“Simplified Reps”

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Objective:

At the end of this tutorial, you will be able to:

- Definitions: Commonly used selection criteria
- How to Create a Simplified Rep
  - Set and Unset Components
- Differentiate between common Graphics Settings
- Substitute a Lower Level Simplified Rep into a Top Level Assembly
- Restate the concept of when to use a Simplified Rep

Overview:

The purpose of this module is to understand how to create, modify and manage usage of Simplified Representations. In addition, leverage existing Simplified Reps into higher-level Assemblies.

Topic value:

Due to proper usage of Simplified Representations, Lam Research has been able to reduce the amount of time needed to open one of their Top Level Assemblies from

20 minutes to less then 2 minutes or 90% faster.
Simplified Rep Tutorial

To begin creation of a Simplified Rep select

1) Simplified Rep/Create

2) Select the Default Rule. In general Master Rep and Exclude Component will be the two most commonly chosen options.

NOTE: For this tutorial Master Rep will be chosen as the default

Definitions:

Master Rep:
- Master Rep defines that initially all components are shown and the user must select the items to be removed.
- Master Rep allows for all future assembled components to be added to ALL Simplified Reps with the default Rule as Master Rep. To avoid this use Exclude Comp instead.

Exclude Comp:
- Exclude Comp defines that the initial state of components are all blanked and the user must select the items to be shown
- Exclude Comp prevents all future assembled components to be added to any Simplified Reps with the default Rule as Exclude Comp.

Graphics Rep
- Graphics Rep reduces the amount of data that is pulled into Ram. (25%)
- Not as commonly used
- Cross Section Not allowed
- No Mass prop

Geometry Rep
• Geometry Rep reduces even more data (50%)
• Not commonly used

3) Enter Name for Simplified Rep:

4) Edit Rep Options. If needed change from Master Rep to Graphics Rep or Geometry Rep. Master Rep is the most common selection.

Master Rep:
• Which ever was chosen in Step 2 will be displayed here

Graphics Rep:
• Replaces THE SELECTED parts with a lightweight version approximately 25% of original size. Mass Prop and Cross Section functionality cannot be calculated.

Geometry Rep:
• Replaces THE SELECTED parts with a slightly larger weight model at approximately 50% of the original size. Mass Prop and Cross Section functionality can be calculated.

Substitute:
• In the Context of an Assembly: Allows the user to replace a component with a part level Simplified Rep

Default
• Removes selected components off of the Simplified Rep that is being defined
5) Selecting Components: Now select the components that need to be displayed on the Sim Rep. The parts on the model can be directly selected or the model tree can be used. See below for description on the two techniques.

Model Tree

- While in the Creation menus of a Simplified Rep, the Model tree adds a column to display the components that are affected by the Sim Rep being defined.
- Removal of components can be selected off the model tree by selecting the model name.

Working Window

- Components can be selected from the working window (Part to be removed is selected in red)
- Reflects in Model Tree
Notes on Part Selection:

- Regardless of where the part is selected, the model tree will reflect the removed components.

- Even though components are selected to be removed from the Sim Rep, nothing will change until you either
  - Update Screen
  - Complete the Sim Rep

- When Update Screen is selected the screen will show the resultant display based on the selected items. Note the difference between original Assembly and new Sim Rep shown here.
After Update Screen is selected and the components removed are not as expected, you may unselect them as follows:

- Select DEFAULT under EDIT REP
- Pick in the model tree the components that were not intended for the Sim Rep
- Update Screen
- Components are Returned to original state
5) Substituting Components:

In many cases, a Simplified Rep of a lower level Sub assembly is needed to be displayed in a respective higher-level assembly.

In the picture on right, there exists a Subassembly of the front panel including all the gauges, levers, hinges etc.

A Simplified Rep has initially been created of the front panel as shown below.

Instead of individually removing all the unwanted components such as Gauge, Bracket and Door Hinge, at the top level, we can select the Simplified Rep on the preexisting lower level subassembly. In this example we will remove components at the high level simplified rep by substituting a Simplified Rep of a lower level assembly.
PROCEDURE:

1) Select Substitute from EDIT REP Menu:

2) Select the Sub Assembly from the model tree

3) Choose *By Simplified Rep* and then Browse:
4) Select the appropriate Simplified Rep name and select OK:

5) Choose OK again **and then** Update Screen:
6) The Simplified Rep is included in the top level Assembly. Notice simplified version of front panel:

![Simplified Front Panel Image]

7) Finish the Simplified Rep by selecting DONE

END OF TUTORIAL: Thank You for Coming!!
Key Vocabulary for “Simplified Reps”:

**Interchange Assembly**: function that allows the switching out of functionally equivalent models. Common usage is a “simplify interchange” where a completed, complex assy is replaced with a simple part representation for faster regeneration.

**Regeneration**: the mathematical updating of CAD geometry and their associated objects when dimensional changes take place. This can be as simple as individual part values updating or as complex as an entire top-level assembly changing.

**Simplified Reps**: advanced Pro/E tools to limit the amount of models needed to be in session (and thus regenerated).
## Tutorial Evaluation:

| Title: | □ Engineer □ Designer □ Draftsmen □ Mfg. Engr. □ Tech. Pubs. □ Analyst |
| PTC Products Used: | □ Foundation □ Advanced Assembly Extension □ Advanced Surface Extension □ Behavioral Modeling □ Intralink □ Modelcheck □ All |
| Time using Pro/E: | □ 0-6 months □ 6-12 months □ 1-2 years □ 2-5 years □ 5+ years |

1. This tutorial content met my expectations: .................................................. 1 2 3 4 5
2. Time was utilized effectively: ........................................................................ 1 2 3 4 5
3. The exercise was easy to understand: ............................................................... 1 2 3 4 5
4. This tutorial will help me on current projects: .............................................. 1 2 3 4 5
5. These techniques make Pro/E a more effective tool: .................................... 1 2 3 4 5
6. These techniques will increase my speed using Pro/E: .................................. 1 2 3 4 5

What 3 concepts/techniques learned from this tutorial will you apply on the job?

1.
2.
3.

What, if anything can be done to improve this tutorial for your company?

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### Additional Comments:

Thank you for filling out this evaluation! Your comments will be used to improve the quality of future tutorials.