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Introduction



Symbols

Below you will find the different conventions used in the manual and their use within the user guide.



Menu: Application Menu > Open Raster Image

Used to present a command. On the left is the icon of choice as it appears in the application, i.e. on the toolbar. On the right are the options for that command.



Attention!!! This icon indicates a warning or caution for the proper operation in order to obtain the desired results.



Information!!! This icon signifies a tip, suggestion, or general note for a command in order to be better explained and described.

Introduction



Target – Work Process

RaVe is a high quality, stand-alone, software application for digitizing scanned drawings to vector files and saving them in vector (.dwg) format. The process is simple and involves two steps:

- a) Image processing
- and
- b) Conversion settings

Image Processing

- Image alignment and setup.
- Fill process.
- Image enhancement and clean up.
- Line thickness adjustment (thinning/thickening).

Conversion Settings

- Setting minimum values.
- Replacement of scanned vectors.
- Arc and curve replacement.
- File digitization.

Ribbon



Application Menu

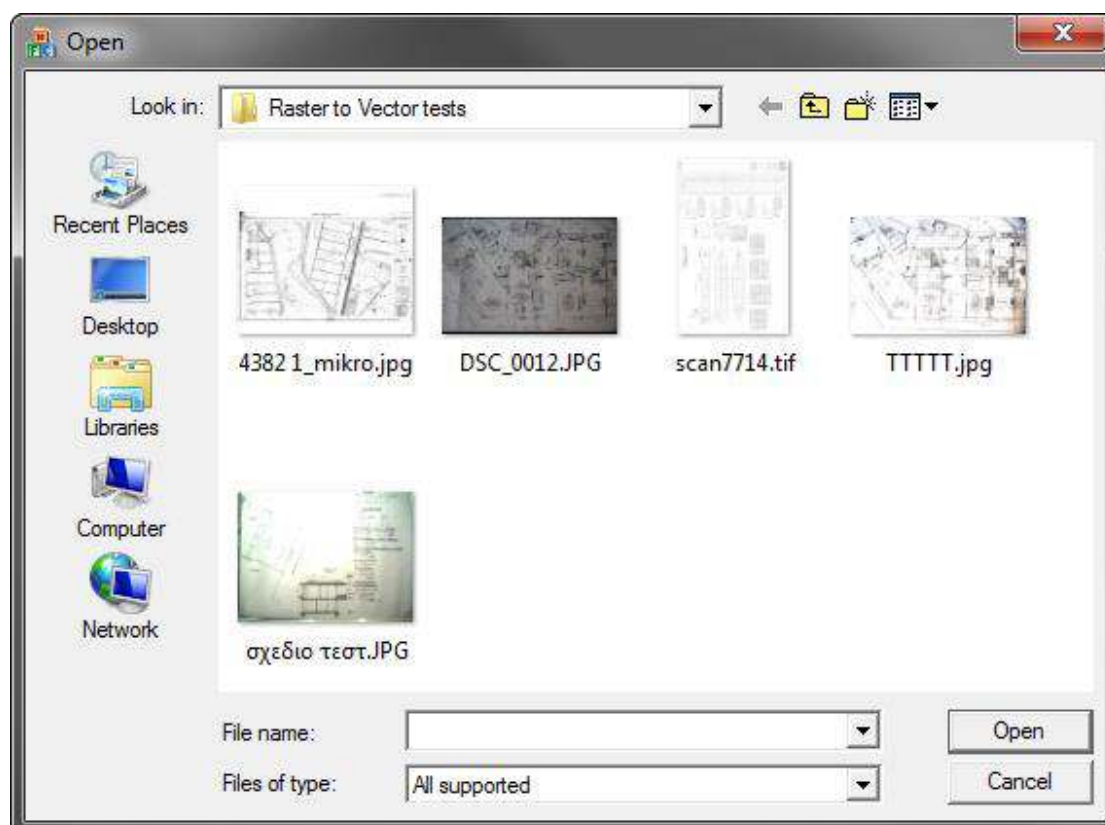
Opening Raster Image

This command opens the raster image to be converted.



Ribbon: Application Menu > Open raster image

Clicking on the icon opens a dialog box to locate the raster image to be converted.



Open Select the file and click Open

Cancel Cancels the command

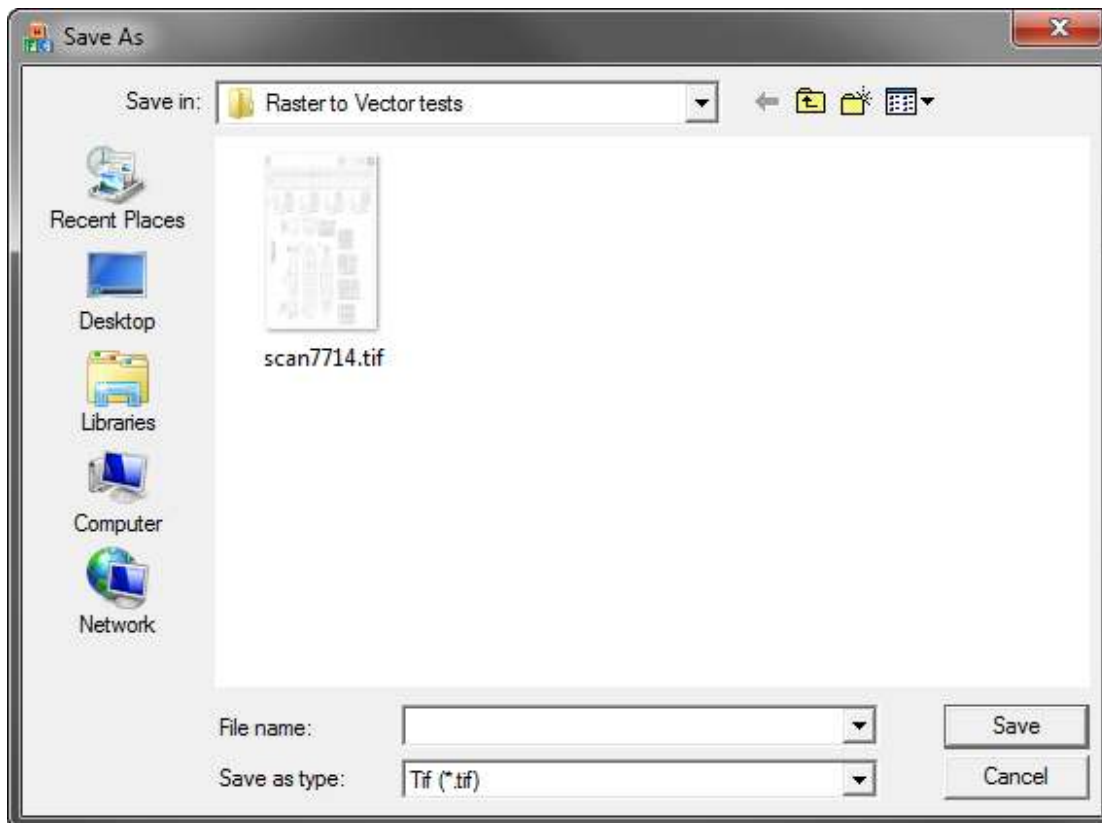
Saving Raster Image

This command saves the converted raster image.



Ribbon: Application Menu > Save raster image

Clicking on the icon opens a dialog box to select the location for the raster image to be saved.



Save Saves the raster image.

Cancel Cancels the command.

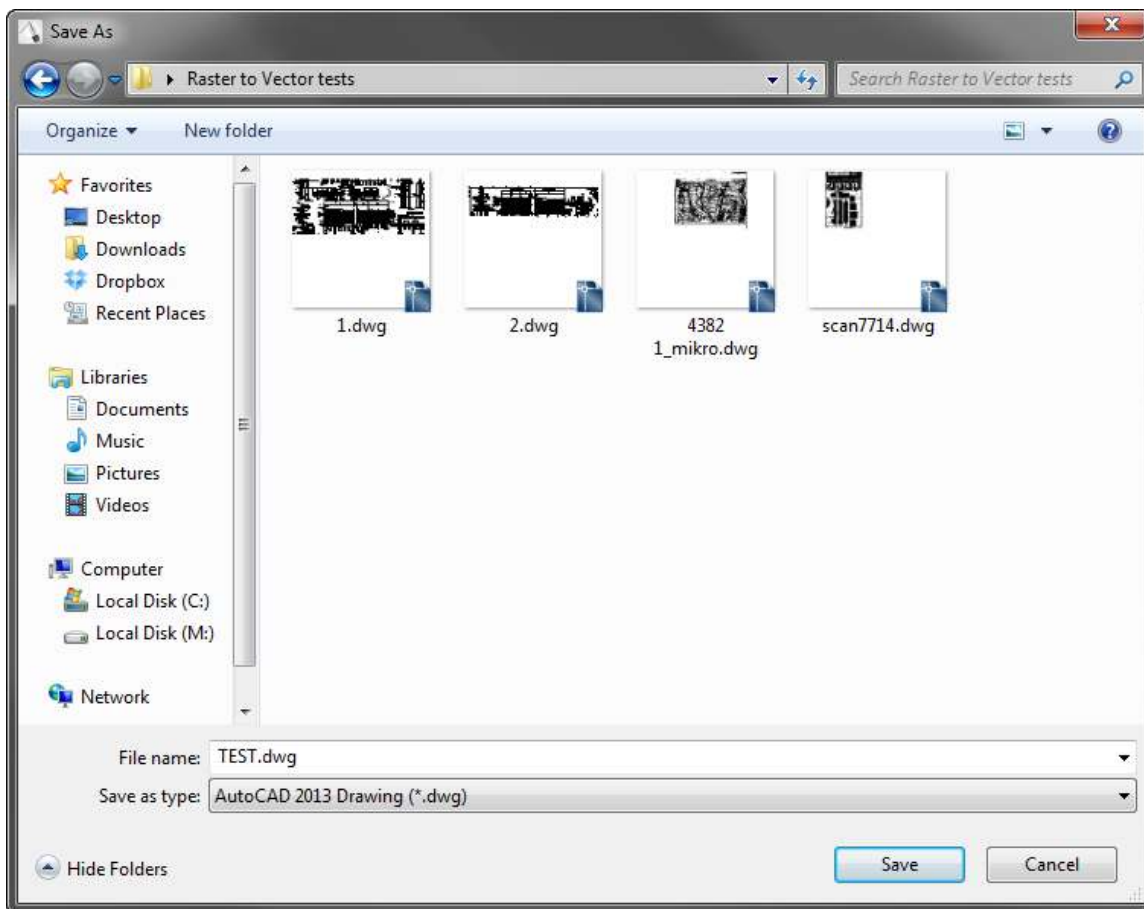
Saving as DWG-DXF

This command saves the vectorized file in Dwg or Dxf format.



Ribbon: Application Menu > Save as DWG-DXF

Clicking on the icon opens a dialog box to select the location for the vectorized file to be saved in Dwg or Dxf format.



File name Type the desired name of the file.

Save as type Select the type of the file to be saved. The following types are supported:

AutoCAD 2013 Drawing (*.dwg)

AutoCAD 2010 Drawing (*.dwg)

AutoCAD 2007 Drawing (*.dwg)

AutoCAD 2004 Drawing (*.dwg)

AutoCAD 2000 Drawing (*.dwg)

AutoCAD R14 Drawing (*.dwg)

AutoCAD R13 Drawing (*.dwg)

AutoCAD 2013 DXF (*.dxf)

AutoCAD 2010 DXF (*.dxf)

AutoCAD 2007 DXF (*.dxf)

AutoCAD 2004 DXF (*.dxf)

AutoCAD 2000 DXF (*.dxf)

AutoCAD R14 DXF (*.dxf)

AutoCAD R13 DXF (*.dxf)

Save Saves the file.

Cancel Cancels the command.

Exit

This command exits from the application.



Ribbon: Application Menu > Exit

Ribbon



Home

Parameters

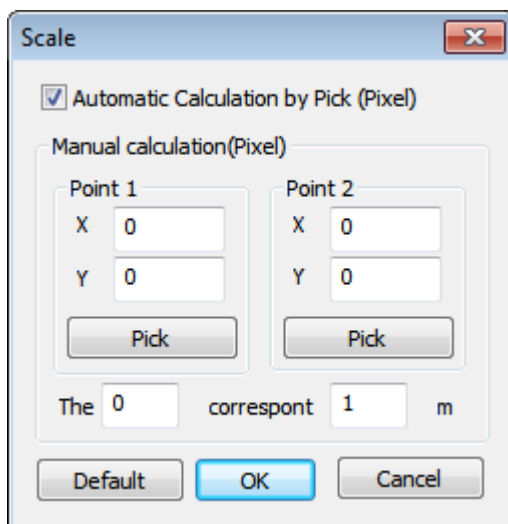
Scale

This command defines the scale for the file conversion.

Ribbon: Home > Parameters > Scale



Clicking on the icon opens the dialog box below.



Automatic calculation by pick (pixel)

Checking this box, the application automatically uses an optimized scale based on the image resolution.

If the checkbox is cleared, then manual calculations can be applied. How; See below.

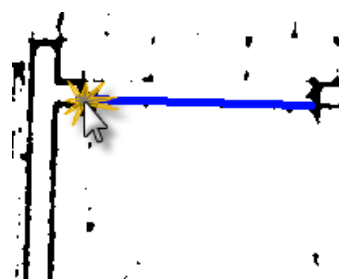
A distance in pixels needs to be defined in meters. Click on *Pick*, in *Point 1* (Pic.1) and then select the first point between the distance on the image (Pic.2).

Manual calculation(Pixel)

Point 1	Point 2
X 1490	X 1631
Y 1109	Y 1111
<input type="button" value="Pick"/>	<input type="button" value="Pick"/>

The 141 correspond 1 m

Pic.1



Pic.2

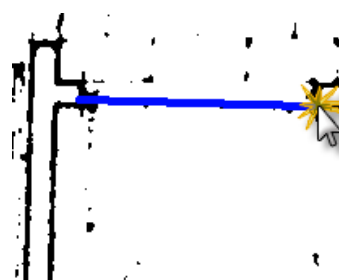
Next, select *Pick*, in *Point 2* (Pic.3) and then select the second pint between the distance in the image (Pic.4).

Manual calculation(Pixel)

Point 1	Point 2
X 1490	X 1631
Y 1109	Y 1111
<input type="button" value="Pick"/>	<input type="button" value="Pick"/>

The 141 correspond 1 m

Pic.3



Pic.4

Since the distance has been set in Pixels, then enter the actual value of the distance in meters (Pic.5).

Manual calculation(Pixel)

Point 1	Point 2
X 1490	X 1631
Y 1109	Y 1111
<input type="button" value="Pick"/>	<input type="button" value="Pick"/>

The 141 correspond 1 m

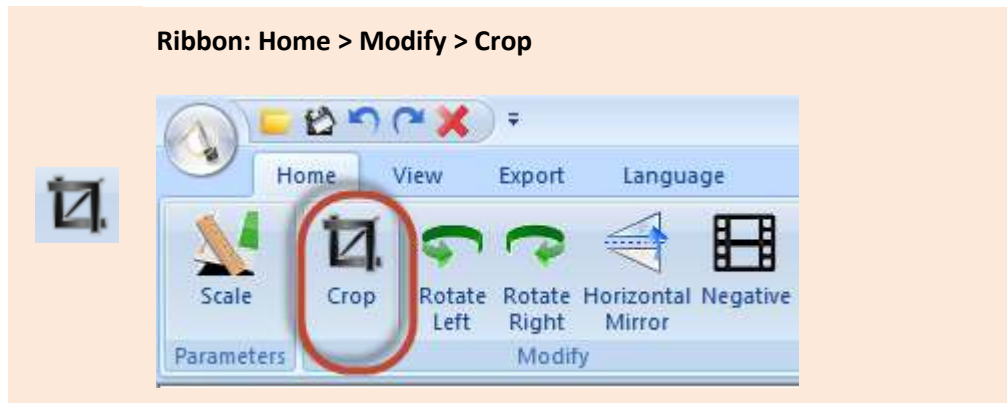
Pic.5

Click OK, to save all values.

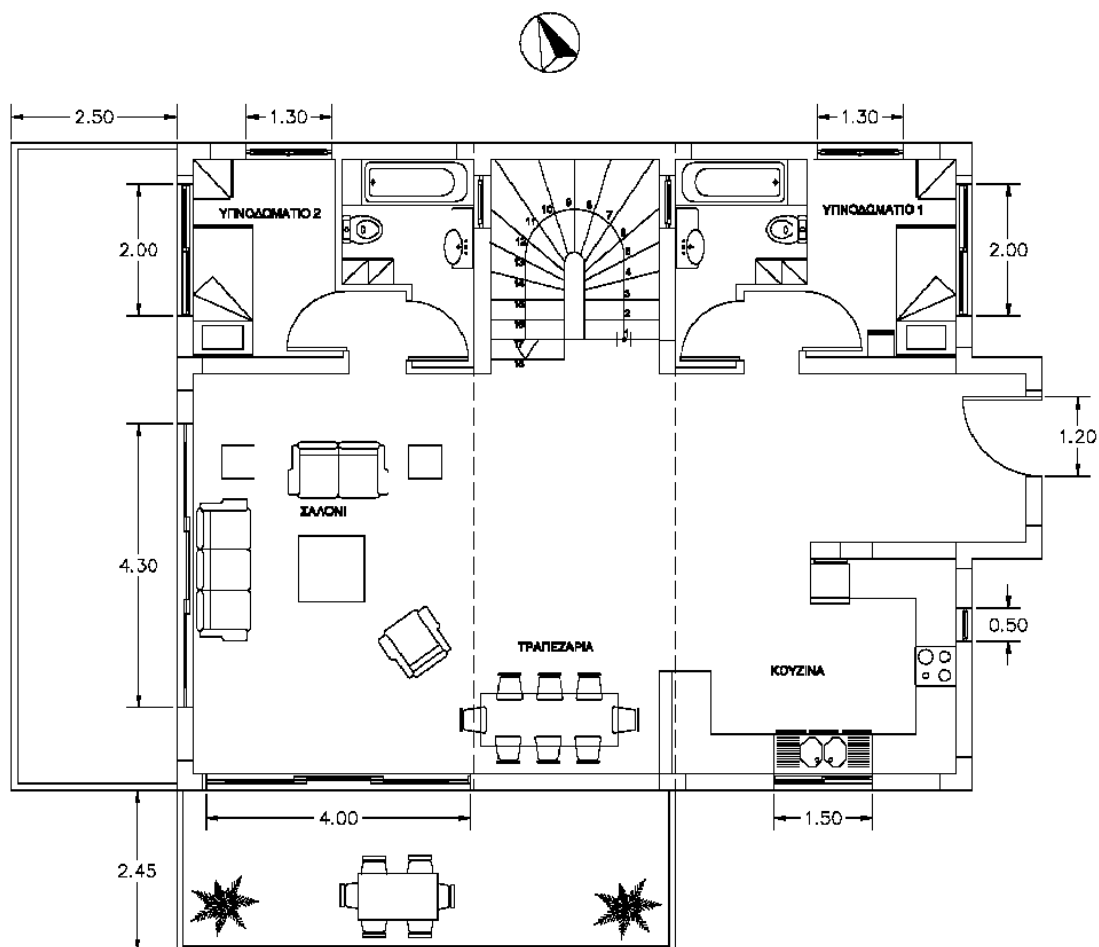
Modify

Crop

This command crops the image.

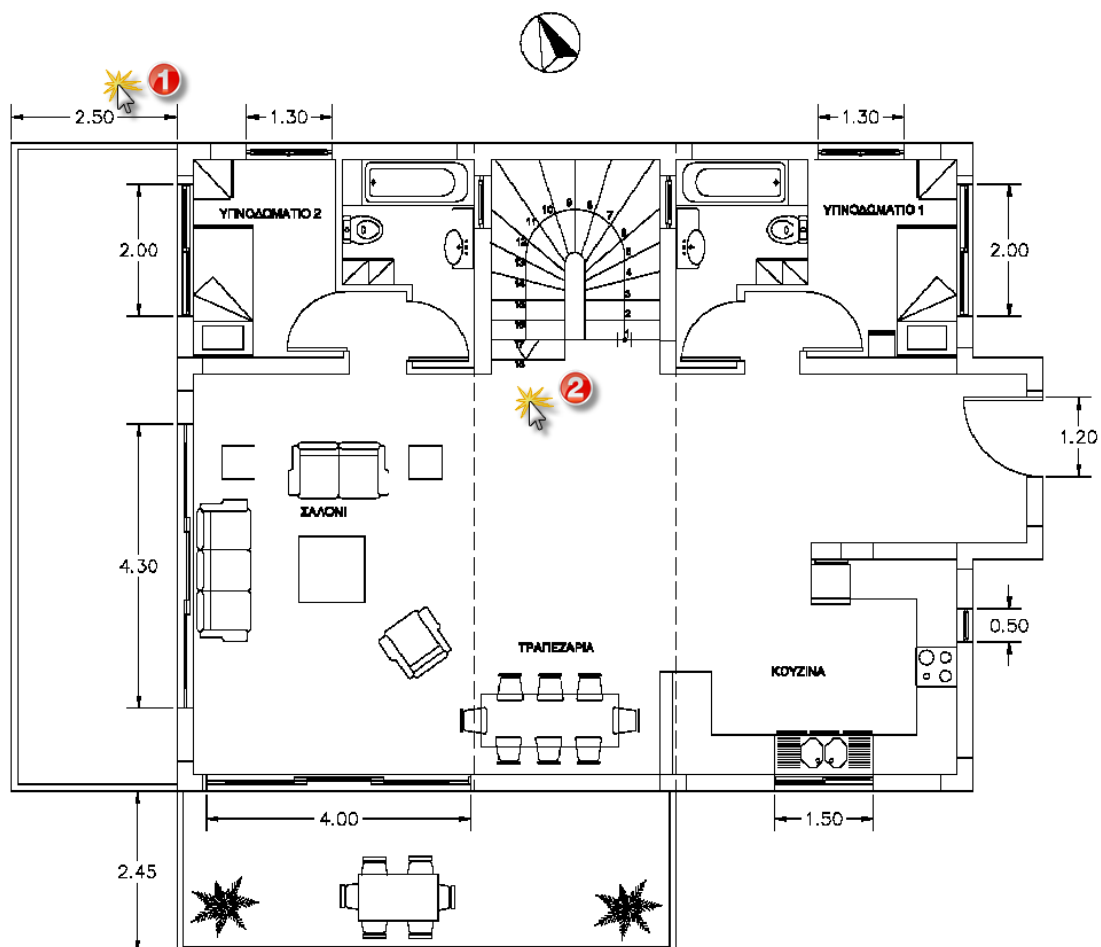


If from an image such as an architectural plan (see below), room 2 needs to be isolated (Pic.1)



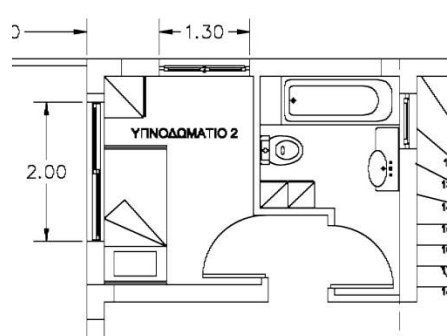
Pic.1

Select the command and pick two diametrically opposite points. For example, left click on the upper left corner of the part that needs to be isolated and then left click on the lower right corner. (Pic.2).



Pic.1

The result is in Pic.3



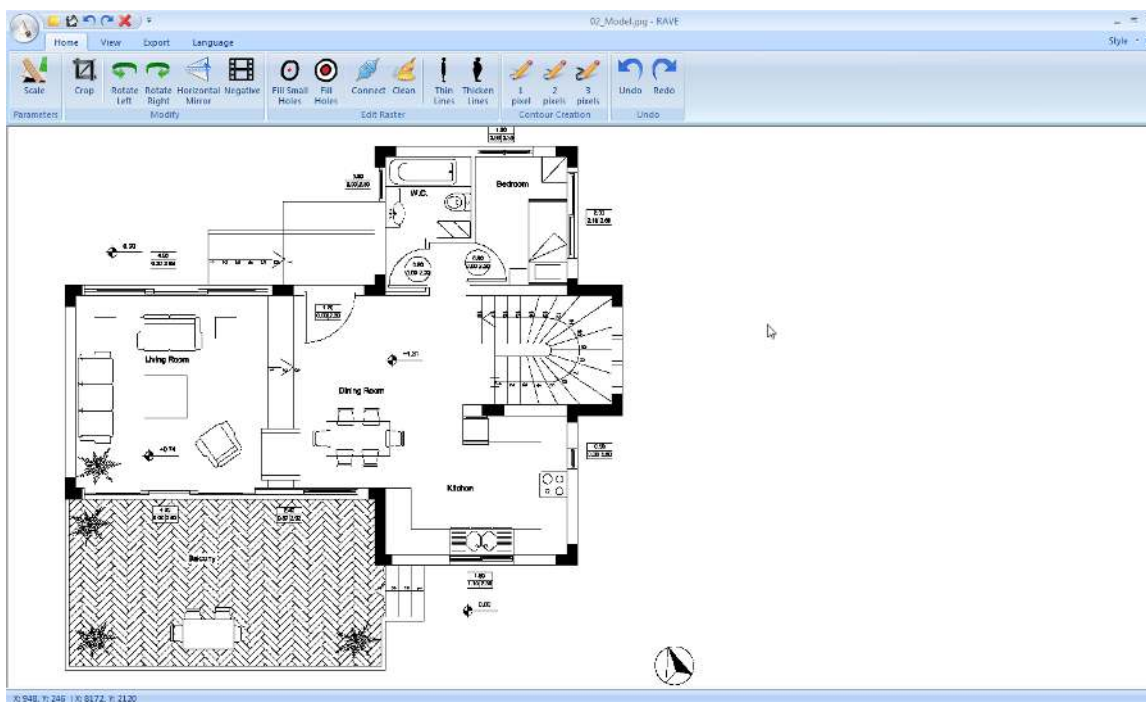
Pic.3

Rotate Left

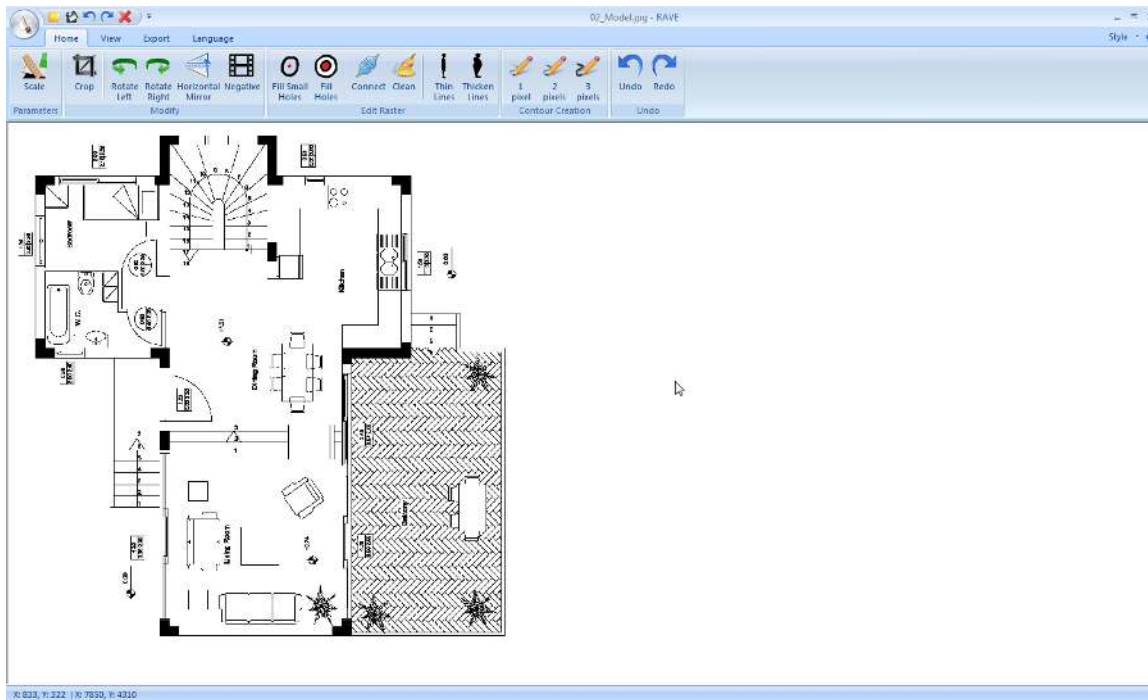
The command rotates the raster image counterclockwise 90°.



Ribbon: Home > Modify > Rotate Left



Before

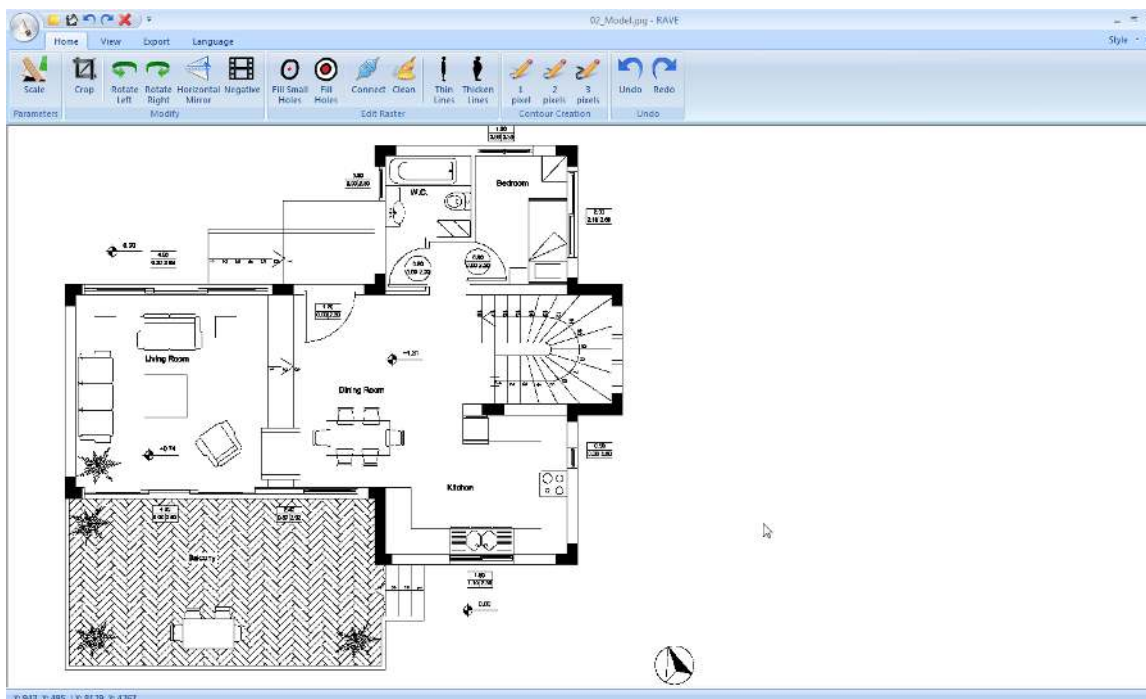


After

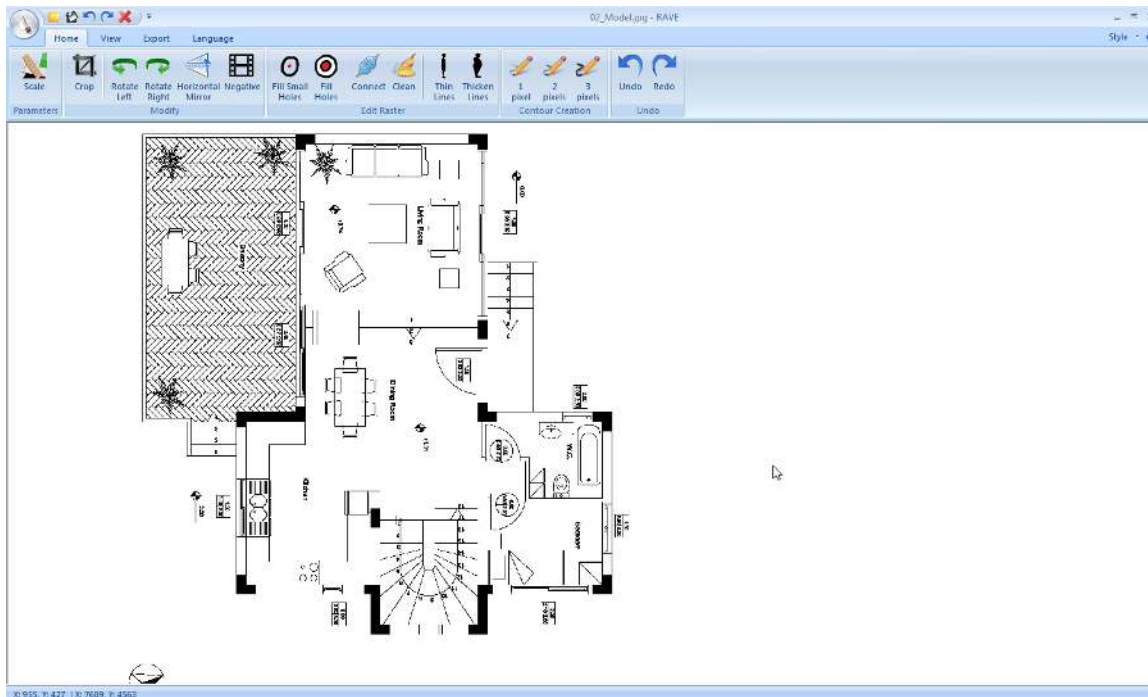
Rotate Right

The command rotates the raster image clockwise 90°.

Ribbon: Home > Modify > Rotate Right



Before



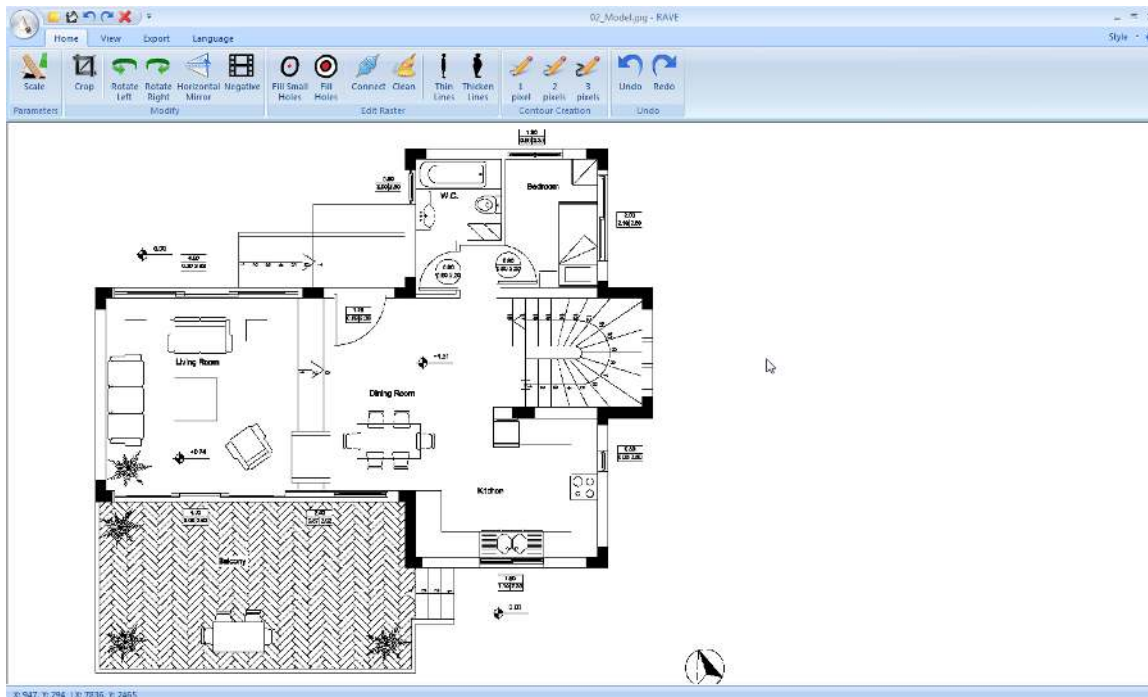
After

Horizontal Mirror

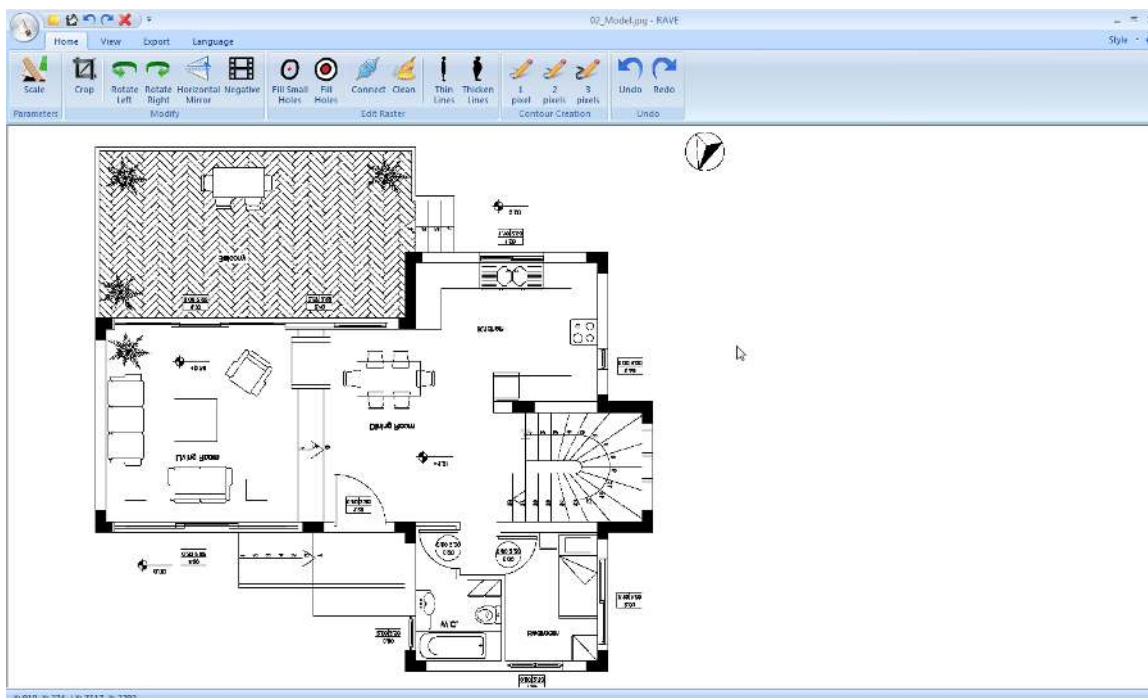
The command creates a mirrored copy of the raster according to the horizontal axis.

Ribbon: Home > Modify > Horizontal Mirror





Before

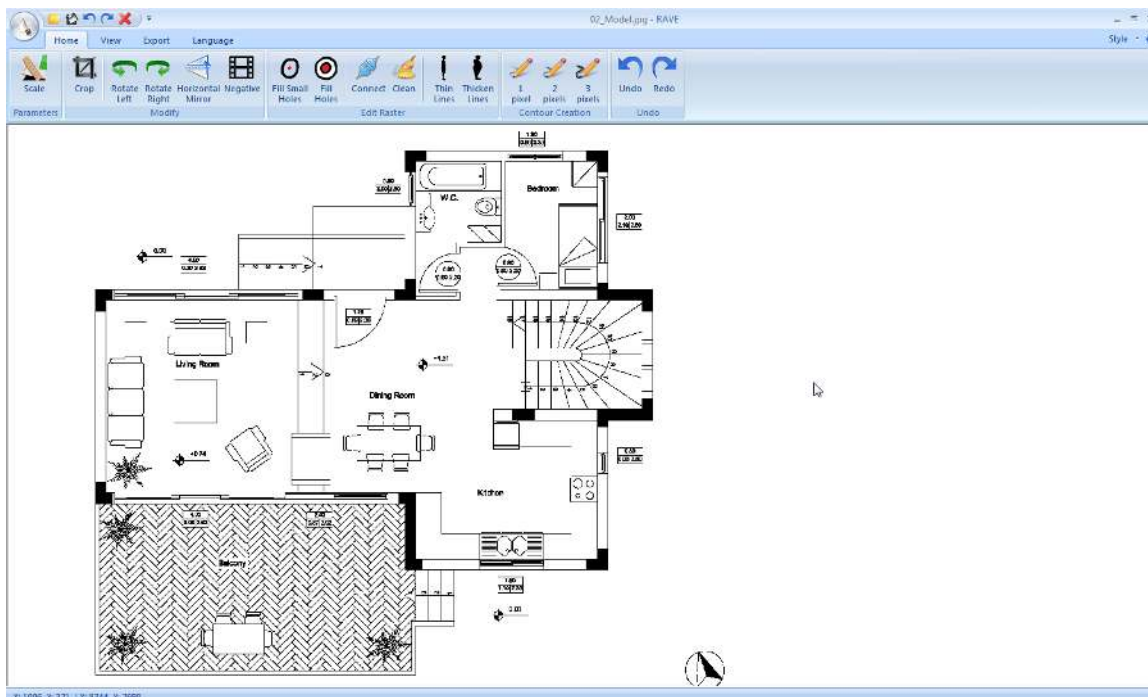


After

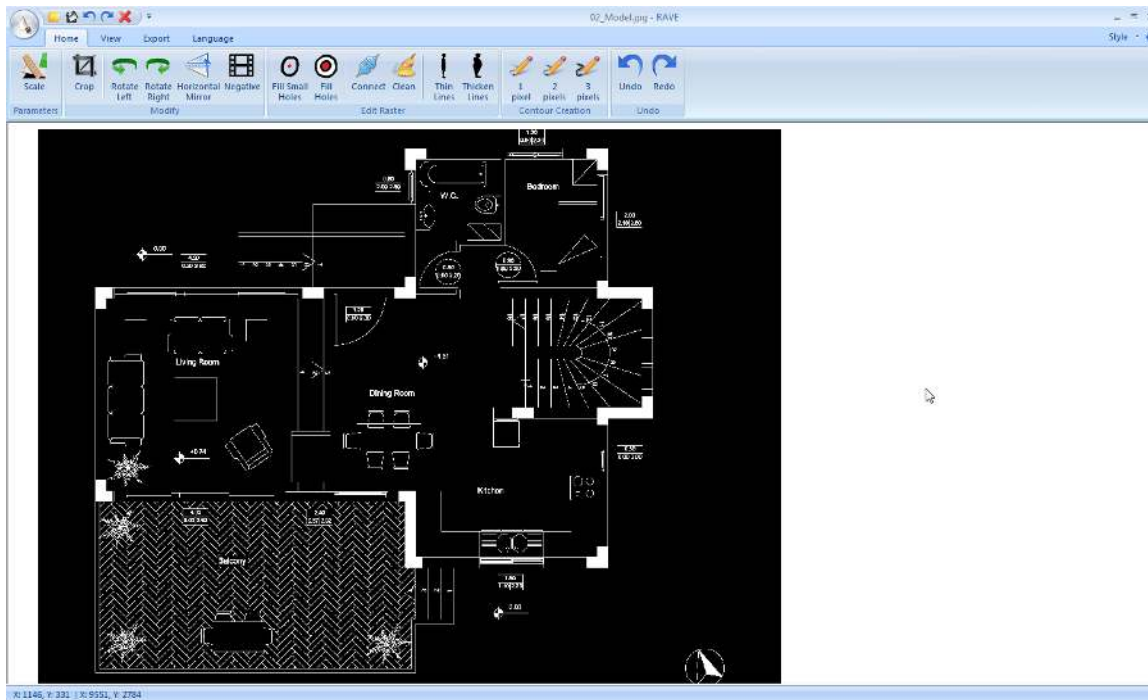
Negative

This command reverses the blacks and whites of the raster. Works the same way negatives work on photographs.

Ribbon: Home > Modify > Negative



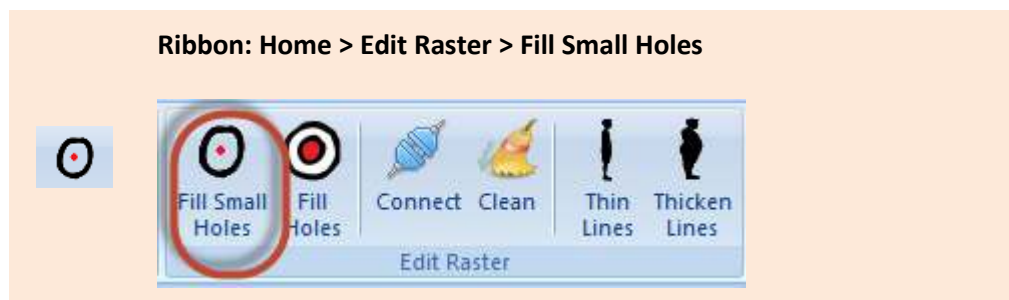
Before



After

Edit Raster

Fill Small Holes



This function performed before vectorization, significantly, improves the vectorization outcome. It fills small gaps which would otherwise impact the vectorized result. For example, a line accidentally cut in the middle will be corrected to a continuous line. Clicking on this icon, repeatedly, replicates the process.

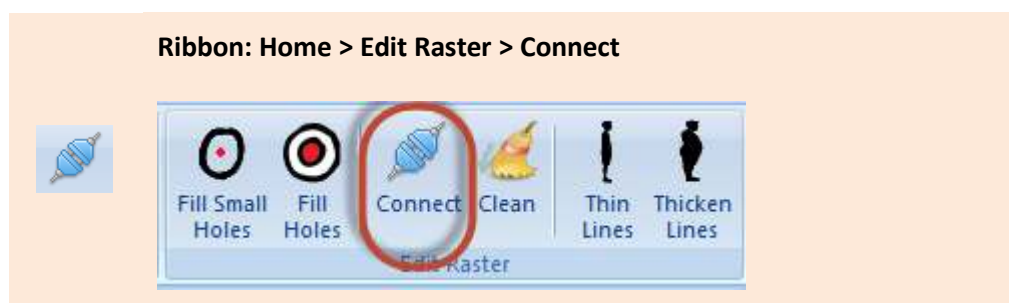
Γέμισμα οπών



This function is used for filling larger gaps. Clicking on this icon, repeatedly, replicates the process.

Both functions make minor corrections. As a result, they can be performed multiple times on the raster image for filling up the gaps.

Connect

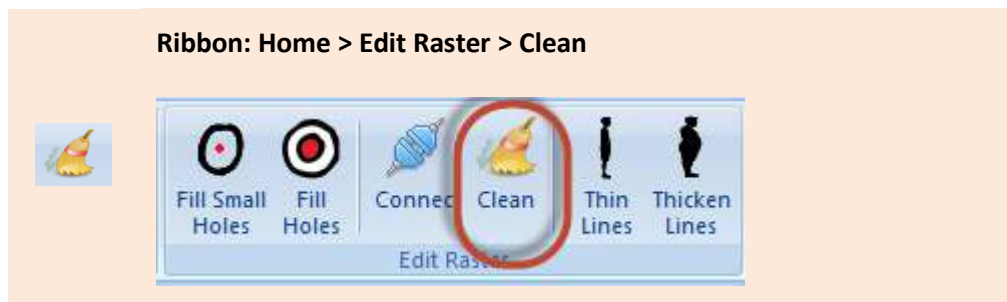


Clicking on this icon connects all the points (pixels) which are 1pixel apart. This function is used only when absolutely necessary. Usually, before the cleaning function (Clean), which can cause gaps larger than 1 pixel, leading to disconnected pixels.

This function result in connecting points that hadn't been initially connected. Thus, clicking Fill Holes must always follow.

Alternatively, clicking on Thin Lines before clicking Connect would reduce the number of undesired connections.

Clean



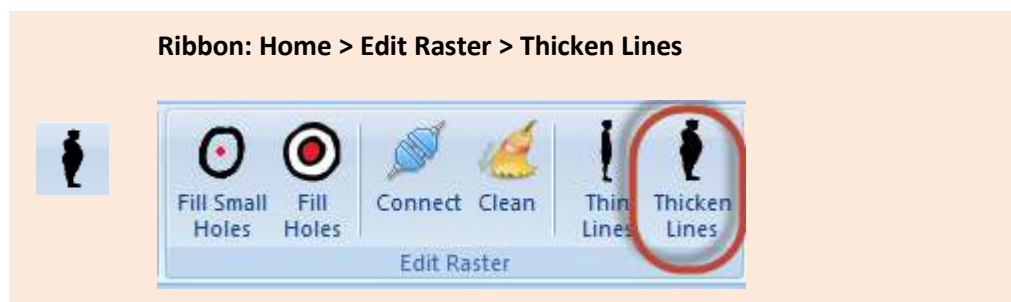
Clean is an essential step before any vectorization. It improves the entire raster image, reduces noise, improves raster quality, and fills small gaps. It can also be repeated many times if necessary.

Thin Lines



Clicking on this icon reduces the width of the lines on the raster image. Each click on this icon reduces the width of the lines of the raster.

Thicken Lines



Clicking on this icon increases the width of the lines on the raster image. Each click on this icon increases the lines of the raster. The thicker the lines the better the vectorization result.

Contour creation

1 pixel

Ribbon: Home > Contour Creation > 1 pixel



Clicking on this icon creates a contour of 1 pixel width. If the width of the existing line is greater than 1 pixel then this command will create a new outline for this line with 1 pixel width.

2 pixel

Ribbon: Home > Contour Creation > 2 pixel



Clicking on this icon creates a contour of 2 pixel width. If the width of the existing line is greater than 2 pixel then this command will create a new outline for this line with 2 pixel width.

3 pixel

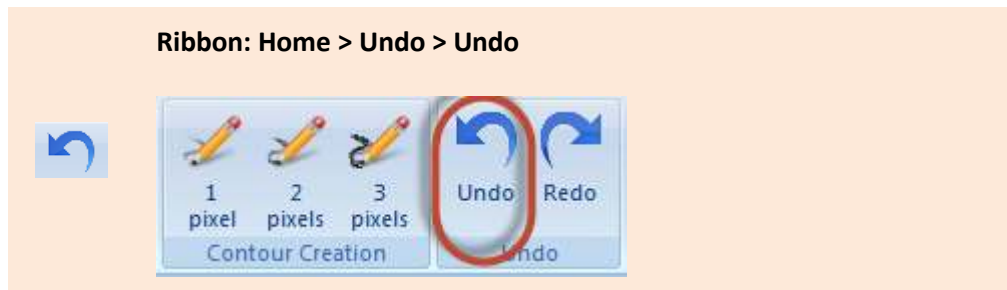
Ribbon: Home > Contour Creation > 3 pixel



Clicking on this icon creates a contour of 3 pixel width. If the width of the existing line is greater than 3 pixel then this command will create a new outline for this line with 3 pixel width.

Undo

Undo



Reverses the most recent action. It can roll back multiple times.

Redo



Reverses the most recent Undo command. It can roll forward multiple times.

Ribbon



View

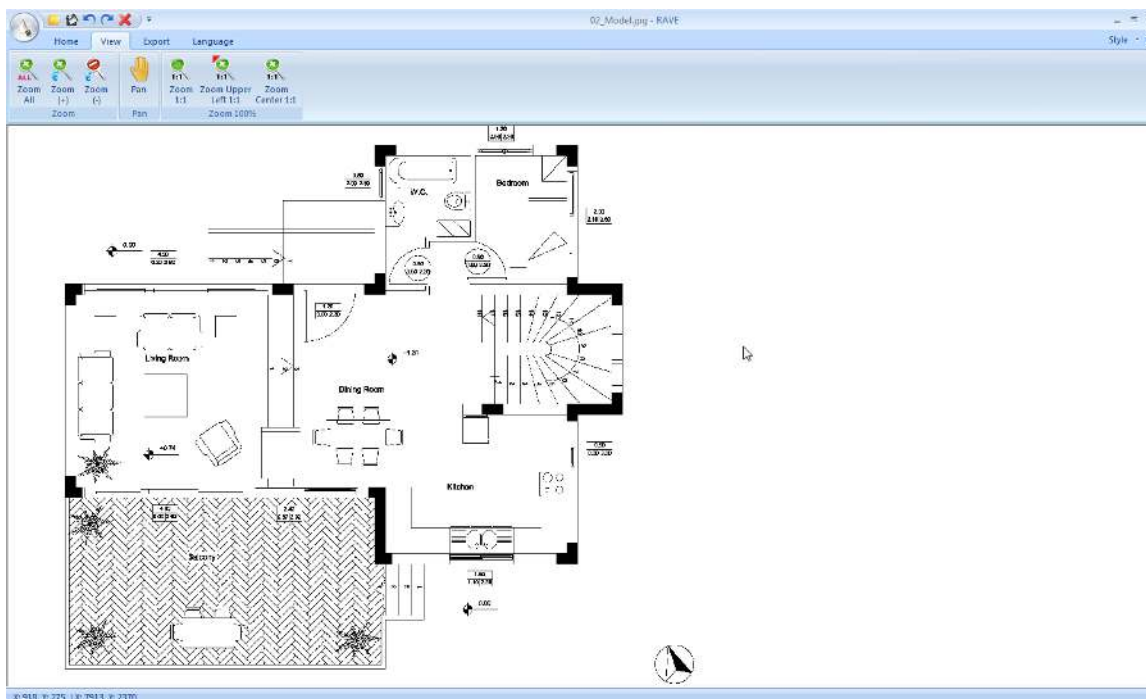
Zoom

Zoom All

Ribbon: View > Zoom > Zoom All



Zooms to display all visible objects.



Zoom In

Ribbon: View > Zoom > Zoom In



Zooms to increase the magnification of the current view with constant step at the position of the cursor.

Zoom Out

Ribbon: View > Zoom > Zoom Out



Zooms to decrease the magnification of the current view with constant step at the position of the cursor.

Pan

Pan

Ribbon: View > Pan > Pan



Moves the view in realtime.

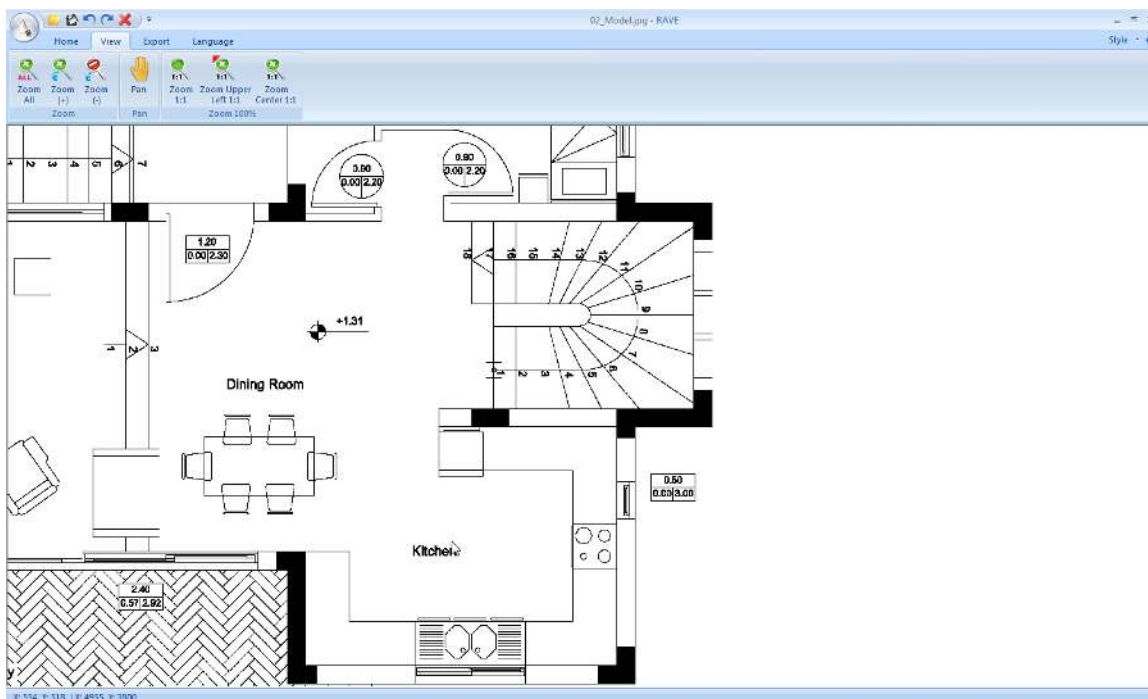
Zoom 100%

Zoom 1:1

Ribbon: View > Zoom 100% > Zoom 1:1



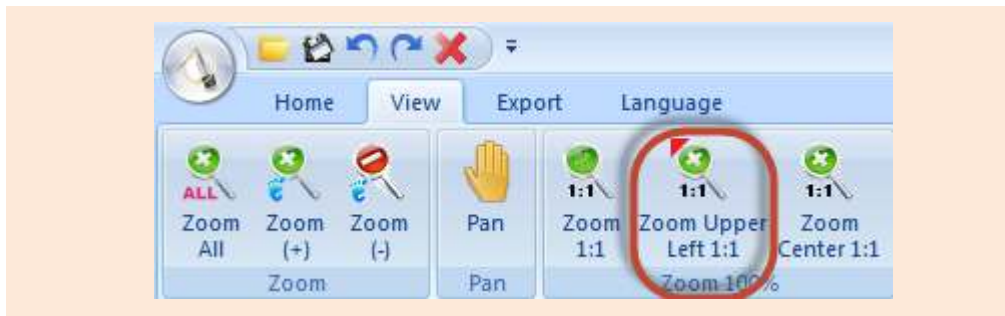
Zooms the raster at scale 1:1.



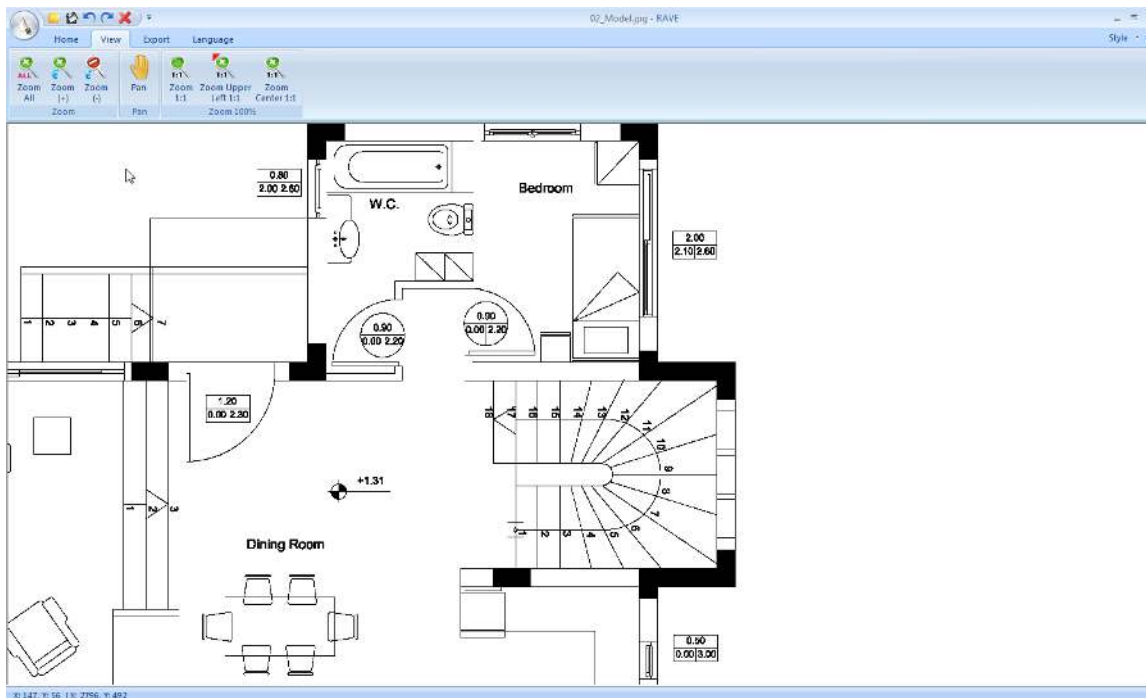
Zoom Upper Left 1:1



Ribbon: View > Zoom 100% > Zoom Upper Left 1:1



Zooms the raster at 1:1, with base point at the upper left corner of the raster.



Zoom Center 1:1

Ribbon: View > Zoom 100% > Zoom Center 1:1



Zooms the raster at 1:1, with base point at the center of the raster.

Ribbon

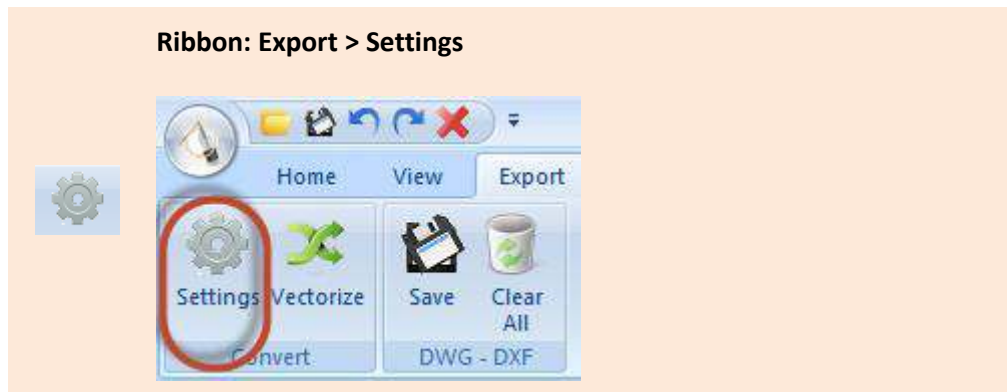


Export

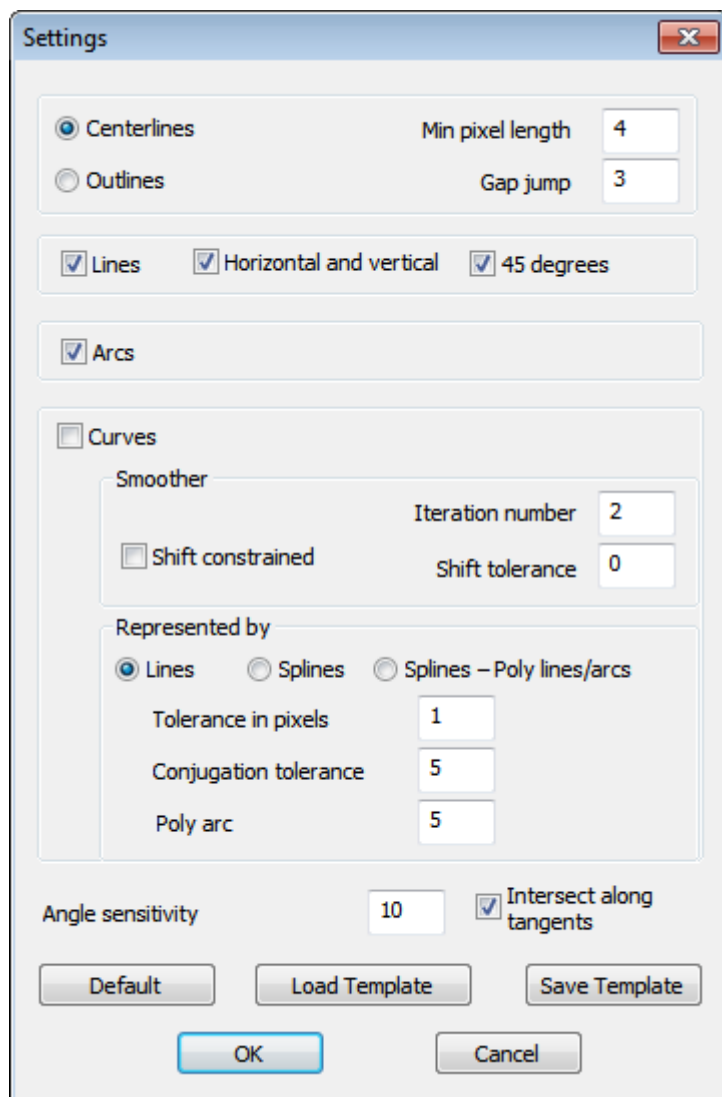
Conversion

Settings

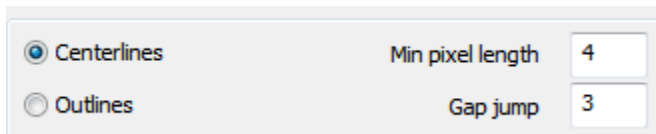
Displays a dialog box which offers the necessary arrangements for proper digitization of the image. Let's see them detail.



Executing the command displays the following dialog box.



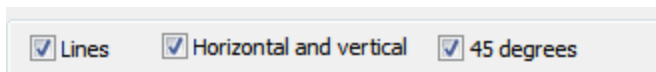
This tab is divided into five (5) main categories. Let's see them in detail:



A settings panel with two radio buttons: 'Centerlines' (selected) and 'Outlines'. To the right, there are two input fields: 'Min pixel length' with the value '4' and 'Gap jump' with the value '3'.

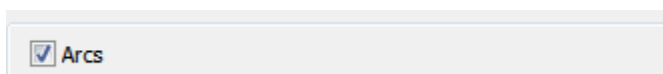
Centerlines	Choosing this option will take an AutoCAD file in which the line will have the form of centerlines AutoCAD
Outlines	Choosing this option will take an AutoCAD file in which the line will have the form Outlines.
Min pixel length	Allows removal of lines, which are combined with other lines at only one point and length in pixels is less than the value of the field. Introducing greater values in this field can have line losses in the results.
Gap jump	Specifies the length of the gap in pixels, that RaVe can override during the digitization process.

Then the following options determine how to recognize elements of the image. The recognition is done either with lines or arcs, or curves.



A settings panel with three checked checkboxes: 'Lines', 'Horizontal and vertical', and '45 degrees'.

Lines	Activating the field, allows the identification of lines.
Horizontal and vertical	Enables the ability to recognize horizontal and vertical lines. For example, a line in the drawing which is in fact vertical, it might show up with a small angle. If this is enabled then the line will be converted as vertical.
45 degrees	When this is selected, Rave will do a special test for lines with an angle of 45 degrees.



A settings panel with one checked checkbox: 'Arcs'.

Curves	Enables the of recognition curved objects. During digitizing the recognition of cycles is made by individual arcs.
---------------	--

Curves

There are many ways of recognizing the curves of the image. The digitization will be made either by smoothing curves or replacing them by something else.

Smoother

Smoothing is an important piece in the amplification mechanism of curves. In each iteration of this operation, we improve the normalization of the curves. The number of repetitions determines the depth of the redesign. Each iteration can slightly turn the curve. So it may be adversely impacted by the accuracy with respect to smoothness. When you need precision, we proposed a few iterations (1-2). When you want to achieve the effect of a perfect curve you may need 10 to 20 reps, but you will lose in accuracy.

Shift constrained Sets the limit on the curve changes. It is directly related to the option **Shift Tolerance** Changes. By activating this option will need to define a number in the field **Shift Tolerance**.

Iteration number Sets the number of repetitions.

Shift tolerance Sets the tolerance in converting a curve.

1. If you set 0, then the curve will stay as is.
2. If you set a value (e.g. x) then it will allow to change the curve by “x” pixels.

The conclusion is that the enabling **Shift constrained** it affect smoothness. So it is better not to use it when we want to achieve perfect curves.

Represented by

Replaces the curves in three different ways. Replace curves with **Limes**, **Splines** or **Polylines** (Splines – Poly lines/arcs).

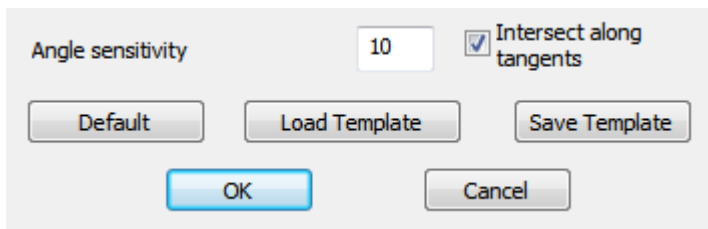
Lines Replaces curves with straight lines.

Splines Replaces curves with splines. Splines are smooth curves that are drawn with the NURBS method (Non Uniform Rational Bazer Splines). There are two options:

Tolerance in pixels: Sets the precision of replacing curves with Splines. Greater tolerance (higher number field), fewer points in Spline. The difference between checkpoints and endpoints is marked with different color.

Splines-Polylines/arcs

Replaces curves with **Polylines** (polylines). A polyline can be composed of several segments or arcs which form an object. The conversion of curves to lines and arcs is controlled by the field Poly arc. Setting a greater value in the field will yield fewer arcs. The value you set in the field is actually the tolerance with arcs.



Angle sensitivity

Setting a higher value in the field will detect more angles

Intersect along tangents

When this is turned off there is a different algorithm used to detect intersected lines. It is suggested to have this off when you have a lot of intersected lines e.g. when you have maps with a lot of intersected curves.

Default

Loads default settings.

Load Template

Loads a template that you have created from a file.

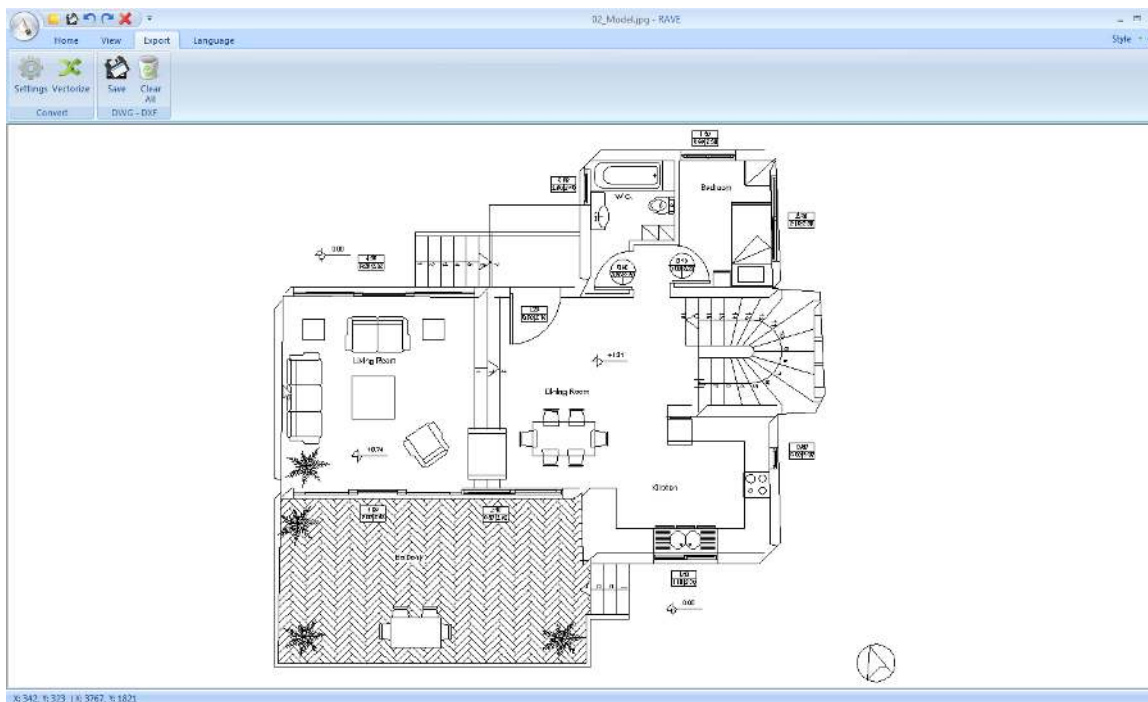
Save Template

Saves the current settings to a file.

Vectorize

Vectorize will start the conversion process of raster (images) files to vector (DWG/DXF) according to the settings you have selected.

Ribbon: Export > Vectorize



Dwg-Dxf

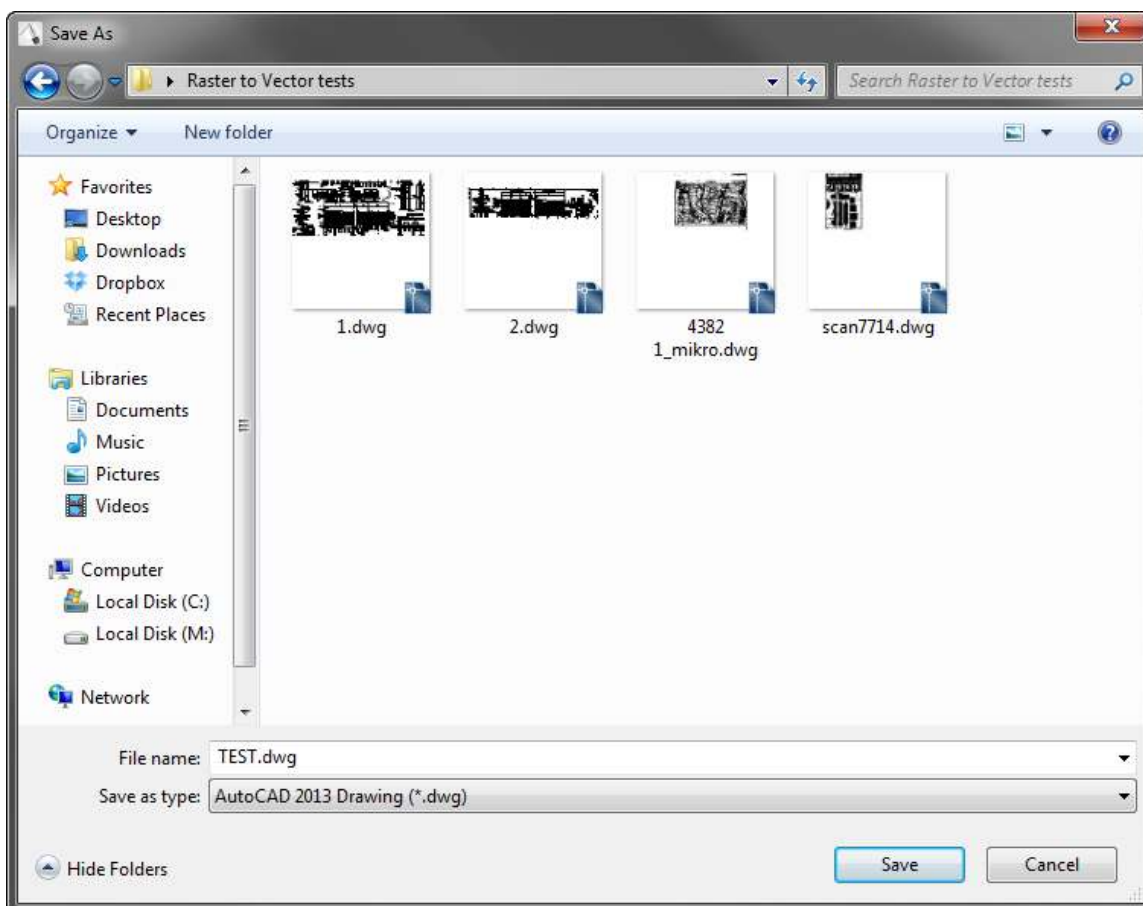
Save

With this command we save our digitized file as DWG or DXF in any AutoCAD version.

Ribbon: Export > Dwg-Dxf > Save



Selecting Save you get the window to choose the location of where you will save your file.



File name

Set a File name.

Save as type	Set the File Type. You have the following options: AutoCAD 2013 Drawing (*.dwg) AutoCAD 2010 Drawing (*.dwg) AutoCAD 2007 Drawing (*.dwg) AutoCAD 2004 Drawing (*.dwg) AutoCAD 2000 Drawing (*.dwg) AutoCAD R14 Drawing (*.dwg) AutoCAD R13 Drawing (*.dwg) AutoCAD 2013 DXF (*.dxf) AutoCAD 2010 DXF (*.dxf) AutoCAD 2007 DXF (*.dxf) AutoCAD 2004 DXF (*.dxf) AutoCAD 2000 DXF (*.dxf) AutoCAD R14 DXF (*.dxf) AutoCAD R13 DXF (*.dxf)
Save	Saves the file.
Cancel	Cancels the command.

Καθαρισμός

Ribbon: Export > Dwg-Dxf > Clear all



This command reset the software to it's startup state so we move on to convert a new file. Please be careful as this will clear everything on the screen and your current work. Make sure you have saved your file before selecting this.

Ribbon



Language

Ribbon



General

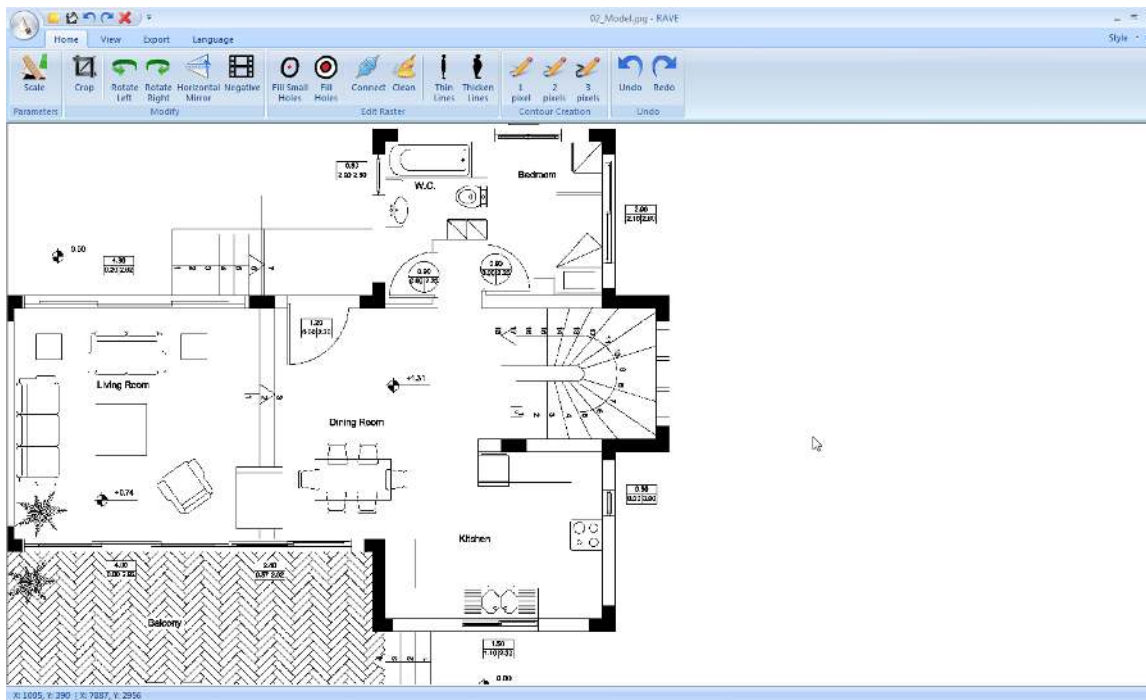
Style

Ribbon: Style

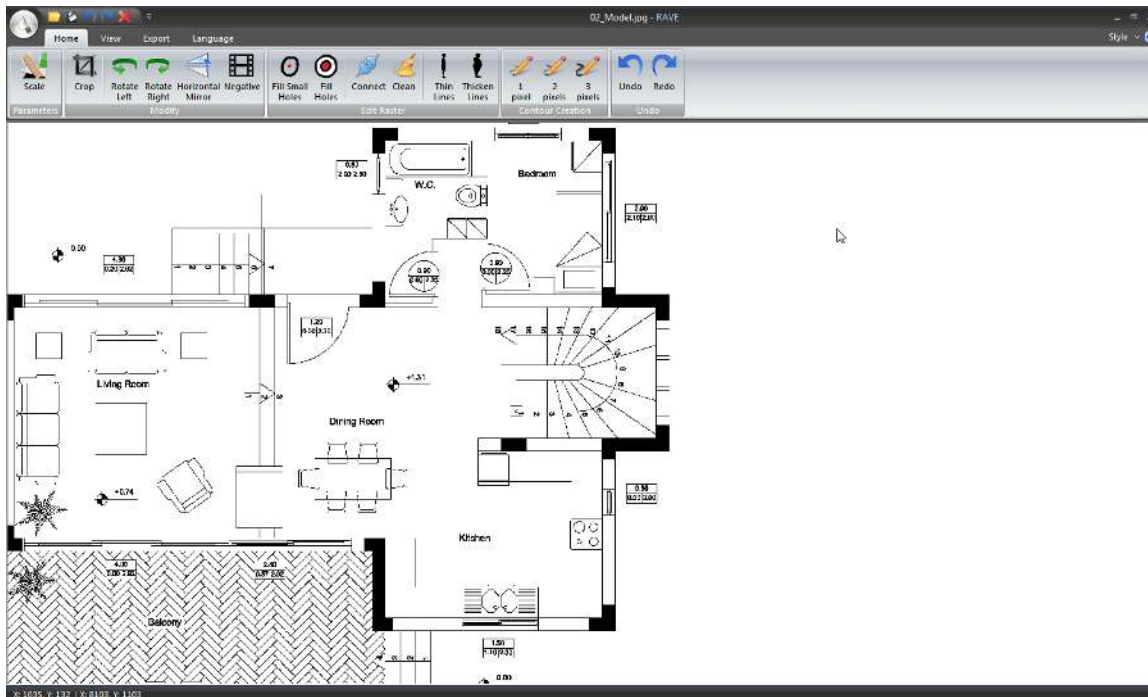


This commands sets the style of your interface. You have the following options:

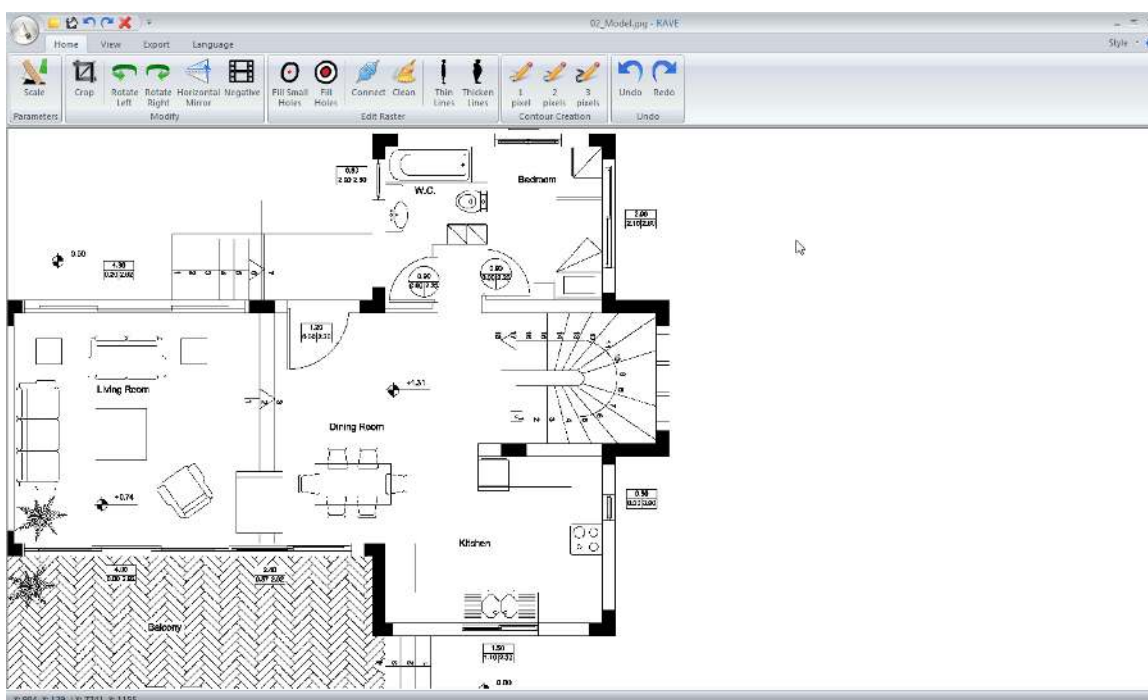
Office 2007 (Blue Style)



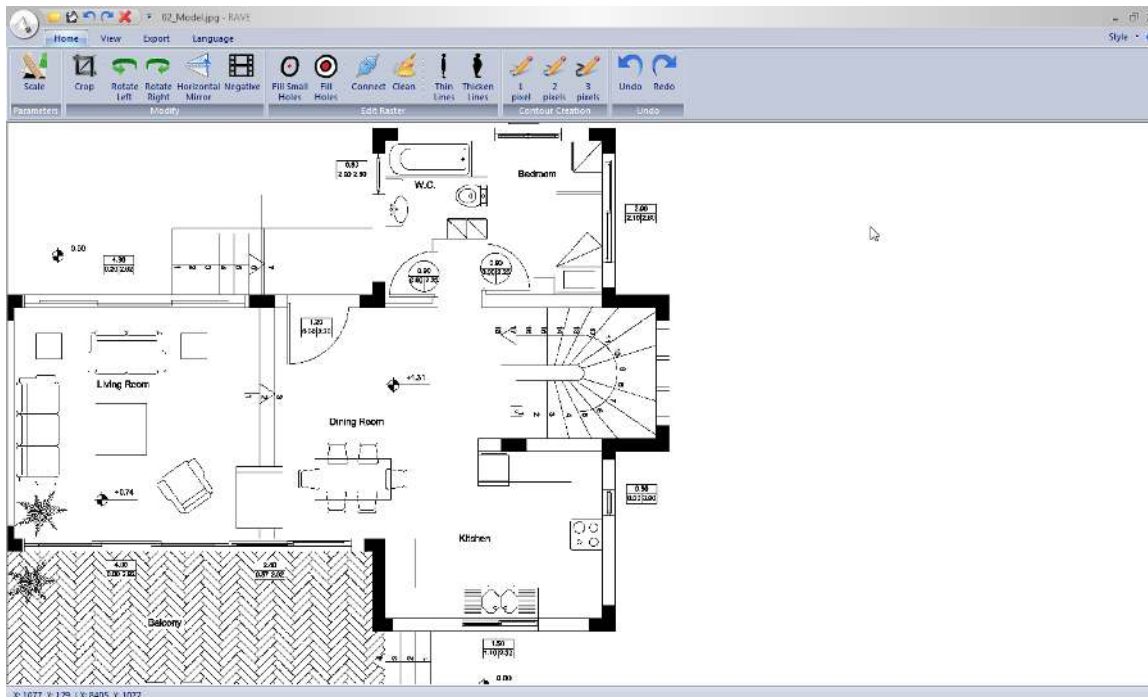
Office 2007 (Black Style)



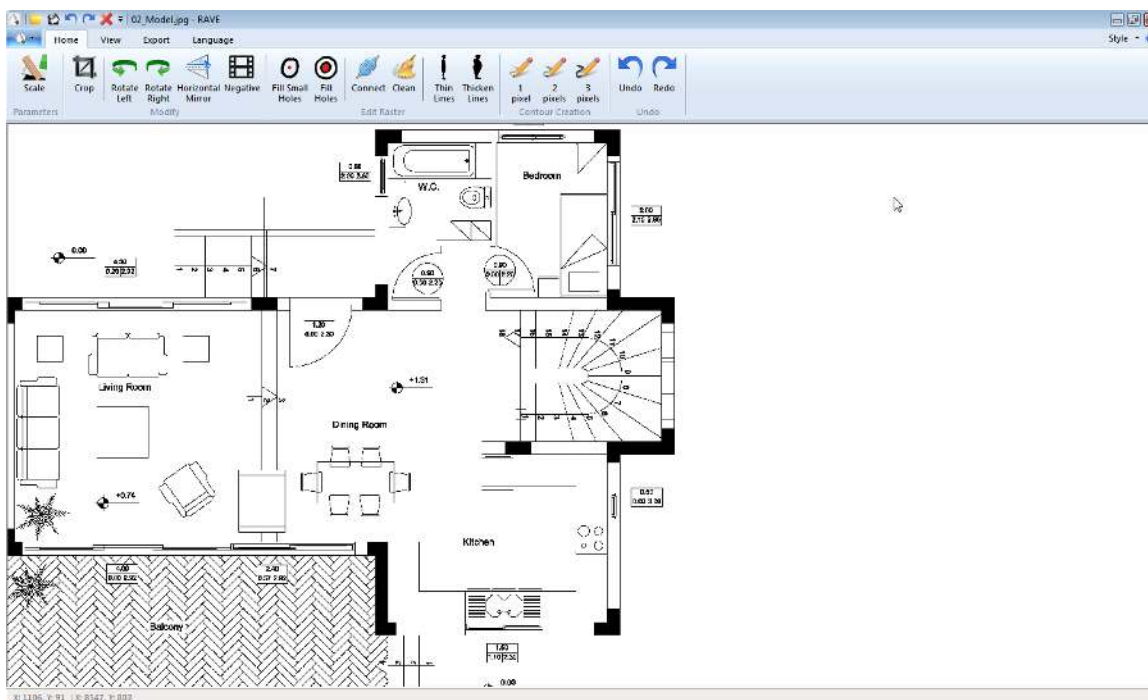
Office 2007 (Silver Style)



Office 2007 (Aqua Style)



Windows 7



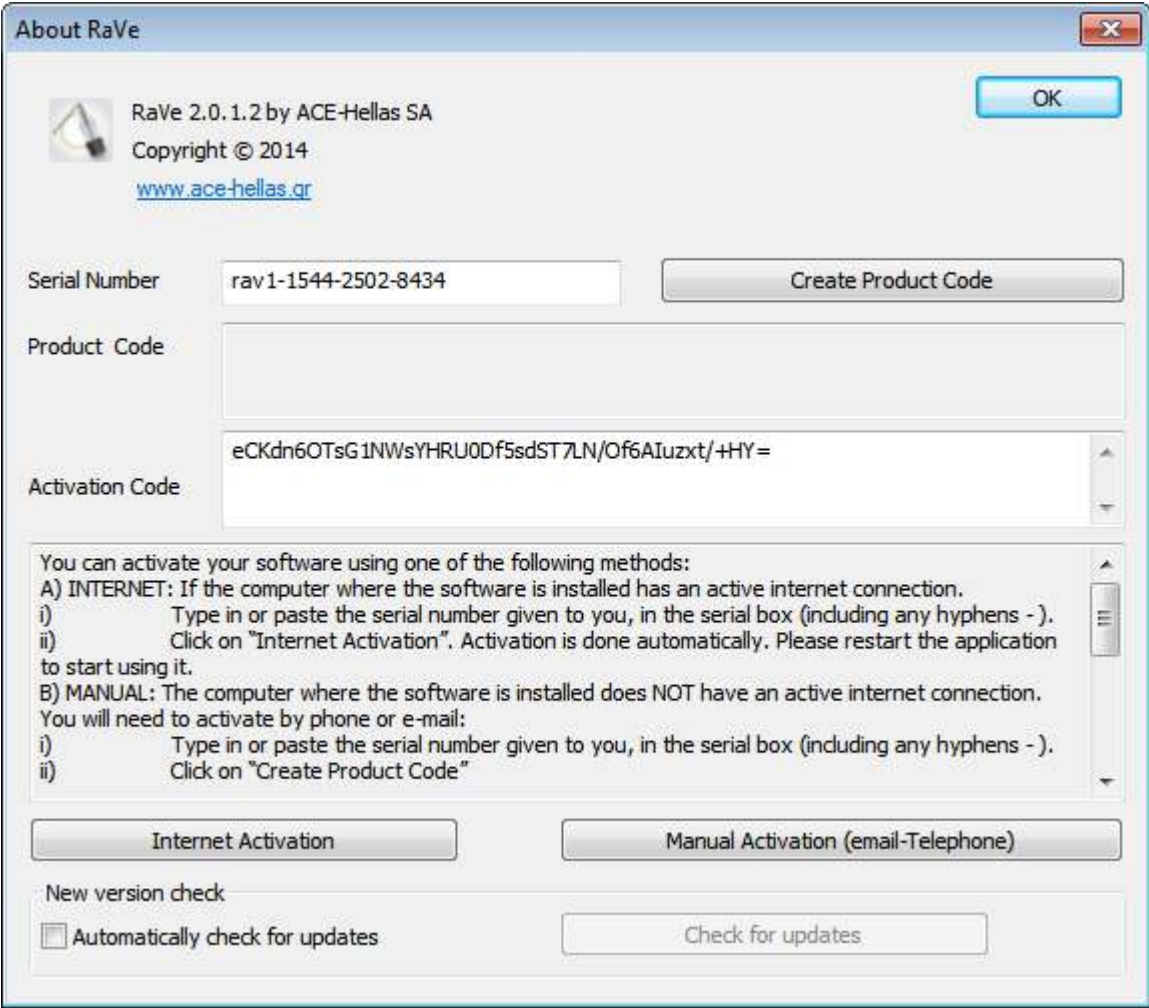
About



Ribbon: About

You select this option to get the about screen and activate the software.

Choosing this command you get the following dialog:



The image shows a Windows-style dialog box titled "About RaVe". It contains the following elements:

- Title Bar:** "About RaVe" with a close button (X).
- Logo:** A small icon of a lightbulb.
- Text:** "RaVe 2.0.1.2 by ACE-Hellas SA", "Copyright © 2014", and a URL www.ace-hellas.gr.
- Buttons:** An "OK" button in the top right corner.
- Serial Number:** A text box containing "rav1-1544-2502-8434" and a "Create Product Code" button.
- Product Code:** An empty text box.
- Activation Code:** A text box containing "eCKdn6OTsG1NWsYHRU0Df5sdST7LN/Of6AIuzxt/+HY =".
- Instructions:** A scrollable text area with the following content:

You can activate your software using one of the following methods:

A) INTERNET: If the computer where the software is installed has an active internet connection.

 - i) Type in or paste the serial number given to you, in the serial box (including any hyphens -).
 - ii) Click on "Internet Activation". Activation is done automatically. Please restart the application to start using it.

B) MANUAL: The computer where the software is installed does NOT have an active internet connection. You will need to activate by phone or e-mail:

 - i) Type in or paste the serial number given to you, in the serial box (including any hyphens -).
 - ii) Click on "Create Product Code"
- Activation Buttons:** "Internet Activation" and "Manual Activation (email-Telephone)".
- Update Section:** "New version check" with a checkbox "Automatically check for updates" and a "Check for updates" button.

Quick Launch Bar



Menus



At the Quick Launch Bar, we can create shortcuts for faster execution of commands. The defaults commands are:

- Open Raster File
- Save Vector File
- Exit
- Undo
- Redo



Reference to the mentioned commands can be found in previous chapters.

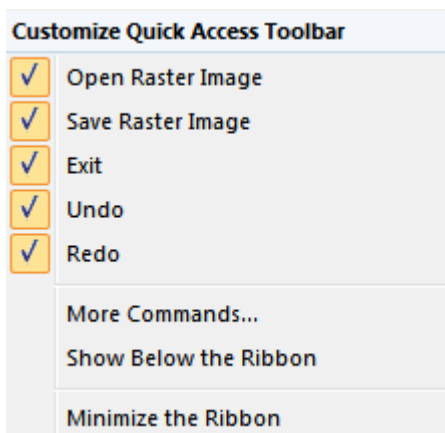
Customize Quick Access Toolbar

With the following command we can customize the tool bar.



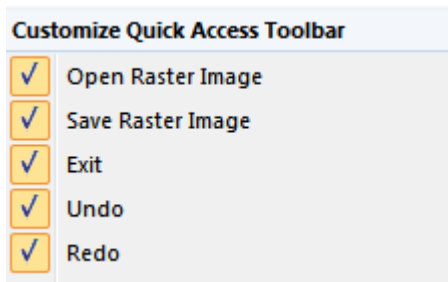
Quick Access Toolbar: Customize Quick Access Toolbar

Selecting it you get the following commands:

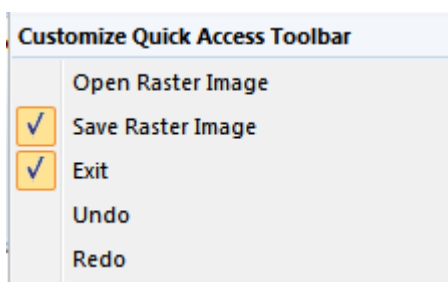
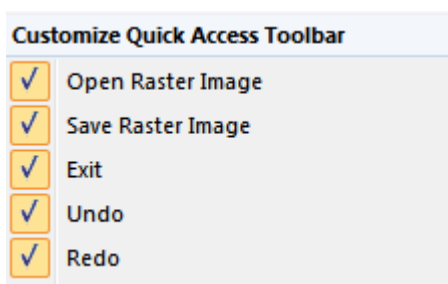


Let's see in detail what we can do:

Enabled Commands area



At this toolbar you will see the commands that have been inserted into the Quick Access Toolbar. Selecting or Disabling each command will show it or hide it. For Example:



Show Below the Ribbon

Shows the Quick Access Toolbar below the Ribbon.

Quick Access Toolbar: Customize Quick Access Toolbar > Show Below the Ribbon

Executing the command you get the following Toolbar:



Minimize the Ribbon

Minimizes the Ribbon

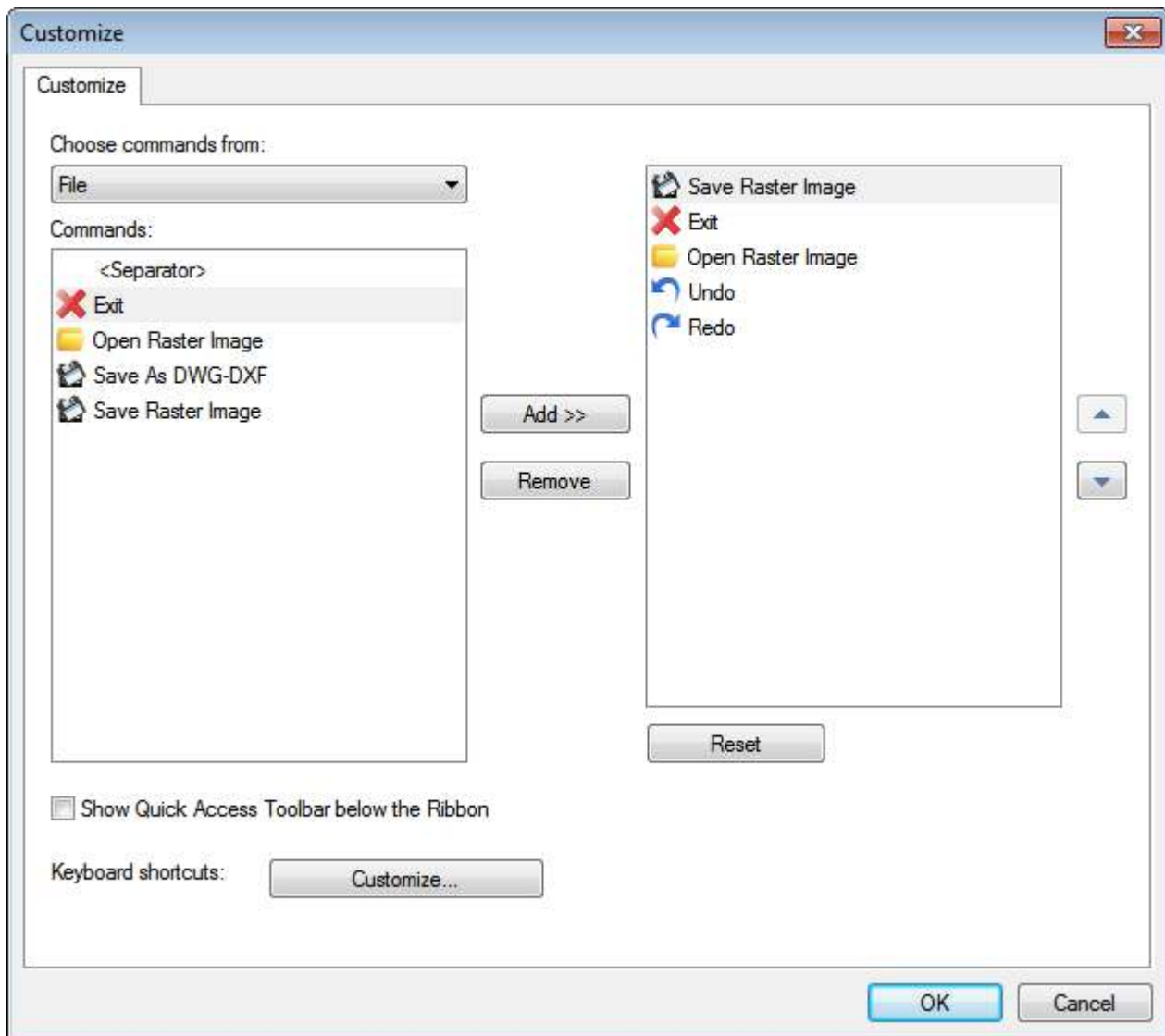
Quick Access Toolbar: Customize Quick Access Toolbar > Minimize Ribbon

More commands

This command customizes the Toolbar. Using this command we can add or remove commands from the toolbar.

Quick Access Toolbar: Customize Quick Access Toolbar > More commands

Selecting the command you get the following prompt:



Let's see the commands in detail::

Choose commands from:

We choose the group of commands we want to. You will get the following options:: File, Print Preview, Basic, View, Export, Language. After we select one group of commands we will see the commands that are included in the group.

Commands

Shows the list of commands that belong to this group. Selecting one command from the group and clicking Add will add it to the right column which is the list of active commands on the toolbar.

Add

Adds a command to the toolbar.

Remove

Removes a command from the toolbar.

Reset

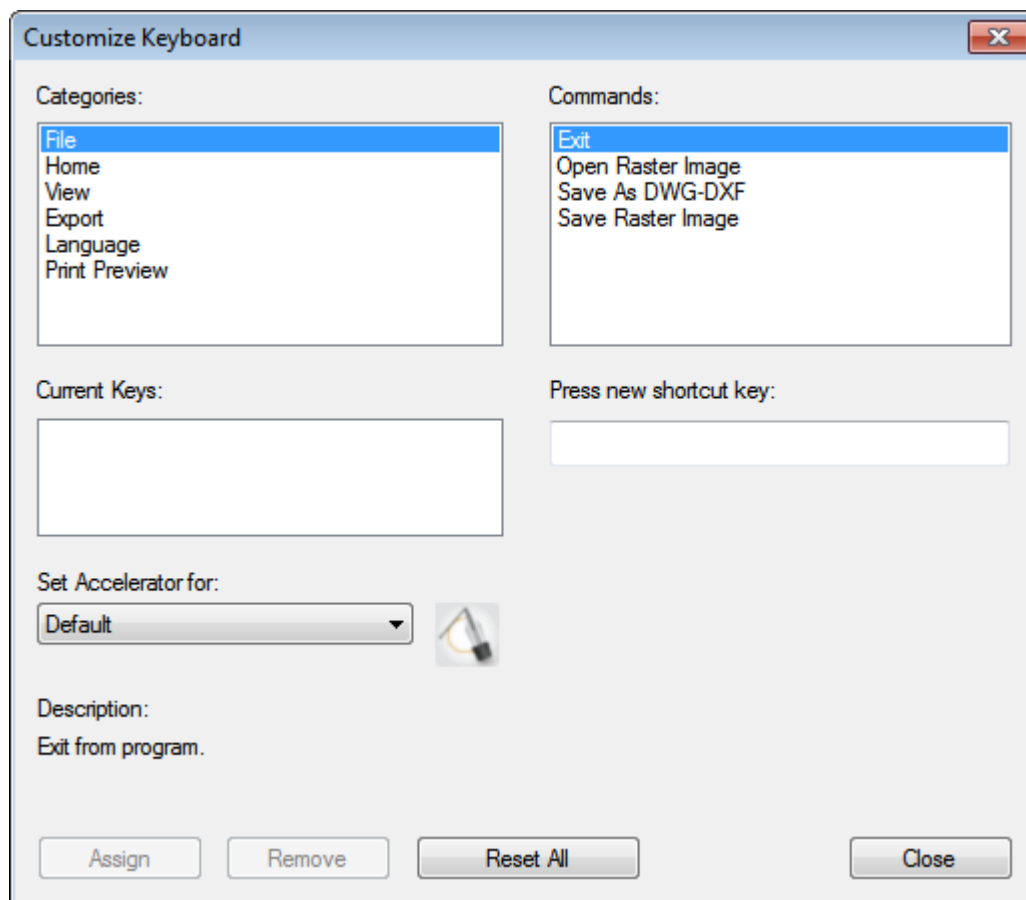
Resets the default settings for the toolbars.

Show Quick Access Toolbar below the Ribbon

Moves the quick access toolbar below the Ribbon area.

Customize

Creates the shortcuts of the commands. Executing this command you will get the following prompt:



Categories	Shows the Categories of the commands.
Commands	Shows the Commands that belong to each category.
Current Keys	Shows the shortcut of each command.
Press new shortcut key	Setup a new shortcut key
Set Accelerator for	Set up the accelerator
Assign	Assigns the shortcut to the command
Remove	Removes the shortcut from the command.
Reset All	Resets defaults
Close	Closes the dialog.

