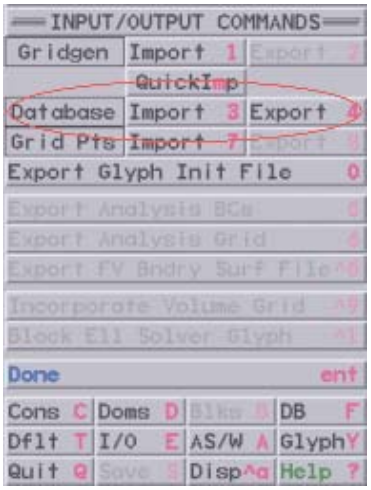
POINTWISE POINTER

A USER TIP FROM THE SUPPORT DESK
FALL 2002

Working with Database Models



This issue of the ***Pointwise Pointer*** will focus on several of the tools available for working with your database models in Gridgen. Keep in mind that "database" refers to your CAD model or geometry in Gridgen terminology. Generally, most users import these models from a CAD package into Gridgen. However, it is possible to augment your model or create simple models within Gridgen.

It is also very important to remember that Gridgen always maintains your grid model and your database model in separate files. Grid data should be saved in a Gridgen Restart (.gg) file, and database data should be saved in a Composite (.dba) file. All database file types can be imported using the **Database Import** command in the ***Input/Output Commands*** menu. This command will attempt to determine the type and attributes of your database file based on the file's extension. When this fails, you will be returned to the ***File Attributes*** menu to select the correct file type and attributes to complete the import process. If you set the extensions on your files to Gridgen's defaults for that file type, you can avoid import delays.

Most users transfer database models from their CAD software to Gridgen via the IGES format. This provides generally reliable transfer to Gridgen. However, there are subtle "flavors" of IGES depending on the software that creates the file. To provide users with additional avenues of geometry import, Gridgen Version 14's Native CAD Readers provide the ability to read CATIA® V4, Pro/ENGINEER® (versions 17 - 20), and STEP AP 203 geometry in its native format. ACIS SAT® files are also now supported. These channels of import for your geometry may eliminate any IGES "flavor" issues you might be encountering. These files are all imported to Gridgen using the same **Database Import** command mentioned above.

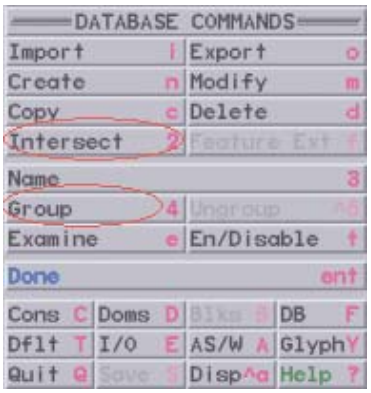
Any database information needing to be saved or exported from Gridgen should be exported to Gridgen's native database format, Composite. This option will be accessed again from the ***Input/Output Commands*** menu now using the **Database Export** command. All database types that can be imported to Gridgen can be exported to the Composite format. Therefore, this is an excellent mechanism for combining multiple database files into a single file for simplification. Also, any database entities created within Gridgen *must* be exported to a Composite file in order to be preserved. We recommend that users maintain their database in a Composite file since these files also contain the database entity names. This will prevent grid-database associativity problems when transitioning to a new version of Gridgen, since the entity names are the tag used to associate grid entities to database entities.

This brings us to the topic of database model clean up. The best path to a cleaner model and the one generally recommended to users involves using the **Database Export** command. Rather than go through the tedious process of deleting individual or sets of entities from memory, we prefer to simply export a new model directly with only the entities we wish to keep. In the majority of cases, users' models are sufficiently defined by trimmed or bounded surfaces. So at the last stage of the export procedure, when Gridgen places you into the database entity Browser to select which entities to export, use the **Pick By Text** tool to have Gridgen select only trimmed surfaces by typing in the string "trmsf". This is all you will export initially. Then **Restart** Gridgen and import the new Composite file. More often than not the model will be complete and clean. Occasionally, you may need to redo the process and add a few

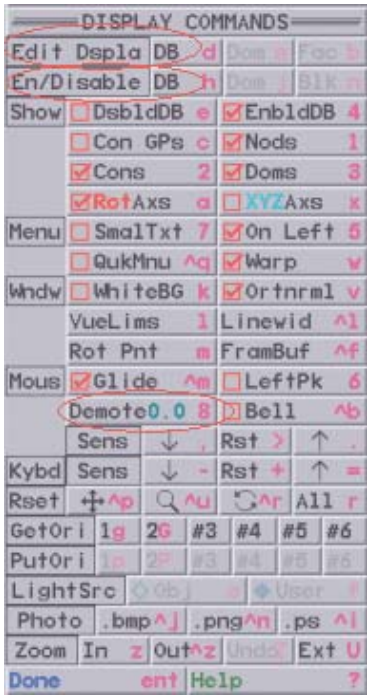
Gridgen®
RELIABLE CFD MESHING

additional surfaces to complete the model. However, it is much more efficient to export what you wish to keep in your model than to whittle away what you don't want to keep using the **Delete** command.

One of Gridgen's most powerful tools for adding to your database model is the **Intersect** command. This is found in the ***Database Commands*** menu. Very often database models are missing those key surface-surface intersections exactly where you wish to build connector topology, for instance, at the junction of a body and control surface. Without the intersection, creating the correct connector shape is very difficult. The **Intersect** command will very efficiently compute and create a new database curve entity for you representing the intersection. The command actually intersects two groups of entities with each other, so if your control surface is made up of multiple surfaces, you can select them all at once to intersect against one or more body surfaces.



Finally, some tools allowing you more control over how the database model is displayed: the **Group** command, the **Edit Dspla DB** command, the **En/Disable DB** command, and the **Demote** command. The **Group** command is found in the ***Database Commands*** menu and simply allows you to create logical groups of entities in your model. To return to our body/control surface example, you could create a group called "fin" which includes all of your control surface entities and a group "body" for the rest of the geometry. These groups appear as new entities in the database Browser. Selecting the group entity selects all the entities it includes. This greatly simplifies use of some of the other display controls such as **Edit Dspla DB** and **En/Disable DB**.



Edit Dspla DB in the ***Display Commands*** menu provides control over how your entities are rendered. Here you can switch between outline and shaded rendering, for instance. Or you can change the colors used. This command will *not* allow you to turn them off, however. To accomplish this, you can use the **En/Disable DB** command. Disabling not only turns off their display, it makes the entities unavailable for other operations. So you can significantly reduce display clutter, and you can get ultimate control over what database entities are used for grid entity projections.

An often overlooked and very useful command is also found in the ***Display Commands*** menu, the **Demote** command. This command will allow very responsive model manipulations by demoting all database surfaces (as well as domains and blocks) to an outline mode. When the command is invoked, you will be prompted to enter a number from 1 to 9, which will be the delay in seconds until your model is restored automatically to full render. So entering "2" will provide 2-second delays. As soon as you start any manipulation of the model, it will demote instantly and stay demoted until there are no more manipulations for at least 2 seconds. You can hit the space bar on the keyboard at any time for instant restoration of full rendering. You can also enter a value of "10" for demote. In this case, the display will stay in outline mode indefinitely until you hit the space bar. Using this command will allow you to display your entire model in shaded rendering all the time if you wish!

Want a free notebook to hold all your Pointwise Pointers? Go to www.pointwise.com and fill out the *Focal Point* survey and we will send you a Pointwise Pointer notebook.

213 South Jennings Avenue
Fort Worth, Texas 76104-1107
888-GRIDGEN (toll free)
(817) 377-2807
(817) 377-2799 (fax)
support@pointwise.com
www.pointwise.com

Pointwise Pointer October 2002