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CUST 307 - Unwrapping PTC Windchill Packages

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Remote Presence



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Defense & Security



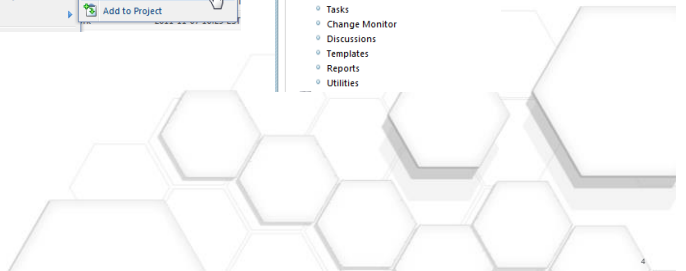
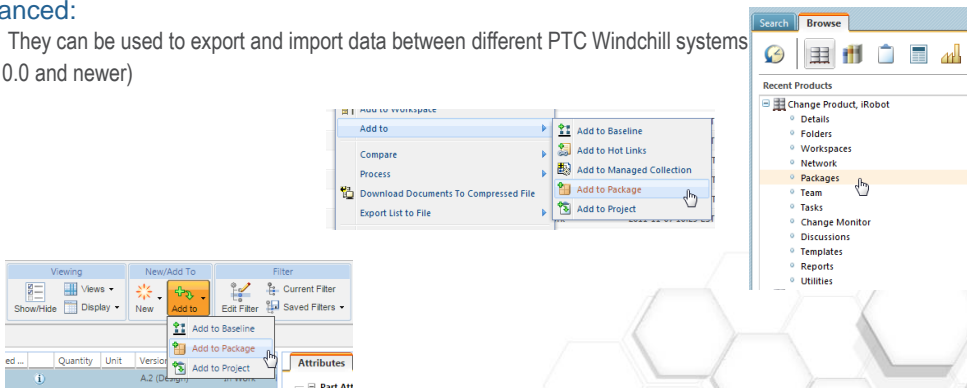
Additional information



- Headquarters: Bedford, Mass.
- Locations: California, United Kingdom, China, Hong Kong
- 530+ Employees Total
- 560M 2014 Revenue
- PTC Windchill users: 500 licensed users, 30% are engineers, and supported by a staff of 3.

What are Packages?

- **Basic:**
 - Packages are objects introduced in PTC Windchill 9.1 to help deliver information to people outside of PTC Windchill
 - Similar to baselines or managed collections – but can gather up related data and export them as a .zip file
- **Advanced:**
 - They can be used to export and import data between different PTC Windchill systems (10.0 and newer)



After Implementing Packages

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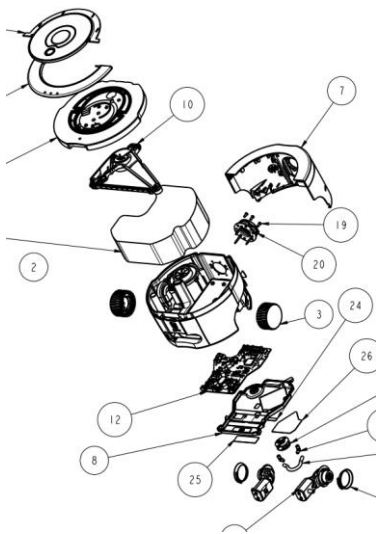
The benefits of rolling out packages at iRobot

- All users can generate packages
- Packages are not limited to single BOMs
- Can easily review the data that was sent out
- All the processing happens server-side
- Within 30 minutes we could have a .zip that's ready for quoting

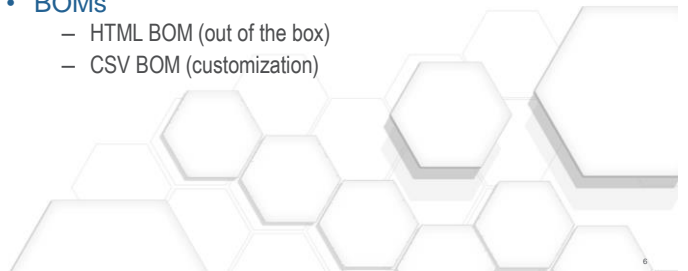


What's in the package

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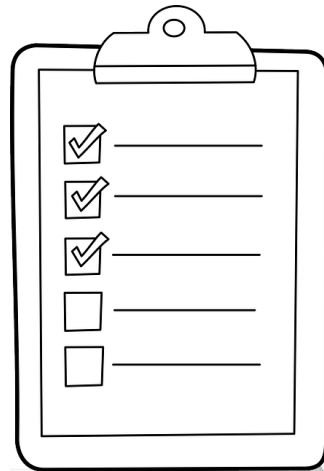


- **Content**
 - Native drawings and models
 - Electrical FAB archives
 - associated WTDocuments
- **Published Data**
 - PTC CreoView representations
 - Extracted PDF drawings (customization)
 - Published STEP models (will be live soon)
- **BOMs**
 - HTML BOM (out of the box)
 - CSV BOM (customization)



3 Steps

- Getting the engineering data
 - Creating baseline
 - Export baseline
- Building a BOM
 - Copy tables
 - Paste into excel
 - Merge and format
- Interrogating the data
 - Load assemblies
 - Inventory PDFs
 - Delete extra



- Better than the alternatives
 - Workspace export
 - Manual downloading document content
 - Batch printing the drawings
 - File-backup from PTC Creo
- BOM will all the key data
- Satisfied our manufacturers



- Needed add-ons, macros, and scripts
- Export regularly failed
 - Java applet needed an uninterrupted connection
 - Processing could take hours
 - Required extensive permissions
 - Unclear what was exporting
- Expert engineers were needed
 - Objects/associations were fixed as issues were found
 - The next export would find new issues
- Time consuming (2 weeks per quote)



Project Mindset

- Focus on saving time
- Everything else was nice to have

Technical Mindset

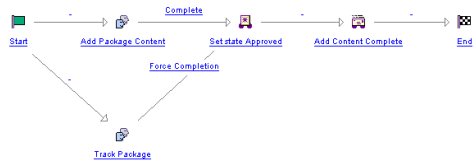
- Determine how much of the old process could be replaced with PTC Windchill packages
- Use configurations as much as possible
- Use customizations if justified



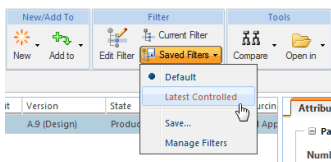
- Allow for someone without detailed knowledge of the product to create a PTC Windchill package
- Give engineers the ability to interrogate structures for correctness in PTC Windchill prior to exporting
- Automatically extract drawings PDFs from the PTC CreoView viewables
- Automatically generate and include BOMs in the package



Steps taken - Configuration



AbstractWorkPackage	State	Role	Permissions
AbstractWorkPackage	Approved	Read Only	Pri...+Read +Download
AbstractWorkPackage	Approved	Creator	Pri...+Read +Modify +Revise +Download +Modify Content
AbstractWorkPackage	Approved	Package Creator	Pri...+Revise +Download
AbstractWorkPackage	All	Package Creator	Pri...+Read +Create
AbstractWorkPackage	In Work	Creator	Pri...+Read +Modify +Create +Download +Create By Move +Modif
AbstractWorkPackage	In Work	Package Creator	Pri...+Modify +Download +Modify Content



- **Workflow**
 - Streamlined the package workflow
 - Optional approval
- **Permissions**
 - Allow all iRobot users to create packages
 - Consolidated the permissions and roles
 - Lock and Revise actions limited to specific states
- **Configurations**
 - Organization preferences
 - Default collector options
 - Created saved filters on the structure page



- PDF auto-extraction from PTC CreoView viewables
 - Could not rely on partners having PTC CreoView installed
 - End users preferred PDFs
 - Removed the need for additional scripts
- BOM logic and generation
 - Customization will find all the top level objects
 - Then generate CSV BOMs
- Data Integrity Checks
 - Created additional structure table columns
 - PTC Windchill will run specific logic checks
 - Engineers can find and fix issues early

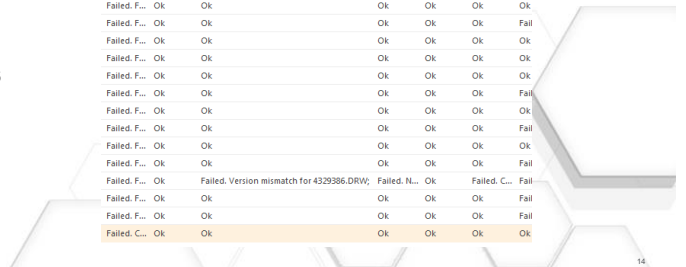
```

95 <div class="carousel">
96 <h1>One more for Good measure</h1>
97 </div>
98 <a class="btn btn-lg btn-primary href="#">Previous</a>
99 </div>
100 </div>
101 <a class="left carousel-control href="#"><span class="glyphicon glyphicon-chevron-left aria-hidden="true"></span></a>
102 <span class="sr-only">Previous</span>
103 </a>
104 <a class="right carousel-control href="#"><span class="glyphicon glyphicon-chevron-right aria-hidden="true"></span></a>
105 <span class="sr-only">Next</span>
106 </a>
107 </div><!-- /.carousel -->
108 </div>
109 <!-- Featured Content Section -->
110 <div class="container">
111 <div class="row">
112 <div class="col-md-4">
113 <div class="col-md-4">
114 <div class="col-md-4">
115 <div class="col-md-4">
116
    
```



- Associations
 - WTParts have associated EPMDocs or WTDocs
 - MCAD parts or assemblies have related drawings
- Metadata
 - Revision between the EPMDoc and WTPart match
 - Number between the EPMDoc and WTPart match
 - EPMDoc filename contains the WTPart
 - EPMDoc and WTPart are in the same context
- Related Objects
 - Children are at least as mature as the parent
 - User has access to the WTPart and its related objects
 - Drawings have published viewables
 - AML/AVL is in an approved state

Check A...	Check C...	Check Rel Revs	Check R...	Check R...	Check R...	Ch...
Failed. F...	Ok	Ok	Ok	Ok	Ok	Fail
Failed. C...	Ok	Ok	Ok	Ok	Ok	Ok
Failed. C...	Ok	Failed. Version mismatch for 4387210;	Failed. N...	Ok	Ok	Fail
Failed. C...	Ok	Ok	Ok	Ok	Ok	Ok
Failed. C...	Ok	Ok	Ok	Ok	Ok	Ok
Failed. C...	Ok	Ok	Ok	Ok	Ok	Ok
Failed. F...	Ok	Ok	Ok	Ok	Ok	Fail
Failed. F...	Ok	Ok	Ok	Ok	Ok	Fail
Failed. F...	Ok	Ok	Ok	Ok	Ok	Fail
Failed. F...	Ok	Ok	Ok	Ok	Ok	Fail
Failed. F...	Ok	Ok	Ok	Ok	Ok	Ok
Failed. F...	Ok	Ok	Ok	Ok	Ok	Ok
Failed. F...	Ok	Ok	Ok	Ok	Ok	Ok
Failed. F...	Ok	Ok	Ok	Ok	Ok	Fail
Failed. F...	Ok	Ok	Ok	Ok	Ok	Ok
Failed. F...	Ok	Ok	Ok	Ok	Ok	Fail
Failed. F...	Ok	Ok	Ok	Ok	Ok	Ok
Failed. F...	Ok	Ok	Ok	Ok	Ok	Ok
Failed. F...	Ok	Ok	Ok	Ok	Ok	Fail
Failed. F...	Ok	Ok	Ok	Ok	Ok	Ok
Failed. F...	Ok	Failed. Version mismatch for 4329386.DRW;	Failed. N...	Ok	Failed. C...	Fail
Failed. F...	Ok	Ok	Ok	Ok	Ok	Ok
Failed. F...	Ok	Ok	Ok	Ok	Ok	Fail
Failed. C...	Ok	Ok	Ok	Ok	Ok	Ok



Condensed Procedure

- Find the structure you want to export
 - Select all
 - Show related cad/docs
 - Switch to saved filter: latest controlled
 - Add to package, create new/use existing, leave all setting as default
- Manage the package
 - Navigate to the new package
 - Start the approval route, select approvers if desired
 - Once approved, select lock
- Create the delivery
 - Create a new delivery
 - Zip package for delivery
 - Wait for email notification

Desired Procedure

- Find the structure you want to export
 - Select the top level wpart
 - Add to package, create new/use existing, chose saved filter, then click ok
- Manage the package
 - (workflow gets launched automatically), user gets task to add optional approvers
 - Once Approved, workflow will automatically:
 - Lock
 - Create new delivery
 - Zip package for delivery
 - User waits for email notification



- Rollout Delta packages
- Create packages with Engineering Changes
- Integrate baselines to use with the BOM Compare
- Lock packages from the workflow
- Automatically create a default delivery



- **Better configuration filter in the package collector**
 - Options can be preset/saved
 - Allow users to chose the preset/saved filters during new package creation
- **Able to have different profile for the collector**
 - For 'ECN Packages' collect resulting objects, related parts, related epmdocument, etc
 - For 'Quoting Packages' collect all parts, dependant epmdocument, related wtdocuments, published viewables, etc
- **Ability to programmatically run one of the existing BOM Reports, use a preset table view, and then save the resulting file in the package**



- **Move the creation and storage of the zip file out of the delivery and put it into the package**
 - Having the zip file reprocessed and saved for each delivery seems like a waste of time and space
- **Allow for specific objects to be excluded by attribute**
 - For example, I have some files that are part of a structure, but have an iba called 'package status' and its set to false. When I collect all the objects related to the structure, my files are automatically excluded
- **Enhance the interactive BOM**
 - Allow additional columns to be added
 - Add additional views – change baseline view, multilevel BOM with AML/AVL, etc



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