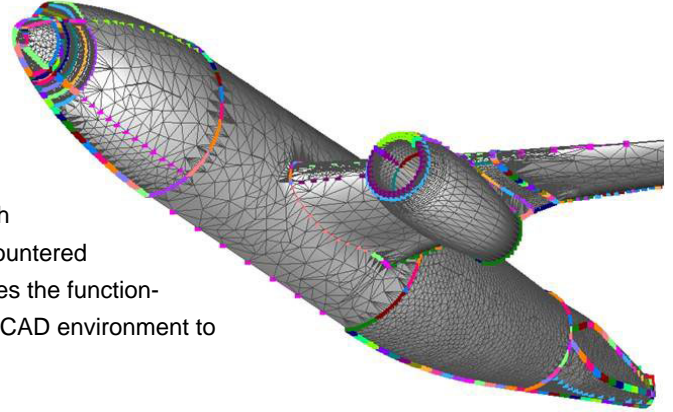


## Streamlining CAD-to-Mesh for NASA's CFD Process

NASA had a need for a robust and accurate path to import complex models directly from major CAD systems, with minimum user intervention, into the Chimera Grid Tools System. CAPRI CAE Gateway was selected as a uniform gateway to major CAD systems for the Chimera Grid Tools (CGT) software and its user base at NASA. The direct CAD access enabled by CAPRI meant that native CAD data was available on demand for preprocessing, which eliminated inaccuracies, bottlenecks, and additional steps typically encountered when using CAD data in simulations. CAPRI CAE Gateway also provides the functionality to access attributes and parameters directly from the user's native CAD environment to enable automation of the analysis and design process.



### About CADNexus

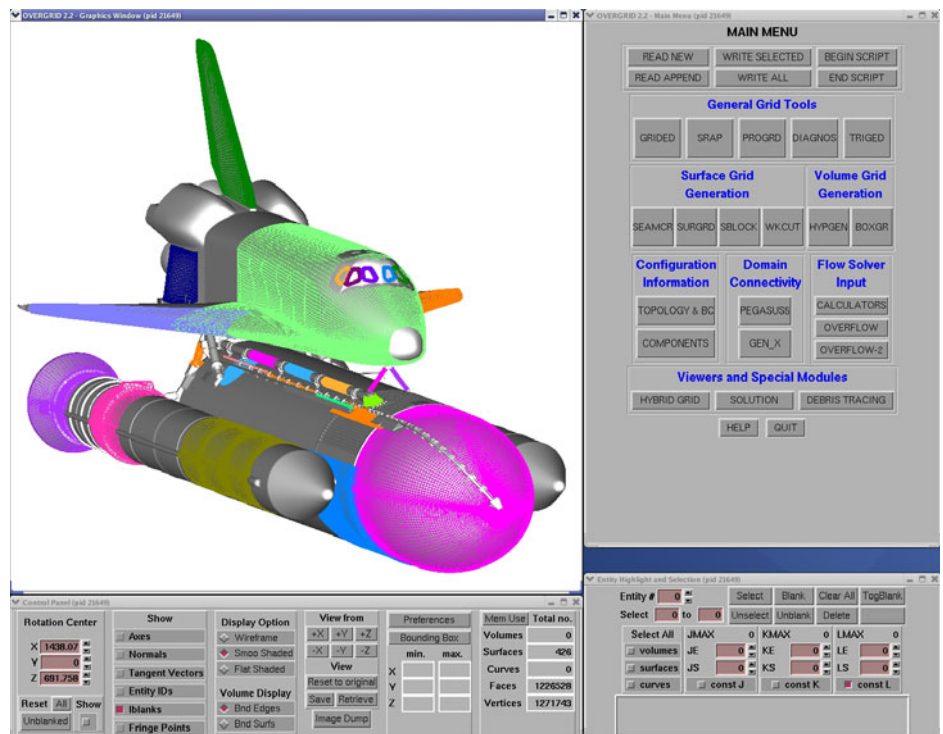
CADNexus provides vendor-independent CAD-to-CAE integration solutions to companies that rely on simulation-driven design to improve product quality, accelerate time-to-market, and reduce engineering inefficiencies and costs.

CADNexus is an independent software company founded in 2004 with roots at the Massachusetts Institute of Technology. The management and technical team have extensive consulting and research experience in the aerospace industry and world-class expertise in CAD systems, simulation software, scientific visualization, parallel computing, and simulation-based design optimization.

At CADNexus, our goal is to enhance CAD model accessibility by bridging the gap between the CAD environment and downstream CAE tools for engineering. Our suite of exclusive CAE gateway products provides a complete software foundation to streamline and automate the use of complex CAD models for simulation-based engineering analysis and design.

### Benefits

- **Productivity Gain**  
– From days to minutes
- **Translation-Free**  
– True to CAD
- **Easy integration into your design process**



*OVERGRID graphical interface in Chimera Grid Tools*

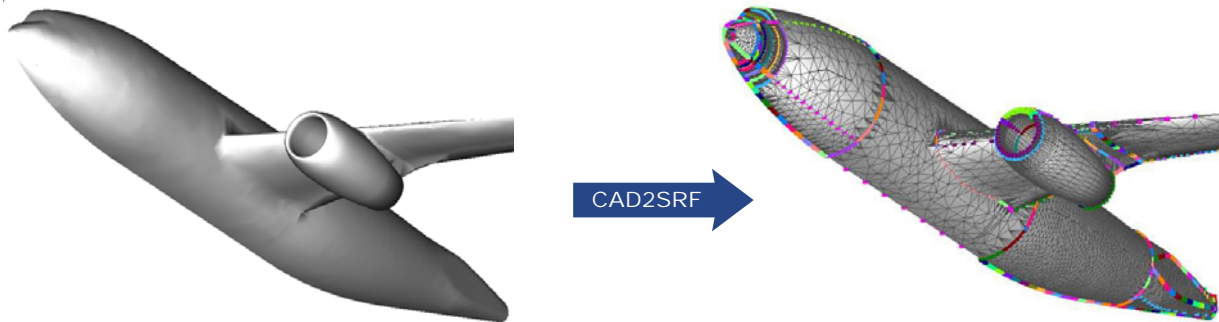
## About OVERGRID

OVERGRID is a graphical front end for many modules in CGT. It is best suited for simulations that require creation and manipulation of overset structured grids and unstructured surface triangulations on complex configurations. CGT is commonly used in applications that utilize the OVERFLOW-2 compressible viscous flow solver, the INS3D incompressible viscous solver, and the CART3D inviscid flow solver. As a result, CGT directly supports many important NASA projects, as well as other projects in government and industry that utilize similar grid technologies. CGT is used at NASA and over 100 organizations for CFD simulations. The software was developed at NASA Ames Research Center; Dr. William M. Chan is lead developer.

For more information about CGT visit:  
<http://www.nas.nasa.gov/~wchan/cgt/doc/man.html>

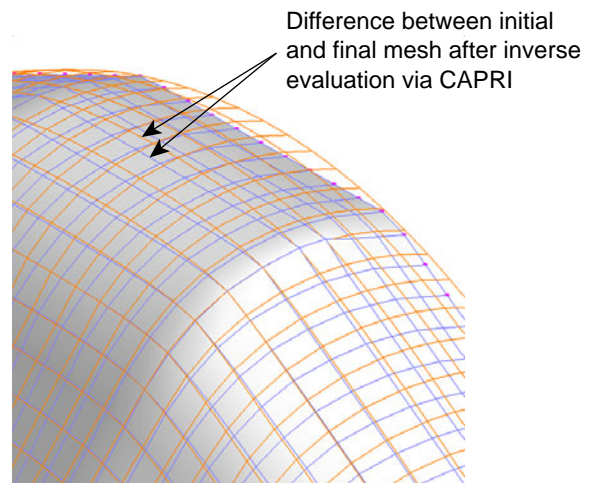
## Preprocessing (CAD2SRF)

CAD2SRF generates a watertight triangulation representation of the CAD model with little or no manual intervention. This triangulation can then be directly used for meshing in OVERGRID.



## True-to-CAD (SRF2CAD)

Takes the final mesh and snaps it back onto the native CAD model eliminating any inaccuracies between the mesh and the native geometry. Enables mesh adaptation and mesh movement for parametric design.



## What Users are Saying...

“Previously, if we received CAD geometry, it first had to be converted into a format acceptable for Chimera Grid Tools to read, i.e., unstructured surface triangulation or structured abutting patches. This process has always been very tedious and labor intensive (using commercial grid generation software), and could take days or weeks.”

“The capability to ‘read’ in CAD geometry directly into OVERGRID and then perform surface grid generation on the CAD, was simply not available until we had the CADNexus CAPRI CAE Gateway integration.”

– Dr. William M. Chan  
NASA Ames