FLUENT INTERFACE

GID CHARACTERISTICS

USEFUL CAD SYSTEM

- Creation of geometry.
- NURBS handling (freeform, edition, simplification…)
- Import and export CAD data in several formats.
- Several options for reparing and cleaning CAD data.
- Simple assignment of boundary conditions and material properties.
- Definition of analysis parameters.
- Versatile visualization and quality control tools.
- NURBS reconstruction from mesh.

MESH GENERATION OPTIONS

- Structured meshes for linear and quadratic elements including: triangular, quadrilateral, hexahedral, prism and tetrahedral meshes.
- Unstructured meshes are automatically generated based on quality and spacing criteria defined by the user (or using a background mesh).This includes:
  - Triangular, quadrilateral circles, spheres, and tetrahedral meshes (either linear or quadratic elements).
  - Mesh generation is carried out after all data have been assigned to geometrical entities.
- Semi-structured volume meshes (structured in one direction) of hexahedra, prisms or tetrahedra.
- Cartesian meshes.
- Three surface meshers available:
  - RFAST: mesh in the parametrical space (2D).
  - RSURF: mesh in space (3D).
  - RJUMP: mesh in space a group of surfaces skipping their contact lines as specified by the user.
- Boundary Layer Mesh in 2D and 3D.
- GiD allows to generate large meshes in a fast and efficient manner.
- Mesh edition utilities: mesh refinement, edge collapse, smoothing, etc.

VISUALIZATION OF NUMERICAL RESULTS

- Contour and vector plots, deformed shapes, isosurfaces, surface extrusion using a result and beam diagrams from static and dynamic analysis.
- Visualizable on original and deformed meshes.
- Visualization on several meshes for adaptive solutions.
- Several rendering modes (reflection, transparencies…)
- Animated sequences.
- 3D cuts over all kind of meshes.
- Several graphs types: point, line, boundary.
- Coloured stream lines and ribbons according to any result.
- Import of neutral FEMAP® and Tecplot® results, NASTRAN® and 3dStudio meshes.

MAIN ADVANTAGES

- **A single environment (completely graphical) for both pre and postprocessing.**
- **Poweful geometry repairing and meshing tools**
- **Sets and materials applied over geometry or mesh entities**
- **Intuitive interface (conditions are easy to create and edit)**
- **All the GiD pre and postprocessing tools are available**

GiD + FLUENT

Free Full Version can be downloaded at: *www.gidhome.com/gidplus*

Best Quality/ Price Ratio GiD's competitive price makes it affrontable for individuals and organizations who want a highe-performace pre/postprocessing system in a personal or professional enviroment.

Avaible in UNIX and PC platforms GiD has been developed using C++ and OpenGL tools in order to give the best performance and portability on UNIX® workstations and PC under Windows® or Linux® on 32 and 64 bits and Mac OSX® on 32 bits.

How to Buy GiD? For details and orders contact (*gid@cimne.upc.edu*) or go to the online shopping center through *www.cimne.com/tiendaCIMNE*

More Information available at: *www.gidhome.com*

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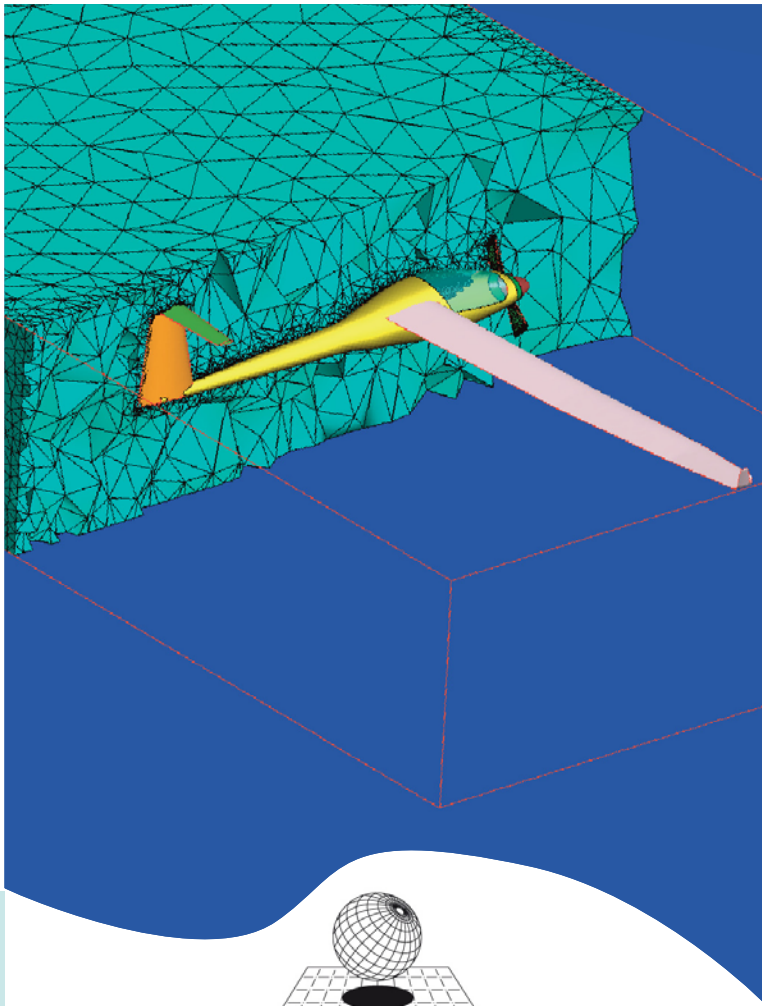
Save time on your **FLUENT** **CFD** simulations with **GiD**

- The personal pre and post processor -



CIMNE

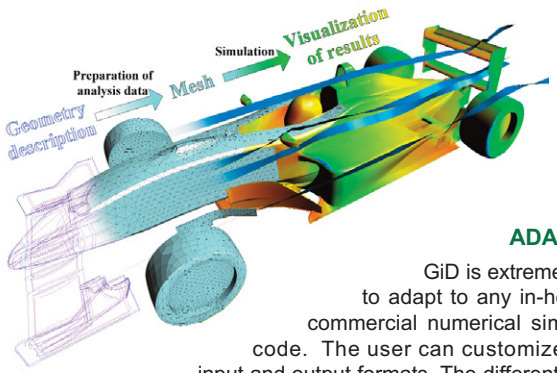
www.cimne.com

WHAT'S GID?

GiD is a pre and postprocessor developed by CIMNE, International Center for Numerical Methods in Engineering, located in Barcelona (Spain). GiD has been designed as a universal, adaptive and user-friendly graphical user interface for geometrical modeling, data input and visualization of results for all types of numerical simulation programs. Typical problems that can be successfully tackled with GiD include most simulations in solid and structural mechanics, fluid dynamics, electromagnetics, heat transfer, geomechanics, etc. using finite element, finite volume, boundary element, finite difference or point based (meshless) numerical procedures.

GiD is ideal to be used in a multi-user environment such as universities, research centers and enterprises for development and applications of different numerical simulation programs.

UNIVERSAL: GiD can generate all the information (structured and unstructured meshes, boundary and loading conditions, material types, visualization of results, etc.) required for the analysis of any problem in science and engineering using numerical methods.



ADAPTIVE: GiD is extremely easy to adapt to any in-house or commercial numerical simulation code. The user can customize GiD´s input and output formats. The different menus can be tailored to fit any specific need. A deep integration of any code with GiD is possible. The analysis process can be also be started monitored and stepped from within GiD.

USER-FRIENDLY: The development of GiD has been focused on the user needs and on the simplicity, speed, effectiveness and accuracy required at input data preparation and results visualization levels.

GiD the universal, adaptative and user friendly pre and post processing system for computer analysis in science and engineering

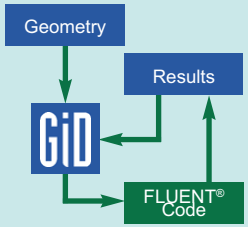
www.gidhome.com

FLUENT SOLVER

- The commercial package FLUENT® is a powerful and flexible general-purpose CFD software developed by ANSYS, Inc.
- Special FLUENT® software capabilities include:
  - 2D and 3D multiphysics problems simulation supporting quadrilateral, triangle, tetrahedra, hexahedra, polyhedra, wedge and pyramid elements
  - Several solvers available: pressure-based coupled, fully-segregated pressure-based and two density-based formulations
  - Strong capabilities to deal with simulation problems related with turbulence, chemical reactions, multiphase flows, heat-transfer and acoustics (parallel processing of the data is avaible)
- Thousands of companies throughout the world benefit from this engineering design and analysis tool, using FLUENT® for a wide variety of multiphysics applications.

INTERFACE FLOW

- To define a FLUENT® problem, the user can create the geometry with the GiD CAD tools or import it using a common format and repair it.
- Conditions can be applied over geometry or mesh entities (i.e. before or after meshing)
- After writing the .msh file with GiD and finishing the setup of the model with FLUENT®, the simulation is ready to be run
- The post processing data can be viewed right away into GiD.

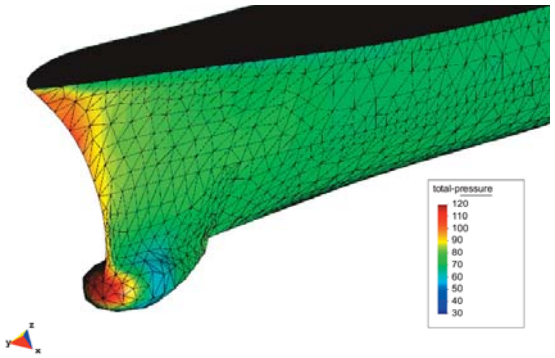


Flow Diagram

POSTPROCESSING CAPABILITIES

Simulation results can be imported from the GiD-FLUENT interface in order to postprocess them by taking profit of all the GiD capabilities.

The results are loaded using the .dat Tecplot® format.



Total pressure distribution over a keel
Source: Naval Surface Warfare Center, Carderock Division

GID FLUENT GRAPHICAL INTERFACE

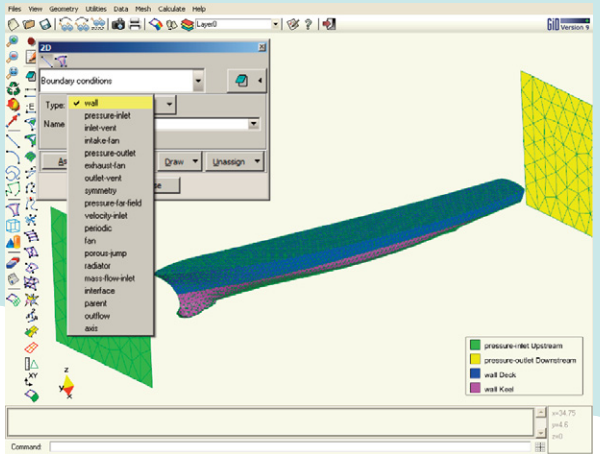
- GiD-Fluent Interface allows the user to pre and postprocess all kinds of FLUENT® 2D and 3D simulations.
- The interface is a free GiD module downloadable from the Data Menu (Data - Problem type - Internet Retrieve)
- The interface supports all FLUENT® element types except polyhedra
- The interface is compatible with all GiD distributions and with FLUENT® version 4, 5 and 6.

BOUNDARY CONDITIONS

During preprocessing boundary conditions can be applied either to geometry or mesh entities in a completely graphical environment.

1D or 2D elements (depending on the dimension of the problem) can be selected using all the GiD available tools, and grouped into different sets which are easy to create, modify and display on the screen.

Wall and Interior boundary condition types (depending on their position in the mesh) are set by default to the unassigned elements.

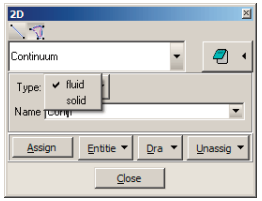


Zones Definition In A Naval Simulation
Source: Naval Surface Warfare Center, Carderock Division

CONTINUUM DEFINITION

During preprocessing user can define the fluid (default) and solid domains for each problem by selecting the 2D or 3D geometric or mesh entities (depending on the dimension of the problem) in a completely graphical environment.

The user selections will be saved as GiD sets, allowing the user to display or edit the different created sets.



Example Of Continuum Definition Window