coreform

A comprehensive toolset for streamlined geometry cleanup and mesh generation

Coreform Cubit includes everything needed for streamlined progress from CAD to analysis, with full-featured capabilities for geometry preparation and mesh generation, analysis, and fine-tuning.

GEOMETRY

Break the geometry bottleneck to reduce modeling time

Preparing CAD geometry for meshing consumes more time and resources than any other stage of the CAE process. Cubit provides powerful, user-guided automated tools to make geometry cleanup and simplification fast and satisfying.

Build solid geometry directly or import CAD
Create solid geometry directly in Cubit, or import geometry from leading CAD platforms. Modify with transform or Boolean operations.

Auto-heal dirty CAD
Geometry analysis and repair tools diagnose and fix geometric and topological errors from imported CAD by trimming, stitching, and rebuilding.

Clean up and defeature with smart tools
User-guided, automated routines detect and remove undesirable features such as fillets, chamfers, and sliver curves and surfaces.

Comprehensive toolset
Everything you need for fast geometry cleanup, meshing, and export.

Semi-automated hex meshing
Rich set of tools for streamlining the creation of analysis-ready models

Expert-level mesh control
Industry-leading mesh analysis and improvement tools for complete control from Jacobians to vertices.

Scripting & automation
Python integration and scripting tools to increase simulation speed and throughput

Smart workflow wizard
Step-by-step guidance through geome try preparation and mesh generation.

MESHING

Mesh any CAD geometry with robust hex and tet algorithms

Coreform Cubit supplies a comprehensive meshing feature-set for surface and solid meshing with a wide variety of element types and methods for automating and streamlin ing mesh creation.

Battle-tested algorithms
Deep stock of mesh generation algorithms including paving, mapping, sub-mapping, sweeping and multi-sweeping.

Smart controls
User-guided adaptive or fully automatic interval sizing and scheme selection.

Unrivaled hex meshing
State-of-the-art structured and unstructured quad- and hex-dominant meshing with powerful, smart automation options.

Multi-scheme tet meshing
Multi-scheme automatic tri/tet meshing schemes with Distene MeshGems, Delaunay, and advancing front algorithms.

MINIMUM REQUIREMENTS **OS** Windows 7 or newer, 64-bit; Red Hat 7, 64-bit (or similar system with at least glibc 2.5 and libstdc++ 4.4); SUSE 12; Debian 6; Ubuntu 10.4 or newer; Mac 10.11+, 64 bit only. **Hardware** 4GB RAM (8GB or more recommended), 1GB disk space. Graphics card and driver capable of supporting OpenGL 3.2.

AUTOMATION

Semi-automated hex meshing with interactive smart tools

Smart workflow wizard
Step-by-step guidance through geometry preparation and mesh generation, with user interactive diagnostics and smart suggestions.

Smart sweep suggestion & forcing
Automatic recognition of nearly sweepable topologies and identification of potential source-target pairs. Automatic surface compositing to force a sweep topology.

Smart decomposition
Smart detection/suggestion of decomposition operations needed to enable mapping, sub-mapping or sweeping schemes.

Autoscheme hex meshing
Automatic meshing scheme selection based on user-adjustable topological and geometric criteria.

Imprint & merge
Unique suite of interactive, automated tools to enable efficient and robust conformal meshing of multi-volume assemblies.

CONTROL

Expert-level mesh controls for superior quality and precision

Industry-leading capabilities for specifying mesh properties, analyzing mesh quality, and performing precise local or global mesh modifications.

Mesh quality analysis and visualization
Quality analysis with general and element-type-specific metrics for quad, tri, tet, hex, and wedge elements, including aspect ratio, area/volume, min/max angle, Jacobians, condition number, distortion, and approximate maximum timestep (for explicit transient dynamics).

Mesh property controls
Adaptivity and sizing function options for controlling mesh density in response to geometric or user-defined properties, including local field variable solution values from previous analyses. User-specified fixed or variable-firmness interval sizing, including arc span and curve biasing.

Mesh smoothing and optimization
Smoothing algorithms: equipotential, condition-number optimizing, length weighted and smart Laplacian, Winslow elliptic. Mean ratio and edge length smoothing provided by MESQUITE, a mesh optimization toolkit by Argonne National Laboratory and Sandia National Laboratories.

Mesh refinement and scaling
Multiple methods for global or local conformal refinement with automatically generated transition elements per user specification, including pillowing and directional sheet operations to reduce or create anisotropy.

SCRIPTING

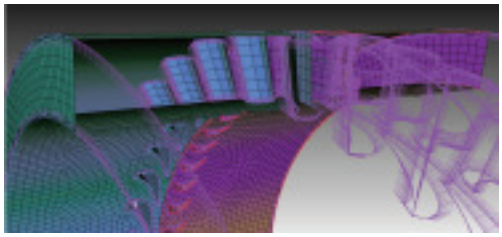
Powerful scripting & process automation for maximum simulation throughput

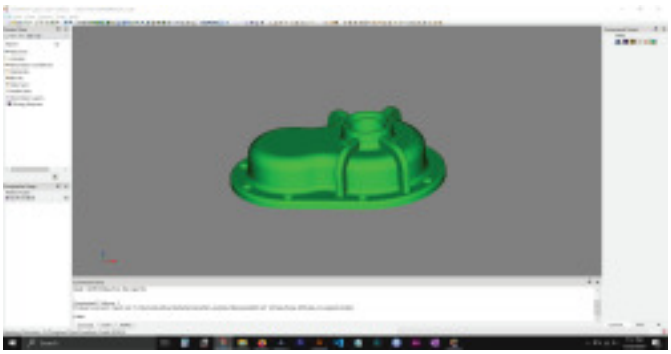
Replayable journal files
All GUI input is automatically echoed to the command line and saved as an editable, replayable journal file.

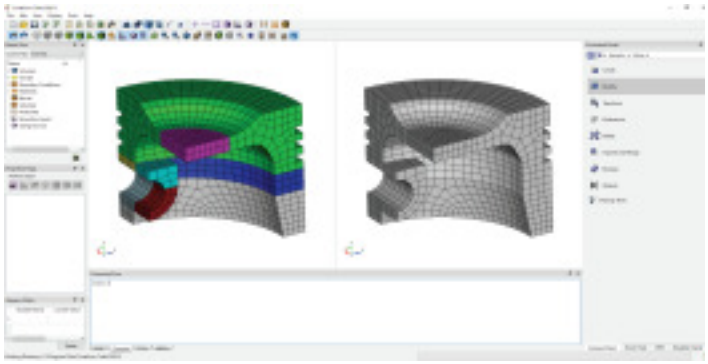
Python scripting
Scripting functionality is available directly via the command line with a built-in Python interpreter, or via file input for batch mode operation.

GUI and tool customization
Journaled command sequences and Python scripts can be launched with user-created, importable custom command buttons and toolbars.

Integration via SDK
Available SDK allows deep customization for seamless custom workflow integration via Python or C++.







1427 South 550 East
Orem UT 84097 USA
Telephone +1 801 717 2296 **www.coreform.com**