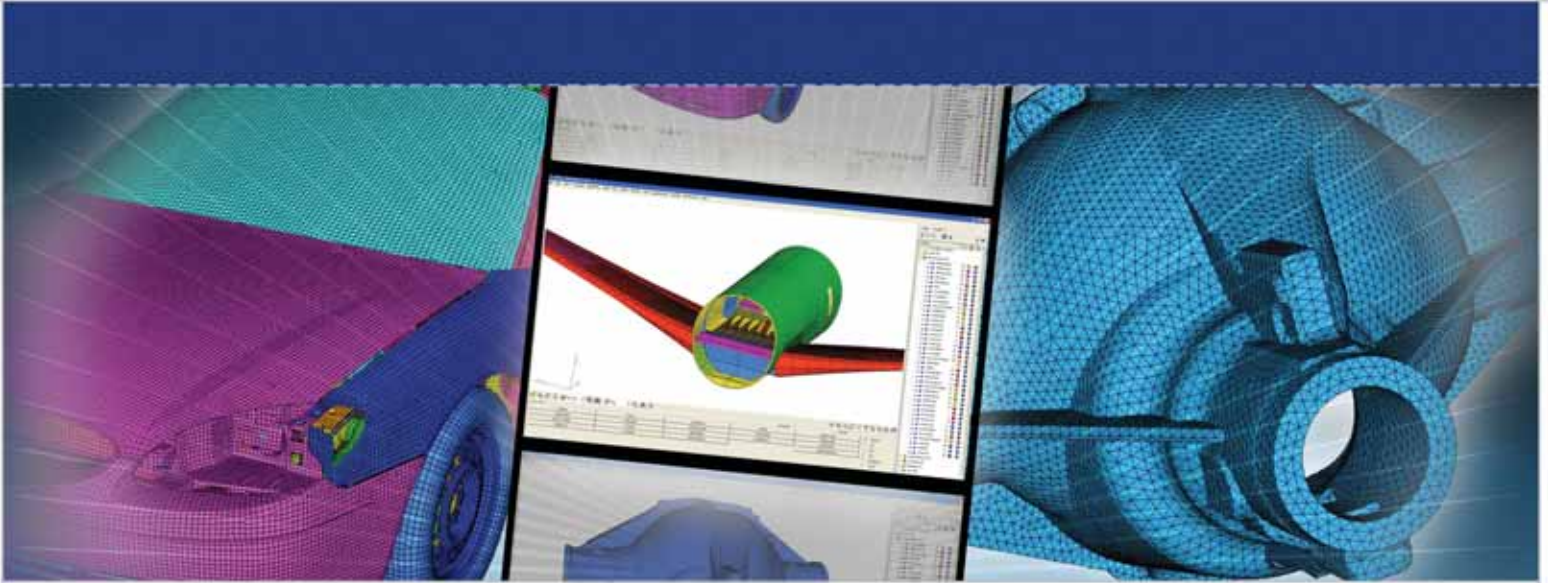




The Enterprise Solution for Product Innovation



Altair® HyperMesh®

The Fastest, Solver-Neutral CAE Environment
for High Fidelity Modeling

Altair HyperMesh is a high-performance finite-element pre-processor that provides a highly interactive and visual environment to analyze product design performance. With the broadest set of direct interfaces to commercial CAD and CAE systems and its rich suite of easy-to-use tools to build and edit CAE models, HyperMesh provides a proven, consistent analysis platform for the entire enterprise.

Focusing on engineering productivity, HyperMesh is the user-preferred environment for all CAE modeling tasks ranging from geometry clean-up to high-quality automeshing and analysis set-up.



Altair HyperMesh is a high-performance finite-element pre-processor for popular finite-element solvers that allows engineers to analyze product design performance in a highly interactive and visual environment. HyperMesh's user interface is easy to learn and supports a number of CAD geometry and finite-element model file formats, thereby increasing interoperability and efficiency. Advanced functionality within HyperMesh allows users to efficiently manipulate geometry and mesh highly complex models. These functionalities include extensive meshing and model control, morphing technology to update existing meshes to new design proposals and automatic mid-surface generation for complex designs with varying wall thicknesses. Solid geometry enhances tetra-meshing and hexa-meshing by reducing interactive modeling times, while batch meshing enables large-scale meshing of parts with no manual clean-up and minimal user input.



BENEFITS

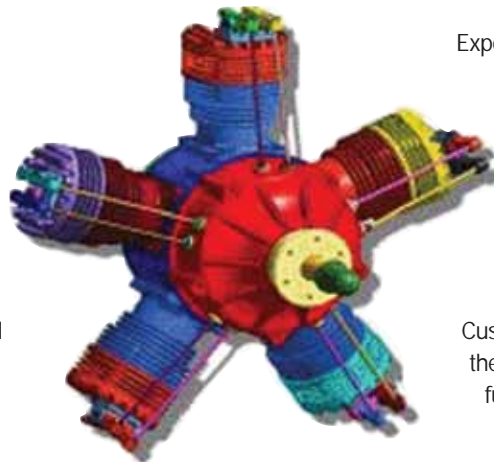
- **Open-Architecture Design**
With the broadest set of direct CAD and CAE interfaces coupled with user-defined integrations, HyperMesh fits seamlessly within any simulation environment.
- **High-Speed, High-Quality Meshing**
With both automatic and semi-automatic shell, tetra- and hexa-meshing capabilities, HyperMesh simplifies the modeling process of complex geometries.
- **Advanced Model Morphing**
A flexible set of morphing tools allows users to modify existing meshes to meet new designs and reduce model development costs.
- **Increases End-User Modeling Efficiency**
Batch Mesher technology eliminates the need to perform manual geometry clean-up and meshing, thus accelerating the model development process.
- **Reduces Training Time and Cost Through Elimination of Redundant Tools**
An easy-to-use, intuitive graphical user interface makes it simple for anyone to learn the software, which further increases modeling efficiency and reduces training cost.
- **Closes the Loop Between CAD and FEA**
Create surfaces from finite elements enabling analysis engineers to communicate results and design modifications back into the design environment.
- **Reduces Model Assembly Time**
Leverage highly automated methods for rapid model assembly that create connections such as bolts, spot welds, adhesives and seam welds.

IMPROVE YOUR PRODUCTIVITY BY CUSTOMIZING HYPERMESH TO FIT YOUR ENVIRONMENT

HyperMesh incorporates a variety of tools for seamless integration into any existing engineering process.

Basic Macros: Create macros that automate a process or series of steps.

Configure the HyperMesh Interface: Customize your modeling experience through an easy-to-use interface containing multiple model browser views and keyboard-controlled shortcuts.



Export Templates: Export templates allow the HyperMesh database to be written out to user-defined formats for non-supported solvers.

Input Translators: Users can extend HyperMesh's interface support by adding input translators to read different analysis data decks.

Custom Utilities: Take advantage of the power within the Tcl/Tk toolkit to build custom applications that are fully integrated within HyperMesh.

GEOMETRY INTERFACING AND CLEAN-UP

HyperMesh provides direct access to a variety of industry-leading CAD data formats for generating finite-element models. Moreover, HyperMesh has robust tools to clean up (mend) imported geometry containing surfaces with gaps, overlaps and misalignments that prevent high-quality mesh generation. By eliminating misalignments and holes, and suppressing the boundaries between adjacent surfaces, users can mesh across larger, more logical regions of the model, while improving overall meshing speed and quality. Boundary conditions can be applied to these surfaces for future mapping to underlying element data.

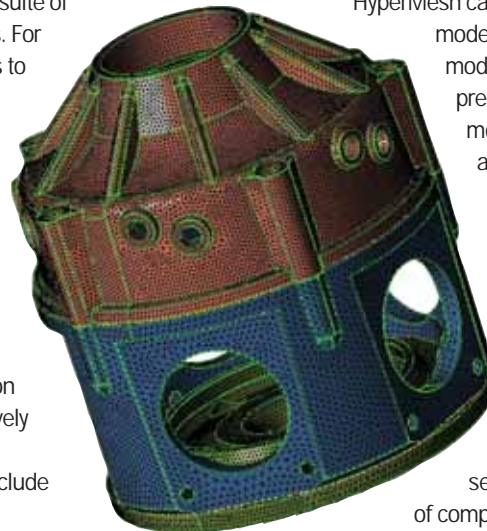
- CATIA V4/V5
- PRO-ENGINEER
- UNIGRAPHICS
- ACIS
- IGES
- PARASOLID
- STEP



MODEL BUILDING AND EDITING

HyperMesh presents users with an advanced suite of easy-to-use tools to build and edit CAE models. For 2D and 3D model creation, users have access to a variety of mesh-generation capabilities, as well as HyperMesh's powerful automeshing module. Automatic mid-surface generation, a comprehensive laminate modeler and morphing (transform existing FE meshes to new design proposals) offer new levels of model manipulation.

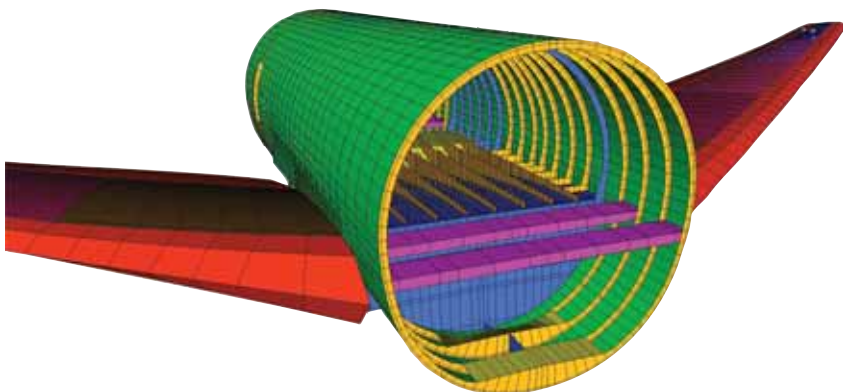
The surface automeshing module in HyperMesh is a robust tool for mesh generation that provides users with the ability to interactively adjust a variety of mesh parameters for each surface or surface edge. These parameters include element density, element biasing and mesh algorithm. Element generation can be automatically optimized for a set of user-defined quality criteria. Using solid geometry,



HyperMesh can utilize Boolean operations to connect or separate solid models for tetra-meshing or hexa-meshing. Partitioning these models is fast, easy and allows users to spend less time preparing the geometry for solid meshing. The solid-meshing module allows users to mesh partitioned volumes quickly and intuitively.

HyperMesh can also rapidly tetra-mesh a closed volume with high-quality first- or second-order tetrahedral elements. The tetra-mesh module uses the powerful AFLR algorithm. Users can control element growth for structural or CFD modeling requirements, select tria or quad elements for tetrahedral generation and re-mesh local regions. Users can also employ the interactive, process-driven tools within HyperMesh for easy model setup, including model assembly using connectors, creation of complex contact definitions, application of boundary conditions and solver deck preparations.

CAE SOLVER INTERFACES



HyperMesh supports a host of different solver formats for both import and export. Along with fully supported solvers, HyperMesh also provides the flexibility to support additional solvers by way of a complete export template language and C libraries for the development of input translators.

- OptiStruct
- OptiStruct/Analysis
- RADIOSS
- ABAQUS
- NASTRAN
- ANSYS
- MOLDFLOW/C-MOLD
- LS-DYNA
- PAMCRASH
- PERMAS
- MADYMO
- MARC
- I-DEAS
- FLUENT
- Star-CD
- Others



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