Recipe for Success: Digital Viewables

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The Engineering Services Contract (ESC) and Information Management Communication Support contract (IMCS) at Kennedy Space Center (KSC) provide services to NASA in respect to flight and ground systems design and development. These groups provide the necessary tools, aid, and best practice methodologies required for efficient, optimized design and process development. The team is responsible for configuring and implementing systems, software, along with training, documentation, and administering standards. The team supports over 200 engineers and design specialists with the use of Windchill, Creo Parametric, NX, AutoCAD, and a variety of other design and analysis tools.
The focus of this presentation is as follows

• Beginner to Intermediate level administrator
• Model Based Design Publishing
• Lessons Learned in CAD Worker/Windchill management
Where to Begin

• PTC Reference Documents
  – PTC Creo View MCAD Adapters 3.0 Installation and Configuration Guide
  – Installing PTC Creo 3.0: PTC Creo View
  – Windchill Visualization Services Guide

• Precision LMS Classes
  – Business Administration of Windchill PDMLink
  – MCAD Data Management of Creo Parametric Designs with Windchill PDMLink

• Other Helpful Resources
  – Visualization Blog http://www.vizpundit.com/
Creo View Adapter Publishing Areas

• Geometry
  – Solids
  – Surfaces
    • Quilts
    • Cabling
    • Pipelines
  – Cosmetics
  – Datum features
  – Skeletons

• Annotations
  – Dimensions/GD&T
  – Notes

• Views
  – Orientation
  – Simplified Reps
  – Exploded States
  – Styles
  – Cross Sections
  – Layer States

• Data
  – Parameters
  – Mass Properties
  – Analytical Elements

• Drawings
  – HPGL/PDF

• Thumbnails
Geometry
Geometry

Display of shaded, shaded with edges, mesh, or hidden line removal rendering

Allows you to measure analytical elements, more accurate tessellated surface mesh

Datum Features & Cosmetic Geometry

Quilt geometry conversion

Publish models referenced by drawing

Break out components of Object types
Advanced Geometry

PTC Live Global
Planar Annotations

1. REMOVE SCALE AND BURRS AND BREAK SHARP CORNERS AND EDGES.
2. PRIME AND PAINT.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M-1994.

TOLERANCES ON:

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<thead>
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<th>FRACTIONS</th>
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<td>±2/32</td>
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<tr>
<td>±3/64</td>
<td>3 PL ± .010</td>
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UNS S30400 304 SS FULL HARD
SAE AMS5913
TREAT
NONE
TREAT
NONE
THERMAL
NONE
WEIGHT
4.635
• Creo View 2.0 and prior, Floating and Miscellaneous model annotation types could be shown by filtering, however cannot be created in Creo Parametric.

• Creo View 3.0 Floating and Miscellaneous Annotation can no longer be displayed

• New Creo View 3.0 – Preference: “Use Model Annotation Default Visibility”
Views

Orientation
Simplified Rep
Combined State

Layers

Combined State

Layers

Combined State
Publish View States

Simplified Reps

Include/Exclude Reps by name
<table>
<thead>
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<th>Value</th>
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<td>PROE Parameters</td>
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</table>
Data

Structure data

View States
### Data

#### Creo Parameters
- PRCE_MODEL
- PRCE_DRAWDNO
- Instance_Name
- shapetype
- Parameter
- Weld_Info
- Feature_Name
- Feature_Id
- Layer
- Model_RevNum
- CableParameters

#### Cable Parameters

#### Features

#### Drawing Parameters

Enable feature annotations

Mechanica Simulations
Mass Properties

- Not viewable with Creo View Lite
- May incur severe performance penalty for large assemblies
- A single component can take several seconds to process
Creo View Filters

- If data isn’t showing up, first check your filter settings (Default and Active Views)
• Found in wvs.properties and in the adapter recipe file

• wvs.properties:
  • publish.cadtimeout.component – 600 second default
  • publish.cadtimeout.assembly – 3600 second default
  • publish.cadtimeout.drawing – 600 second default
  • publish.cadtimeout.<ObjectType>.<AuthApp> - 3600 seconds
  • publish.cadtimeout.* properties determine the maximum amount of time that will be spent to complete conversion for a given CAD data set type. These values must be set higher than longest expected publishing time for each type.
  • See CS56714 or the Windchill Visualization Services Guide
Timeouts – Worker Helper

- Server timeouts not used when a worker helper is utilized
  - Only accessible in admin mode
- Helper timeouts allow more control
  - Short Timeout (60 sec default)
  - Long Timeout (3600 sec default)
- Helper log: "Worker helper timed out waiting for progress message from worker."
- WVS Job Monitor: "Helper: timed out waiting for progress message from worker."
Timeouts – Worker Helper

WVS Job Monitor:

May 14, 2014 2:43:54 PM: make temp dir D:\ptc\apps\Windchill\temp\pubtemp\publish2686927680562291532.tmp
May 14, 2014 2:43:54 PM: Start: Assembly - vms_area_layout.asm, 1.1
May 14, 2014 2:43:54 PM: Authoring Application: Creo
May 14, 2014 2:43:54 PM: Transferring Files to: D:\ptc\apps\Windchill\temp\pubtemp\publish2686927680562291532.tmp
May 14, 2014 2:43:55 PM: Number of Files (identified to be) Transferred: 10
May 14, 2014 2:43:55 PM: Creo Asm Conversion
May 14, 2014 2:43:55 PM: Added request to PROE queue for publish queue set CREOQ.
May 14, 2014 2:43:56 PM: No available connected worker
May 14, 2014 2:44:07 PM: Registering Server (long timeout)
May 14, 2014 2:44:11 PM: Downloading vms_area_layout.asm (long timeout)
May 14, 2014 2:44:13 PM: Loading vms_area_layout.asm (long timeout)
May 14, 2014 2:44:20 PM: Saving Model (long timeout)
May 14, 2014 2:44:38 PM: Processing vms_area_layout.asm (short timeout)
May 14, 2014 2:44:39 PM: ……
May 14, 2014 2:44:39 PM: ………
May 14, 2014 2:44:52 PM: Converting Author States (short timeout)
May 14, 2014 2:44:53 PM: Generating source output (short timeout)
May 14, 2014 2:45:02 PM: Generating Output (short timeout)
May 14, 2014 2:45:02 PM: Generating thumbnail (short timeout)
May 14, 2014 2:45:22 PM: D:\ptc\apps\Windchill\temp\transfer\w1i1j14\vms_area_layout_asm.pvs
May 14, 2014 2:45:22 PM: Asm Processing Returned: D:\ptc\apps\Windchill\temp\transfer\w1i1j14\vms_area_layout_asm.pvs
May 14, 2014 2:45:24 PM: Done deleting temporary workspace publish2686927680562291532tmp.
May 14, 2014 2:45:24 PM: Start Store Component Viewable Files
May 14, 2014 2:45:31 PM: Adding Bounding Box Information
May 14, 2014 2:45:31 PM: Uploading Files
May 14, 2014 2:45:32 PM: End Store Component Viewable Files: 23 Files
May 14, 2014 2:45:32 PM: remove temp dir: D:\ptc\apps\Windchill\temp\transfer\w1i1j14
May 14, 2014 2:45:32 PM: End: Assembly - vms_area_layout.asm, 1.1
May 14, 2014 2:45:32 PM: Representation Name: default
May 14, 2014 2:45:32 PM: End Job: Part - 0000044386, vms_area_layout.asm, 1.1 (Design)
May 14, 2014 2:45:32 PM: Publish Complete event dispatched
May 14, 2014 2:45:32 PM: remove temp dir: D:\ptc\apps\Windchill\temp\pubtemp\publish2686927680562291532.tmp
Timeouts

Helper log:

[2014-05-15 10:57:23] In message rewriting, original message is
Error Handling

- “Fail Current Job On Following Errors” will cause the publish job entirely and sets the WVS Job Status to “JOB FAILED”
- Worker reports “The adapter has been configured to exit the current job when this error occurs”
- Error codes can be found in the worker_<n>.log files

```
[2014-05-11 02:04:11] Registering Server: 
```
• Worker Restart
  • Proestartup.bat ships out of the box
  • Executed by the helper on each start and restart of the worker
  • Deletes the Creo adapter workspace by default
  • Disable proestartup.bat by renaming
  • Can be edited to perform additional cleanup or to capture information for troubleshooting (e.g. terminate hanging processes)
  • **Do not** add commands to kill either the `workerhelper.exe` or `workermonitor.exe` processes
  • See [CS155210](#) for details
Conversion Modes

- Full
- Component
- Minimum Memory
• **Full**
  - Generates a unique OL file for every instance of every part in an assembly
  - Most expensive in terms of the number of files generated and conversion time
  - May result in longer downloads when viewing in Creo View
  - Converted assembly exactly corresponds to appearance of original CAD data

• **Component**
  - One OL file is reused for all component instances in an assembly
  - Uses less disk space
  - Viewables load faster in Creo View
  - May be inefficient in certain cases (CS110013)

• **Minimum Memory**
  - Intended for very large assembly conversion where available memory is insufficient
  - Loads 3d model one file at a time, processes it, the unloads it
  - All instances use a single OL file as with the Component mode
Administrator Mode

• Recipe Editor user interface Administrator mode Preparation
  – LOD Setup
  – LOD Details
  – Filter, Split, and Face under the Parameters tab

• To start the Recipe Editor in Administrator mode, use the following command line option:

<creo_view_adapters install point>\bin\rcpedit.exe -admin proe2pv.rcp
Option Performance

- Testing performed to determine which options provide the worst delays
- Started with a 300 piece assembly with a complicated shrinkwrap model

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<tr>
<th>Option</th>
<th>Duration</th>
<th>Duration - Baseline</th>
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