# BOXERMesh

A key component of the BOXER end-to-end parallel simulation environment, BOXERMesh is an advanced, hybrid unstructured CFD/FEA grid generator that meshes geometries of arbitrary complexity and size, delivering significant Capability, Productivity and Cost benefits. BOXERMesh is fully parallelised, highly scalable software with an absolute focus on Ease-of-use, Reliability and Speed. Key features include the avoidance of CAD repair through robustness to imperfections and the assurance of a reliable and predictable process that delivers ready-to-run meshes.
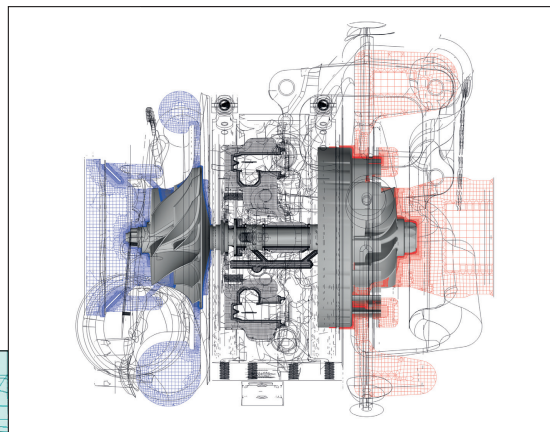
BOXER

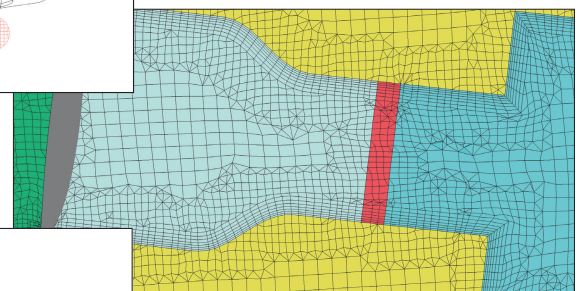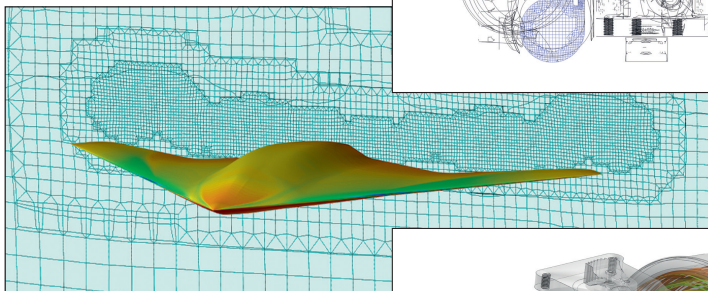### Supporting end-to-end parallel simulation
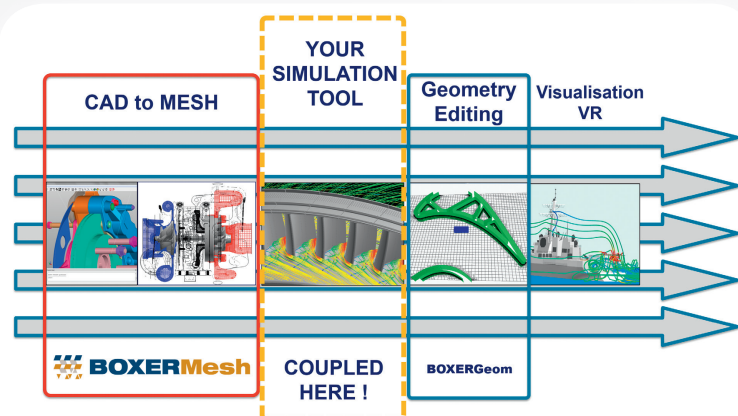
Advanced Capability

- Complex geometry
- Full viscous layering
- Conformal multi-region
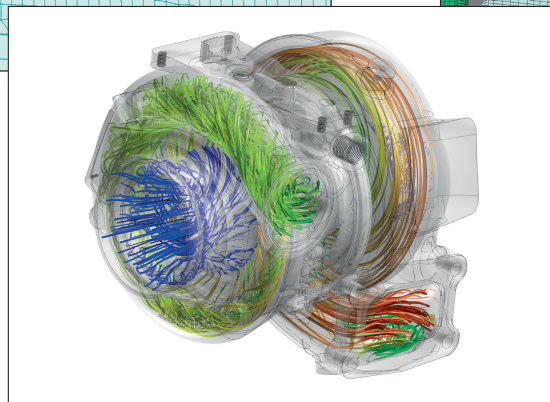- Mesh refinement

Intuitive & Easy to Use

- Simple & powerful GUI
- Direct CAD import
- Patch manipulation
- Scripted capability

Reliable

- Highly CAD-tolerant
- Stringent mesh quality criteria
- Robust meshing process
- Ready-to-run meshes

Fast & Scalable

- Fully parallel, including layering
- Excellent scalability
- Runs on laptops to HPC clusters
- Process-independent pricing: use as many processes as you want !

For further information contact: enquiries@cambridgeflowsolutions.com

Features

Graphical User Interface: the GUI provides powerful yet straightforward functionality to allow users to import, specify and create quality meshes. The GUI is built using HOOPS libraries from Techsoft3D (www.hoops3d.com)

Prismatic Near-wall Layers: are easily specified and automatically created, allowing viscous flow resolution down to y+ levels of 1. Near-wall layer extrusion is implemented as a fully parallel process.

Multi-region meshes: different regions within a model are meshed with conformal interfaces (node and face matched), and support viscous near-wall layers.

Refinement: based on curvature, surface or volume allow the mesh to be carefully tailored to each application. Additional options include refinement based on shells and volumes imported from CAD or CFD solutions.

Mesh Anisotropy: can be specified locally or globally, along one or several of the Cartesian directions.

Domain Extrusion: body-fitted mesh boundary faces can be extruded along Cartesian directions at user-defined expansion rates, allowing the domain to be extended very efficiently.

Parallel Distributed Memory: BOXERMesh is a true parallel application using distributed data structures and MPI-based processing. The software runs on almost any platform, from laptops to HPC clusters and the Cloud.

Scalability and pricing: distributed memory parallel processing gives BOXERMesh exceptional scalability, offering users very significant speed-ups over a large range of parallel processes. (see graph). The simple, flat pricing structure allows users to run on as many processors as they require.

Scripting: journal files are generated through the GUI and easily edited. BOXERMesh can be run in batch, or as part of an automated process.

Cartesian and Cylindrical Polar Coordinate Systems: both systems support node and face matched periodic mesh boundaries.
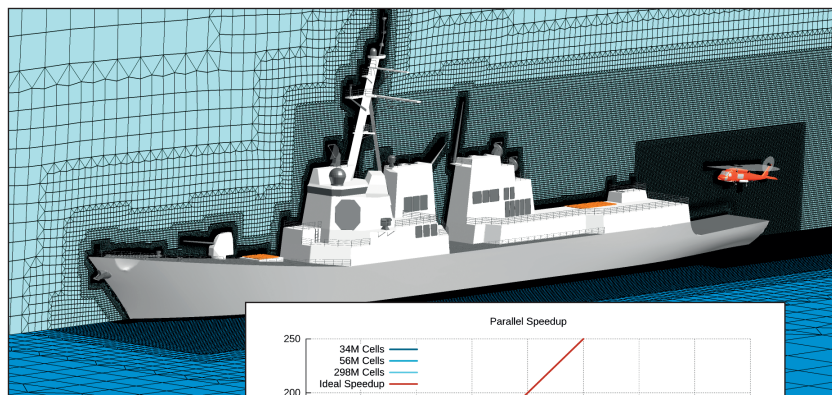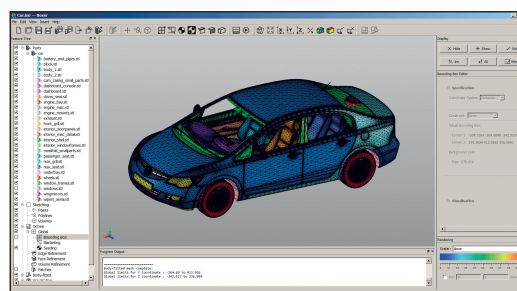

Formats

Input

A wide range of native CAD parts formats are read directly into BOXERMesh. Users can control the resolution of imported CAD, including surface curvatures. When available, CAD feature tree information (part names / IDs) is retained at import into BOXERMesh.
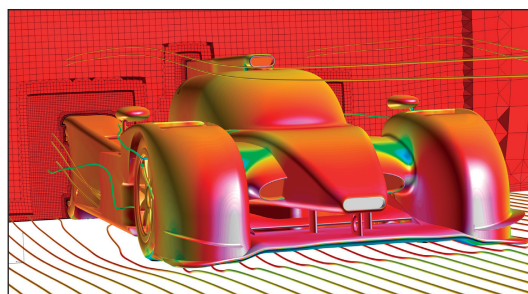
ACIS	PRC
CATIA® v4, v5 and v6	Pro/Engineer® / CREO
I-deas	Solid Edge®
Inventor	SolidWorks®
IGES	STEP
JT	STL
Parasolid	UGNX

Output

BOXERMesh supports the following output formats:

Fluent, CFX, STAR-CD, CCM+, CFD++
OpenFOAM, SU2
CGNS (CFD General Notification System)
Fieldview Unstructured
PATRAN Neutral - ASCII (NEU) ABAQUS
VTK (tet shredded)

CAMBRIDGE FLOW SOLUTIONS
Proprietary and customised CFD

For further information contact: enquiries@cambridgeflowsolutions.com