Tips & Techniques for Working with Assemblies in I-deas NX Series

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Agenda

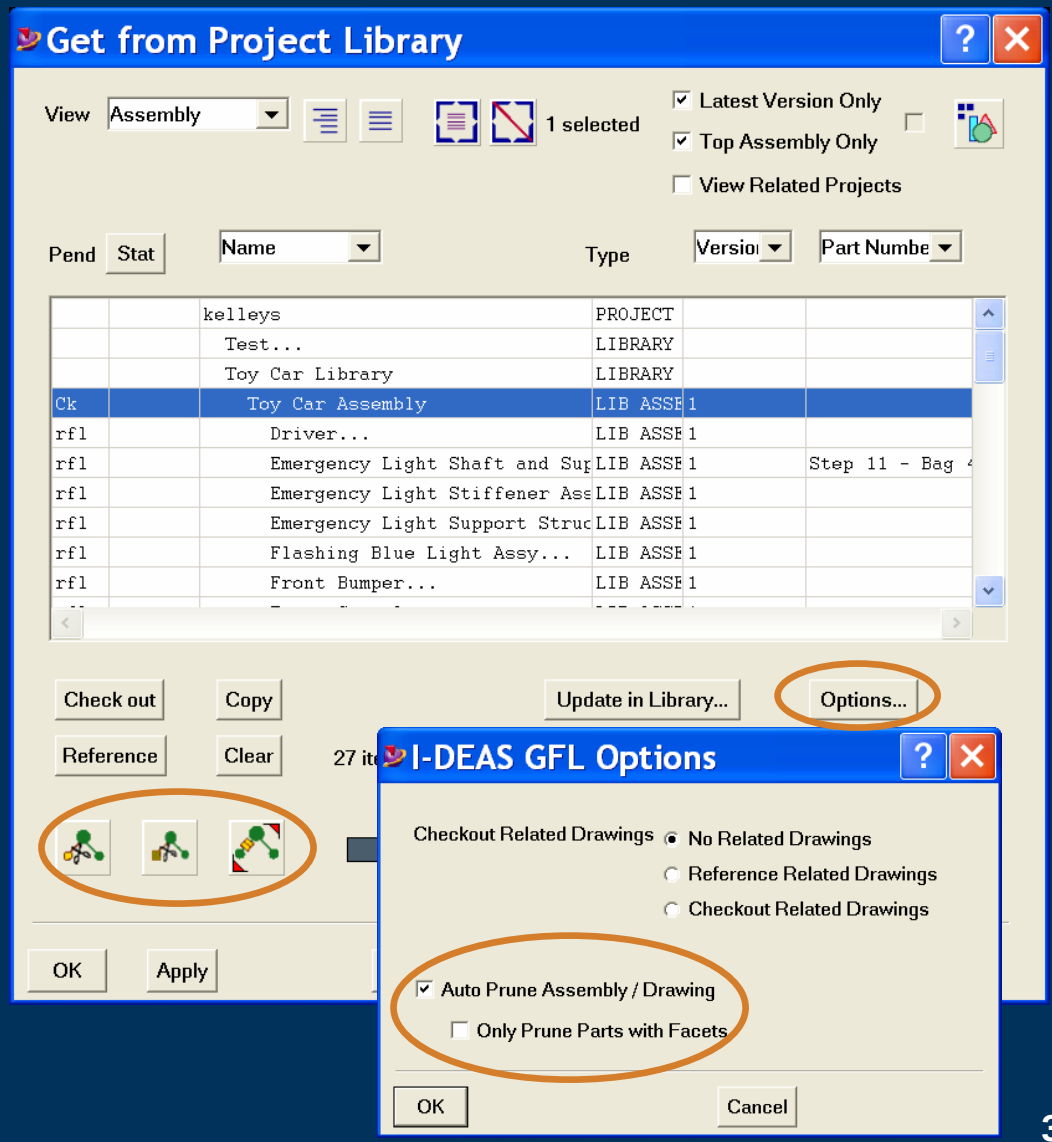
Tips and Techniques to…

- Decrease library retrieval time
- Simplify the display
- Create constraints and dimensions
- Organize the assembly hierarchy
- Interrogate the assembly
- Increase overall performance

Decrease Library Retrieval Time

Prune

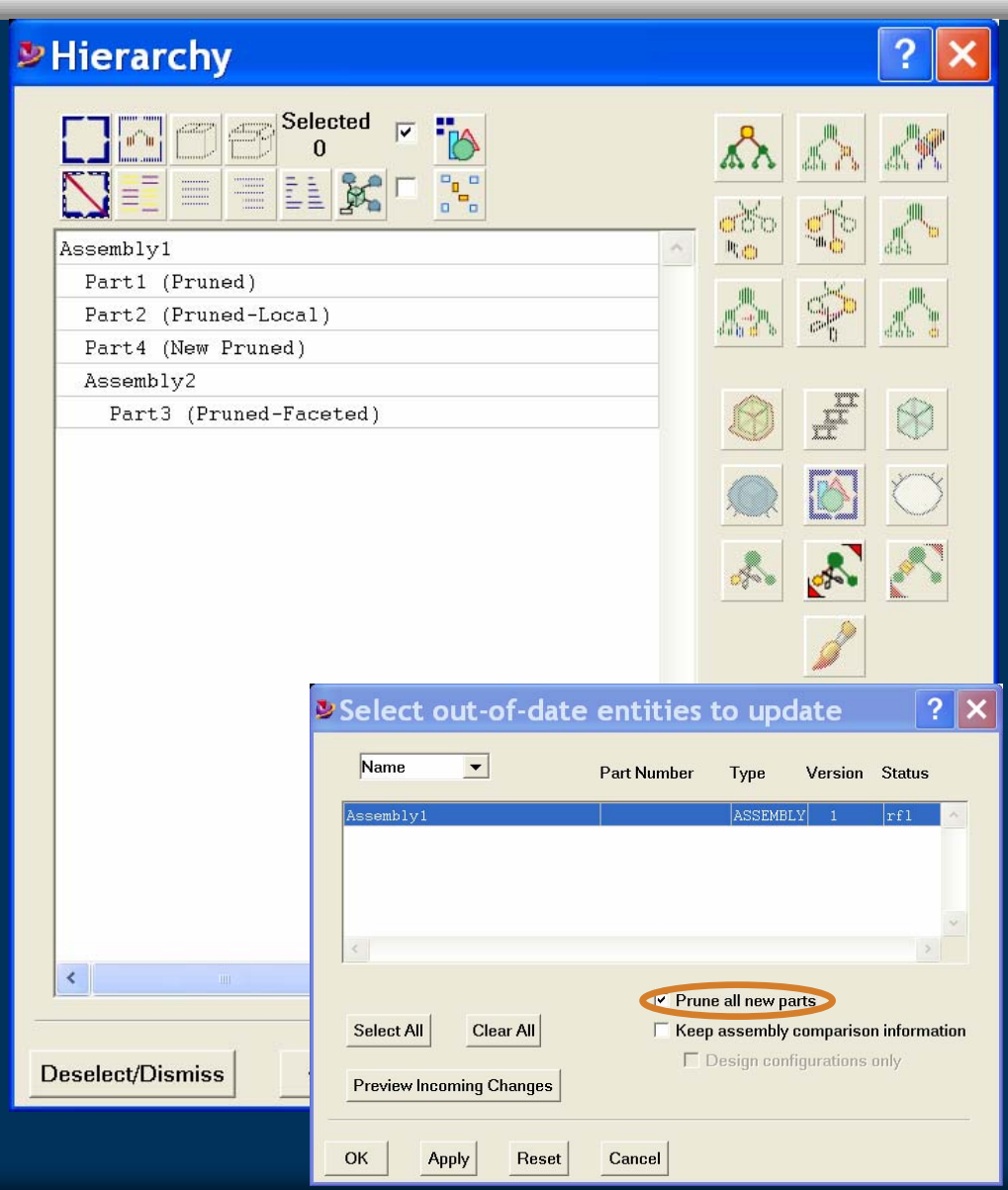
- *Prune* is used to avoid retrieving items from the library
- Pruned instances
  - Are removed from display
  - Are not included in property calculations
  - Do participate in constraint network solves
  - Are not included in interference checks
    - Prune-Faceted is included in Facet Interference Check
- GFL Options
  - *Auto Prune Assembly/ Drawing*



Decrease Library Retrieval Time

Prune Status

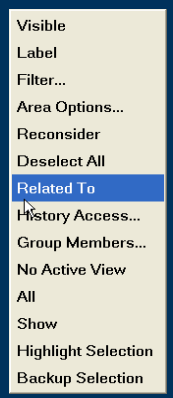
- Pruned
  - Part is not in model file and has no faceted information stored for it
- Pruned-Local
  - Part exists in model file
- New Pruned
  - *Prune all new parts switch* was on when assembly was updated from library
- Pruned-Faceted
  - Faceted geometry for the instance has been stored with the assembly

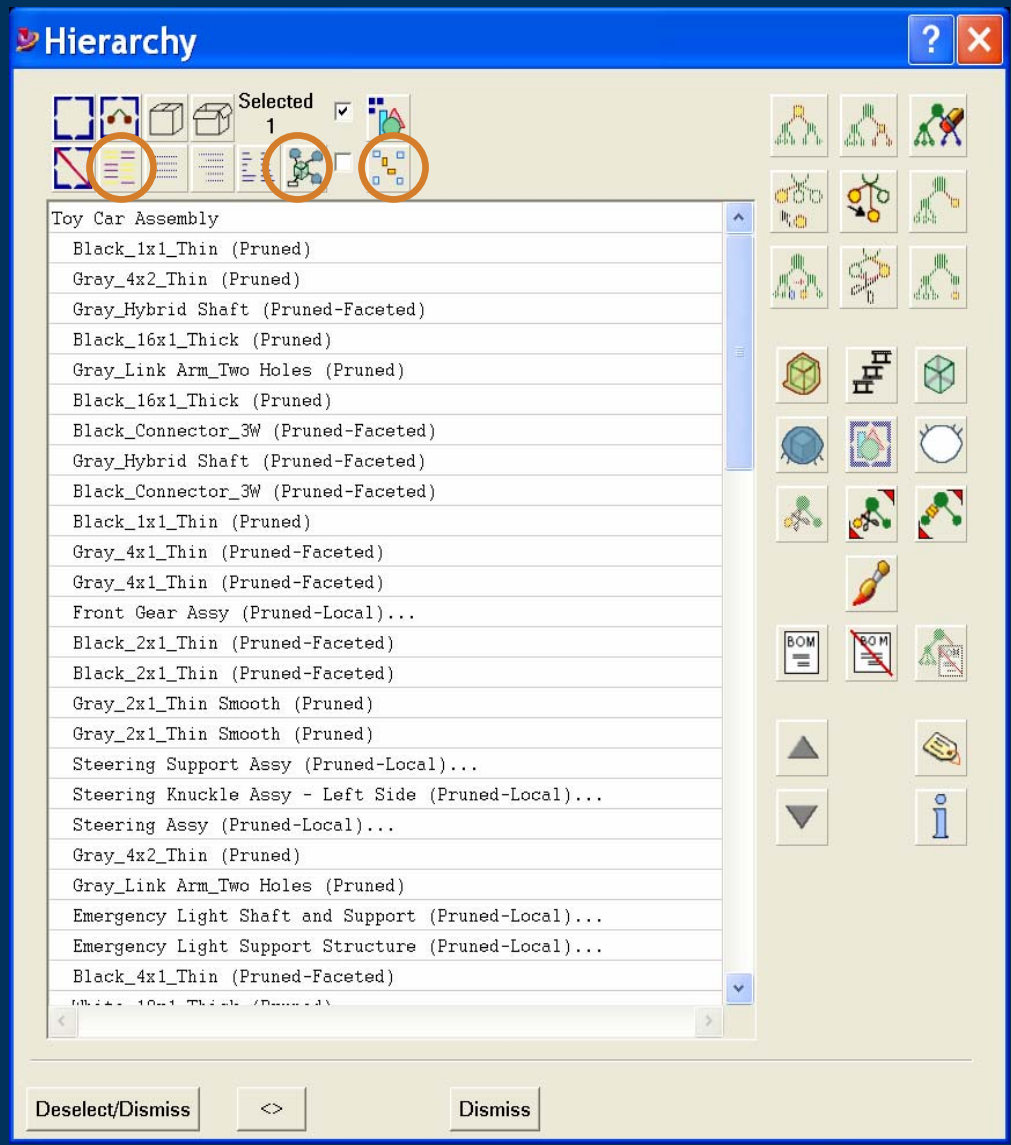


Decrease Library Retrieval Time

Unprune Selection Tools

- Invert Selection
- Combined Total Size
- Proximity Selection
- Related To

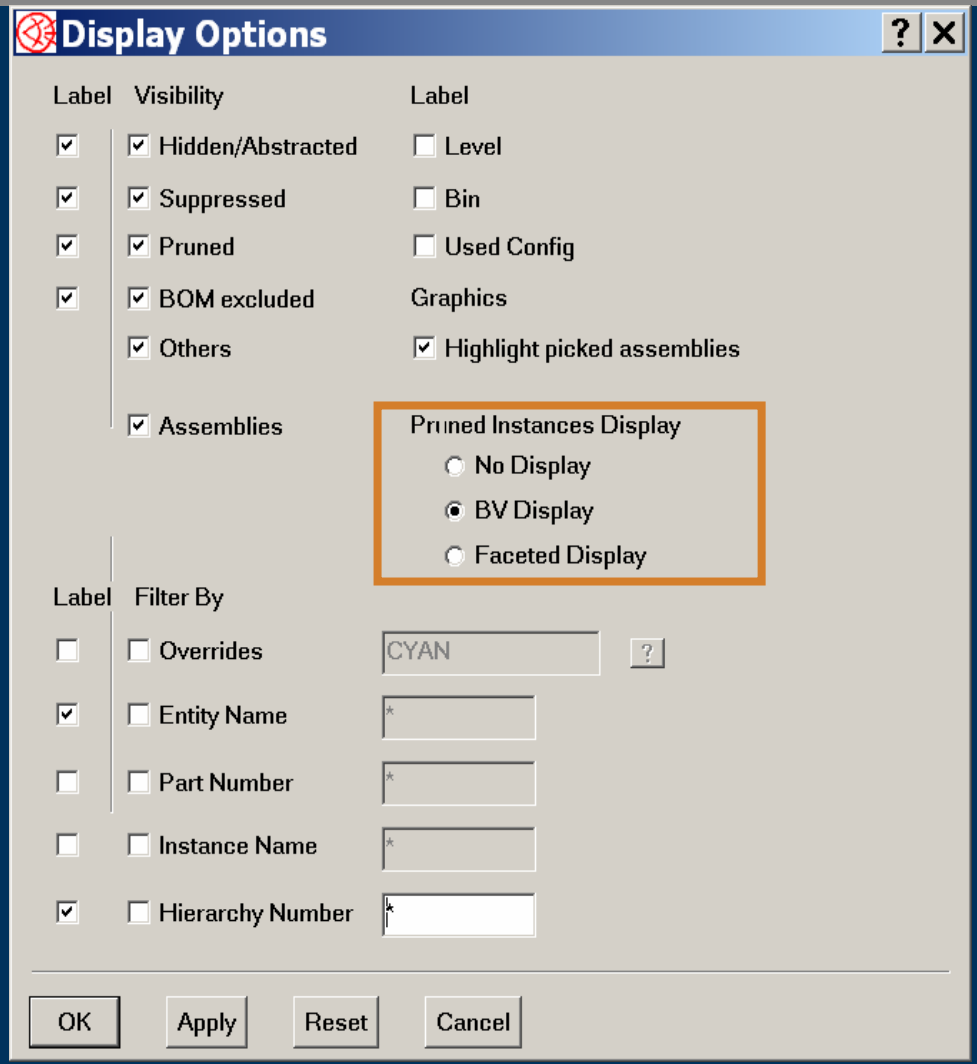




Simplify the Display

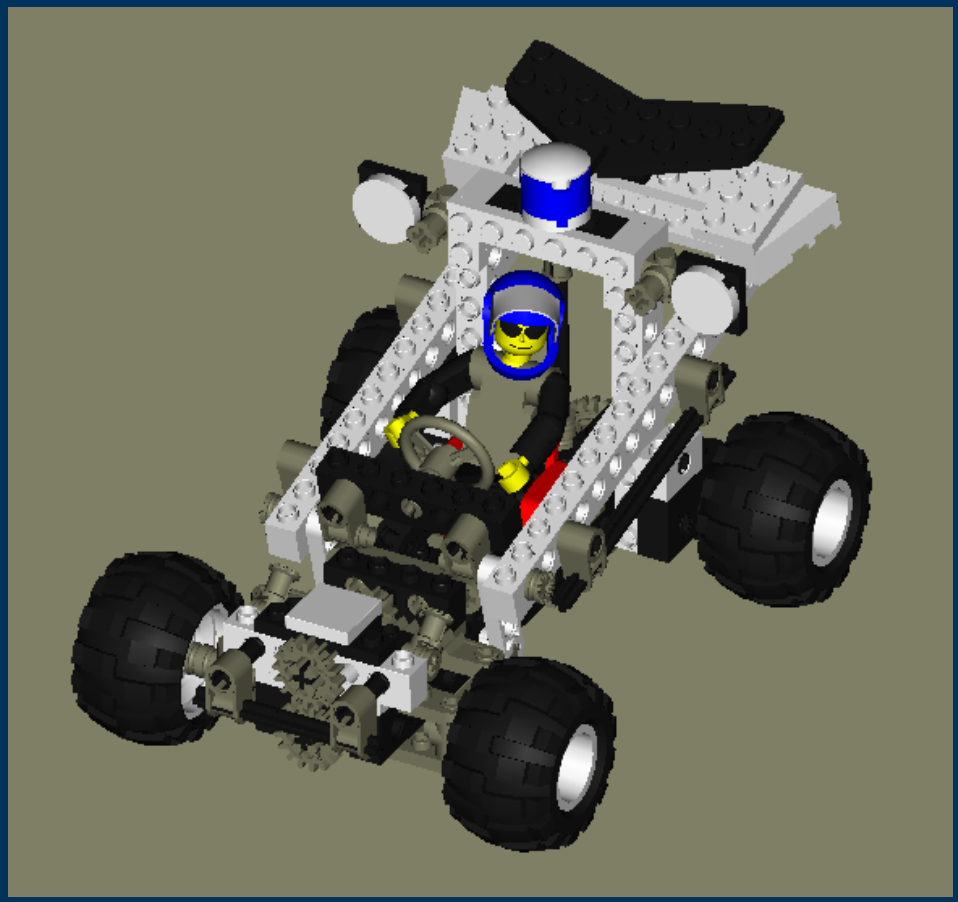
Pruned Instances Display

- No Display
  - Instance is removed from the display
- BV Display
  - Bounding volume of instance is displayed
- Faceted Display
  - Faceted model of instance is displayed if available



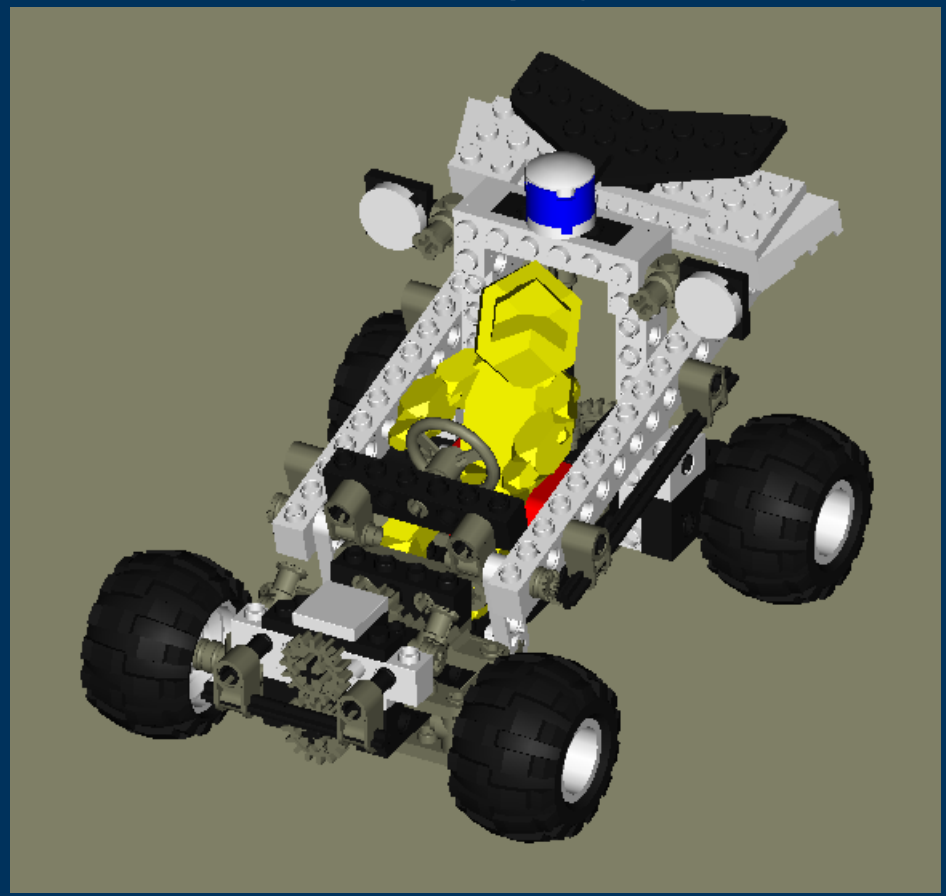
Simplify the Display

All Unpruned



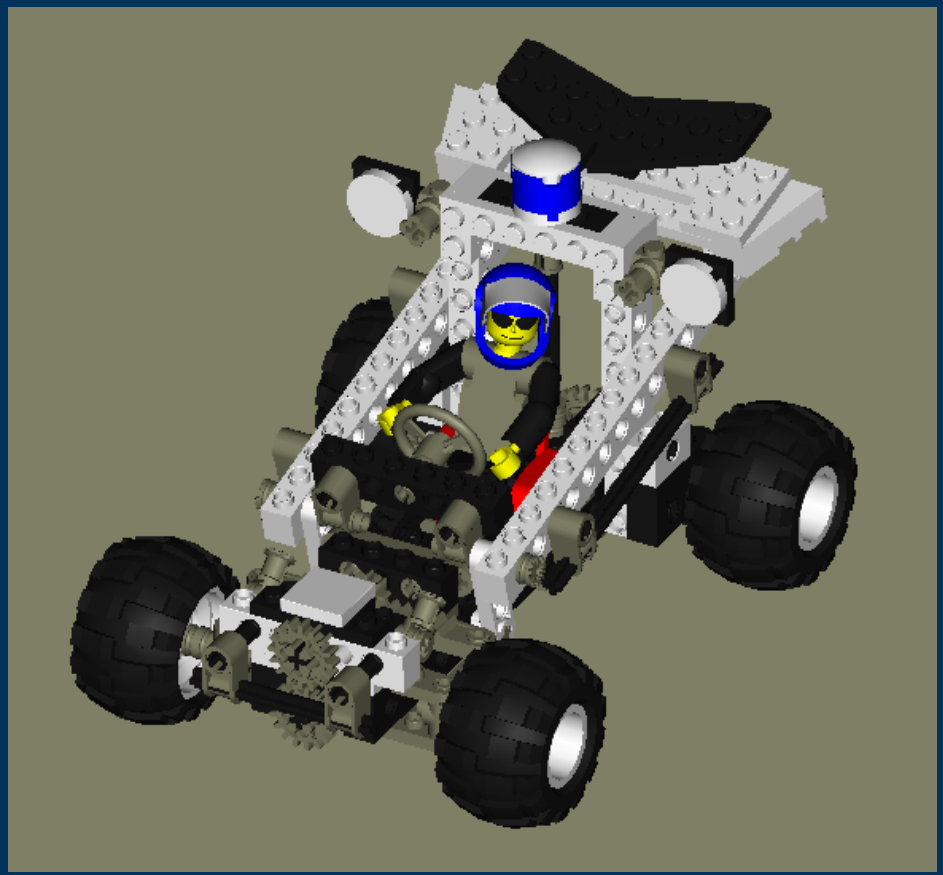
Driver Assembly Pruned

BV Display



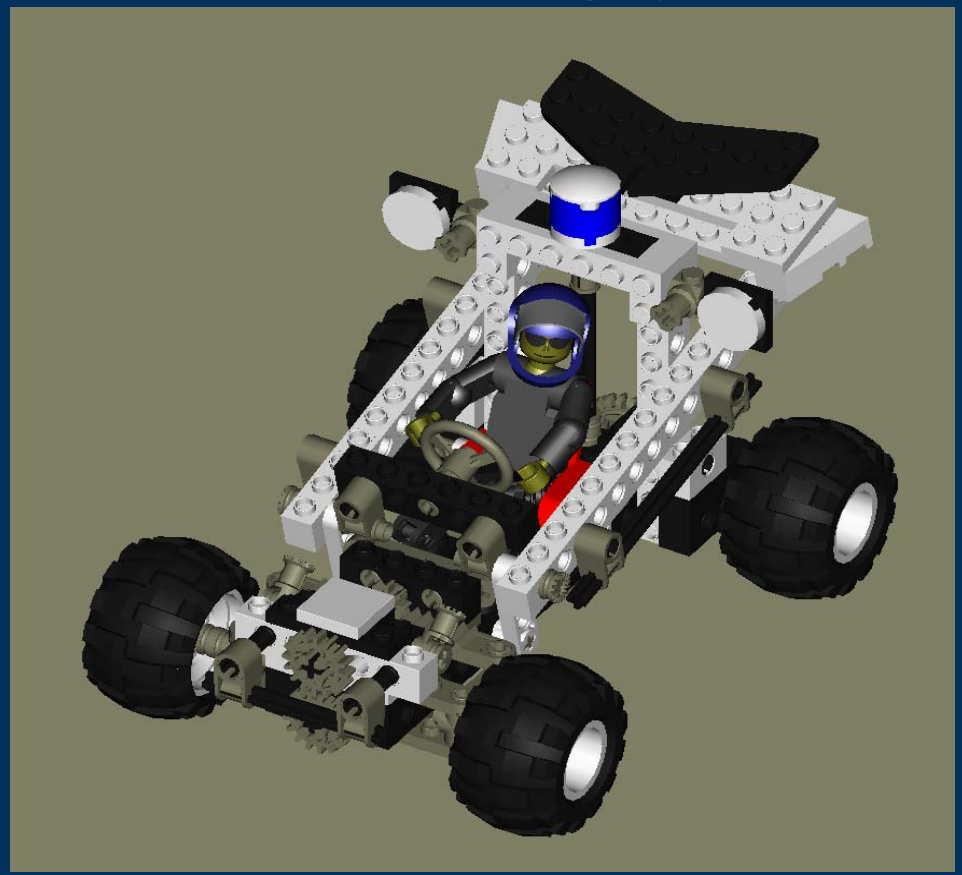
Simplify the Display

All Unpruned



Driver Assembly Pruned

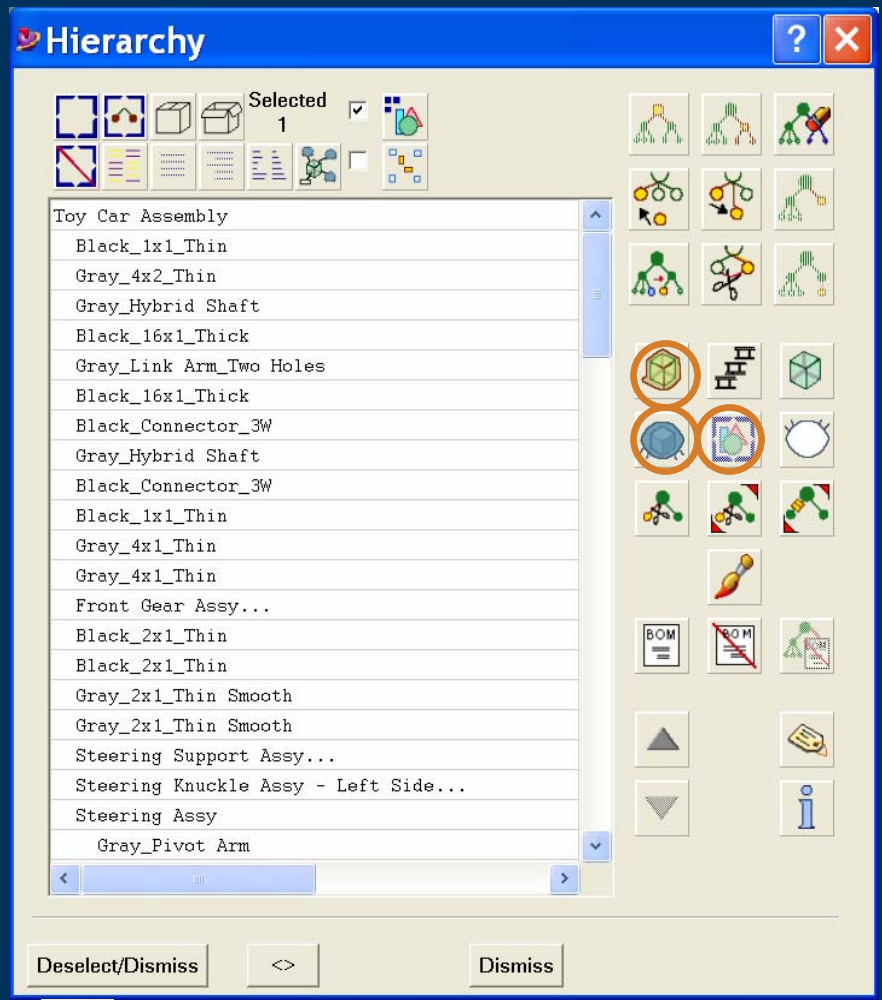
Faceted Display



Simplify the Display

Suppress

- Removed from display
- Does not participate in constraint network solves
- Is not included in property calculation or interference checks
- Is not shown in drawing views
- May be included or excluded in BOM



Hide

- Removed from display
- Participates in constraint network solves
- Included in property calculation and interference checks
- Shown in drawing views
- Is included in the BOM by default

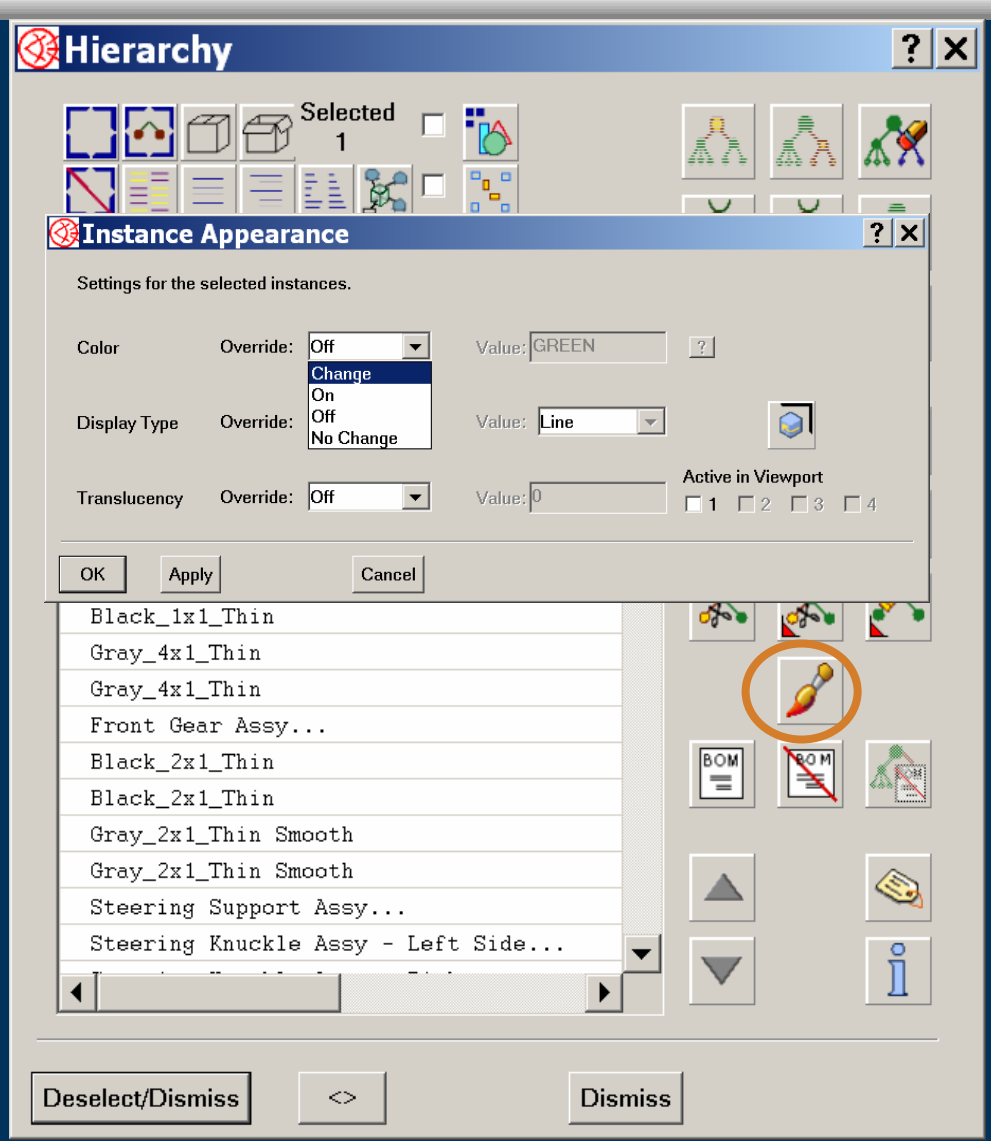
Abstract

- Choose part geometry or annotation to display

Simplify the Display

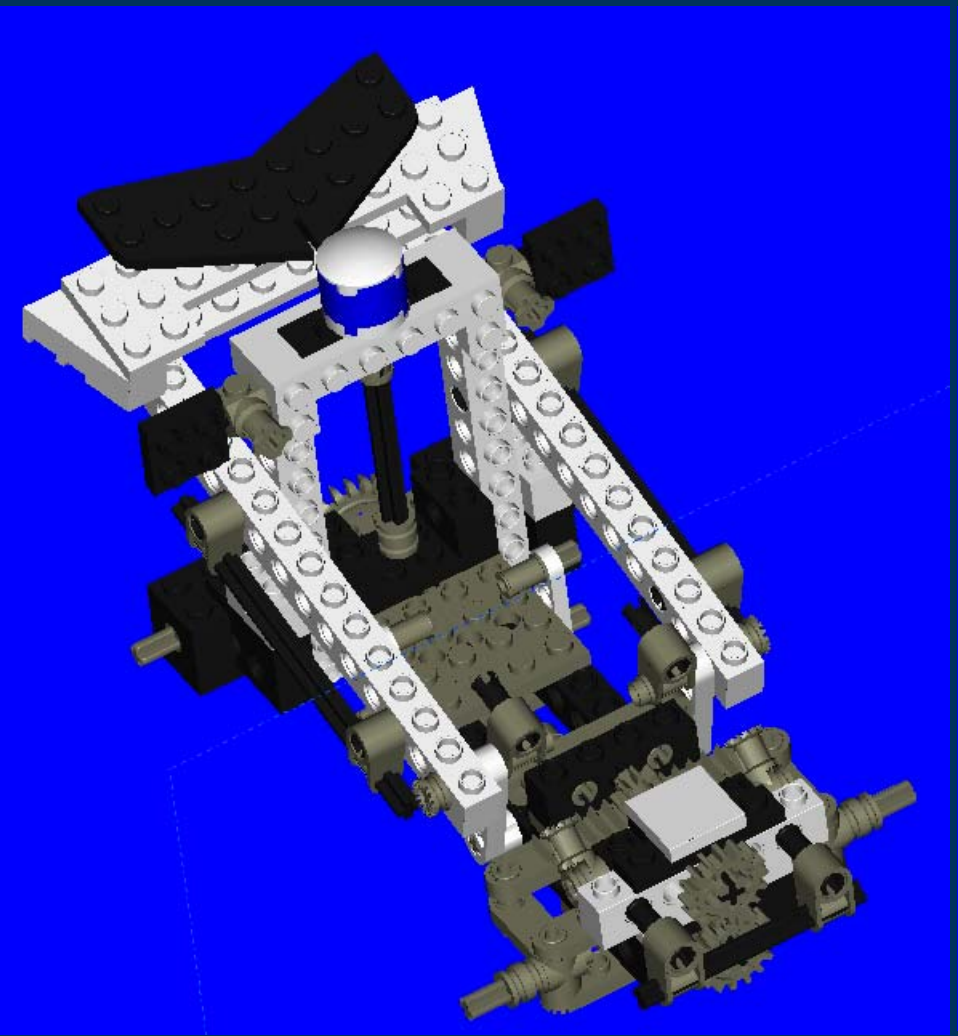
Instance Appearance

- The following part instance appearance attributes can be modified without affecting the part:
  - Color
  - Display Type
  - Translucency

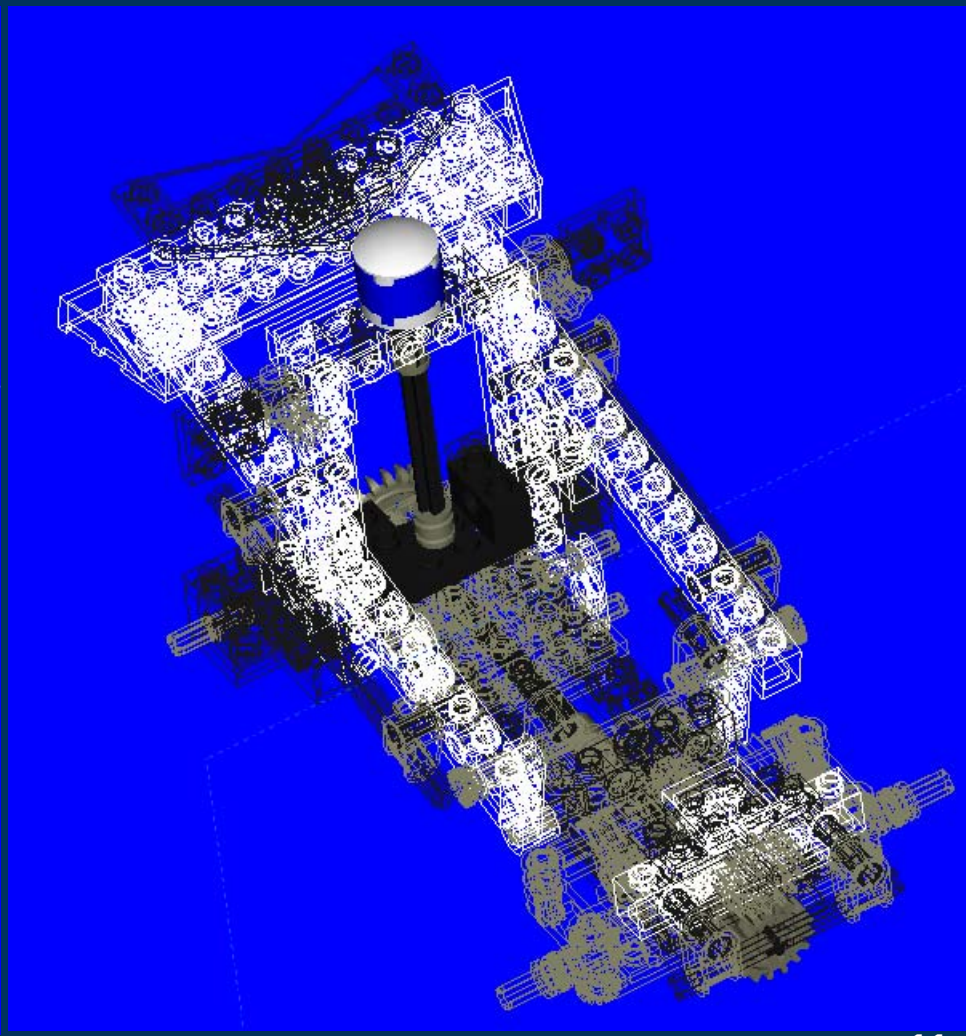


Simplify the Display

Shaded Display



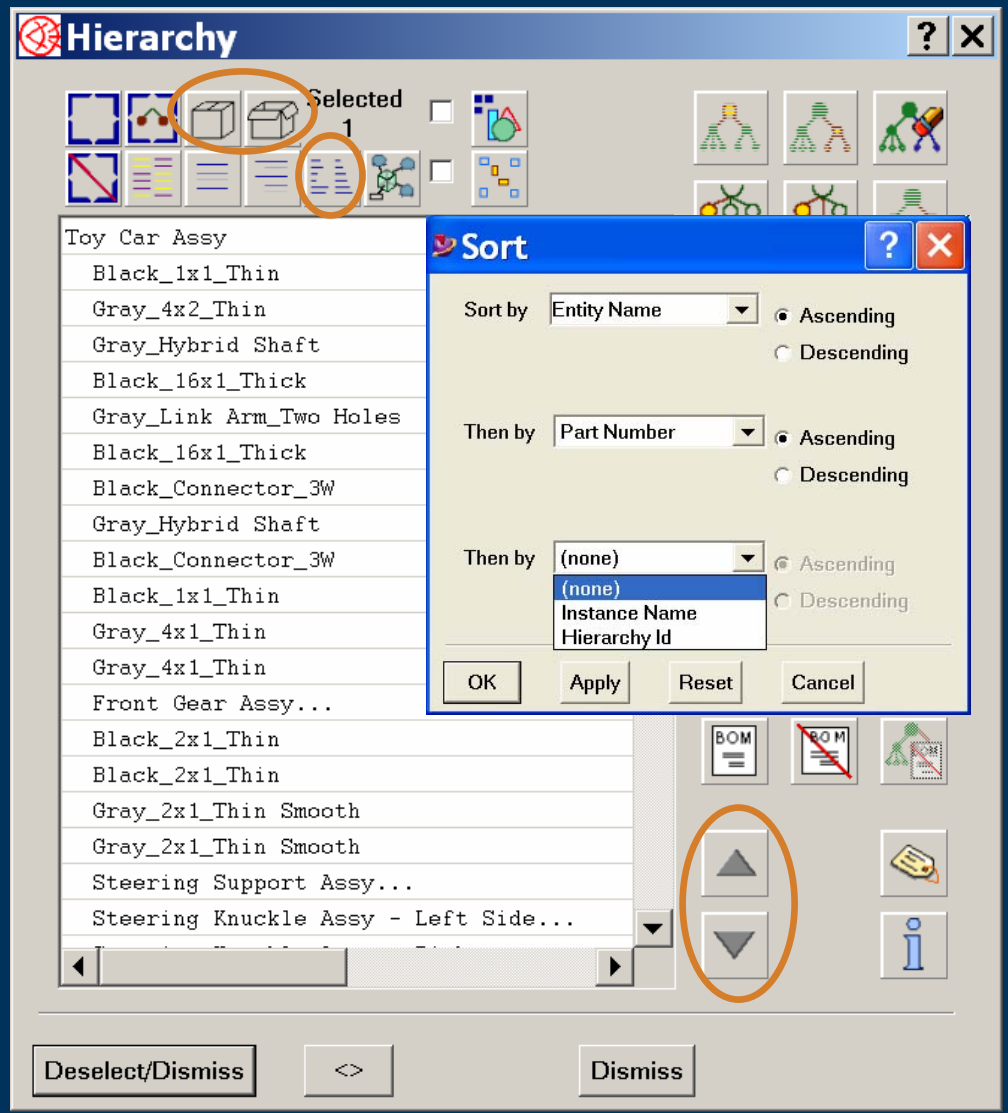
Mixed Mode Display



Organize the Assembly Hierarchy

Hierarchy Tools

- Pack and Unpack
- Sort
- Up and Down



Create Constraints and Dimensions

Tips

- Create relationship at lowest level possible
- Lock one instance to the assembly and constrain other instances to it
- As much as possible, constrain one instance before moving onto the next
- Use parallel, perpendicular, and coincident instead of equivalent angular or linear dimension
- Constrain to most persistent geometry
  - Ref geometry
  - Surfaces
  - Centerlines
  - Edges
  - Vertices

Create Constraints and Dimensions

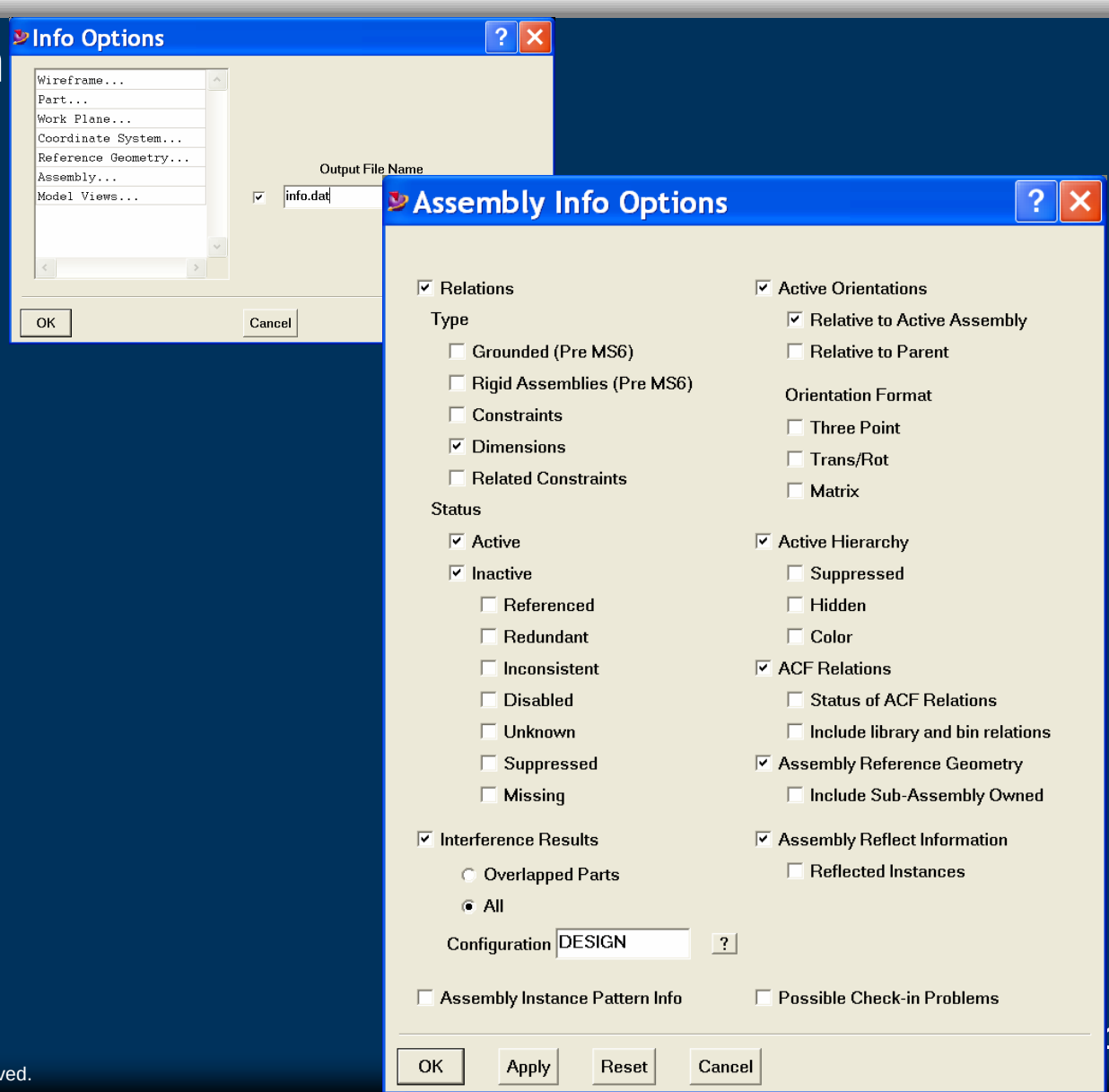
Tips

- Apply largest degree of freedom (DOF) constraint or dimension first
- Create relationships with direction intent or that have the Flip option available during creating
- Remove inconsistent dimensions and constraints
- Remove unnecessary redundant dimensions and constraints, but remember that some redundant constraints are useful
- Resolve any missing geometry constraints and dimensions
- Use Find Problems in Relations Browser to find and resolve any problematic constraint loops

Interrogate the Assembly

Assembly Information

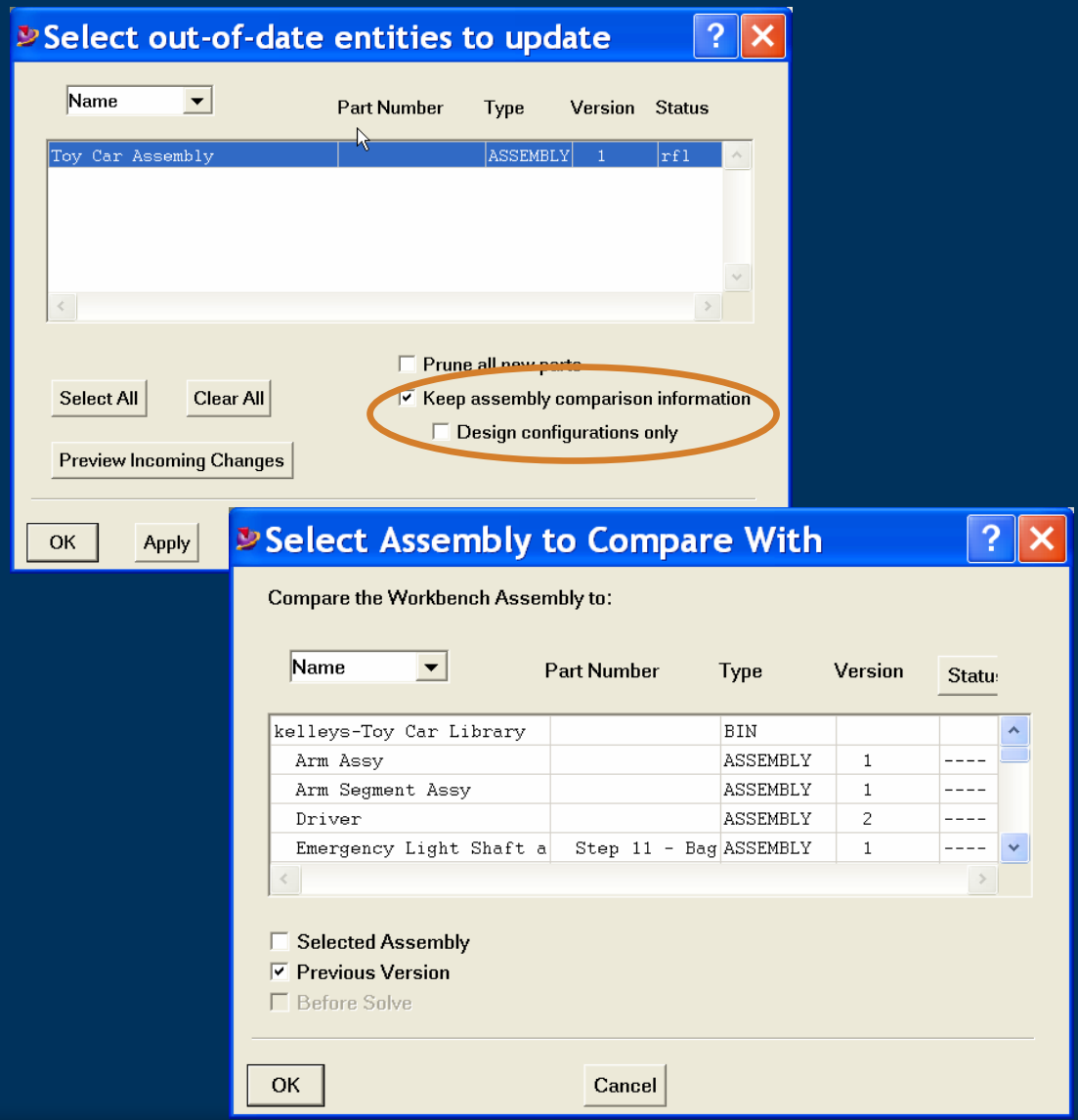
- Relations
- Interference Results
- Assembly Instance Pattern Info
- Active Orientations
- Active Hierarchy
- ACF Relations
- Assembly Reference Geometry
- Assembly Reflect Information
- Possible Check-in Problems



Interrogate the Assembly

Assembly Compare

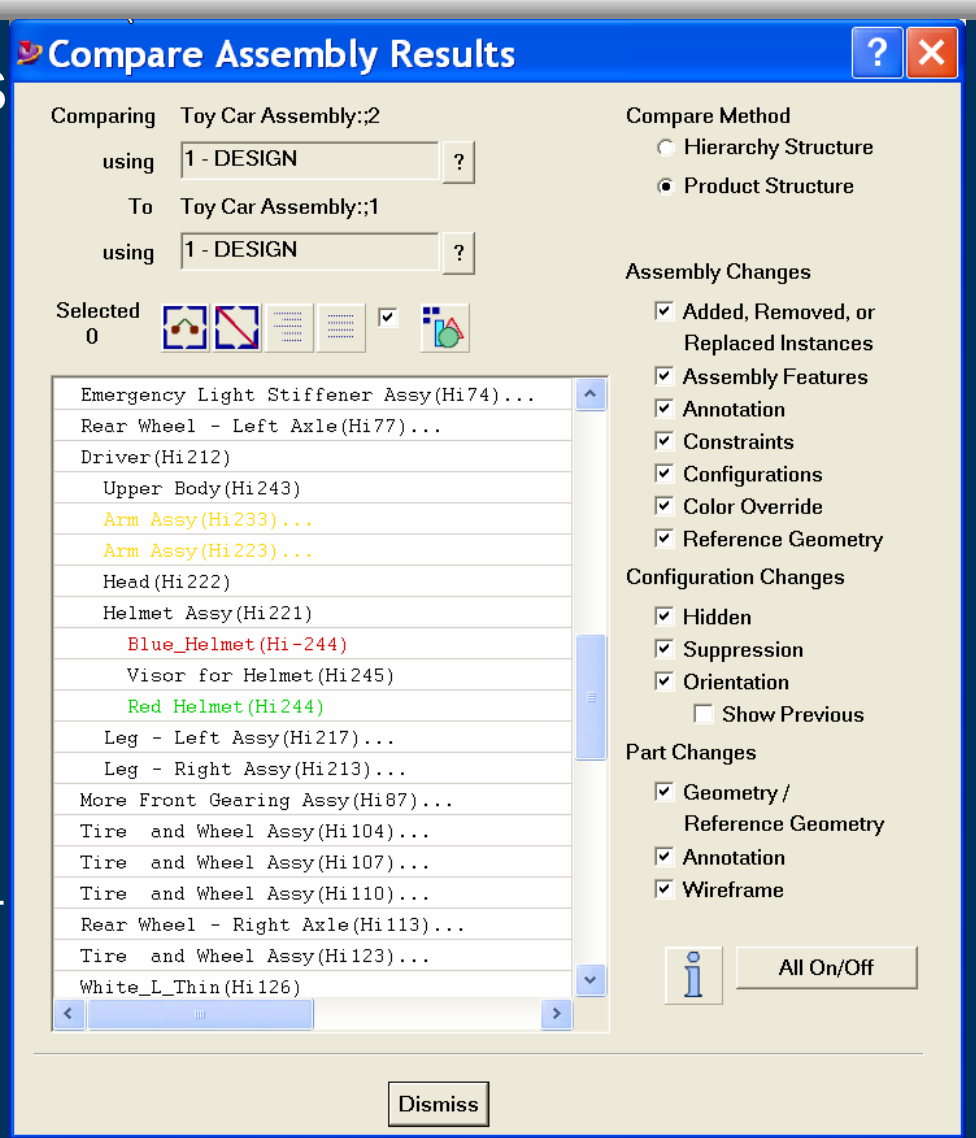
- Assembly before and after update from library
- Assembly before and after last solve
- Two different configurations of the same assembly
- Two different versions of the same assembly
- Two different assemblies



Interrogate the Assembly

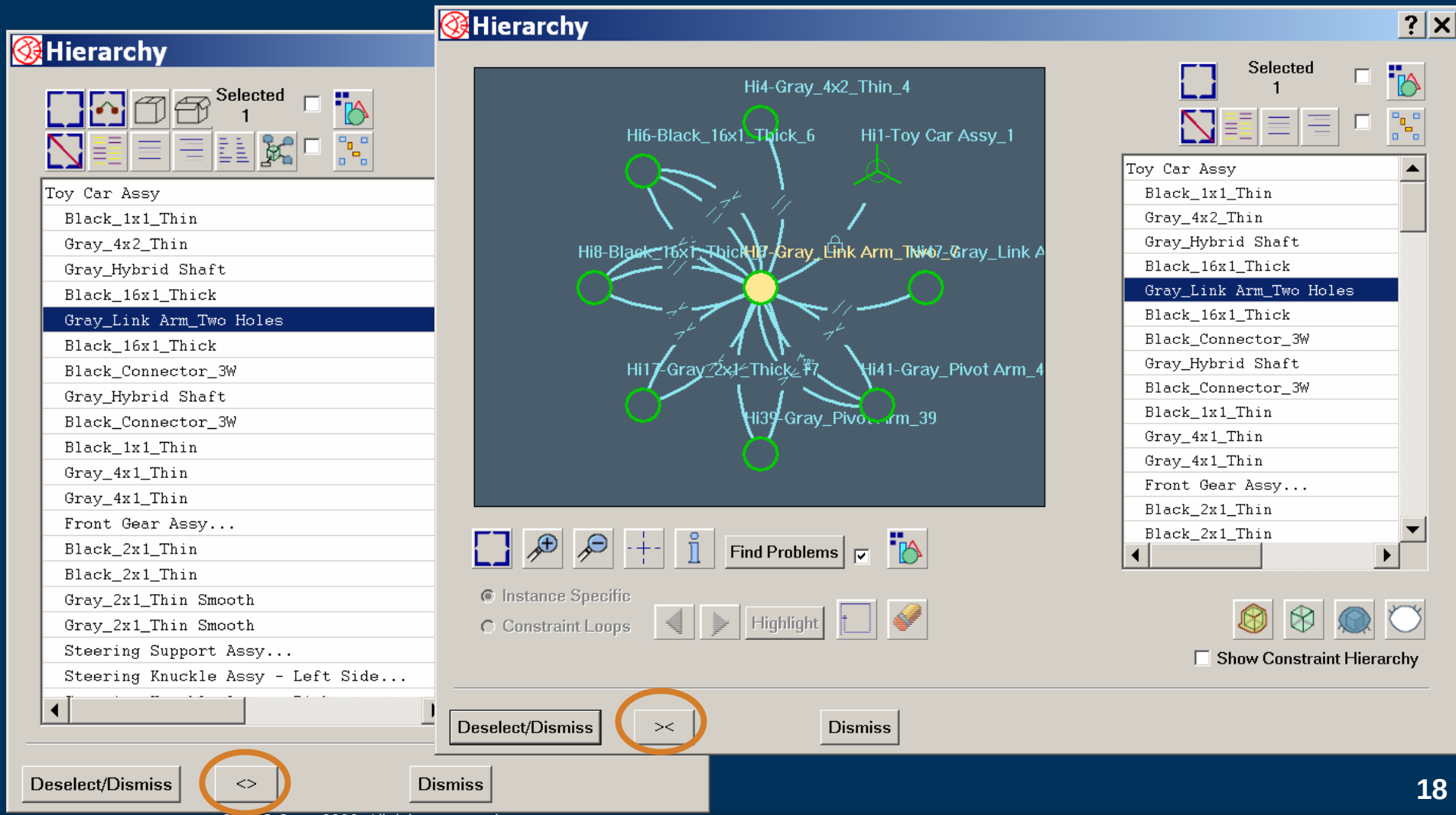
Compare Assembly Results

- Assembly Changes
- Configuration Changes
- Part Changes
- Graphics Display and Hierarchy Listing
  - Green indicates added
  - Yellow indicates modified
  - Red indicates deleted
  - Hidden, deleted, suppressed, or pruned instances are shown in graphics region by bounding volumes



Interrogate the Assembly

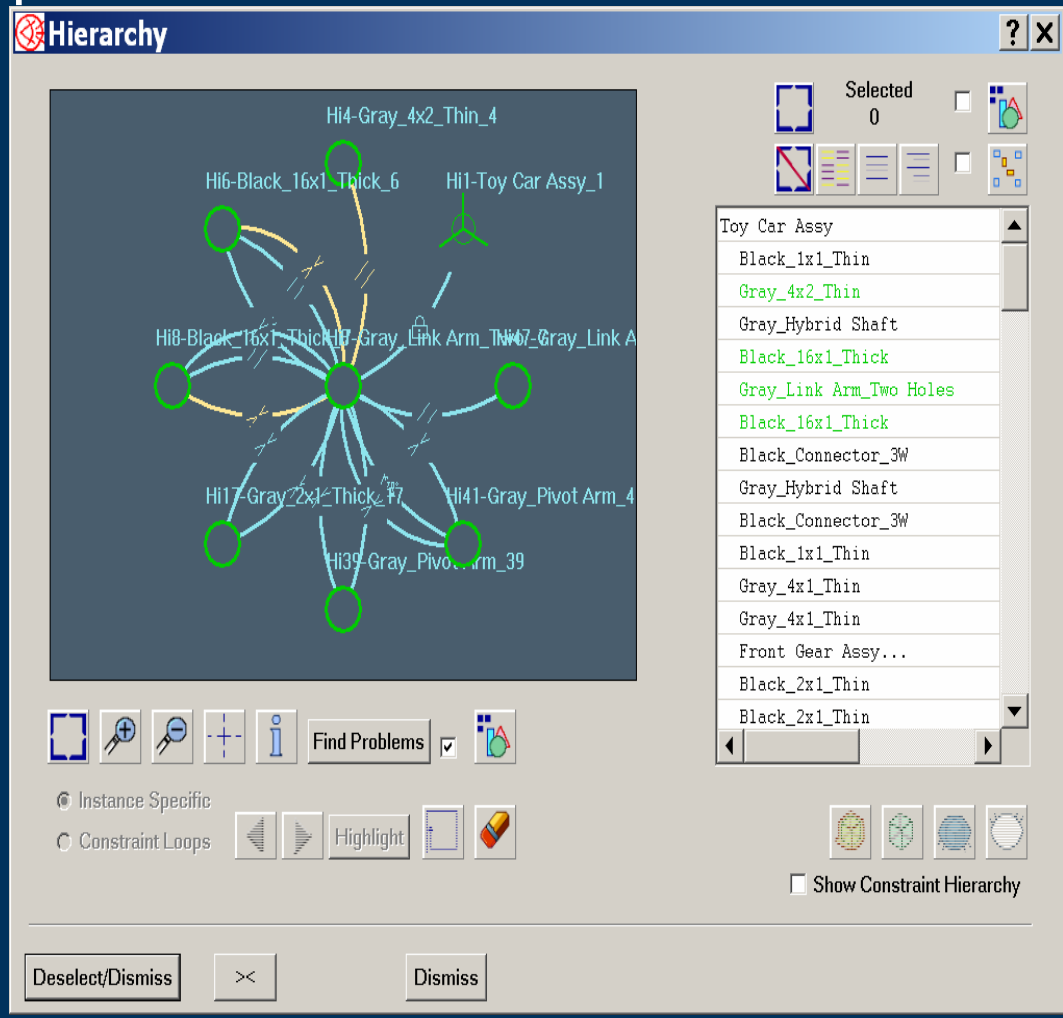
Combined Hierarchy and Assembly Relations Browser Form



Interrogate the Assembly

Select Instance or Relationship

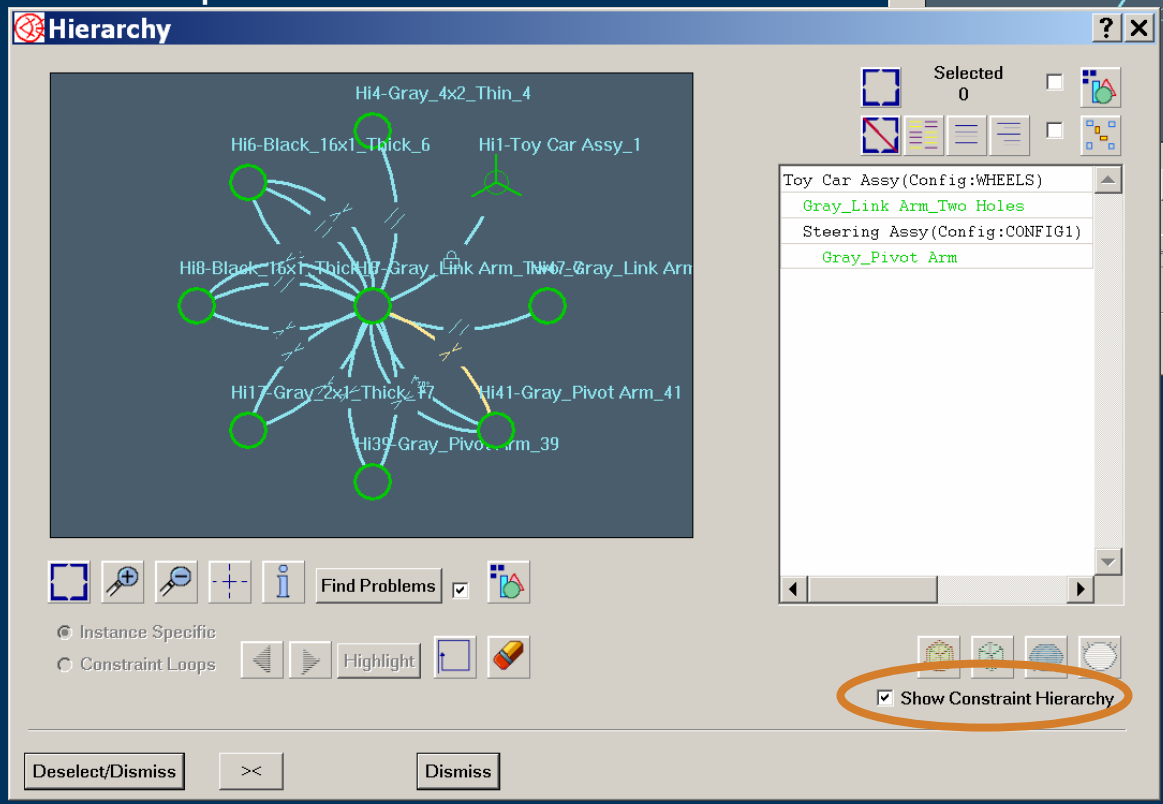
- A selected instance in the hierarchy will be centered in the *Relations Browser*
- If a constraint or dimension is selected, the participating instances will be shown in green in the hierarchy
- Multiple relationships can be selected and all participating instances will be highlighted in green in the hierarchy

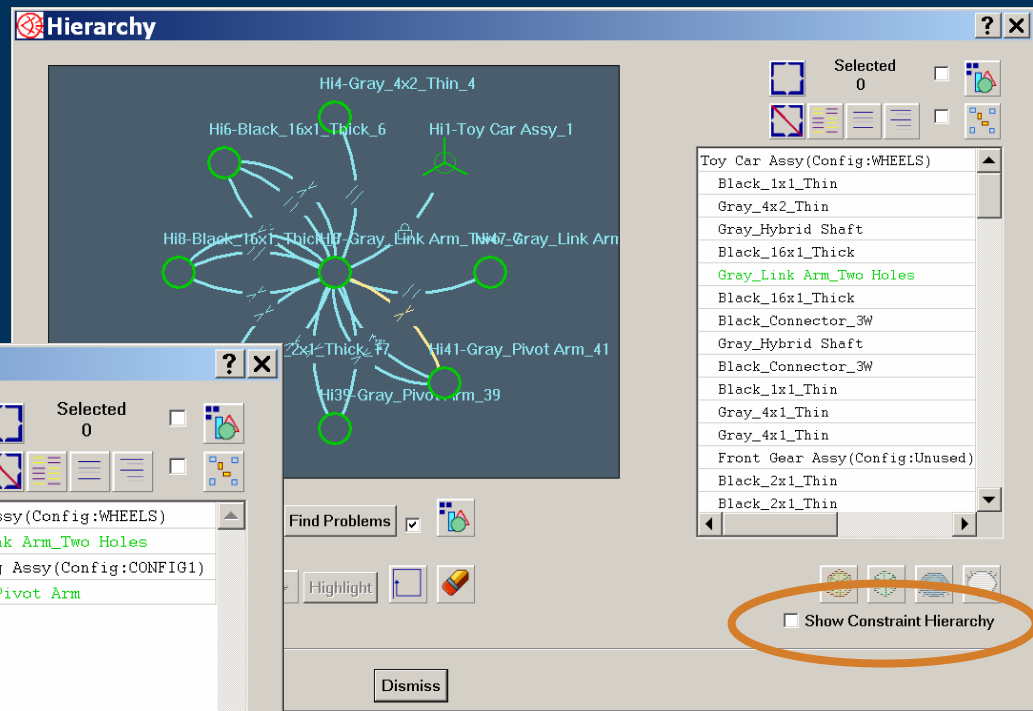


Interrogate the Assembly

Show Constraint Hierarchy

- Toggle on to show only those instances participating in the selected constraint and their parent assemblies





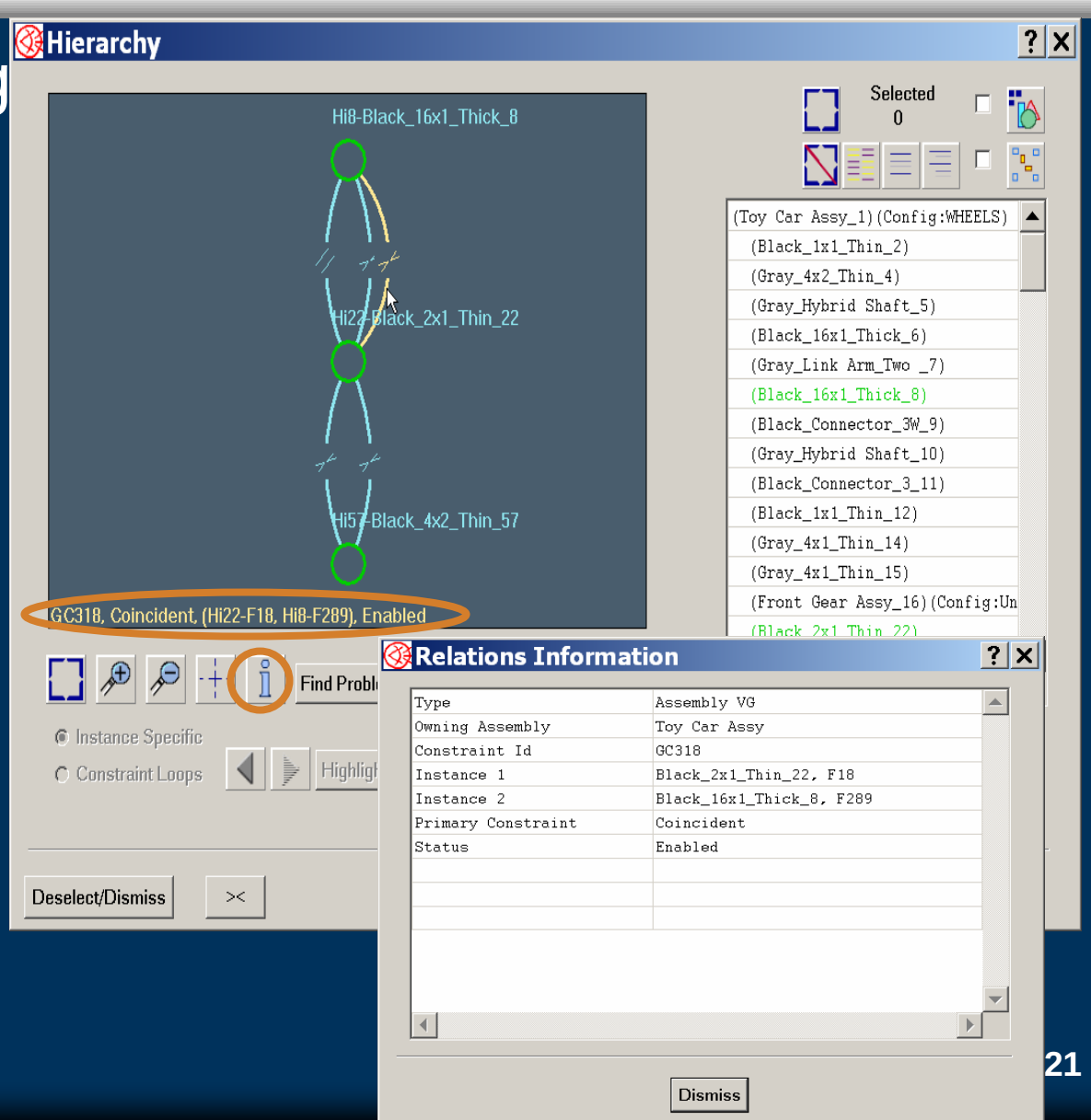
Interrogate the Assembly

Dynamic Highlighting

- Constraint ID
- Hierarchy numbers with geometry involved
- Status

Info

- Type
- Owning assembly
- Constrain ID
- Name of instance and geometry involved in the relationship
- Primary constraint
- Status



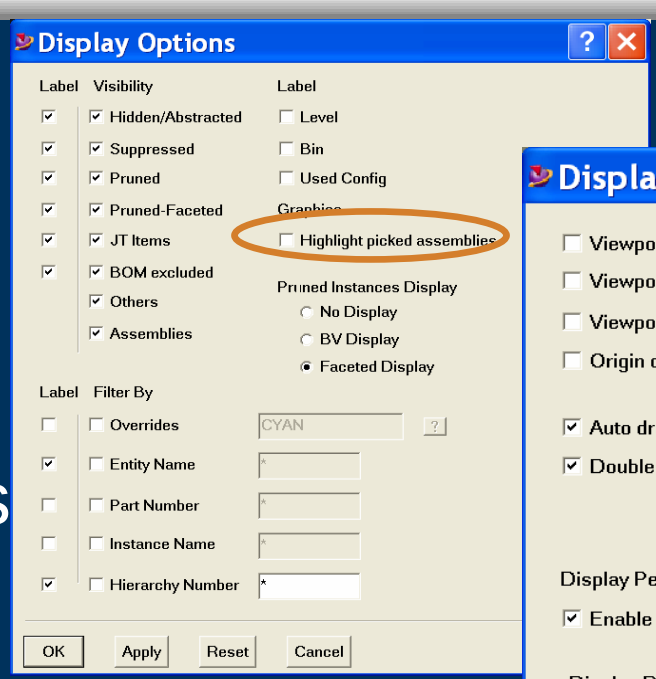
Increase Overall Performance

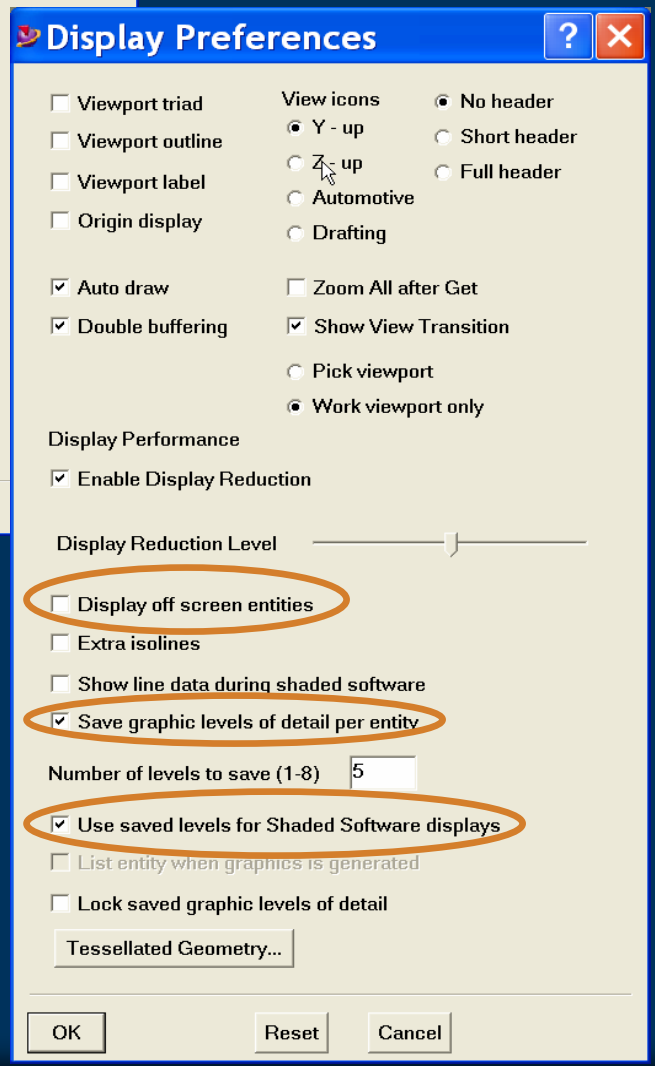
Display Options

- *Highlight picked assemblies*

Display Preferences

- *Save graphics levels of detail per entity*
- *Display off screen entities*
- *Use saved level of details for Shaded Software displays*

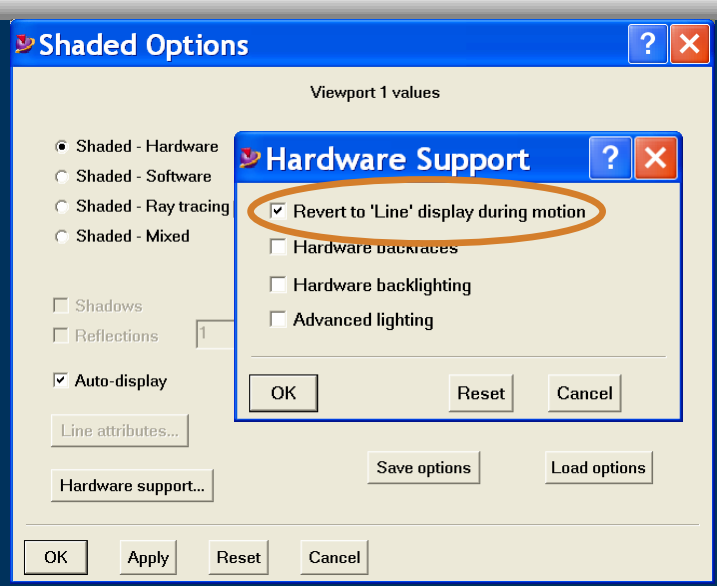


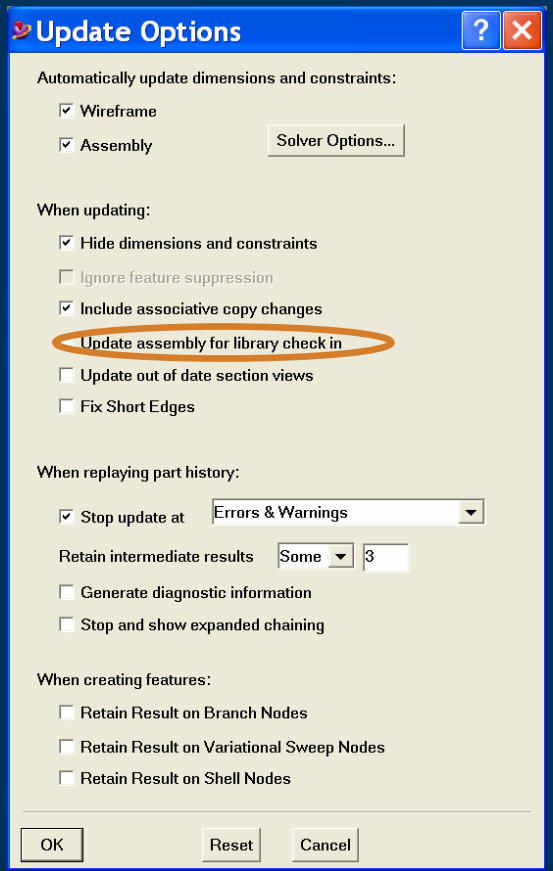


Increase Overall Performance

Shaded Options → Hardware Support

- *Revert to 'Line' display during motion*





Update Options

- *Update assembly for library check in*

Increase Overall Performance

Exporting and Importing Large Assemblies

- Files > 30 MB
  - Increase *Total Virtual Memory Limit (TVM)* to at least 1500 in *Options → Preferences → Memory Usage*

    ***NOTE: Only recommended if have enough RAM available to do this
- Files > 80 MB
  - Set *OI_STREAMPROTOCOL=file* prior to running I-deas
- Alternative Variables
  - IMSIGES_USEOA=1
  - IMSSTEP_USEOA=1

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