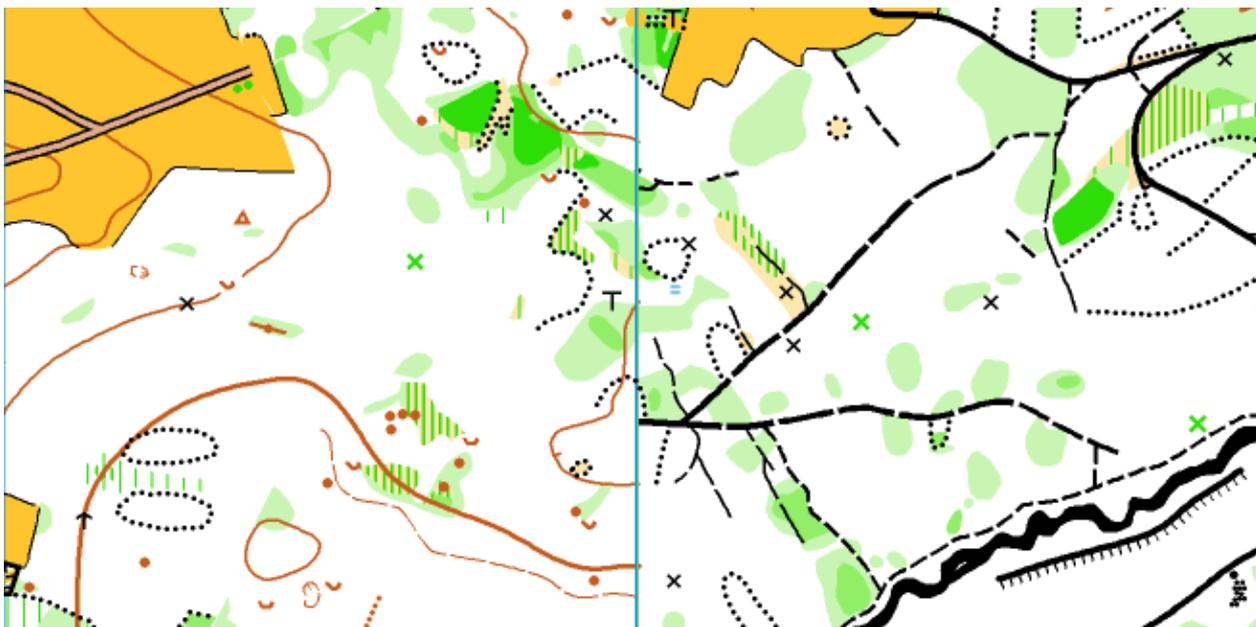
Multitechnique

- Open your *[Map File]*.
- Use the Crop function to differ which symbols you want to crop in which parts of your map. See an Animation **how to use the Crop funktionCrop**.



In the following example, we used the yellow and green areas as **Crop Objects**. In the yellow part, all paths and roads were cropped. In the green area, all terrain objects. You can use the Crop function as often as you like in the same *[Map File]*.

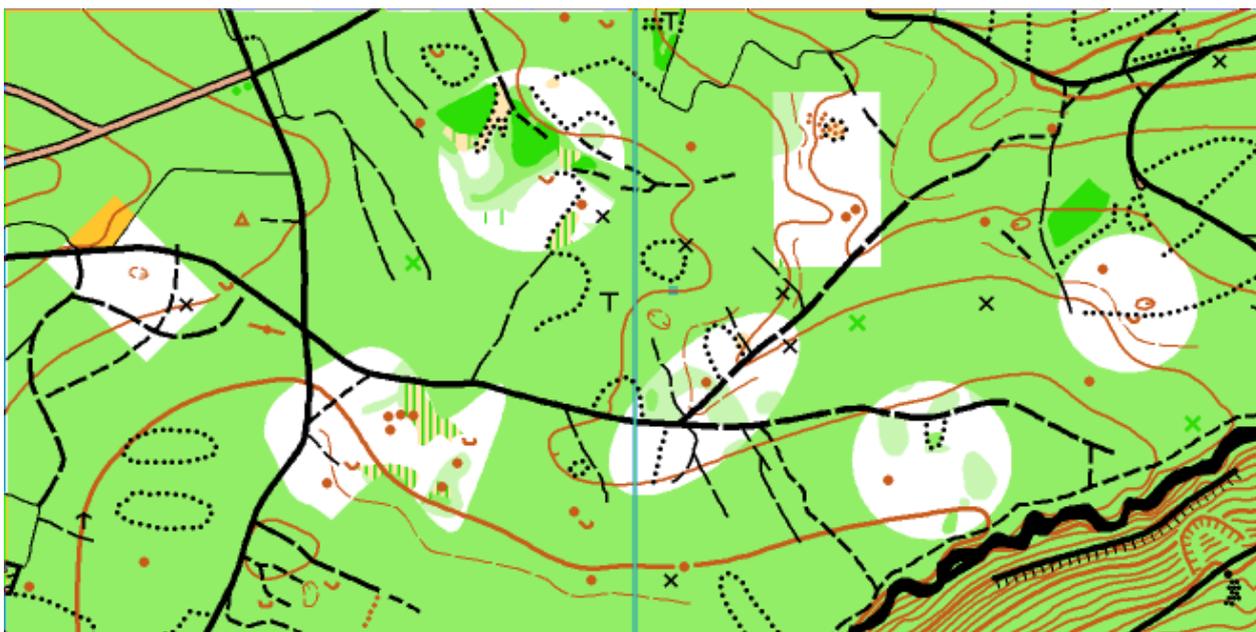




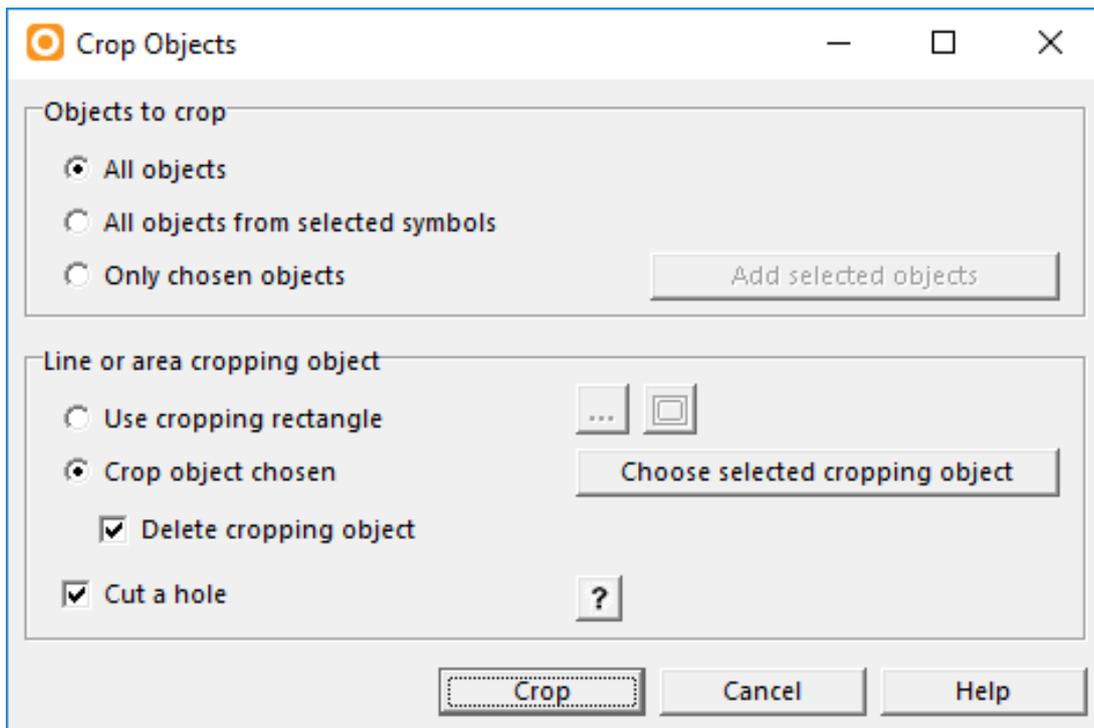
- Save the map, load it as Background Map in your *[Course Setting File]* and set courses.

Island O

- Open your *[Map File]*.
- Draw an area object over your map and **Cut Holes** in it. In this example, we use a green area symbol.



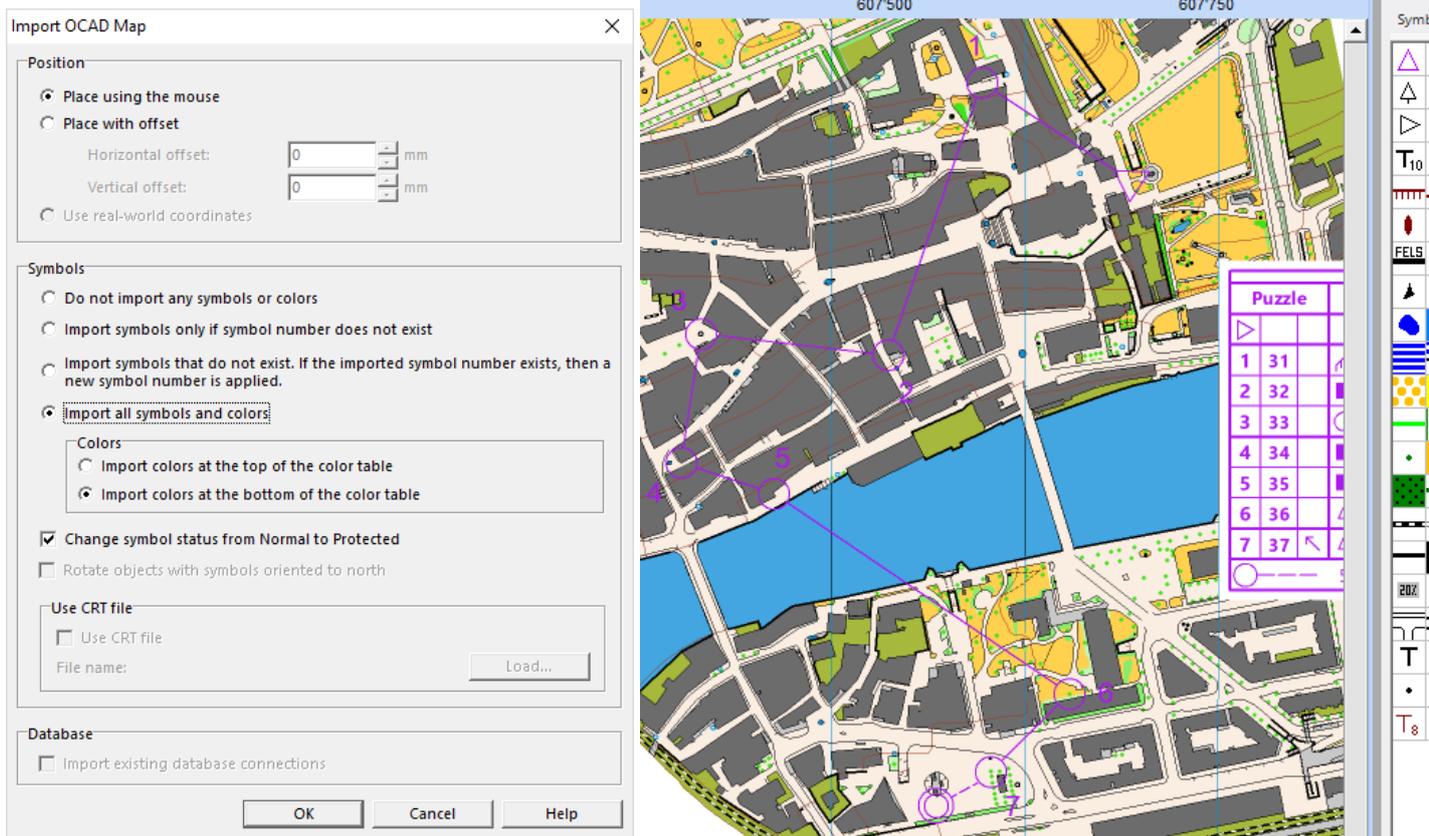
- We select the green area symbol and use the **Crop** function to crop everything except the holes.



- Save the map, load it as Background Map in your *[Course Setting File]* and set courses.

Puzzle O

- Open a new *[Course Setting File]*, load your *[Map File]* as a Background Map and set a course.
- Export your course as a **Course Map** under **Course Setting>Export>Export Course Maps**.
- Reopen your **Course Map**. Go to **File>Open Recently Exported Documents**.
- In a first step remove the Background Map (**Background Map>Manage>Remove**) and in a second step import the Background Map (**File>Import**). Import all symbols and colors and **Import colors at the bottom of the color table**.



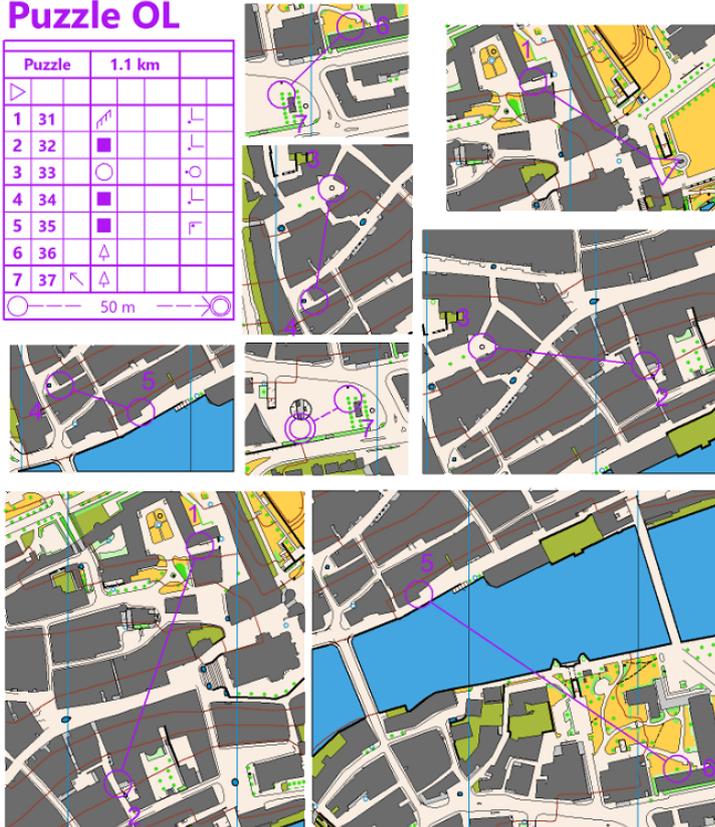
- Export a **Map Extract** for each control (**Map>Export Part of Map**).
- Open a new **[Course Setting File]** for the final Layout.
- Import all Map Extracts one by one in the new **[Course Setting File]** and place them using the mouse (**File>Import**). Again, import all symbols and colors and **Import colors at the bottom of the color table**.
- Edit each Map Extract manually in the new **[Course Setting File]**.

💡 The imported symbols are protected by default, so it's not possible to move them after the first placement. Select the symbols in the symbol box and set their status to **Normal** (F2) to move them around.

💡 A map flip at every control increases the difficulty. Arrange the Map Extracts in the Layout **[Course Setting File]** in a way, that you can print the odd numbers on the front and the even numbers on the back side of a map.

Puzzle OL

Puzzle	1.1 km		
▶			
1	31		
2	32	■	
3	33	○	
4	34	■	
5	35	■	
6	36	△	
7	37	△	



- [Course Setting File - Layout] PuzzleO.ocd
- [Course Setting File] PuzzleO.ocd
- [ExportCourses] PuzzleO.Puzzle.ocd
- [Extract] 0-1.ocd
- [Extract] 1-2.ocd
- [Extract] 2-3.ocd
- [Extract] 3-4.ocd
- [Extract] 4-5.ocd
- [Extract] 5-6.ocd
- [Extract] 6-7.ocd
- [Extract] 7-F.ocd
- [Extract] ControlDescription.ocd
- [Map File] Sprint Orienteering Map ISSOM Soloth...

Map Change

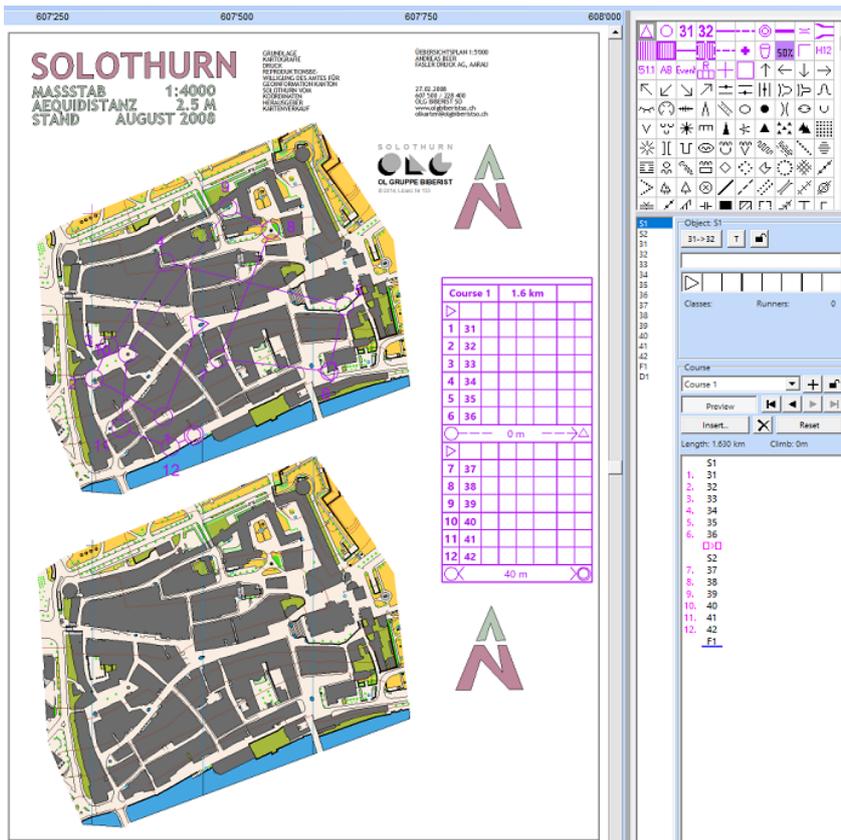
Let's assume we add only one Map Exchange.

Print Course on two Maps

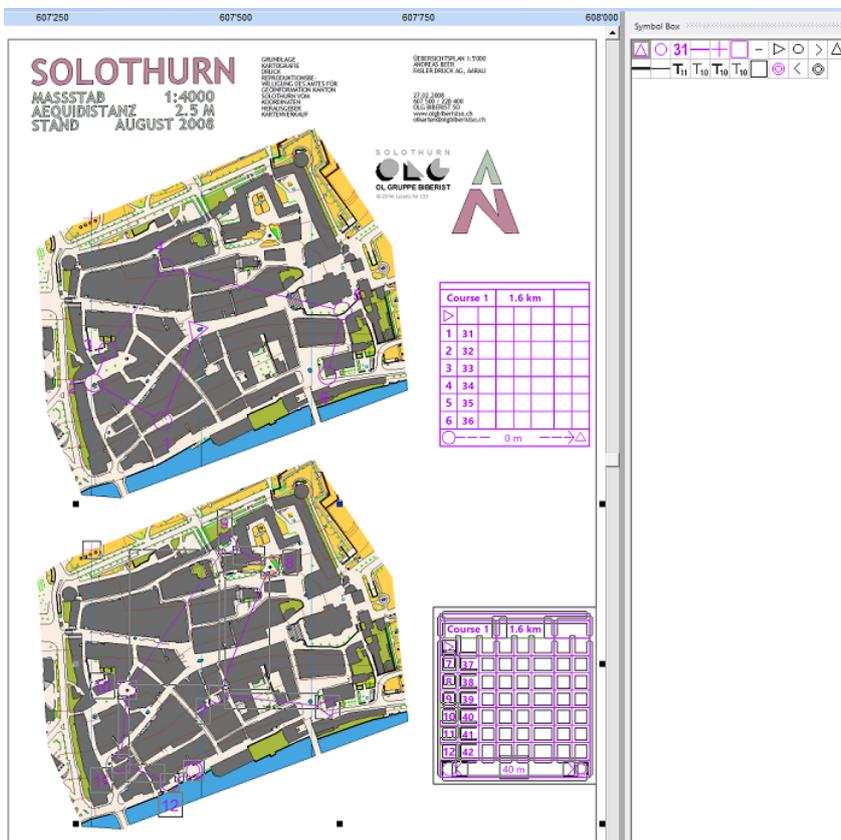
- Open a new *[Course Setting File]*, load your *[Map File]* as a Background Map and set a course.
- Insert a **Map Change** into your course. A map exchange can be placed after a control (which is indicated with 0m to the next start in the control description) or after a Marked Route (the length of the marked route appears in the control description). Add a Start symbol after the map exchange.
- When you print or export your map, two maps will be printed/ exported. The start on the second map is indicated with a Start symbol.

Print Course on one Map

- Modify your *[Map File]* first. **Crop** the part you will use for your course and **Duplicate** it. Insert a Registration Mark (Symbol 602 in ISOM 2017) into your map before you duplicate it.
- Save the modified *[Map File]* under a new name, e.g. *[Map File - Layout]*.
- Open a new *[Course Setting File]*, load your *[Map File - Layout]* as a Background Map.
- Set a course with a **Map Change**. Only use one map extract for course setting. Put a Registration Mark (Symbol 750 in ISCD 2018) at the same place as the Registration Mark of your *[Map File - Layout]*.



- Export **Course Maps** under **Course Setting>Export>Export Course Maps**.
- Open both course maps. Copy the course objects from one file and insert them into the other. Use the Registration Marks for adjustment.



- Modify your course where needed and save your **[Course Setting File]** under a new name, e.g. **[Course Setting File -Final]**.

- 📁 [Course Setting File] MapChange.Course 1.1.ocd
- 📁 [Course Setting File] MapChange.Course 1.2.ocd
- 📁 [Course Setting File - Final] MapChange.ocd
- 📁 [Course Setting File] MapChange.ocd
- 📁 [Map File - Layout] Sprint Orienteering Map ISSOM Solothurn.ocd
- 📁 [Map File] Sprint Orienteering Map ISSOM Solothurn.ocd

💡 As a different workaround, you

could proceed like in the Puzzle-O above. You don't modify your *[Map File]*, but import it into both **Course Maps**, where you export Map Extracts for the *[Course Setting File -Final]*.

Score O

See the **Score Orienteering** page for more information.

Control Point	Symbol	Symbol	Symbol
31-[20]	●		
32-[30]	●		
33-[15]	∪		
34-[5]	/	/	Y
35-[10]	∪		
36-[10]	⊘		T
37-[20]	⊘		

Course 1 2.9 km

Course Order:

1. 31-[20]
2. 32-[30]
3. 33-[15]
4. 34-[5]
5. 35-[10]
6. 36-[10]
7. 37-[20]
- F1

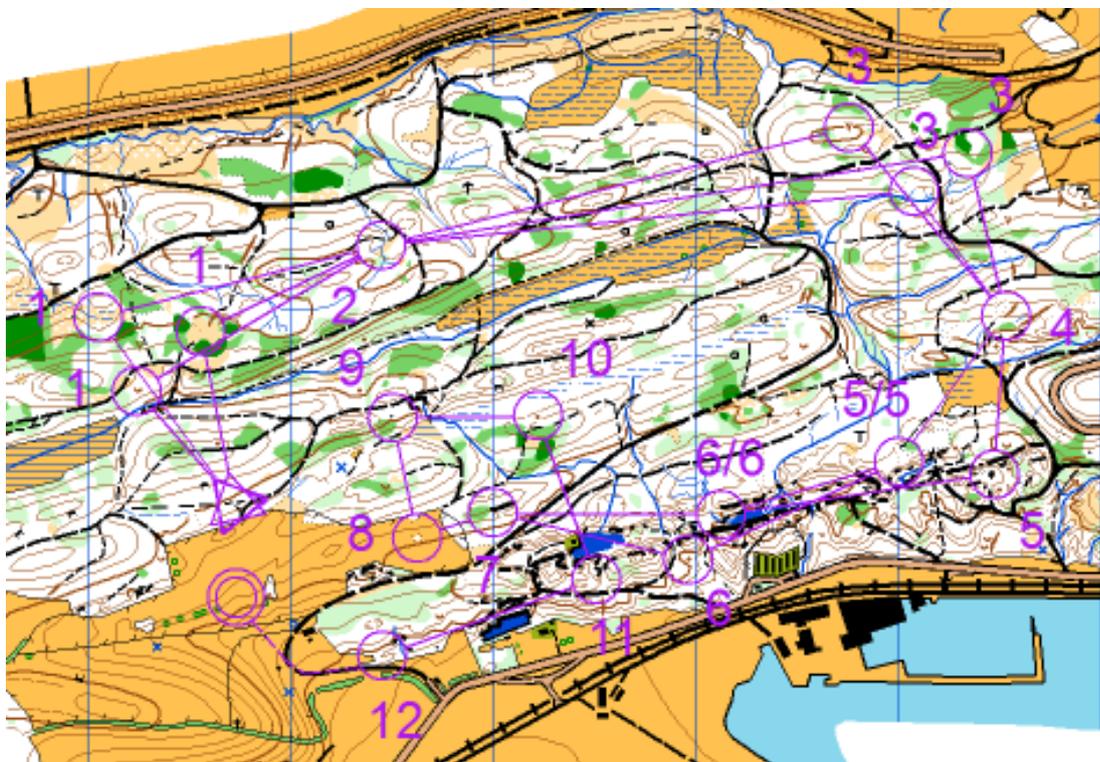
References

- [1] http://www.ocad.com/docs/Getting_Started_with_Course_Setting_in_OCAD.pdf
- [2] http://www.ocad.com/docs/Einführung_in_die_Bahnlegung_mit_OCAD.pdf
- [3] <https://youtu.be/SLHtPoS53nc>

Create Relay Courses

Mas Ori Sta CS

This function is only available in course setting projects!

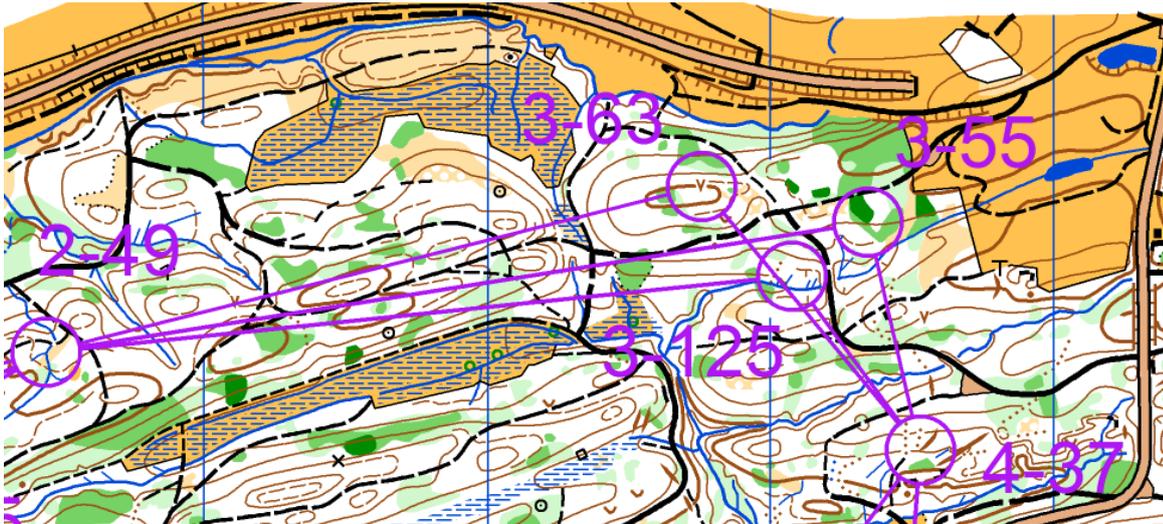


Create a Relay Course

To set courses for a relay, do the following steps:

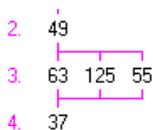
1. **Create a New Course Setting Project.**
2. **Add Course Setting Objects** (e.g. Start, Controls, Finish) to the project.
3. **Create a New Course.** Choose **Relay** as the **Course type** and define the number of legs.
4. **Create a New Class.** Check the option **Create classes automatically**. Define the number of teams and allocate start numbers to the class.
5. **Add the Course Objects to a Course.** You have special options for the relay.

Insert a Team Variation



A **Team Variation** means that runners of different teams go to different controls. OCAD allocates the chosen amount of controls regularly to the teams, but, to make the relay fair, each runner of the team get a different variation (e.g. Runner 1 goes to control 63, Runner 2 goes to control 55 and Runner 3 goes to control 125). The number of possible variations is given by the number of legs of the relay. If a relay consists of three legs, you will have to make three variations, so that the relay is fair. Variations can be equal to each other, if for example you want to place only two controls instead of three. In this case the equal variations are visited more often than the other one. In any case, OCAD will force you to keep the relay fair (i.e. all teams have run the same leg variations at the end of the relay). Although, you should verify the courses before printing.

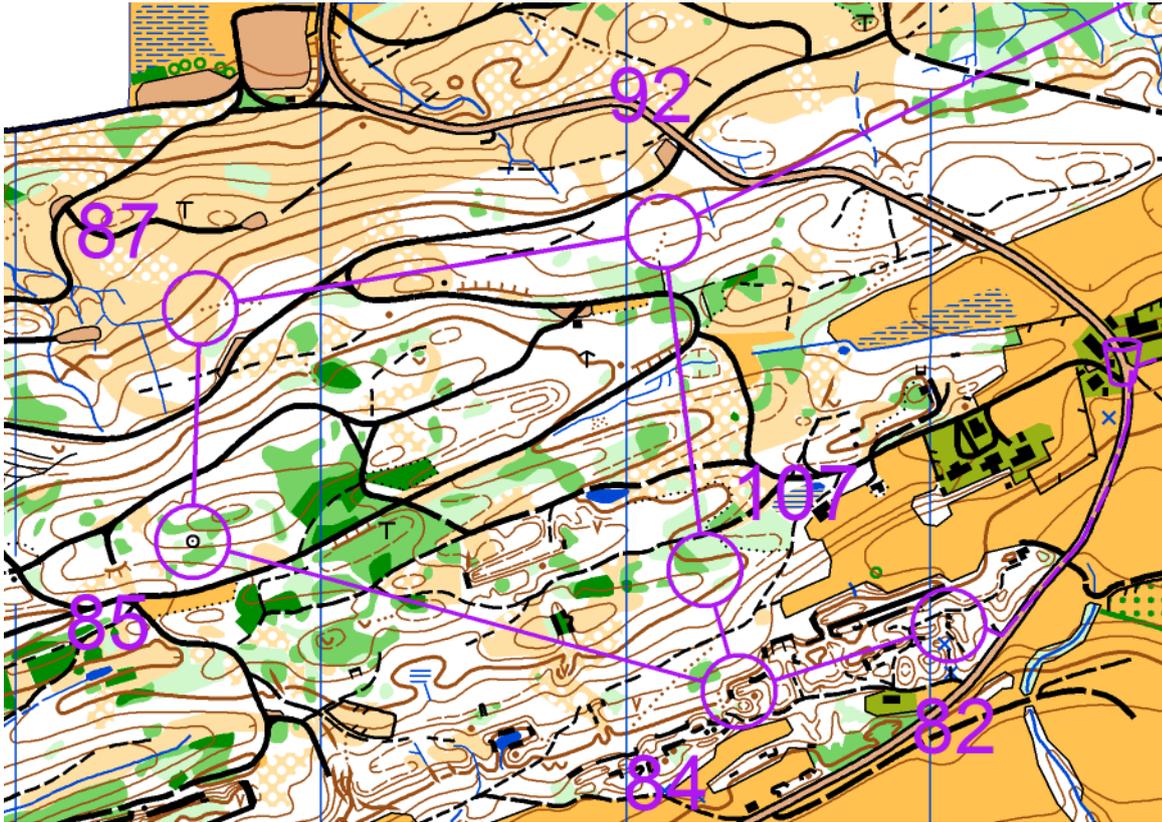
1. Mark a position in the relay course where you want to insert the variation.
2. Click the **Insert** button in the **Course Object Box** on the right side of the window.
3. The **Insert Course Object** dialog appears.
4. Choose the **Team Variation** option.
5. Click the **OK** button.
6. The team variation  appears in the course box.
7. You can add controls to the variation by marking the correct position and double clicking them.
8. The variation for the example above looks as follows:



 - It is also possible to leave a variation empty. This means that two runners in a team of three will have to get a control and one runner leaves it out.

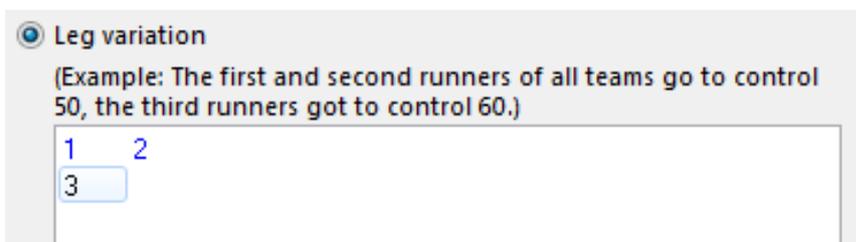
- OCAD will tell you with a warning message when you are trying to create something unfair.
- To delete a variation select it and press the **Delete** key or click the **Delete** icon.

Insert a Leg Variation



A **Leg Variation** means that there is a variation of the legs within the same team. This can be used for when you have a relay with three legs but the second leg is shorter than the other two legs. In the example above the first and the third runner goes from control 92 to 87, then to 85 and finally to control number 84, whereas the second runner goes from control number 92 to 107 and then directly to 84, which is the shorter leg. All runners who run the second leg of the relay will have this shorter variation. It is also possible to make team or additional leg variations within a leg variation itself. The same which applies to the team variation, applies also to the leg variation: OCAD will force you to keep the relay fair (i.e. all teams have run the same leg variations at the end of the relay). Although, you should verify the courses before printing.

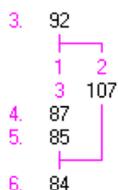
1. Mark a position in the relay course where you want to insert the variation.
2. Click the **Insert** button in the **Course Object Box** on the right side of the window.
3. The **Insert Course Object** dialog appears.
4. Choose the **Leg Variation** option.
5. Drag identical legs to the same column in the table.



6. Click the **OK** button when finished.



7. The leg variation appears in the course box. The pink numbers indicate the leg number.
8. You can add controls to the variation by marking the correct position and double clicking them.
9. The variation for the example above looks as follows:



- It is also possible to leave a variation empty. This means that some legs have additional controls where other legs go directly to the next control in common.

- OCAD will tell you with a warning message when you are trying to create something unfair.
- To delete a variation select it and press the **Delete** key or click the **Delete** icon.

Add the Variant to the Map

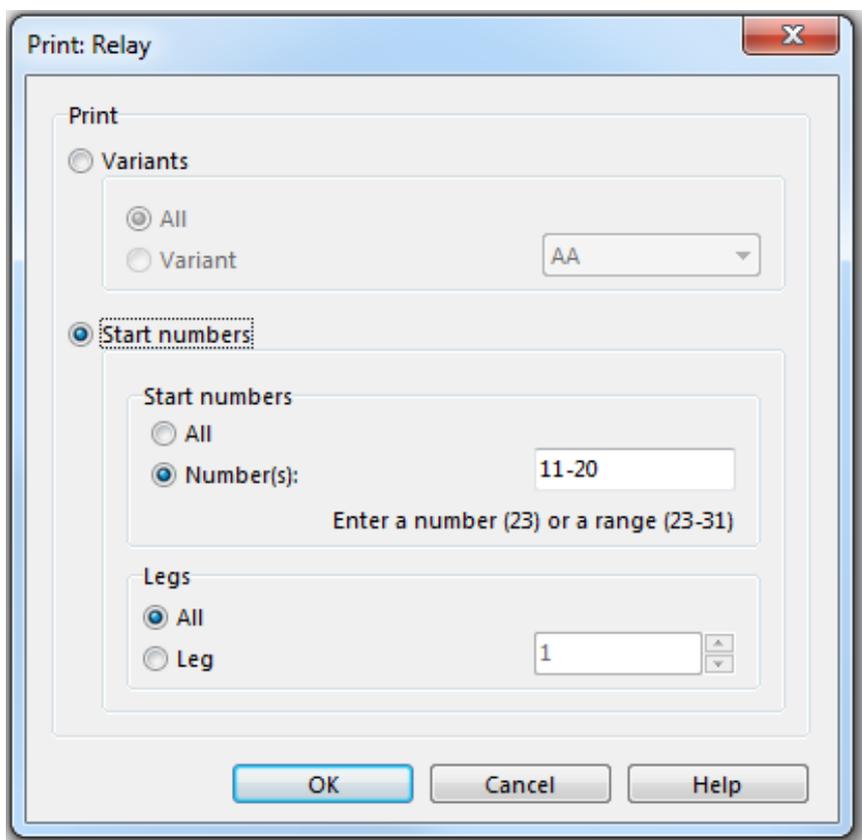
Read the [Add Variant for Relay Courses](#) article for more information.

Add the Start Number to the Map

Read the [Add Start Numbers for Relay Courses](#) article for more information.

Print a Relay Course

1. Choose **Courses** in the **Print** submenu of the **Course Setting** menu.
2. Adjust the print settings with help of the **Print Courses** and the **Printing Maps** pages of this Wiki.
3. Select the relay course in the **Select Courses/Classes** field.
4. Click the **Print** button.
5. The **Print** dialog appears.



You can print:

- **Variants**

- **All:** All variants are printed once.
- **Variant:** The variant selected in the dropdown list is printed once.
- **Start numbers**
 - **All:** All courses to all defined start numbers (in the **Classes** dialog) are printed. The variations are allocated regularly to the teams.
 - **Number(s):** All courses to the defined start numbers (in the **Classes** dialog) entered in this field are printed. The variations are allocated regularly to the teams. You can enter a single start number (e.g. 23) or a range of numbers (e.g. 23-31).
 - **Legs:** If you choose the **Start numbers** option you also have to define which legs you want to print.
 - **All:** All legs of the selected start numbers are printed.
 - **Leg:** Enter a leg number if you want to print only single legs of the selected start numbers.

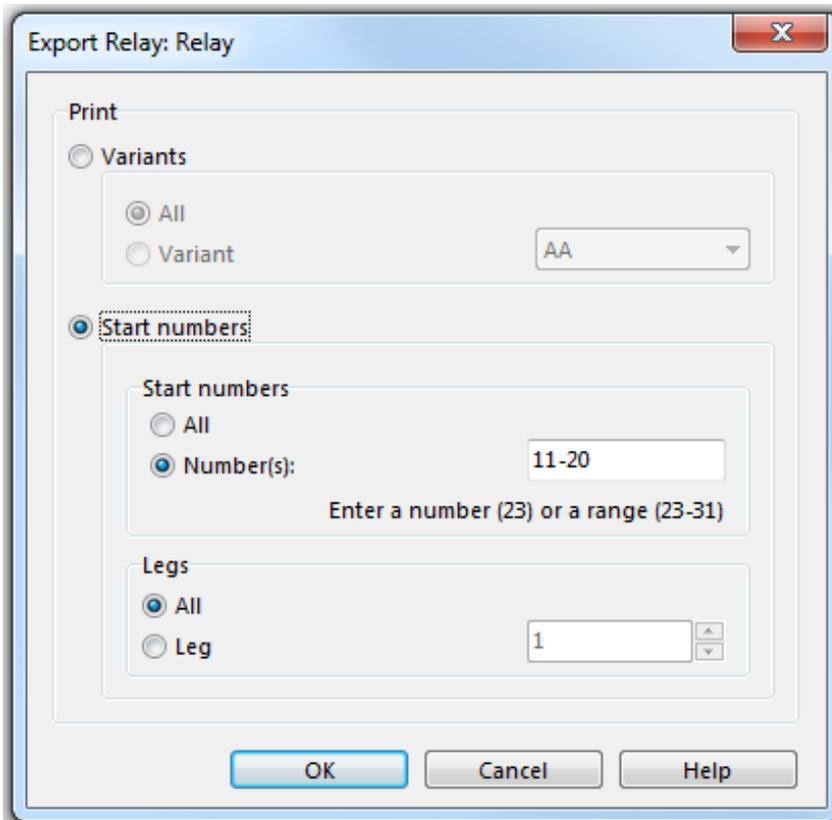
Click the **OK** button when finished. The courses are printed. This can take a moment.

 You can anytime reprint the course for a specific runner under the condition that nothing in the variations has been changed.

Export

Export a Relay Course

1. Choose **Export** in the **File** menu.
2. Adjust the export settings with help of the **Export Files** page of this Wiki.
3. Click the **Export** button.
4. The **Select Courses/Classes** dialog appears.
5. Select the relay course and click the **OK** button.
6. The **Export Relay** dialog appears which is the same as the **Print** dialog.



The screenshot shows the 'Export Relay: Relay' dialog box. It has a title bar with a close button. The dialog is divided into three main sections: 'Print', 'Start numbers', and 'Legs'. In the 'Print' section, the 'Start numbers' radio button is selected. In the 'Start numbers' section, the 'Number(s):' radio button is selected, and the text box contains '11-20'. Below this text box is the instruction 'Enter a number (23) or a range (23-31)'. In the 'Legs' section, the 'All' radio button is selected, and the text box contains '1'. At the bottom of the dialog, there are three buttons: 'OK', 'Cancel', and 'Help'.

You can export:

- **Variants**
 - **All:** All variants are exported once.
 - **Variant:** The variant selected in the dropdown list is exported once.
- **Start numbers**
 - **All:** All courses to all defined start numbers (in the **Classes** dialog) are exported. The variations are allocated regularly to the teams.
 - **Number(s):** All courses to the defined start numbers (in the **Classes** dialog) entered in this field are exported. The variations are allocated regularly to the teams. You can enter a single start number (e.g. 23) or a range of numbers (e.g. 23-31).
 - **Legs:** If you choose the **Start numbers** option you also have to define which legs you want to export.
 - **All:** All legs of the selected start numbers are exported.
 - **Leg:** Enter a leg number if you want to export only single legs of the selected start numbers.

Click the **OK** button when finished. The courses are exported. This can take a moment.



If you want to export all relay variations to one file, do the following:

- Go to **File->Print**.
- Choose **Microsoft Print to PDF** as Printer and click on **Print**.
- Adjust the Print settings and click on **Print**.
- A PDF with all your relay variations will be exported.

Export Relay Variations

1. Choose the **Export Relay Variations** command in the **Export** submenu of the **Course Setting** menu.
2. The **Export Relay Variations** dialog appears.
3. Browse a location and enter a name for the file to export.
4. Click the **Save** button to export the txt-file.

The Text-File contains all courses. The start numbers are listed with the corresponding variation.

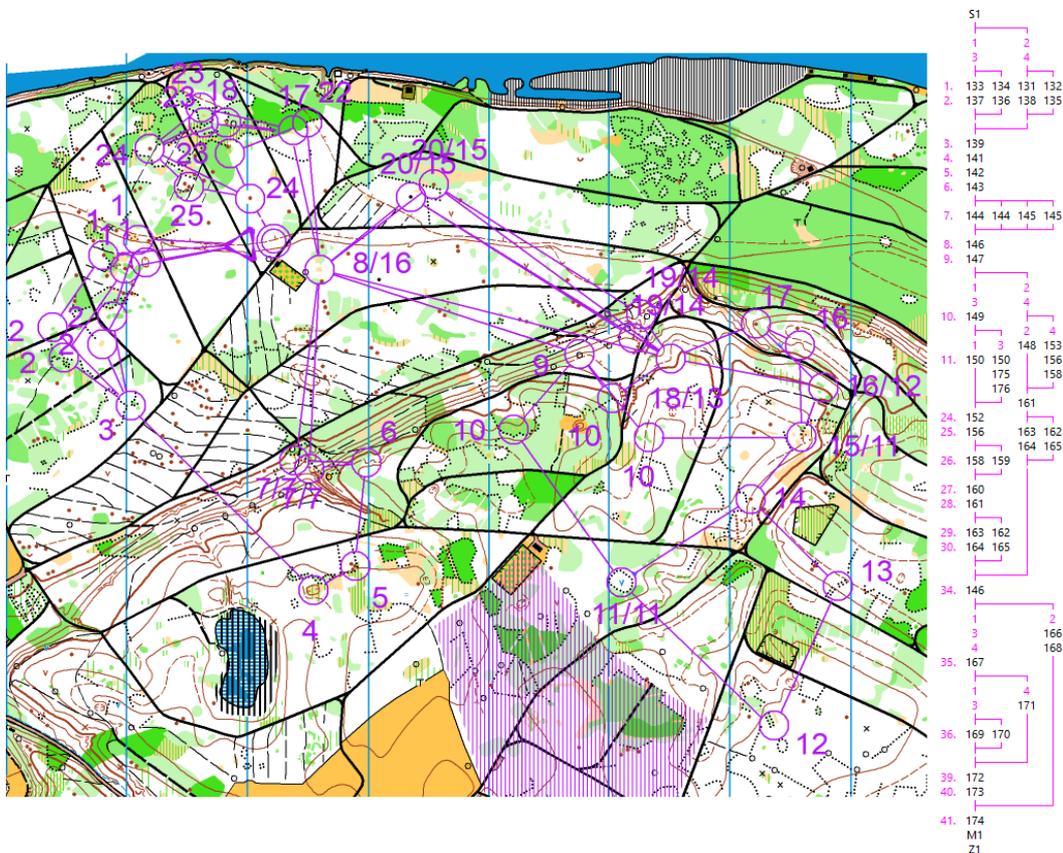
Export the Relay Course Scheme

You can **Export the Course Scheme** or simply **Copy the Course Scheme**.

Example of a Relay Course

See here an **Example of a Sprint Relay Course**.

See below an example of a forest relay competition with 4 legs.



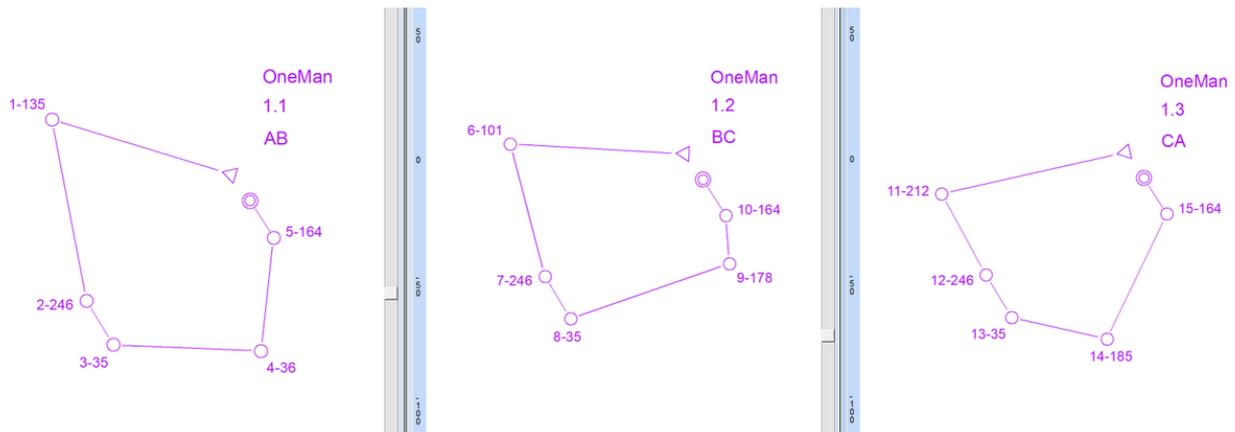
[Back to the Course Setting for Orienteering page.](#)

One-Man Relay Courses

Mas Ori Sta CS

A one-man relay is a relay with mass-start and any number of legs competed by one single runner. The difference of a one-man relay course to a normal relay course is mostly that the legs are a bit more different. This is to make the course more attractive to the single runner.

One-man relay courses can be set similar to normal **Relay Courses**. Visit the **Create Relay Courses** page for more information.



Example for a one-man relay with continuous numbering.

Back to the **Course Setting for Orienteering** page.

Score Orienteering

Mas Ori Sta CS

Score orienteering is not implemented in OCAD yet. Although there are options to create a score orienteering event with OCAD.

The idea behind a ScoreO is, that the runners have a certain timespan, in which they have to collect as many controls (or points) as possible.

Use all Controls

The simplest way is to set controls, a start and a finish and then print all controls. There will be no need to **Create a New Course**. The disadvantage of this method is that you cannot make classes, so all participants will have the same controls.

You can **Change the Code** of the controls in a way: 31 -> 31-[20]; 32 -> 32-[10]; 33 -> 33-[20]

Like this you can weighten the controls (distant and more difficult controls give more points) and the runner see the points on the map.

Hide Connection Lines

A different method is hiding the connection lines. Do the following:

1. **Create a New Course.**
2. **Add Course Objects** to it.
3. Search the symbol for the **Connection Line** in the symbol box.
4. **Hide** the symbol.
5. Search the symbol for the **Control Number in the Control Description**.
6. **Hide** the symbol.
7. Set the numbering in the **Course Setting Options** to **Code only**.
8. **Change the Code** of the controls in a way: 31 -> 31-[20]; 32 -> 32-[10]; 33 -> 33-[20].
9. If you change to the **Preview** mode, the course looks like a score orienteering course now.

💡 Add controls in their numerical order to the course to get them rightly sorted on the control description. The length of the course can be edited in the **Courses** dialog in the column for extra length. Extra length can be negative.

Course 1	2.9 km		
31-[20]	●		
32-[30]	●		
33-[15]	∪		
34-[5]	/ / y		
35-[10]	∪		
36-[10]	∩		T
37-[20]	○		

Course Object dialog box: Code: 34-[5] OK Cancel Help

Courses dialog box: Course 1, Length: 2.860 km, Climb: 0m

Course List:

1. 31-[20]
2. 32-[30]
3. 33-[15]
4. 34-[5]
5. 35-[10]
6. 36-[10]
7. 37-[20]

F1

Hide Single Connection Lines

Deleting single connection lines is not possible but you can use a trick. Change to the **Preview** mode and drag the end point of the connection line to the start point, so that they start and end at the same point. This makes the connection line invisible. You can use this method when you have a part of arbitrary control order within a normal course.

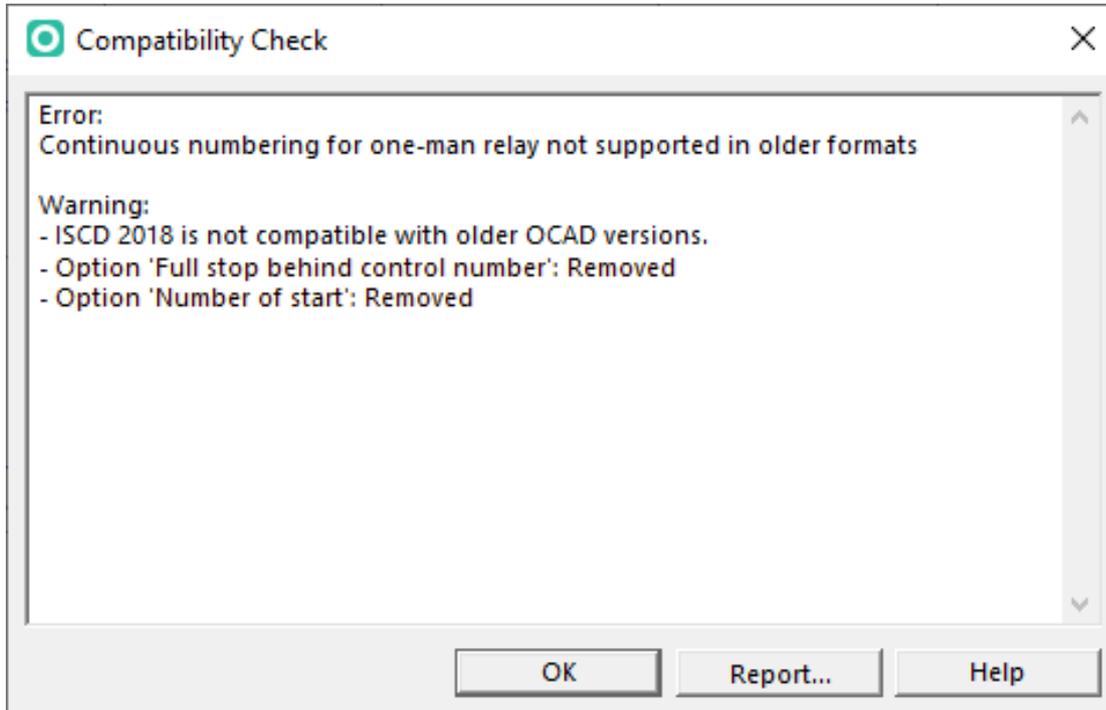
💡 Add controls in their numerical order to the course to get them rightly sorted on the control description. The length of the course can be edited in the **Courses** dialog in the column for extra length. Extra length can be negative.

Back to the [Course Setting for Orienteering](#) page.

Compatibility Check

OCAD 2019 files from Course Setting projects can be saved in a previous OCAD versions (10, 11 or 12) if the file passes the Compatibility Check.

Example:



Possible Errors

- Course XXX is a relay or one-man relay. This cannot be saved in older formats.
- Continuous numbering for one-man relay not supported in older formats.
- ISCD 2018 is not compatible with older OCAD versions.
- Course name symbol is not compatible with older OCAD versions.
- Class names symbol is not compatible with older OCAD versions.

Possible Warnings

- Full stop after control number: Removed
- Number of start: Removed
- Control description anchor: Removed
- Route objects are deleted (not compatible with older OCAD versions).

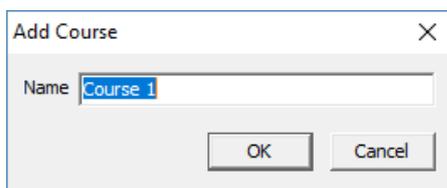
Compose Course



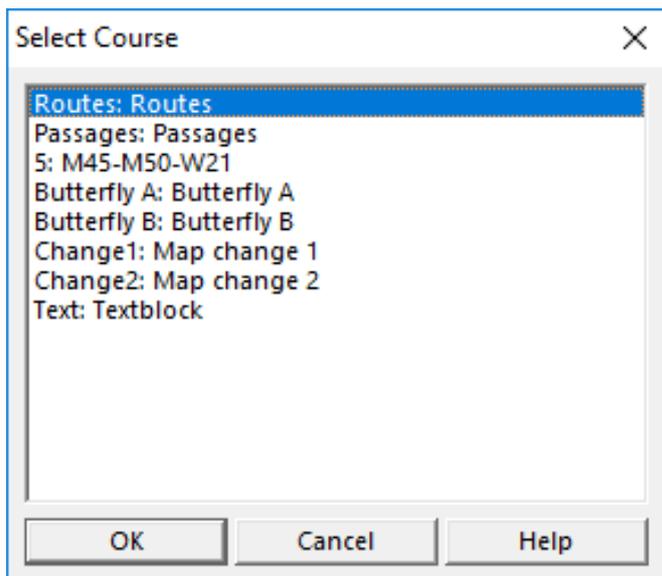
Compose a new course

 Short video as a starter: **New Course Setting Functions** ^[3]

1. Choose the **Compose course** tool from the toolbar.
2. Compose the course by clicking in the drawing area. First click adds a start object, each additional click adds a control point and double click adds a finish object to the map and the course.
3. When you click on the **Compose course** tool, but no Course has been defined so far, OCAD will add a course automatically. Enter the name. You will get to the **Courses** window, where you see the newly added course. Click on **Close**.



4. If there are already Courses defined, but you have not chosen one in the **Course List**, a window appears where you can select a course.



Modify an existing course

Remove controls from the course

Use **CTRL** key + Click to remove a control from the course.

Insert controls into the course

- Choose the Compose course tool from the toolbar.
- Initialize the **Insert mode** with entering and leaving a control circle with the mouse.
- Once the insert mode is initialized each click inserts a control point.
- Use **ESC** key to exit the insert mode.

Move a control point

1. Enter a control circle with the mouse.
2. Press the left mouse key and drag the control point to the new position
3. Leave the left mouse key.

Limitations

The Compose course tool is not working for variations in **Relay Courses**.

Course Setting Objects Toolbar

Beside the Compose course tool, there are the most common Course Setting Symbols in the Toolbar. Click on one of them and a Drawing Mode is activated automatically.



Route Analyzer

This function is available in course setting projects for sprint orienteering maps, ski orienteering maps and mountain bike orienteering maps.

It helps you to see and evaluate possible routechoises between two controls.

You will also get the shortest route for each course.

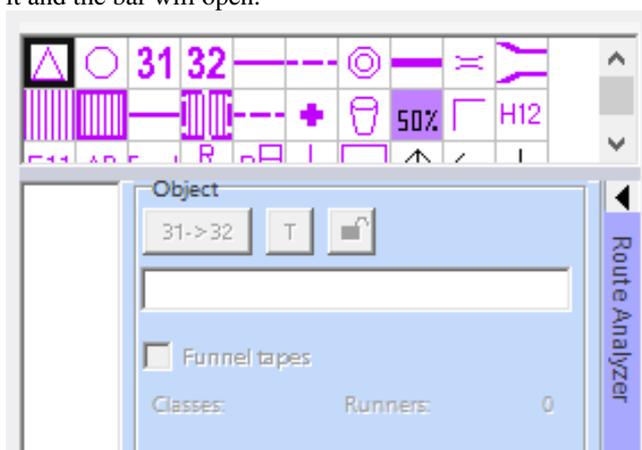


 --> See a **short video on Youtube** ^[1], which explains you the basics.

Open Route Analyzer

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When you are in a Course Setting project, you will see a purple bar at the right side called **Route Analyzer**. Click on it and the bar will open.



How it works

When you run the Route Analyzer the first time, the function will need some time to proceed all necessary steps to show possible routes.

This includes:

- Process impassible features
- Create graph nodes
- Connect nodes
- Calculate routes

The larger your map is, the more time it will take to prepare the map. The calculation of the route itself will be quite fast. You can follow the progress in the lower left corner of the OCAD window.

If you calculate additional routes, it will be much faster, as the function doesn't need to prepare the map again.

Here, too, the longer and more complex the route is, the longer it takes to calculate.

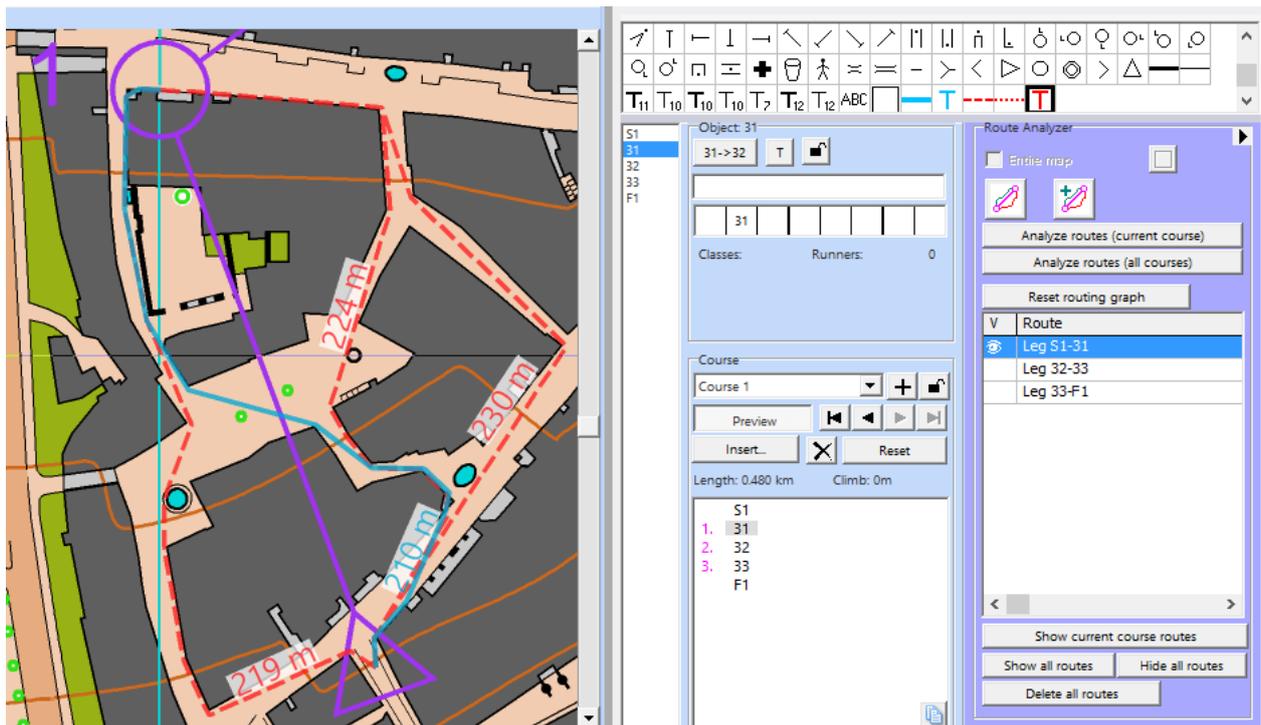
The shortest option is displayed with a solid blue line. The distance of the route is also shown with a text symbol.

Alternative routes are shown in red color.

Route Analyzer Box

You can either calculate only a route between two points, the whole route of a course or the routes for all courses at once.

There are many ways to display the routes.



Define the perimeter

- **Entire Map:** This may take quite long time to prepare the map, depending on its size.
- **Define perimeter:** Draw a perimeter on the map. The perimeter will be shown with a light blue line. Routes will only be analyzed in this perimeter.

Draw leg and analyze route

You can calculate routes only between two points.

1. Click on **Draw leg and analyze route.** 
2. Click and drag a line in the OCAD window.
3. Repeat these two steps for further routes.

The routes will be saved in the **Route Box**.

Add route via point(s)

1. Click on **Add route via point(s).** 
2. Touch an existing route on the map and release where the new route should pass. The route is calculated again.
3. Insert multiple via points by pressing the SHIFT key.

Analyze routes (current course)

1. Select a course in the **Course Box**.
2. Click on **Analyze routes (current course)**.
3. All routes will be saved in the **Route Box**.

A Text-File will be created to **adjust the course length**.

Analyze routes (all courses)

1. Click on **Calculate routes (all courses)**.
2. All routes for all courses will be calculated and will be saved in the **Route Box**.

A Text-File will be created to **adjust the course length**.

Reset routing graph

Click on **Reset routing graph** to process again all impassible features and build up the nodes.

This may be necessary if you detect a mistake in your map (e.g. an unwanted gap between two impassible features), which can be seen in the function **Show Impassable Features**.

After you corrected the mistake in your *[Map File]*, you need to reset the routing graph, before calculating new routes.

Route Box

All calculated routes will be shown in the **Route Box**.

You see on the left side, if the route is visible or not. The right side shows you between which two controls the route has been calculated.

V	Route
<input checked="" type="checkbox"/>	Leg S1-31
<input checked="" type="checkbox"/>	Leg 31-32
<input checked="" type="checkbox"/>	Leg 32-33
<input checked="" type="checkbox"/>	Leg 33-34
<input checked="" type="checkbox"/>	Leg 34-M1
<input checked="" type="checkbox"/>	Leg M1-Z1

Show current course routes

Shows the routes of the select course in the **Course Box**. All routes of this course will be visible in the **Route Box**, all other routes will be hidden.

Show all routes

Show all routes in the **Route Box**.

Hide all routes

Hide all routes in the **Route Box**.

Delete all routes

Delete all routes in the **Route Box**.

Adjust Course Length

When you click on **Analyze routes (current course)** or **Analyze routes (all courses)**, a .txt-File will be created in the same folder, where your course setting project is saved. This txt-File contains a summary of all routes, as well as a summary for each course for itself.

Example:

```
Course Setting Project.Course 1.shortestRouteLengths.txt
Course Setting Project.AllLegsRouteLengths.txt
```

Course	Course 1 Shortest route (leg)	Shortest route (total)	
Leg S2-57	92m	92m	0m
Leg 57-58	97m	189m	4m
Leg 58-59	185m	374m	5m
Leg 59-F2	131m	505m	4m

Length = 310 m
 Extra length = 195 m
 Climb along route = 13 m

- **Length:** The length of your course.
- **Extra length:** The difference between the shortest possible route of the course and the course length.

💡 For Sprint Orienteering Courses, it is common to show the length of the ideal route and not the course length. Add the **Extra length** value to the corresponding field in the **Courses** dialog.

- **Climb along route:** If there is a **DEM** loaded in the course setting project, climbing is calculated along the shortest route.

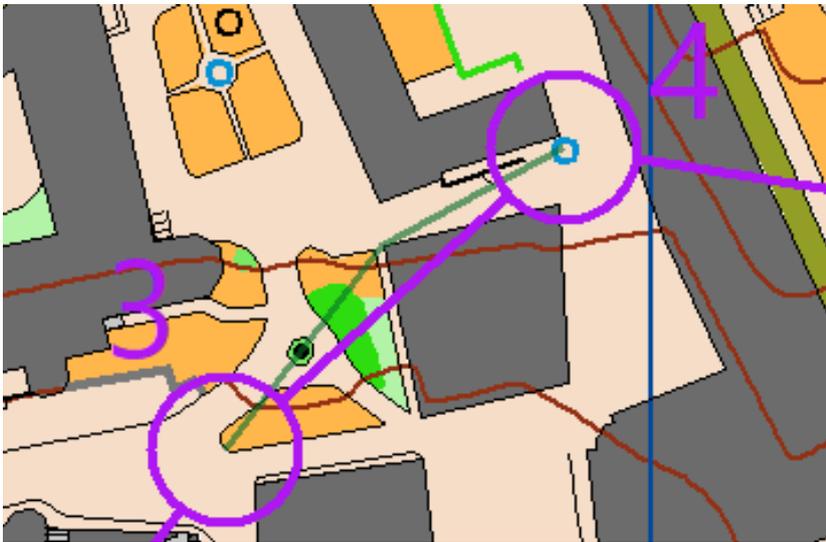
Limits of the function

The Route Analyzer is a great function. However, it's not working in every situation.

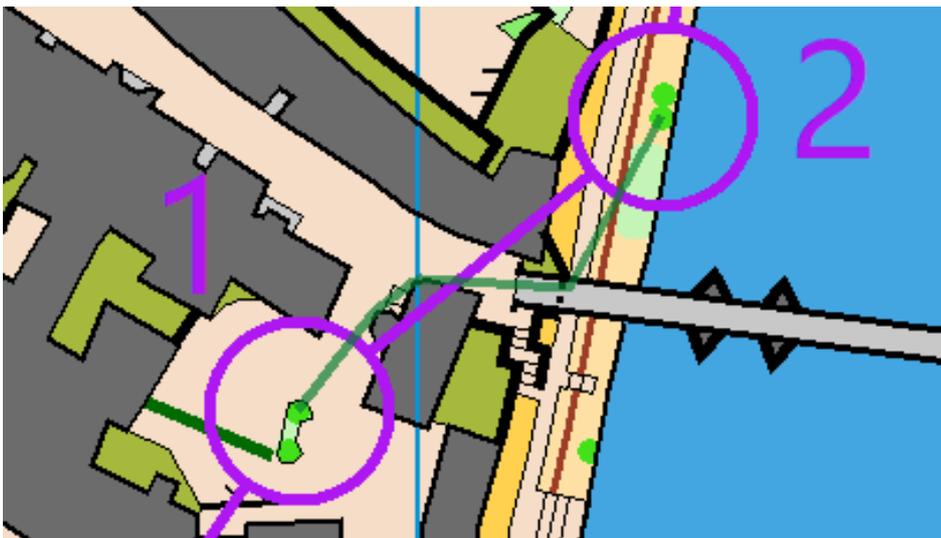
These are the limits of the function:

- The function is not (yet) considering the runnability. It only distinguishes between passable and impassable features. The fastest route may go through a green area.

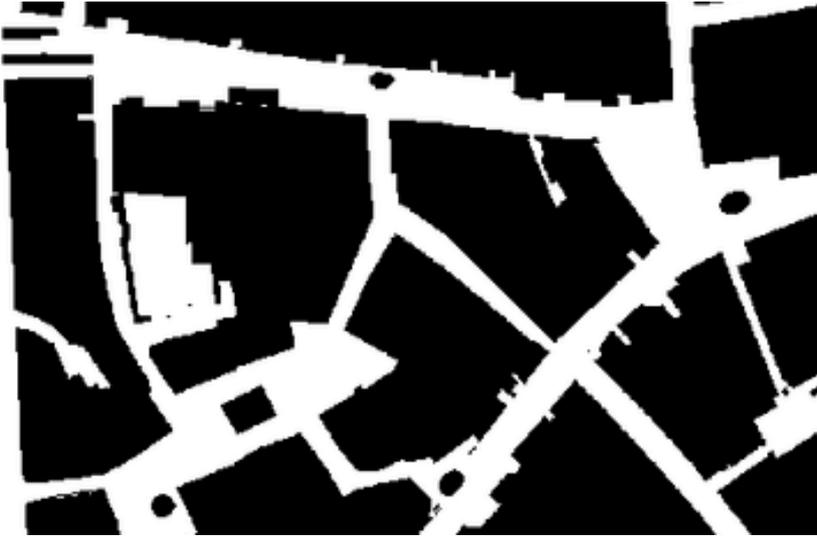
Positive side effect: You may notice routes that you have not thought off before (e.g. possible route through green area).



- The function can't deal with different running levels, e.g. underpass, overpass, bridges or tunnels.



- Further mistakes may also be a result of bad map drawing. Check the function **Show Impassable Features**.



Editing the routes

You can edit the routes and labels manually. Just click on the routes and edit them. The length will not yet be adjusted automatically.

Shift + Ctrl + 	Add Vertex
Ctrl + 	Remove Vertex
Ctrl +  + Mouse	Remove Vertex with <i>Mouse Over</i> .

See the **Tips with Keyboard and Mouse** page or the **Select Object and Edit Vertex** page for more information.

Last but not least

-  Before printing/exporting your courses, be sure that all the calculated routes are hidden or deleted.

You probably don't want to give a map to the runners with all measured routes on it.

- The graph is automatically saved in the course setting project directory after calculating the first route (if the option "whole map" is selected) and reloaded when the file is opened again. For that, three files are saved in the folder of the course setting project:

- [FILENAME CS PROJECT].ocdGraph
- [FILENAME CS PROJECT]. ~imp.tiff
- [FILENAME CS PROJECT]. ~imp.tfw

Whether a graph has been loaded or not can be seen by the fact that the "Reset routing graph" button is active.

- Credit goes to Fabian Hertner who helped us to develop this function with his ideas and knowledge.

References

- [1] https://youtu.be/XbHSJn_2yXU

Add Course Setting Objects

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(This function is only available in course setting projects!)

Add Start, Controls and Finish

Start

1. Select the  **Start** symbol in the symbol box.
2. Select any drawing mode.
3. Click in the drawing area to place the object. Now the **Course Object Dialog Box** appears. It proposes the code S1 for the start. Enter a different code if desired.
 - 💡 **Skip** the course object dialog box by holding down the Shift key when clicking in the drawing area.
4. Click the **OK** button.
5. The **Start** object appears on the map.
6. You can now **Add the Course Object to Courses**.
7. Select it to get some editing options. Visit the **Edit Course Setting Objects** page to get more information (e.g. how to edit the control description).

Control

1. Select the  **Control** symbol in the symbol box.
2. Select any drawing mode.
3. Click in the drawing area to place the object. Now the **Course Object Dialog Box** appears. It proposes a code. Enter a different code if desired.
 - 💡 **Skip** the course object dialog box by holding down the Shift key when clicking in the drawing area.



4. Click the **OK** button.
5. The **Control** object appears on the map.
6. You can now **Add the Course Object to Courses**.

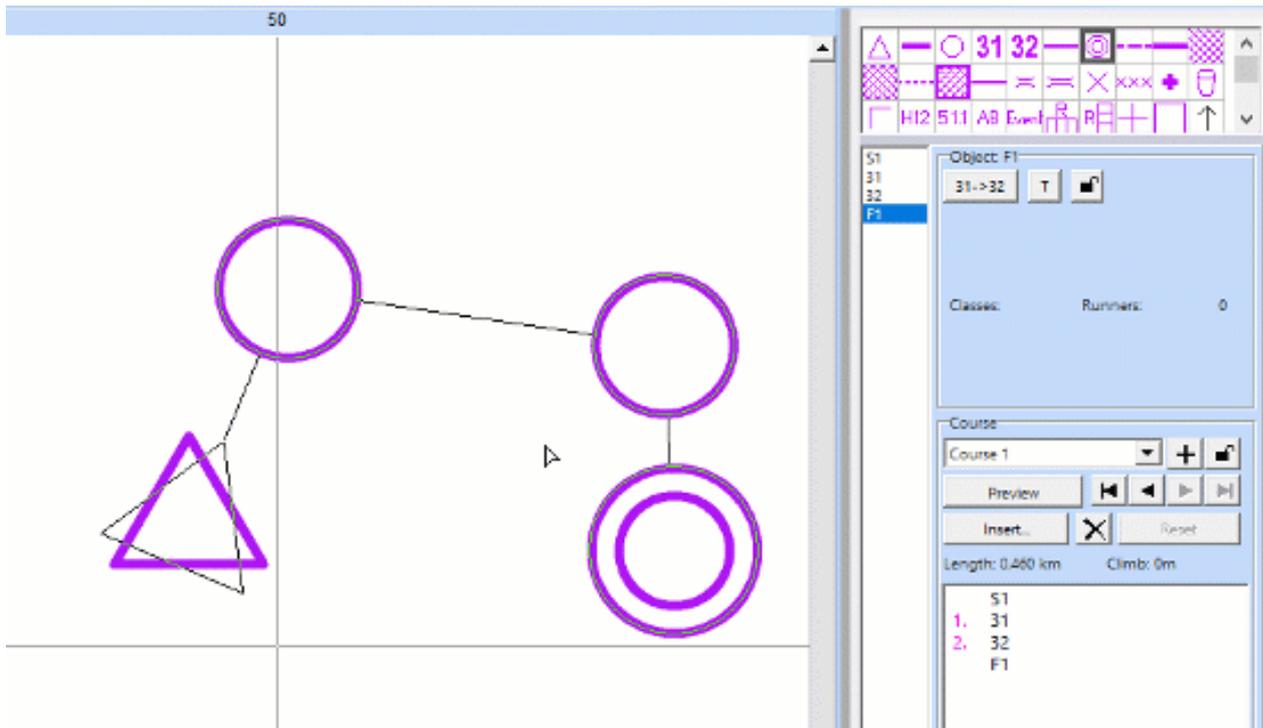
7. Select it to get some editing options. Visit the **Edit Course Setting Objects** page to get more information (e.g. how to edit the control description).

Finish

1. Select the  **Finish** symbol in the symbol box.
2. Select any drawing mode.
3. Click in the drawing area to place the object. Now the **Course Object Dialog Box** appears. It proposes a code. Enter a different code if desired.
 - 💡 **Skip** the course object dialog box by holding down the Shift key when clicking in the drawing area.
4. Click the **OK** button.
5. The **Finish** object appears on the map.
6. You can now **Add the Course Object to Courses**.
7. Select it to get some editing options. Visit the **Edit Course Setting Objects** page to get more information.
 - 💡 It is not possible to edit the control description for the finish. The control description is defined by the marked route between the last control and the finish.

Add Control to Map and Course at once by Moving the Connection Line

1. Select the course in the dropdown list of the **Course Object Box**.
2. Make sure that you are not in the Preview Mode.
3. Select the  **Control** symbol in the symbol box.
4. Choose the **Select Object and Edit Vertex** tool.
5. Click on the connection line between those controls where the object should be added and drag the connection line to the place where the object should be added. Now the **Course Object Dialog Box** appears. It proposes a code. Enter a different code if desired.
 - 💡 **Skip** the course object dialog box by holding down the Shift key when clicking in the drawing area.
6. Click the **OK** button.
7. The object appears on the map and is **added to the course**.
 - 💡 **Variant for step 5 and 6:** If the connection line is moved to an existing control then this control is added to the course without creating a new control on the map.



Add a Marked Route

A marked route is mostly used from the last control to the finish. Sometimes you may also have marked routes between controls (e.g. to cross a bridge or a dangerous area).

The marked route treated in this article applies to a route the runner must use. If you want to add a marked route just for information, but which is not part of the course you have to add it as a different object, which is described at the end of this article.

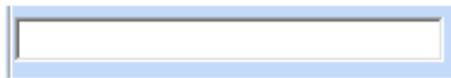
To create a marked route:

1. Select the  **Marked Route** symbol in the symbol box.
2. Select a drawing tool (e.g. the curve tool).
3. Draw the marked route in the direction in which the competitors are running (e.g. from the last control to the finish).
4. Now the **Course Object Dialog Box** appears. It proposes a code. Enter a different code if desired (See below if this dialog box does not appear automatically).
5. Click the **OK** button.
6. The **Marked Route** object is shown on the map.
7. You can now **Add the Course Object to Courses**.
8. Select it to get some editing options. Visit the **Edit Course Setting Objects** page to get more information.

Check **Funnel tapes** **Funnel tapes** in the **Course Object Box** when a marked route is selected to get the corresponding symbol on the control description.



You can even enter a Text Control Description for the Marked Route. This text appears in the Text Control Description and has no effect on the Symbol Control Description, but it can be useful to make the Text Control Description smaller.



Course Course 1, Length 1.9 km

Start	Track
1. 31	Knoll
2. 32	Building
3. 33	Depression
4. 34	Road



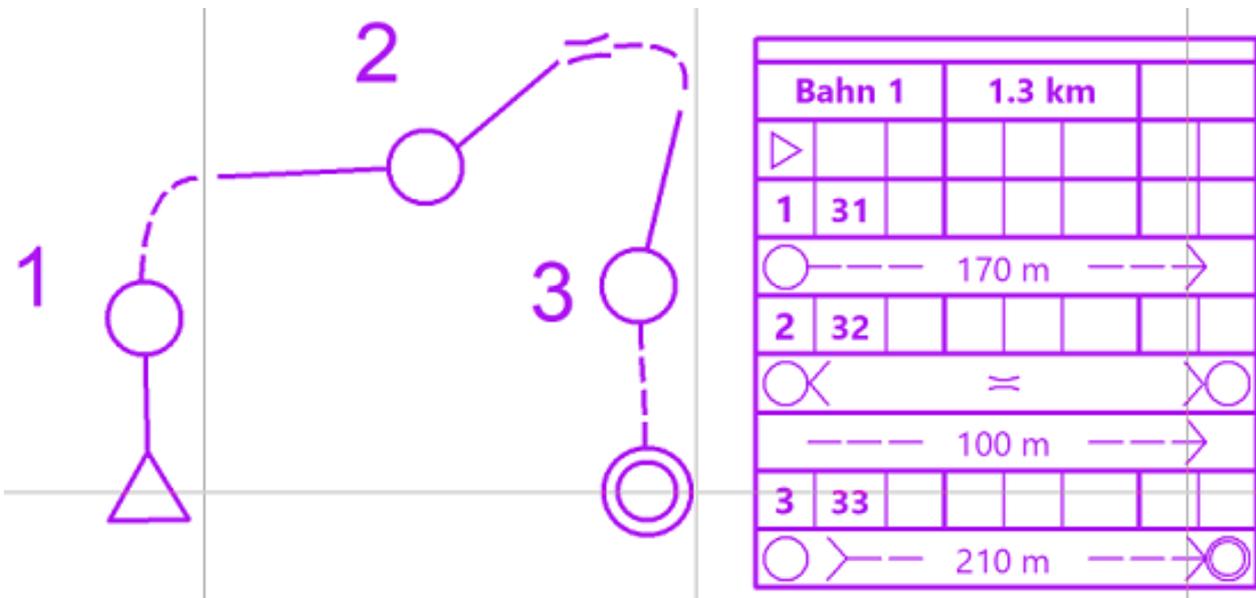
Course Course 1, Length 1.9 km

Start	Track
1. 31	Knoll
2. 32	Building
3. 33	Depression
4. 34	Road

Follow taped route 130 m from last control to finish 130m to finish

The marked route defines how the finish is displayed on the control description. Marked routes can be drawn anywhere in the course, but note that they must be drawn in the direction in which the competitors are running, otherwise the course will not be drawn correctly.

Marked routes must be added to each course like controls and the finish (**Add a Course Object to Courses**).



Marked Route 1: Starts at control, *Funnel tapes* disabled.

Marked Route 2: Starts not at control, *Funnel tapes* disabled.

Marked Route 3: Starts at control and ends at finish, *Funnel tapes* active.

If the **Course Object Dialog Box** does not appear automatically:

1. Right-click on the **Marked Route** symbol in the symbol box.
2. Choose the **Edit** command from the context menu. The **Line Symbol** dialog box appears.
3. In the **Main Line** tab activate the **Course setting symbol: Marked route** option.
4. Click the **OK** button and draw the marked route again.

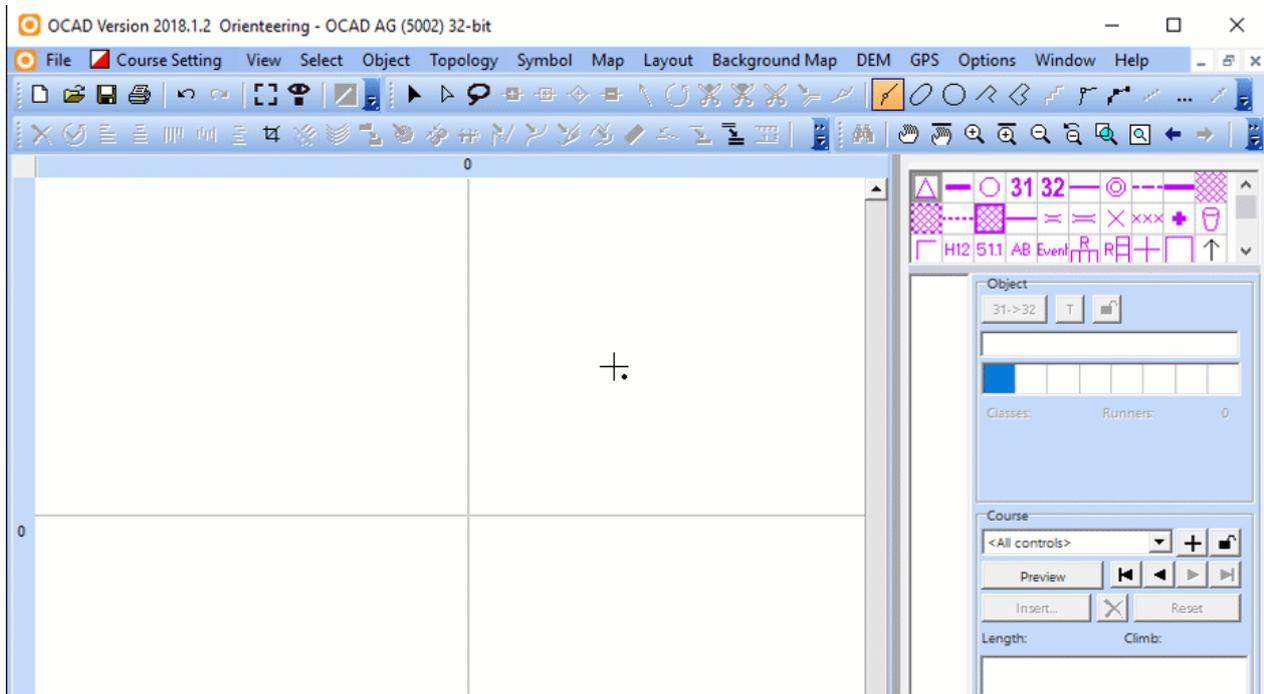
If you want to create a marked route without influence on the course:

1. Right-click on the **Marked Route** symbol in the symbol box.
2. Choose the **Duplicate** command.
3. Right-click on the duplicated **Marked Route** symbol in the symbol box.
4. Choose the **Edit** command from the context menu. The **Line Symbol** dialog box appears.
5. In the **Main Line** tab disable the **Course setting symbol: Marked route** option.
6. Click the **OK** button. Now you can draw a marked route which cannot be added to a course and is always visible.

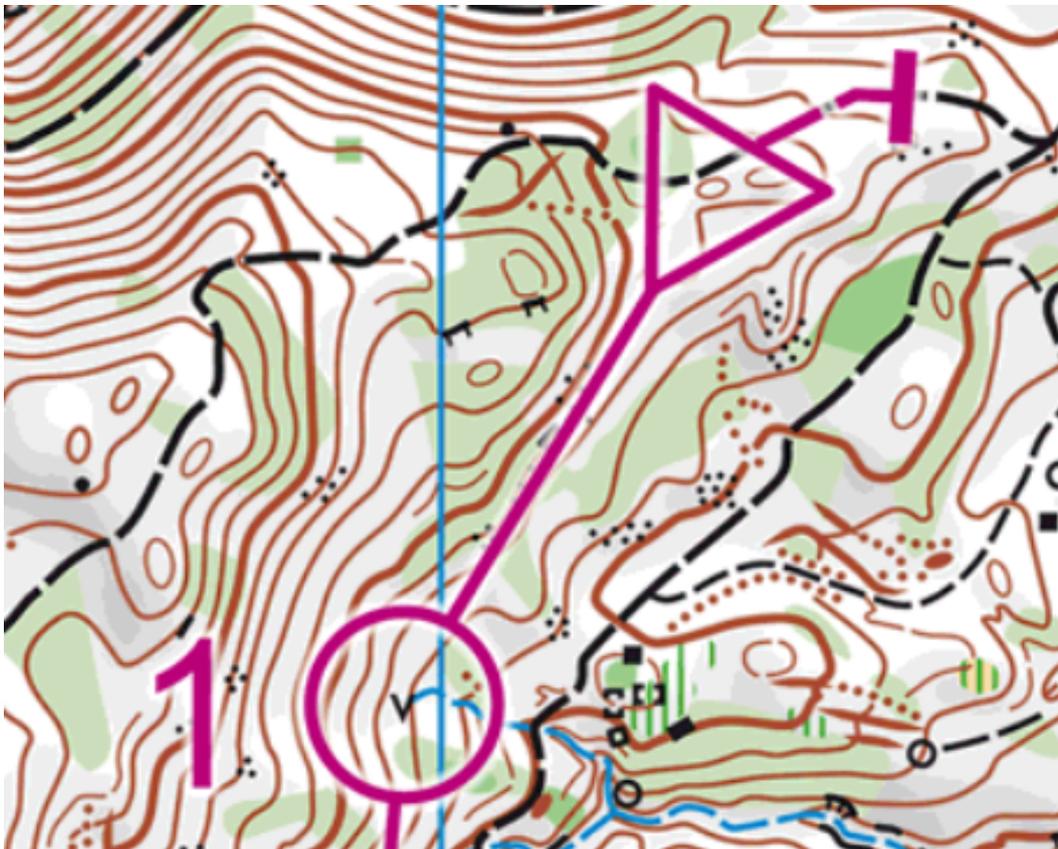
Add the Map Issue Point

Since ISOM 2017, there's a symbol for the map issue point (symbol number 702).

Draw a marked route to the start triangle and then add a Corner Vertex into the dashed line. The crossbar for the map issue point appears.



💡 You can also draw the Map Issue Point like a normal point object (and not insert a Corner Vertex). However, please note that in this case the Map Issue Point will be displayed in all courses.



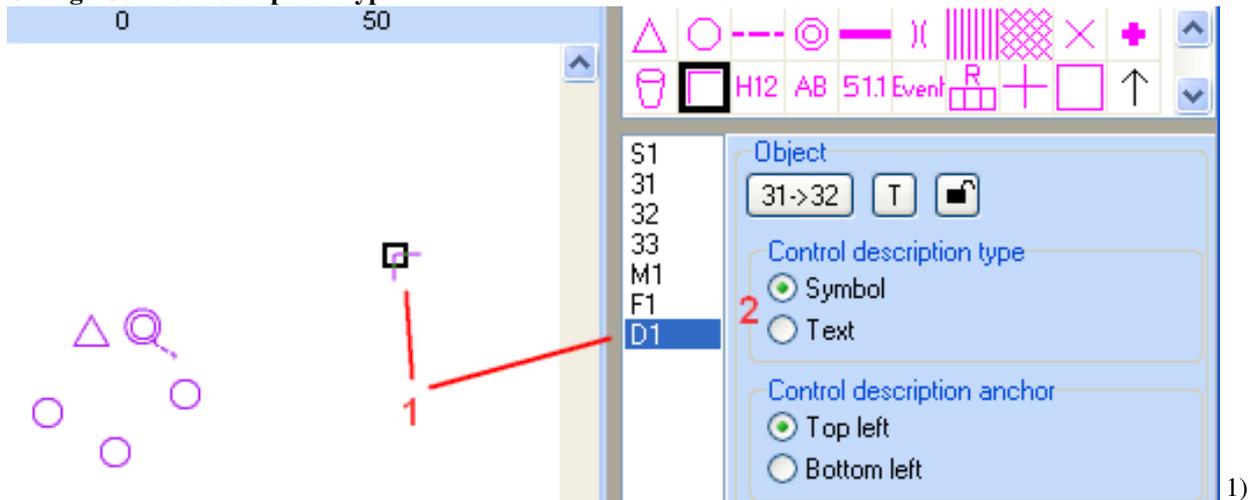
Example for Map Issue Point at EOC 2018 Middle Distance Final Women.

Add a Control Description

To print a control description together with the course you have to place a control description object. This object is a placeholder and indicates the upper left corner of the control description.

1. Select the  **Control Description** symbol in the symbol box.
2. Select any drawing mode.
3. Place the upper left corner of the control description on the map.
4. Now the **Course Object Dialog Box** appears. It proposes a code. Enter a different code if desired.
5. Click the **OK** button.
6. The **Control Description** object is indicated by a hook on the map which is the upper left corner.
7. Select it to get some editing options. Read the **IOF Symbol Control Description** article to get more information.

Change Control Description Type



Select the control description corner on the drawing area or in the course setting objects list.

2) Change the **Control description type** from symbol to text or vice versa on the right side of the window.

 It's the same with changing the **Control description anchor** from top left to bottom left in the **Course Object Box**.

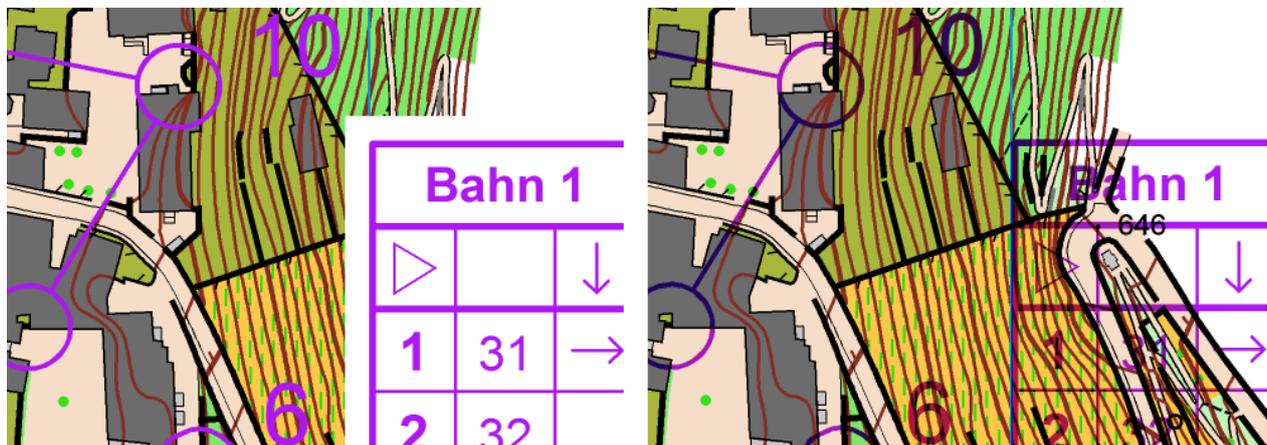
Control Description with White Background

If the background map should be masked below the text description, activate the **White background** option in the **Options** dialog of the **Course Setting** menu.

Click the **Preview** button to get a preview of the control description.

Control Description with White Background (Draft Mode)

If you prefer to print your maps in draft mode, you will face a problem, that there is no block-out of the control description in draft mode.



In this case, activate the new option **Draw white background even in draft mode** in the **Course Setting Options** dialog. Read more in the **Course Setting Options** article.

Add a Course Title

Normally you add the title of the course to the map. To add a course title, you place a text object which is a placeholder for the course title. This text object will be filled with the course title in each course.

1. Select the **H12 Course Title** symbol in the symbol box.
2. Select any drawing mode.
3. Click in the drawing area to place the object. Now the **Course Object Dialog Box** appears. It proposes a code. Enter a different code if desired. If this dialog does not appear automatically, you must make a modification to the course title symbol which is described below.
4. Click the **OK** button.
5. The **Course Title** object appears on the map with the placeholder text **Course**.
6. Select it to get some editing options. Visit the **Edit Course Setting Objects** page to get more information.

Click the **Preview** button to get a preview of the course title.

OCAD allows you to use the course name (e.g. Course C), a list of all classes using that course (e.g. M16 - W20 - M40) or both (e.g. Course C M16 - W20 - M40) as a course title. To define the appearance of the course title:

1. Choose the **Options** command from the **Course Setting** menu. The **Course Options** dialog box appears.
2. Select the desired course title in the **Course title** box.

The same course title will also appear in the control description.

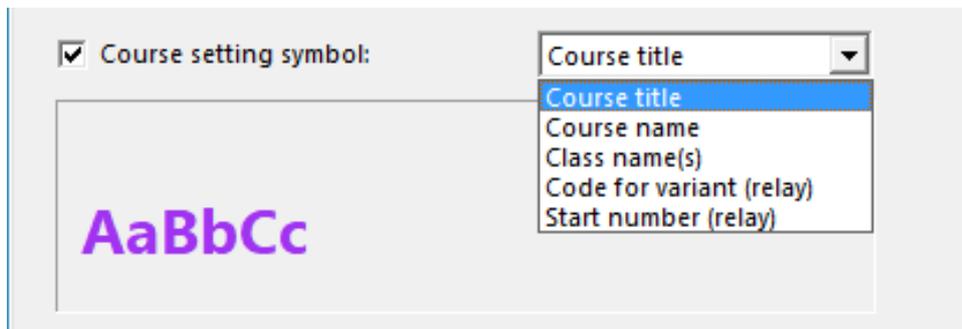
If the **Course Object Dialog Box** does not appear automatically:

1. Right-click on the **H12 Course Title** symbol in the symbol box.
2. Choose the **Edit** command from the context menu. The **Text Symbol** dialog box appears.
3. In the **General** tab activate the **Course setting symbol** option and choose the **Course title** item from the dropdown list.
4. Click the **OK** button and place the course title again.



Instead of displaying the **Course title**, you can also display the **Course name** and/or **Class name(s)**.

1. Right-click on the **H12 Course Title** symbol in the symbol box.
2. Choose the **Edit** command from the context menu. The **Text Symbol** dialog box appears.
3. In the **General** tab activate the **Course setting symbol** option and choose the **Course name** or **Class name(s)** item from the dropdown list.
4. Click the **OK** button and place the course title again.
5. You can also display **Course title**, **Course name** and **Class name(s)** by duplicating the symbol (right click on symbol in symbol box -> duplicate) and choose different items from the dropdown list.



Add Variant for Relay Courses

For relay courses, you can add an overview of the variations (variant) to the map. To add the variant, a text object which is a placeholder for the variant is placed. This text object will be filled with the variant of each runner when printing or exporting the map. The variations are indicated with a letter in the variant text field. The leg is indicated with the number at the beginning of the text field. The variations are indicated with letters (e.g. from A to C at a three men relay). If two runners have the same sequence of letters, they have exactly the same variations on this leg. Different letters mean different variations.

1. Select the **AB Variant (Relay)** symbol in the symbol box.
2. Select any drawing mode.
3. Click in the drawing area to place the object. Now the **Course Object Dialog Box** appears. It proposes a code. Enter a different code if desired. If this dialog does not appear automatically, you must make a modification to the course title symbol which is described below.
4. Click the **OK** button.
5. The **Variant** object appears on the map with the placeholder text **AB**. This text is replaced with the variation sequence when printing or exporting the map.
6. Select it to get some editing options. Visit the **Edit Course Setting Objects** page to get more information.

If the **Course Object Dialog Box** does not appear automatically:

1. Right-click on the **AB Variant (Relay)** symbol in the symbol box.
2. Choose the **Edit** command from the context menu. The **Text Symbol** dialog box appears.
3. In the **General** tab activate the **Course setting symbol** option and choose the **Code for variant (relay)** item from the dropdown list.
4. Click the **OK** button and place the Variant object again.



Visit the **Create Relay Courses** page to get more information about relays.

Add Start Numbers for Relay Courses

For relay courses, you must add the start number to the course in order to give the right map to the right runner. To add a start number, a text object which is a placeholder for the start number is placed. This text object will be filled with the start number of each runner when printing or exporting the map.

1. Select the **51.1 Start Number (Relay)** symbol in the symbol box.
2. Select any drawing mode.
3. Click in the drawing area to place the object. Now the **Course Object Dialog Box** appears. It proposes a code. Enter a different code if desired. If this dialog does not appear automatically, you must make a modification to the course title symbol which is described below.
4. Click the **OK** button.
5. The **Start Number** object appears on the map with the placeholder text **51.1**. This text is replaced with the start number when printing or exporting the map.
6. Select it to get some editing options. Visit the **Edit Course Setting Objects** page to get more information.

If the **Course Object Dialog Box** does not appear automatically:

1. Right-click on the **51.1 Start Number (Relay)** symbol in the symbol box.
2. Choose the **Edit** command from the context menu. The **Text Symbol** dialog box appears.
3. In the **General** tab activate the **Course setting symbol** option and choose the **Start number (relay)** item from the dropdown list.
4. Click the **OK** button and place the start number again.



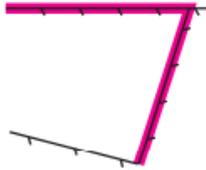
Visit the **Create Relay Courses** page to get more information about relays.

Add Other Objects

In your Course Setting Project you may want to add other objects like:

- **Out-of-Bounds Boundary**

An out-of-bounds boundary shall not be crossed .



- **Out-of-Bounds Area**

An Out-of-Bounds Area shall not be entered. Depending on the borderline type (none, dashed, solid) you can see if the Out-of-Bound Area is marked in the terrain or not (no marking, intermittent marking, continuously marking)



- **Crossing Point**

A crossing point can be used for instance through or over a wall or fence, across a road or railway, through a tunnel or out-of-bounds area, or over an uncrossable boundary. The lines shall reflect the length of the crossing  .



- **Out-of-Bounds Route**

A route which is out-of-bounds. Competitors are allowed to cross directly over a forbidden route, but it is forbidden to go along it  .



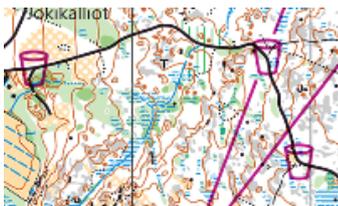
- **First Aid Point**

Shows the location of a first aid post .



- **Refreshment Point**

Shows the location of a refreshment point which is not at a control . If the refreshment point is at a control, it will be marked in the Control Description only.



- **Event Title**

Shows the event title  .

Event Example



- **Reserve Fiels**

In case of Sport Timing Software failure (SI, EMIT), punch into these fields  .



- **Registration Mark**

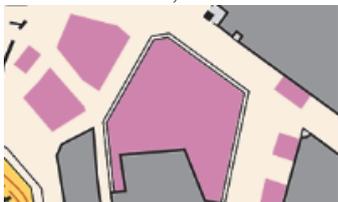
At least three registration marks should be placed within the frame of a map in a nonsymmetrical position. These can be used for course overprinting when overprinting on already printed maps or when exporting and merging different Course Maps  .

See a possile use here.



- **Temporary construction or closed area**

Obvious temporary constructions like platforms for spectators and speaker, closed area for spectators, outside restaurant areas, etc. shall be represented with this symbol  .



- **White Background**

White Background can be used to cover part of your Background Map, e.g. for **Corridor trainings**  .



- **Logo of the Event**

Use the **Layout** Menu to insert Logos from the Event, Sponsors, ect. Note that you can save your Layout in order to import it again the next time.



- **Date of the Event, Name of Course Setter, Corrections to the Map, Parking, Other information relevant to the runner**

For other text objects you may have to **Create Your Own Symbols**. It is important for these symbols that the option **Course Setting Symbol** (in the symbol dialog, when you click the symbol with the right mouse button and choose **Edit** from the context menu) is switched off. The option **Course Setting Symbol** must be used only for objects which belong to a course like controls, the marked route from the last control to the finish or the course title.



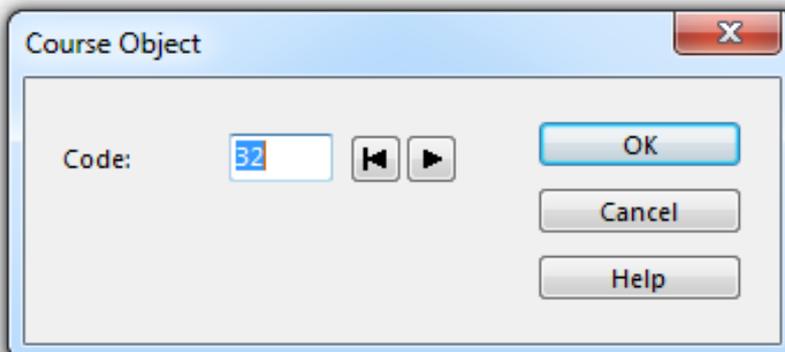
Example If there is a marked route for children which you would like to appear on all other courses (just for information) you proceed as follows:

1. Right-click on the  **Marked Route** symbol in the symbol box.
2. Choose the **Duplicate** command.
3. Right-click on the duplicated  **Marked Route** symbol in the symbol box.
4. Choose the **Edit** command from the context menu. The **Line Symbol** dialog box appears.
5. In the **Main Line** tab disable the **Course setting symbol: Marked route** option.
6. Click the **OK** button. Now you can draw a marked route which cannot be added to a course and is always visible.

Use this new symbol to draw the children course.

Course Object Dialog Box

This dialog box appears after placing a course object or clicking the **Change Code** button in the course setting box on the right side of the window.



In this dialog box you can create or edit the code of a course object.

Code

OCAD proposes the next free number for the controls and a letter plus a number for other course objects. It is recommended to use this convention.

First Free Code button

Click this button to get the first free code available. For control objects OCAD first searches for the lowest number you have defined and assumes that you want to use only numbers above this number. If you want to use a lower number, you must enter it on the keyboard.

Next Free Code button

Click this button to get the next free code available.

Click the **OK** button when finished.

 - There are no restrictions for the code. You can enter an arbitrary code, even letters and some glyphs are allowed.

- If **Auto Control Description** is activated, this dialog is extended with the control description part. Read the **Course Setting with Auto Control Description** article for more information.

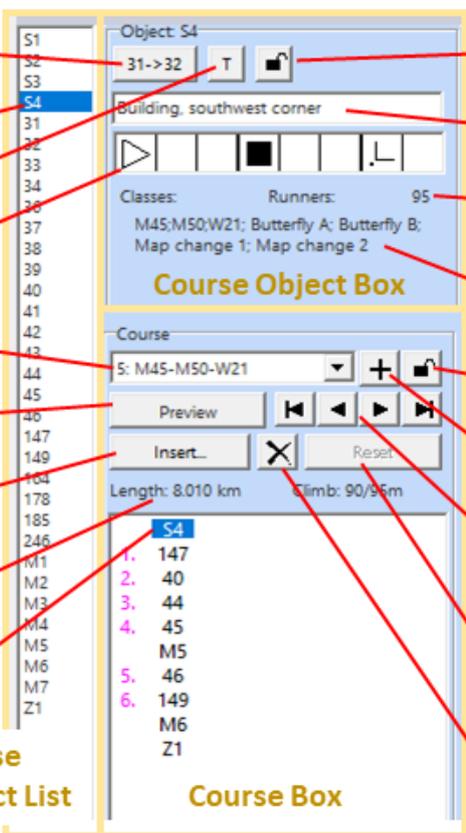
- **Skip** the course object dialog box by holding down the Shift key when clicking in the drawing area.

Back to the **Course Setting for Orienteering** page.

Edit Course Setting Objects



The **Course Setting Box** on the right side of the window provides several editing options for added course setting objects (Start, Control, Finish, Marked Route etc.).



The screenshot shows the 'Course Object Box' and 'Course Box' in OCAD. The 'Course Object Box' contains fields for 'Object S4', '31->32', a text description 'Building, southwest corner', a 'Runners' count of 95, and a list of classes: 'M45;M50;W21; Butterfly A; Butterfly B; Map change 1; Map change 2'. The 'Course Box' shows 'Course 5: M45-M50-W21', 'Length: 8.010 km', and 'Climb: 90/95m'. A 'Course Object List' on the left shows objects S1 through Z1, with S4 selected. Red arrows point from text labels to specific UI elements.

- Click to change code of the selected Course Object
- Selected Course Object
- Click to add a Text Blok
- Modify the Symbol Control Description
- Select a Course
- Get a Preview of the selected Course
- Insert a Course Object
- See the Course Length and Climb
- Selected Object in the Course Box
- Click to Lock/Unlock the Position of the Course Objects
- Enter a Text Control Description
- Number of Runners visiting selected Course Object
- List of all Classes containing the selected Course Object
- Click to Lock/Unlock all Courses
- Add a New Course
- Use these Arrows to navigate through the Courses
- Reset all graphical modifications (e.g. cut connection line) of the selected Course.
- Delete the selected Objects from the Course

Course Object List

To edit an Course object, you have to select it first in the **Course Object List** or in the map window.

Course Object Box

Change Code

Change the code of the selected course setting object by clicking the corresponding button . The **Course Object Dialog Box** appears. Enter a arbitrary new code (no restrictions) or click the arrows to find the first  or the next  free code. Click the **OK** button when finished.

If you want to renumber all controls, use the **Renumber all controls** function in the **Controls** submenu of the **Course Setting** menu.

Text Block

Click this button  to add a text block to the control description. The **Course Object** dialog appears. Enter a code for the text block and click the **OK** button. The text block appears in the list of all course objects to the left of the **Object** box. Select it and type a text in the field standing for the text control description. Now the text block has to be added to a course. For this reason, select the course, mark the correct position in the course (e.g. after control number 38) and double-click the text block in the course object list. The inserted text appears in the control description of the chosen course.

8	37		∧			↓
9	38		∧			✓
This is a text block						
10	34		⊙			♂
11	30		∨			

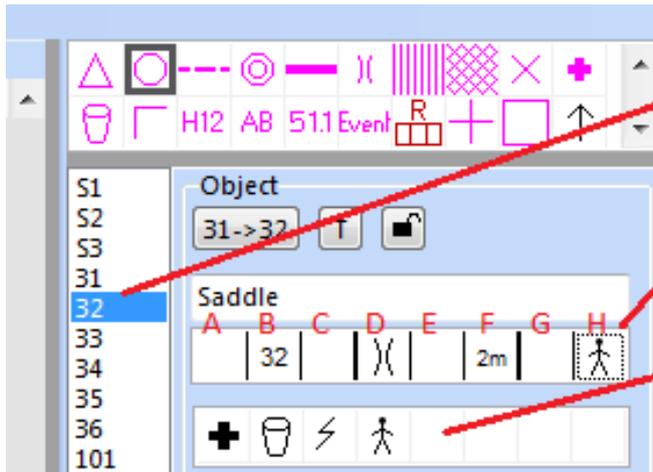
Lock or Unlock Objects

Click the **Lock** button  to lock or unlock course setting objects. If the course setting objects are locked, they cannot be moved in the drawing area. This can be useful if you add controls to the course by double-clicking on them. There it can happen that you shift the control accidentally when double-clicking on it. When locking the controls before, this can not happen.

Text Control Description

Enter a text in this field for the text control description. Alternatively, the text control description can be edited using the **Edit Text Control Description** function in the **Course Setting** menu. Defining a text for the text control description is possible for **Starts**, **Controls**, **Marked Routes** and **Text Blocks** (displayed also in the symbol control description).

IOF Symbol Control Description

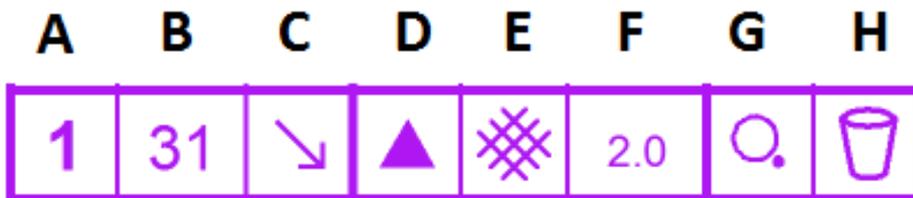


1. Select a control or start object on the map or in this list

2. Click one of the fields (C-H)

3. Click one of OCAD's proposals or click an empty field to delete the symbol

You can edit the IOF symbol description by clicking one of the eight squares. OCAD proposes some symbols for the corresponding field in a menu. To delete a symbol from the control description, click an empty field of OCAD's proposals, when clicking the corresponding square (C-H).



A: Control Number: The control number is specified automatically depending on the sequence of the controls and cannot be edited.

B: Control Code: To edit the control code use the **Change Code button**.

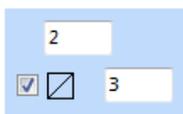
C: Which of any Similar Feature: Declare the position of the feature when there are similar features at close quarters.

D: Control Feature: The control feature can be declared in this field.

E: Appearance: Add additional information characterizing the appearance of the feature.

F: Dimensions/Combinations: The dimensions or combinations of the feature can be declared in this field.

You can either choose the crossing or junction symbol for two combination symbols or enter the dimension of the feature:



Enter a value in the upper field of this box to define the dimension of this feature.

Enter a value in both fields of this box to define the heights of two features.

Enter a value in both fields and check the diagonal box to define the height of a feature on a slope.

G: Location of the Control Flag: Declare the precise location of the control flag in this field.

H: Other Information: Other information can be given in this field (e.g. radio control or refreshments).



- Sources and additional information to the IOF control description can be found here: **IOF Control Descriptions 2018.pdf** ^[1]

- Editing the symbol control description is possible for **Starts** and **Controls**.

- It is not possible to edit the control description for the finish. The control description is defined by the marked route between the last control and the finish.

Add an Own Symbol to the Control Description

It is possible to add an own symbol to the control description.

1. Create a new point symbol with the correct appearance and dimensions for the control description. Learn how to create a new point symbol on the **Create a New Symbol** page.
2. Unlike the **Point Symbol Dialog** in a normal map project, the **Point Symbol Dialog** of **Course Setting** projects have an additional part, namely the **Course setting project for orienteering** part.
3. Check the **Control description symbol** option.
4. Check the fields (B-H), which you want OCAD to propose your own symbol.
5. Click the **OK** button when finished.

Classes and Runners

In this part of the dialog all **Classes** using the selected course setting objects are listed. In addition, the total number of runners visiting this object is given. Define the number of runners per class in the **Classes** dialog.

Course Box

Course

Select a course in the dropdown list . The course is now selected. You can add course objects to it by double clicking them on the map or on the list with all objects. There are three special items in this list:

- **All courses:** Select this item and click on **Preview** to display all courses.
- **Runners:** Select this item to display all controls. In the **Preview** mode the total number of runners visiting this control is given in brackets behind each control code. Define the number of runners per class in the **Classes** dialog.
- **All controls:** Select this item to display all controls on the map. In the **Preview** mode each control is displayed with its code.

Add

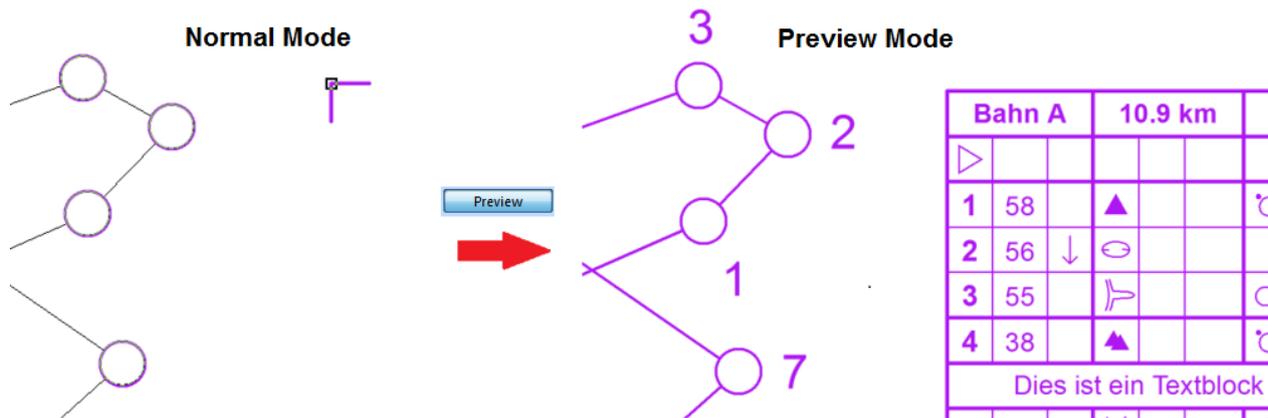
Click the **Add** icon  to add a new course. The **Courses dialog** opens with the added course listed in the last row.

Lock or Unlock Courses

Click the **Lock** icon  to lock or unlock all courses. When courses are locked, it is not possible to add or remove course setting objects.

Preview

Click the **Preview** button to get a preview of the selected course. You are now in the **Preview** mode. In the **Preview** mode it is possible to make several graphical adjustments on the course.



The following adjustments are allowed:

- **Connection Lines:** Connection lines can be edited with most of the editing tools (e.g. **Reshape, Add, Move or Remove Vertices, Cut** etc.). This can be useful if for example a connection line crosses another control or covers an important map object.
- **Control Numbers:** Select a control number and move it to another position. This can be useful if the control number gets in the way of other course objects or important map information.

Visit the **Make Graphic Modifications** page to get more information.

Note: Other adjustments (e.g. move controls or add new course objects) are not allowed to make in the **Preview** mode. Make sure you click the **Preview** button again before going on working on the courses.



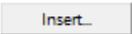
- If control circles cover important map information, they have to be cut in the normal mode and not in the **Preview** mode.

- When moving a control or a course setting object on the map, all affecting graphical adjustments (e.g. moved control numbers or cut connection lines) made in the preview mode get lost. Use the **Lock** button to prevent from moving course objects accidentally.

Switch Between Courses

Use the arrow buttons  to switch between the courses.

Insert

Select a course and click the **Insert** button . The following course objects can be inserted:

- Mandatory crossing point(s)
- Mandatory passage through out of bounds area
- Map exchange
- Team variation
- Leg variation

Visit the **Insert Course Object** page for more information.

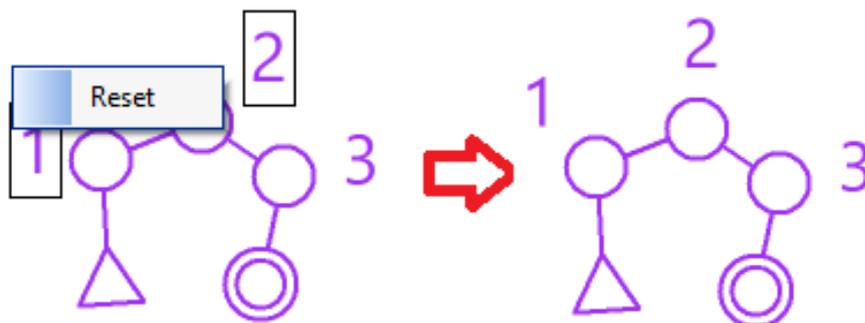
Delete

Remove a course object from a course by selecting it and clicking the **Delete** button . Alternatively, you can press the **Delete** key on your keyboard.

Reset

This button  is available when you are in the **Preview** mode. All graphical adjustments (e.g. moved control numbers or cut connection lines) are removed when clicking this button.

You can also reset only selected preview objects or graphical adjustment. Select them in the drawing window (press the SHIFT key to select multiple objects) and click the right mouse button. A pop-up window appears.



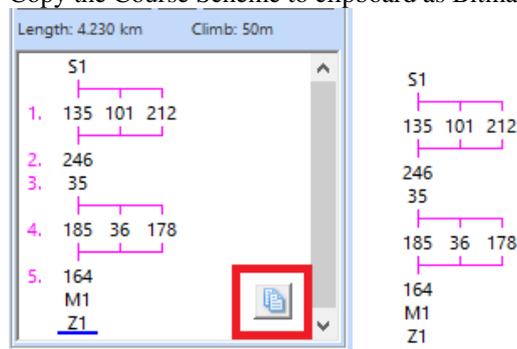
Course Length and Climb

The length and climb of the course  is displayed here. The length of the course is calculated automatically. However, you can add an extra length in the **Courses** dialog. This can be useful for example for Sprint Courses, when you want to show the length of the ideal running route.

If a **DEM** is used, the climb is calculated automatically, too (**Climb Calculated**). Although, you will have to adjust this value in the **Courses** dialog (**Climb Used**) because OCAD calculates it using the linear distance from one control to another. Both climb values are displayed in the Course Box, but only the **Climb Used** is displayed in the Control Description.

Copy Course Scheme

Copy the Course Scheme to clipboard as Bitmap.



You can also **Export the Course Scheme**. Choose the corresponding command in the **Export** submenu of the **Course Setting** menu.

Main Page

Course Setting for Orienteering

References

[1] https://orienteering.org/wp-content/uploads/2010/12/control-description-a4-pages_copy.pdf

Control Elevation



(This function is only available in course setting projects!)

Control elevation is used to calculate the height climb for courses. This function doesn't work for relay courses.

Choose the **Control Elevation** command in the **Controls** submenu of the **Course Setting** menu to change the elevation of a control.

The **Control Elevation** dialog box is displayed. It shows a table with four columns:

Name	Elevation DEM	Elevation Used	Difference
S1	710.30	714.00	3.70
S2	715.35	715.35	0.00
S3	672.34	672.34	0.00
S4	715.12	715.12	0.00
S5	690.59	700.00	9.41
31	717.86	717.86	0.00
32	720.32	720.32	0.00
33	719.44	719.44	0.00

Buttons: Export..., Close, Help

- **Name:** In this column the control code is displayed.
- **Elevation DEM:** This column shows the elevation of the control calculated with help of the **DEM**. If no **DEM** is loaded, this column is empty.
- **Elevation Used:** In this column an elevation value can be entered if there is no DEM available or if elevation DEM value is not correct. If a value is entered in this column, it is used for courses' height climb calculation.
- **Difference:** The difference between the **Elevation DEM** and the **Elevation Used** columns is displayed here.

Click the **Close** button to quit this dialog. Click the **Export** button to export the table as a XLS, TXT, HTM or DOC-File.

Back to the **Course Setting for Orienteering** page.

Create a New Course

Mas Ori Sta CS

(This function is only available in course setting projects!)

To create a new course, you first define its name and other parameters. Then you can **add course objects** and assign **Classes** to the course.

Define the Name and Other Settings

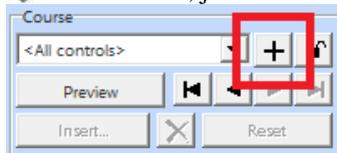
1. Choose the **Courses** command in the **Course Setting** menu.
2. The **Courses** dialog appears.

Course:	Length:	Extra length:	Climb calculated:	Climb used:	Number of controls:	Course type:	Legs:	Runners/teams:
	[km]	[km]	[m]	[m]				
Easy Course	1.50	0.18	10	10	5	Normal course	1	45
Difficult Course	3.00	-0.14	23	20	7	Normal course	1	95
Passages	2.57	0.00	59	50	8	Normal course	1	35
Butterfly A	3.32	0.00	54	30	11	Normal course	1	10
Butterfly B	3.32	0.00	54	30	11	Normal course	1	10
One-Man Relay	7.57	0.00	0	40	20	One-man relay	2	12
Relay Women	2.87	0.00	0	50	12	Relay	3	15

Buttons: Add, Delete, Duplicate, Report..., Close, Help

3. Click the **Add** button.
4. Enter a course name in the first column.
5. Define the **Course type** in the corresponding column. You can choose between **Normal Course**, **Relay** or **One-man relay**.
6. If you have chosen the **Relay** or **One-man relay** option, define the number of legs in the last column.
7. Click the **OK** button when finished. Other adjustments can be made after adding course objects to the course in this dialog. Visit the corresponding article below.

💡 As a shortcut, just click on **Add** in the Course box.



Add Course Objects

Adding course objects is the next step. They must have been created before (**Add Course Setting Objects**).

To add a course object to a course follow these steps:

1. Select the course in the dropdown list of the **Course Object Box**.
2. Make sure that you are not in the **Preview Mode**.
3. Double click a course object either on the map or in the course objects list.
4. The course object is inserted at the position of the blue horizontal insertion line in the **Course Object Box**. Click the correct position in the course (so that the line gets moved) before adding the course object.

7. [57](#)
8. [41](#)
9. [39](#)

You can add a **Start**, a **Finish**, **Controls** or a **Marked Route** to the course, as well as some special objects (e.g. relay variations or **Text Blocks**) listed on the **Insert Course Object** page.

Edit the Course

Find editing options on the **Edit Course Setting Objects** page.

Choose the **Courses** command in the **Course Setting** menu to display the **Courses** table with the following headers:

- **Course**: Edit the course name in this column.
- **Length**: The length is calculated automatically with help of the set scale. This column cannot be edited.
- **Extra length**: In this column you can enter extra length. The extra length is added to the calculated length and the sum shows up in the control description. The extra length can also be negative to make the course length shorter. For Sprint Orienteering Courses, it is common to show the length of the ideal route and not the calculated length.
- **Climb calculated**: In this column the calculated climbing is shown. Climbing is calculated with help of the **DEM** or with the control elevations entered in the **Control Elevation** dialog. You most probably have to adjust this value, because OCAD calculates it using by adding the net ascent from each control to the next one.
- **Climb used**: Enter a value here for the height climb which shall show up in the control description.
- **Number of controls**: The number of controls is listed in this column.
- **Course type**: Change between **Normal course**, **Relay** or **One-man relay** in this dropdown list.
- **Legs**: For **Relays** and **One-man relays** enter the number of legs in this column.
- **Runners/teams**: Edit the number of **Runners/teams** in the **Classes** function.
- Click the **Move up** or the **Move down** button to move the selected course up or down.
- Click the **Add** button to add a new course.
- Click the **Delete** button to delete the selected course.
- Click the **Duplicate** button to duplicate the selected course.
- Click the **Report** button to save the table as a XLS, TXT, HTM or DOC-File.
- Click the **OK** button to save all changes and quit the dialog.
- Click the **Cancel** button to quit the dialog without saving any changes.

Back to the **Course Setting for Orienteering** page.

Create a New Class



(This function is only available in course setting projects!)

This function is used when different classes use the same **course**. You will have to define classes and allocate a course to them.

If you have two Classes (e.g. Women Elite and Women 20) and both have the same Course, it is a common mistake to name the Course **WE, W20** and not to create any Classes. You will get troubles with your timing software this way.

Instead you can still name the Course **WE, W20** (or simple name it **A**), but you need to create two Classes (**WE** and **W20**) and allocate the same Course to both of them.

1. Choose the **Classes** command from the **Course Setting** menu.
2. The **Classes** dialog appears.

Class:	Course:	Runners/teams:	Start numbers		Comment:
			From:	To:	
M12	Easy Course				
W12	Easy Course				
ME	Difficult Course				
WE	Difficult Course				
Passage	Passages				
Butterfly A	Butterfly A				
Butterfly B	Butterfly B				
One-Man Relay	One-Man Relay	10	1	10	
Relay Women	Relay Women	50	101	150	

3. Uncheck the **Create classes automatically** option. If this option is enabled, courses and classes are equal which means that every class has a different course.
4. Click the **Add** button to create a new class. A new row is inserted in the table.
5. Enter a name in the **Class** column (e.g. M20)
6. Allocate a course. Choose the course from the dropdown list in the **Course** column.
7. For **Relay Courses**:

Enter the **Start numbers**. The amount of Start numbers is the number of Teams. If you have 5 Start numbers and 3 Legs, you will get 15 runners (1.1, 1.2, 1.3, 2.1, 2.2, ..., 5.3) On the basis of the start numbers, variations get allocated to the teams.

Define the estimated number of teams in the corresponding column. This number is only used for the calculation of course statistic. If you have 10 Teams and 4 Legs, it will give you 40 runners at a common control.

8. For **Normal Courses**:

Mostly there's no need to enter Start numbers, as the printing of Start Numbers is done independently.

Define the estimated number of runners in the corresponding column. This number is only used for the calculation of course statistic.

9. Optionally, you can add a **Comment** to each class.

- Click the **Move Up** or **Move Down** button to move a class up or down in the table.

- Click the **Delete** button to delete the selected class.
- Click the Report button to save the table as a XLS, TXT, HTM or DOC-File.
- Click the **OK** button to save and quit the dialog.

Import Class Assignment

Click the **Import** button to import a class assignment file. The file contains four columns with course name, class name, number of runners and comment column. OCAD ignores the first header line. The columns are separated by a semikolon (;) or a tab. Do not use these characters, e.g. in the comment column.

Example file:

```
Course;Class;Runners;Comment
1;M17;64;7-8 km, medium, 1:10'000, A3 Portrait
1;M40;21;6-7 km, difficult, 1:10'000, A3 Landscape
2;W21;122; 8-9 km, very difficult, 1:15'000, A4 Portrait
3;W13-14;82;3-4 km, easy,1:5000, A4 Landscape
```

Insert Course Object

Mas Ori Sta CS

(This function is only available in course setting projects!)

This dialog box appears when you click the **Insert** button in the **Course Box**.



To insert a Course Object to several Courses at once, see the **Insert Course Objects to Courses** page.

Insert Course Object
✕

Insert

Mandatory crossing point(s)

Mandatory passage through out of bounds area

Map exchange

Team variation
(Runners of different teams go to different controls)

Leg variation
(Example: The first and second runners of all teams go to control 50, the third runners go to control 60.)

1		3
2		

Drag identical legs to the same column.

OK

Cancel

Help

Mandatory Crossing Point

Check this option to add a mandatory crossing point. The mandatory crossing point appears in the control description.



The connection line is not adapted to the crossing point because the runner may choose between several.

Edit the Connection Line afterwards as needed.

Mandatory Passage Through Out of Bound Area

Check this option to add a mandatory passage through out of bound area. The mandatory passage appears in the control description.



The connection line is not adapted to the mandatory passage because the runner may choose between several.

Edit the Connection Line afterwards as needed.

Map Exchange

Check this option to add a map exchange. The map exchange appears in the control description.



A map exchange can be placed after a control (which is indicated with 0m to the next start in the control description) or after a **Marked Route** (the length of the marked route appears in the control description).

The map exchange also has an impact on printing. With an inserted map exchange, two maps are printed. To show a start symbol on the second map, a start symbol must be added after the map exchange.

Add a Course Title (e.g. H21) to your original course with the map exchange. When you **Export Course Maps**, you will get two ocd files. They are labeled **H21 (1)** and **H21 (2)**.

H21 (1) H21 (2)

Example of a Map Exchange.

Team Variation

This command is only available for relay and one-man relay courses.

Read the **Insert a Team Variation** article for more information.

Leg Variation

This command is only available for relay and one-man relay courses.

Read the **Insert a Leg Variation** article for more information.

Back to the **Course Setting for Orienteering** page.

Add a Course Object to Courses



(This function is only available in course setting projects!)

Add a Course Object to Courses

To add a course object to a course follow these steps:

1. Select the course in the dropdown list of the **Course Object Box**.
2. Make sure that you are not in the **Preview Mode**.
3. Double click a course object either on the map or in the course objects list.
4. The course object is inserted at the position of the blue horizontal insertion line in the **Course Object Box**. Click the correct position in the course (so that the line gets moved) before adding the course object.

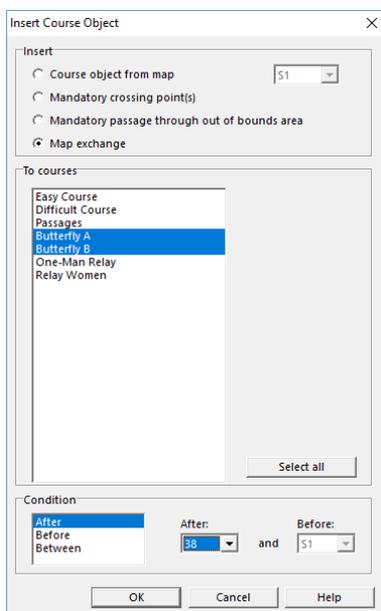
7. 57
8. 41
9. 39

You can add a **Start**, a **Finish**, **Controls** or a **Marked Route** to the course, as well as some special objects (e.g. relay variations or **Text Blocks**) listed on the **Insert Course Object** page.

Insert Course Objects to Courses

With this function a course object (start, control, marked route, finish, mandatory crossing point, mandatory passage or map exchange) can be inserted to multiple courses at a specified position.

1. Choose the **Insert Course Objects to Courses** command in the **Course Setting** menu.
2. The **Insert Course Object** dialog appears.



3. Choose an object to be inserted: **Course Object from Map** (select it in the dropdown list), **Mandatory Crossing Point(s)**, **Mandatory Passage Through Out of Bounds Area** or a **Map Exchange**.
4. Select the courses which the course object is to be inserted in the **To Courses** field. Select multiple courses by holding the **Ctrl** key or by clicking the **Select all** button.
5. Define a condition. Choose between **After**, **Before** or **Between** and select the course objects in the drop down lists.
6. Click the **OK** button when finished.

Back to the [Course Setting for Orienteering](#) page.

Delete Course Object from Courses

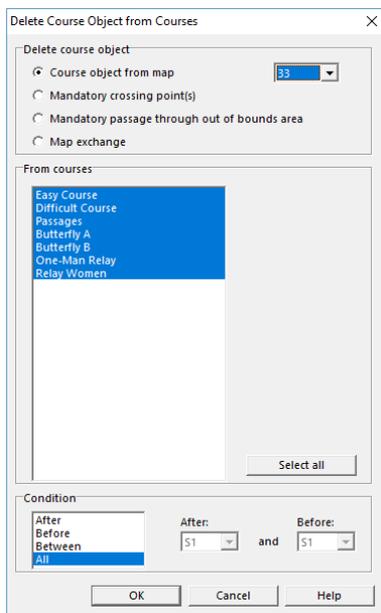


(This function is only available in course setting projects!)

This is the inverse function of the **Insert Course Object to Courses** function.

With this function a course object (start, control, marked route, finish, mandatory crossing point, mandatory passage or map exchange) can be deleted from multiple courses at a specified position.

1. Choose the **Delete Course Objects from Courses** command in the **Course Setting** menu.
2. The **Delete Course Object from Courses** dialog appears.



3. Choose an object to be deleted: **Course Object from Map** (select it in the dropdown list), **Mandatory Crossing Point(s)**, **Mandatory Passage Through Out of Bounds Area** or a **Map Exchange**.
4. Select the courses which the course object is to be removed from in the **From Courses** field. Select multiple courses by holding the **Ctrl** key or by clicking the **Select all** button.
5. Define a condition. Choose between **After**, **Before**, **Between** or **All** and select the course objects in the drop down lists.
6. Click the **OK** button when finished.

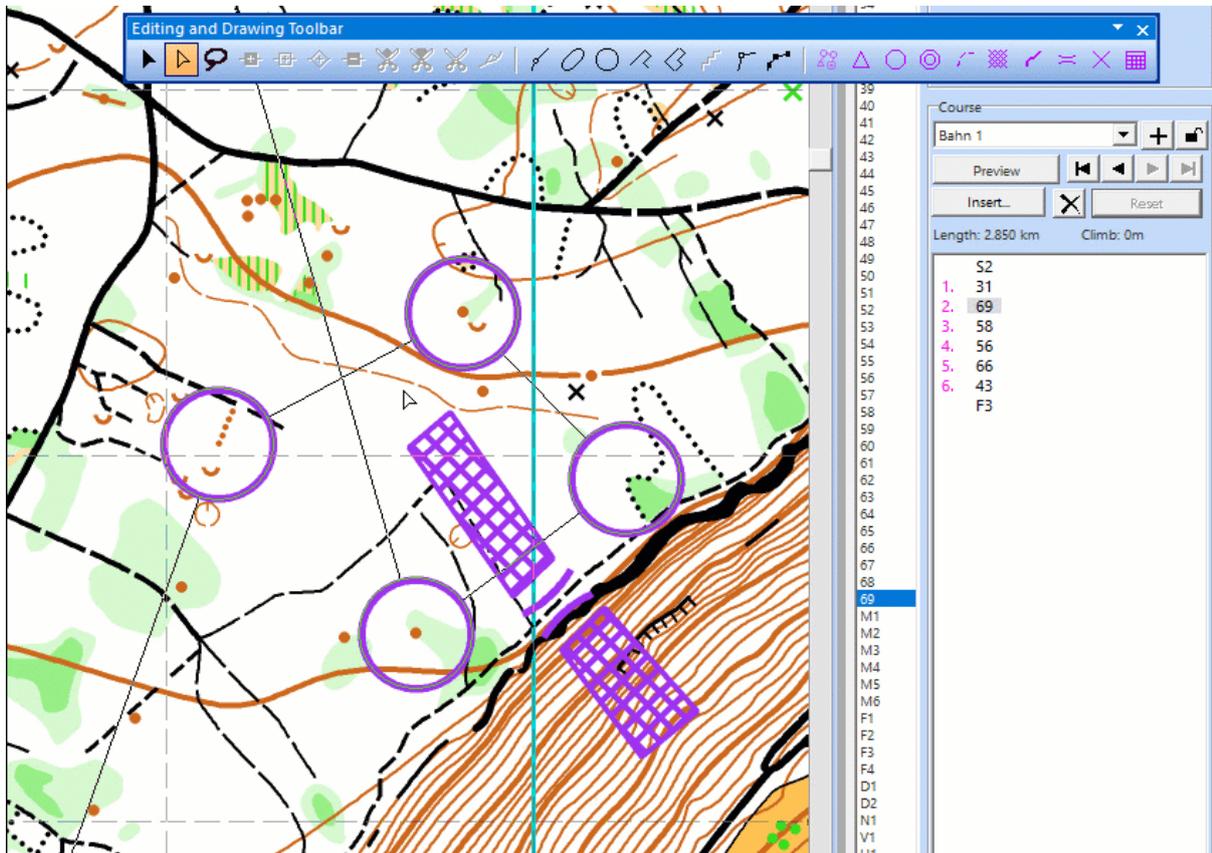
Back to the [Course Setting for Orienteering](#) page.

Make Graphic Modifications

Mas Ori Sta CS

(This function is only available in course setting projects!)

Often it is necessary to make graphic modifications to the courses generated by OCAD because for example a course object covers important map information. The common modifications made for the different courses are stored in the course setting file.



Cut out Control Circles

If a control circle covers a map detail like a knoll, a part of the control circle should be cut out to make the knoll visible. You need to make this cut-out only once. It will be visible for all courses that use this control.

1. Switch off the **Preview** mode.
2. Select the desired control.
3. Select the  **Cut** tool to cut out a part of the control circle.

 To close (repair) a cut, select the **Cut** tool and click into the gap.

Modify Connection Lines and Moving Control Numbers

You can modify connection lines and move control numbers of a specific course.

1. Select the desired course in the **Course Object Box** on the right side of the window.
2. Make sure that you are in the **Preview** mode.
3. Select the desired control number or connection line.

Then:

- Move the control number by dragging the small square to the desired position.
- Cut out a part of the connection line using the  **Cut** tool and **dragging** the mouse from the beginning to the the end of the part that could be cut out.
- Insert additional vertices into the connection line using the  **Add Normal Vertex** tool. Move these vertices using the  **Select Object and Edit Vertex** tool.

 Use the **Move Control Number for All Courses** or the **Edit Connection Line for All Courses** functions to modify course objects with an effect on all courses.

Make Other Modifications

To make further modifications choose **Export Course Maps** from the **Export** submenu in the **Course Setting** menu.

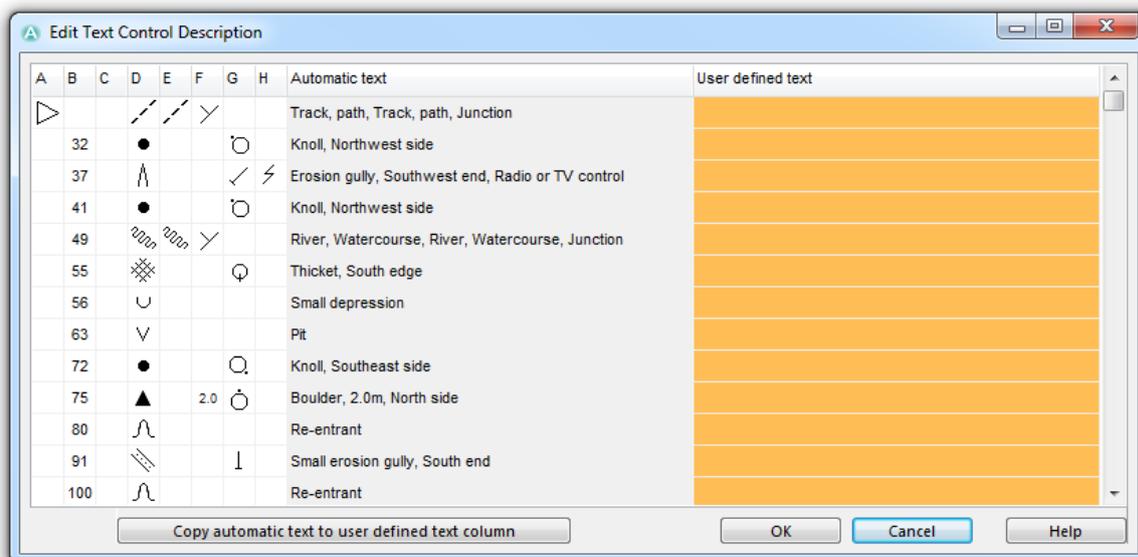
Back to the **Course Setting for Orienteering** page.

Edit Text Control Description

Mas Ori Sta CS

(This function is only available in course setting projects!)

Choose the **Edit Text Control Description** command in the **Course Setting** menu to edit the text control description. The **Edit Text Control Description** dialog appears:



You can write to each control a user defined text in the orange colored column. To copy the automatic text to the user defined text column use the corresponding button at the bottom of the dialog. Only the text in the **User defined text** column will appear in the text control description. The automatic text is generated according to the symbol

names. To rename a symbol click the corresponding symbol with the right mouse button in the symbol box and choose the **Edit** command in the context menu. Enter a new name in the **Symbol description** field of the dialog.

 Note that when you use the **Copy automatic text to user defined text column** button, all user defined text gets overwritten with the automatic text. Make sure to copy the automatic text to the user defined column before you edit the text by hand.

 Instead of defining the Control Description Symbols for each Control by yourself, use the **Auto Control Description**

Click the **OK** button when finished.

To add a text control description to your course choose the  **Control Description** symbol and place it on the map. Enter a code in the **Course Object** dialog and click the **OK** button. The upper right corner of the control description is indicated with a hook. In the **Course Object Box** on the right side of the window you have the option to change the **Control description type** from symbol to text.

The text symbol description can also be edited in the **Course Object Box**. Visit the **Edit Course Setting Objects** page for more information.

Back to the **Course Setting for Orienteering** page.

Auto Control Description

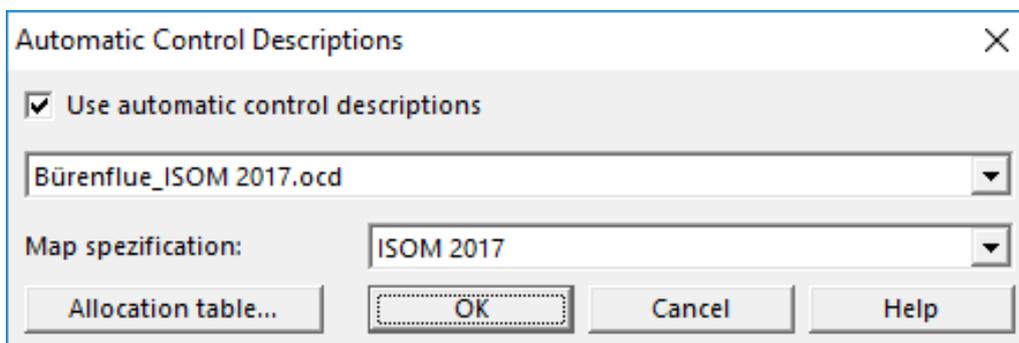
Mas Ori Sta CS

(This function is only available in course setting projects!)

Automatic Control Description is a tool to support course setters with a semi-automatic identification of the control feature. The course setting project and the map need to have the same scale and the same offset.

Activate the Auto Control Description

1. Choose the **Automatic Control Descriptions** command in the **Course Setting** menu. The **Automatic Control Descriptions** dialog box is displayed.
2. Activate the **Use automatic control descriptions** option.
3. An **.ocd** or **.eocd-Background Map** must be chosen. The **Automatic Control Descriptions** tool does not work with raster background maps.



Allocation Table

Click the **Allocation Table** button in the **Automatic Control Descriptions** dialog to display the allocation table. In the allocation table the relationship between the map symbols and the control description symbols are defined. The allocation table must be adapted if the background map was not drawn with an actual ISOM compatible symbol set.

The allocation table contains nine columns:

- **Map Symbol:** The symbol numbers of the map symbols are listed here.
- **Control Description, Symbol 1-6:** This column contains the numbers of the symbols of the currently opened course setting file which match to the map symbols. You can allocate up to six different symbols. When you set a control later you can switch between these symbols using the **Tab** key. If you do not want to allocate a symbol number for a column, enter **0.000**.
- **Mouse Event, Drag Direction:** This column defines the symbol which is used for the location of the control flag when you drag the mouse pointer in a direction after placing a control. The allowed inputs for this column are:

None Side Edge Part CornerInside CornerOutside Tip End PartUpperLower Top Beneath Foot Footside Between

The corresponding symbol is taken when you drag the mouse pointer in the direction which the control flag stands (**Location of the Control Flag** part in the **IOF Symbol Control Description**).

- **Mouse Event, Click:** This column defines the symbol which is used for the location of the control flag when you place the control by a simple click. The allowed inputs for this column are:

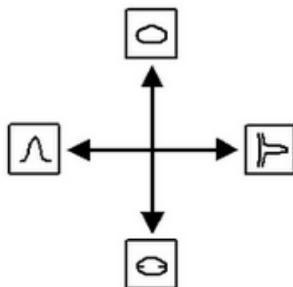
None Beneath Between Top Foot

The corresponding symbol is taken when you place a control by a simple click (**Location of the Control Flag** part in the **IOF Symbol Control Description**).

Course Setting with Auto Control Description

1. **Activate the Auto Control Description.**
2. Place a control on the map.
3. The **Course Object Dialog Box** appears with an additional part for the **IOF Symbol Control Description**.
 - If the control was placed by clicking exactly on an OCAD object, OCAD will identify the control feature and add the corresponding symbol to the control description. If more than one symbol is defined for this feature in the allocation table you can switch between them by pressing the **Tab** key.
 - If the control is placed exactly on an OCAD object by pressing the left mouse button and dragging in a defined direction, OCAD will identify the control feature and additionally recognize the location of the control in relation to the feature.

If the object is a contour line OCAD, sets a hill in the control description by default. But there is a way to bring OCAD to add the hill, depression, re-entrant or spur symbol directly to the control description: When placing a control at one of these features drag the mouse in one of the four main directions:



Up = hill
Down = depression

Left = re-entrant

Right = spur

Use Auto Control Description for Text Control Description

Choose the **Edit Text Control Description** command in the **Course Setting** menu to transfer the Automatic Generated Control Description into text.

Back to the **Course Setting for Orienteering** page.

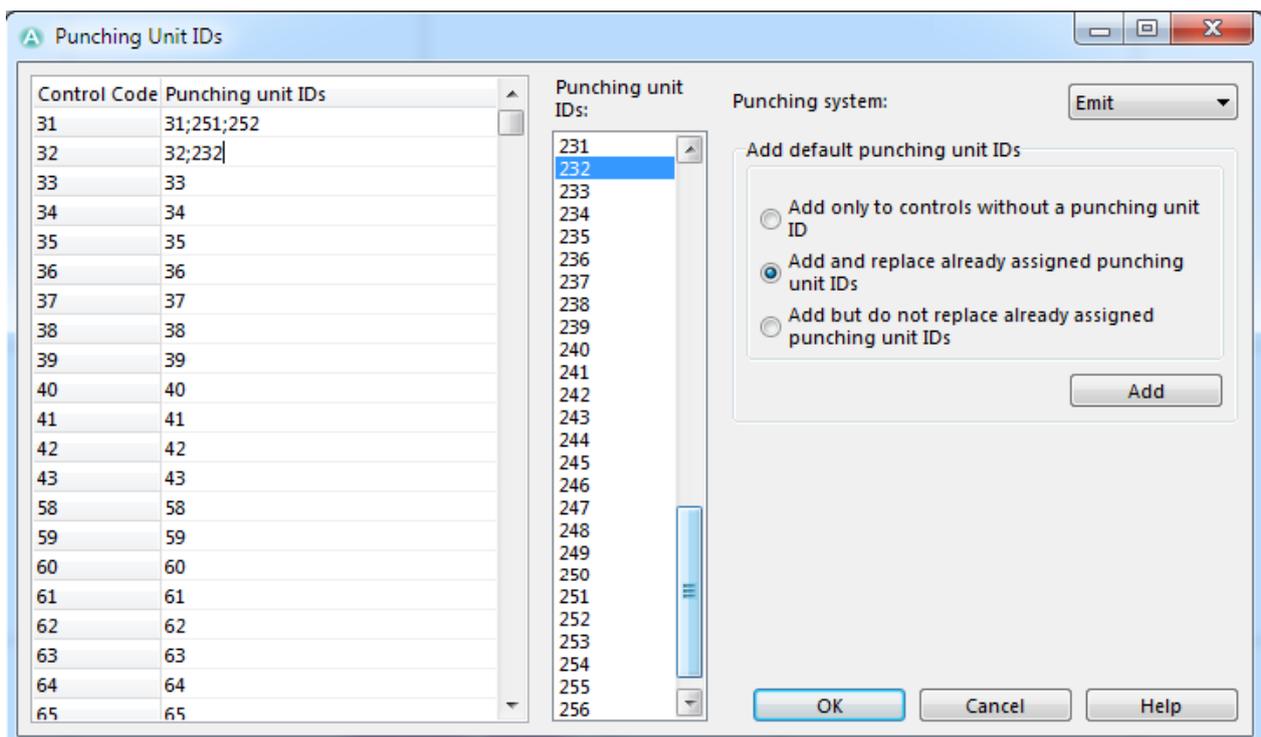
Punching Unit IDs

Mas Ori Sta CS

(This function is only available in course setting projects!)

Choose the **Punching Unit IDs** command in the **Course Setting** menu to enter the punching unit IDs. The **Punching Unit IDs** dialog appears.

Punching unit IDs are often used for Emit result systems. OCAD exports the punching unit IDs in IOF XML file version 2 and 3.



After placing a control you can add the electrical ID of the Emit punching unit to it or, if there is more than one unit at the same control, all the IDs which refer to this control. The ID of an Emit unit is often different from the code shown in the control description.

Select a field in the **Punching Unit IDs** column and double click an ID in the list on the right side of the table to add it. The ID can also be typed directly into the field. Per control code more than one punching unit IDs can be allocated. They are separated by a semicolon (;).

Choose a punching system in the **Punching system** dropdown list. You can choose between **SportIdent**, **Emit** and **Other**.

In the **Add default punching unit IDs**-part of the dialog you can add the already existing codes of the controls to the punching unit IDs. You have three options:

- Choose the first option to add the existing control codes only to controls, which does not have a punching unit ID, yet.
- Choose the second option to add all existing control codes and replace the existing punching unit IDs.
- Choose the third option to add all existing control codes without replacing the existing punching unit IDs.

Click the **Add** button to execute the chosen action.

Back to the **Course Setting for Orienteering** page.

Course Statistic and Event Statistic



(This function is only available in course setting projects!)

Choose this command from the **Course Setting** menu to see several course and event statistics. Before using this command you must enter the estimated number of runners for each course, otherwise you will not get the full functionality. Select **Classes** in the **Course Setting** menu to get to the **Classes** dialog box where you can enter this number.

Course and Event Statistics

Course statistics

Code	Cours.	Runn
S1	3	20
S2	4	0
S3	1	0
S4	1	150
S5	1	0
S1	1	0
S2	2	10
S3	3	10
S4	2	0
S5	1	0
S6	5	10
S7	5	20
S8	6	10
S9	3	20
S10	3	20
S11	1	0
S12	1	0
S13	3	10
S14	1	0
S15	1	0
S16	2	10
S17	1	0
S18	1	50
S19	1	50
S20	1	0
S21	1	0
S22	1	0
S23	1	0
S24	1	0
S25	1	50

Leg statistics

Code	Courses	Runners
S2-S6	4	0
S6-S7	5	10
S7-S9	2	0
S8-S9	2	10
S8-S9	2	0
S9-S44	2	10
S8-S96	2	10
S8-S61	2	0
S9-S58	2	0
S9-S60	2	50
S9-S65	3	50
S9-S66	2	0
S61-S9	2	0
S63-S44	4	50
S65-S9	2	10
S65-S63	2	0
S66-S38	2	0
S61-S52	3	0
S64-SF3	4	50

Event statistics

Number of controls: 37
 Number of courses: 8
 Number of classes: 9

Shortest distances between controls:
 2m: S5 -> S3 (No control descriptions -> Pr) ?

Legs between 2 controls in opposite directions:
 Difficult Course, Passages: 39 <-> 38 ?
 Butterfly A, Map Change A: 59 <-> 65
 Butterfly B, Map Change A: 59 <-> 65
 Course One-Man Relay : OCAD does not Man relays.
 Course Relay Women : OCAD does not Man relays.

Identical courses:
 No identical courses

Courses without start or finish:
 No courses without start or finish

Control / Course diagram

	Easy C	Diffic	Passad	Butter	Butter	Map C	One-M	Relay
S1	S	-	-	-	-	S	S	-
S2	-	S	-	S	S	-	-	-
S3	-	-	S	-	-	-	-	-
S4	-	-	-	-	-	-	S	-
S5	-	-	-	-	-	S	-	-
S1	1	-	-	-	-	-	-	-
S2	2	-	-	-	-	X	-	-
S3	3	-	-	-	-	14	X	-
S4	4	-	-	-	-	12	-	-
S5	5	-	-	-	-	-	-	-

Course Statistics

In this part of the dialog a table is shown with all course objects listed, the number of courses which use it and the number of runners which will visit it. When you select a course object, you can see which courses and which classes contain it in the two boxes on the right side.

Leg Statistics

Leg statistics includes only normal courses.

In this part of the dialog a table is shown with all legs listed and the number of courses which contain it. Select a leg to see all courses containing it in the box on the right side.

Activate **Hide legs used in one course only** to see only legs which are used in more than one courses.

Event Statistics

The following information can be found in this part of the dialog:

- Number of controls
- Number of courses
- Number of classes
- Shortest distances between controls: All controls with a distance less than 60m (resp. 30m for sprint races) to each other are listed here.

Competition Rules for IOF Foot Orienteering Events 2019: ^[1] *19.4 Controls (including the start control flag) shall not be sited within 30 metres of each other (25 metres for map scales 1:5000 or 1:4000 or 1:3000). The distance between the controls is measured in a straight line.*

- Legs between 2 controls in opposite direction: All legs which are used in two directions are listed here.
- Identical courses: All identical courses are listed here.
- Courses without start or finish: All courses with missing start or finish are listed here.

Control/Course diagram

A table is displayed in this part of the dialog. You can read out of this diagram which control is used in which course at which position.

Export

Click the **Export** button to export the course statistic to a text file.

Back to the **Course Setting for Orienteering** page.

References

[1] <https://orienteering.sport/orienteering/competition-rules/>

Course Setting Consistency Check Report



(This function is only available in course setting projects!)

This dialog shows a html formatted report about the course setting **Consistency Check**.

Use the **Print** button to print the dialog content or the **Save as** button to save the content as a html file.

Missing Course Item(s)

This section lists missing start or finish items in a course or if no climb is set.

-  The climb is not checked for relay courses.

Identical Courses

All identical courses are listed here.

Shortest Distances Between Controls

All controls that are closer than 30m (25m for sprint races) to each other are listed here.

Competition Rules for IOF Foot Orienteering Events 2019: ^[1] 19.4 Controls (including the start control flag) shall not be sited within 30 metres of each other (25 metres for map scales 1:5000 or 1:4000 or 1:3000). The distance between the controls is measured in a straight line.

Unused Control

This section lists controls that are not used in any course.

Control Description Shortcoming(s)

This section lists shortcomings in the control description:

- No symbol defined in column D
- No symbol defined in column D and E although "crossing/intersection", "junction" is chosen in column F
- No symbol defined in column D and E although "between" is chosen in column G
- No "crossing/intersection", "junction" or "between" chosen although symbols are defined in column D and E

Opposite Direction Legs

This section lists legs that are used in the opposite direction by different course

-  Opposite direction legs are not checked for relay courses.

Back to the **Course Setting for Orienteering** page.

Print Courses

Mas Ori Sta CS

(This function is only available in course setting projects!)

Choose the **Courses** command in the **Print** submenu of the **Course Setting** menu to print courses.

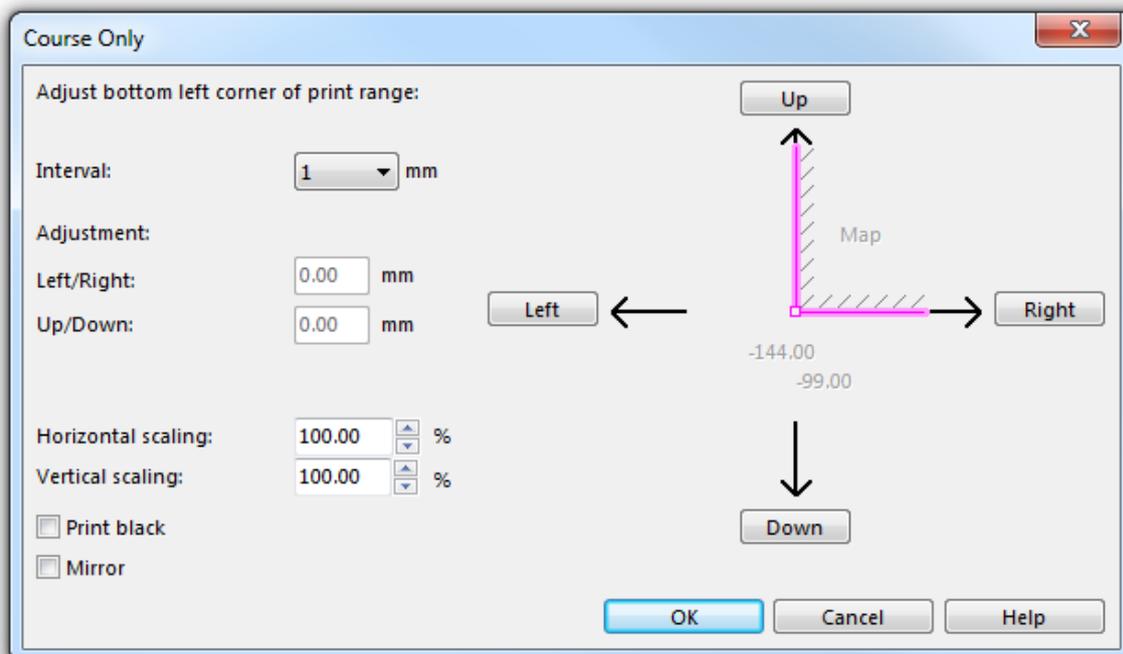
The **Print Courses** box appears on the right side of the screen. Adjust the settings which can be made in the **Printer**, **Page handling**, **Scale** and **Options** part with help of the **Printing Maps** page. The differences of the **Print Courses** to the **Print** box are that there is no **Color** field but in addition a **Select Courses/Classes** field. The **Print map size** field has the extra option **Course only on already printed map**.

Print Course Only

Choose the **Course only on already printed map** option from the **Print map size** part of the **Print Courses** box.

Click the  **Setup** button.

The **Course Only** dialog appears:



Adjust bottom left corner of the print range:

- **Intervall:** Set the interval step for 1 click on an adjustment button (**Left**, **Up**, **Right**, **Down**).
- **Left, Up, Right, Down:** Click on the adjustment buttons **Left**, **Up**, **Right** or **Down** to adjust the print range in relation to the map. The left/right and up/down adjustment is displayed on the left side of the dialog box, in the **Adjustment** part.
- **Horizontal Scaling, Vertical Scaling:** Enter here a scaling to adjust the course to an already printed map. Normally you will need here only very small corrections (99...101%) caused by the shrinking of the paper.
- **Print black:** Activate this option if the courses should be printed in black. Use this setting for making printing films.
- **Mirror:** Activate this option if the courses should be mirrored. This is used for making printing films on laser or inkjet printers.

Select Courses/Classes

Choose whether you want to select **Courses** or **Classes**. Select all courses/classes to be printed. Select several courses/classes by holding the **Ctrl** key or all courses/classes by clicking the **All** button.

Print Relay Courses

Relay courses normally have variations. The start number and the leg number define the course for a specific runner. You can anytime reprint the course for a specific runner under the condition that nothing in the variations has been changed.

Read the **Print a Relay Course** article for more information.

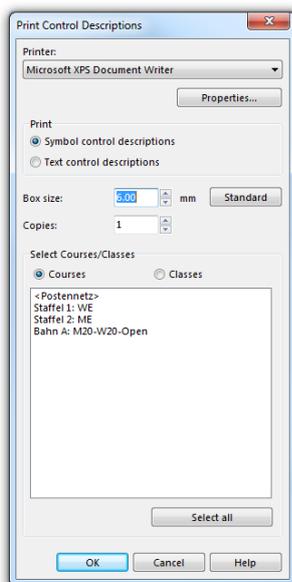
Back to the **Course Setting for Orienteering** page.

Print Control Descriptions



(This function is only available in course setting projects!)

Choose the **Control Descriptions** command in the **Print** submenu of the **Course Setting** menu to print the control descriptions. The **Print Control Descriptions** dialog box is displayed.



Make the following adjustments:

Printer

Select the printer to print the control description. In the box you can select one of the installed Windows printer drivers. Click the **Properties** button to change printing options (for instance to print in landscape mode).

Print

- **Control descriptions:** Select this radio button to print the symbolic control descriptions.
- **Text control descriptions:** Select this option to print the control descriptions as text. A text must be defined for each control (**Edit Text Control Description**).

Box size

Enter the size of the symbol boxes for the symbolic controls descriptions. Click the **Standard** button to set this value to **6 mm**.

Copies

Enter the number of copies to be printed.

💡 If you enter more than 1 copy, OCAD will fill entire pages with the same course until the number of copies is reached. Therefore if you enter "2" you will get one page per course filled with as many control descriptions as possible of that course.

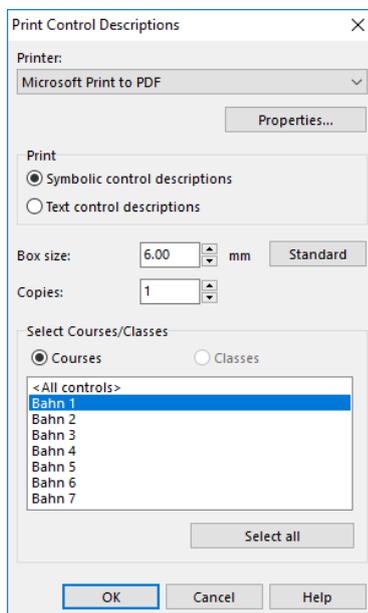
Select Courses/Classes

Choose whether you want to select **Courses** or **Classes**. Select all courses/classes which the control descriptions are to be printed. Select several courses/classes by holding the **Ctrl** key or all courses/classes by clicking the **All** button.

💡 You can enter the title for the control descriptions in the **Course Setting Options** dialog box.

Export Control Description in PDF File

In Windows 10 it is possible to export the control description in a pdf file without installing additional software like FreePdf ^[1] or Adobe Acrobat ^[2].



Choose the *Microsoft Print to PDF*.

Bahn 1		3.6 km	130 m
▷		■	△
1	31	Π	♂
2	32	■	┘
3	33	■	ㄣ
4	60	■	♂
5	34	■	ㄣ
6	35	■	┘
7	36	■	ㄣ
8	37	■	ㄣ
9	38	■	ㄣ
10	39	Π	┘
11	40 ↓	■	⊙
12	41	/	<
13	53	/	Y
14	43	/	∧
15	59	/	┘
16	65 ↓	△	
17	44	△	
18	45	△	

Bahn 2		3.1 km	110 m
▷		■	△
1	32	■	┘
2	31	Π	♂
3	55	■	┘
4	38	■	ㄣ
5	61	■	┘
6	39	Π	┘
7	40 ↓	■	⊙
8	41	/	<
9	53	/	Y
10	43	/	∧
11	65 ↓	△	
12	44	△	
13	45	△	
14	46	△	
15	47 →	△	
16	48 ↑	/	∨
17	49	△	
18	57 ↑	Π	┘

Bahn 3		2.8 km	100 m
▷		■	△
1	55	■	┘
2	31	Π	♂
3	36	■	ㄣ
4	37	■	ㄣ
5	38	■	ㄣ
6	39	Π	┘
7	40 ↓	■	⊙
8	41	/	<
9	53	/	Y
10	59	/	┘
11	65 ↓	△	
12	44	△	
13	47 →	△	
14	48 ↑	/	∨
15	57 ↑	Π	┘
16	61	■	┘
17	51	■	┘
18	54	■	┘

Back to the **Course Setting for Orienteering** page.

References

- [1] http://freepdfxp.de/index_de.html
- [2] <http://www.adobe.com/acrobat/DC>

Course Setting Import



(This function is only available in course setting projects!)

Import an OCAD Map

It is possible to import an OCAD map in a course setting project.

1. Choose the **Import** command from the **File** menu.
2. Select an OCAD map in the browser and click the **Open** button.
3. The **Import OCAD Map** dialog appears. Read the **Import OCAD Map** article if you do not know how to deal with this dialog.
4. Click the **OK** button to finish.

Use this function for example to import ski or bike orienteering maps, where control circles and connection lines are not printed over all map objects.

Import Courses from ORware

With this function course definitions exported as *.txt or *.csv file from the event software **ORware** ^[1] can be imported to an OCAD course setting project. This import is primarily thought for events where the runners from a class have individual courses (butterflies, loops etc.). The import creates one course per runner with it's individual course definition.

The course setting objects (start, controls, finish etc.) have to be added to the course setting project before starting with the import.

File Structure

[TYPE];[IDENT];[CLASS];[COMBINATION];[LENGTH];[CLIMB];[START];[CTRL1]; ... ;[CTRLn];[FINISH]

- [TYPE]: Course type (individual race or relay)
- [IDENT]: Course identification. Example: M21-17 (course name and startnumber)
- [CLASS]: Class name
- [COMBINATION]: Variation code. Example: BCCA
- [LENGTH]: Course length
- [CLIMB]: Course climb
- [START]: Start code
- [CTRL1] ... [CTRLn]: Control 1 - n codes
- [FINISH]: Finish code

File Example

[TYPE];[IDENT];[CLASS];[COMBINATION];[LENGTH];[CLIMB];[START];[CTRL1]; ... ;[CTRLn];[FINISH];

Individual race;M20-1;M20;AA;3700;50;L1;31;33;34;36;M1

Individual race;M20-2;M20;AB;3700;50;L1;31;33;35;36;M1

Individual race;M20-3;M20;BA;3700;50;L1;32;33;34;36;M1

Individual race;M20-4;M20;BB;3700;50;L1;32;33;35;36;M1



The header line has to be included into the *.txt or *.csv file.



[TYPE] column is not used in OCAD 2019. All imported courses are treated as individual courses.



Marked routes are imported as controls. Do not add them to the *.txt or *.csv file. Add marked routes to the courses with Insert Course Object to Courses function.

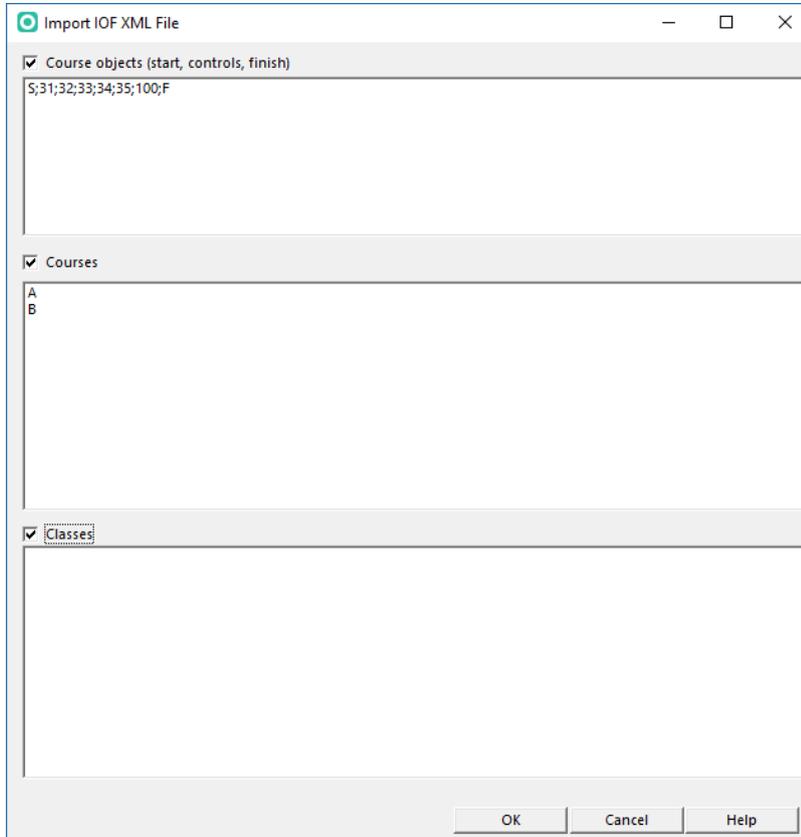


Map changes cannot be imported. Add map exchanges to the courses with Insert Course Object to Courses

function.

IOF XML Import

Choose this function to import a XML file with course data, e.g. Eventor xml files with the same categories as in Eventor.



The screenshot shows a dialog box titled "Import IOF XML File". It contains three sections, each with a checked checkbox and a text area:

- Course objects (start, controls, finish)**: The text area contains "5;31;32;33;34;35;100;F".
- Courses**: The text area contains "A" and "B" on separate lines.
- Classes**: The text area is empty.

At the bottom of the dialog are three buttons: "OK", "Cancel", and "Help".

Choose if you want to import **Course object (start, controls, finish)**, **Courses** and/or **Classes**.

Back to the **Course Setting for Orienteering** page.

Course Setting Export



(This function is only available in course setting projects!)

In the **Export** submenu of the **Course Setting** menu you have different options for an export.

Export Courses XML

Choose this command to export a XML file with the course data. OCAD supports the IOF Version 2.0.3 and 3.0.

The exported XML file is opened automatically. The **IOFdata.dtd** file also belongs to the XML file. This document type definition file specifies the structure of the XML document.

The exported XML file can be read from several event softwares.

Export Courses Text

1. Choose this command to export a list of control numbers of the courses or classes in text file.
2. The dialog box **Export Courses (Text)** appears.
3. Choose wheter you want to export **Courses** or **Classes**
4. Check the **Export climbing** option when climbing shall be exported, too.
5. Check the **Export number of controls** option to export also the number of controls.

Format of the exported file:

1. The class name as entered in the **Classes** dialog box or the **Course Name**.
2. Length of the course in km (calculated length plus extra length entered in the **Courses** dialog box).
3. Climb of the course as entered in the **Courses** dialog box.
4. Number of controls.
5. Start, all controls and finish (**Relay** variations are indicated in brackets)

Example:

Normal Course	5.7	130	19	S1-117-150-107-63-93-99-97-98-64-140-52-87-132-95-116-90-47-120-115-F1
Relay.1	3.3	85	12	S1-(71/117/118)-64-(78/140/70)-52-(-(106-132/87-56))-95-116-90-47-120-115-F1

The exported file is opened automatically in a text editor.



When you export **Relay Courses** each leg is exported individually.



There is no option to choose courses or classes when **Create classes automatically** in the **Classes** dialog is choosen.

Export Classes Version 8 Text

Choose this command to export a list of the control numbers of the classes.

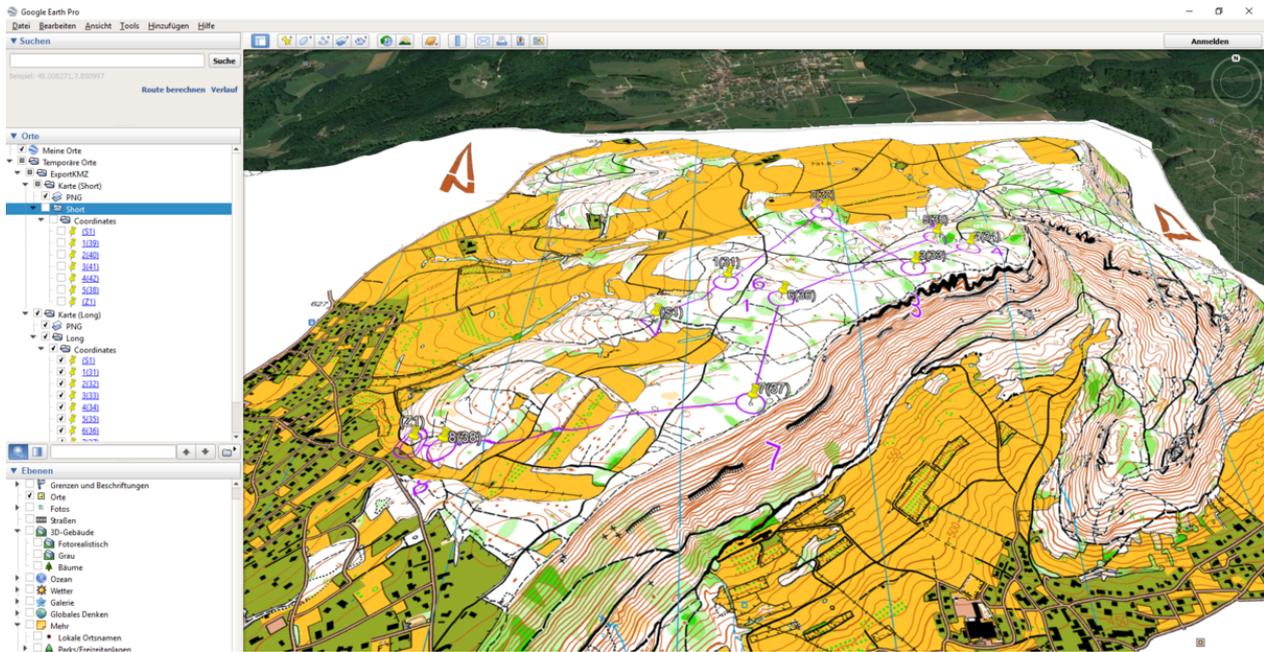
The exported file can then be imported in several event softwares.

After choosing this command the **Export Classes (Version 8)** dialog box appears where you can choose a path and enter the file name for the class file.

Format of the exported file The exported file is a text file. For normal courses there is one line per class, for relay courses and one-man relay courses there is one line per runner (the range of start numbers must have been defined in the **Classes** dialog box). The fields are separated with semicolons (;) and contain the following information:

1. Class name as entered in the **Classes** dialog box. If classes are created automatically, this field is empty.
2. Course name.

Slider. Check the Google Earth Help for further information.



Export Course Statistic and Event Statistic

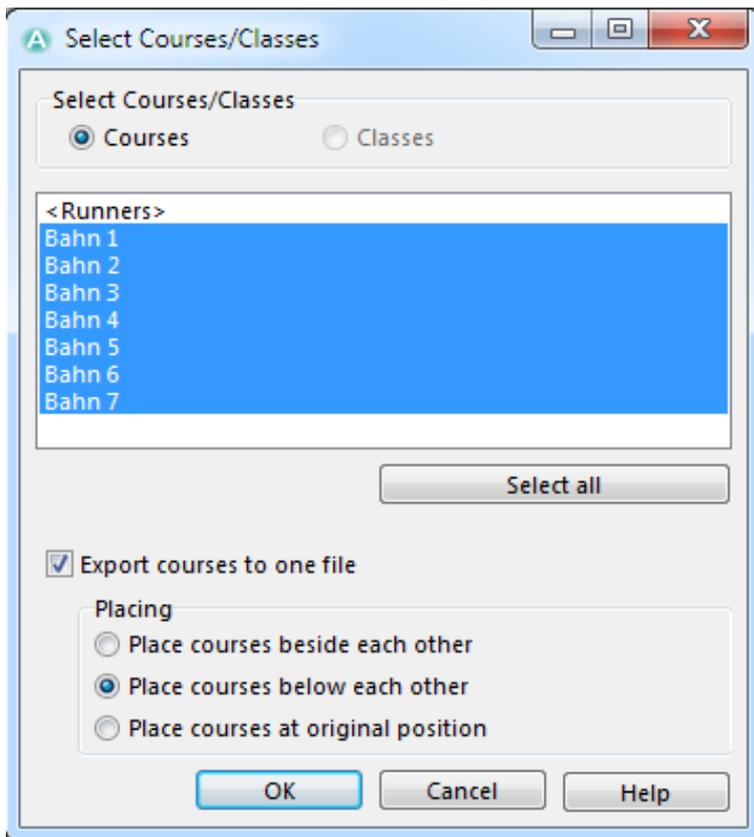
Use this command to export course, leg and event statistics to a text file. The text file contains the same information as in the **Course Statistic and Event Statistic** dialog. This export is also available via the **Course Statistic and Event Statistic** command in the **Course Setting** menu.

Export Course Maps

Use this command to **Make Graphic Modifications** to courses that are not possible within the course setting project. The common modifications like moving the control numbers or modifying the connection lines are possible without using this command. Visit the **Make Graphic Modifications** page for more information.

A course map file is a normal OCAD-File and not a course setting file. The **Background Map** will be the same as in the course setting file. All symbols used for course setting are imported in the symbol set. Opening course maps is also possible in the **OCAD Course Setting** edition. However, this works only for course maps, which were exported from an **OCAD Course Setting** edition. However the functions for editing a course map in **OCAD Course Setting** edition are restricted since not all editing tools are available in this edition.

Using this command may be dangerous. If you make modifications to the courses after exporting the course maps, the exported course maps are not updated and are therefore not correct. Use this command only if you are absolutely sure that the courses are final.



1. Choose the **Course Maps** command from the **Export** submenu of the **Course Setting** menu.
2. The **Select Courses/Classes** dialog appears.
3. Select whether you want to export **Courses** or **Classes**.
4. Select all courses/classes to be exported. Select multiple courses/classes by holding the **Ctrl** key or click the **Select all** button to select all courses/classes.
5. If multiple courses/classes are selected they are exported in different files unless you check the **Export courses to one file** option. Choose whether you want to place the courses beside each other, below each other or at the original position.
6. Click the **OK** button when finished.

Option: Place courses beside each other



Option: Place courses below each other



Option: Place courses at original position

Churer Altstadt Massstab 1:4000 Aquidistanz 2m

Bahn 1 2.5 km 70 m

1	31	→	■	△	△
2	32	↖	■	△	△
3	33	↖	■	△	△
4	34	↖	■	△	△
5	35	←	■	△	△
6	36	←	■	△	△
7	47	←	■	△	△
8	37	←	■	△	△
9	38	↓	■	△	△
10	39	↓	■	△	△
11	48	→	■	△	△
12	40	→	■	△	△
13	41	→	■	△	△
14	42	→	■	△	△
15	43	→	■	△	△
16	44	→	■	△	△
17	45	→	■	△	△
18	46	→	■	△	△

Bahn 2 2.1 km 65 m

1	80	↖	■	△	△
2	45	↖	■	△	△
3	44	↖	■	△	△
4	42	↖	■	△	△
5	57	↖	■	△	△
6	48	↖	■	△	△
7	38	↖	■	△	△
8	37	↖	■	△	△
9	31	↖	■	△	△
10	32	↖	■	△	△
11	33	↖	■	△	△
12	34	↖	■	△	△
13	35	↖	■	△	△
14	52	↖	■	△	△
15	46	↖	■	△	△

Bahn 3 2.0 km 60 m

1	57	↖	■	△	△
2	31	↖	■	△	△
3	32	↖	■	△	△
4	33	↖	■	△	△
5	35	↖	■	△	△
6	36	↖	■	△	△
7	58	↖	■	△	△
8	37	↖	■	△	△
9	40	↖	■	△	△
10	41	↖	■	△	△
11	44	↖	■	△	△
12	45	↖	■	△	△
13	60	↖	■	△	△
14	46	↖	■	△	△

Bahn 4 1.9 km 60 m

1	53	↖	■	△	△
2	48	↖	■	△	△
3	39	↖	■	△	△
4	36	↖	■	△	△
5	37	↖	■	△	△
6	31	↖	■	△	△
7	32	↖	■	△	△
8	33	↖	■	△	△
9	35	↖	■	△	△
10	44	↖	■	△	△
11	43	↖	■	△	△
12	42	↖	■	△	△
13	41	↖	■	△	△
14	40	↖	■	△	△
15	46	↖	■	△	△

SWISS orienteering
DL-Karte 1079 Q
Kartensystem
Best. Imprint
September 2011

SWISSLOS
Der Kartensport verbindet sich mit einem Setting
des Schweizerischen Orientierungssportverbandes (OSV)

Hersteller: O.G. Chur
Stand: Februar 2013
Koordinator: 760731
Freigelegung: AG vom 25.01.2013
Software: OKAD 1.1

Kartographie: Gian Reto Schaad
Marie Wiedl
Claudio Wettstein
OKAD 1.1

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und darf ohne schriftliche Genehmigung
des Herausgebers nicht kopiert werden.

💡 There is no option to choose courses or classes when **Create classes automatically** in the **Classes** dialog is chosen.

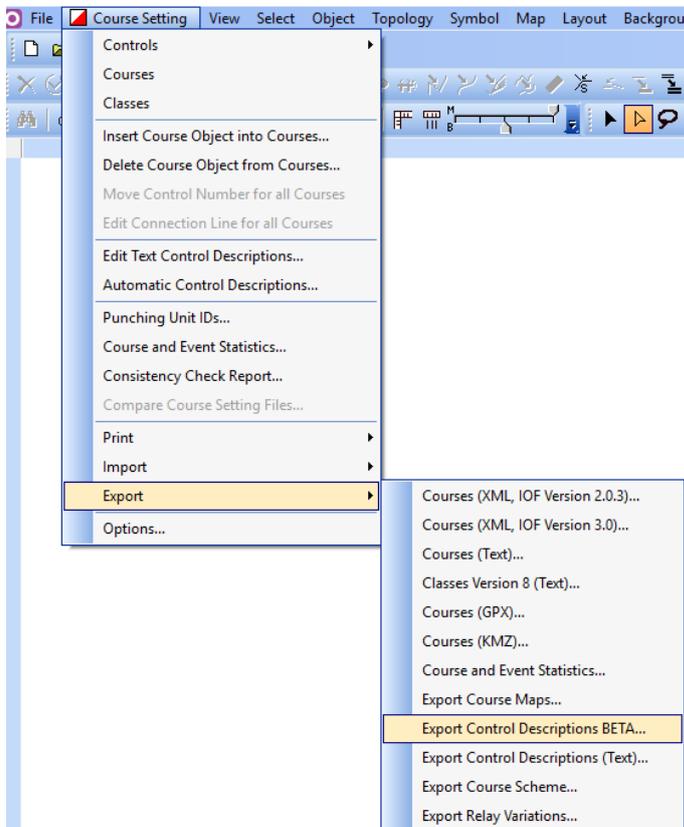
💡 If you want to export **Relay Courses** or **One-Man Relay Courses**, you will have to define which legs/variations/start numbers you want to export. This dialog is the same as the dialog in the **Export a Relay Course** article. Read this article for more information.

Export Control Descriptions

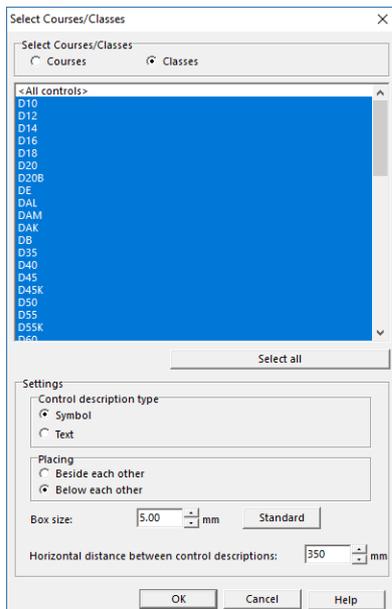
Available since Version 19, Build 2708.

Use this command to export control descriptions as .ocd files. After the export, the files can be edited.

1. Choose the **Export Control Description** command from the **Export** submenu of the **Course Setting** menu.



2. Choose which **Courses/Classes** you want to export.

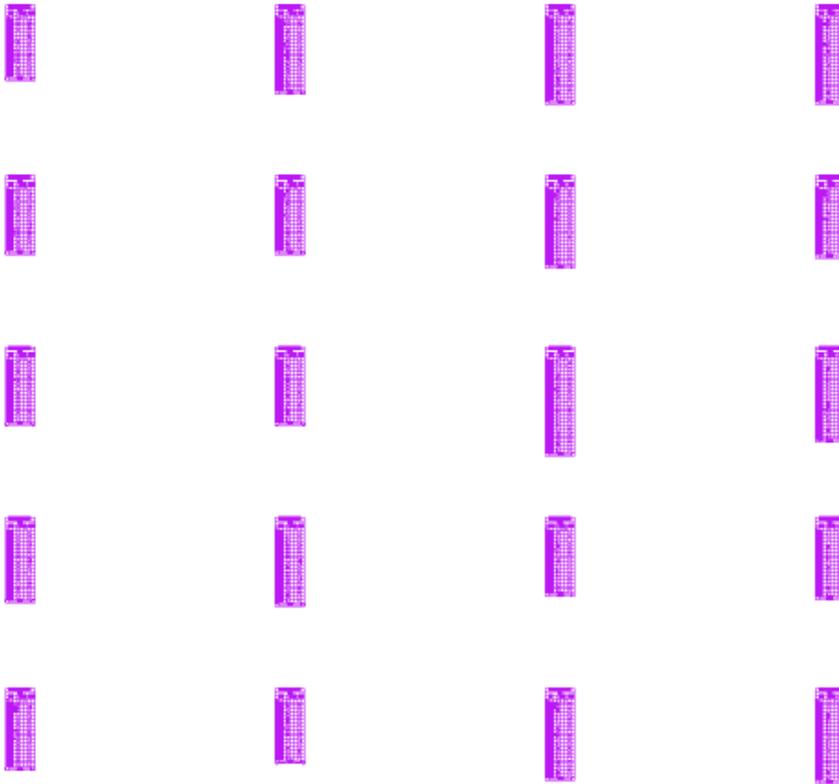


3. Adjust **Settings** if needed.

4. Click the **OK** button.

A new file, named *xxx.ControlDescriptions.xxx*, will be created. Save the file.

Open the exported file (**File->Recently Exported Documents**).



 Note: This function does not support relay or one-man-relay courses.

Merge Exported Files

The function **Export Control Descriptions** was originally developed for multi days orienteering events, to give the runners an A4 page with the control description of all their stages.

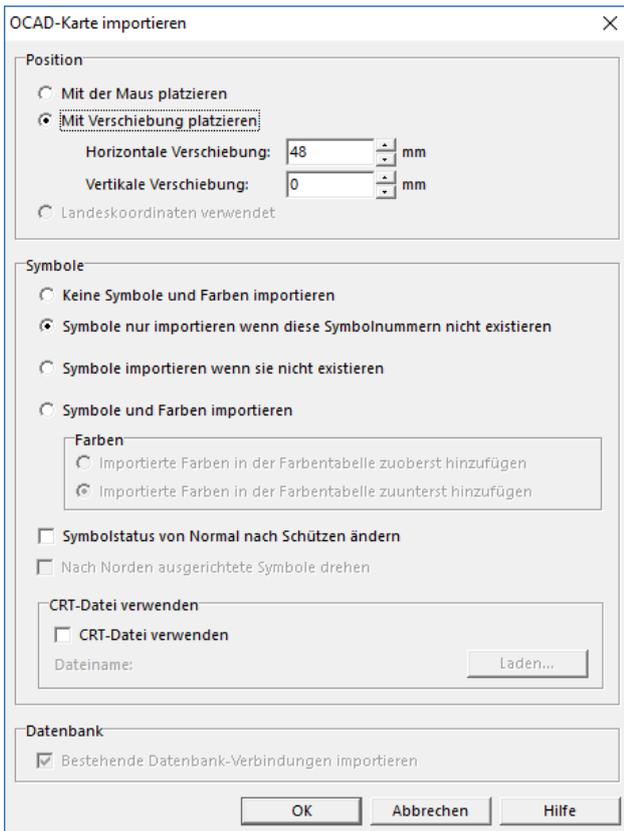
How it works:

Export Control Descriptions

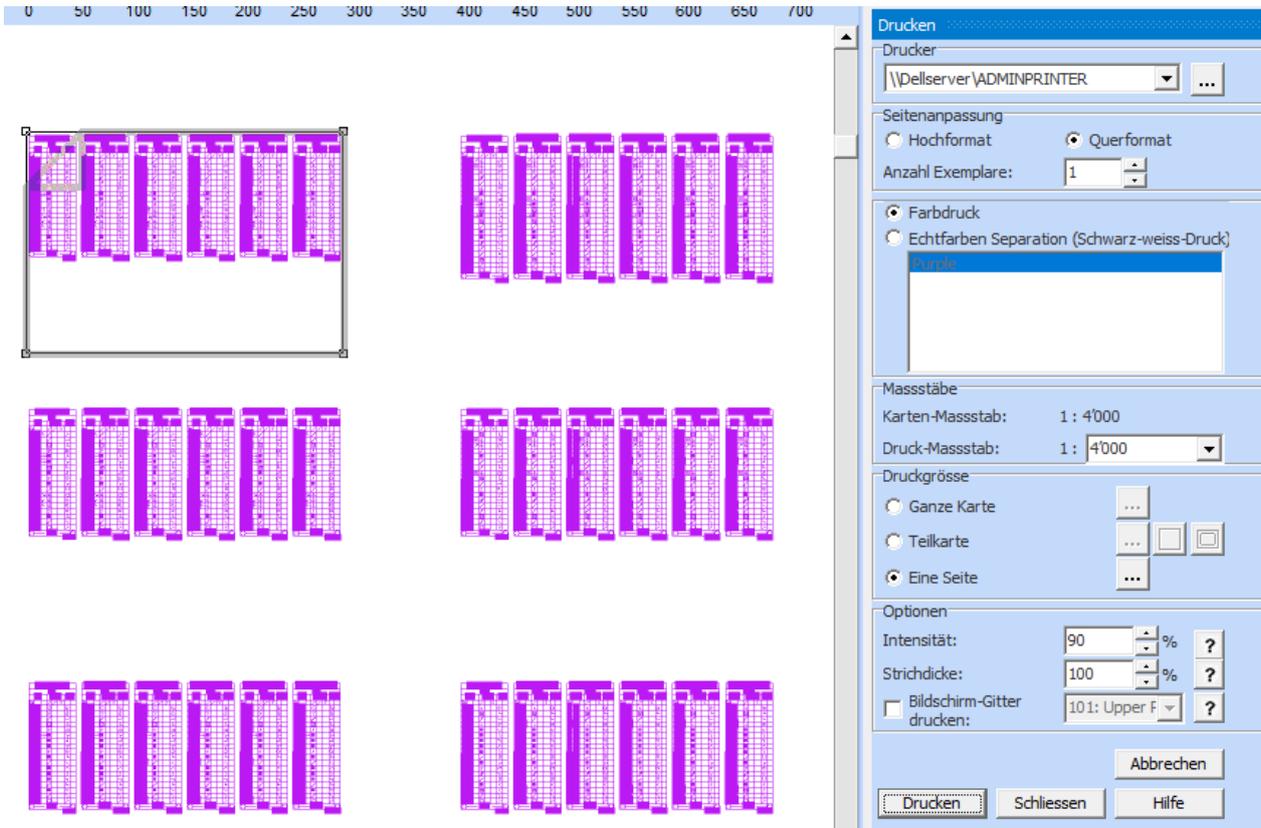
1. Export the Control Description from stage 1 as explained above.
 - Choose all classes.
 - Control description type: Symbol.
 - Placing: Below each other.
 - Box Size: Use 5.00 mm to get 6 stages on an A4 paper.
 - Horizontal distance between control description: Use 350 mm. Because not all Control Descriptions have space together a new 'column' begins after approx. 10 classes. 350 mm is slightly larger than A4 landscape.
2. Export also the Control Description of all other stages as explained above. Each stage will give you one .ocd file.

Merge exported files

1. Open the .ocd file from the first stage.
2. Import the file from your second stage (**File-> Import**).
 - Position: Place with offset. Add 48mm for each stage (Stage 2=48mm, stage 3=96mm, ...).
 - Symbols: Import symbols only if symbol number does not exist.
3. Repeat the steps above for all stages.



Now you can print for every class the control description from all stages (or export as PDF).



Export Control Description Text

Use this command to export control descriptions as text files. Control descriptions for **Relay Courses** and **One-Man Relay Courses** cannot be exported.

1. Choose the **Export Control Description (Text)** command from the **Export** submenu of the **Course Setting** menu.
2. The **Select Courses/Classes** dialog appears.
3. Select wheter you want to export control descriptions of **Courses** or **Classes**.
4. Select all courses/classes the control description is to be exported. Select multiple courses/classes by holding the **Ctrl** key or click the **Select all** button to select all courses/classes.
5. If multiple courses/classes are selected they are exported in the same file beneath eachother.
6. Click the **OK** button when finished.



A **Text Control Description** has to be defined to get an useful output of this function.



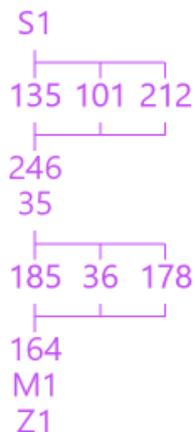
There is no option to choose courses or classes when **Create classes automatically** in the **Classes** dialog is choosen.

Example Output:

```
Chlosterwald Orienteering Event
Class M20
Course A, Length 3.3 km, Climb 205 m
Start Path, Path, Junction
1. 71 Small depression
2. 64 River, Watercourse, Junction
3. 78 Pit
4. 52 Erosion gully, Southwest end, Radio control
5. 106 Small erosion gully, South end
6. 132 Knoll, South side
7. 95 Re-entrant
8. 116 Copse, West side, TV control
9. 90 Boulder, 2.0m, North side
10. 47 Knoll, Northwest side
11. 120 Spur, Southeastern foot
12. 115 Re-entrant
Follow taped route 230 m from last control to finish
```

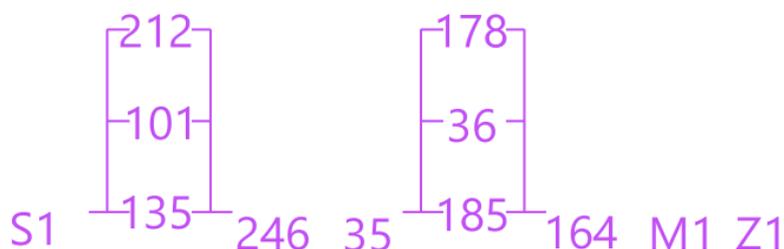
Export Course Scheme

1. Choose the **Export Course Scheme** command in the **Export** submenu of the **Course Setting** menu.
2. Select from which **Courses/Classes** you want to export the course scheme and click on **OK**.
3. The Course Scheme will be exported in a new .ocd-File. You can now **Import** this file into your course setting project.



The Course Scheme will be exported vertically. If you need the Course Scheme horizontally, do the following:

- Select all object of the Course Scheme.
- Rotate the objects by 90° (**Object>Rotate Object>Rotate (Enter Angle)**).
- Again select all object of the Course Scheme and go to **Object>Indicate Direction of Area Pattern, Point or Text Object**. Click once into the drawing area.
- Adjust the Course Scheme manually.



Export Relay Variations

1. Choose the **Export Relay Variations** command in the **Export** submenu of the **Course Setting** menu.
2. The **Export Relay Variations** dialog appears.
3. Browse a location and enter a name for the file to export.
4. Click the **Save** button to export the TXT-file.

The Text-File contains all courses. The start numbers are listed with the corresponding variation.

Learn more about relays on the **Create Relay Courses** page.

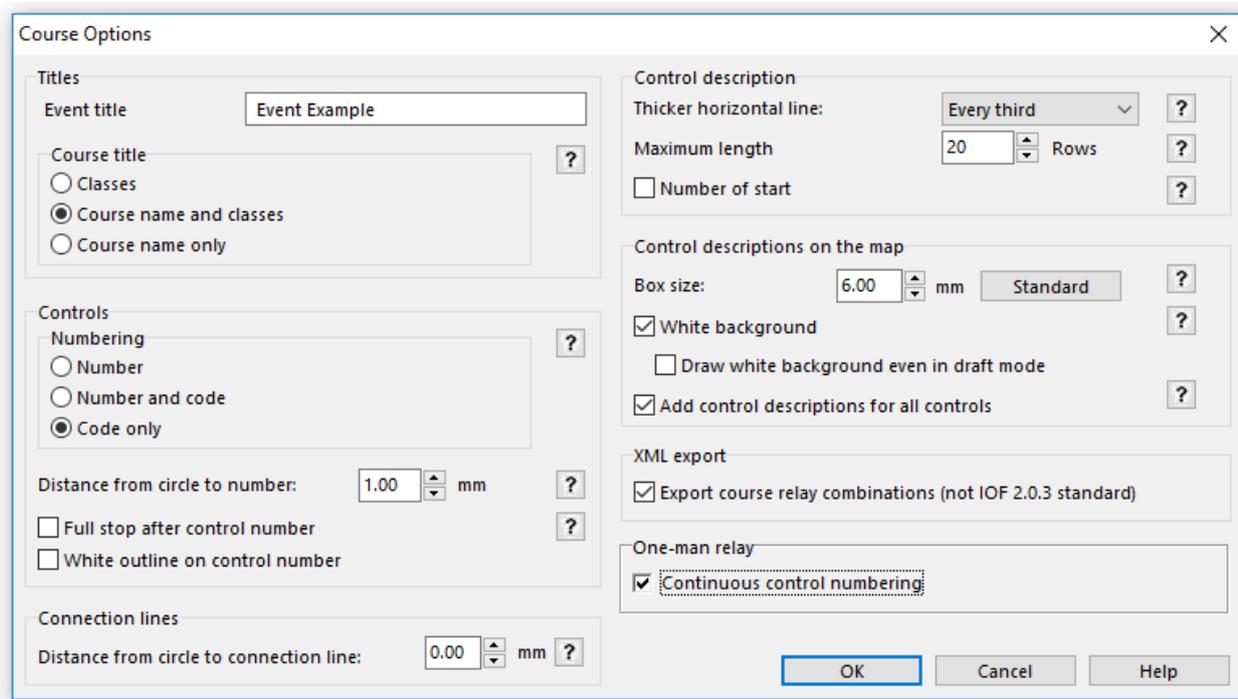
Back to the **Course Setting for Orienteering** page.

Course Setting Options



(This function is only available in course setting projects!)

Choose the **Options** command from the **Course Setting** menu to display the **Course Options** dialog box.



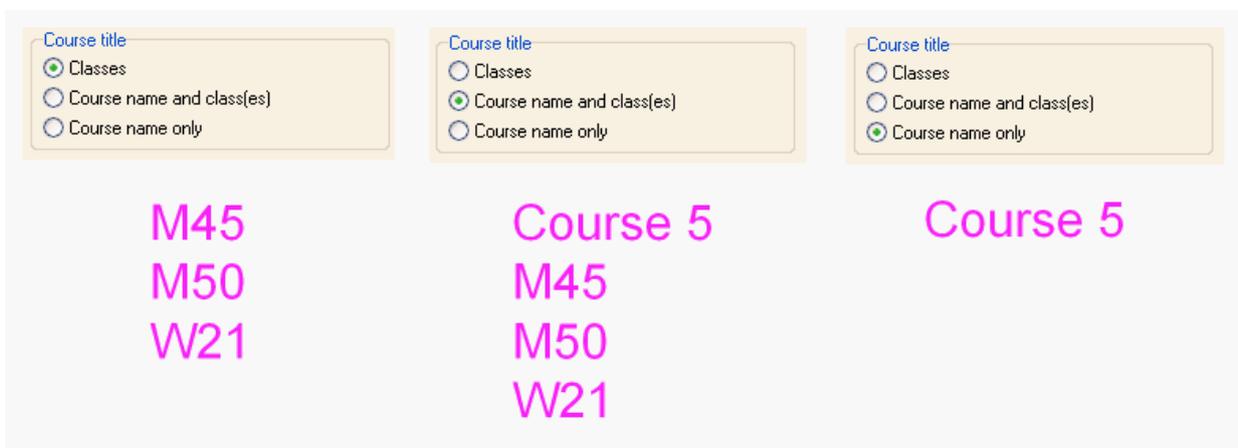
Titles

Event Title

Enter the name of the event. The event title appears on top of the control description.

Course Title

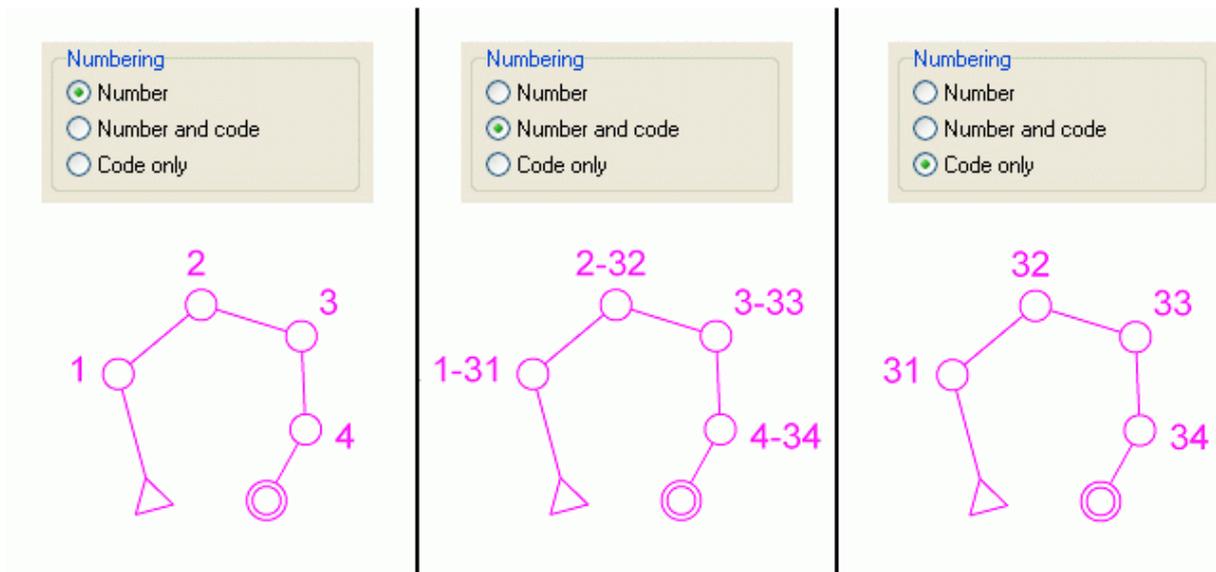
Choose wheter the **Course Title** shall be displayed with the **Classes**, the **Course Name and Classes** or the **Course Name only**.



Controls

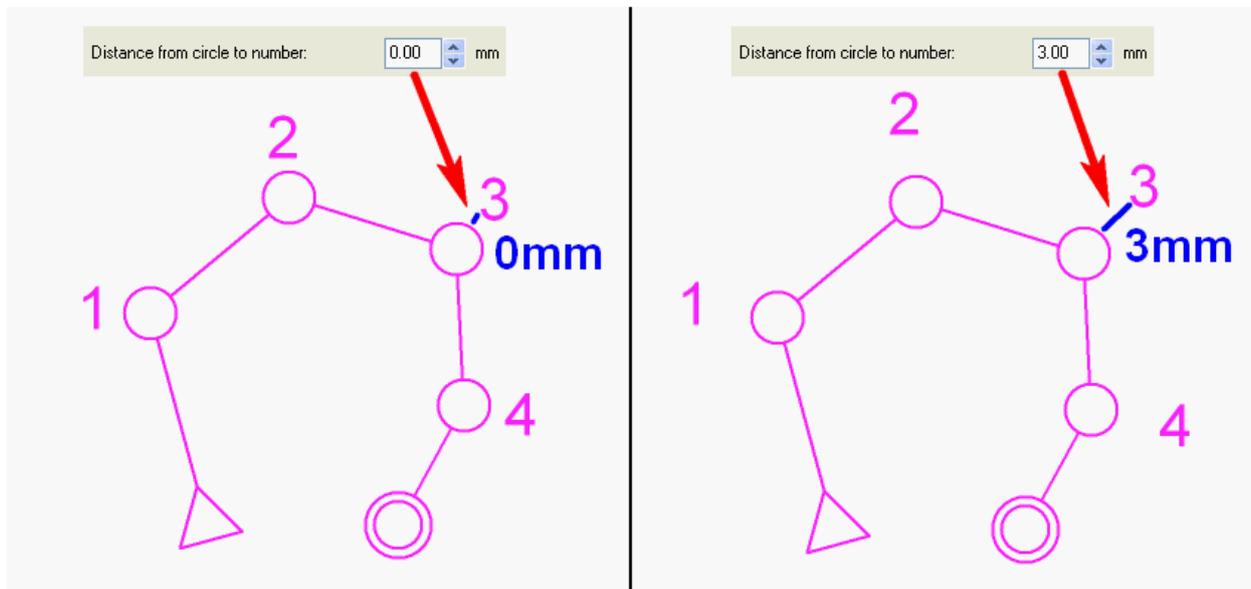
Numbering

Choose whether the controls shall be numbered with the **Number**, the **Number and Code** or the **Code only**.



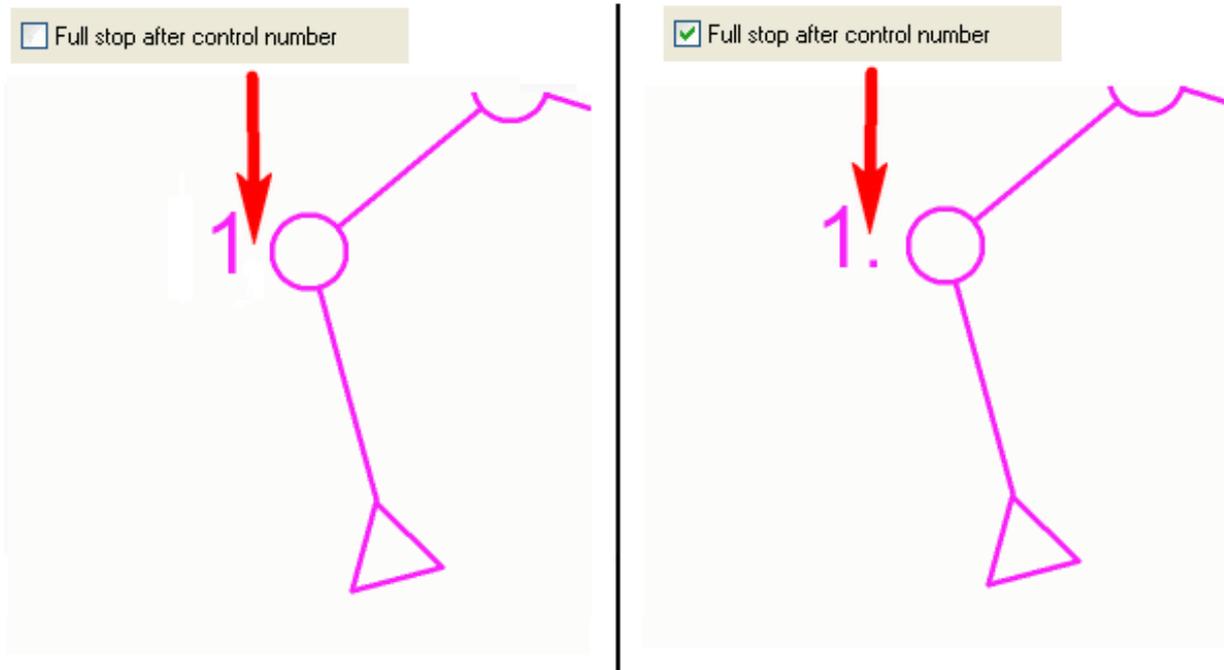
Distance from Circle to Number

Enter the default distance from the control circle to the number in mm.



Full Stop Behind Control Number

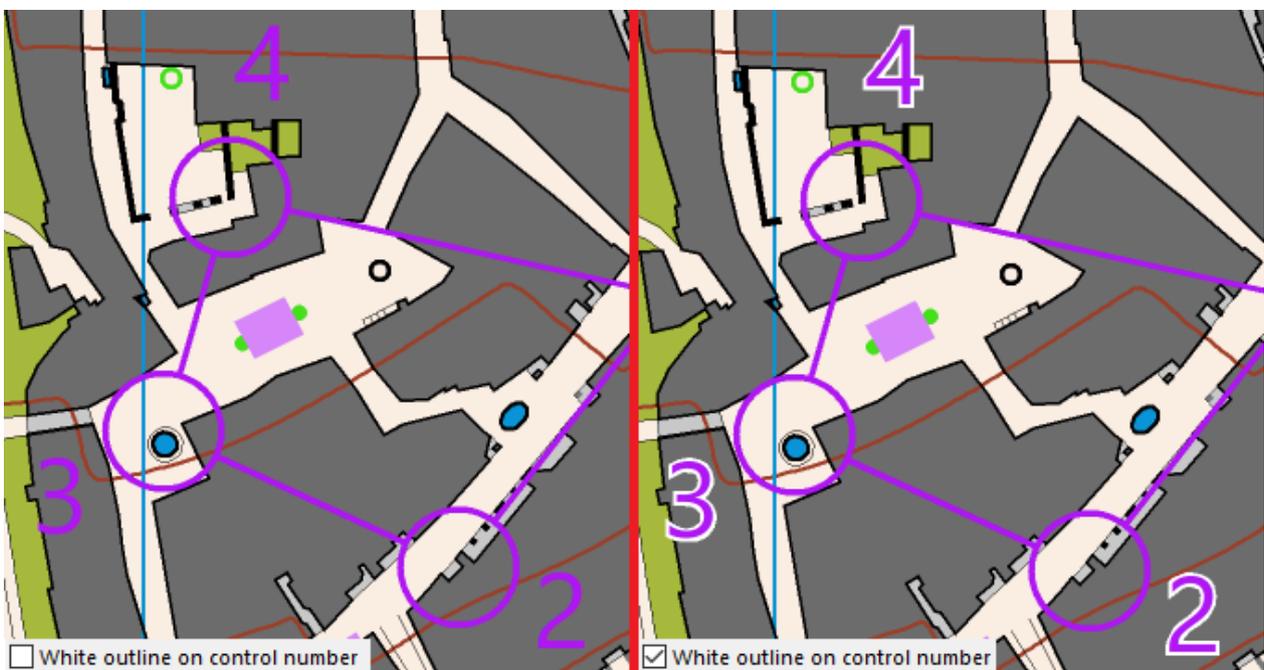
Check this option if a full stop shall be placed behind each control number.



White Outline on Control Number

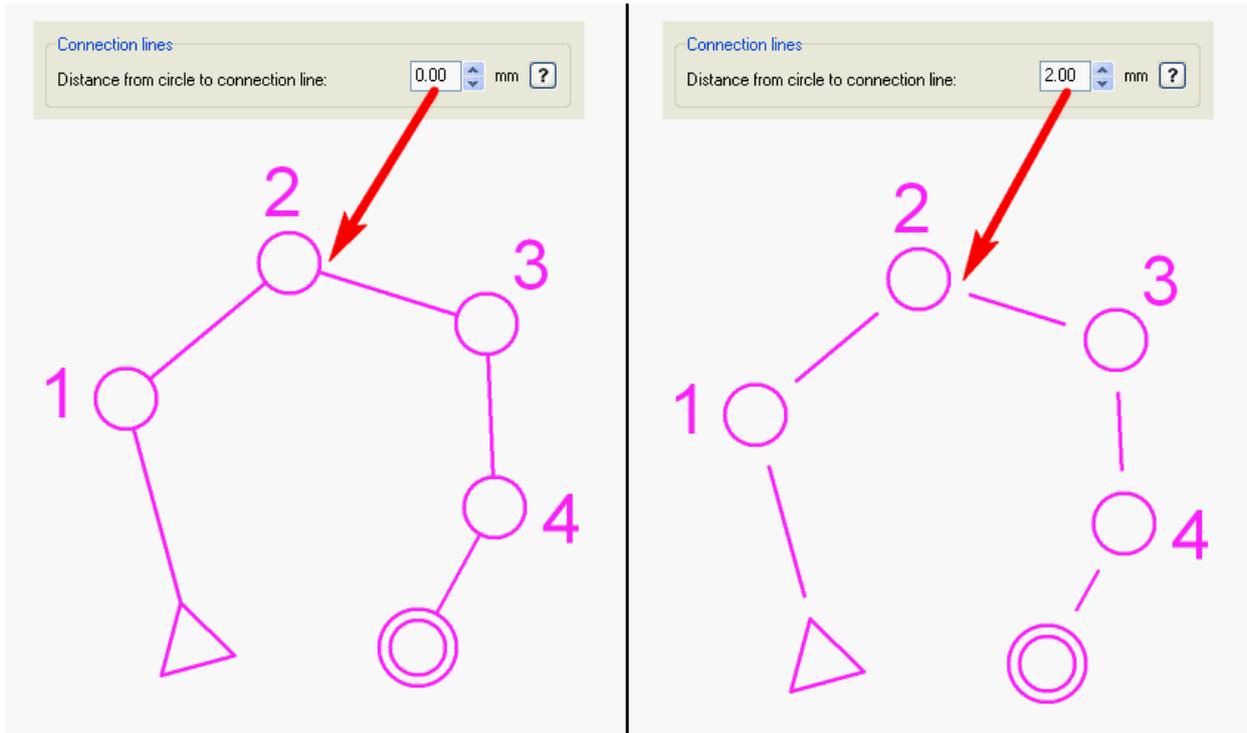
This function is only available for ISSOM 2007 and ISOM 2017 course setting projects. Activate this funktion to add white background to your control numbers for better visibility.

💡 Be careful not to cover any important map information with the white background.



Connection Lines

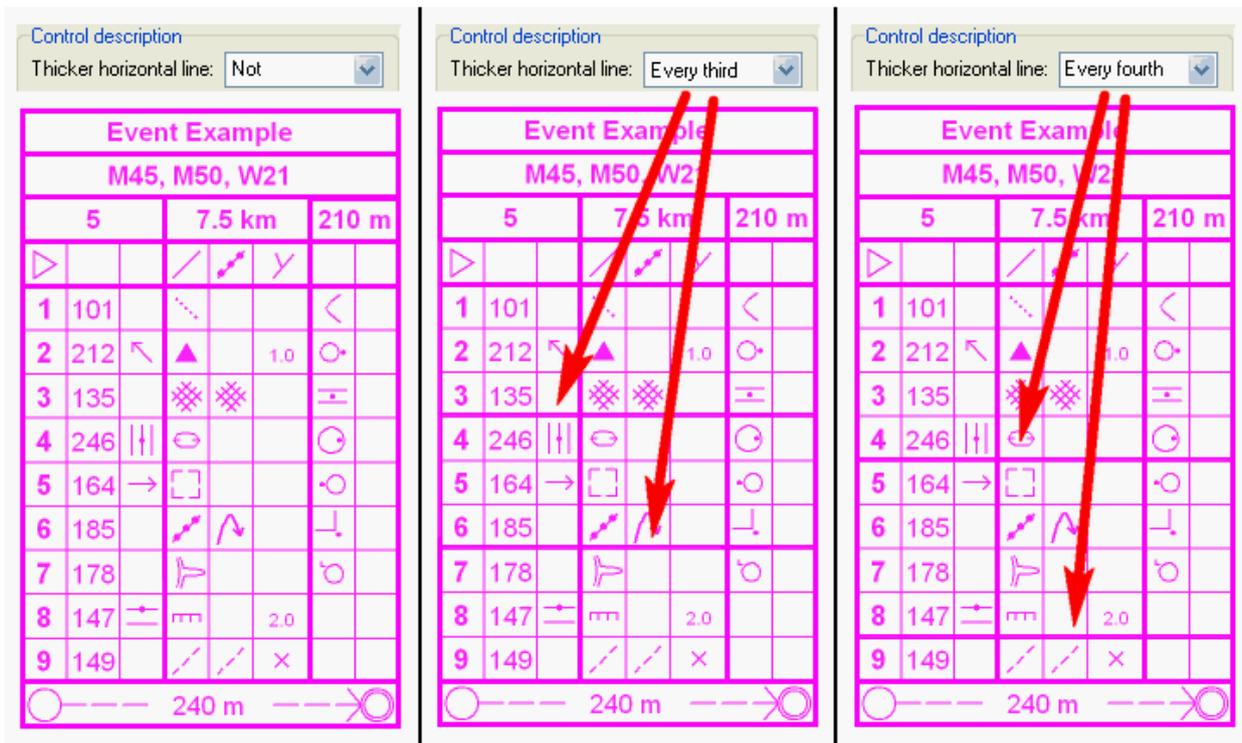
Define a distance from the circle to the connection line in this field.



Control Description

Thicker Horizontal Line

Choose between a thicker horizontal line in the **IOF Symbol Control Description** every third or every fourth line or not at all.



Maximum Length

Define the maximum length of the control description in rows in this field.

Maximum length Rows

Event Example									
M45, M50, W21									
5		7.6 km			210 m				
▷	S1	/	↗	∩					
1	101	⋯						<	
2	212	↖	▲		1.0			○	
3	135	⊗	⊗					≡	
4	246		⊖					○	
5	164	→	□					○	
○----- 120 m ----->									

6	185		↗	↶				⊥	
7	178		⦿					○	
8	147	⇌	mm		2.0				
9	149		/	/	×				
○----- 240 m ----->									

Number of Start

Check this option so that the number of the start appears in the control description.

Number of start

Event Example									
M45, M50, W21									
5		7.6 km			210 m				
▷		/	↗	∩					
1	101	⋯						<	
2	212	↖	▲		1.0			○	
3	135	⊗	⊗					≡	
4	246		⊖					○	
5	164	→	□					○	
○----- 120 m ----->									

Number of start

Event Example									
M45, M50, W21									
5		7.6 km			210 m				
▷	S1	/	↗	∩					
1	101	⋯						<	
2	212	↖	▲		1.0			○	
3	135	⊗	⊗					≡	
4	246		⊖					○	
5	164	→	□					○	
○----- 120 m ----->									

Control Description on the Map

Box Size

Define the size of a box in the control description in this field. Click the **Standard** button to set the value to **6.00 mm**.

Box size: mm

Event Example											
M45, M50, W21											
5			7.6 km			210 m					
▶			/	↗	Y						
1	101		⋯			<					
2	212	↖	▲		1.0	○					
3	135		⊗	⊗		≡					
4	246		⊖			⊙					
5	164	→	□			⊙					

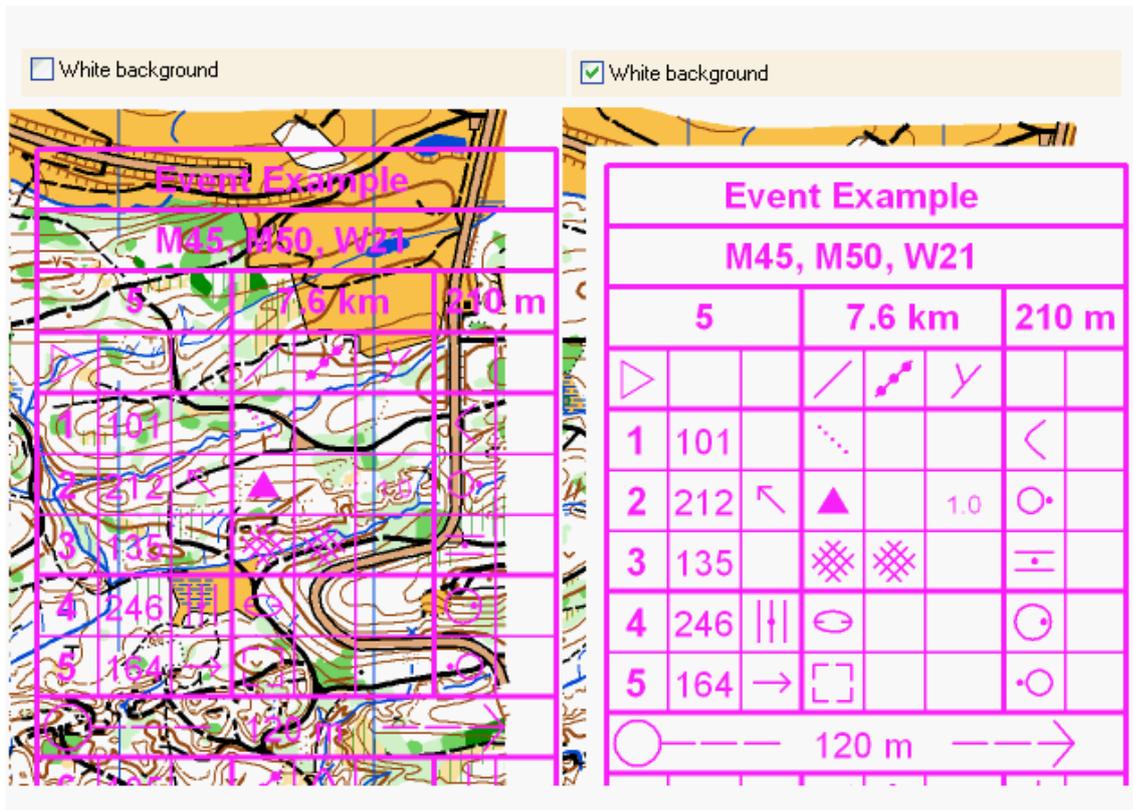
Box size: mm

Event Example											
M45, M50, W21											
5			7.6 km			210 m					
▶	S1		/	↗	Y						
1	101		⋯			<					
2	212	↖	▲		1.0	○					
3	135		⊗	⊗		≡					
4	246		⊖			⊙					
5	164	→	□			⊙					

💡 IOF International Specification for Control Description 2004 ^[1]: The description sheet boxes should be between 5mm and 7mm.

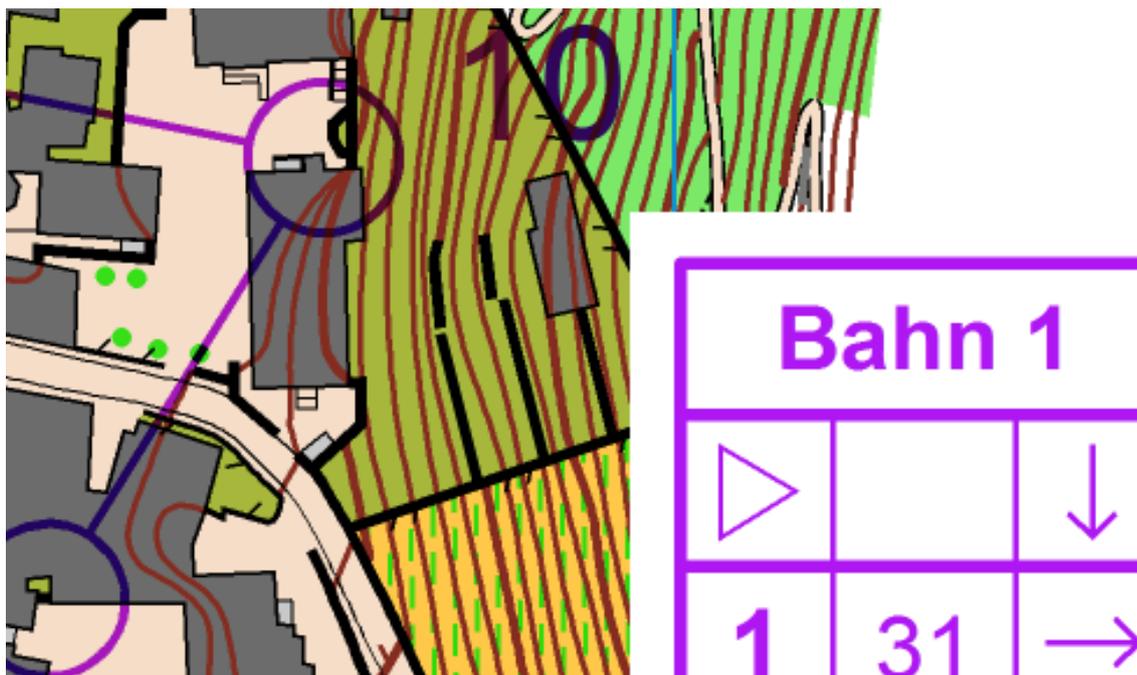
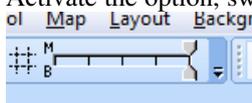
White Background

Check this option to get a white background behind the control description on the map.



Check the **Draw white background even in draft mode** option to show the control description with white background also in draft mode. Use this option if you prefer to print your maps in draft mode.

Activate the option, switch to draft mode and move both draft mode sliders in the View toolbar to the right position.

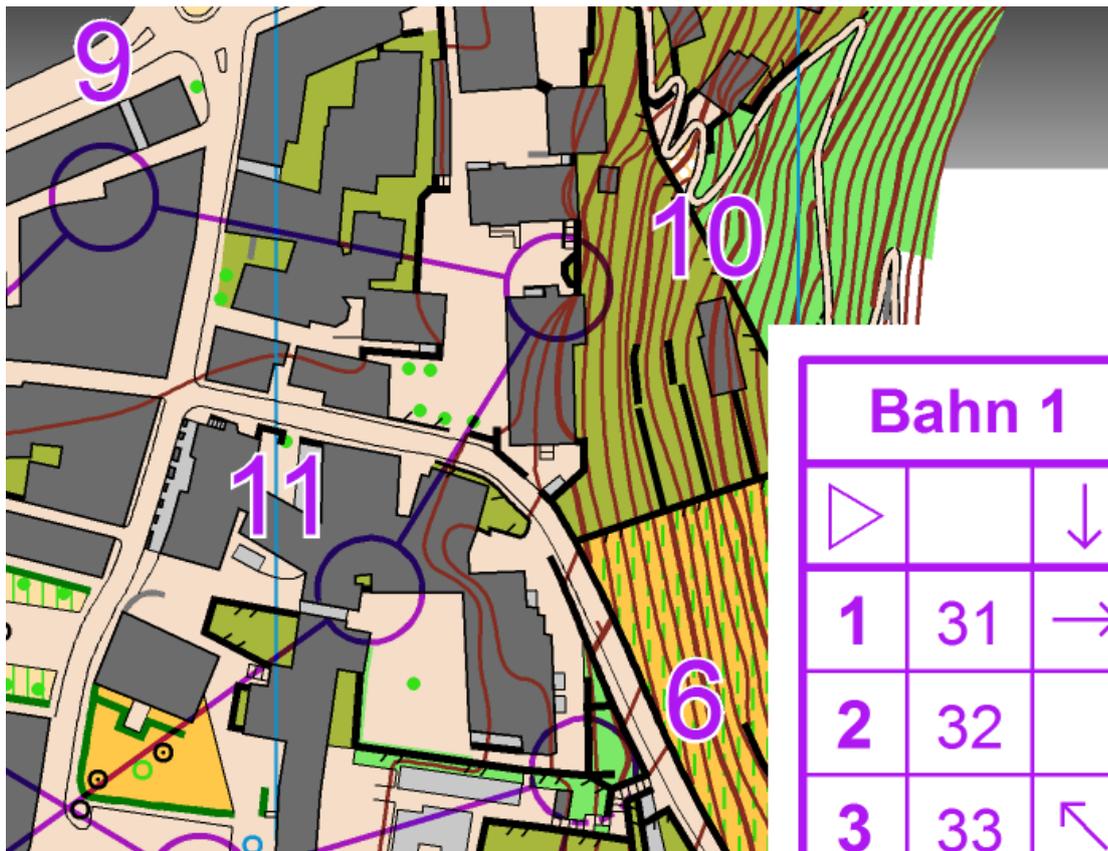


Select a course and click the **Preview** button. The course overprint now is transparent, but the white background of the control description is opaque and blocks out the orienteering map.

OCAD does not block out only the control description. Furthermore, OCAD blocks out all objects drawn with this opaque color used in the symbol **760.00 White background**. By default it is the color number **203 White background**.

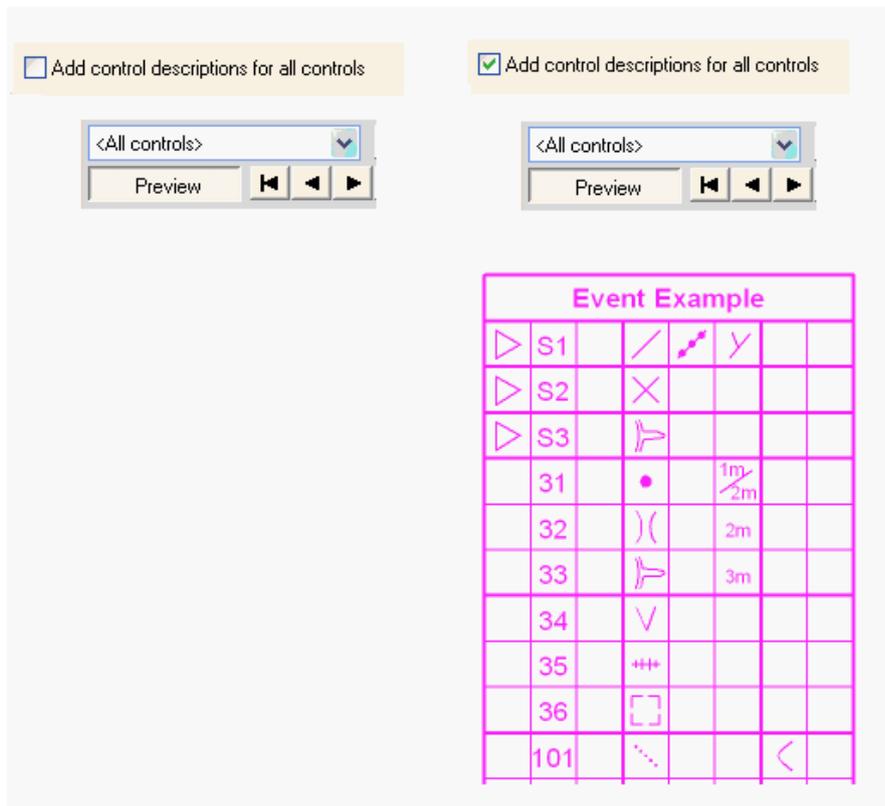
Example: If you also like a framing of the control numbers in draft mode, select the symbol **703.000 Course: Control number**, edit the symbol and change the color from **204 Purple transparent** to **202 Purple**. Click on the Framing tab, enter the new **Line width** (0.2mm) and change the **Framing color** to the opaque color **203 White background**.

Close this dialog. The control numbers have now a white framing.



Add Control Descriptions for All Controls

Check this option to add the control description on the **All Controls** map, too.

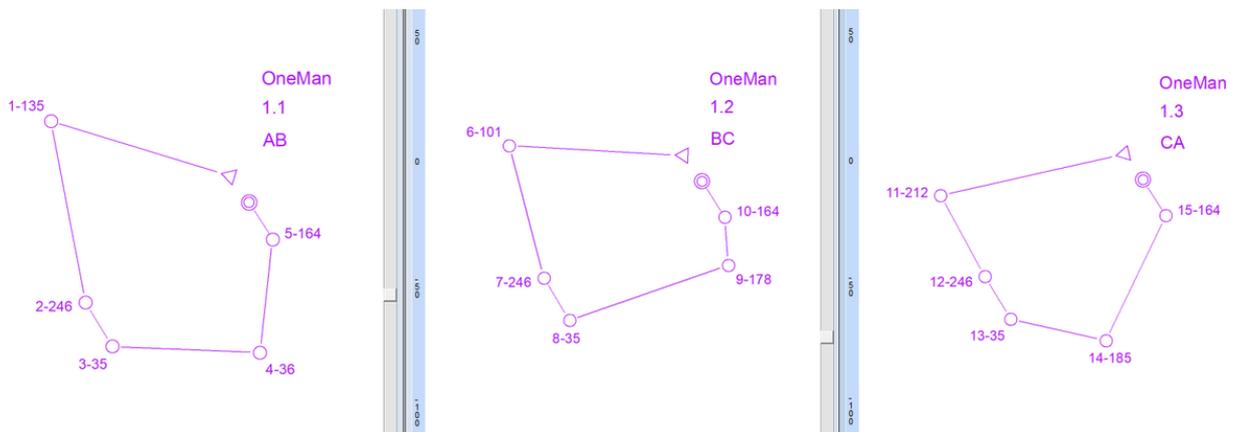


XML Export

Activate this check box to export the relay variation within the XML export, too. This is an extension of the IOF specification.

Continuous Numbering

If the option is set, the numbering for one-man relay will be continuous on the maps for the 2nd and 3rd loop.



Back to the **Course Setting for Orienteering** page.

References

[1] <http://orienteering.org/wp-content/uploads/2010/12/IOF-Control-Descriptions-20041.pdf>

Tutorials

Using Airborne Laserscanning Data for Orienteering Base Map Generation

This tutorial shows a possible way to proceed LiDAR data in OCAD and how to use them when drawing orienteering maps.

In case you have access to LiDAR Data, we can highly recommend you working with it. As you will find out, working with LiDAR Data makes mapping easier, more accurate and faster.



Short videos as a starter:

- Learn how to create different kinds of contours in the DEM Wizard and how to use them -> **DEM Wizard - Contours** ^[1]
- Learn how to use the output of the DEM Wizard for vegetation mapping -> **DEM Wizard - Vegetation** ^[2]

Open New File

Open OCAD.

Las files are very large and the calculating needs a lot of memory (RAM). Because of that it is recommended to import the Las files with the 64-bit Version of OCAD.

Go to **File** -> **New** -> *Orienteering map*: Choose a symbol set for orienteering maps and choose the scale (e.g. *Orienteering Map ISOM 2017 10000.ocd*).

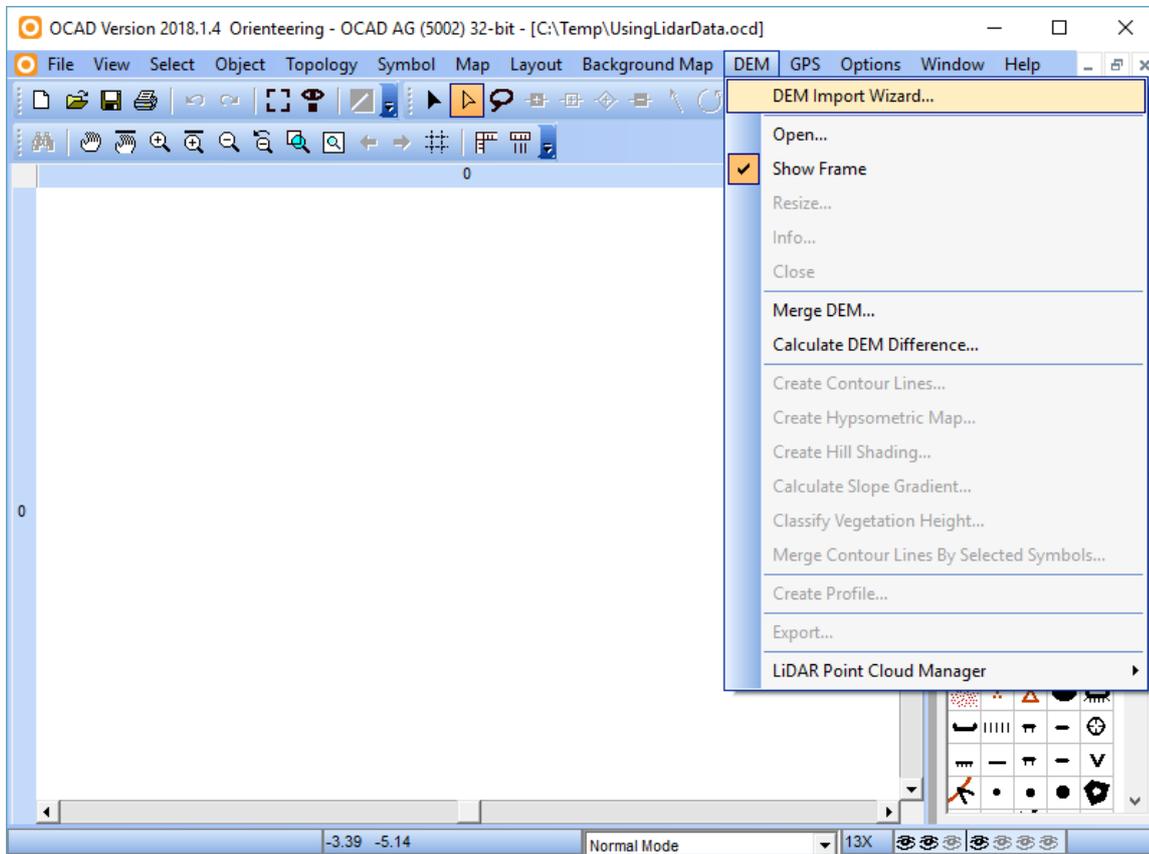
Save the newly created file under **File** -> **Save**.

DEM Wizard

Open the DEM Wizard

Open the **DEM Import Wizard** in the **DEM** Menu.

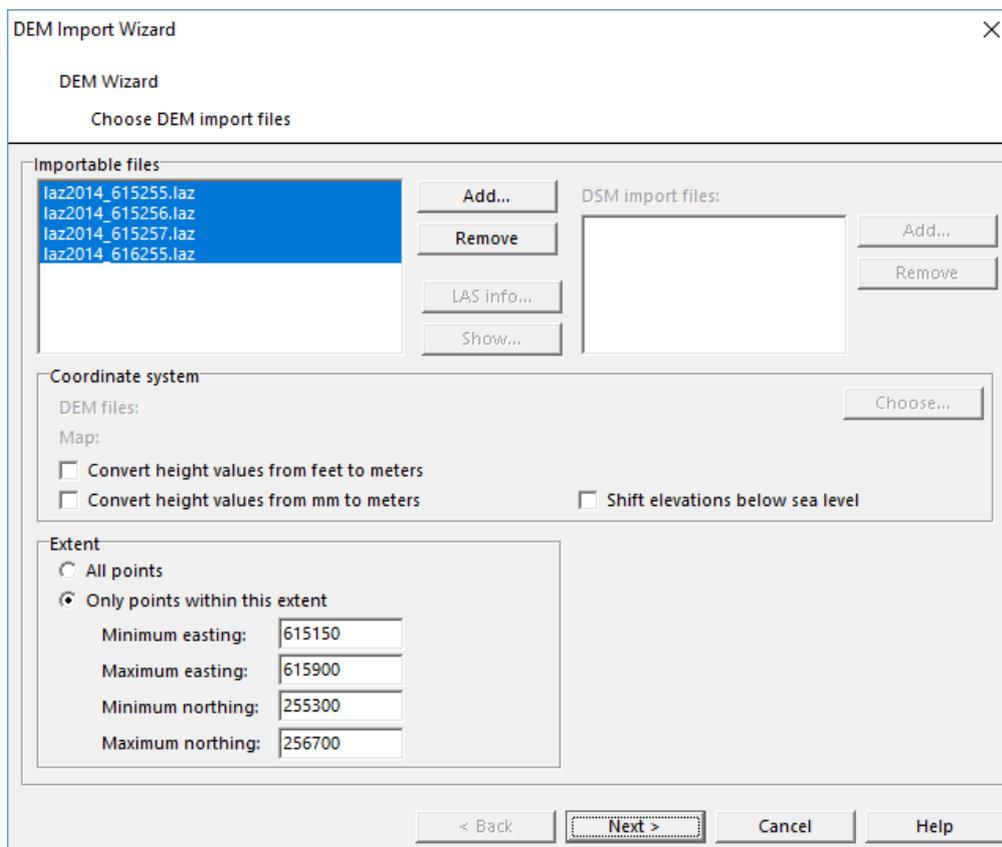
You find more detailed information about the DEM Wizard [here](#).



Choose DEM Import File

Choose one or several **importable files**. In this tutorial we proceed a LAS-file.

Find more Information about this step **here**.



DEM Settings

Here you can choose your favourite folder (in the upper right corner under *File name*) where all files should be stored .

In this tutorial, we have a look at all possible outputs. However, not all of them make sense for mapping as we discuss later in the section **How to use the output**. Enter the **DEM Settings** as follows.

Find more Information about this step **here**.

DEM Import Wizard

DEM Wizard

Settings

Analyze files

Minimum easting:	617000
Maximum easting:	618000
Minimum northing:	256000
Maximum northing:	257000
Points per square meter:	28,10

Data type of import files

Grid

Raw (cloud of vector points)

Points:	28'097'717
Rows:	2001
Columns:	2001
Minimum height value:	419
Maximum height value:	800

OCAD 2018 DEM

File name: laz2014_617256.ocdDem ...

- Create Contour Lines ?
- Create Hypsometric Map ?
- Create Hill Shading ?
- Calculate Slope Gradient ?
- Classify Vegetation Height ?
- Extract features ?
- Create Raw Data Points Map ?
- Create ocdLas file for LIDAR Point Cloud Manager
- Create vegetation base map ?

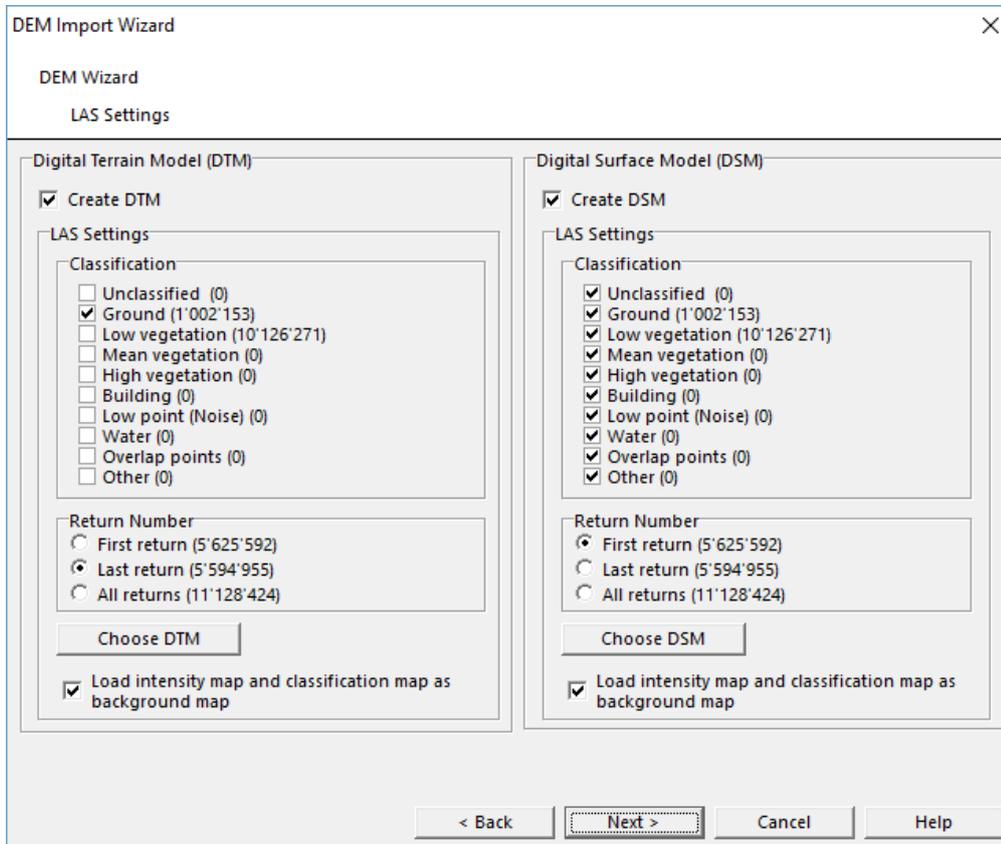
< Back Next > Cancel Help

LAS Settings

Select the **LAS Settings** as follows.

We will need the **.ocdlas-File** later in the **LiDAR Point Cloud Manager** section.

Find more information about this step [here](#).



The screenshot shows the 'DEM Import Wizard' dialog box, specifically the 'LAS Settings' section. The dialog is divided into two main panels: 'Digital Terrain Model (DTM)' and 'Digital Surface Model (DSM)'. Both panels have a 'Create' checkbox checked. Each panel contains a 'LAS Settings' sub-section with a 'Classification' list and a 'Return Number' section. The 'Classification' list includes: Unclassified (0), Ground (1'002'153), Low vegetation (10'126'271), Mean vegetation (0), High vegetation (0), Building (0), Low point (Noise) (0), Water (0), Overlap points (0), and Other (0). The 'Return Number' section has three radio button options: First return (5'625'592), Last return (5'594'955), and All returns (11'128'424). Below the classification and return number sections are buttons for 'Choose DTM' and 'Choose DSM'. At the bottom of the dialog, there are four buttons: '< Back', 'Next >', 'Cancel', and 'Help'.

DEM Import Wizard

DEM Wizard

LAS Settings

Digital Terrain Model (DTM)

Create DTM

LAS Settings

Classification

- Unclassified (0)
- Ground (1'002'153)
- Low vegetation (10'126'271)
- Mean vegetation (0)
- High vegetation (0)
- Building (0)
- Low point (Noise) (0)
- Water (0)
- Overlap points (0)
- Other (0)

Return Number

- First return (5'625'592)
- Last return (5'594'955)
- All returns (11'128'424)

Choose DTM

Load intensity map and classification map as background map

Digital Surface Model (DSM)

Create DSM

LAS Settings

Classification

- Unclassified (0)
- Ground (1'002'153)
- Low vegetation (10'126'271)
- Mean vegetation (0)
- High vegetation (0)
- Building (0)
- Low point (Noise) (0)
- Water (0)
- Overlap points (0)
- Other (0)

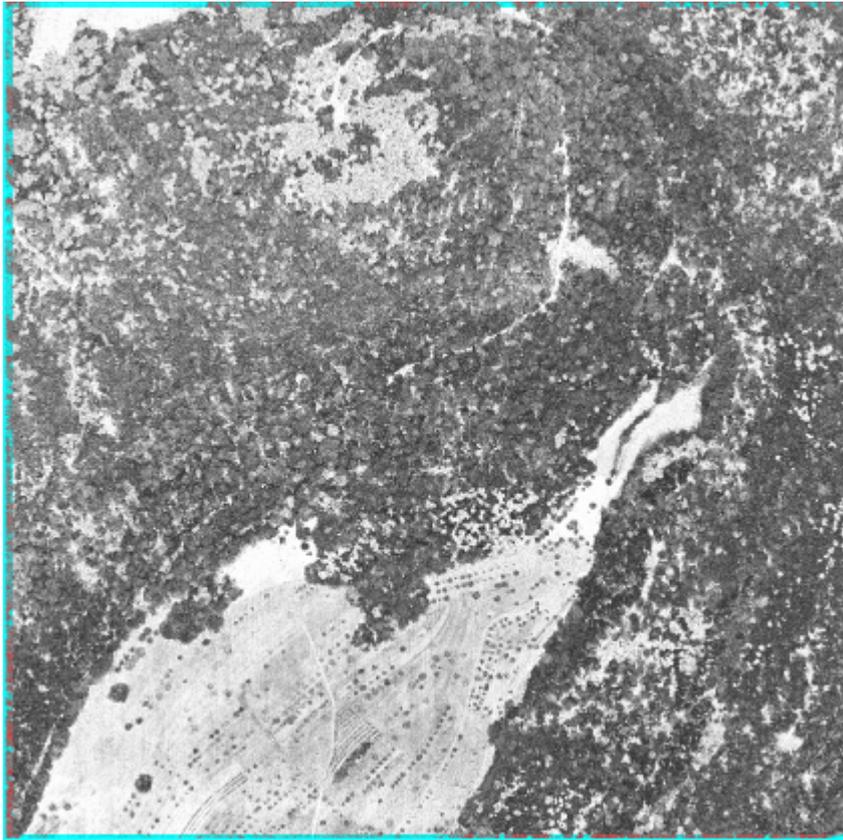
Return Number

- First return (5'625'592)
- Last return (5'594'955)
- All returns (11'128'424)

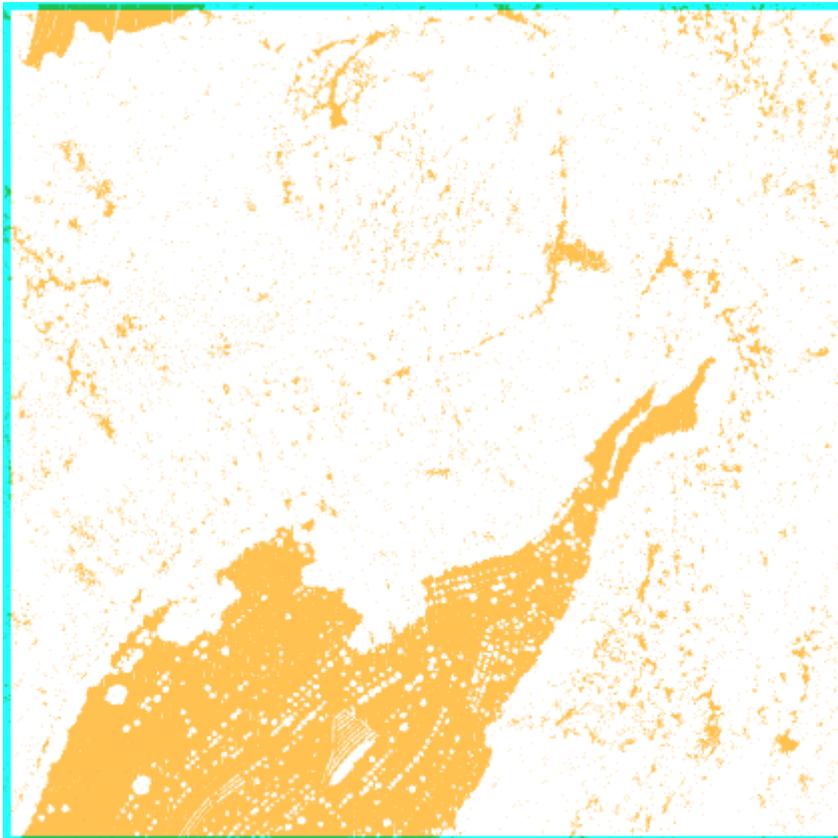
Choose DSM

Load intensity map and classification map as background map

< Back Next > Cancel Help



DSM Intensity Map



DSM Classification Map

Create Contour Lines

Select the settings to **Create Contour Lines** as follows.

Activate both boxes **Create custom contours (no smoothing)** and **Create smoothed contours using TPI**.

Choose as contour interval 1m/5m/25m.

Click on **Load symbols from template** to get 12 line symbols at the bottom of your symbol box. The boxes will be filled automatically.

Choose **Use different symbols for depression** to distinguish depressions from hills.

Find more information about this step [here](#).

DEM Import Wizard

DEM Wizard

Create Contour Lines

Create custom contours (no smoothing)

Contour interval: 1 m

Contour interval main: 5 m

Contour interval index: 25 m

Create smoothed contours using TPI

Form line contour interval: 1 m

Contour interval main: 5 m

Contour interval index: 25 m

Symbols

Load symbols from template...

Symbol (1m) 10050.000 Contour 1m

Symbol (5m) 10051.000 Contour 5m

Symbol (25m) 10052.000 Contour 25m

Symbol (1m) 10060.000 Smoothed Form Line Co

Symbol (5m) 10061.000 Smoothed Main Contou

Symbol (25m) 10062.000 Smoothed Index Contou

Use different symbols for depressions

Symbol (1m) 10050.001 Contour 1m Depression

Symbol (5m) 10051.001 Contour 5m Depression

Symbol (25m) 10052.001 Contour 25m Depressio

Symbol (1m) 10060.001 Smoothed Form Line Co

Symbol (5m) 10061.001 Smoothed Main Contou

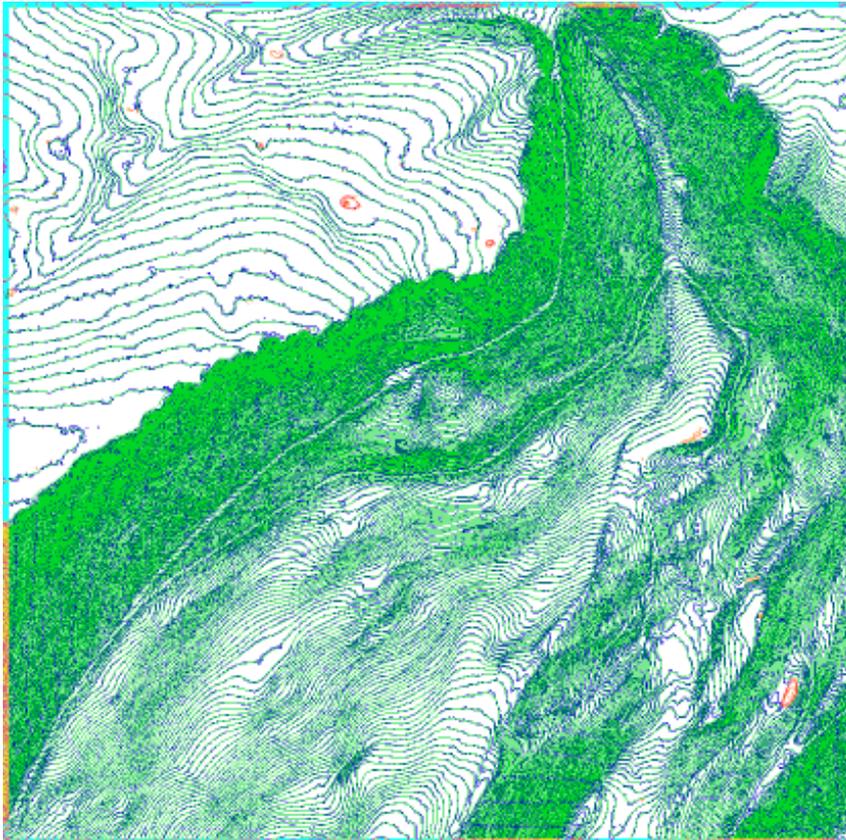
Symbol (25m) 10062.001 Smoothed Index Contou

Minimum contour: 419 m

Maximum contour: 800 m

Total number of contour values: 382

< Back Next > Cancel Help

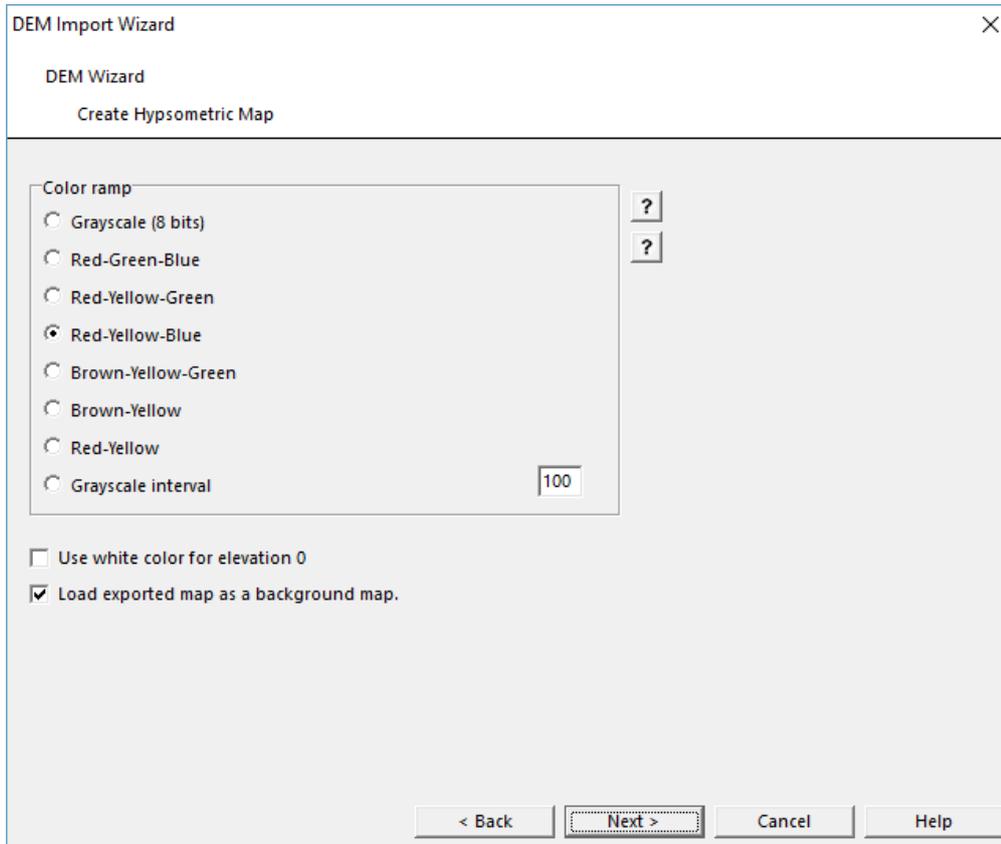


Contour Lines

Create Hypsometric Map

Select the settings to create a **Create Hypsometric Map** as follows.

Find more information about this step [here](#).



DEM Import Wizard

DEM Wizard

Create Hypsometric Map

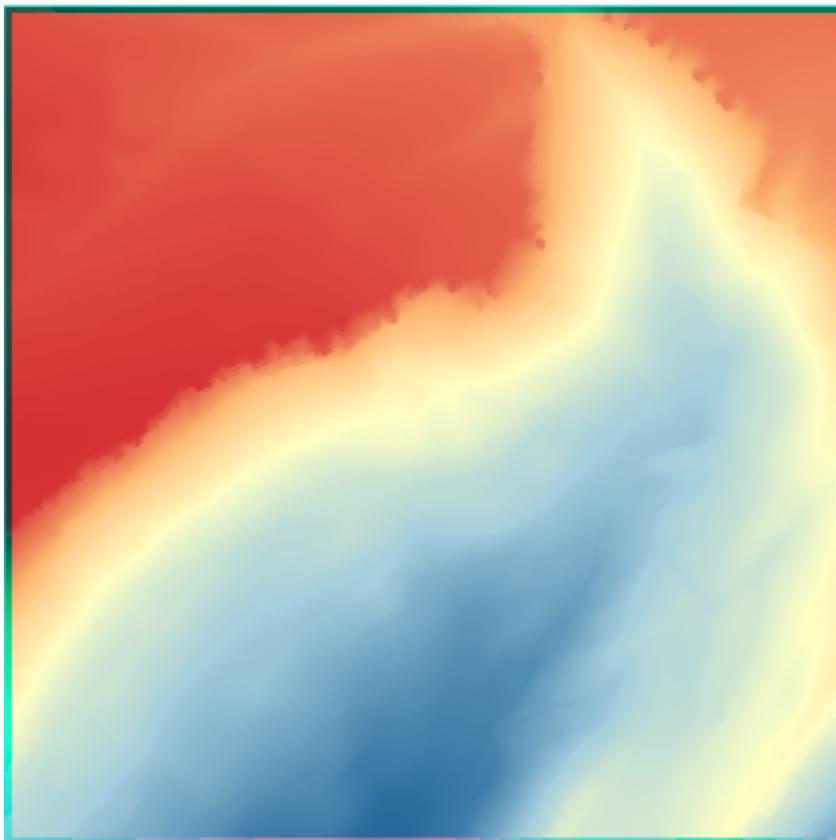
Color ramp

- Grayscale (8 bits) ?
- Red-Green-Blue ?
- Red-Yellow-Green
- Red-Yellow-Blue
- Brown-Yellow-Green
- Brown-Yellow
- Red-Yellow
- Grayscale interval 100

Use white color for elevation 0

Load exported map as a background map.

< Back Next > Cancel Help



Hypsometric Map

Create Hill Shading

Select the settings for **Create Hill Shading** as follows.

Find more information about this step [here](#).

DEM Import Wizard

DEM Wizard

Create Hill Shading

Shading method

Hill shading (slope shading) ?

Hill shading (slope shading combined with oblique light shading) ?

Resolution:

DEM cell size (0.50 m)

Interpolation 0.50 m Interpolation mode: Bicubic

Azimuth: 315 deg

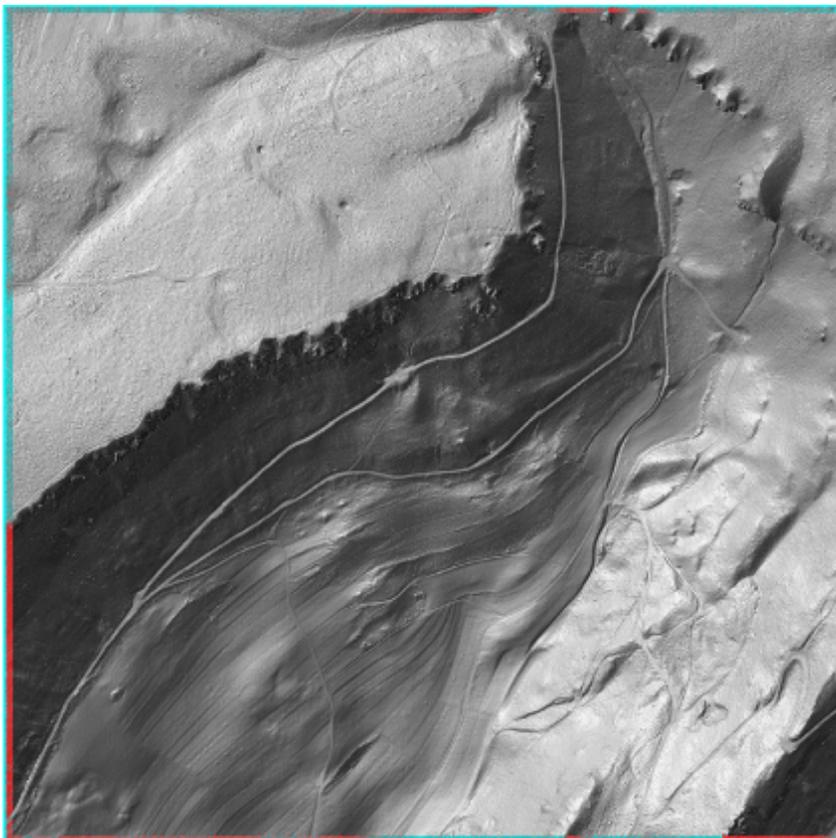
Declination: 45 deg

Exaggeration: 4

Load exported map as a background map.

Preview...

< Back Next > Cancel Help



Hill Shading

Create Slope Gradient

Select the settings for **Calculate Slope Gradient** as follows.

Check **Extract cliff features from black pixels**.

Find more information about this step [here](#).

DEM Wizard ×

DEM Wizard

Calculate Slope Gradient

Slope gradient method:

Continuous (<x° = grayscale / >x° = black) deg

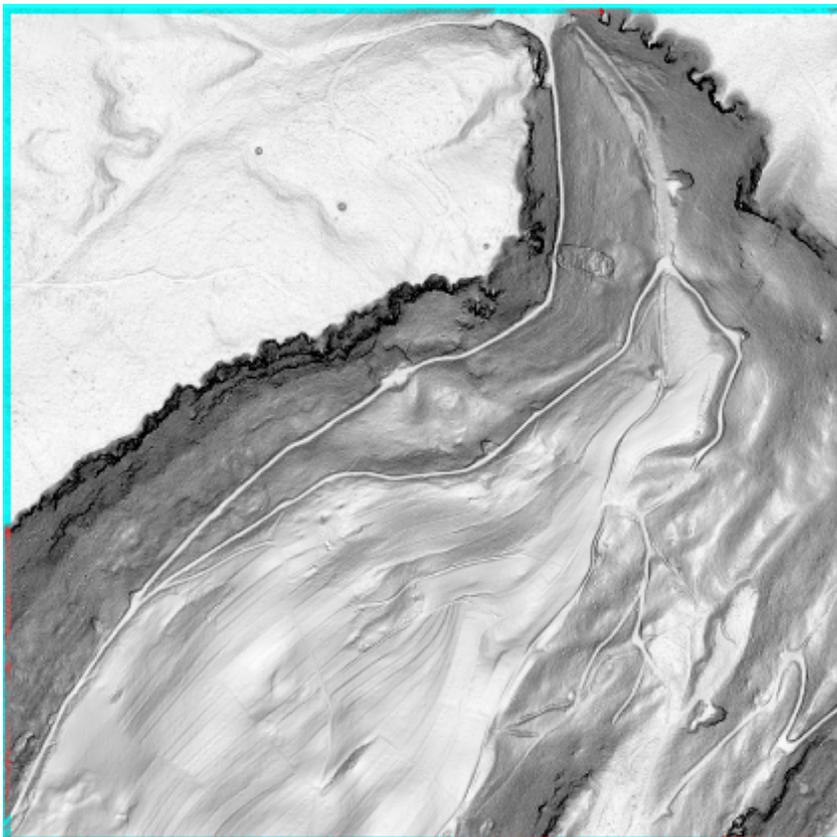
Black/white (<x° = white / >x° = black) deg

Load exported map as a background map.

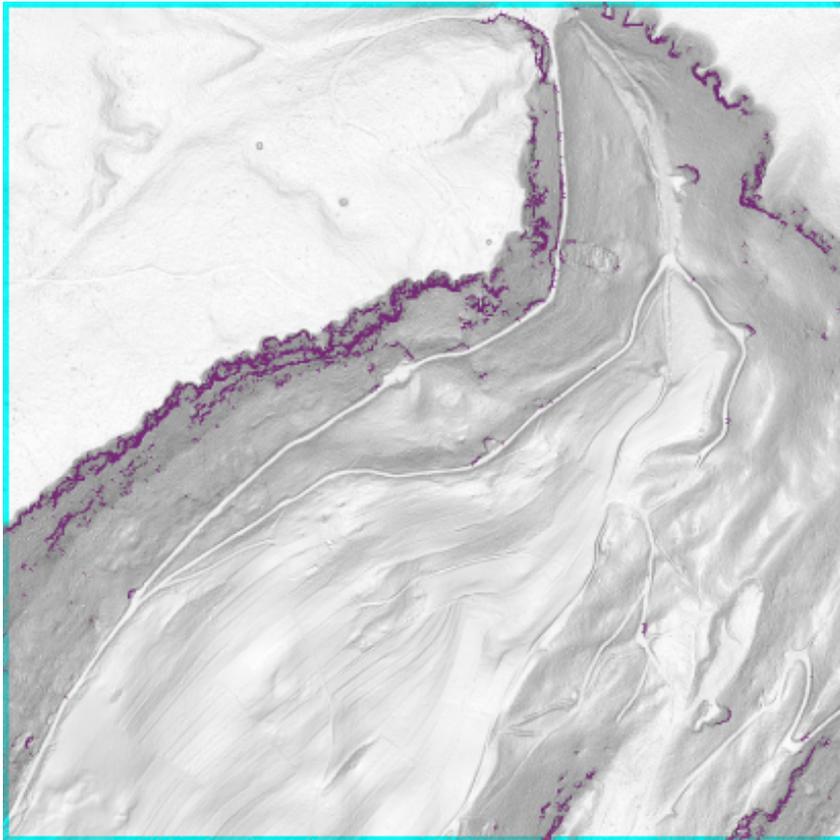
Extract cliff features from black pixels:

Cliff minimum area: pixel

Cliff minimum length: pixel



Slope Gradient

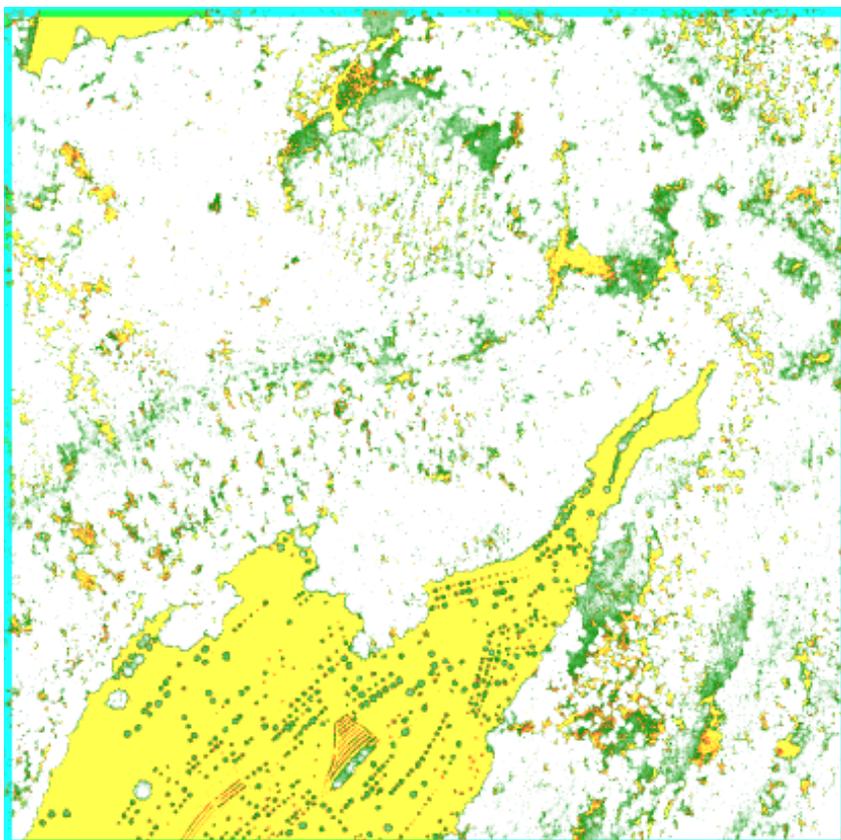
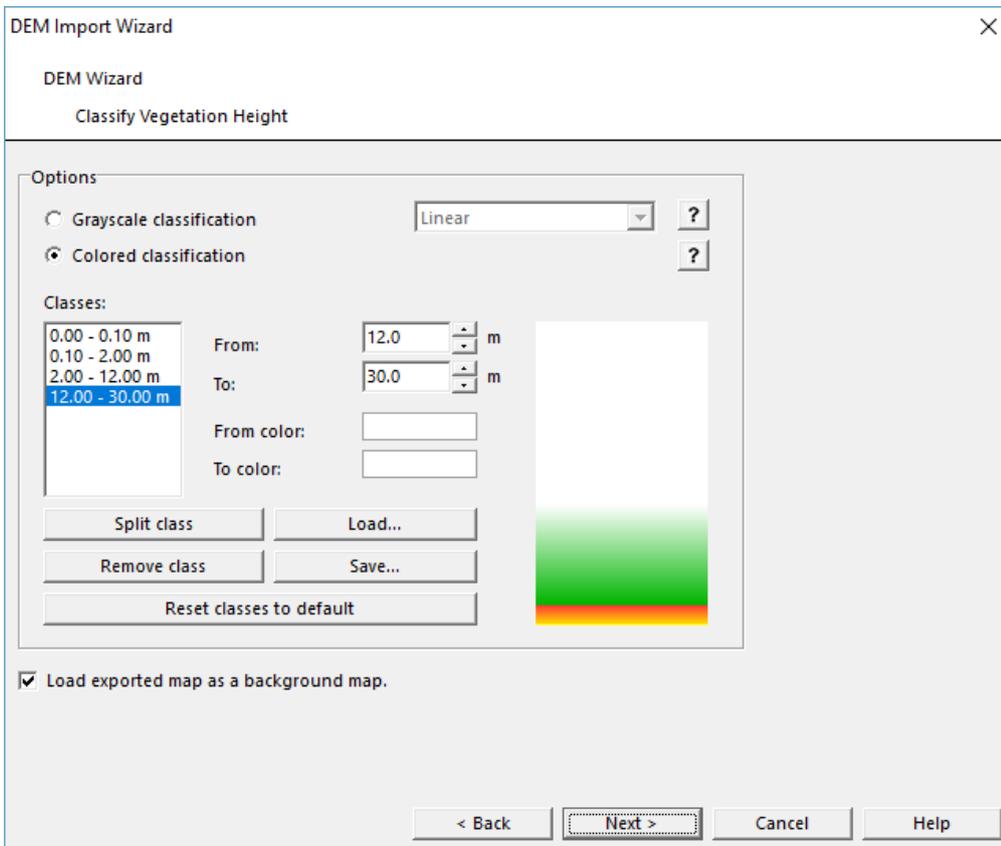


Cliff features as vector symbol (Slope Gradient Map is dimmed).

Classify Vegetation Height

Select the settings for **Classify Vegetation Height** as follows.

Find more information about this step [here](#).



Vegetation Height Map

Extract Features

Select the settings to **Extract Features** as follows.

Find more information about this step [here](#).

DEM Import Wizard

DEM Wizard

Extract features

Extract landform features

Knoll symbol: 109.000 Small Knoll

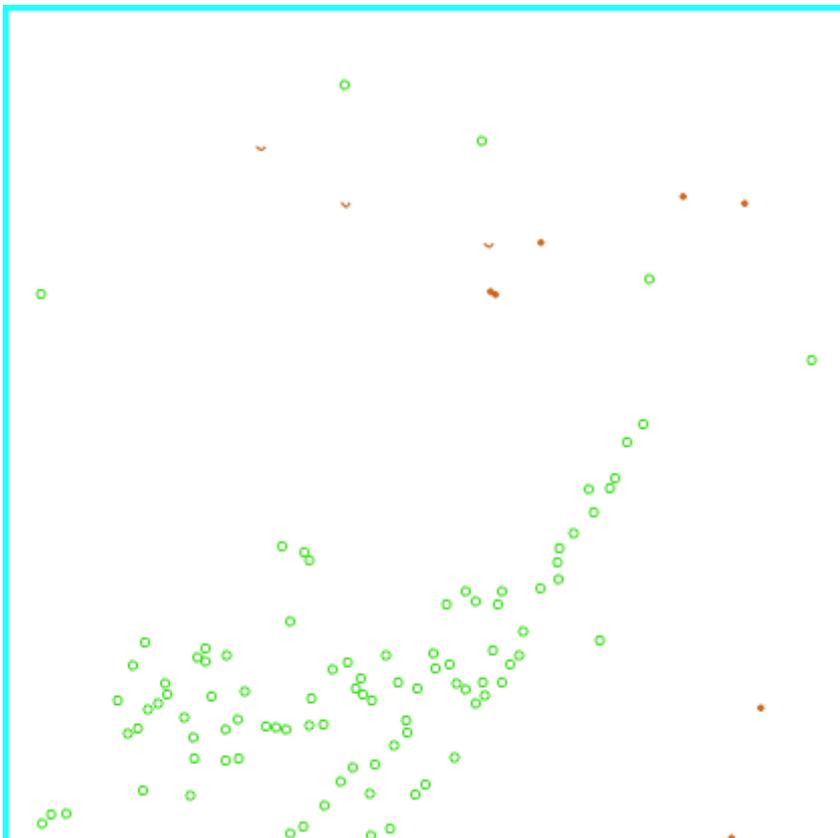
Small depression symbol: 111.000 Small Depression

Extract vegetation features

Tree symbol: 417.000 Prominent Large Tree

Tree minimum height: 4 m

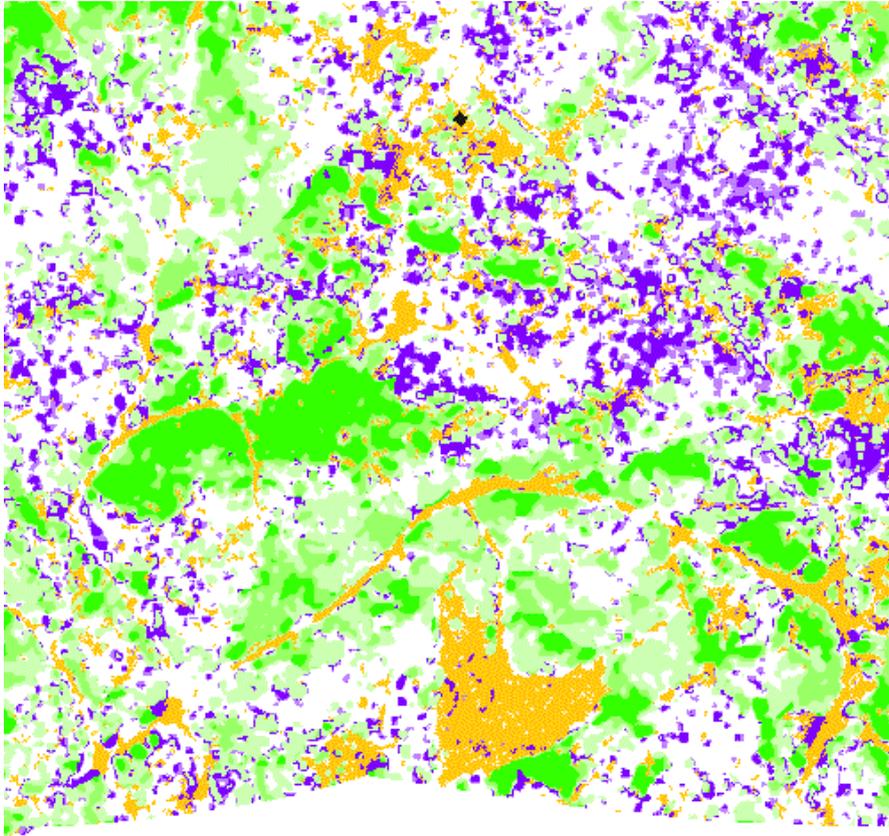
< Back Next > Cancel Help



Extracted Features

Create Vegetation Base Map

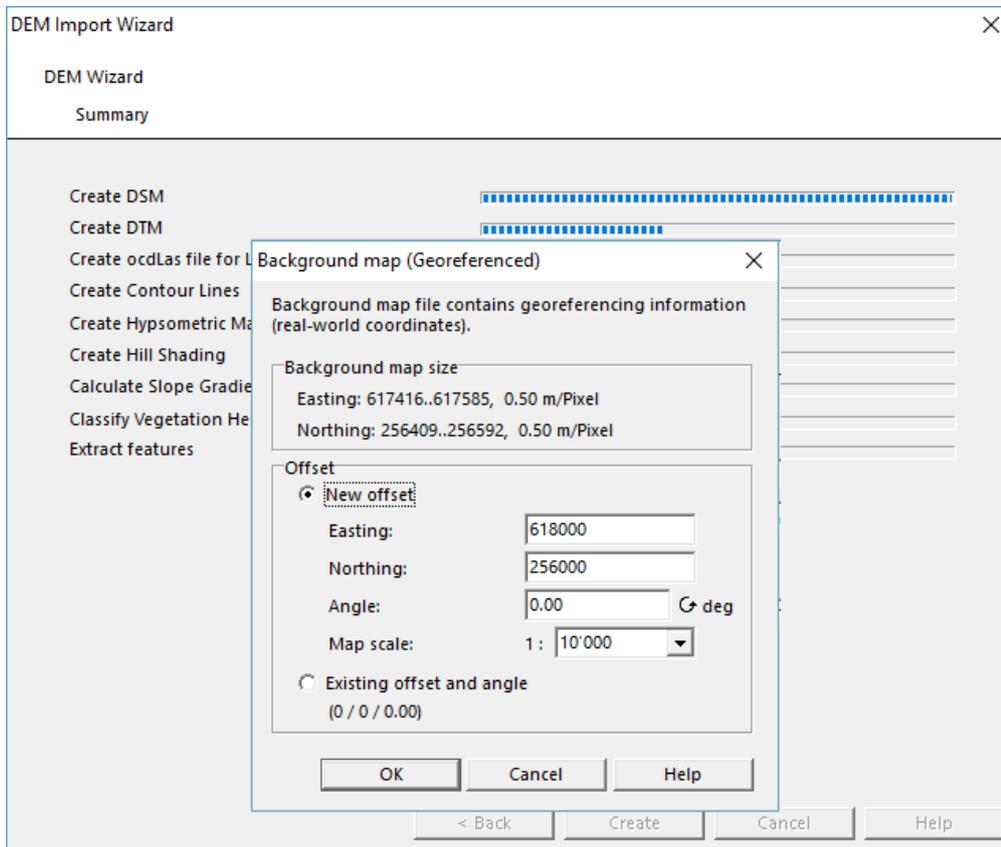
If you checked this option in the **DEM Settings**, a Vegetation Base Map will be calculated with default values. To adjust the settings, you need to run the **LiDAR Point Cloud Manager**.



Summary

This dialog shows the progress of the different functions.

During the calculation, a message concerning georeferencing the map will pop up (unless the map is already georeferenced). Do not change anything and click on **Ok**. After finishing the process the dialog closes automatically.



 laz2014_617256.laz	LAZ-Datei	143'218 KB
 laz2014_617256.ocdLas	OCDLAS-Datei	521'345 KB
 laz2014_617256_Classify Vegetation Height.tfw	TFW-Datei	1 KB
 laz2014_617256_Classify Vegetation Height.tif	TIF-Datei	11'731 KB
 laz2014_617256_DemDataPoints.tfw	TFW-Datei	1 KB
 laz2014_617256_DemDataPoints.tif	TIF-Datei	3'913 KB
 laz2014_617256_Diff.ocdDem	OCDDem-Datei	15'641 KB
 laz2014_617256_Diff_filter_4.ocdDem	OCDDem-Datei	15'641 KB
 laz2014_617256_DSM.ocdDem	OCDDem-Datei	15'641 KB
 laz2014_617256_DSM_LasClassification.tfw	TFW-Datei	1 KB
 laz2014_617256_DSM_LasClassification.tif	TIF-Datei	3'913 KB
 laz2014_617256_DSM_LasIntensity.tfw	TFW-Datei	1 KB
 laz2014_617256_DSM_LasIntensity.tif	TIF-Datei	3'913 KB
 laz2014_617256_DTM.ocdDem	OCDDem-Datei	15'641 KB
 laz2014_617256_DTM_combine_2_10.ocdDem	OCDDem-Datei	15'641 KB
 laz2014_617256_DTM_filter_2.ocdDem	OCDDem-Datei	15'641 KB
 laz2014_617256_DTM_filter_10.ocdDem	OCDDem-Datei	15'641 KB
 laz2014_617256_DTM_Hill Shading.tfw	TFW-Datei	1 KB
 laz2014_617256_DTM_Hill Shading.tif	TIF-Datei	3'913 KB
 laz2014_617256_DTM_Hypsometric map.tfw	TFW-Datei	1 KB
 laz2014_617256_DTM_Hypsometric map.tif	TIF-Datei	11'731 KB
 laz2014_617256_DTM_Slope Gradient.tfw	TFW-Datei	1 KB
 laz2014_617256_DTM_Slope Gradient.tif	TIF-Datei	3'913 KB
 laz2014_617256_LasIntermediateReturns.tfw	TFW-Datei	1 KB
 laz2014_617256_LasIntermediateReturns.tif	TIF-Datei	3'913 KB

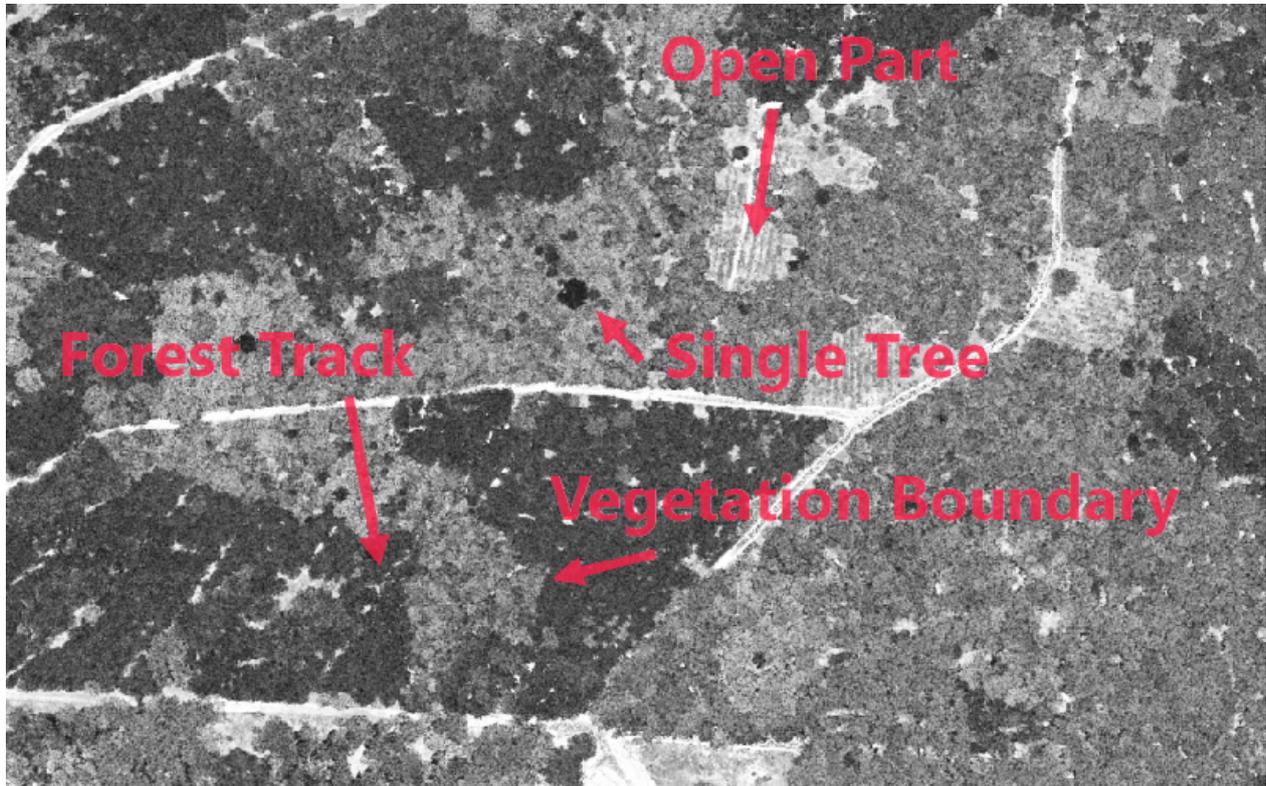
All generated files for this example. They are stored in the folder you specified in the DEM Settings.

How to use the output?

As you probably noticed, not all output files and derived data are usefull. We can give you the following recommendations:

Intensity Map and Classification Map

The **Intensity map** can be useful for mapping. You can see quite well **Vegetation boundaries**, **forest tracks**, **single trees** and **open parts** in the forest.



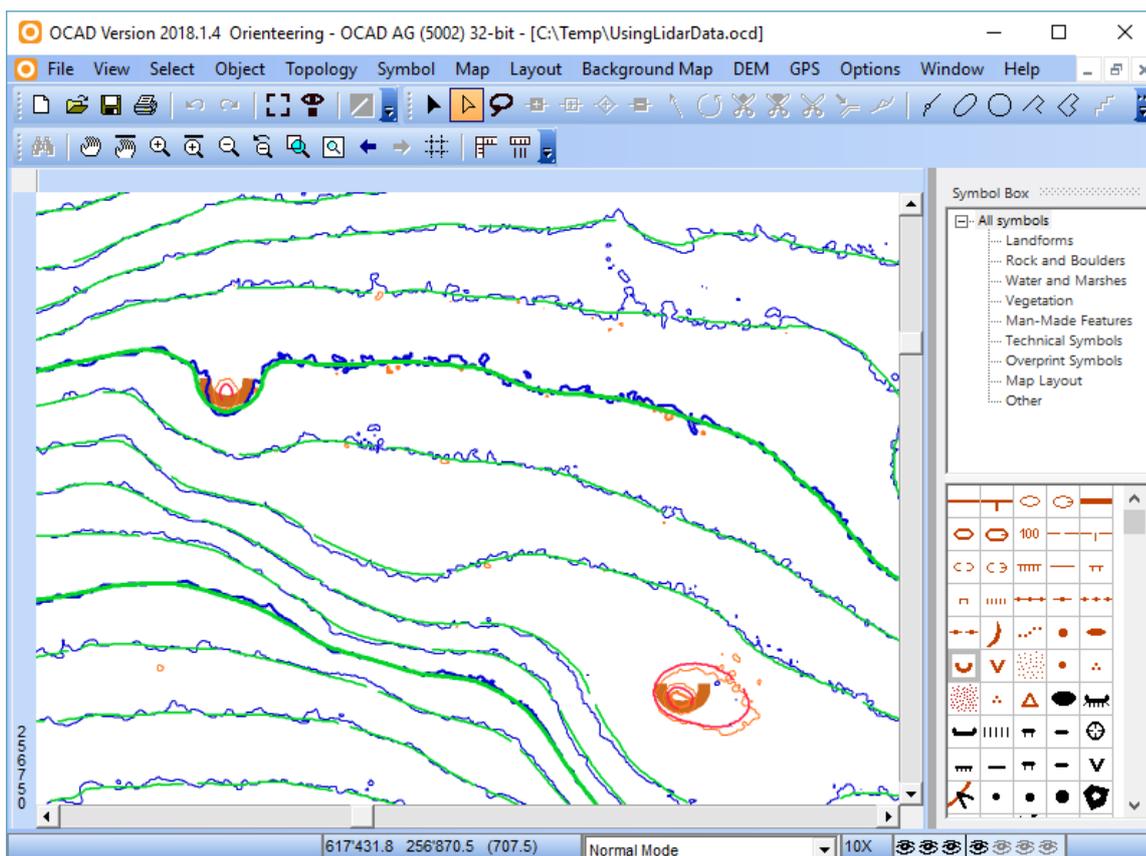
Example

of an Intensity map. Compared to the Vegetation Height Map, you can see well vegetation boundaries (black forest= coniferous forest; grey forest = deciduous forest).

The **Classification map** is of no use for mapping.

Contour Lines

- For mapping in the terrain, use the **custom contour lines** as background, where you have all details on it (provided you choose the contour interval small enough. 1m is an appropriate interval.)
- To draw contour lines on the PC, first calculate and load the **TPI contours** and adapt them afterwards where needed. Use the **Reshape** function for adapting. Keep in mind, that these contours are smoothed and therefore not include all details. Some valleys or ridges appear flatter than they actually are. Nevertheless, especially in steep and constant slopes, the biggest part of the TPI contours can be adopted to your map without redrawing. You save a lot of time with it.
- The distinction in hills and depression is recommended, as you get a faster and better understanding of the terrain.



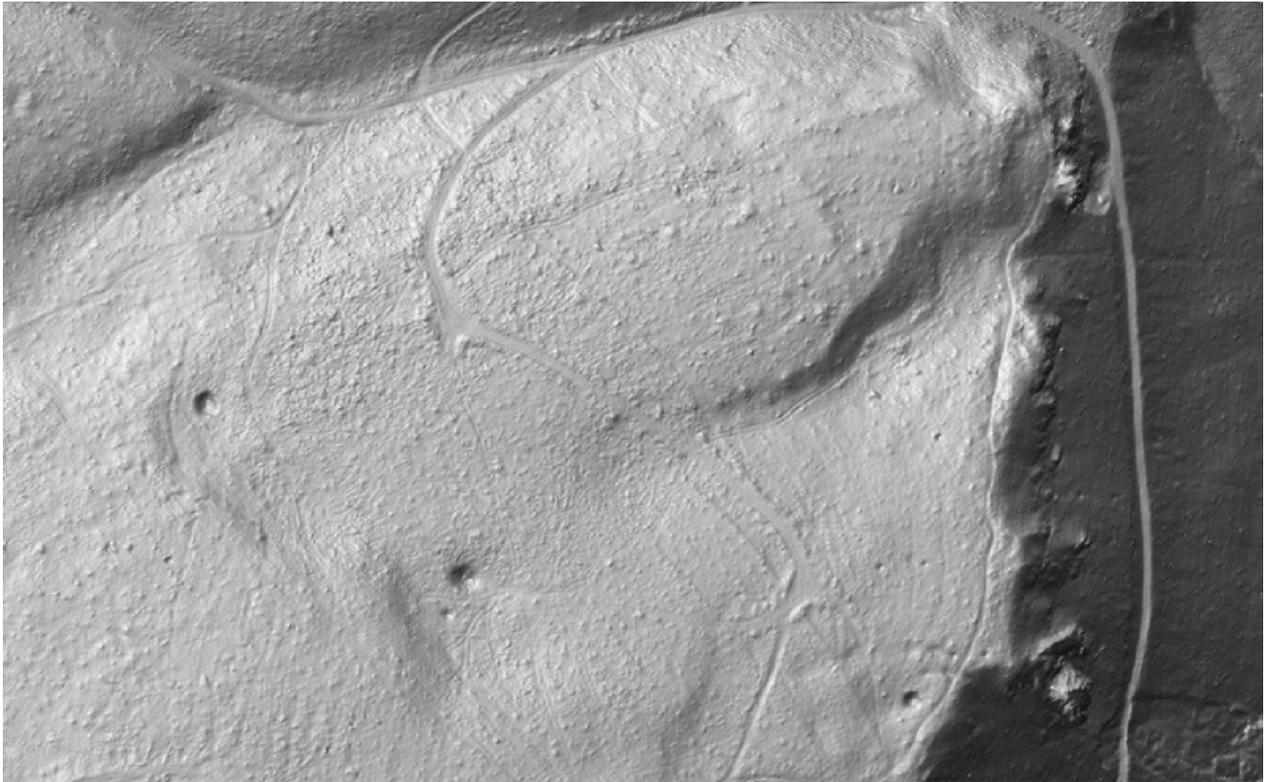
Smoothed contour lines in green, custom contour lines in blue. Orange and red ones for depressions.

Hypsometric Map

This map may be used for visualisation, but is obsolete for field work and mapping purpose.

Hill shading Map

The hill shading map can be useful to detect point and line objects like pits, paths or watercourses.

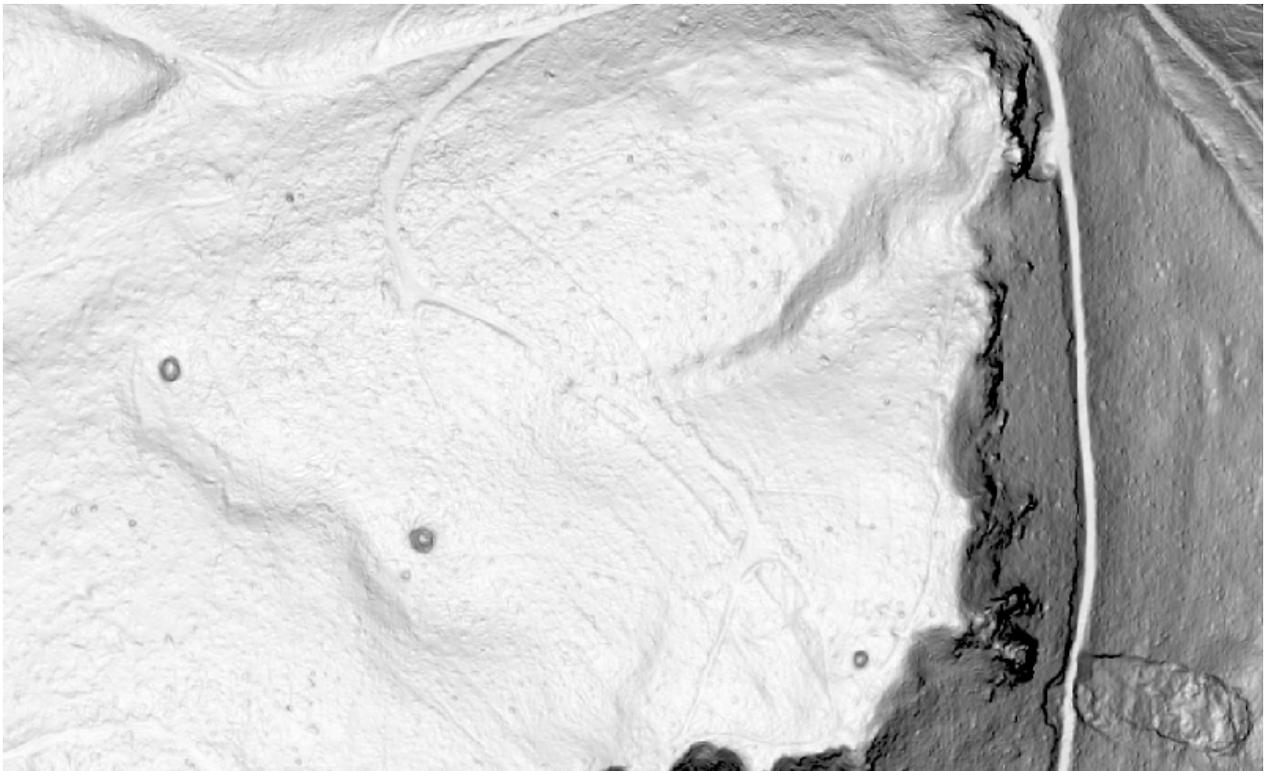


Hill

Shading Map of Bürenflue. Small pits and knoll as well as tracks and pathes are much better visible here than with contour lines.

Slope Gradient Map

The Slope Gradient Map also shows paths or relief features like the Hill Shading Map.



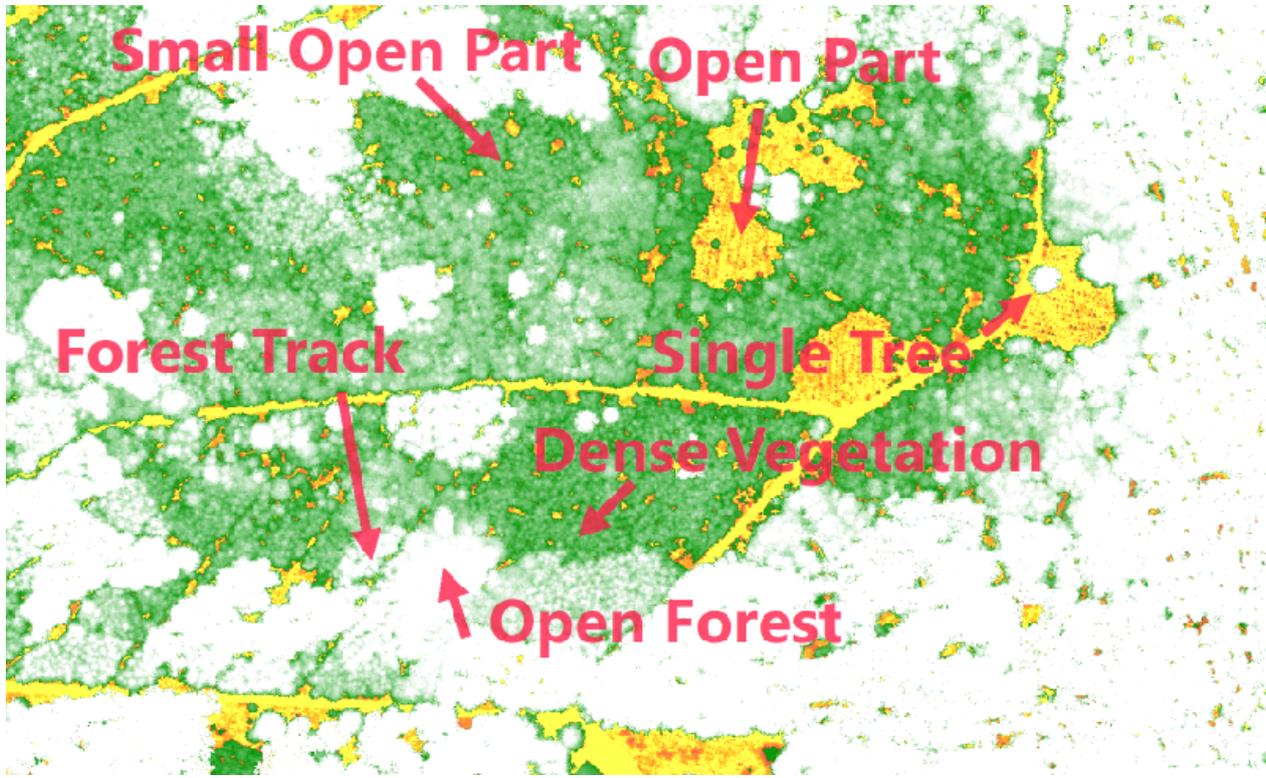
The

Slope Gradient Map shows in this example basically the same as the Hill Shading Map. However, the features of the Hill Shading Map appear clearer and more distinct.

Please see [here](#) how use the Extracted Cliff Features.

Classify Vegetation Height

The Vegetation Height Map is an very useful background map. You cannot see Vegetation boundaries like on the Intensity Map, but also forest tracks, single trees and open parts in the forest, especially small open parts in dense vegetation. Furthermore it gives you information about the density of the vegetation.

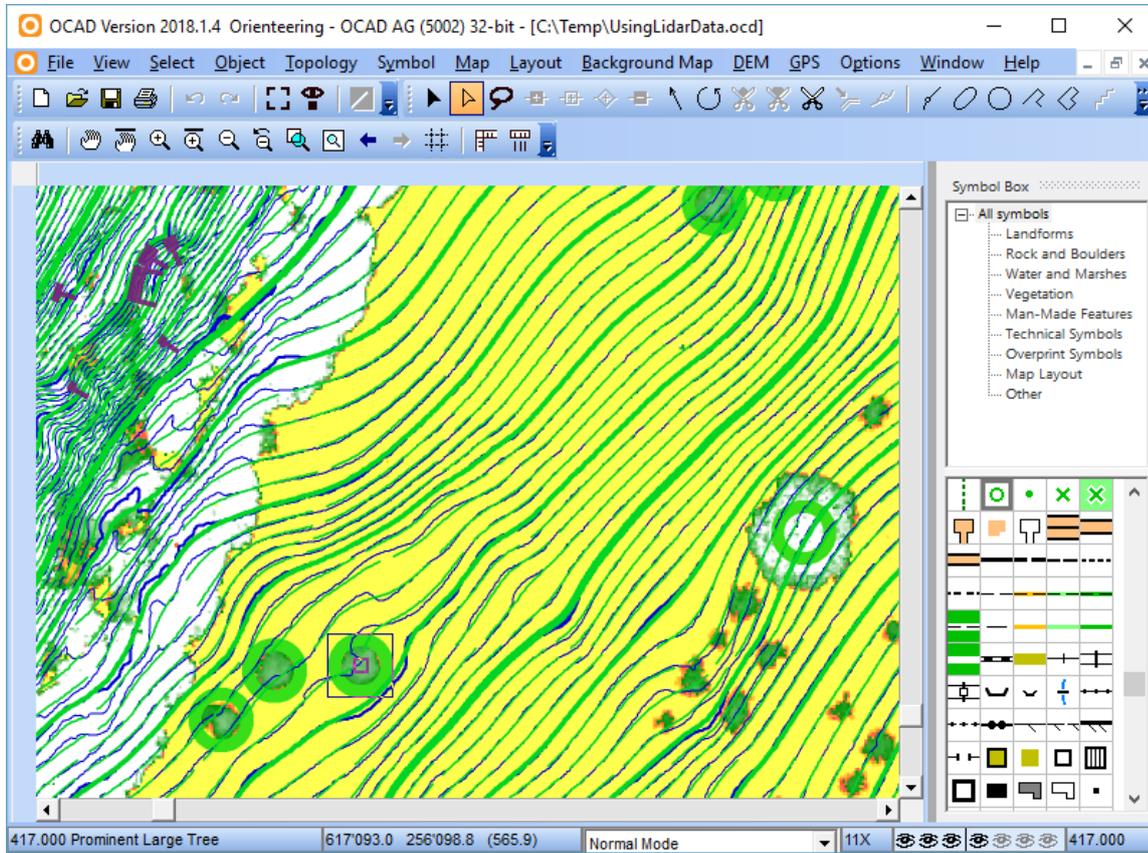


Example

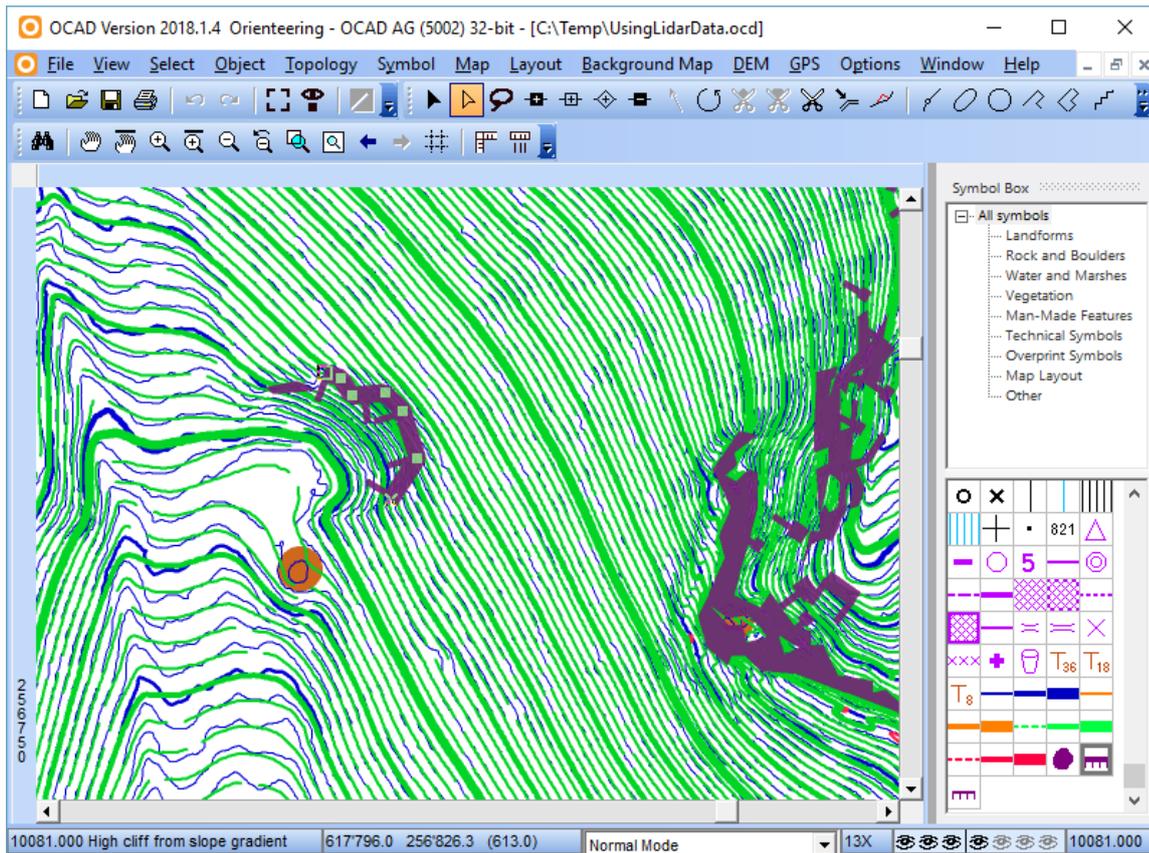
of a Vegetation Height Map.

Extract features

This function is (1) very dependent on the quality of the data and (2) the results should be treated with caution. In terms of LiDAR data, a small knoll looks very similar to a cluster of branches, a tree stump or a small fir tree. However, the results can give you a hint, which places you should check carefully during fieldwork.



Extracted Trees.



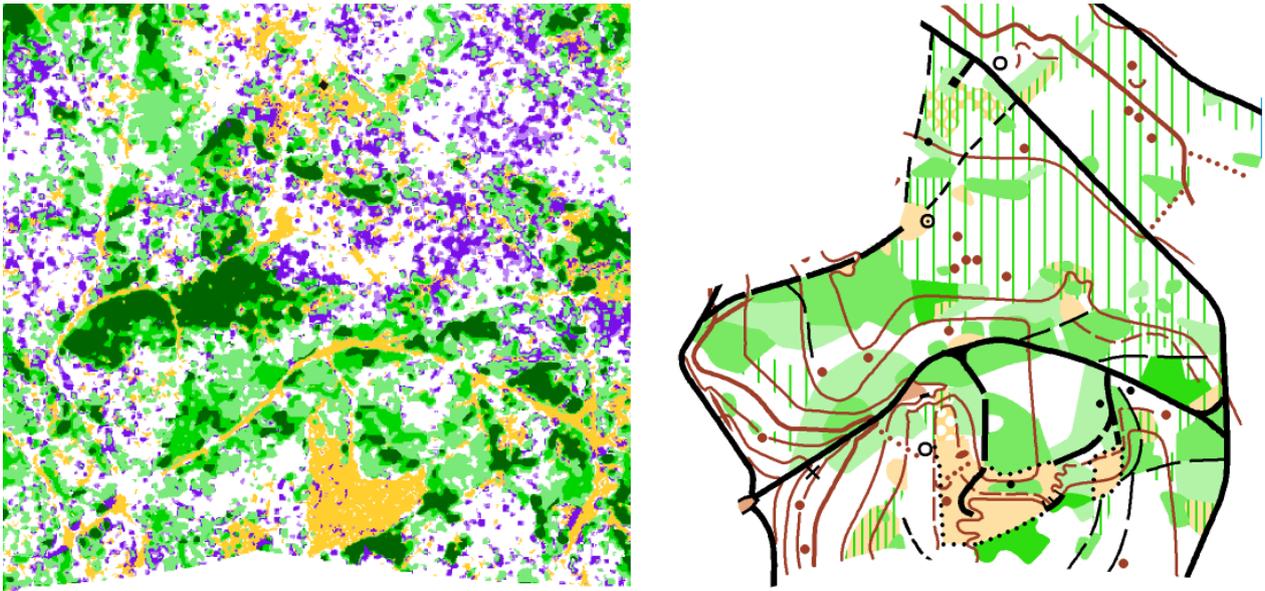
Extracted Cliff Features. As you remember, you choose the settings to Extract Cliff Features in the Slope Gradient function, but you should interpret the results in the same way as for the other extracted features.

Vegetation Base Map

The Vegetation Base Map is a product of the **LiDAR Point Cloud Manager**. Compared to the **Vegetation Height Map**, the Vegetation Base Map shows both low or high vegetation

As mentioned above, the Vegetation Base Map will be calculated with default values. To adjust the settings, you need to run the **LiDAR Point Cloud Manager**.

With the default settings, you will for sure get a good first impression of the vegetation, but they may not work properly for your map. However, as classifying vegetation is a big task when drawing orienteering maps, we believe that the Vegetation Base Map will become more and more important in the future.



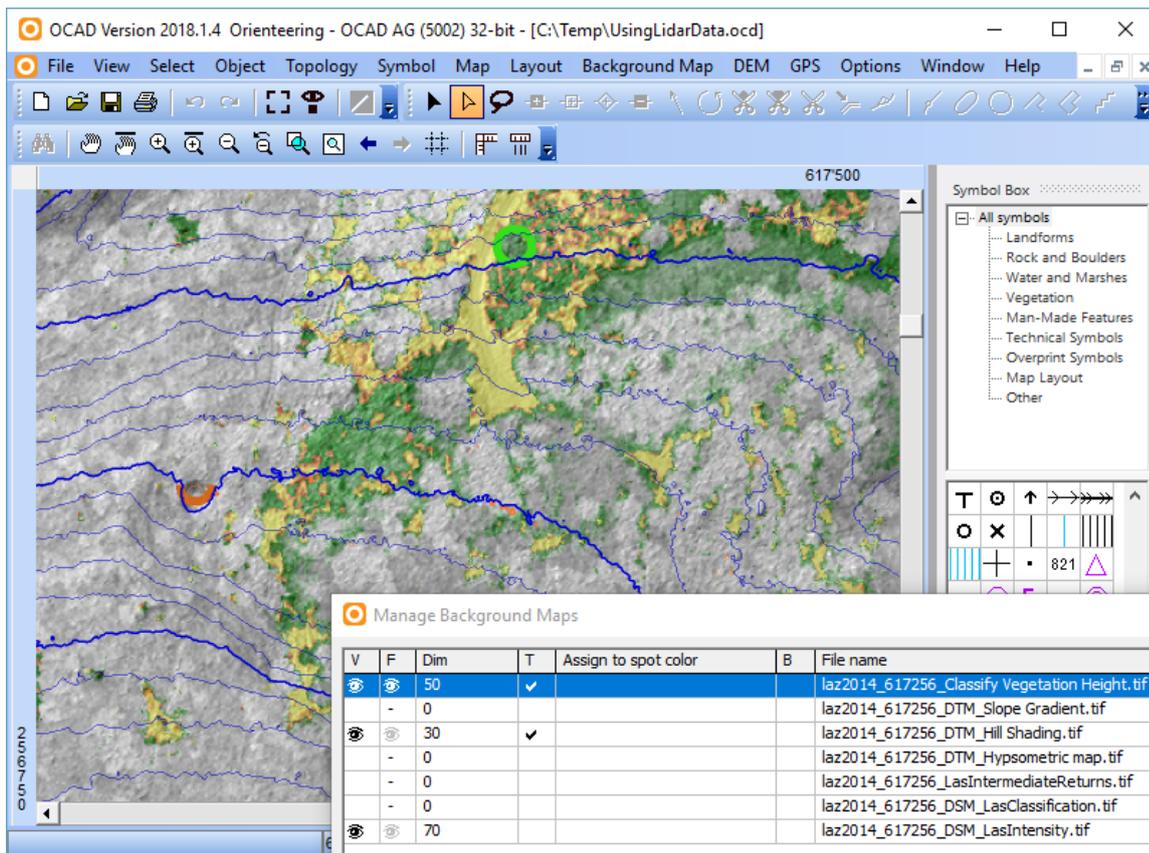
Raster map generated with the LiDAR Point Cloud Manager compared with the Orienteering map of the same area.

Summary

As we could see, there are several background maps which are very useful for mapping.

How we combine and use them best?

- You can arrange your background maps in a way, that the information of several background maps are visible. In the OCAD Menu, go to **Background Map -> Manage**. Here you can set your favourite background maps visible. To see several background maps at once, make them visible and use dimming. When you print this map, all important information are on one paper.
- When you go mapping with a tablet PC, you can easily switch between all the background maps.



Example

how to combine different background maps (Intensity Map, Hill Shading and Vegetation Height Map).

References

- [1] https://www.youtube.com/watch?v=yoPRy1Y_Scs
- [2] <https://www.youtube.com/watch?v=nogycUy1Ixk>

Drawing Orienteering Maps in OCAD

The focus of this tutorial is how to draw an orienteering map with OCAD. It doesn't matter if you start a new mapping project or update an old existing map.

About OCAD

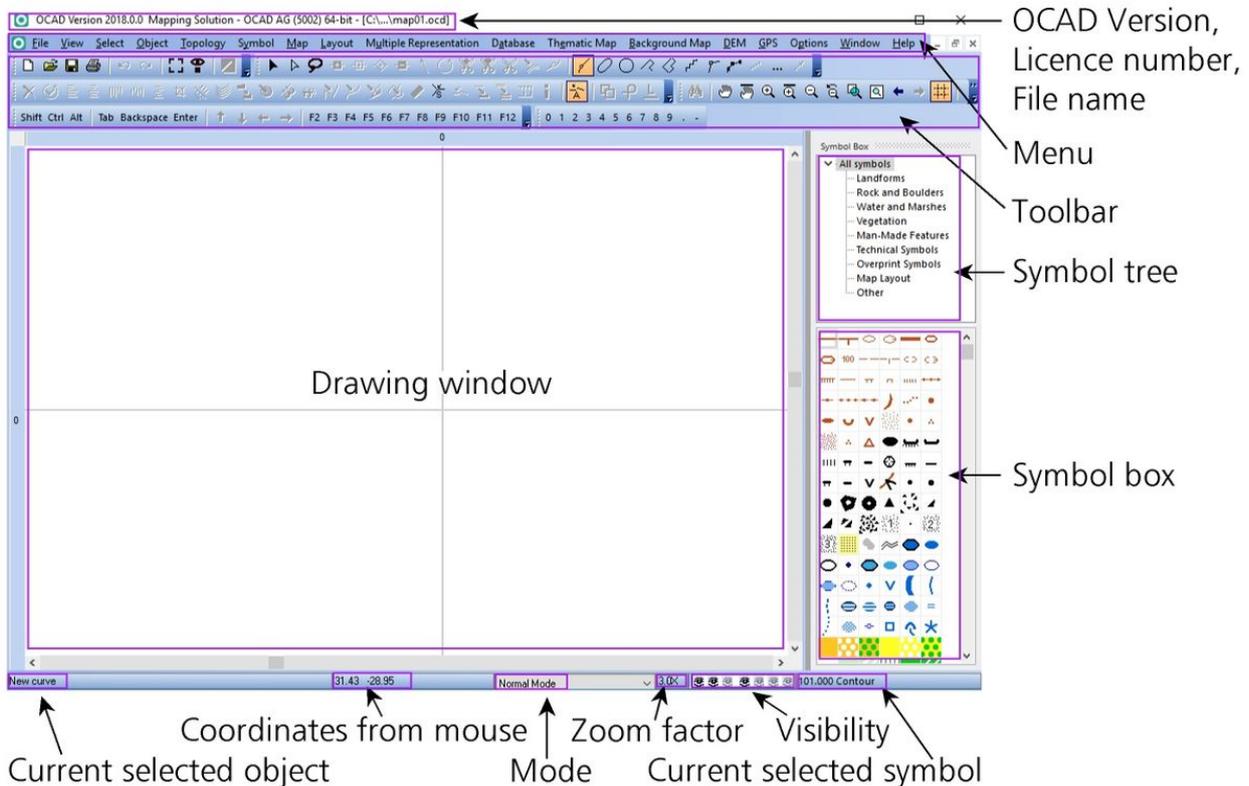
Run OCAD

OCAD Orienteering and OCAD Mapping Solution are now available as **64-bit version and 32-bit version**. The OCAD Setup installs both versions.

For normal use, the 32-bit version is sufficient. Please note, the 64-bit version isn't faster than the 32-bit version. The big advantage of 64-bit is that OCAD can allocate more than 3 GB RAM if available on the computer. That is important when loading huge raster background maps or DEM files.

Structure of the OCAD User Interface

The image below shows you the **OCAD User Interface**.



OCAD Help

You will find the following submenus in the **Help** menu.

Contents: Opens the OCAD Main Page.

Menu: Help for menu commands.

Toolbar: Help for toolbar buttons.

Tutorial: Link to the OCAD Tutorials.

What is New: See the newly added functions on this page.

OCAD Home page ^[1]: Opens OCAD homepage on the Internet.

OCAD Service Update: Download the current Service Update.

OCAD Tutorial Videos ^[2]: Connect to Learning Videos on OCAD homepage.

OCAD Youtube Channel ^[2]: OCAD Youtube Channel

Getting Started with OCAD: Open the PDF file 'Getting Started with OCAD'. For different languages see **here** ^[3]

OCAD Blog ^[3]: Show the newest posts from the OCAD Blog.

License Transfer Utility: Opens the License Transfer Utility to deactivate your license and transfer it to another user.

License Manager: The License Manager tool shows an overview about the OCAD licenses which are assigned to your organization (company or association).

About OCAD: General Information about OCAD like license information and current version of OCAD.

Service Update

Regular and free updates are included in the OCAD subscription model. The Service Update corrects known bugs and adds the latest cartography tools and enhancements to your OCAD.

Therefore we recommend using OCAD software always with the most recent Service Update to benefit from the quality improvements.

Please download the current Service Update from the **Help -> OCAD Service Update** function in the OCAD program.

The content of the Service Update is listed in the **Release notes** ^[4]. Your current version of OCAD can be seen under **About OCAD** in the **Help** menu.

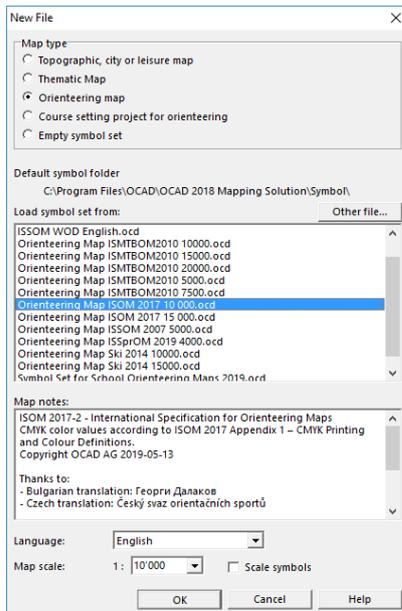
New Map

Start a New Map File

Before start mapping you should define which type of map you want to draw, which symbol set you want to use and which scale the map should have. For this tutorial we want to draw an normal forest orienteering map in scale 1:10'000.

To create a new map:

1. Select **New** in the **File** menu. The **New File** dialog box appears.



2. Choose a map type. OCAD provides predefined symbol sets to help you begin drawing your map immediately. Choose the symbol set **Orienteering Map ISOM 2017 10000.ocd**.

3. Decide in which **scale** the map shall be drawn. Set the scale to 1:10'000.

4. Choose the language of the symbol set. (only at ISOM 2017 available)

5. By clicking the **OK** button, OCAD creates a new map and copies the chosen symbol set to it.

Click [here](#) to learn more about this step.

Set Scale and Coordinate System

Select the **Set Scale and Coordinate System** item from the **Map** menu. The **Set Scale and Coordinate System** dialog box appears.

Enter the Map Scale

Enter a scale and click the **OK** button.

💡 Do not use this dialog to change the scale after entering the initial values. To increase or decrease the size of the map subsequently, use the **Change Scale** function in the **Map** menu. Setting the current scale does not enlarge or reduce the map. It only changes a number in the map file and georeferencing will be lost.

Georeference the Map

Before loading a georeferenced **Background Map**, work with **GPS** data or import **Spatial Base Data**, we recommend that you first georeference the map. Georeferencing means, that you assign space-related reference information to objects in a spatial reference system. Shortly: A georeferenced map is assigned to a coordinate system. You should contact your data supplier, national surveying office or cartographic institute to find out which coordinate system will best suit your needs.

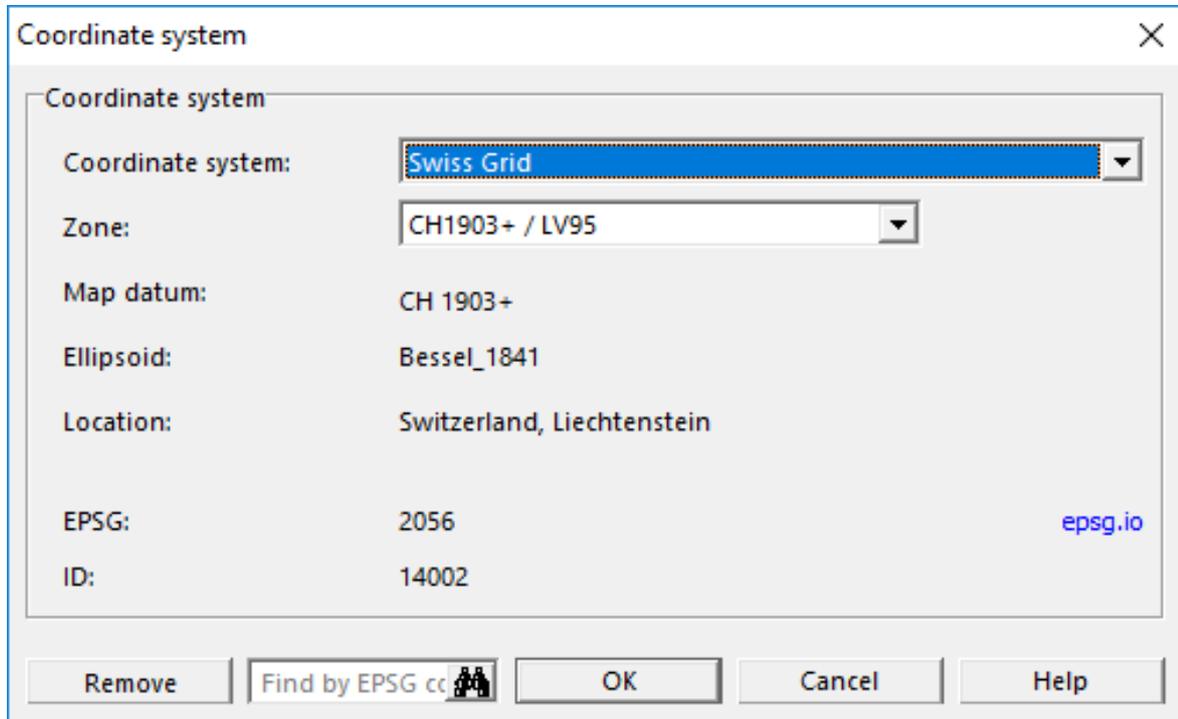
1. Choose whether you want define **Paper coordinates** (in mm) or **Real world coordinates**. We choose **Real world coordinates** for this tutorial.
2. In the **Easting offset** and **Northing offset** fields, enter the coordinate values for the center of your map.
3. The coordinate system can be rotated by entering a value in the **Angle** field. The "Angle" is the deviation from the magnetic North to the coordinate system. At the moment there are 0-degree deviation in Switzerland.
4. In the **Grid distance** field, enter the desired distance for the **Coordinate Grid lines**.

💡 Enter the coordinate values for the center of your map in the horizontal and vertical offset fields. This is important since the drawing area of OCAD is limited to 4 x 4 m in the **Ori Orienteering** edition, in the **Sta Starter** edition as well as in the **CS Course Setting** edition and 80 x 80 m in the **Mas OCAD Mapping**

Solution. This option is used to ensure that imported **Spatial Base Data**, georeferenced **Background Maps** and **GPS** measurements do not lie outside the drawing area.

Coordinate System

Click the **Choose** button to define a coordinate system. The **Coordinate System** dialog appears.



Choose the desired coordinate system. OCAD supports a lot of coordinate systems.

Click [here](#) to learn more about Scale, Coordinate System and Georeferencing.

Create the Base Map for the Field Work

Before you go mapping into the terrain, you should try to create the best possible base map. The more you invest in your base map, the faster and more accurate your mapping will be. In OCAD you can import spatial data, old orienteering maps, derive own base maps with LiDAR data and combine them.

Raster Base Maps

Typically, the orthophotos and topographic maps for orienteering maps are delivered as raster files. OCAD supports, among others, the most common used raster files: JPG, TIFF and PNG.

Orthophotos and topographic maps are mostly georeferenced. Raster files are georeferenced, when the pixels are referenced with the coordinates. Normally the georeferencing data is saved in a world file. The world file has the same file name as the raster file, but with another file extension: JPG → JGW, TIFF → TFW, PNG → PGW.

Open Georeferenced Raster Base Map as Background Map

Click to **Background Map->Open**

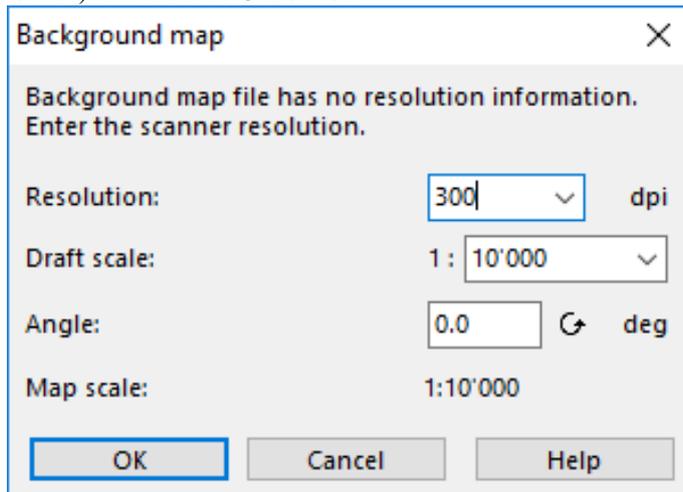
If there's not yet a coordinate system and offset, the **Background Map (Georeferenced)** dialog appears and shows the georeferencing of the selected background map.

Click **OK**.

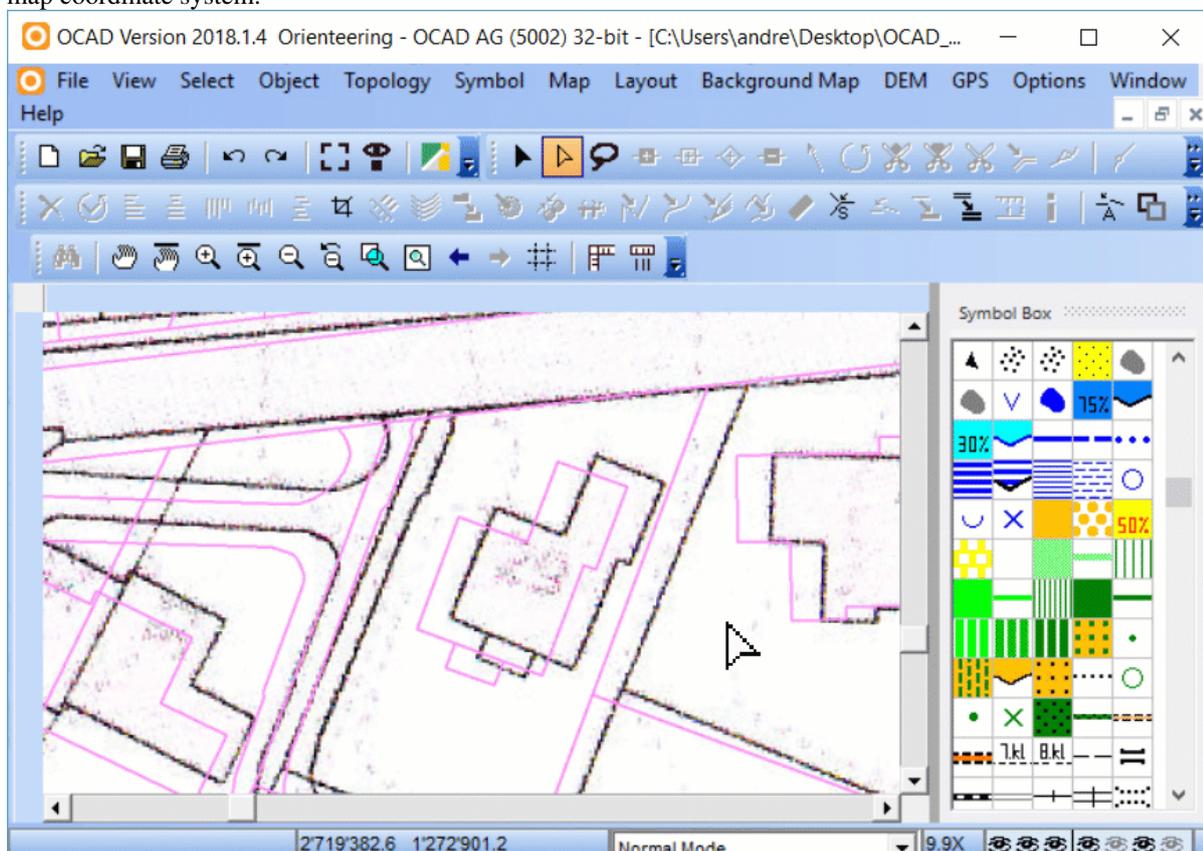
Open not Georeferenced Raster Base Map as a Background Map

Click to **Background Map->Open**

If the selected file is not georeferenced, you need to enter a resolution for the background map (if a raster map is loaded) and click the **OK** button.



The background map is displayed at the center of the current drawing area. The raster map (background map) now needs to be adjusted with the map (**Adjust a Background Map**). In other words, it needs to be referenced with the map coordinate system.

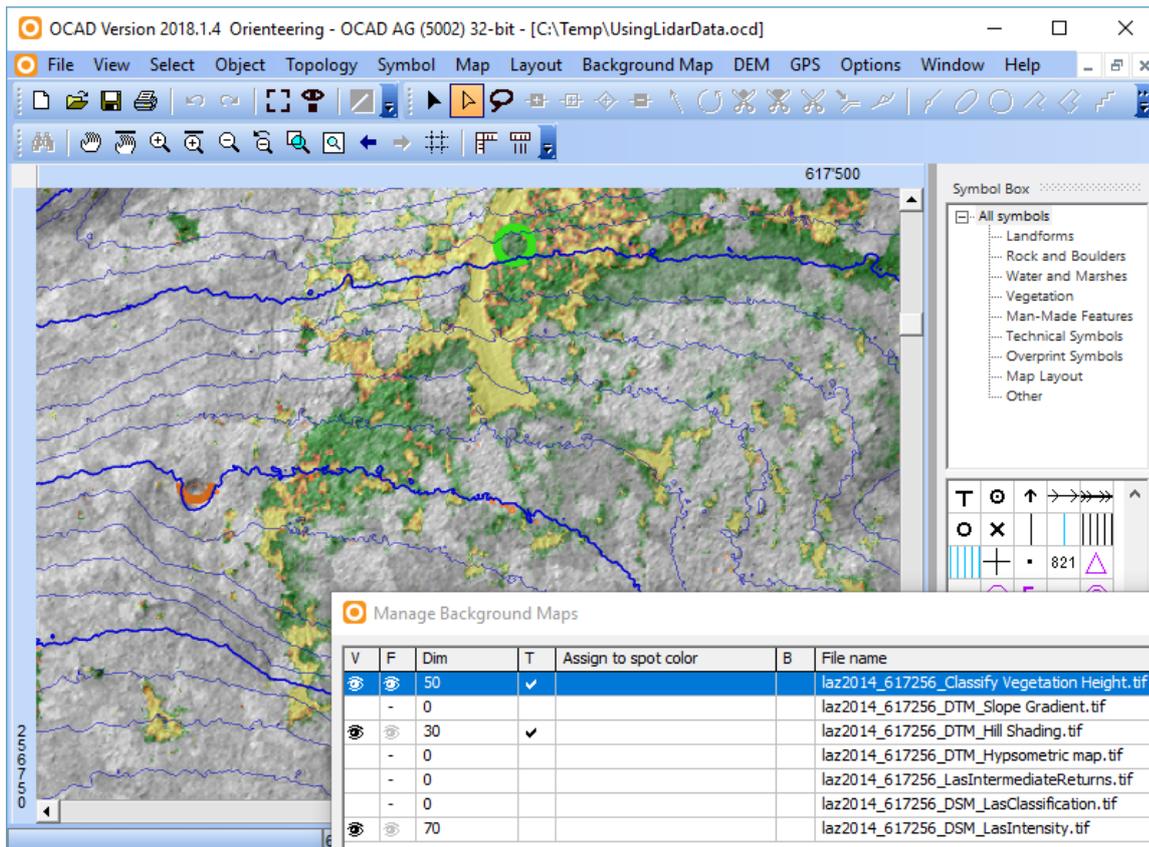


💡 We recommend you to print the grid on the base map. Thereby you can adjust your scanned base map easier. In the dialog **File->Print** select **Print screen grid** and choose the **Grid color**.

Preparation of LiDAR Data

LiDAR data is often a base for orienteering maps and highly recommended to use if available. LiDAR data is available as a point cloud in the las/laz file format. With LiDAR data, you can easily get lot of information about the terrain and the vegetation, which will make mapping much faster and more accurate.

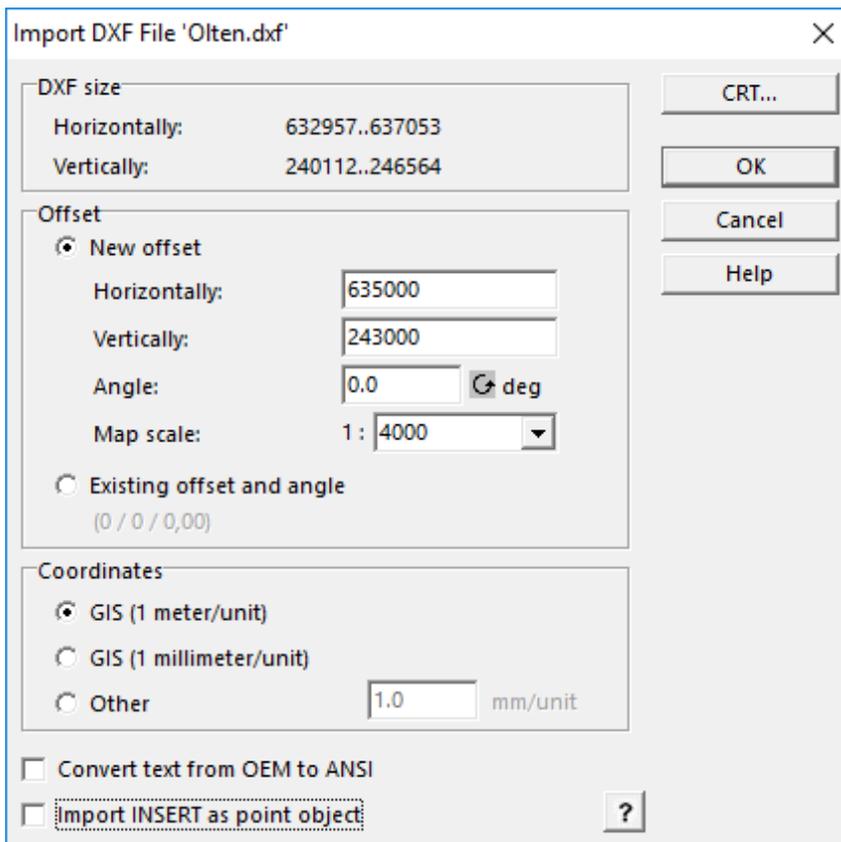
For this purpose, there's an extra tutorial about **Using Airborne Laserscanning Data for Orienteering Base Map Generation**. There you will learn, how to proceed LiDAR data in OCAD and how to use them when drawing orienteering maps..



Import Vector Data

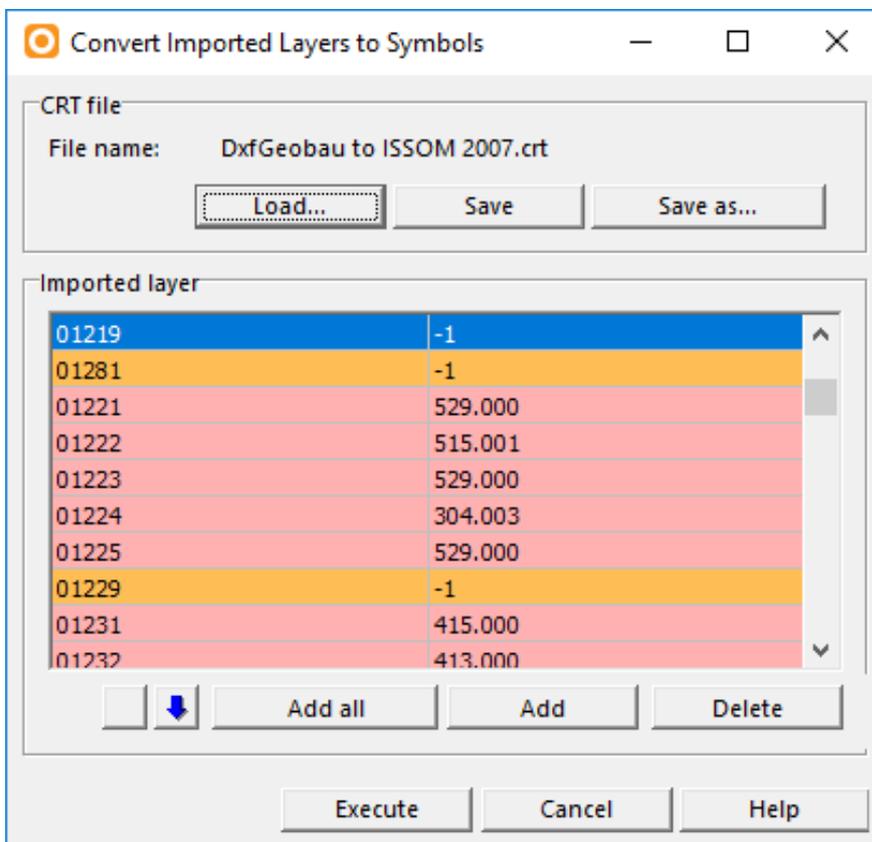
Vector data can also be used to create the base map. The advantage is that vector data contain point, line, area and text objects which are directly converted to map objects during the import into OCAD. It saves a lot of time because especially in urban surroundings many map objects can be created automatically instead of being digitized manually. Governmental data is generally available as DXF or Shape files. OCAD can also import other vector data formats like PDF, AI, SVG or OSM (Open Street Map).

1. Go to **File->Import**
2. Choose an **importable file, e.g. a dxf-file**.



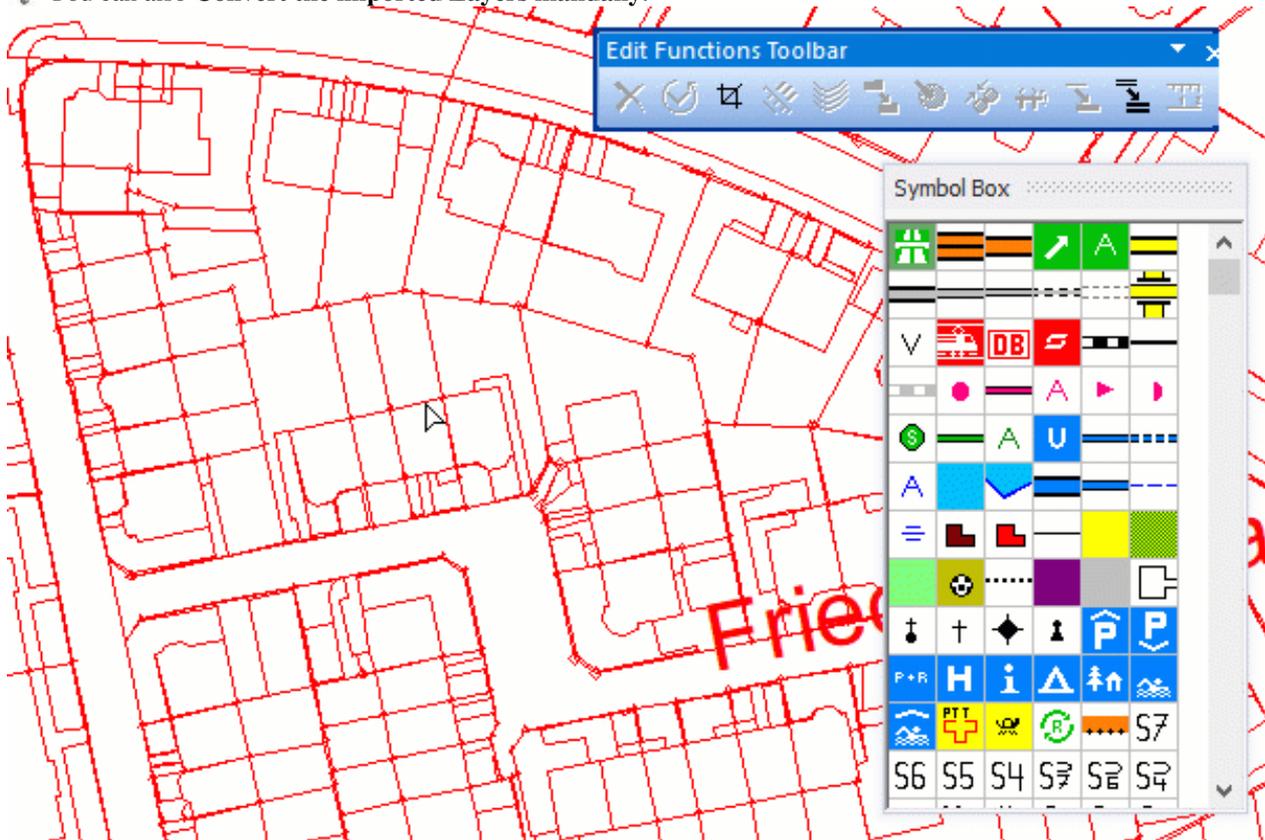
- The vector data is shown as **Unsymbolized objects** in the drawing area. You can symbolize the objects automatically:

Map → Convert Imported Layers to Symbols...



- The map now shows all objects with the assigned symbols.

💡 You can also **Convert the imported Layers manually**.



Revision of an Existing Orienteering Map

If you use an old orienteering map as a base map for the revision, you have to consider following points:

- Control if the scale is proper.
- Check the declination.
- **Correct the symbol set** and match it to the current international specification.
- Convert freehand lines into curves.
- Delete disturbing objects. The base map shouldn't contain any dark area objects.

The preparation of an existing OCAD file for a revision needs experience. It is recommended to consult an experienced map drawer or a map consultant.

💡 If your map is not georeferenced or no LiDAR/cadastral data has been used before, we recommend you to start your new map from scratch. As you could see in the chapters above, high quality base maps can be produced in a minute, where all objects are at the right place.

Mapping in the terrain

Nowadays, with the right background material and equipment, mapping in the terrain is not about the right place of the object - it is about which objects should be on the map. This process is called generalisation and is done differently by every cartographer.

In case your background material isn't that great, you can get help of a **GPS device** or a **Laser Rangefinder**. In this case, mapping with a Tablet PC can make sense. OCAD supports real-time GPS so you can see your current position on the tablet. Furthermore, switching between different background maps is easy.

However, most cartographers still prefer to map with pen and paper. This way, you are faster in the field and can make the final drawing at home, where you work more efficiently and weather independent.



In the example above, the following color were used:

- Black: Buildings, streets, paved area, rocks, stones
- Red: Terrain, canopies/passages, open land
- Blue: Water, wells, walls, fences
- Green: Vegetation, hedges, trees

Prepare your field work for digitizing

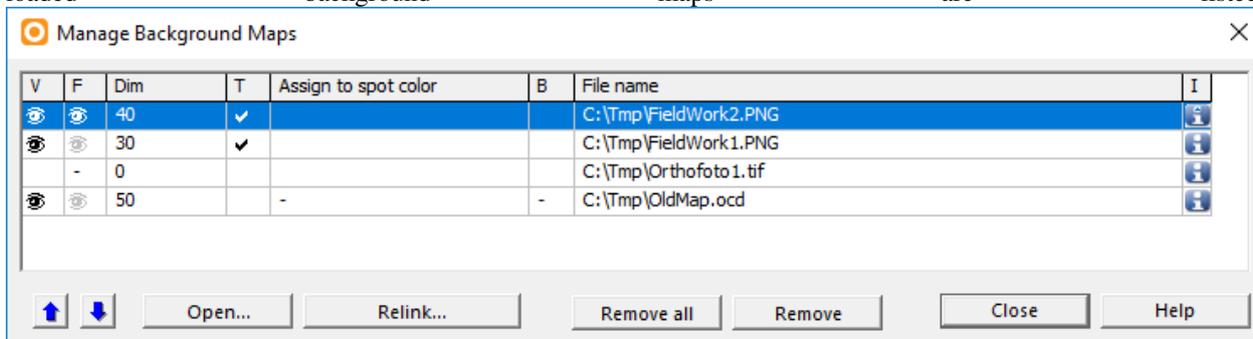
Scan Field Work, Open it as a Background Map and Adjust

When you are back from mapping...

1. Scan your field work and save it in a raster format (JPG, TIFF or PNG).
2. **Background Map->Open**
3. **Adjust your Background Map (F9)**

Background Map Options

Go to **Background Map -> Manage** In the Manage Background Map dialog a table is displayed, in which all loaded background maps are listed.



- **V (Visible):** You can make a background map visible or hide it by clicking the corresponding cell in this column. An eye icon in this column means that the background map is visible.

💡 To hide all background maps temporary use the **Hide All** command in the **Background Map** menu.

- **F (Visible in Background Favorites view mode):** You can make a background map visible or hide it in the **Background Favorites** by clicking the corresponding cell in this column. An eye icon in this column means that the background map is visible in the **Background Favorites**.
- **Dim:** In this column you can enter a value in percentage to make the background map appear brighter, i.e. to dim it. 0% means the background map is displayed in its original colors. 100% means the background map appears completely white. Dimming is used to get a better distinction between the background map and the map.
- **T (Transparent):** If more than one background map is opened you can set them transparent so that both are visible. Activate this option by clicking the corresponding cell in this column.

💡 The order of the background maps can be changed with the arrow icons   or with drag and drop.

Background Map Options

Choose the **Hide All** command in the **Background Map** menu or press the **F10** key to hide all background maps temporarily or make them visible when they are hidden.

Draw an Object on the Map

To draw an object, click on the symbol in the symbol box first, then choose the drawing tool in the toolbar and finally draw the object in the drawing area.

Please read the Wiki Page **Drawing an Object** to learn more about it.

Edit Objects

To edit an object, there are many edit tools:

- Edit tools in the Edit and Drawing Toolbar



- Edit functions in the Edit Functions Toolbar



To edit an object, the object has to be selected:

- Select and Edit Object(s)  e.g. move an object
- Select Object and Edit Vertex  e.g. insert, move, remove a vertex

Find more information on the **Edit Object** page.

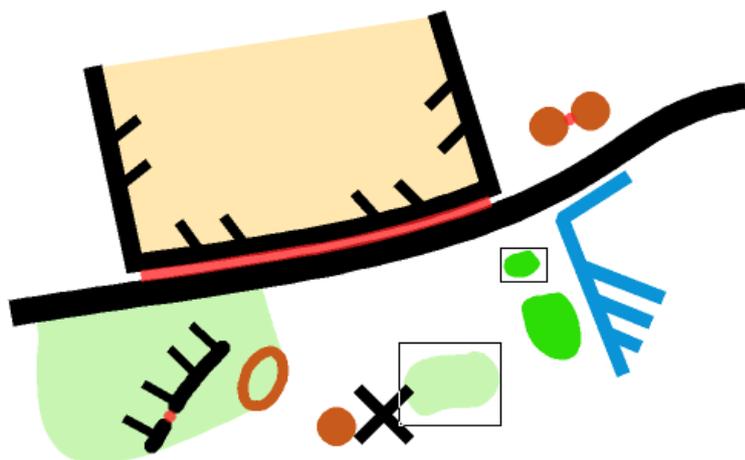
Check Legibility of your Map

The term **Generalisation** was mentioned already above and deals with the question, which objects are important and should be on a map and which are not. The problem is seldom that there are too few objects on the map, but often are too many and too small objects on the map. This has to do with more accurate background maps, on which you see every detail.

Be also aware, that orienteering maps are no cadastral maps. Readability is much more important than position accuracy. You are allowed to cheat, e.g. make buildings smaller to emphasize a passage. Nobody will recognise.

OCAD has a function called **Check Legibility** that helps you verifying your map.

Use this function to check minimum distances between objects, minimum length of line objects or minimum size of area objects according to ISOM 2017.



Object index	Object type	Symbol	Colors	Number of	Elevation [r]	Length [m]	Area [m]
7	Area object	410.000 Vegetation, Fight	C=204 M=0 Y=255 K=0	10	0.00	-	28.41
10	Area object	406.000 Vegetation, Slow Running	C=51 M=0 Y=76 K=0	16	0.00	-	178.99

Colors and Symbols

Colors

In the **Map -> Colors** dialog you can manage the colors of the symbols. You shouldn't change something in the list, when you don't know what you are doing. The order of the colors in the color list regulates the overlaying: a color covers at the printing all the colors that are below.

The actual ISOM Symbol Sets of OCAD contains the latest CMYK color value. However, they may change from time to time. The latest CMYK color values can be found [\[here^{\[5\]}\]](#).

Symbols

Symbol Sets for Orienteering Maps

OCAD delivers many predefined Symbol Sets for Orienteering maps and are part of OCAD. Choose one of the Symbol Set, when you start a new file **File -> New**. The latest ISOM (International Specification for Orienteering Maps) is ISOM 2017 for Forest Maps. If your map is still in an older ISOM standard, you can change the symbols to ISOM 2017 under **Map -> Symbol Set Conversion**.

For Sprint Maps the latest specification is only 2007 (ISSOM 2007). The symbol sets are also delivered for Ski and Bike orienteering.

Print and Export

Print

Go to **File>Print** (or Ctrl+P) to print your map. Select printer, scale and extend. Read more on the **Printing Maps** page.

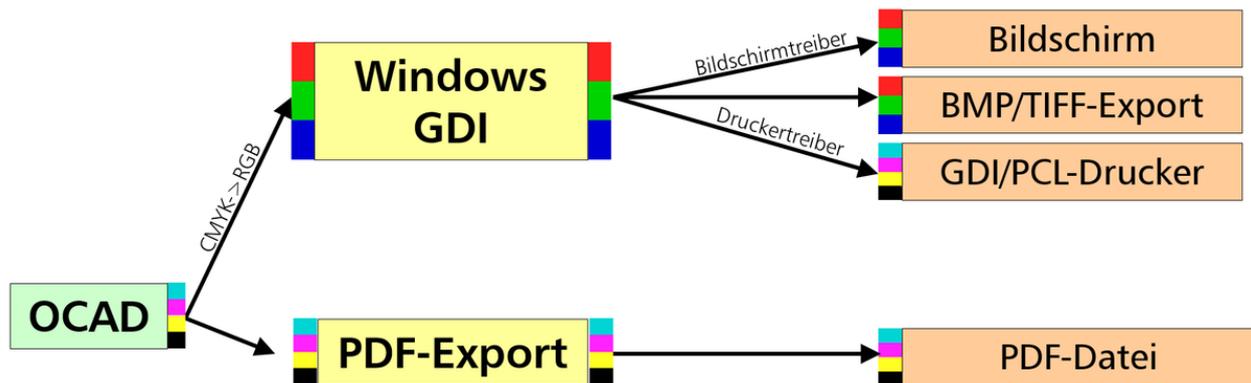
💡 Print your map in the intended scale after a while. Check if you can read all details. Remember to keep at least the minimum dimensions defined by the IOF. The **Check Legibility** function helps you with that. When working with 64x zoom level, you easily get too small and too many symbols on your map.

Export Files

Go to **File>Export** (or Ctrl+E) to export your map. Set output file, quality and extend. Read more on the **Export Files** page.

💡 You can't export a PDF, when you are in the **Draft View** mode. Change to the Normal mode.

💡 Due to color display, we recommend you to always create a PDF first out of OCAD and print this PDF afterwards. OCAD works with CMYK Colors and they will only be displayed correctly this way. What you see on your screen are RGB-Colors from the Windows Graphics Device Interface (GDI). When you print maps directly out of OCAD, the Windows GDI converts the CMYK values first in RGB values and your printer driver back to CMYK values. This way it may come to changes in the color values.



References

- [1] <http://www.ocad.com/en/>
- [2] <http://www.ocad.com/en/support/learn-video/>
- [3] <http://ocad.com/blog/>
- [4] http://ocad.com/OCAD2018/OCAD_2018_Update.txt
- [5] <https://orienteering.org/resources/mapping/>

Varia

Technical Data

Computer / System Requirements

- OCAD 2019 requires Windows 7, Windows 8 or Windows 10 (32- or 64-bit). OCAD 2019 is available as 32-bit and 64-bit software.
- We strongly recommend for Windows Vista und Windows 7 to use the default Aero Theme to avoid unnecessary screen redraws or erased maps when moving dialogs.
- 50 MB of free disk space for the installation
- At least 1 GB RAM (depends on the size of open maps and background maps). The OCAD program without any open map needs only 70 MB RAM.
- OCAD 2019 as 32-bit software can allocate up to approx. 3.5 GB RAM (**32-bit** Windows 7 consult the page Physical Memory). OCAD 2019 as 64-bit software and can allocate more than 3.5 GB RAM if available.
- Screen resolution: 1280 x 1024 or higher recommended
- OCAD 2019 Mapping Solution: We recommend to install the Borland Database Engine ^[4] (import shape files, database connections to dBase files, using OCAD to create thematic maps) and the Microsoft Access Database Engine 32-bit ^[4] (database connections to Access/Excel files, using OCAD to create thematic maps).

 OCAD 64-bit version cannot connect to Microsoft Excel/Access if the 32-bit version of Microsoft Access Database Engine is installed. The same with 64-bit Microsoft Access Database Engine and OCAD 32 bit version. In this case use the same OCAD version as installed Microsoft Access Database Engine..

64-bit Version vs. 32-bit Version

OCAD 2019 Orienteering and **OCAD 2019 Mapping Solution** are now available as 64-bit version. However, we have still also a 32-bit version. The OCAD Setup installs both versions. Both versions use the same resources, nevertheless it is possible to run both versions at the same time. The installer creates a program shortcut for each version.

Please note, the 64-bit version isn't faster than the 32-bit version. The big advantage of 64-bit is that OCAD can allocate more than 3 GB RAM if available on the computer. That is important when loading huge raster background maps or DEM files.

OCAD 2019 Starter and **OCAD 2019 Course Setting** only come as a 32-bit version.

You can check your Windows version in the OCAD map information dialog.

OCAD 64-bit runs only in Windows 64-bit version. Nowadays, most computers are running on a 64-bit Windows version. OCAD 32-bit runs on both Windows 64-bit and 32-bit. The ocd files are 100% compatible between both versions.

Please note that not all OCAD functions are available in both versions. The restrictions for OCAD 64-bit version are:

- dbf database file cannot be used
- GPS Real Time via COM interface does not work
- Laser Range Finder does not work

After the installation ocd files are associated with OCAD 2019 32-bit version. To change to 64-bit see **How to Change Default Program Association**.

OCAD on Mac OS X

Read the **OCAD on Mac OS X** article for more information.

OCAD on Linux

Read the **OCAD on Linux** article for more information.

OCAD Limits

- Maximal map size: 4 x 4 meters (OCAD Orienteering edition), 80 x 80 meters (Mapping Solution edition)
- Resolution (accuracy of coordinates) 0.01 mm
- 10000 objects (Starter edition), 16 million objects (OCAD Mapping Solution, Orienteering, Course Setting and Viewer edition)
- 4 million vertices for each object
- Unlimited number of symbols (number range 0.001 to 999'999.999)
- 32'000 colors (number range from 0 to 32'000)
- 2 GB file size

OCAD File Format

This description of the OCAD file format is intended for programmers who want to directly access the information in OCAD files.

- OCAD 12 File Format
- OCAD 11 File Format ^[1]
- OCAD 10 File Format ^[2]
- OCAD 9/10 Graphic ^[3]
- OCAD 9 File Format ^[4]
- OCAD 6/7/8 File Format ^[5]

Recommendations

OCAD runs on all 7 / 8 or 10 computers except Windows 8 RT (ARM tablets).

Mapping on TabletPC

Hardware:

- Tablet PC with Windows
- Long battery life (8 hours or longer)
- Outdoor screen
- GPS with USB or Bluetooth connection

Software:

- OCAD Orienteering Edition

Draw Orienteering Maps and Course Setting

Hardware:

- Desktop or Laptop with Windows
- 4 GB or more RAM (at least 8 GB RAM when working with big Airborne Laserscanning Files)

Software:

- OCAD Orienteering Edition or OCAD Course Setting Edition

Map Publishing Companies

Hardware:

- Desktop PC with Windows one or two screens
- 4 or more GB RAM

Software:

- OCAD Mapping Solution

Special OCAD Settings:

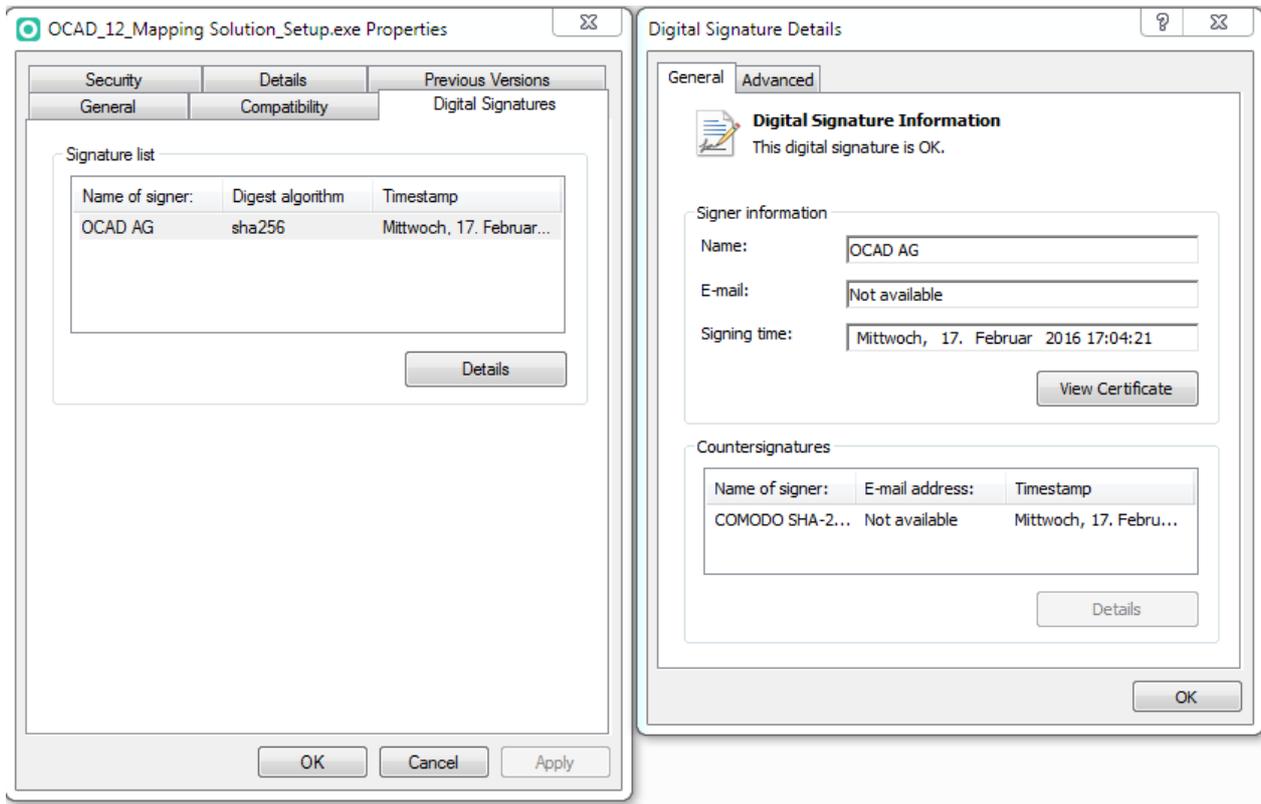
- Switch on the **Faster text rendering** in **OCAD Preferences** -> **View** tab in **Options** menu.
- Switch off the **Anti-Aliasing** mode in **View** menu. If Anti-Aliasing is switched off then OCAD draws the screen color by color. Otherwise OCAD draws the screen once after a short time.

Digital Signature

The OCAD program file and the OCAD setup file are signed with the digital signature ^[6] of OCAD AG. That confirms the software author and guarantee that the code has not been altered or corrupted since it was signed by use of a cryptographic hash. OCAD uses the digital signature algorithm sha256RSA.

That is the reason why OCAD 2019 doesn't run on Windows XP and Vista.

To see the digital signature open the context menu of the OCAD setup file (.exe file) in **File Explorer** and click **Properties**. The **Properties dialog** opens. Click the **Digital Signature** tab. Click **Details**. In **Digital Signature Details** dialog is the **Signer Name** *OCAD AG*.



[Back to Main Page](#)

[Previous Chapter: Tutorials](#)

References

- [1] http://www.ocad.com/wiki/ocad11/en/?title=Main_Page
- [2] <http://www.ocad.ch/docs/OCAD10Format.txt>
- [3] <http://www.ocad.ch/docs/OCAD9Format.pdf>
- [4] <http://www.ocad.ch/docs/OCAD9Format.txt>
- [5] <http://www.ocad.ch/docs/format8.txt>
- [6] https://en.wikipedia.org/wiki/Code_signing

Service Update

Regular and free updates are included in the OCAD subscription model. The Service Update corrects known bugs and adds the latest cartography tools and enhancements to your OCAD.

Therefore, we recommend using OCAD software always with the most recent Service Update to benefit from the quality improvements.

Please download the current Service Update from the **Help -> Download Update** function in the OCAD program.

The content of the Service Update is listed in the **Release notes** ^[4].

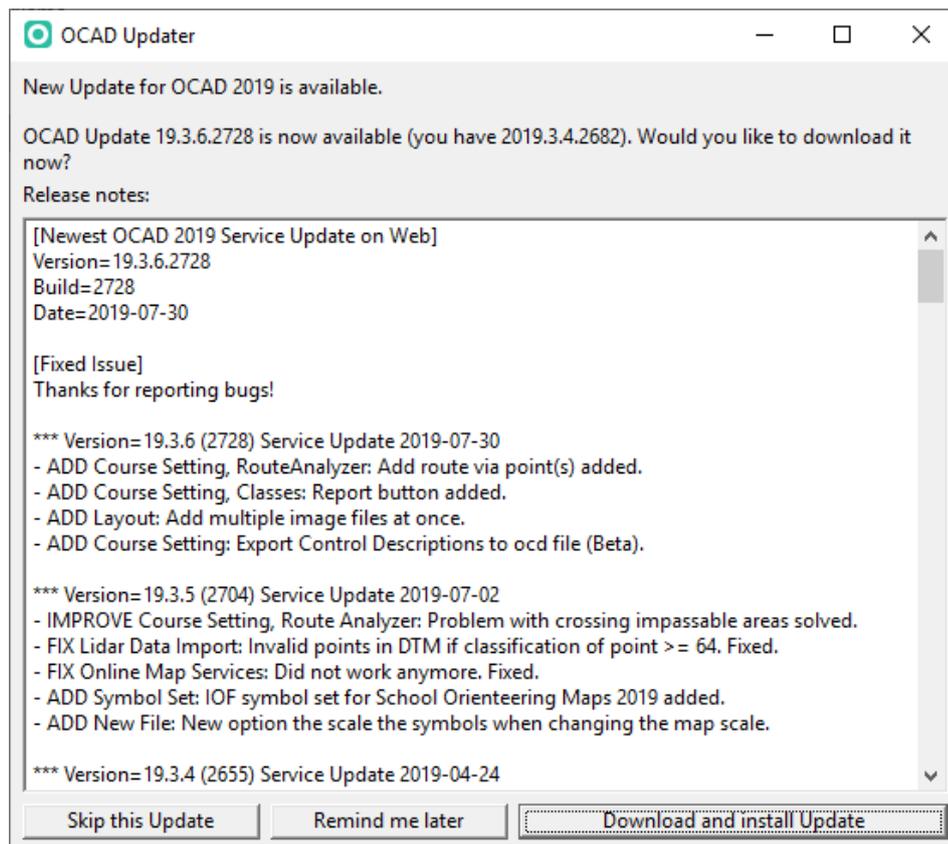
Which OCAD version do I have?

You can find out your exact Software Version under **Help -> About OCAD**.

Also, the **OCAD 12 and 2019 Updater** can be used as a general overview and update tool for OCAD installations.

OCAD Updater

OCAD checks for the newest Service Update online, everytime when it is started. If there's a new Service Update available, the **OCAD Updater** dialog appears.



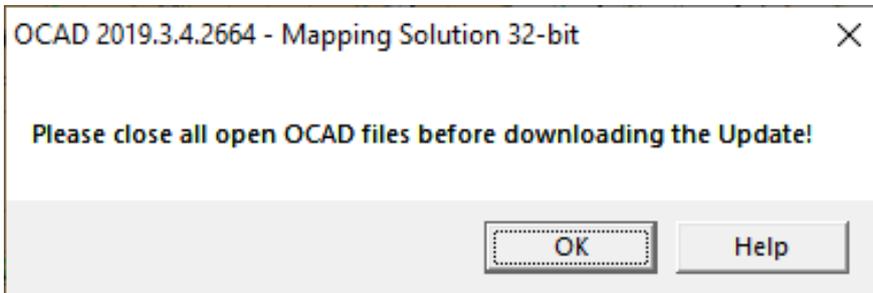
You have three options:

- **Skip this Update:** Click this button to skip the current version. OCAD will not ask again to install the service update until a new version is available.
- **Remind me later:** When this button is clicked, OCAD will ask you again to install the Service Update, when you start OCAD the next time.
- **Install Service Update:** Click this button to install the update.

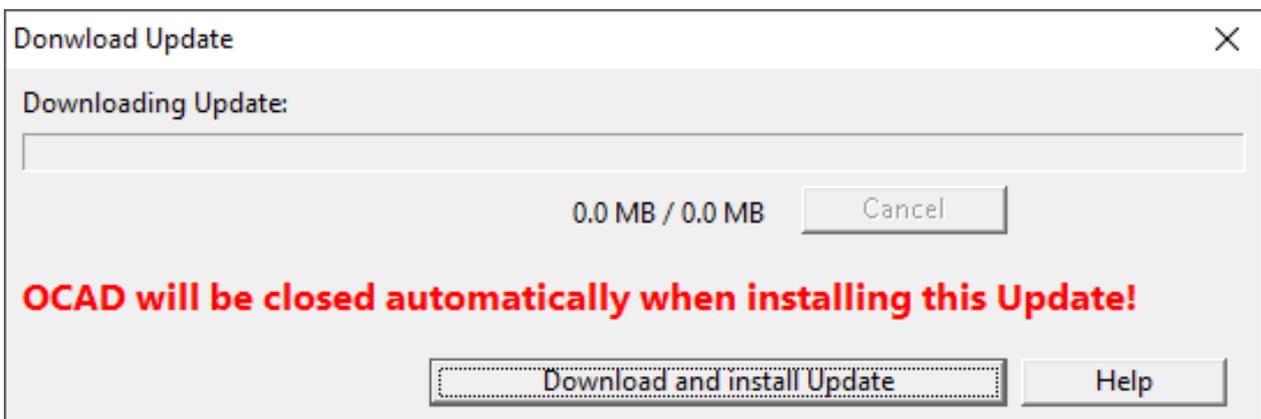
OCAD Service Update

In addition to the **OCAD Updater** you can also click on **Download Update** in the **Help menu** to download the current Service Update from the OCAD website.

If there are still OCAD files open, a message appears to close all files.

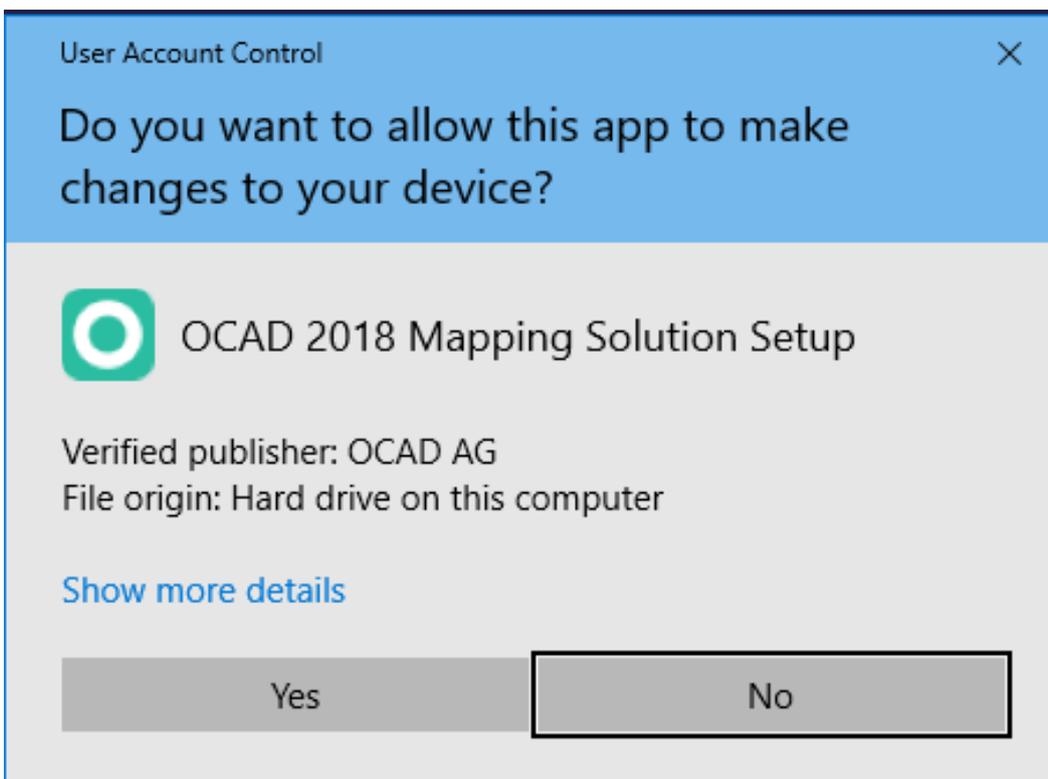


Click on **Download and install Update**. OCAD will be closed automatically afterwards.



Installation

Confirm to install the update.



Please visit the **Installation** page for further proceeding.

Switch Off the OCAD Updater

To switch off the OCAD Updater disable the option in the **Preferences**.
