Mimics Z 1.0 Overview

Mimics Z is a fully integrated, user-friendly 3D medical image processing and editing software that translates CT or MRI data into rapid prototyping data within minutes. Mimics Z has been developed exclusively for Z Corporation and Contex by Materialise, the creator of Mimics, the leading medical imaging software in the rapid prototyping industry.

Mimics Z offers you an easy to use wizard that will guide you through the whole process of making a printed model from the import of images to the launching of ZPrint or DESIGNprint software with your 3D model loaded. At any time information is available about the next step in the process and an extensive help function enables you to produce great results with a minimum of effort. The wizard is divided in following steps:

Step 1: Import

Mimics Z imports 2D stacked images such as CT or MRI DICOM images. A wizard helps to guide you through the import process. It allows for the merging of multiple image sequences into one project, to convert different image sets at once, or to select specific images prior to creating the project.

After importing, Mimics Z will display the image data in several ways, each providing unique information. Mimics Z divides the screen into four views: the original axial view of the image, the re-sliced data making up the coronal and sagittal views and the 3D view showing the created 3D models. Mimics Z includes several visualization functions such as contrast enhancement, panning, zooming and rotating of calculated 3D objects.

Step 2: Thresholding

In Mimics Z, segmentation masks are used to highlight regions of interest. Mimics Z enables you to define and process your datasets with up to 30 different segmentation masks.

Thresholding is the first action performed to create a segmentation mask. Mimics Z offers you a user-adaptable list of predefined thresholds for common anatomical structures like bone or soft tissue. The predefined thresholds can also be fine tuned manually by the user if needed. Such a threshold selects a region of interest by defining a range of gray values. The boundaries of that range are the lower and upper threshold value. All pixels with a gray value in that range will be highlighted in a mask.

Step 3: Mask editing

Region Growing:

Region growing will eliminate noise and separate structures that are not connected.

Editing (Draw, Erase, Local Threshold):

Manual editing functions make it possible to draw and erase from the segmentation mask or restore parts of the mask with a local threshold value. Editing is typically used for eliminating artifacts and to separate structures.

Step 4: Calculate a 3D object

Mimics Z provides a flexible interface for quickly calculating a 3D model of the region of interest. Information about height, width, volume, surface, etc. is available for every 3D model. Mimics Z can display the 3D model in any of the windows with visualization functions that include real-time rotation, pan, zoom and transparency. The ability to apply advanced rendering with OpenGL hardware acceleration offers high-quality rendering including Gouraud shading for optimal display of the 3D objects.

Step 5: Export

In the last step of the wizard, you can interface to your Z Corp. or Contex printer by exporting the created 3D objects to a .ZPR file or by launching ZPrint or DESIGNprint directly from Mimics Z. These files are created with a bilinear and interplane interpolation algorithm to enhance the resolution of the RP model. Powerful adaptive filtering offers a significant reduction of the file size.

Software Requirements:

Minimal:

Windows 2000
Internet Explorer 5.0

Recommended:

Windows 2000 or XP
Internet Explorer 6.0

Hardware Requirements:

Minimal:

Intel Pentium II 300 MHz or equivalent

256 MB RAM

Graphics card supporting 1024x768 and 16-bit colour with 4 MB RAM

Non-interlaced 15" color monitor

Recommended:

Intel Pentium 4 3.0 GHz or equivalent

1 GB RAM

ATI RADEON or NVIDIA GeForce card recommended with 128 MB RAM

Non-interlaced 19" colour monitor or 17” flat panel monitor

Resolution of 1280x1024 or higher

Optical mouse with a scroll wheel