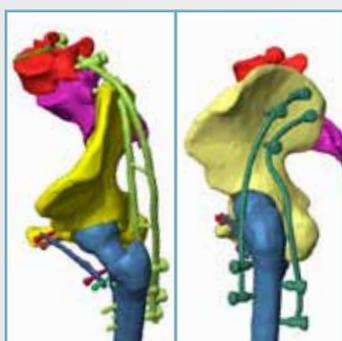


SIMPLEWARE FOR ORTHOPAEDICS



Simpleware software provides advanced solutions for processing medical image data (MRI, CT, micro-CT...) for orthopaedic research. Use Simpleware software's powerful image processing tools to rapidly visualise and segment musculoskeletal anatomies. Integrate CAD-designed medical devices with patient-specific anatomies, and export multi-part Finite Element (FE) meshes for implant validation and contact mechanics analyses. Material properties, density and Young's modulus can be assigned from Hounsfield units, and contacts, node sets and shells added to meshes to improve simulation accuracy. Accurate anatomical models can also be exported as STLs for 3D printing processes.

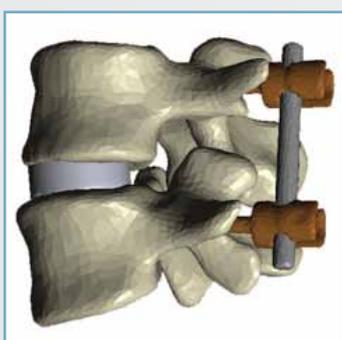


From Image to Model in Minutes

Simpleware software offers an intuitive interface for processing 3D image datasets from a wide range of scan modalities. Find tools quickly and efficiently using a ribbon design, and make use of a comprehensive set of easy-to-follow tutorials when learning the software. Full technical assistance on image processing and meshing is also available from our team of support engineers.

Automate your Workflow

It is possible to customise Simpleware software to meet your specific workflow needs. A scripting API allows access to all options within the software and provides support for a range of languages, including Python, C# and Java. This functionality enables you to automate repeatable operations, build wizards and integrate your own plugins. Script creation is also possible through macro recording.



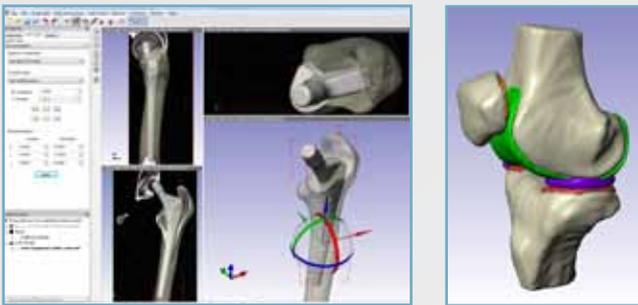
Key Features and Benefits

- » **Intuitive user interface:**
easy-to-learn and easy-to-use
- » **Conforming multi-part meshing:**
automated, robust, fast, simulation-ready
- » **Import 3D image data of any scale:**
MRI, CT, micro-CT...
- » **Integrate CAD and image data:**
easily combine implants and patient data
- » **Advanced 3D image processing tools:**
visualisation, segmentation, analysis...
- » **Established solver compatibility:**
direct export for all leading FE solvers
- » **Greyscale-based material properties:**
assign from Hounsfield units
- » **Customisable and extensible:**
comprehensive scripting facility

3D GREYSCALE VISUALISATION AND IMAGE SEGMENTATION

Simpleware software offers a range of advanced tools and filters for working with a variety of 3D medical data modalities. Volume render 2D image stacks in 3D directly after import, and explore data using colour and opacity mapping. Semi-automated segmentation tools can then be used to obtain bone and soft tissue regions. Inspect your data and create accurate multi-part models in minutes.

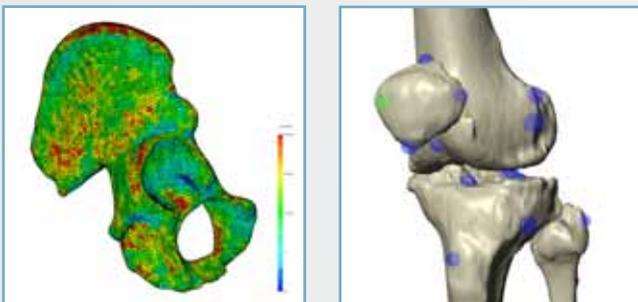
- » Easily reconstruct models from CT, MRI and micro-CT (micro-scale of trabecular bone)
- » Use semi-automated tools to segment data based on greyscale intensity
- » Remove unwanted artefacts
- » Verify segmentation by plotting model contours onto sliced data



MEASUREMENTS AND STATISTICS FRAMEWORK

The intuitive measurement and statistics tools included with Simpleware software allow medical data to be rapidly quantified. Measure bone geometries, and place landmark points in 2D and 3D views for export to musculoskeletal modelling systems. Statistics can also be computed for bone density and Young's modulus.

- » Measure bone distances, angles and lengths in 2D and 3D modes
- » Insert landmark points for musculoskeletal analysis
- » Directly assign greyscale-based material properties to bone from Hounsfield units



About Simpleware

Simpleware develops industry-leading image processing software solutions for 3D image data visualisation, analysis and model generation.

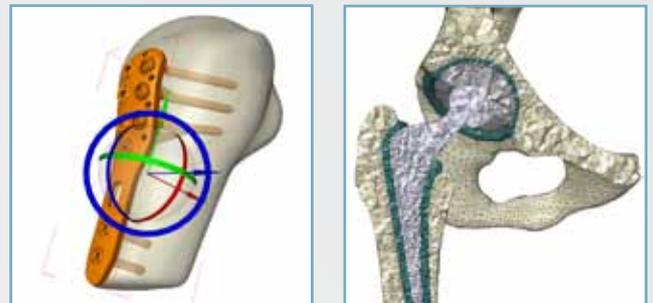
Follow us on:



MULTI-PART MESHING AND CAD INTEGRATION FOR FEA

Simpleware software provides industry-leading meshing algorithms for converting segmented data into robust multi-part models for Finite Element Analysis (FEA). Generate meshes with conforming interfaces and shared nodes, and export to FE solvers for analyses of bone stresses and strains without any need for mesh fixing. Options are also available for integrating CAD-designed medical devices into human body models for simulation and analysis.

- » Define contacts, node sets and shells using solver-specific formats
- » Integrate CAD objects with patient-specific image data for surgical planning
- » Add internal microstructures to reduce weight of custom implants
- » Export meshes to all leading FE solvers
- » Export models as STLs for 3D printing



RECENT APPLICATIONS

Simpleware software has been used to process image data for a wide range of orthopaedic projects. For example:

- » Optimising acetabulum position in a ganz periacetabular osteotomy
- » Analysing stress in the femoral head neck junction
- » Comparing fixation methods for treating clavicle fractures
- » Simulating a total hip replacement
- » Integrating subject-specific models with a musculoskeletal modelling system
- » Carrying out FE analyses of patellofemoral mechanics and bone strain distribution

Visit our website for a fully functional 30-day free trial. Trial versions are fully supported by our technical team.

simpleware 

www.simpleware.com