



DIGITAL TRANSFORMS PHYSICAL

CAD DRIVEN BOMS BEST PRACTICES

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Solution Consultant, Fellow

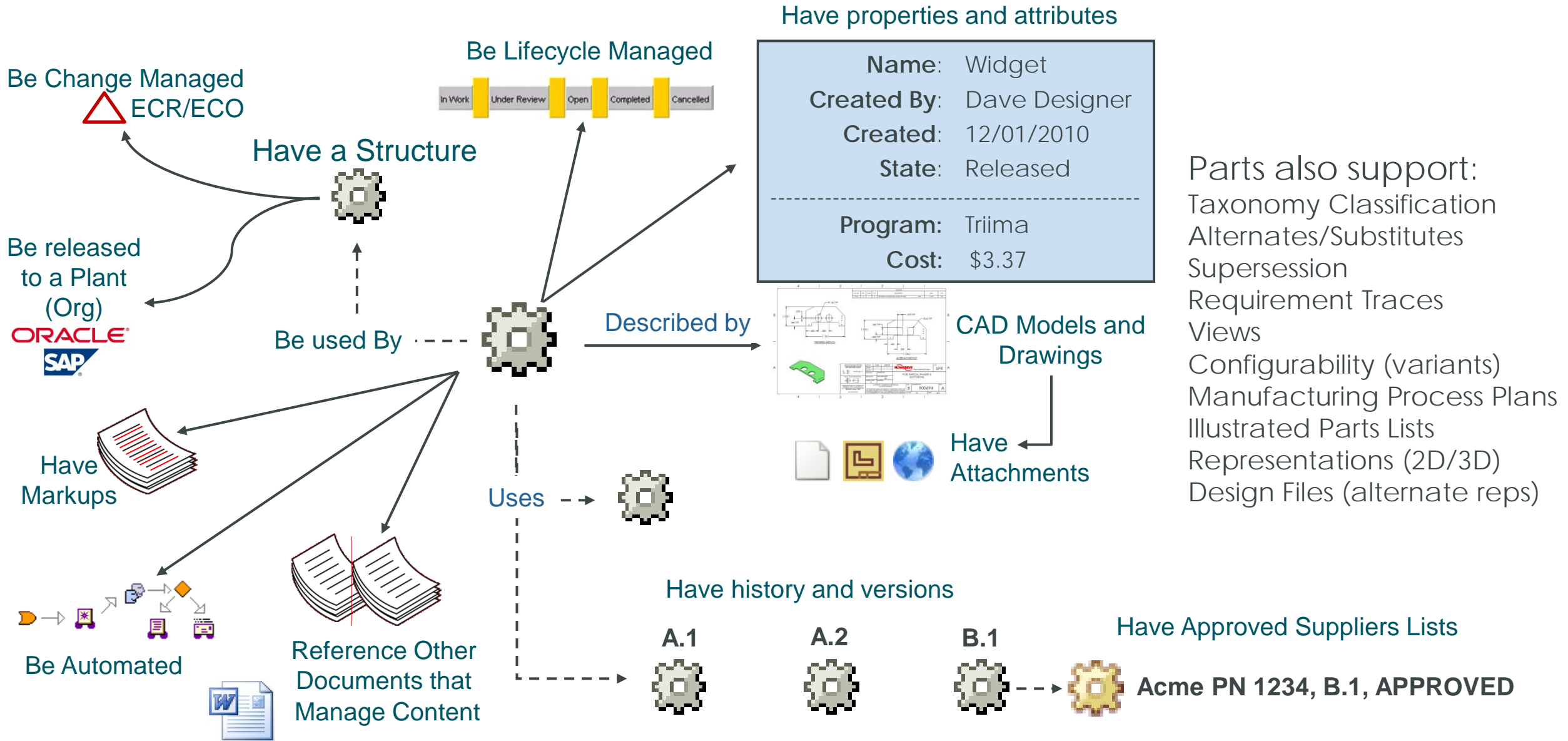


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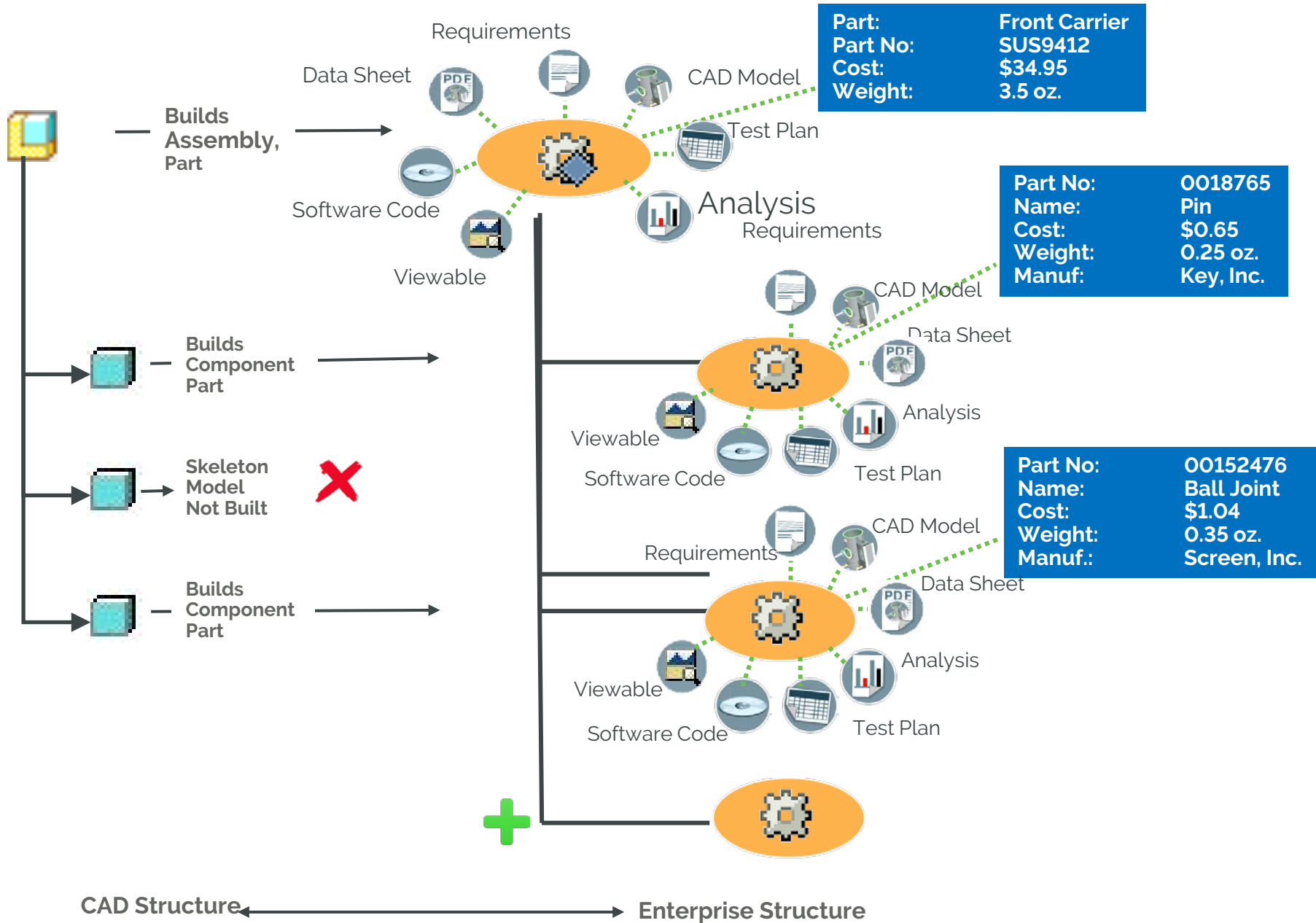
AGENDA

- Why drive BOM's from CAD?
- Review of Functionality
- Demonstration
 - Creating CAD driven BOMs
 - Updating the BOM
 - From CAD
 - From Windchil
- Best Practices

WINDCHILL PLM, A "PART"-CENTRIC APPROACH



CAD-DRIVEN PRODUCT STRUCTURE



Why CAD driven BOM's

- Drives BOM structure from CAD
 - No longer independent tasks
 - Leverage parameters maintained in CAD
 - Simplify the change process
- Beginning of the "Digital Thread"
 - CAD and Viewables become reusable by down stream processes

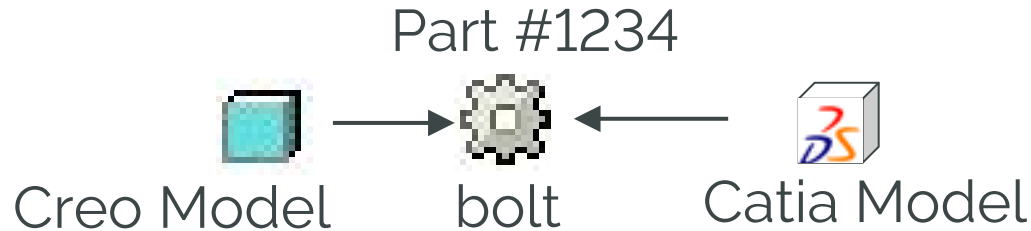
TIPS FOR WORKING WITH CAD-DRIVEN STRUCTURES

Understanding Association Types



Association Type	Builds Structure	Attribute	Reps	Contributes to Structure	Usage
Owner	✓	✓	✓	✓	Associate primary CAD document responsible for driving structure creation
Contributing Image	✗	✓	✓	✓	Multi-CAD secondary association, flexible components
Image	✗	✗	✓	✓	Multi-CAD secondary association, flexible components
Contributing Content	✗	✓	✗	✗	Multi-CAD where secondary attributes critical to BOM
Content	✗	✗	✗	✗	Inclusion of additional descriptive CAD content, ex. Model's Drawing to Part

Contributing Image Example



CREATING A CAD DRIVEN STRUCTURE

■ Auto Associate

- Determines what PART a CAD model should be related to?

- Same as CAD file a name?? CAD model file name 12345.prt → Part 12345

- CAD Attribute drives Part Number?? CAD attribute Part_Number = 45678 → Part 45678

- If no match, should Auto Associate CREATE a NEW Part?

- Optionally performs a "Build". (generates BOM structure)
(Preference determines if Auto Associate also runs a Build)

- Run on Checkin of CAD

- Run manually from CAD object

- Run manually from Related CAD table on Part

- Subsequent checkins of CAD will update BOM
for new parts and changes

Check In

1 Collect Objects 2 Set Options

Create Baseline
Name dale_2022_07_19_17_20_32
Set Location /Sky Rider

Auto Associate Parts to CAD Documents

New Promotion Request After Check In

Undo Checkout Unmodified Objects

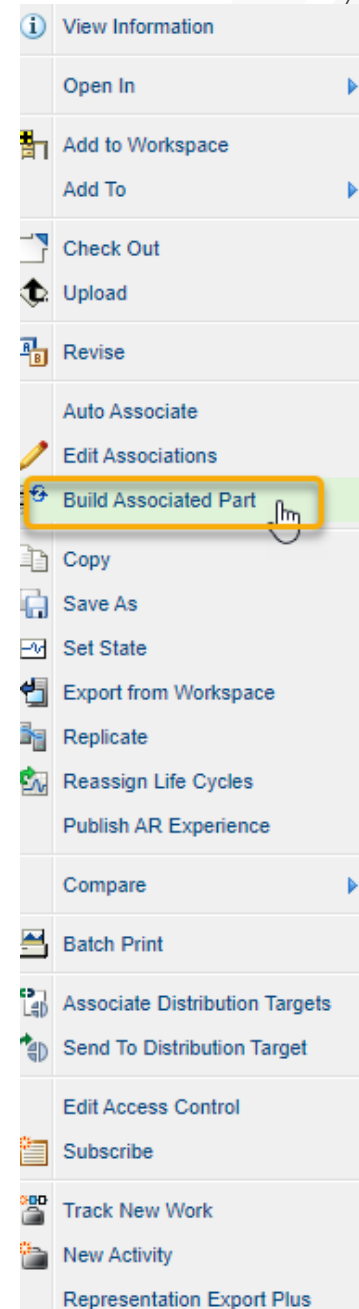
Remove from Workspace

Auto resolve incomplete objects
 Update with object on server, then ignore
 Always ignore

Attach Differences Report

THE BUILD PROCESS

- A “Build” constructs the ***structure*** of a Part. (Also known as a BOM)
 - Can be ran during Auto Associate
 - Can be Ran Manually
 - Can be ran from within Compare CAD to Part



WHAT IF MY CAD STRUCTURE IS DIFFERENT FROM THE BOM STRUCTURE I WANT?

■ Ways to Override the BOM creation process

□ From CAD

- Some CAD types automatically excluded: (Skeletons, Templates, etc.)
- Exclude CAD model from BOM using an attribute to identify it as not in BOM
- Use “Bulk Items” to add parts to BOM that don't have a CAD model

□ From Windchill

- Add / Remove Parts to BOM directly in Windchill
 - Optionally choose to update CAD or not
- Override Quantities

□ Restructure BOM (EBOM to MBOM)

- Requires MPMLink (Covered in another session)

The screenshot shows the Windchill software interface. On the left is a navigation pane with options like 'View Information', 'Check In', 'Check Out', 'Undo Checkout', 'Insert', 'Remove', 'Edit', 'Replace', 'Manage Replacements', 'Copy', 'Paste', 'Expand by', 'Show/Hide Related Information', 'Add Related Information', 'Add to', 'Update Distribution Targets', 'CAD', 'Open in', and 'Select in Visualization'. The main area displays a BOM structure with parts like 'LAKE, PTC, 1.2 (Design)', 'x90, PTC, 1.1 (Design)', '130x3, PTC, 1.1 (Design)', 'GHT THD CONN ORFS -06', 'CONN ORFS -06x-12, PT', '#-012, PTC, 1.1 (Design)', 'DUR-90 #-912, PTC, 1.1 (Design)', and 'PTC, 1.1 (Design)'. A 'Deleted CAD Synchronized Occurrences' dialog box is open, showing a table with the following data:

Part Number	Reference Desig...	CAD Number	Remove from CAD Ass...	Deleted On
T208634	327	T208634	Excluded	2022-07-20 01:0...

At the bottom of the CAD section in the navigation pane, the 'Manage Deleted Occurrences' option is highlighted with a yellow box.

COMPARE PART TO CAD

- Shows build status of CAD and Parts
- Allows build status to be changes.
- A build process can be initiated directly from the Compare screen.

Identity	Quantity	Unit	Build Status	Name	Version	
AT311070, 1115A DRIVELINE BRG/PARK BRAKE, PTC, 1.5 (I				1115A DRIVELINE BRG/P...	1.3	
0004046, DALES YOKE, PTC, 1.1 (Design)	1	each	Completed	0004046	DALES YOKE	1.3
19M8485, CAP SCREW, HEX HD M16x2x90, PTC, 1.1 (D	1	each	Completed	19M8485	CAP SCREW, HEX HD M1...	1.1
19M8485, CAP SCREW, HEX HD M16x2x90, PTC, 1.1 (D	1	each	Completed	19M8485	CAP SCREW, HEX HD M1...	1.1
19M8485, CAP SCREW, HEX HD M16x2x90, PTC, 1.1 (D	1	each	Completed	19M8485	CAP SCREW, HEX HD M1...	1.1
19M8485, CAP SCREW, HEX HD M16x2x90, PTC, 1.1 (D	2	each	Excluded			
24M7338, WASHER, FLAT ID-M17xOD-M30x3, PTC, 1.1 (	1	each	Completed	24M7338	WASHER, FLAT ID-M17x...	1.1
24M7338, WASHER, FLAT ID-M17xOD-M30x3, PTC, 1.1 (	1	each	Completed	24M7338	WASHER, FLAT ID-M17x...	1.1
24M7338, WASHER, FLAT ID-M17xOD-M30x3, PTC, 1.1 (	1	each	Completed	24M7338	WASHER, FLAT ID-M17x...	1.1
24M7338, WASHER, FLAT ID-M17xOD-M30x3, PTC, 1.1 (	1	each	Completed	24M7338	WASHER, FLAT ID-M17x...	1.1
61H1338, ADAPTER WW O-RING, STRAIGHT THD CONN	1	each	Completed	61H1338	ADAPTER WW O-RING, ST...	1.1
AT314986, PARKING BRAKE/BRG ASM, PTC, 1.1 (Desigi	1	each	Completed	AT314986	PARKING BRAKE/BRG ASM	1.1
				T208634	YOKE END FITTING 8.5C	1.1
				T207097	PLATE, BLOCK, SPACER	1.1
				T207097	PLATE, BLOCK, SPACER	1.1
				T844J001	844J LINKAGE SKELETON	1.1



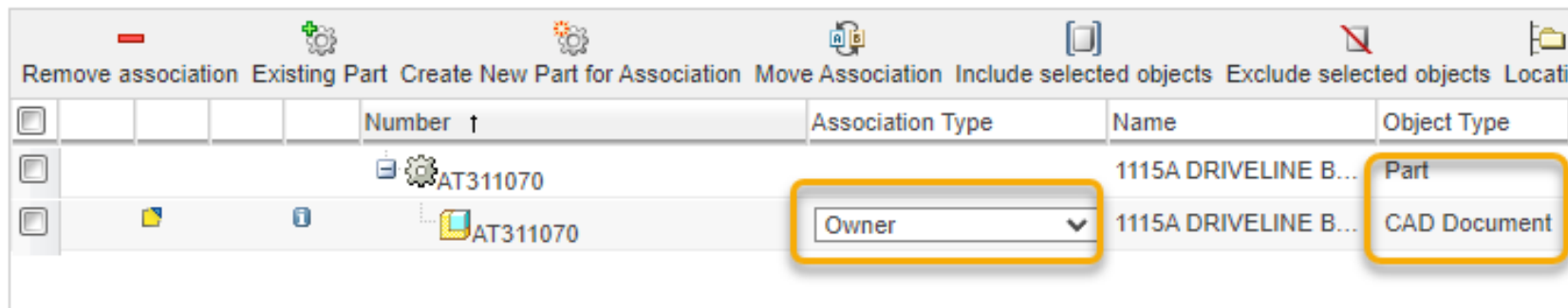
DEMONSTRATION

BEST PRACTICES IN CAD DRIVEN BOM'S

- Maintain as much of the BOM as possible from CAD.
- When Revising, revise the CAD model and Part together. This maintains the link to the correct version.
- If the CAD model is Revised separately, know how to update the relationship to the correct version
- Use “overrides” in Windchill only when you want to intentionally depict the BOM differently than in CAD
- Set up common Lifecycle Transitions for CAD and Parts
- Your Engineering Change Notice Tasks should reflect the roles and responsibilities of updating the CAD and BOM.

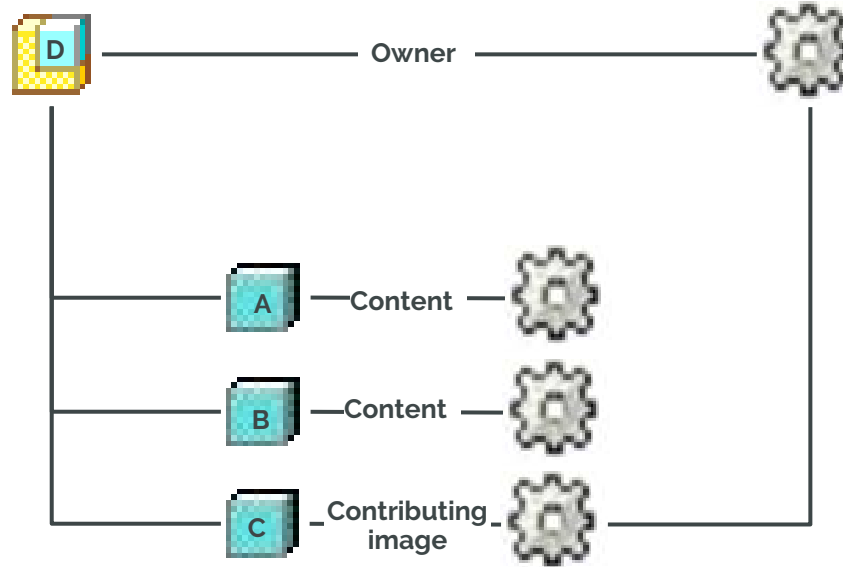
THE EDIT ASSOCIATIONS FUNCTION

- After Parts have been associated to CAD models, you can manually change or remove associations using the Edit Relationships command.
 - Change an item from an Owner link to another type of link
 - Remove Links
 - Add Links manually.
- A build may be necessary after changing relationship types



	Number ↑	Association Type	Name	Object Type
<input type="checkbox"/>	AT311070		1115A DRIVELINE B...	Part
<input type="checkbox"/>	AT311070	Owner	1115A DRIVELINE B...	CAD Document

TIPS FOR WORKING WITH CAD-DRIVEN STRUCTURES

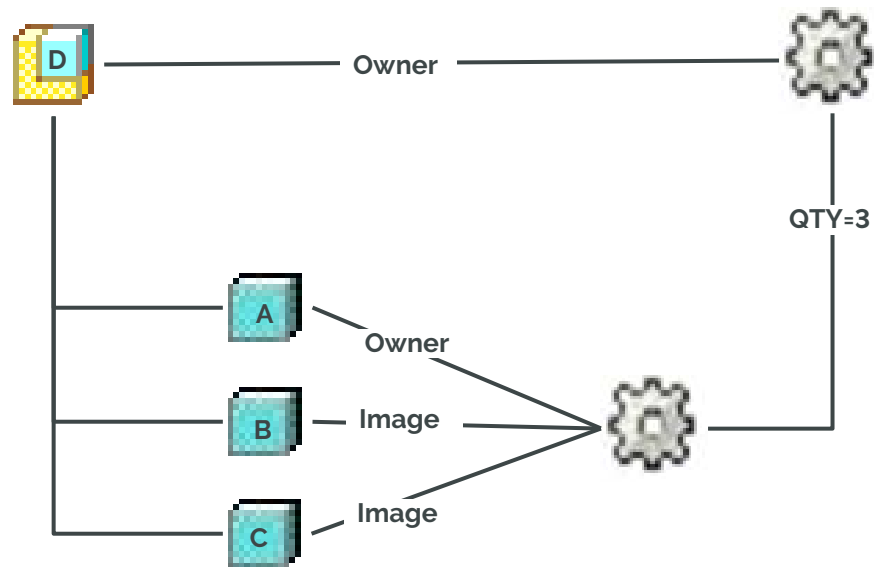


Association Type	Builds Structure	Attribute	Reps	Contributes to Structure
Owner	✓	✓	✓	✓
Contributing Image	✗	✓	✓	✓
Image	✗	✗	✓	✓
Contributing Content	✗	✓	✗	✗
Content	✗	✗	✗	✗



TIPS FOR WORKING WITH CAD-DRIVEN STRUCTURES

Example: Flexible components (Cables)



Association Type	Builds Structure	Attribute	Reps	Contributes to Structure
Owner	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Contributing Image	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Image	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Contributing Content	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Content	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>





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THANK YOU

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