



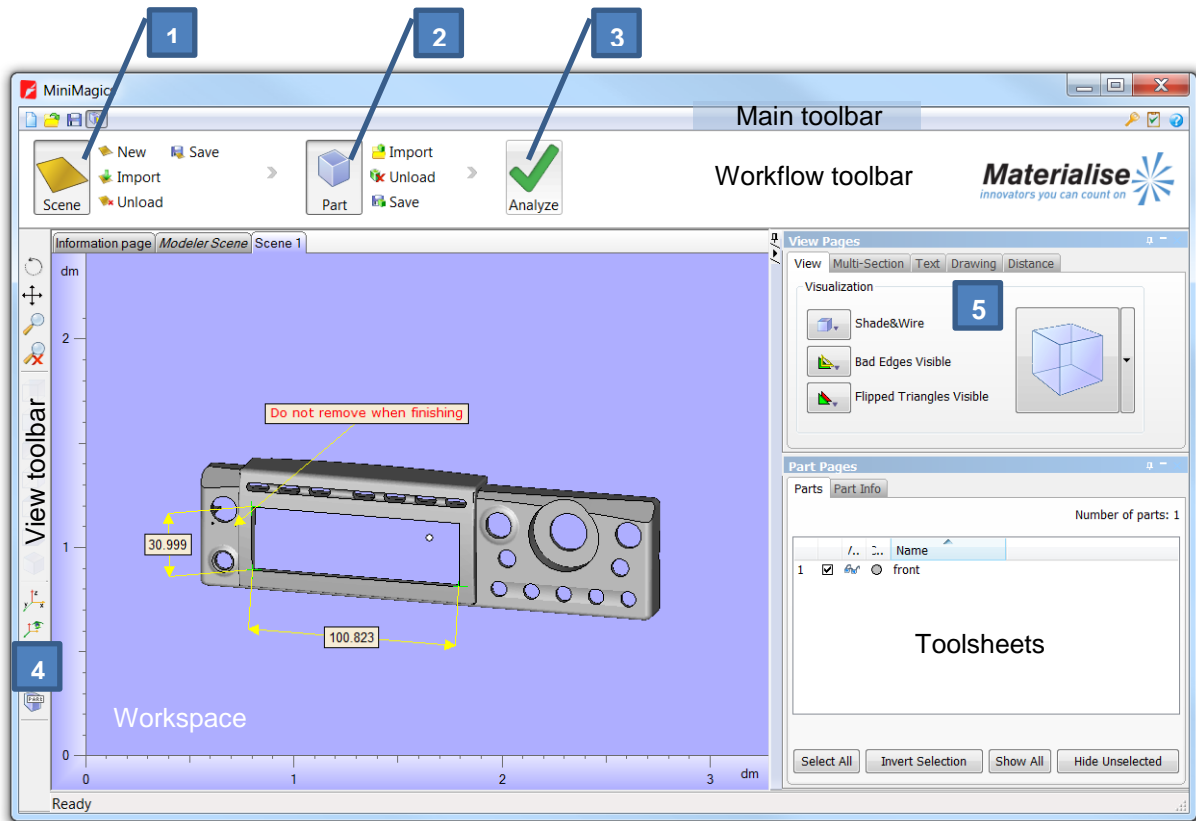
# *MiniMagics*

*User Manual*

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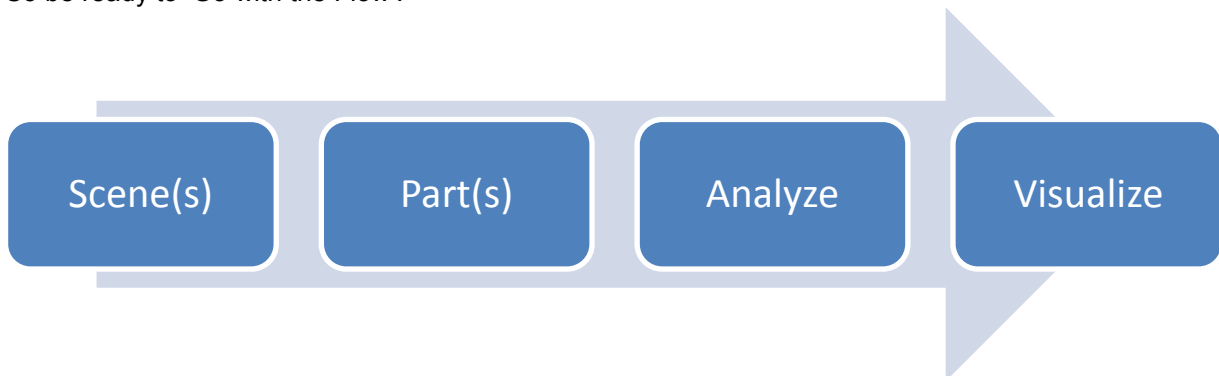
## Quick start and Interface



When you launch MiniMagics, you will arrive on the Information Page. To start working:

1. Click the **Scene** flow button and choose New to create a new **Workspace**
2. Click the **Part** flow button and choose Import to load your **STL-files**
3. Click the **Analyze** button to check if your loaded parts are **buildable or not**
4. Use the functions on the **View** toolbar to visualize & inspect your STL-files
5. You can find more advanced **visualization & communication** options on the **Toolsheets**

So be ready to 'Go with the Flow':



## Main toolbar



### New Project |

This function will remove all parts and scenes from the current project and generates a new, empty project. The user is asked to save the current project (parts and scenes) before closing. If you want to work in two (or more) parallel MiniMagics sessions, just open MiniMagics a second time.

We refer to the *Scene menu* section if you want to create a new scene and load STL-files.

### Load Project |

This function allows you to open an existing project in MiniMagics. The Magics Project File (.magics) is a dedicated file format of Materialise and has the ability to save or load information other than STL data with a particular STL file or files (project). Due to the Magics Project File, you can save a whole project at once instead of saving all parts (STL-files) separately.

If you load a \*.magics file in MiniMagics, following information can be displayed (when present):

- STL-files
- Scenes
- Measurements and annotations
- Modeler Scene

Platforms are hidden when opening a \*.magics file in MiniMagics

We refer to the *Parts menu* section if you want to import single parts (STL- or MGX files).

### Save Project |

Saving STL-files in a project (\*.magics) has the advantage of compressing the file and saving any other information such as scenes, measurements and annotations. The 'Save' function will ask you to re-name your project while preserving the original project.



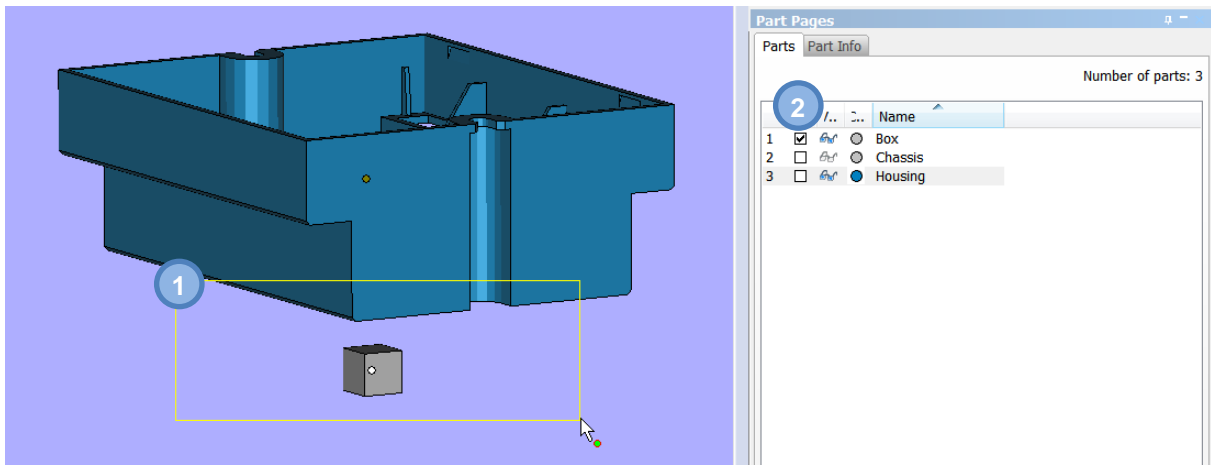
*Use the \*.magics file format if you want to continue your work another time. It will save everything as it is when you save and close Magics.*

**Remark:** The Modeler Scene is always visible and is located right next to the Information Page. In the Modeler Scene, all loaded parts (STL-files) from all Scenes in the current MiniMagics project are shown together.

## Select Part(s) mode |

Use the **Select Parts** function to select parts individually or in groups (while in the mean viewing your workspace). To select a single part, first activate the **Select Parts** function. Then, click on the part or click and drag a window around the grey selection tag of the desired part (1). After releasing the button, the little dot of that part will become white. A white dot means that the part is selected; a grey dot means that it is not selected.

To select multiple parts, either drag a single window around the desired tags, or depress and hold the shift key while clicking on several parts (or dragging multiple windows around the desired tags).



*The Select Part(s) mode is the default mouse mode in MiniMagics. By performing a function e.g. a measurement, you can arrive in another mouse mode e.g. the measure mouse mode. Press ESC or the Select Part(s) button to return to the default mouse mode.*

In addition to the *Select Part(s)* function, you can also select parts by checking them directly in the Part List (2).

We refer to the *Parts menu* section if you want to import parts (STL- or MGX files) in MiniMagics.

## Licenses |

Materialise Software is key protected. You need key-files to activate and register your MiniMagics software. When you start MiniMagics for the first time, the License Wizard will automatically start up to assist you in registering. You can also open the Registration Wizard by clicking on the Licenses button in the Main Toolbar of MiniMagics.

A detailed description of Licensing is given at the end of the manual.

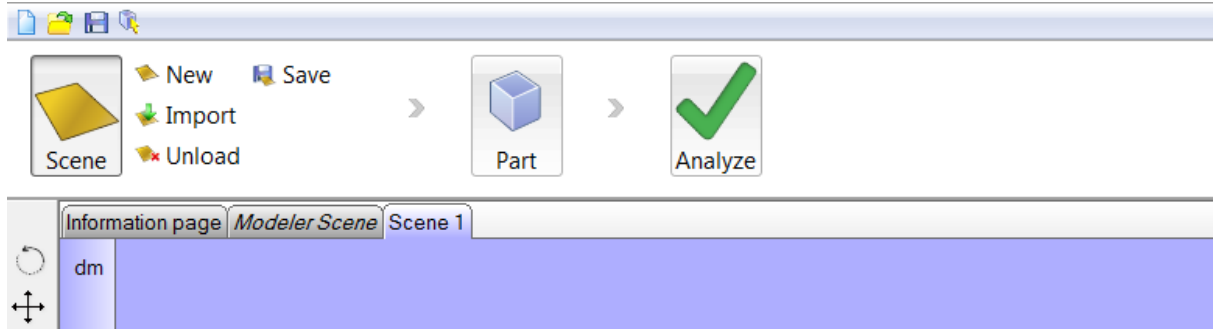
## Settings |

This button will open the Settings dialog of MiniMagics. A detailed overview of the Settings is also given at the end of the manual.

## Help |

Click this button to open the PDF manual you are reading right now.

## Scene



To start working in MiniMagics, you should create a Scene or load an existing one. Once you have a Scene, you can start importing parts (second menu in the Flow Toolbar).

### **New** / New

The *New* button in the Scene's menu will automatically create a new Scene and shown it on your screen. It is possible to create multiple Scenes and work on different Scenes in parallel. Each Scene will appear as a new tab in the workspace. Note that the *Information page* will always remain as first tab. You can toggle between different Scenes by clicking on the tab with the corresponding scene name.

### **Import** / Import

This operations allows you to import an existing Scene (i.e. \*.magics or \*.mgx file). The imported Scene (usually with parts) will be active and shown on your screen. Each imported Scene will appear as a separate tab in the workspace. If there are multiple Scenes inside the file, they will all open as a separate tab.

### **Unload** / Unload

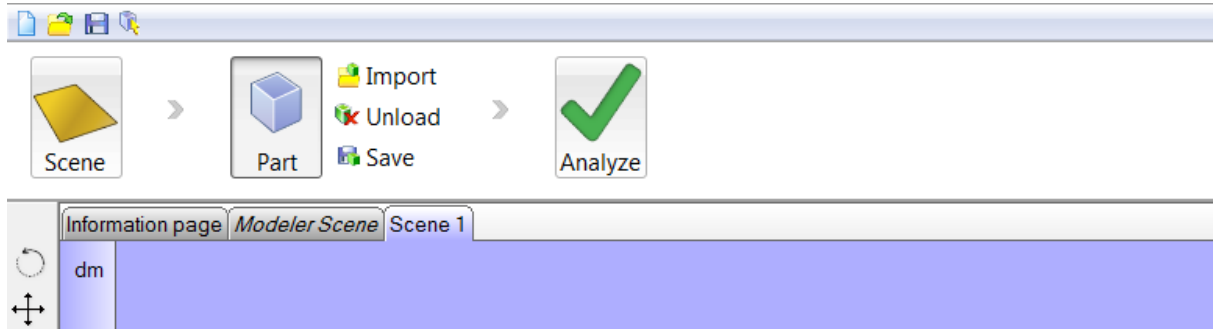
With this operation you can unload your active Scene (including all parts). A dialog will ask if you really wish to delete, press No if you want to Save your Scene first.

### **Save** / Save

This operation pops up a 'Save As' dialog. You can save your current Scene into a \*.magics file. This operation will only save a single scene (your active scene), use the Save Project function (Main toolbar) to save multiple Scenes inside a \*.magics file.

**Remark:** The Modeler Scene is always visible and is located right next to the Information Page. In the Modeler Scene, all loaded parts (STL-files) from all Scenes in the current MiniMagics project are shown together.

## Part



MiniMagics is based on the STL-file format which is the Additive Manufacturing Industry's standard data format. An STL file is a triangular representation of a 3D object: it will describe surfaces as a collection of triangles, which makes them ideal for use in Rapid Prototyping or any environment that requires a triangulated file.

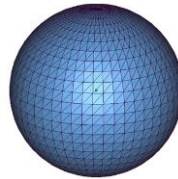
Unlike CAD, STL uses triangles and not entities to describe an object. Each triangle is uniquely defined by its normal and three points that represent its vertices.

### Digital CAD



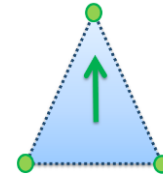
- 2 entities
  - Center point
  - Radius

### STL-file



- Triangle 1
- Triangle 2
- Triangle 3
- Triangle 4
- ...
- Triangle 1500

### Single Triangle



- 1 Triangle
- =
- 3 vertices
- &
- 1 normal

## Import | Import

Use this button to Import parts on your Scene. You can choose to import \*.stl, \*.mgx or \*.magics files.

- \*.stl = Additive Manufacturing Industry's standard data format, contains a single part
- \*.mgx = STL-zip data format developed by Materialise, can contain multiple parts. It is a compressed file format, so it allows you to save memory. All parts are imported on the active scene.
- \*.magics = Dedicated data format of Materialise, can contain multiple parts. All parts are imported on the active scene

MiniMagics has several **demo files** available for use after installation. They can be accessed using the following path: C:\Program Files\Materialise\MiniMagics\demo\_files. A Thumbnail picture of any file can be viewed by using the **Preview** feature in the 'Import part' dialog box.

## Unload | Unload

This operation will Unload all selected parts.

## Save / Save

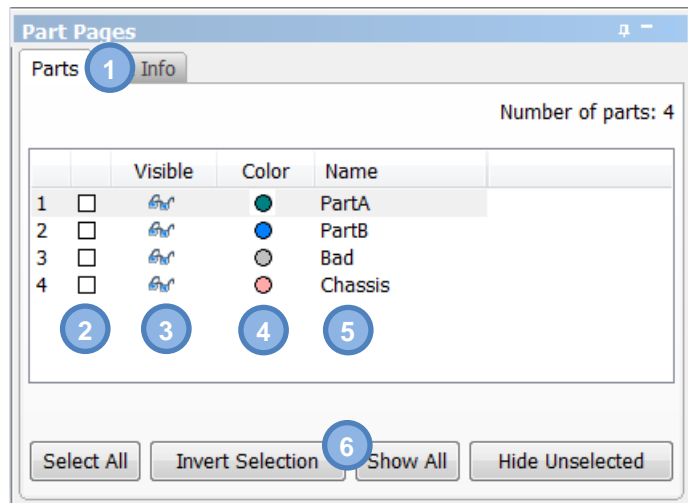
The *Save Part(s) As* dialog contains all different file formats that MiniMagics is capable of producing. You can specify your format in the *Save as type* dropdown box. By default, all parts are saved in a separate \*.stl file. Choose for the \*.mgx (STL-zip) or \*.magics if you want to save all parts in a single file.

## Parts toolsheet

As soon as one part is loaded, the Toolsheets will expand.

The Parts tab (1) can be a very useful and versatile tool for managing loaded parts. All parts currently loaded will be displayed in the list.

Select (or unselect) a single part via the checkboxes (2). Select multiple parts in the list by clicking on a part name to highlight the part and then using the Shift or Ctrl key and clicking on the names of the other desired parts (and then select/unselect one of the checkboxes).



You can also Hide (3) parts by clicking on the glasses or change their Color (4). All actions performed on the toolsheet are activated immediately. If you double click on a part's Name (5), a pop-up dialog will appear where you can easily change the name. The buttons at the bottom (6) will facilitate your work with operations like: Select All, Invert Selection, Show All and Hide Unselected.

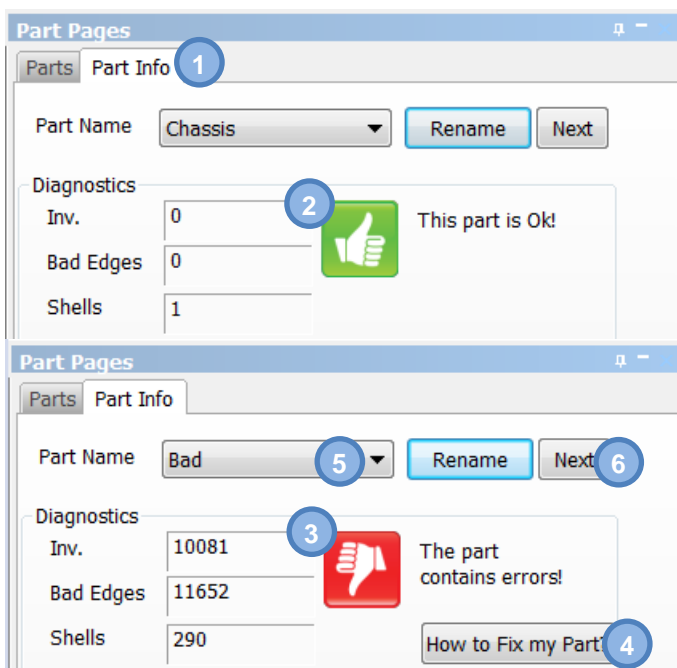
## Part Info toolsheet

The Part Info tab (1) allows you to easily diagnose your part for errors. Errors in STL-files can cause problems during slicing and building. Therefore you need watertight (and error-free) files. A good file contains one single Shell and zero Inverted Normals (Inv.) or Bad Edges.

MiniMagics will show a green thumb up (2) when your part is ok and a red thumb down (3) when your part contains errors (and needs fixing).

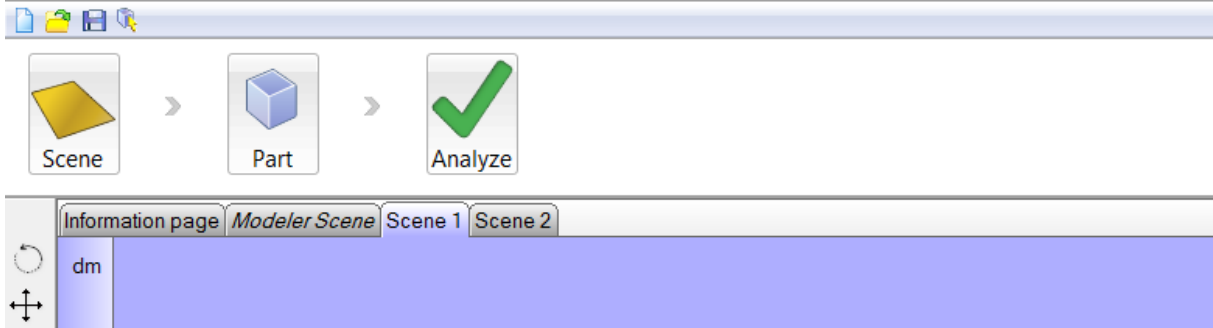
The *'How to Fix my Part?'* button (4) will display additional fixing information on the built-in information webpage (internet connection required). Fixing itself is not included in MiniMagics.

Click the drop down arrow to choose another part (5) or click next (6).



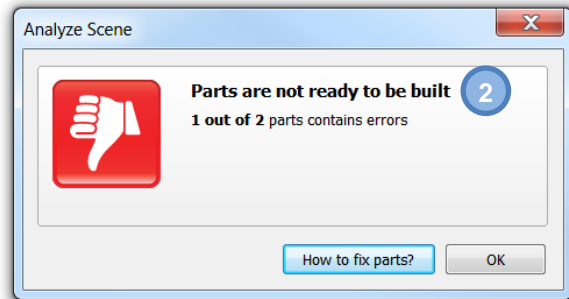
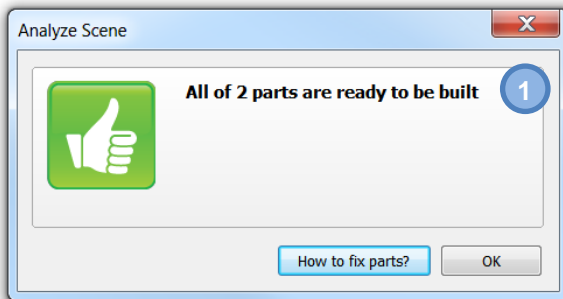


## Analyze



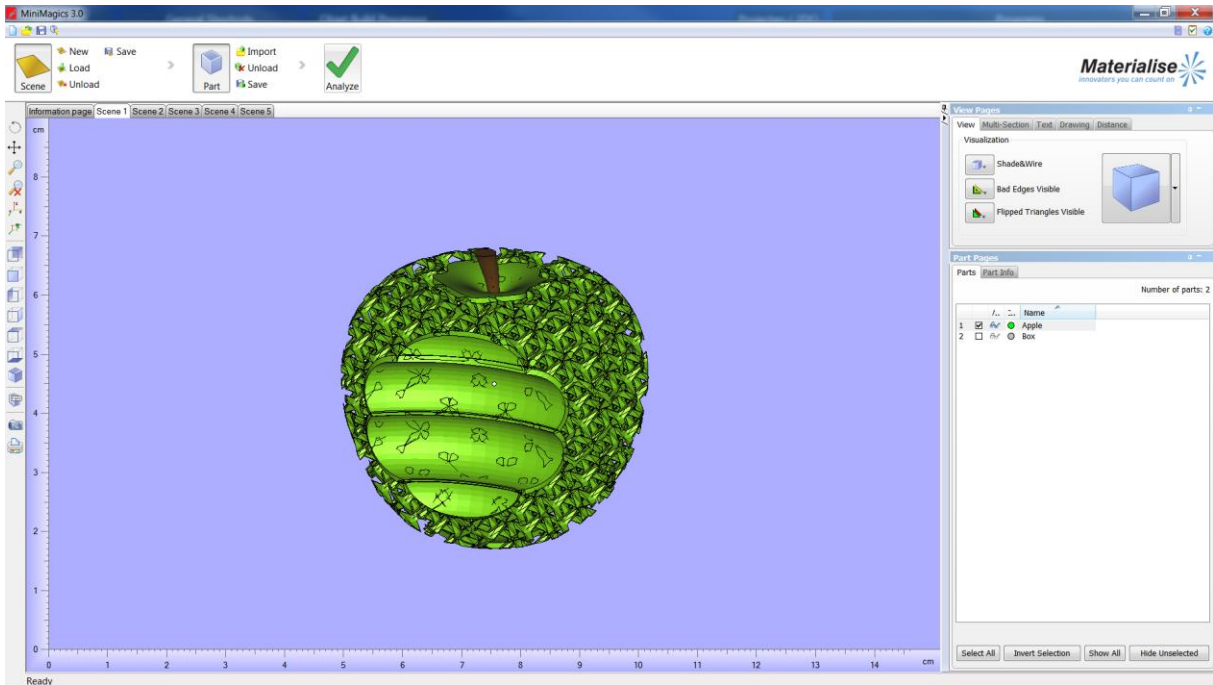
The *Analyze Scene* function allows you to easily diagnose all parts on the active scene for errors. This function will show a green thumb-up when all parts are ready to build (1) and a red thumb down when some of your parts contain errors and need fixing (2).

You can easily diagnose all parts at once with the *Analyze Scene function*, individual part diagnostics can be performed on the *Part Info toolsheet*.



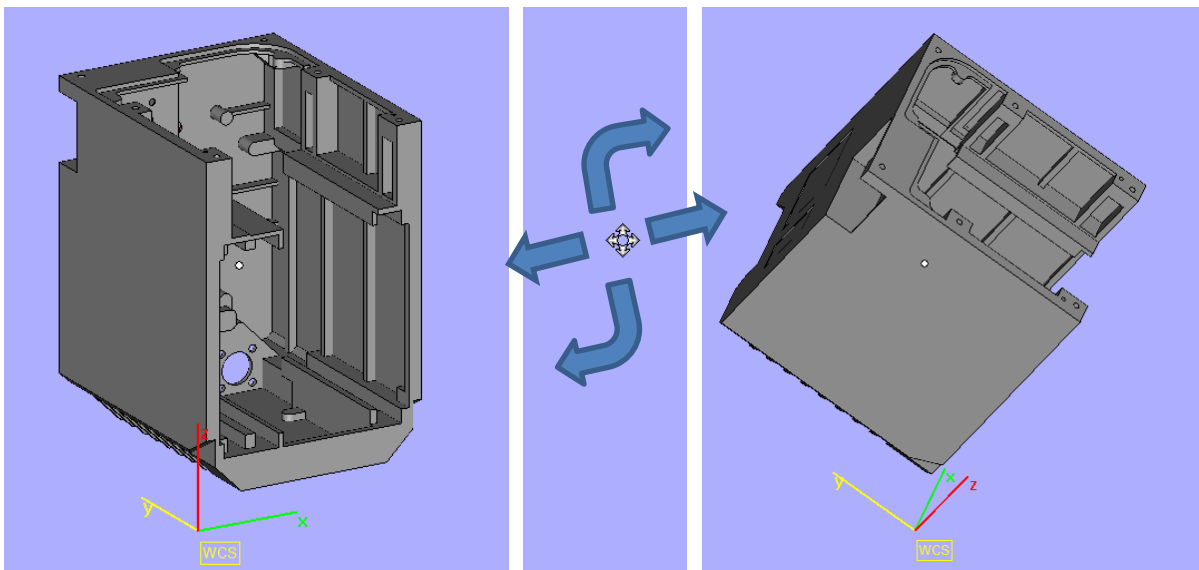
## Visualize


## [View toolbar and Toolsheets]



## View Toolbar

### Rotate and Pan



 The **Rotate** function allows rotation of your part around all three axes of your screen.

Click the Rotate button and use your left mouse button (press it in the workspace) to rotate your part.

The Rotate function has two different cursor images that depend upon the cursor position on the screen: a quadruple arrow shape when the cursor is in the middle of the screen and a circular arrow shape when the cursor is at the edge of the screen.



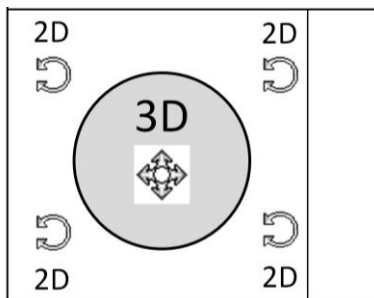
### Quadruple arrow

The movement of the cursor is translated in a rotation around the three axes in the screen (3D movement).



### Circular arrow

The movement of the cursor is translated in a rotation around the axis that is perpendicular to the screen (2D movement).



The easiest way to know which mouse mode will be used is to imagine a big disc in the center of your workspace (indicated with a grey disc).

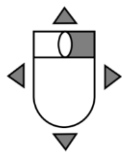
When your cursor is inside this imaginary disk, it will have a quadruple arrow shape (3D movement).

When it is outside this imaginary disk, it will have a circular arrow shape (2D movement).



*It is important to notice that the position of your part in the workspace has no influence at all, only the position of the cursor in the workspace determines the type of rotation (2D or 3D movement).*

The **mouse** also has a rotate option:



Rotate

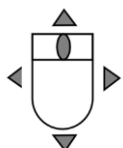
You can also access the rotate function via your right mouse button shortcut (without clicking on the Rotate button).

Press your right mouse button and keep it down while moving your mouse, the part will rotate in accordance with your mouse movements.



The **Panning** function allows you to pan your part in your workflow. Click the Panning button and use your left mouse button (press it in the workflow) to slide your part.

The **mouse** also has a pan option:



Pan

- Panning with a three button mouse is easily accomplished by clicking and dragging with the scroll button (middle button).
- You can also pan with your right mouse button shortcut by holding the shift key down and then clicking and holding the right mouse button while moving the mouse

## Zooming

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The View toolbar has several zoom options:



### Zoom [Alt + Z]

Allows zooming into a specific area of the part. This is accomplished by clicking the left mouse button and dragging a window around the region of the part where you want to zoom.



### Unzoom [Alt + U]

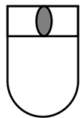
Unzoom will fill the screen with all visible parts. The fill is such that the entire part will be displayed even during any rotation.



### Unzoom Platform

Unzoom Platform shows the parts and their placement on the machine platform.

The **mouse** also has zoom options:



Zoom 

- When using a mouse with a scroll button, roll the scroll button forward to zoom in and backward to zoom out.
- To use the right mouse button shortcuts to zoom, first hold down the control key, then press and hold the right mouse button. To zoom in, move the mouse cursor up the screen and to zoom out, move the mouse cursor down the screen.

## ISO views

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Buttons for changing the viewing angle are also located on the View toolbar:



There are six **Planar** ISO views: Back, Front, Left, Right, Top, Bottom and there is one **TopFrontRight** ISO view.

## Show/Hide

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With these buttons you can show or hide the following features:



Shows or hides the **World Coordinate System**.



Shows or hides the **Orientation Indicator**.



Shows or hides your **Part Names**.

## View Pages

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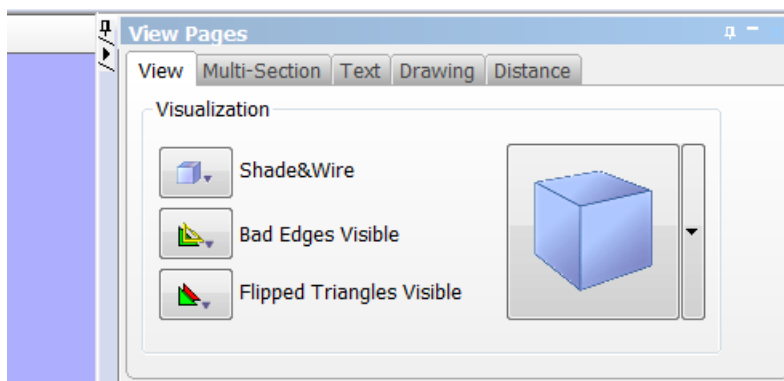
The View Pages Toolsheet contains following tabs which are explained in detail in this chapter:

1. View
2. Multi-Section
3. Text
4. Drawing
5. Distance.

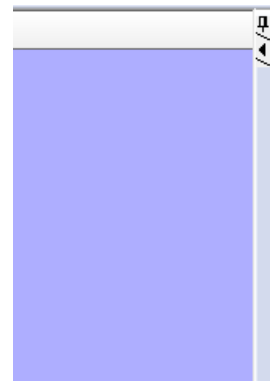
The View tab allows you to change the visualization of your STL-files. You can also inspect your files by creating sections and performing measurements. Furthermore, the annotations (text and drawings) allow you to easily communicate with others.

▶ Click the little black arrow to collapse/expand the Toolsheet.

☰ If you click the little thumbnail, the Toolsheets will automatically collapse when you leave it with your mouse. To expand it again, you should touch the right side of your screen (with your mouse cursor).



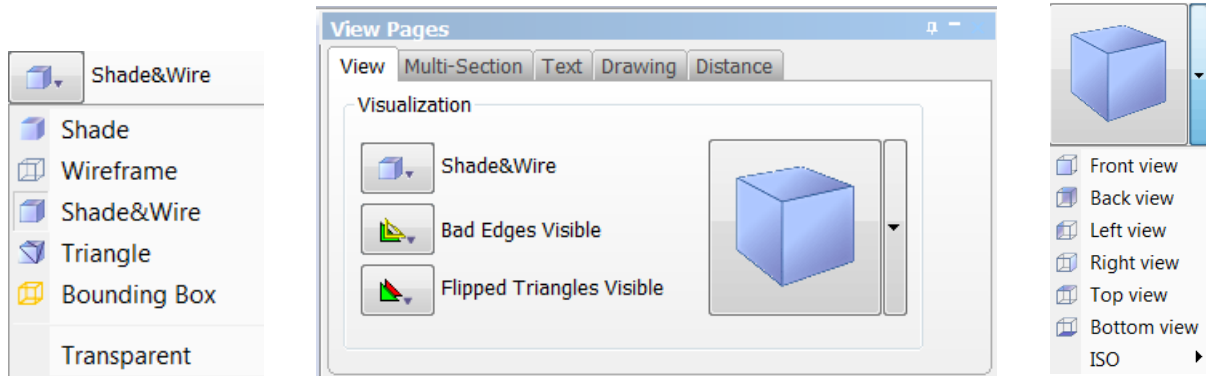
Expanded Toolsheet



Collapsed Toolsheet

## View

The several Shade&Wire options and View angles are selectable through drop down menus.



The **Shade&Wire** options are the first functions you found on the View toolbar. These functions are used to change the way your part is displayed in the Workspace.



### Shade

Displays the part with shades according to the direction of the triangles.



### Wireframe

Shows edges of the object. The edges are defined by the angle of incidence between triangles. Magics defines a visible edge when the angle between two adjoining triangles exceeds the 'definition set' found in the Magics



### Shade & Wire

Displays a combination of shade and wireframe modes



### Triangle

Shows the edges of all triangles. This view shows the native STL file format.



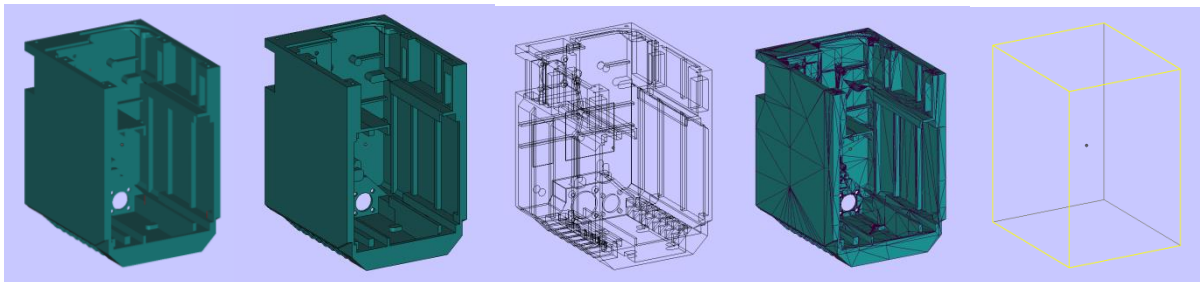
### Bounding Box

Shows only the bounding box (X, Y and Z extents) of the part. This makes rotating parts with a large number of triangles easier (less memory usage). Also, very small bad edges (triangles which are not properly connected) are more evident in this mode because they remain visible (as yellow lines) while the rest of the part is not visible.



### Transparent

This option makes your parts transparent.

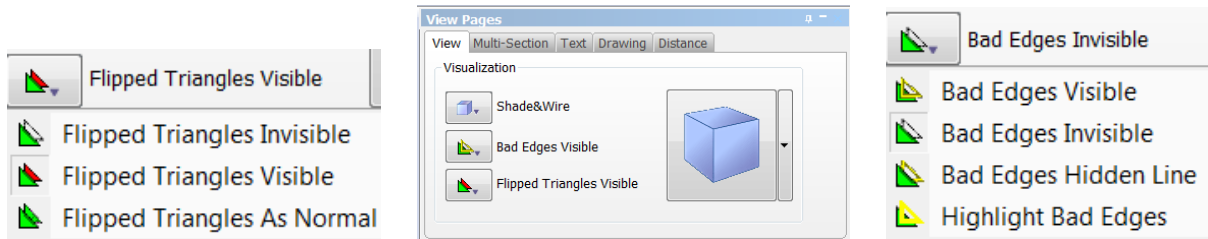


Different View modes (from left to right): Shade, Wireframe, Shade & Wire, Triangle and Bounding Box



The **View Cube** has a drop down menu that contains the different default views along with eight ISO views. You can also click on the View Cube itself. Clicking on a side will activate that particular view.

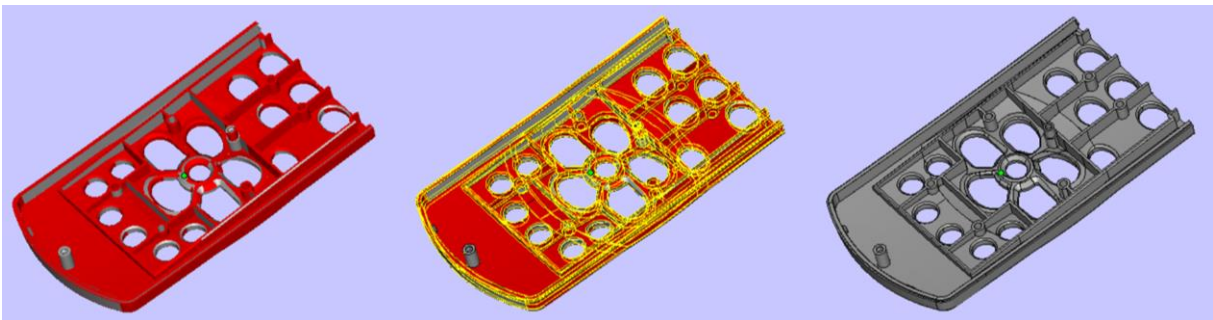
Sometimes, STL-files contain errors and need to be redesigned or fixed. These errors are visualized by default, but you can choose to hide or highlight them.



In the **Flipped Triangle** drop-down menu, you can choose how to display Flipped Triangles: Visible, Invisible or As Normal.

In the **Bad Edges** drop-down menu, you can choose how to display bad Edges: Visible, Invisible, Hidden Line or Highlight Bad Edges.

The figure below gives you an example of making errors visible. It is highly recommended to visualize Bad Edges and Flipped Triangles so you can see at a single glance if your part needs fixing or not.

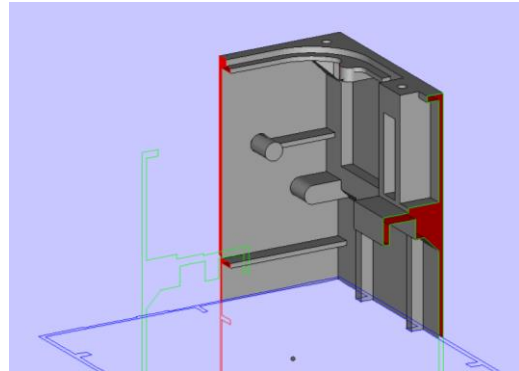
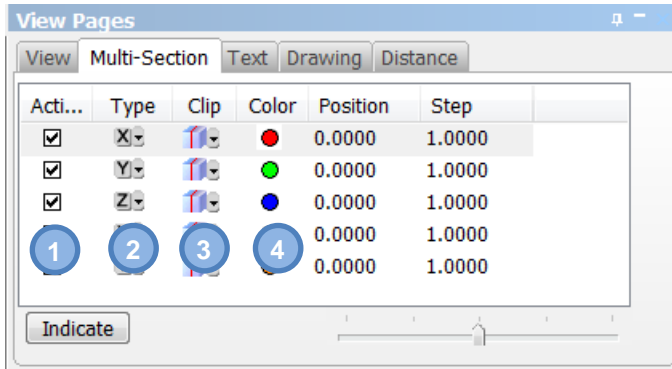


Left: Flipped Triangles visible, Middle: Flipped Triangles and Bad Edges visible, Right: Flipped Triangles and Bad Edges invisible



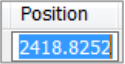
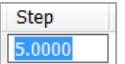
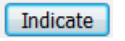

## Multi-Section

Sections are useful to measure, check for errors and look inside the part. With sections you can hide certain parts of your object. They are perpendicular to the X, Y or Z axis. You can define your sections in the **Multi-Section** tab of the View Pages Toolsheet.



1.  Click on the **Active** checkboxes to toggle the sections on or off (so you can define which sections are displayed). You can activate up to five sections at the same time.
2.  With **Type** you can define how the section is created. You can choose between X, Y or Z to set the section perpendicular to the corresponding axis.
3.  The **Clip** function allows viewing inside the part. You can define the portion of the part that will be hidden. With a first click, the portion of the part towards the coordinate system will be hidden. A second click will hide the portion away from the coordinate system. A third click will show the section on your entire part. Use the displayed drop down menu to choose how to display clipping planes.
4.  You can change the **Color** of each section by clicking on that section's Color button.

The position of the section can be determined in four ways:

1. The **Position** box allows you to enter an absolute X, Y or Z coordinate value to place the section in the desired location. 
2. The **Step** box allows you to enter an absolute step value. When using the left and right arrows on the keyboard, the section will move according to this value. 
3. The **Indicate** button allows positioning of the section by clicking anywhere on the part (with your left mouse button). 
4. The **Slider** alters the position of the section in a continuous manner. The section will be calculated and displayed in real-time. The position of the section is displayed in the Position box. 

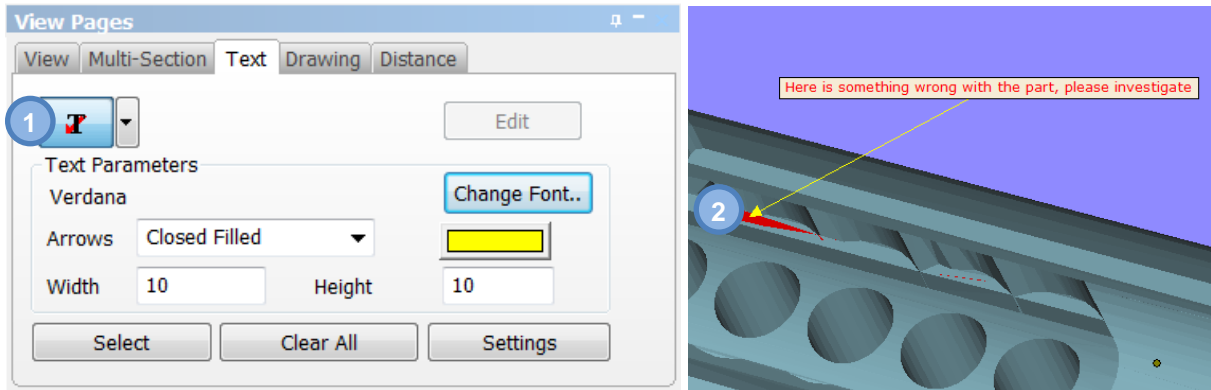



*Sections are only displayed when active (check box is flagged). Sometimes it can happen that you cannot find a certain part. The reason is often that one of your sections is still active and that the part is located in the hidden area of the section.*





## Text

Adding extra information to your project has never been so easy. You can easily add text to your part and keep a well-organized overview of your project. The text is connected to your part and saved in your Magics project file (\*.magics).

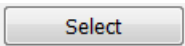
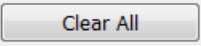
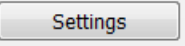
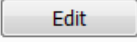


1.  Go to the Text tab of the View Pages Toolsheet and click the Text and Arrow option. Use the displayed drop down menu to choose Text only.
2. Indicate a point on your part where you want to attach the label and click a second time to define the position of the label itself. Afterwards, type your message in the text dialog.

Under Text Parameters, you can change the look and feel of the text and arrows:

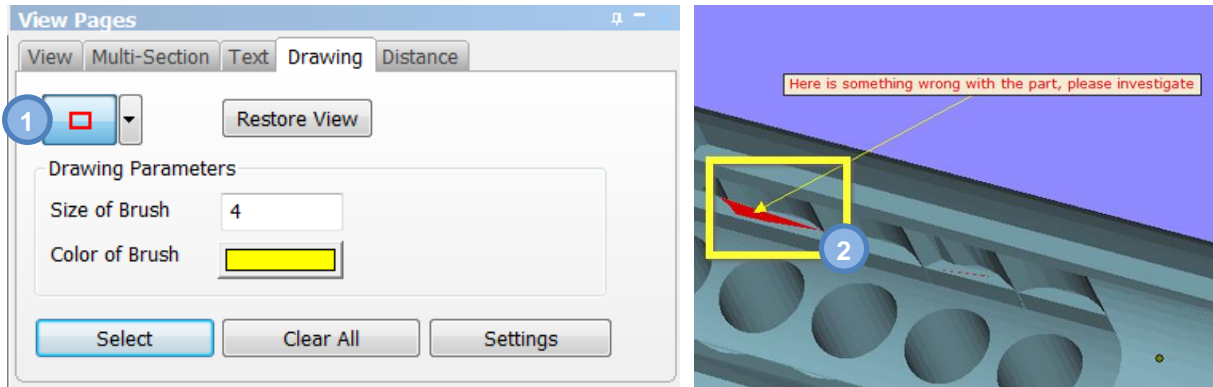
	This button allows changing font, font style, size and color.
Arrows	The style of the arrows can be adapted. You can choose between Open, Closed Filled, Closed or None
	This button allows changing the color of the arrows
Width	Here you can change the width of the arrows
Height	Here you can change the height of the arrows


Furthermore you have buttons to change the settings and to select, edit or clear your text annotations:

	This button allows selecting an existing text annotation. If you afterwards press the delete button of your keyboard, you can delete the selected annotation.
	This button allows to clear all annotations (text and drawings) in a single click
	This button allows changing the settings of the text tags and arrows
	If you have selected an existing annotation, you can use this button to modify the text


## Drawing

You can highlight certain areas by adding drawings to your project. The drawings are projected on the screen and saved in your Magics project file (\*.magics).

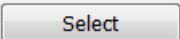
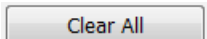

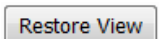


1.  Go to the Drawing tab of the View Pages Toolsheet and click the Rectangle option. Use the displayed drop down menu to choose Ellipse or Freehand.
2. Go to the area you want to highlight and make your drawing

Under Drawing Parameters, you can change the size and color of the brush:

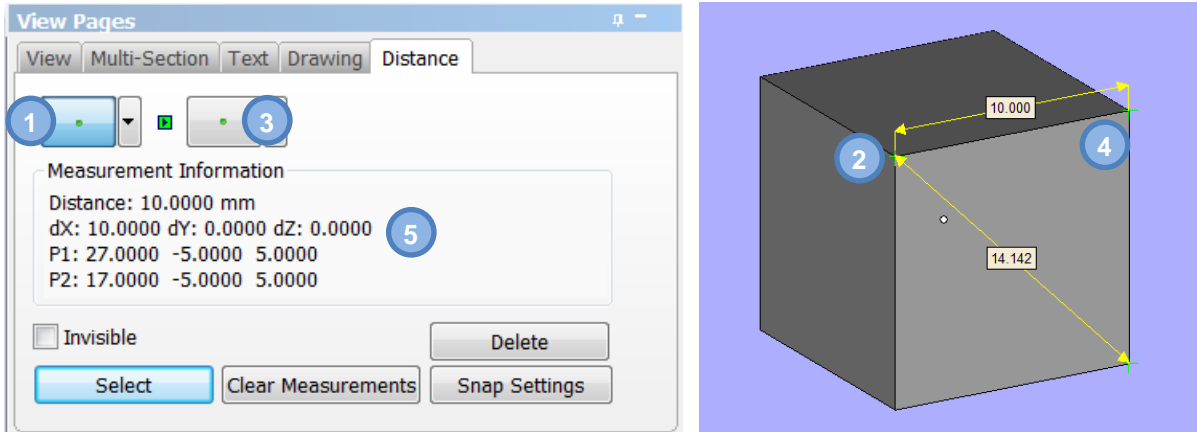
Size	Here you can change the thickness of the brush
	This button allows changing the color of the brush

Furthermore you have buttons to change the settings and to select, clear or restore the view of your drawings:

	This button allows selecting an existing drawing. If you afterwards press the delete button of your keyboard, you can delete the selected drawing.
	This button allows to clear all annotations (text and drawings) in a single click
	This button allows changing the settings of your drawings
	A drawing is not fixed to the part but a projection on the screen. If you rotate or pan the part view, the drawing will not move simultaneously. You can restore a certain view point by selecting the relevant drawing and clicking Restore View.


## Distance

MiniMagics allows you to measure distances on your parts. All measurements are performed on the wireframe. Therefore, measuring is best performed in the 'Shade and Wireframe' or 'Triangle' viewing mode to minimize interpretation errors during measurement.



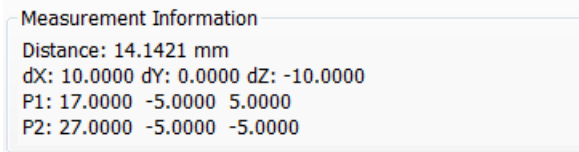
1.  Go to the Distance tab of the View Pages Toolsheet and click the Point option

2. Click on the first point of your part which you want to measure from

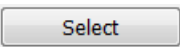

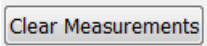

3.  MiniMagics allows you to immediately select a next Point

4. Now, click on the second point of your part which you want to measure to. The measurement will now be active but not yet finished. At this point, dragging the cursor will move the measurement tag. Click the mouse one more time to set the measurement tag in place.

5. On the Distance tab, you will find all information regarding your measurement



Furthermore you have buttons to change the settings and to select, clear or hide your measurements:

	This button allows selecting an existing measurement
	This button allows to delete a single measurement just by clicking on the measurement tag
	This button allows to clear all measurements in a single click
	This button allows changing how the Point will snap on the part
<input type="checkbox"/> Invisible	This checkbox allows to hide all measurements

## Licenses and Settings

[Main Toolbar]

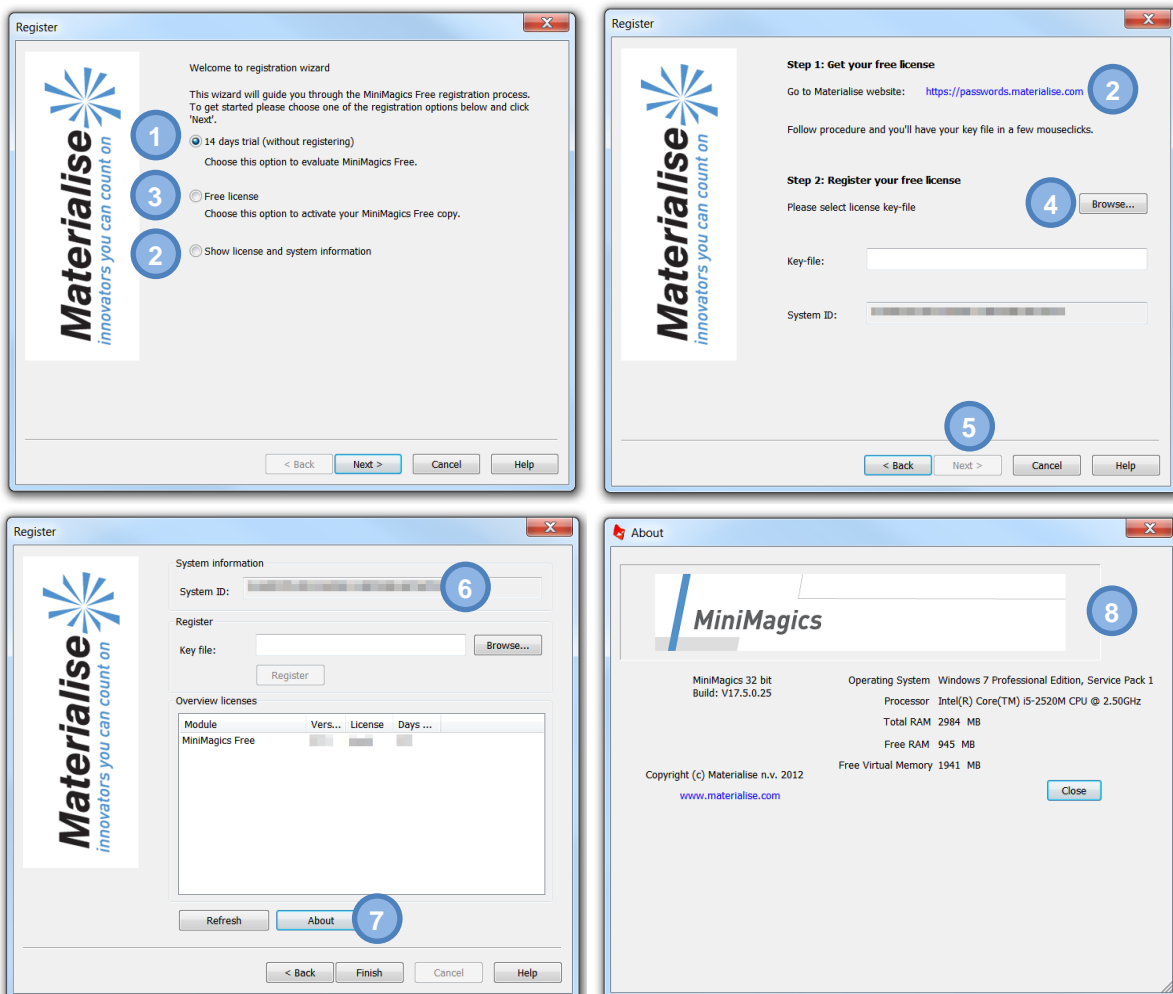
### Licenses |

Materialise Software is key protected. You need key-files to activate and register your MiniMagics software. When you start MiniMagics for the first time, the License Wizard will automatically start up to assist you in registering. You can also open the Registration Wizard by clicking on the Licenses button in the Main Toolbar of MiniMagics. Although MiniMagics is free to use, it still needs to be registered.

You can immediately start using MiniMagics for 14 days without registering (1), but afterwards you should go to Materialise password website <<https://passwords.materialise.com>> (2) to register and get your free key-file. You can register your key-file by choosing *Free license* (3) on the first page of the license wizard and then clicking browse (4) to select the generated key-file. Click Next to register (5).

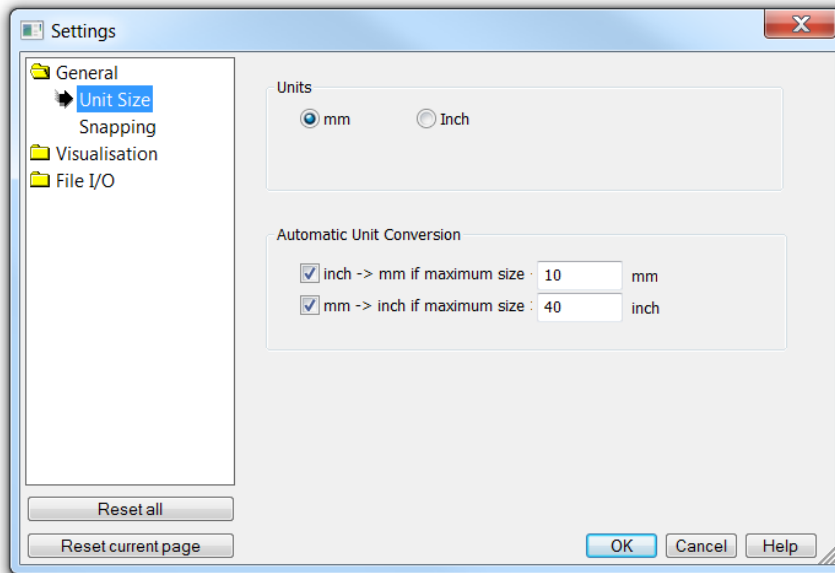
Use the option *Show license* and system information on the Registration Wizard to get your System-ID (6) and an overview of your active license (and how many days you have left before the license is set to expire). Your *System-ID* is a unique identifier for your PC. This ID is dependent on your hardware and we need this ID to generate a key-file.

Click the *About* button (7) to open the MiniMagics *About* dialog (8) which displays the exact MiniMagics version together with some system specific information.



## Settings |

### General > Unit Size



#### Units

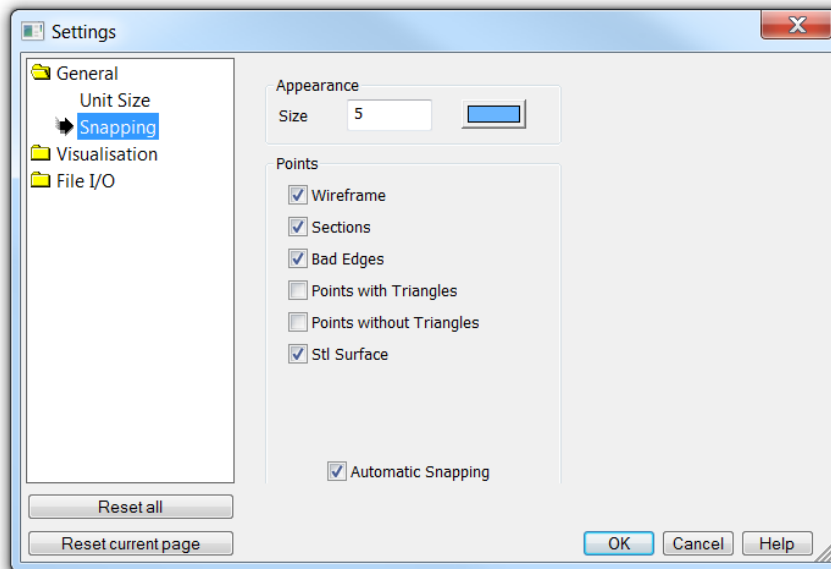
You can choose between mm and inches. You will have to select the units before you load STL files. If the STL file was originally in millimeters, you have to choose mm. If the file is in inches, you will have to choose Inch. If several parts are loaded, some in millimeters and some in inches, the Unit Conversion has to be used otherwise parts are out of proportion. MiniMagics always remembers the last used unit and takes this as default the next time you start.

#### Automatic Unit Conversion

The automatic unit conversion is used to avoid mistakes due to the units you work in. It may be that you are working in millimetres, and that you load a part whose dimensions are expressed in inches. A part of 2inch\*2inch\*2inch, will then become a part of 2mm\*2mm\*2mm. The size of the part is not correct anymore. Because 1inch is 25.4mm, the dimensions of the part expressed in millimetres are bigger than those when the part is expressed in inches. A part of 2inch\*2inch\*2inch, is as big as a part of 50.8mm\*50.8mm\* 50.8mm.

When you are working in millimeters and you load a part and the dimensions are very small (you can define 'very small' i.e. when 'maximum size is smaller than X mm' in the options – see figure above), it may be that the part you loaded was originally expressed in inches. Magics will then multiply the dimensions with 25.4 (inch to mm conversion), so the part will now be expressed in millimeters. When you are working in inches and you load a part and the dimensions are very big (you can define 'very big' i.e. when 'maximum size is greater than X inch' in the settings – see figure above), it may be that the part you loaded was originally expressed in millimeters. Magics will then divide the dimensions with 25.4, so the part will now be expressed in inches.

## General > Snapping



### Appearance

Some features in MiniMagics (for example measurements and text annotations) require that you snap to a point on the part. When you snap to a point, it will be marked with a colored circle with a radius as set in the size box. The little circle will get the color marked in the color box.

### Points

You can decide which points you can snap to: points on a wireframe, sections, bad edges, corner points of a triangle, free points (points that are not a corner point of a triangle) and/or points on the STL surface.

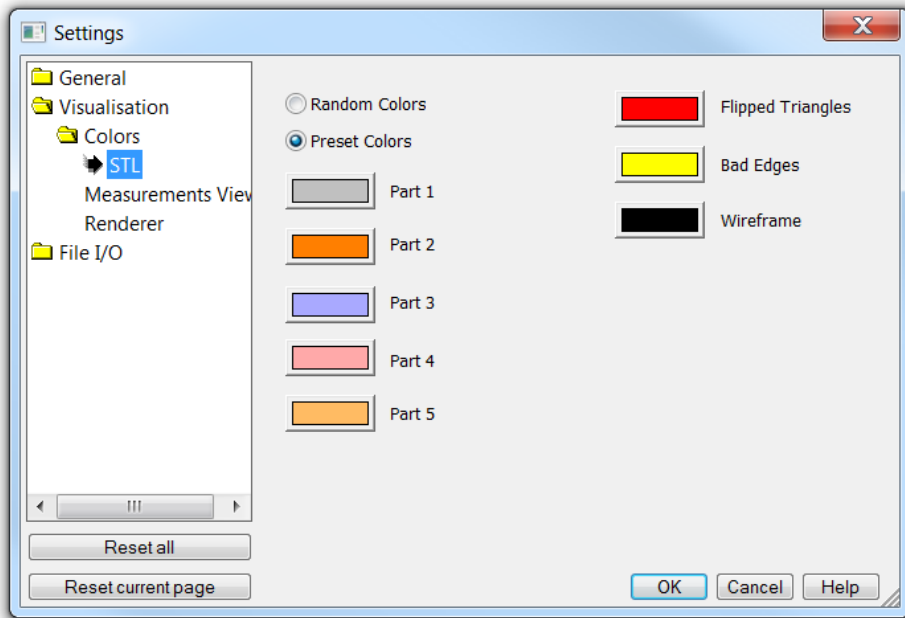
When you for example unselect wireframe, you will not be able to snap a point that is lying on the wireframe.

### Automatic snapping

**ON:** When this option is marked, MiniMagics actively searches for points when you move the mouse over the part. Magics will highlight these points. To select a point, click on it.

**OFF:** MiniMagics will only search for a point when you have clicked with the mouse. This option is faster.

Visualisation > STL Colors



**Random Colors**

When you select random colors, random colors are used for the different parts you import.

**Preset Colors**

When you select Preset colors, the colors of this window are used.

Part 1 to Part 5

These five buttons represent the five colors as they will be assigned to the loaded parts. The first part you load will get the first color. The second part will get the second color and so on.

Flipped Triangles

The color of the flipped (inverted) triangles

Bad Edges

The color of the bad edges

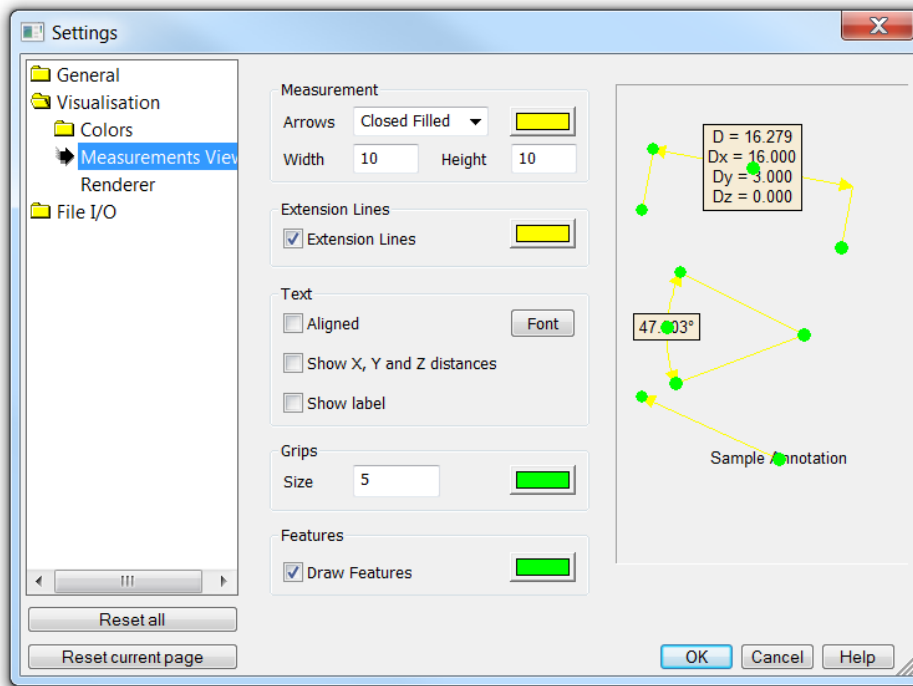
Triangle Border

The color of the triangle borders

Wireframe

The color of the wireframe

Visualisation > Measurements View



## Measurement

**Arrows** Arrows can be placed at the end of the line that indicates the distance between two features. An open, a closed, or a closed filled arrow can be chosen



The color of the arrows can be adapted

**Width** The width of the arrow-head can be adapted

**Height** The height of the arrow-head can be adapted

## Extension Lines

**Extension Lines** You can choose to draw extension lines or not. These extension lines appear when you drag your measurement tag away from the part. Extension lines don't have arrow-heads



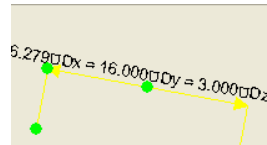
You can adapt the color of the extension lines



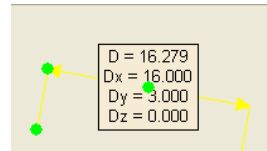
## Text

Aligned

Checked



Not Checked

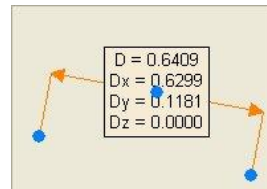


Font

You can adapt the font of the text

Show X, Y and Z distances

Checked, the measurement value is not aligned.



## Grips

When you select a measurement, some grips (dots) will appear on the measurements lines. They allow changing the position of the measurement entities; the measurement value will be updated.

Size

You can define the size of the grip



You can define the color of the grip

## Features

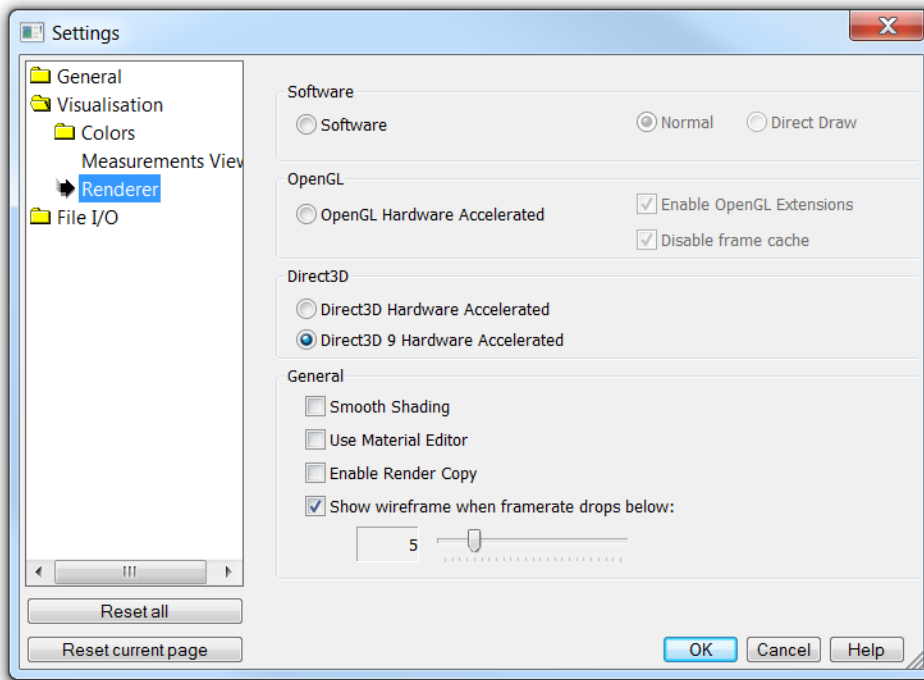
Draw Features

A detected point is indicated with a cross



You can define the color of the features

Visualisation > Renderer



Modern video cards have specialized hardware to make rendering faster. MiniMagics can use OpenGL and Direct3D. These video cards will make rendering much faster.

The principle is that your computer sends the triangles to the memory of the video card and the card will do the rendering of the part, following the instructions of MiniMagics. This has two consequences:

- To have optimal results, the memory on the video card must be large enough (1 MB STL needs approx. 1,5MB ram on the 3D-card).
- Each time the part has been changed, the whole list of triangles must be send again to the video card. This can cause delays depending of the size of the part. When you have a huge amount of triangles (millions of triangles), delays can be avoided by switching back to software rendering. Each 3D-card has a limit.

Remark: We recommend trying each mode and comparing the results. Not only the hardware is important, but also the drivers. If you're having problems, try again with other (more recent) drivers.

**Software** This renderer is the default renderer of MiniMagics, written by Materialise. The rendering is a part of the program and is done by the CPU. If you do not have a special 3D-videocard or good drivers, we recommend you to use this setting.

**Normal** The whole rendering process is done by MiniMagics.

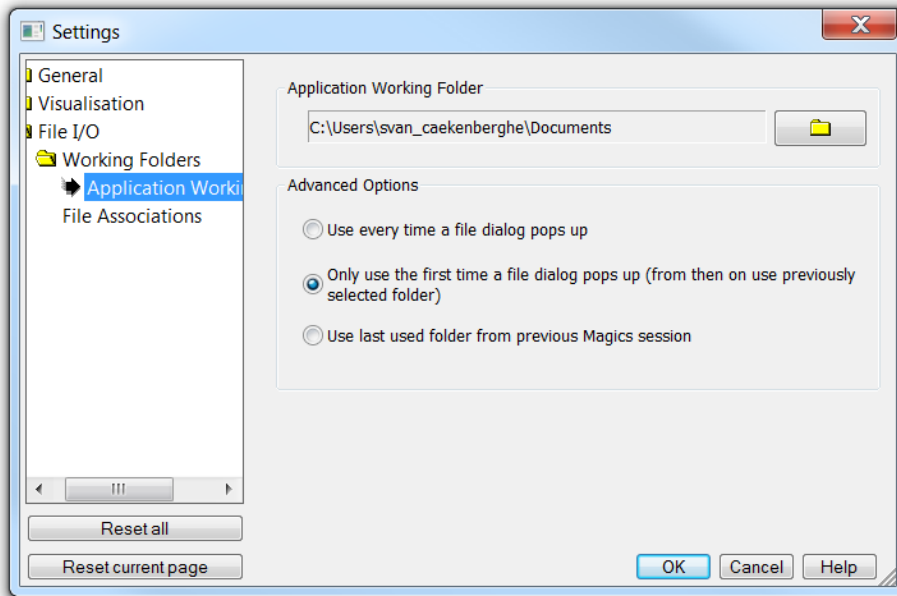
**Direct Draw** Some instructions of Microsoft DirectDraw are used to speed up the rendering.


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**OpenGL** OpenGL was developed for CAD purposes and using the HW-acceleration present on the card. If a certain feature is not supported by your 3D-card, the OpenGL-driver will perform that specific instruction via software rendering (software fallback).

<b>Enable OpenGL Extensions</b>	This flag enables advanced OpenGL extensions. When the driver implements these correctly you should see a dramatic improvement in speed. If after enabling this flag you encounter random crashes or don't see a performance increase, it's advised to either update your graphics card driver or disable this flag.
<b>Disable frame cache</b>	Select this setting when you experience problems on high-end OpenGL-cards.
<b>Direct3D Hardware Accelerated</b>	Direct3D is a part of Microsoft's Direct X. Direct X was originally developed for 3D games but Direct3D is also useful for us. When a feature is not implemented on the 3D-card, the Direct3D can't fall back on software rendering, so the instruction won't be done. Direct3D is NOT supported in Win NT.
<b>Smooth Shading</b>	In the Open-GL or Direct3D render mode, the part can be visualized using smooth shading. The variations in color will now be shown more gradually and no longer as separate triangles. Note that only the visualization of the part changes, the number of triangles and the accuracy of the STL are not changed.
<b>Use Material Editor</b>	OFF: When you click on the colored circle in the Part List toolsheet, a color palette appears. ON: When you click on the colored circle in the Part List toolsheet, the material editor dialog appears. Besides the color, you can also select the material properties. The colors can be described in 2 ways: RGB (red, green, Blue) and HLS (Hue, Lightness, Saturation).
<b>Enable Renderer Copy</b>	By Enabling this flag you tell the application that it's ok to keep a copy of the triangles in graphics card memory. This will speed up the rendering a lot on most systems. If your system doesn't have a lot of graphics memory or you work with very large files it's best to disable this feature.
<b>Show Wireframe when framerate drops below</b>	This flag allows the application to only render wireframes or points of parts when rotating the view thus interaction speeds up in the 3D-views.

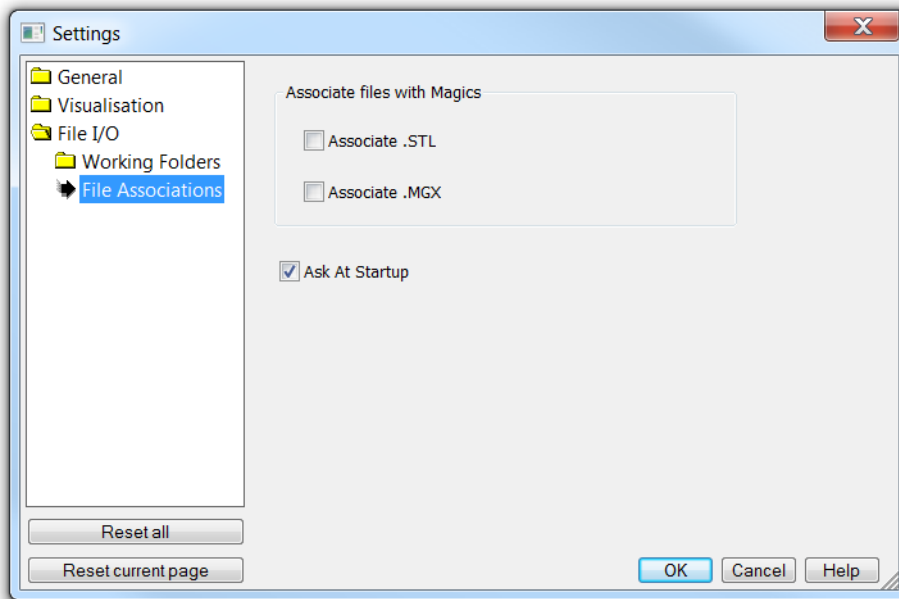
## File I/O > Application Working Folders



**Application Working Folders** You can browse by clicking on the folder icon  and set a folder as default folder.

- Option 1 MiniMagics always proposes this folder when a part needs to be loaded or saved.
- Option 2 MiniMagics only proposes the chosen folder the first time a file dialog pops up. The succeeding times a file dialog pops up, the previously selected folder is used.
- Option 3 MiniMagics proposes this folder the first time when a part needs to be loaded or saved. The next time, he proposes the last selected folder.

## File I/O > File Associations



### Associate STL files with MiniMagics

Associate .STL      Offers you to associate STL files to MiniMagics

Associate .MGX      Offers you to associate MGX files to MiniMagics

Ask at Startup      You can check this association each time Magics started. When the association is not there anymore, the user will be prompted.

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## System Requirements

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### Minimal Hardware Requirements

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#### CPU

- Pentium IV 3 GHz or higher

#### Memory

- 2 GB RAM

#### Free Disk Space

- 200 MB

#### Display

- 1280 x 1024 resolution or higher
- 32-bit color depth (True color)

#### Video Card

- 'NVidia GeForce' or 'ATI/AMD Radeon'
- DirectX 9 compatible video card
- At least 256 MB of memory
- At least a memory interface width of 256-bit
  
- 'NVidia Quadro', 'ATI/AMD FireGL' or any 'Intel' gpu chipset are **not** recommended

#### Operating Systems

- MiniMagics 3.0 **runs** only on:
  - Windows XP SP3 (32bit), SP2 (64bit)
  - Windows Vista SP1 or later (32bit/ 64bit)
  - Windows 7 SP1 (32bit/ 64bit)
- MiniMagics **will not run** on:
  - Windows 98
  - Windows 2000
  - Windows Server Editions
- MiniMagics does **not** run natively on **Mac OS X**.
- MiniMagics does **not** run natively on **Linux**, or **any other operating system** not listed above.
- Virtualization systems such as VMWare are not recommended.

### Supported Browsers for built-in Information Page

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- The built-in Information page will use Internet Explorer (IE) to connect to the internet. We support IE10, IE9, IE8 and IE7. Versions older than IE7 are not supported.

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## MiniMagics License Agreement [en]

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