

Simulation Modeling Sciences

**Geometry and
Mesh Generation Toolkit**

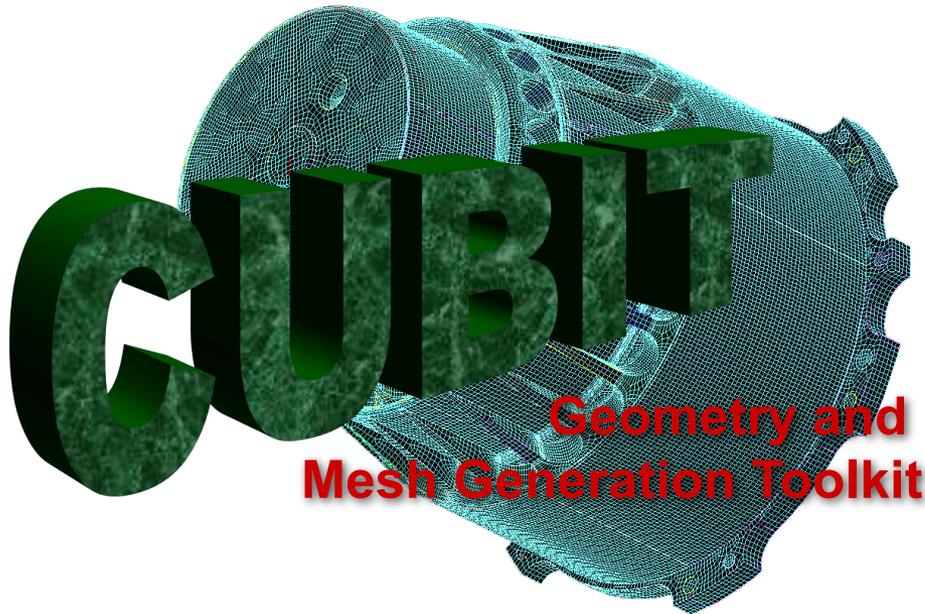
CUBIT Fast-Start Tutorial

5. Usability Tools



Usability Tools

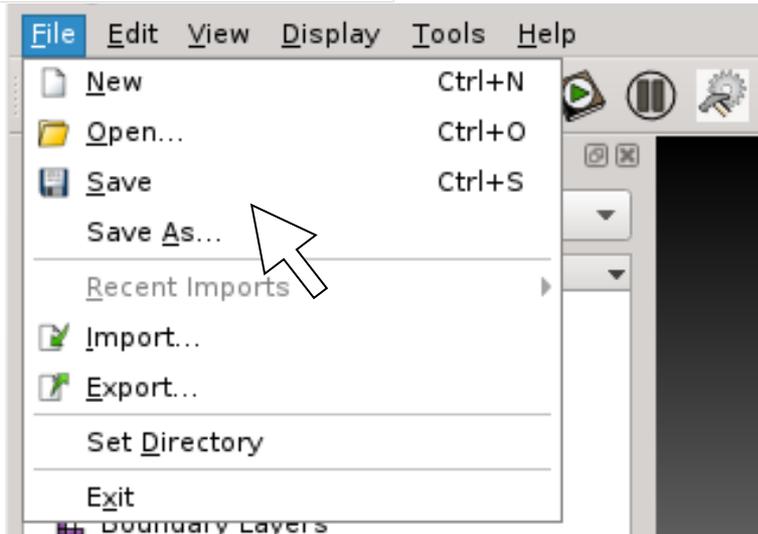
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1. The CUBIT .cub File
2. The CUBIT journal File
3. Keyboard Shortcuts
4. Custom Toolbars
5. Working with Names
6. Working with Groups

The CUBIT .cub File

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CUBIT Database File contains:

1. Geometry
2. Meshing Schemes
3. Intervals
4. Virtual Geometry
5. Mesh
6. Boundary Conditions

Snapshot of the current state of the model

Save Choose *Save* or *Save As...* to save or create a .cub file

Open Choose *Open* to read a .cub file

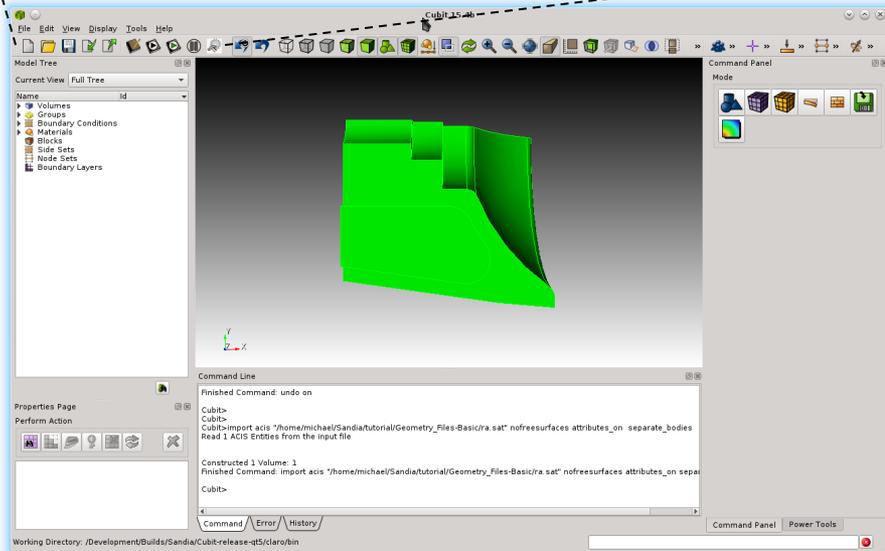
Deletes existing data and Resets your CUBIT session with the new data from the .cub file

The CUBIT Journal File

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Create/Edit
Journal

Playback
Journal File



Set a custom location for automatic journals files in **Tools->Options...** (**Cubit->Preferences...** on Mac) under **History**

CUBIT Journal File contains:

- Sequential list of CUBIT commands
- Comments
- APREPRO Scripts

Complete list of sequential commands used to regenerate a desired state of a model

Automatic Journal File Creation

On start-up, CUBIT automatically creates a new .jou file and logs every command in the session to the file

Default location is the installation directory

Named cubitXX.jou and historyXX.jou

Creating/Editing Journal Files

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Journal File Editor

- Interactive Editor for CUBIT journal files
- Can also use any text editor

Edit the current session

- Import the History Tab: record of all commands to date in the session
- Add, delete or edit the CUBIT commands

Play commands

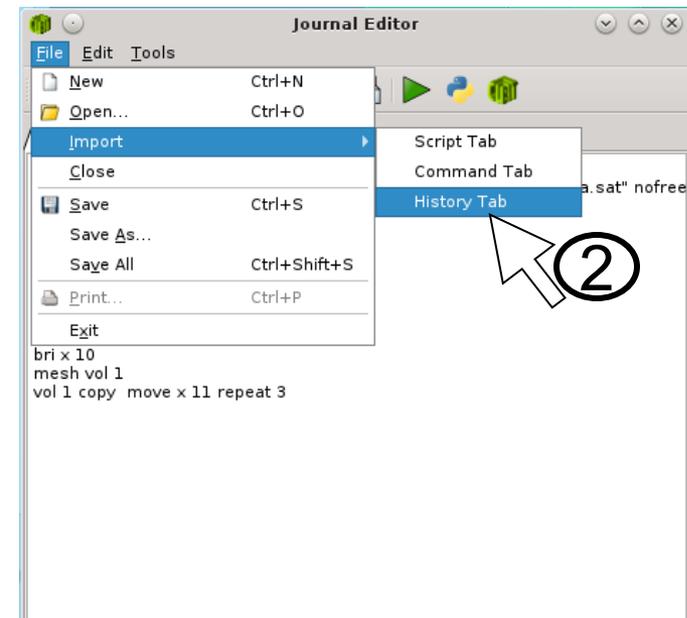
- Highlight and right click on one or more commands
- Use the *Play Selected* menu item

Python Scripting

- Toggle between CUBIT command language and python scripting



① Open the Journal File Editor



② Import the current CUBIT session for editing in the Journal Editor



Keyboard Shortcuts



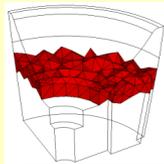
Speeds up frequently used tasks

Simul

Focus should be in Graphics Window (click any open space)

Examples:

Control-s	Speed save the model to filename.cub.X Increments X each time cntrl-s is executed
l (lower case L)	When a geometry entity is selected, lists its attributes to the command window
e	When a geometry entity is selected, echoes the ID of the entity to the command line
x, y or z	Displays a slice of the interior mesh elements in the x, y or z planes. Use j and k to move the slice plane
i	Toggle the visibility of the current selection
TAB	Toggle the selection to other entities obscured by surfaces/volumes in front
h	Display list of available keyboard shortcuts*



*Some keyboard shortcuts are only available in the command line version of Cubit

Display Tools

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Turn on Undo

Undo

Wireframe

True Hidden Line

Hidden Line

Transparent

Solid/Smooth

Display Geometry

Display Mesh

Display BCs

Display Virtual

Refresh Graphics



Display Modes

Zoom In

Zoom Out

Auto Center

Toggle Perspective

Toggle Scale

Toggle Slice Mode

Toggle Slice Tool

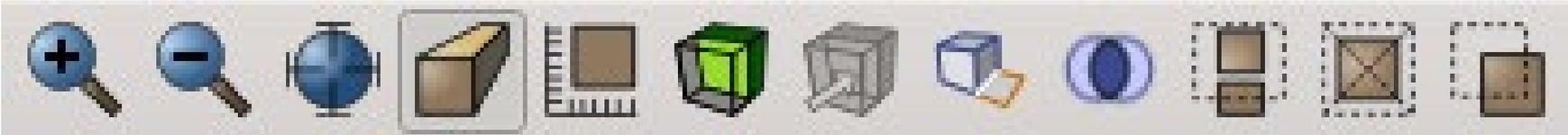
Show model edges

Locate Overlapping Surfaces

Select enclosed/extended

X-Ray Selection

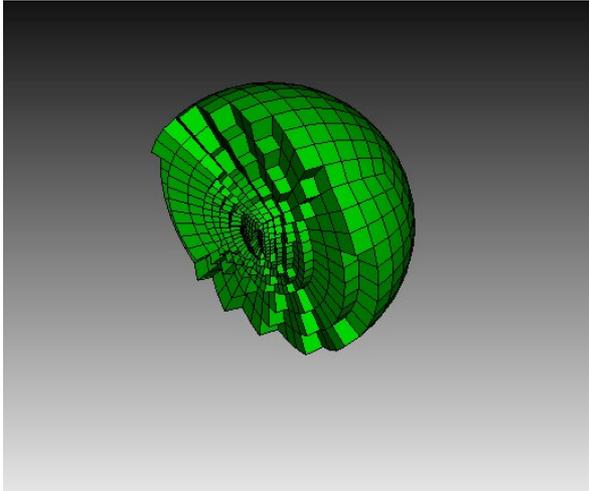
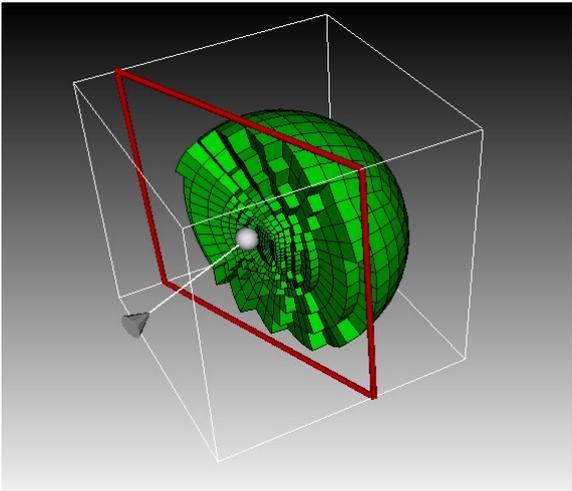
Box/Poly





Slice Tool

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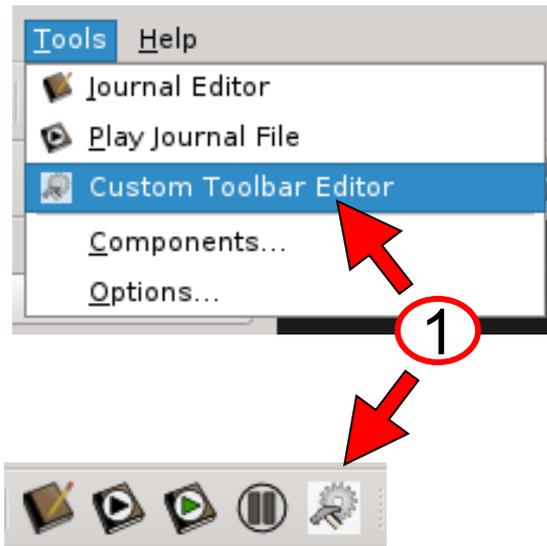
Toggle Slice Mode
Toggle Slice Tool



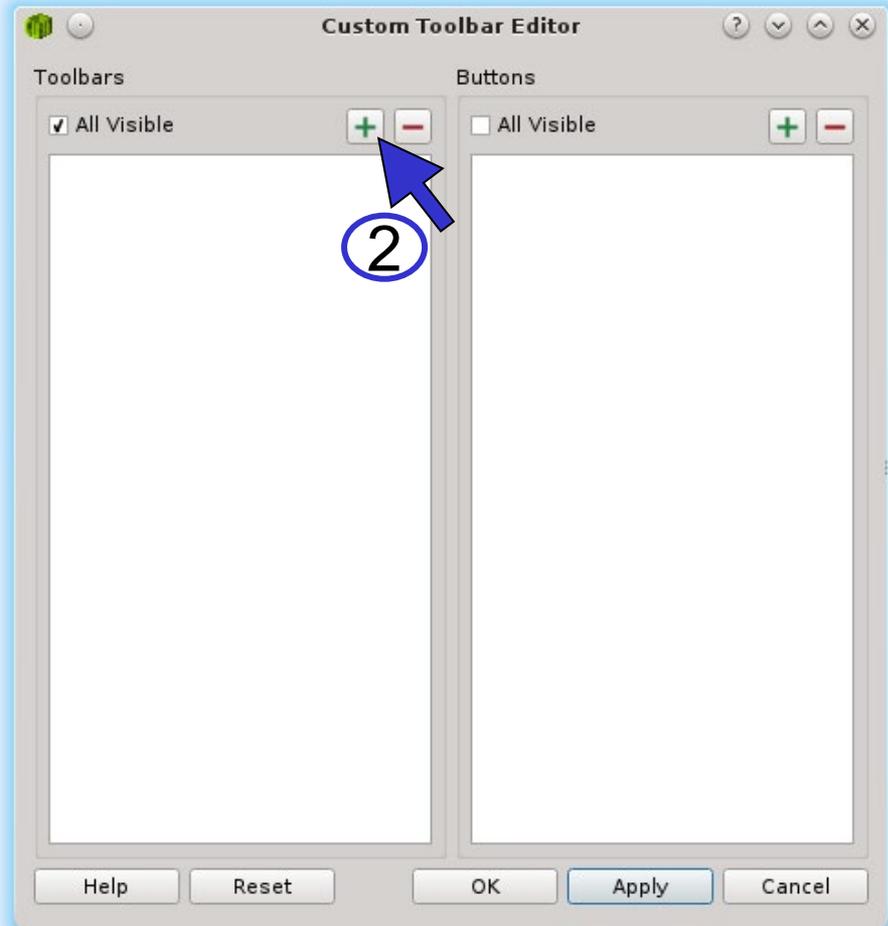
Custom Toolbars

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Create a series of frequently used commands and assign them to a button in the toolbar

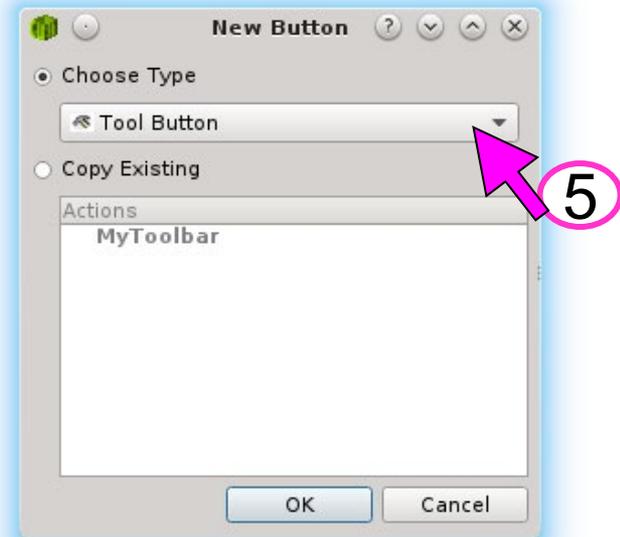
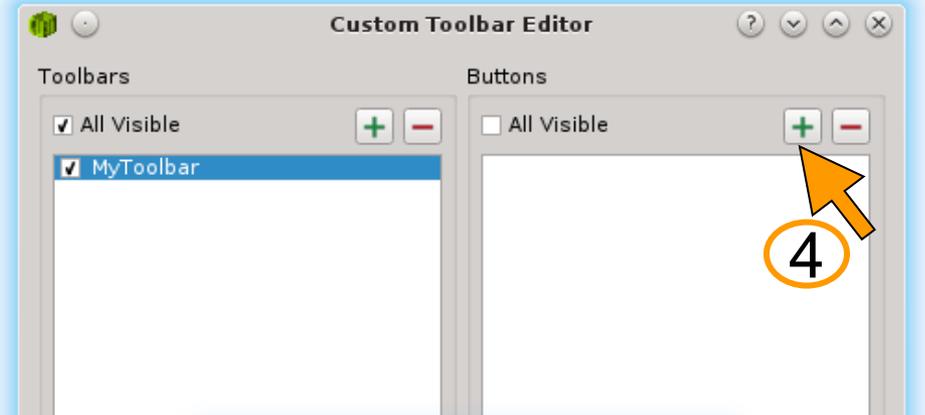
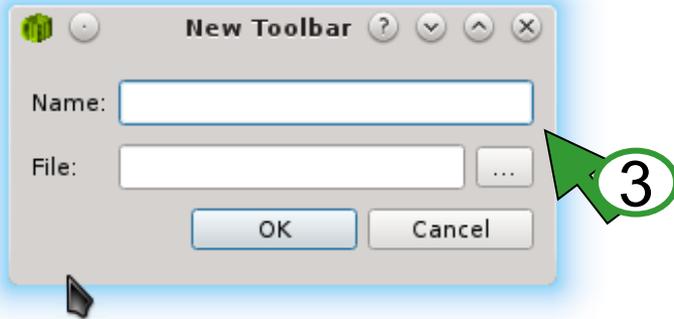


- 1 Select **Custom Toolbar Editor** from the Tools menu, or use the toolbar shortcut.
- 2 Click the '+' button under the Toolbars column.



Custom Toolbars

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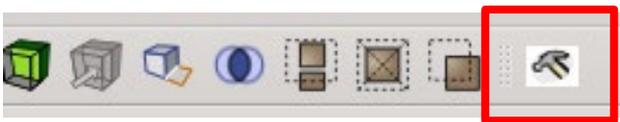


- 3 Give the new toolbar a name and file location and click *OK*.
- 4 With the new toolbar selected, click the '+' button under the Buttons column.
- 5 Choose 'Tool Button' as the new button type and click *OK*.

Custom Toolbars

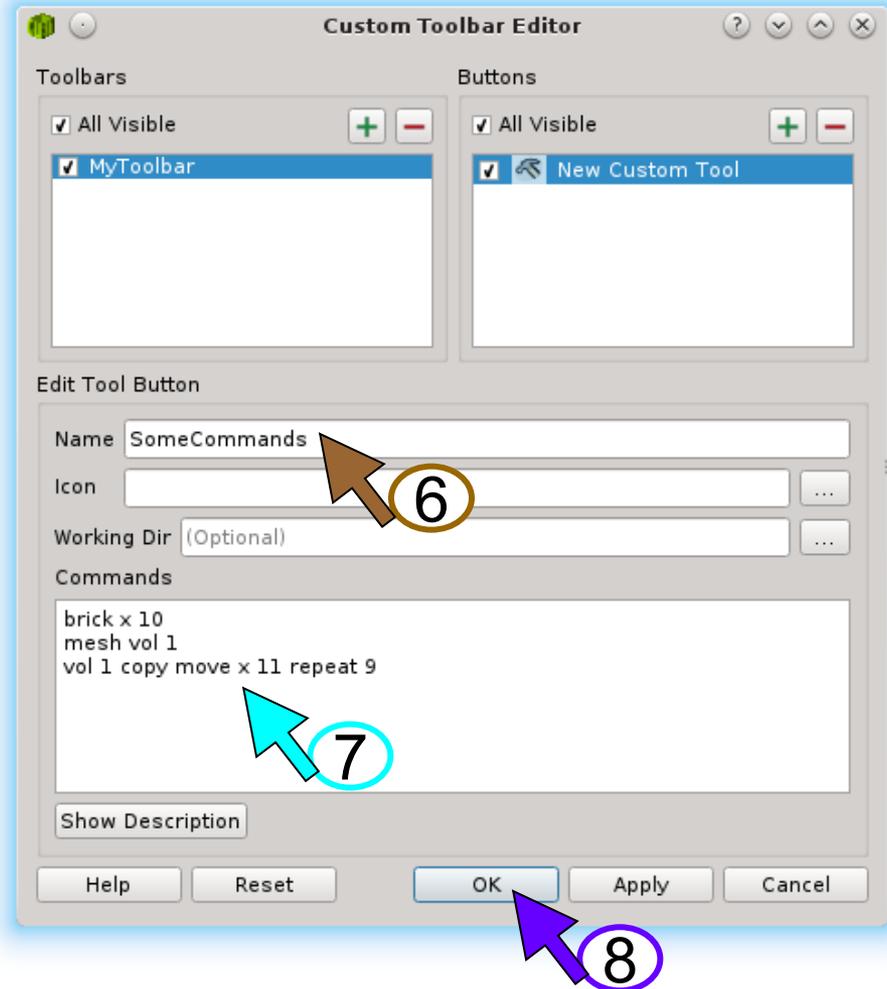
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- 6 Give the new button a name.
- 7 Enter any series of Cubit commands that will be executed any time you hit the button
- 8 Click *OK* to save the toolbar and button.



You should see a new toolbar and icon appear with the other toolbars

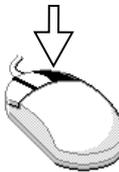
Select this button to execute your custom commands



Custom Toolbars

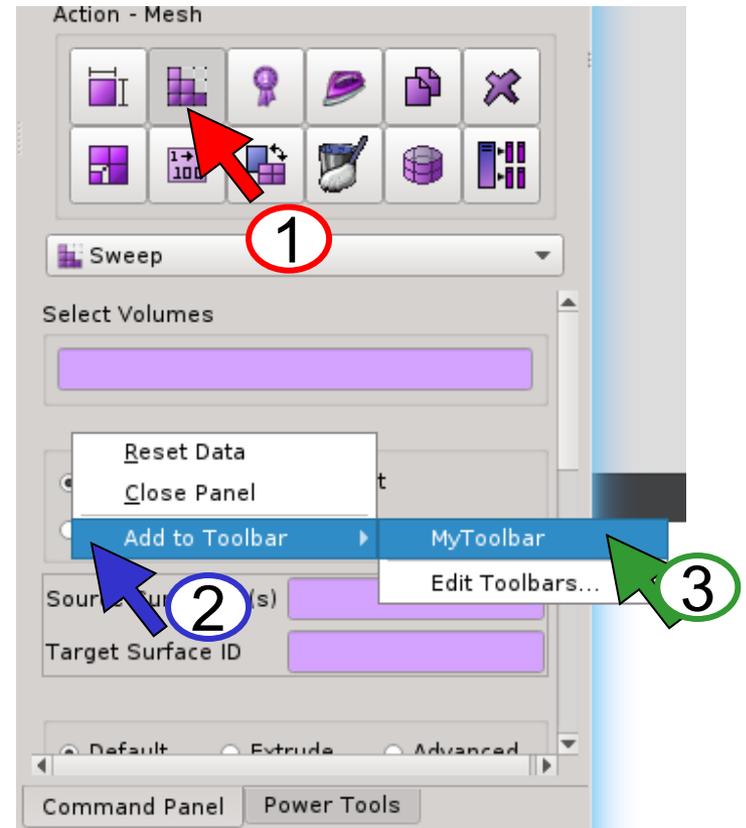
Create shortcuts to frequently-used Command Panels.

- 1 Open any command panel.
- 2 Right-click on any blank space in the panel and select **Add to Toolbar** from the context menu.
- 3 Select the custom toolbar you want to add the shortcut to. Click **OK** in the editor to confirm.



You should see a new toolbar icon for the panel.

Select this button to open the corresponding Command Panel.



Entity Names

- All geometry entities can be given 1 or more names

- Reasons to use names

- More intuitive in commands

mesh **stronglink**
draw **stronglink**

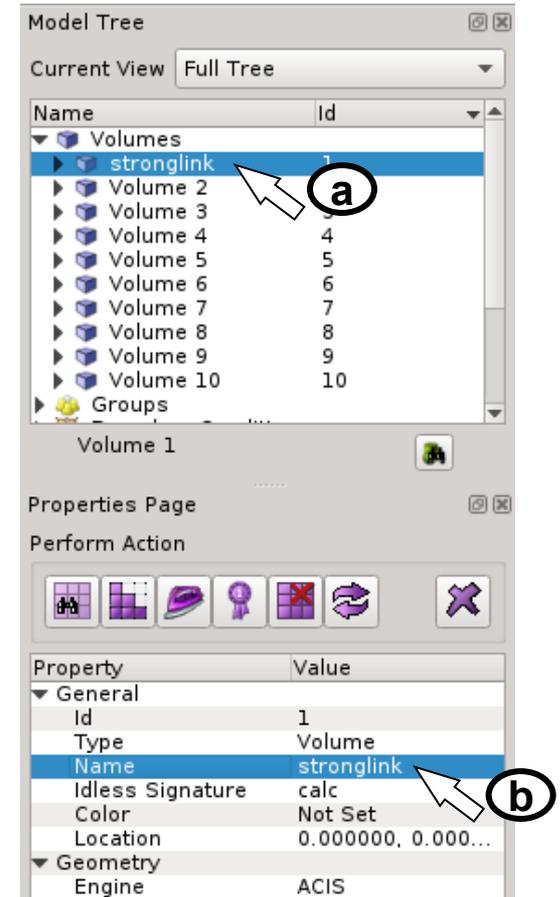
- More persistent than IDs - saved to SAT
- Can group entities by name
- Names propagate during webcuts, can track original parts (*Gear* becomes *Gear* and *Gear@A* when split)

- To change names

- Ⓐ Geometry Tree View: Right-Click menu, “Rename”
- Ⓑ Property Panel: Edit “Name” value
- Ⓒ Command line: <entity> name “<name>”

Volume 1 name “stronglink”

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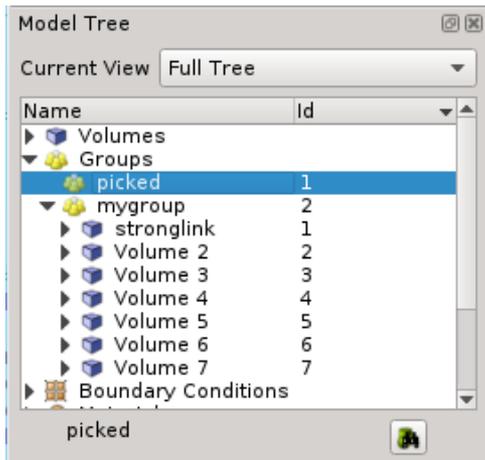
Groups

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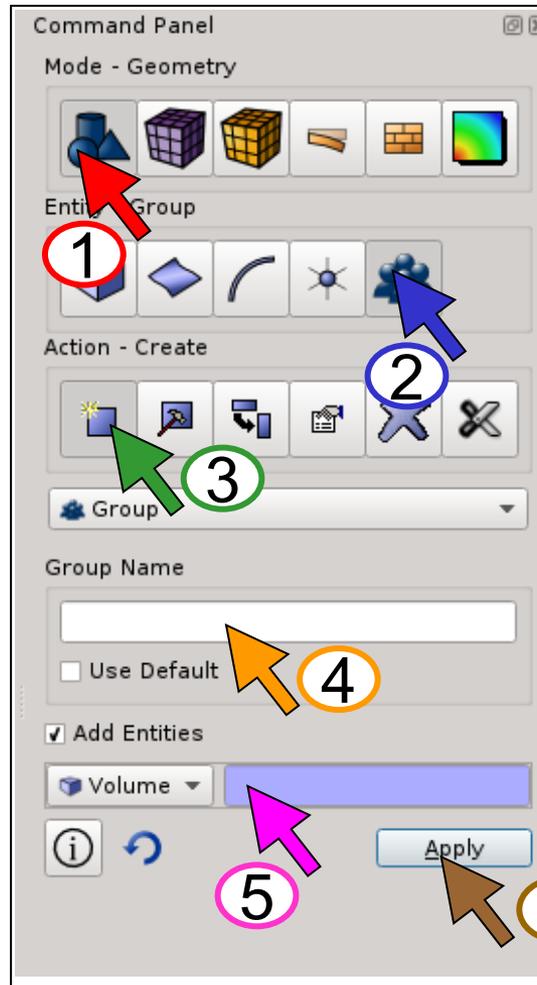
Groups are a collection of entities

Can be used for managing large datasets

Can perform operations with groups



Current groups shown in Geometry Tree



To Create a group from the Command Panels

- 1 Click *Mode-Geometry*
- 2 Click *Entity-Group*
- 3 Click *Action-Create*
- 4 Enter a unique group name
- 5 Select entities or define criteria for new group members
- 6 Click *Apply*

Groups

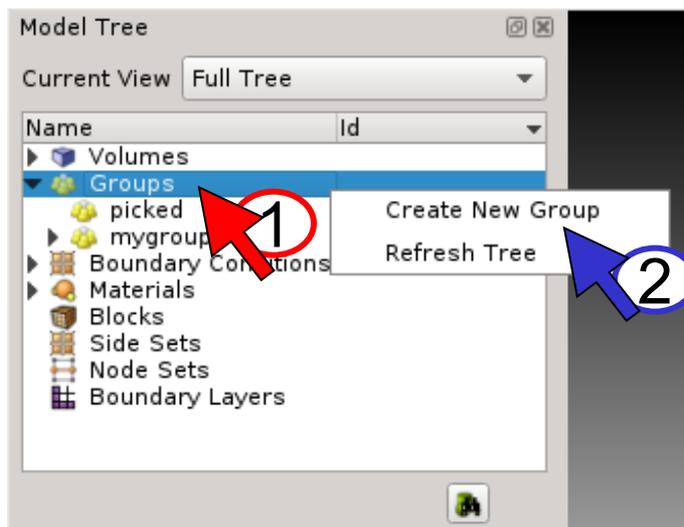
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To create groups from the command line

```
CUBIT> group "<groupname>" add {entities}
```

```
CUBIT> <groupname> remove {entities}
```

To create groups from the Geometry Tree



- 1 Right-Click on *Groups* in the Geometry Tree
- 2 Select *Create New Group*
- 3 Enter a unique new group name



Groups

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(a) Add to Group/BC/Part

Remove from Group/BC/Part

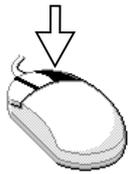
Choose an existing group to add/remove to and Click OK



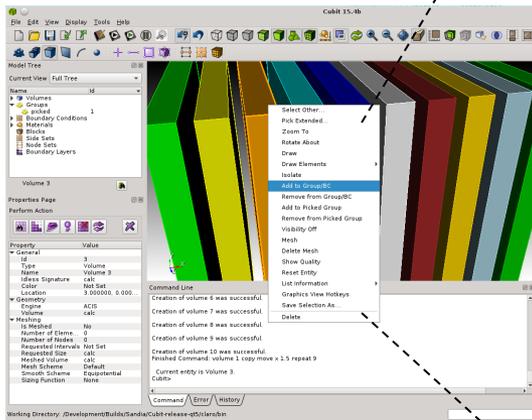
(b) Add to Picked Group

Remove from Picked Group

Picked group is reserved
Always exists
Immediately adds/removes
from picked group



Right-click after selecting entity in the Graphics Window



- Select Other...
- Pick Extended...
- Zoom To
- Rotate About
- Draw
- Draw Elements
- Isolate
- Add to Group/BC**
- Remove from Group/BC
- Add to Picked Group
- Remove from Picked Group
- Visibility Off
- Mesh
- Delete Mesh
- Show Quality
- Reset Entity
- List Information
- Graphics View Hotkeys
- Save Selection As...
- Delete

(a)

(b)