Large Assembly Management

Some of the Techniques

Gert Landheer
GPO Solutions
Userdag 2010
Agenda

- About GPO Solutions
- Definition “Large Assembly”
- History
- Your task
- Planning
- It's a choice
- Maintenance
- Several Simplified Representation examples
- Possible concept
GPO Solutions

Reseller van PTC oplossingen

- Pro/ENGINEER, Windchill, Arbortext, Mathcad, Productview

Consultancy

- Implementatie van PTC software, klantspecifieke configuraties en advies bij het automatiseren van ontwerp- en productieprocessen

Training

- Alle PTC opleidingen

Klantondersteuning

- We beschikken over ervaren en gecertificeerde engineers die u kunnen helpen met het optimaal gebruik van de software, hardware en IT gerelateerde producten

Softwareontwikkeling

- Ontwikkelen van klantspecifieke applicaties
What's a large assembly?

- A large assembly...
  - Has more than XX (unique) parts and YY sub-assemblies
  - Has a few but complex parts
  - Takes more than XX minutes to load
  - Takes more than X GB of disk-space
  - Consumes more than X MB of RAM-memory
  - Takes more than XX minutes to check out from Windchill
  - ...
- No such definition exists! All above correct.
History

- Hardware
  - UNIX
  - 32Mb RAM
  - Disk 400Mb
  - Graphics Limited
Your task

- **Review**
  (Explore structure, View, etc.)
  - ProductView
    - ProductView Express
    - ProductView Lite
    - ProductView Professional

- **Design**
  (Edit, Add, Delete etc.)
  - Pro/ENGINEER
Planning

- Templates
- Layers
- Assembly structure
- Reference Scope
- Naming convention
- Communication !!
Planning

- **Templates**
  - Datum Planes
  - Orientations
  - Parameters
  - Predefined Simplified Reps
    - Example: Exclude < X
- Layers
- Naming convention
- Assembly structure
- Reference Scope
- Communication !!
Planning

- Templates
- **Layers**
  - Define all layers in advance
    - Template
    - Layer Reference Model
  - Forbid the creation of additional layers by the users
- Naming convention
- Assembly structure
- Reference Scope
- Communication !!
Planning

- Templates
- Layers
- **Naming convention**
  - References
  - Publish Geometry features
  - Copy Geometry features
  - Parts - Skeletons
  - Assemblies
- Assembly structure
- Reference Scope
- Communication !!
Planning

- Templates
- Layers
- Naming convention

**Assembly structure**

- Skeleton(s)
- Confusing:
  - Top-Down Design ≠ LAM
  - Top-Down Design can be used for large assemblies
- Re-use of files
- Substitute - Replace

- Reference Scope
- Communication !!
Planning

- Templates
- Layers
- Naming convention
- Assembly structure

**Reference Scope**
- Avoid references between components
- Communication !!
Planning

- Templates
- Layers
- Naming convention
- Assembly structure
- Reference Scope
- Communication !!
  - Large Assembly → many people involved
  - Goal; achieve what?
  - Status
Parts

- Appropriate amount of detail
  - All parts will be used in an assembly

- Modeling techniques
  - Solid
  - Surface
  - Clean model (no buried features)
  - WF5: Geometry Pattern
Maintenance

• It's a Job

• Try to avoid the use of Delete
  → use:
    • Edit
    • Edit Definition
    • Edit Reference (Replace Reference)
    • Replace
Licenses

- Foundation XE
  - Simplified Reps
- Foundation XE + Advanced Assembly Extension (AAX)
  - Simplified Reps
  - Data sharing
  - Interchange assemblies
Toolbox Pro/E

- Family tables
- Interchange groups
- Layout
- Envelope
- Zone
- Substitute
- ...

- Simplified representation
- Skeleton
- Shrinkwrap
- Publish Geometry
- Copy Geometry
- On-Demand
- ...

Solutions in 3 Dimensions
Simplified Reps; Choice

- Detail or Performance
Simplified Reps; Compare

- Hide
  - In session

- Layer
  - In session

- Suppress
  - Parent-Child

- Simplified Rep
Simplified Reps; Defaults

- **Master Rep**
  - Full Model Data

- **Geometry Rep**
  - No Feature Data
  - Solid- Mass Props
  - Measurements possible

- **Graphics Rep**
  - Wireframe only (default)
  - No Mass Props
  - Cannot be modified or referenced

- **Default**

- **Default Envelope Rep**

- **Symbolic Rep**
  - Points
Simplified Reps; Selection

- **Manual**
  - Component Chooser (WF5)
  - RMB> Representation
- **Rule Based**
Simplified Reps; Selection

- Manual
- **Rule Based**
  - “Automatic” search tool
    - **Class** (hyperlink)
    - Size
    - Exterior Components
    - Zone
- Evaluate Rules (WF5)
Simplified Reps; Selection

- **Manual**
- **Rule Based**
  - “Automatic” search tool
    - Class
    - **Size** (hyperlink)
    - Exterior Components
    - Zone
- Evaluate Rules (WF5)
Simplified Reps; Selection

- Manual
- **Rule Based**
  - “Automatic” search tool
    - Class
    - Size
    - Exterior Components *(hyperlink)*
    - Zone
- Evaluate Rules (WF5)
Simplified Reps; Selection

- Manual
- Rule Based
  - “Automatic” search tool
    - Class
    - Size
    - Exterior Components
    - Zone (hyperlink)
- Evaluate Rules (WF5)
Simplified Reps; Substitute

- **Envelope**
  - WF5 → Default Envelope
  - Separate part
  - Several ways to define geometry
  - Sub-set possible
  - No sub-assy required to replace components

- Family Table
- Interchange
Simplified Reps; Substitute

- Envelope
- **Family Table**
  - Family Table used to create “simple” version of part
- Interchange
Simplified Reps; Substitute

- Envelope
- Family Table

**Interchange**
- Interchange Assembly with “simple” version
- 2 separate files
- Part or assy
Simplified Reps; Sys Behavior

- **On-Demand**
  - System retrieves required information
  - Open Graphics Reps by default....
  - Avoid error:
Concept

Srep: Replace engine

Replace volume claim

Srep: Def. Envelope