



WORLD EVENT
2010

Configuration Management 101: Best Practices for using Baselines, Effectivity and Configurations

Jeff Zemsky
PTC

2010

Configuration Management 101

Configuration Basics –

- Why we need these tools

Baselines

Effectivity

Configurations

Appendix

- Preferences



Which Verticals depend on Configuration Management?

Aerospace/ Defense	Automotive	High Tech/ Electronics	Industrial Equipment	Consumer Products	Life Sciences
					
					
					
					
					
					
					
					
					
					
					
					
					

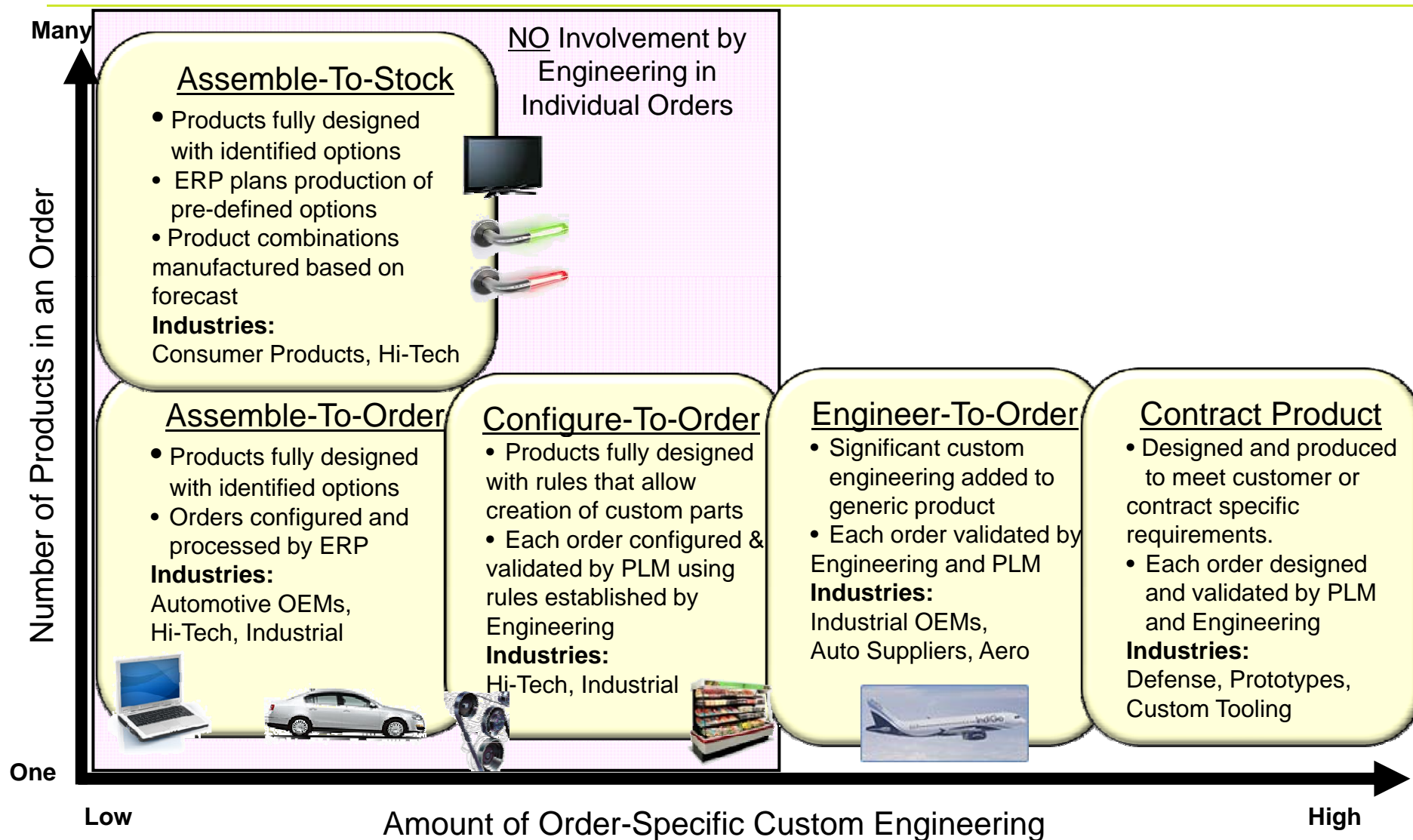
All

But....

There are differing levels of configuration control needed based upon:

1. Product Complexity
2. Customer requirements / demands
3. Regulatory demands
4. Service models
5. And so on....

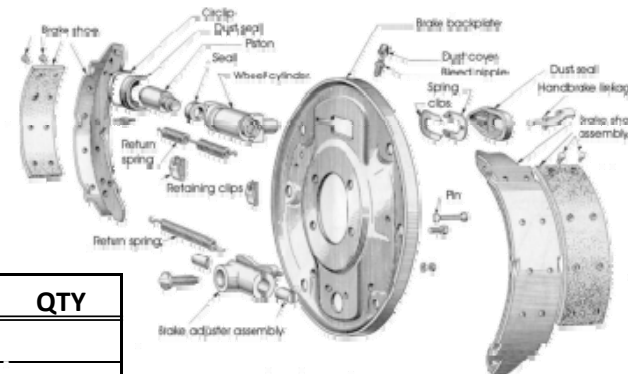
Business Strategies that use these Configuration techniques



Configuration Basics

Why we need these tools?

- Designs change
- Latest alone is insufficient
- We need to understand these impacts over time
- We need to capture the configurations for downstream needs
 - Supply Chain
 - Manufacturing
 - Safety and Certification
 - Field Service
 - Customers



Part Number	Name	QTY
44-33252-A	Brake Assembly	
23-2311235	Bracket	2
32-97302-2	Bolt-1/4-UNF	6
73-428083	Spindle	1
77-298379	Housing-1	1
23-83276	Washer-960	6

Part Number	Name	QTY
66-23908	Shoe support	44-33252-B Brake Assembly
23-138930	Spring	
88-237398	Pad Assy-HT	
48-2398908	Pad-HT-L	
78-323980	Mtg Supp	
23-2311235	Bracket	2
32-97302-38	Bolt-3/8-UNF	4
73-4280822	Spindle-HF	1
76-5694824	Housing-2	1
23-83276	Washer-860	4
66-23908	Shoe support	2
23-138930	Spring	2
77-238392	Pad Assy	2
38-2398908	Pad-LR-M	1
68-323340	Mtg Sup-LT	1

Tools to help understand our Configurations

Baselines

“A managed baseline is essentially a snapshot of an evolving collection of product data objects.”

Effectivity

“Effectivity is the planned date, lot, or serial number at which old part versions are replaced with new part versions in production.”

Configurations & Instances

“A configuration identifies the versions of parts used to build the part instance.”

“An instance identifies, by serial number, a unique, manufactured instance of a part, built according to a specific configuration.”

Configuration Management 101

Configuration Basics –

- Why we need these tools

Baselines

Effectivity

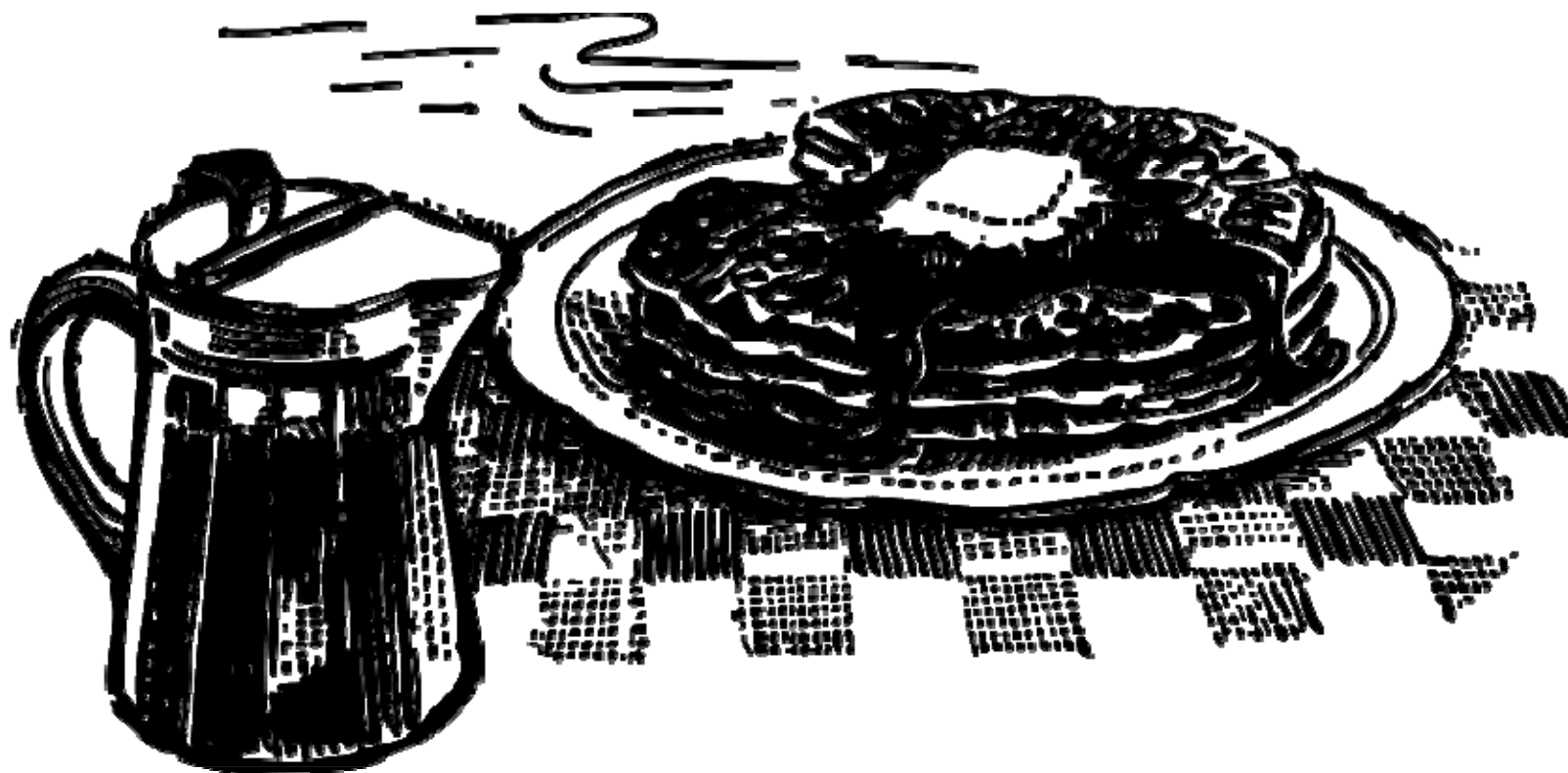
Configurations

Appendix

- Preferences



Baselines can help with Pancakes





Pancake Recipes

The weekends are time to make pancakes....but.....

So – which pancake recipe (or BOM) to use?

Decisions, decisions?

- Baking soda
- Baking powder
- Eggs mixed in
- Eggs separated and the whites whipped and folded in
- Add butter or not
- Milk
- Buttermilk
- Sour cream
- Cast iron pan
- Teflon griddle



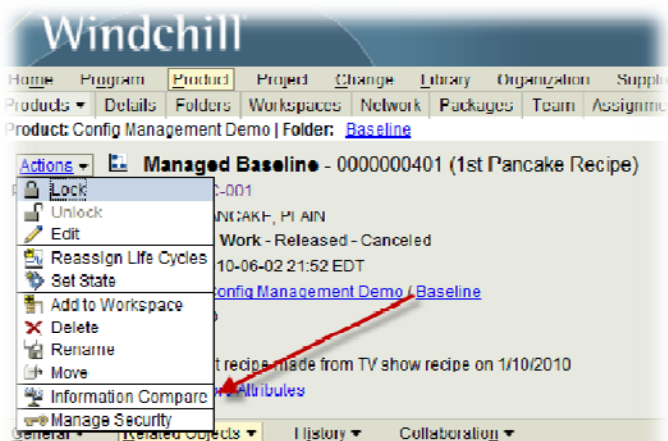













But if we had Baselines for our Pancakes

Problem is – we update the recipes all the time

If we had baselines to reference we could see

- What changes we made
- Compare the differences
- Use the baselines to make sure we had the right BOM



Comparison Report			
Choose new object			
Attributes:			
 0000000401 (1st Pancake Recipe) ⓘ		 0000000402 (2nd plain pancake) ⓘ	
Name	1st Pancake Recipe	Name	2nd plain pancake
Description	1st recipe made from TV show recipe on 1/10/2010	Description	switch to buttermilk and fold in egg whites to improve richness and make them lighter
Baseline Members:			
 0000000401 (1st Pancake Recipe) ⓘ		 0000000402 (2nd plain pancake) ⓘ	
 0000000406 (Demo Organization) - Eggs, whole, A.1 (Design) ⓘ		--	
 00000004052 (Demo Organization) - Milk, 1%, A.1 (Design) ⓘ		--	
 PC-001 (Demo Organization) - PANCAKE, PLAIN, A.2 (Design) ⓘ		 PC-001 (Demo Organization) - PANCAKE, PLAIN, B.2 (Design) ⓘ	
Checkin Comments	First recipe	Checkin Comments	recipe revision
Version	A.2	Version	B.2
--		 00000004047 (Demo Organization) - Eggs, yolk, A.1 (Design) ⓘ	
--		 00000004055 (Demo Organization) - Buttermilk, A.1 (Design) ⓘ	
--		 00000004048 (Demo Organization) - Egg whites, whipped, A.1 (Design) ⓘ	




Pancakes – great but what does this mean to me?

Capture snapshots of important Configurations

- Design review configurations
- Production Releases
- Significant configurations to share with partners, suppliers and customers































Enable the organization to see the configuration and its related data

Actions  **Managed Baseline** - HSPDR_BOM-20090408163010.6 (hspdr_bom-20090408163010.6) State: In Work ?

Primary Object Number: [015000](#)
 Primary Object: HSPDR
 State: In Work - Released - Canceled
 Last Modified: 2010-06-03 10:51 EDT
 Location: / [HPSDR](#)
 Protected: Yes
 Locked By:
 Description: Phase Gate 1.0 Pre-Production Release Design Configuration
[More Attributes](#)

General ▾ **Related Objects** ▾ History ▾ Collaboration ▾

Baseline Objects (10 of 10 total objects) View: All ?

	Name	Actions	Number	Version	State	Last Modified	Context
	Lab Data - Power Supply Test 0512	  Actions ▾	0000001306	A.1	In Work	2010-06-03 10:50 EDT	HPSDR
	ATLAS_Docu_USLetterLowRes	  Actions ▾	0000001308	A.1	In Work	2010-06-03 10:50 EDT	HPSDR
	RMZRoHSDeclaration	  Actions ▾	0000001309	A.1	In Work	2010-06-03 10:50 EDT	HPSDR
	Mercury_Operation_with_PowerSDR_v1-0	  Actions ▾	0000001311	A.1	In Work	2010-06-03 10:50 EDT	HPSDR
	Simple change type	  Actions ▾	00101	A.1	Open	2009-05-22 09:49 EDT	HPSDR
	ATLAS BACKPLANE	  Actions ▾	010000	C.2 (Design)	Released	2009-04-08 12:30 EDT	HPSDR
	HSPDR	  Actions ▾	015000	A.2 (Design)	Released	2009-04-08 12:32 EDT	HPSDR
	MERCURY RECEIVER	  Actions ▾	014000	B.2 (Design)	Released	2009-04-08 12:31 EDT	HPSDR
	JANUS A/D - D/A	  Actions ▾	010200	B.2 (Design)	Released	2009-05-08 16:46 EDT	HPSDR
	PENELOPE TRANSMITTER	  Actions ▾	013000	A.2 (Design)	Released	2009-04-08 12:32 EDT	HPSDR

(0 objects selected)



Baselines basics

Baselines may include:

- Parts
- Documents
- Dynamic documents
- CAD documents
- Requirements
- Change Objects

Baseline Types

- Windchill Created – for example: Promotion Requests
- User created: Managed Baselines

Managed Baselines can be:

- Protected:** Objects in that baseline cannot be deleted without deleting baseline
- Locked:** Locking makes the baseline private to the person who locked it

The screenshot displays the Windchill 'Managed Baseline' interface for the object 'HSPDR_BOM-20090408163010.4 (hsp)'. The primary object is 'MERCURY RECEIVER', which is in the 'In Work' state. The interface includes a navigation pane on the right showing 'Object Type (47 total objects)' with a list of object types like Change Notice, Change Request, Document, EPM Document, Part, Problem Report, Requirement, Section, Specification, and Variance. The main area shows 'Baseline Objects (72 total objects)' in a table view. The table has columns for Name, Actions, Number, Version, State, Last Modified, and Context. The first row is 'MERCURY RECEIVER' with number '014000' and version 'B.2 (Design)'. Subsequent rows list various capacitors with their respective numbers and versions. The bottom of the interface shows a status bar with '0 of 72 total objects selected', 'Page 1 of 5', and navigation controls.

Name	Actions	Number	Version	State	Last Modified	Context
MERCURY RECEIVER	Actions	014000	B.2 (Design)	Released	2009-04-08 09:31 PDT	HSPDR
CAPACITOR, 100nF, 1 ...	Actions	070066	A.1 (Design)	Released	2009-04-08 09:00 PDT	HSPDR
CAPACITOR, 390nF, 1 ...	Actions	070067	A.1 (Design)	Released	2009-04-08 09:00 PDT	HSPDR
CAPACITOR, 91pF, 51 ...	Actions	070068	A.1 (Design)	Released	2009-04-08 09:00 PDT	HSPDR
CAPACITOR, 1000pF, 1 ...	Actions	070069	A.1 (Design)	Released	2009-04-08 09:00 PDT	HSPDR
CAPACITOR, 56pF, 5 ...	Actions	070070	A.1 (Design)	Released	2009-04-08 09:00 PDT	HSPDR
CAPACITOR, 10uF, 51 ...	Actions	070071	A.1 (Design)	Released	2009-04-08 09:00 PDT	HSPDR
CAPACITOR, 10pF, 51 ...	Actions	070072	A.1 (Design)	Released	2009-04-08 09:00 PDT	HSPDR
CAPACITOR, 47uF, 51 ...	Actions	070073	A.1 (Design)	Released	2009-04-08 09:00 PDT	HSPDR
CAPACITOR, 1uF, 50' ...	Actions	070074	B.1 (Design)	Released	2009-04-08 09:00 PDT	HSPDR
CAPACITOR, 2.2uF, 5 ...	Actions	070075	A.1 (Design)	Released	2009-04-08 09:00 PDT	HSPDR
CAPACITOR, 100pF, 1 ...	Actions	070076	A.1 (Design)	Released	2009-04-08 09:00 PDT	HSPDR



Creating and Updating Baselines

You can create baselines:

- Manually (i.e. Folder ⇒ File ⇒ New ⇒ Baseline)
- During Check In of CAD Documents
- During Import from Spreadsheet

Updating can include:

- Changes to attributes
- Add, remove or change content
 - Add or Paste items
 - Update Revisions of existing items

Primary Object

- Indicates which object is the reason for creating the Baseline

Note: As-Stored Configuration for CAD Document is not a Baseline, it is a dynamic configuration. It can change!

Baseline Objects (9 of 9 total objects)

		Name	Actions	Number	Version
<input type="checkbox"/>		Baking Powder	Actions ▾	0000004042	A.1 (Des
<input type="checkbox"/>		Eggs, whole	Actions ▾	0000004046	A.1 (Des
<input type="checkbox"/>		Sugar	Actions ▾	0000004044	A.1 (Des
<input type="checkbox"/>		Milk, 1%	Actions ▾	0000004052	A.1 (Des
<input type="checkbox"/>		VANILLA EXTRACT	Actions ▾	0000004057	A.1 (Des
<input checked="" type="checkbox"/>		PANCAKE, PLAIN	Actions ▾	PC-001	A.2 (Des
<input type="checkbox"/>		Flour	Actions ▾	0000004043	A.1 (Des
<input type="checkbox"/>		Butter	Actions ▾	0000004051	A.1 (Des
<input type="checkbox"/>		Salt	Actions ▾	0000004045	A.1 (Des

(0 objects removed)

Add or Paste new items

Primary Object

Update Revision



What can you do with Baselines

Add to or Check out to Workspace

Use a Configuration Criteria to show product structure

- In PSB and PSE
- Multi-level BOM Compare
- Information Compare

For Collecting items

- Any place the Collector is used
- Changes, Packages, etc.
- Set Configuration to Baseline

Multi-Level Bill of Materials Compare Query

Source

Part: PC-001, Demo Organization

Latest: "Default" [More...](#)

Target

Part:

Baseline: "1st Pancake Recipe", [More...](#)

Return Collected Objects

Current Configuration: Part Processing, Baseline..., All Dependents

Collect Objects (10 of 10 total objects) Cur

Configuration ▼				File Name
<div> <div>Set Configuration</div> <div>Add Dependency</div> <div>Advanced Processing Options</div> </div> <div> <div>Latest</div> <div>Effectivity...</div> <div>Promotion Request...</div> <div>✓ Baseline...</div> </div>				
<input type="checkbox"/>		0000004042		
<input type="checkbox"/>		0000004043	A.1 ... Flour	
<input type="checkbox"/>		0000004044	A.1 ... Sugar	
<input type="checkbox"/>		0000004045	A.1 ... Salt	
<input type="checkbox"/>		0000004047	A.1 ... Eggs, yolk	
<input type="checkbox"/>		0000004048	A.1 ... Egg whites, whi...	
<input type="checkbox"/>		0000004051	A.1 ... Butter	
<input type="checkbox"/>		0000004055	A.1 ... Buttermilk	

Configuration Management 101

Configuration Basics –

- Why we need these tools

Baselines

Effectivity

Configurations

Appendix

- Preferences



Effectivity





Effectivity and the Kitchen plan

Ever start a project with a simple goal

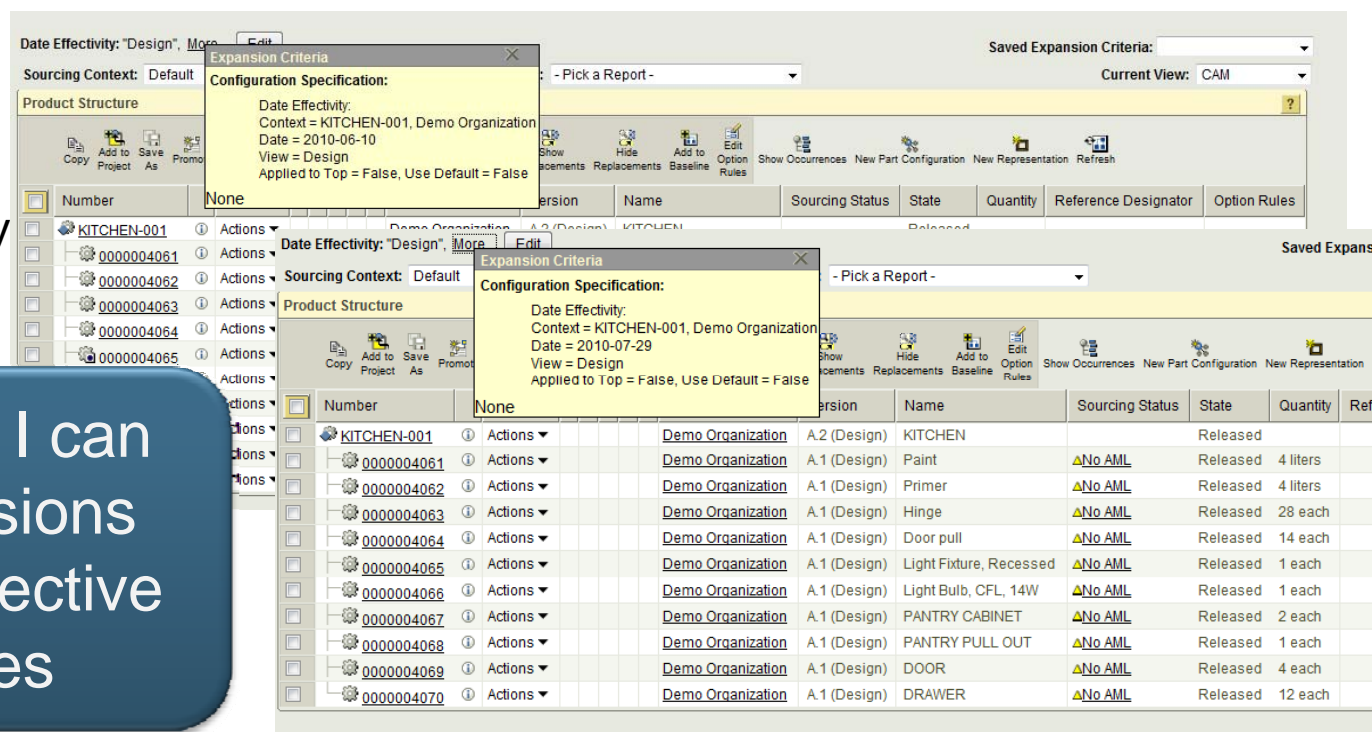
Like..."Let's repaint the cabinets"

From there the project grew and grew to

Let's add

- Lights
- New Hardware
- Rebuild the pantry

With Effectivity I can know what versions of Parts are effective on specific dates



The screenshot displays the 'Expansion Criteria' dialog box in the PTC software. The dialog box is titled 'Expansion Criteria' and contains the following information:

- Configuration Specification:**
 - Date Effectivity: Context = KITCHEN-001, Demo Organization
 - Date = 2010-06-10
 - View = Design
 - Applied to Top = False, Use Default = False

The background shows a table of parts with columns: Number, Name, Sourcing Status, State, Quantity, Reference Designator, and Option Rules. The table lists various kitchen components and their effective dates.

Number	Name	Sourcing Status	State	Quantity	Reference Designator	Option Rules
KITCHEN-001	KITCHEN	Released				
0000004061	Paint	Released	4 liters			
0000004062	Primer	Released	4 liters			
0000004063	Hinge	Released	28 each			
0000004064	Door pull	Released	14 each			
0000004065	Light Fixture, Recessed	Released	1 each			
0000004066	Light Bulb, CFL, 14W	Released	1 each			
0000004067	PANTRY CABINET	Released	2 each			
0000004068	PANTRY PULL OUT	Released	1 each			
0000004069	DOOR	Released	4 each			
0000004070	DRAWER	Released	12 each			



Effectivity – let's get deeper

Effectivity is the planned date, lot, or serial number at which old part versions are replaced with new part versions in production.

- Let's us view what versions of parts are in the product structure based upon Date, Serial number or Lot

Effectivity is set or updated from a change notice or a change task.

- When the change notice has been approved, the planned effectivities get copied over as actual effectivities on the given object.
- Effectivity can also be updated manually on the Part properties page

Effectivity can be applied to:

- Parts
- MPMLink objects including
 - Process plans (manufacturing process plans, sequences, and operations)
 - Manufacturing resources (plants, resource groups, skills, process materials, tooling, and work center)

What did you just say?





Effectivity Concepts

Effectivity Type

- Effectivity applicability is determined by the Trace Code of the Part
- If it is set to Serial Number one can apply Serial Number, MSN or Date effectivity
- If it is set to Lot or Lot/Serial one can apply Lot, Block or Date effectivity

Context

- Effectivity has a context so that a part can be effective in one assembly on one date or serial number and in another assembly on a different date or serial number
 - Example – The new Cooling Fan, Part 123 should be Effective in the Desktop Computer, Part 500 from July 5, 2010 and will be Effective in the Server, Part 600 on September 21, 2010



Effectivity Concepts - Propagation

Propagation Type

- STRUCTURE PROPAGATION would propagate the new effectivity settings throughout the selected structure; to all the children
- SIBLING PROPAGATION will close the open-ended date ranges on the previous revision of the assembly based on our new settings for the new revision
- RECURSIVE SIBLING PROPAGATION will propagate the closure of effectivity on the previous revision of the assembly down including all of its components.

Propagation can only be done using a Change Notice



Effectivity format examples

Date

Effectivity Format	Means
6/23/2010	Effective only on June 23, 2010
6/23/2010, 8/15/2010	Effective only on June 23, 2010 and August 15, 2010
6/23/2010 -	Effective from June 23, 2010 onwards
6/23/2010 – 12/10/2010	Effective from June 23, 2010 to December 10, 2010

(Note – Date Effectivity format is controlled by Locale of the server)

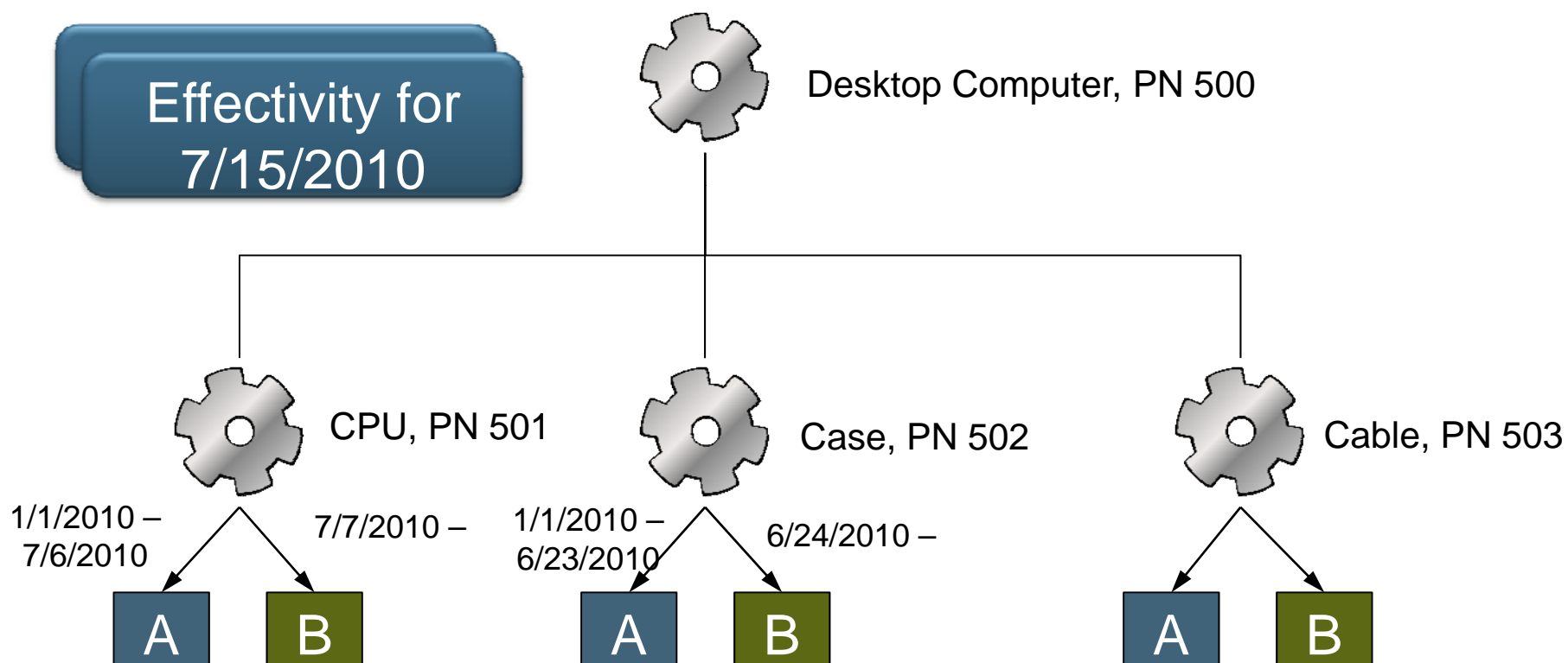
Serial and Lot

Effectivity Format	Means
5	Effective for serial number (or lot) 5 only
5, 23	Effective for serial number (or lot) 5 and 23 only
5 -	Effective from serial number (or lot) 5 onwards
5 - 23	Effective serial number (or lot) 5 through 23



Effectivity – some examples

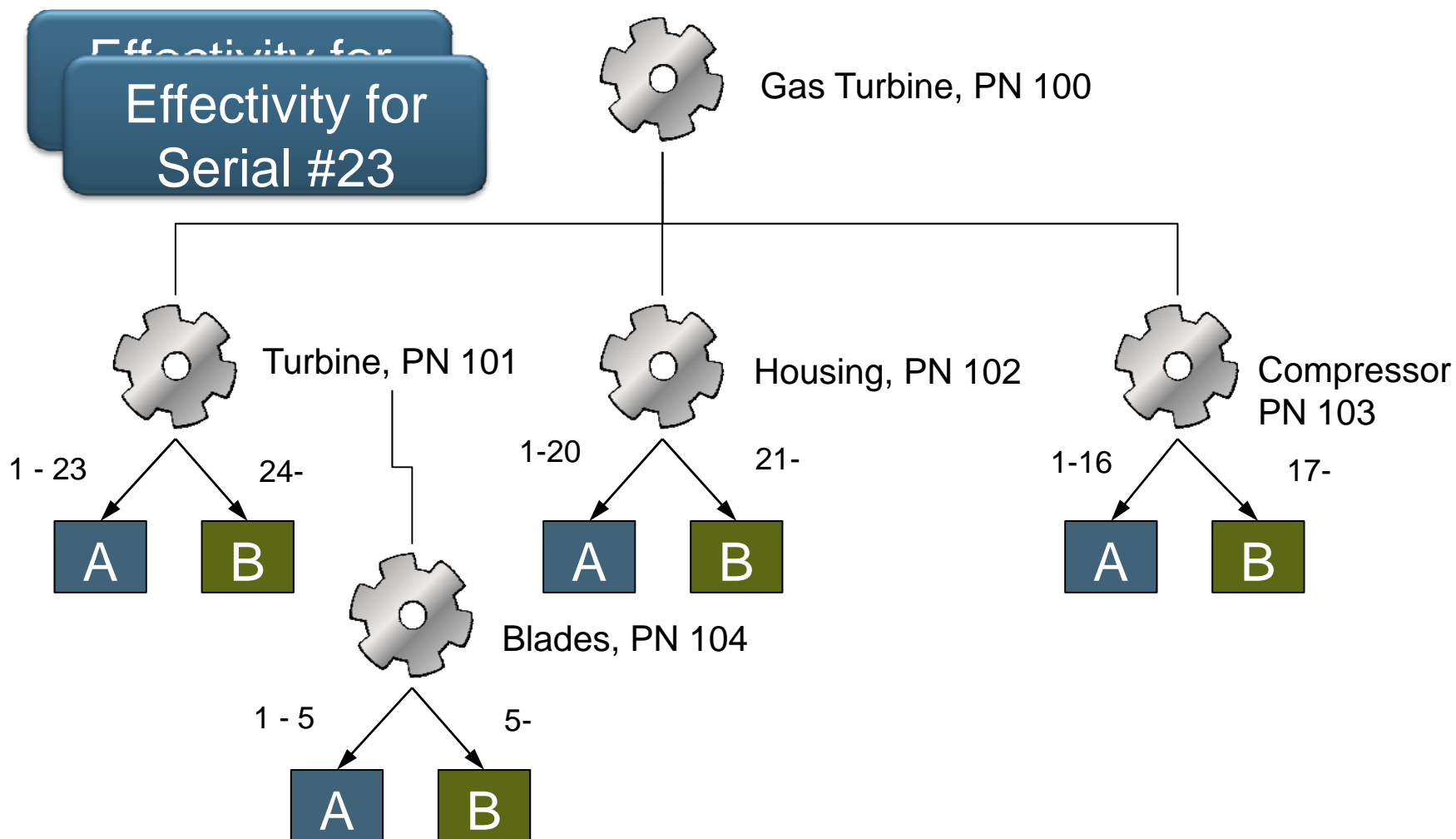
Date Effectivity Example





Effectivity – some examples

Serial Effectivity Example





Applying Effectivity

Edit Change Task

Steps: 1. Set Attributes 2. Select Affected/Resulting Objects

Affected Objects (1 of 1 total object) View: All

Number	Organization	Version	Actions	Name	State	Last Modified	Modified By	Disposition	Annotation Sets	Comments
KITCHEN-001	Demo Organization	A.2 (Design)	Actions	KITCHEN	Released	2010-06-03 11:23 EDT	demo	Use Existing		

Resulting Objects (11 of 11 total objects) View: All

Number	Organization ID	Version	Actions	Name	State	Last Modified	Modified By	Comments
0000004061	Demo Organization	B.1 (Design)	Actions	Paint	Released	2010-06-03 11:38 EDT	demo	
0000004062	Demo Organization	B.1 (Design)	Actions	Primer	Released	2010-06-03 11:21 EDT	demo	
0000004063	Demo Organization	B.1 (Design)		Hinge	Released	2010-06-03 11:21 EDT	demo	
0000004064	Demo Organization	B.1 (Design)		Door pull	Released	2010-06-03 11:21 EDT	demo	
0000004065	Demo Organization	B.1 (Design)		Light Fixture, Recessed	Released	2010-06-03 11:21 EDT	demo	
0000004066	Demo Organization	A.1 (Design)	Actions	Light Bulb, CFL, 14W	Released	2010-06-03 11:21 EDT	demo	
0000004067	Demo Organization	B.1 (Design)	Actions	PANTRY CABINET	Released	2010-06-03 11:38 EDT	demo	

* Indicates required fields.

Back Next Finish Cancel



Applying Effectivity

Specify Effectivity on all selected Items

Specify Effectivity one at a time

Set Effectivity

Define the effectivity parameters for selected parts.

Set Effectivity (10 total objects)

<input checked="" type="checkbox"/>	Number	Organization ID	Version	Name	Effectivity Context	*Effectivity Type	Effectivity Qualifier	*Effectivity Range	Propagation
<input checked="" type="checkbox"/>	0000004061	Demo Organization	B (Design)	Paint		Date ▼	▼		No
<input checked="" type="checkbox"/>	0000004062	Demo Organization	A (Design)	Primer		Date ▼	▼		No
<input checked="" type="checkbox"/>	0000004063	Demo Organization	A (Design)	Glue		Date ▼	▼		No
<input checked="" type="checkbox"/>	0000004064	Demo Organization	A (Design)	Recessed		Date ▼	▼		No
<input checked="" type="checkbox"/>	0000004065	Demo Organization	A (Design)	CFL, 14W		Date ▼	▼		No
<input checked="" type="checkbox"/>	0000004066	Demo Organization	A (Design)	CABINET		Date ▼	▼		No
<input checked="" type="checkbox"/>	0000004067	Demo Organization	A (Design)	PANTRY PULL OUT		Date ▼	▼		No
<input checked="" type="checkbox"/>	0000004068	Demo Organization	A (Design)	DOOR		Date ▼	▼		No
<input checked="" type="checkbox"/>	0000004069	Demo Organization	A (Design)	DRAWER		Date ▼	▼		No
<input checked="" type="checkbox"/>	0000004070	Demo Organization	A (Design)			Date ▼	▼		No

Copy from one row to another



Specifying Effectivity

Set the Context (determines if Date, Serial or Lot is available)

Specify Effectivity ?

Effectivity context

Number:

Organization ID [Demo Organization](#)

Name: KITCHEN

*Effectivity type:

Effectivity qualifier:

*Effectivity range:

Propagate effectivity through structure? ☒ No ☐ Yes

☐ Stop propagation at lower-level traceable objects?

* Indicates required fields.

Select Effectivity type & set range

Information attribute (Exact or No Later than)

If Propagate preference is set, determine whether to use it and where to stop (i.e. Stop at the next lower level Serial traced Part)

Release the Change and Effectivity is applied



Applied in the Workflow



Actions (Go to Latest) Part - 0000004064, Demo Organization, A 1

Name: Door pull
 State: In Work - Released - Canceled
 Status: Checked in
 Modified By: demo on 2010-06-03 11:21 EDT
 Location: / Config Management Demo / Effectivity
 Default Trace Code: Serial Number
[More Attributes](#)

Structure General Related Objects History Collaboration

Define the effectivity parameters for selected parts.

Effectivity (2 of 2 total objects)

Number	Organization ID	Version	Name	Effectivity Context	Effectivity Type	Effectivity Qualifier	Effectivity Range
<input type="checkbox"/> 0000004064	Demo Organization	A (Design)	Door pull	KITCHEN, Organization ID:Demo Organiz: ... Date			6/10/2010 -
<input type="checkbox"/> 0000004064	Demo Organization	A (Design)	Door pull	KITCHEN-001, Organization ID:Demo Organiz: ... Serial			001 -

(0 objects selected)

Note Multiple Effectivity statements




Effectivity Sibling Propagation

Update the Effectivity on the next Revision and it closes the previous

In this example –

PANTRY CABINET, PN 4067 Rev C specified Serial Number 8 and higher

PANTRY Cabinet, PN 4067 Rev B was then set to Serial Number 1 – 7


Actions  **Part - 0000004067, Demo Organization, C.1 (Design)** **State:** Released

Name: PANTRY CABINET
State: In Work - Released - Canceled
Status: Checked in
Modified By: demo on 2010-06-03 14:13 EDT
Location: / [Config Management Demo](#) / [Effectivity](#)
Default Trace Code: Serial Number
[More Attributes](#)

Structure **General** **Related Objects** **History** **Collaboration**



Define the effectivity parameters for selected parts.

Effectivity (1 of 1 total object)

Number	Organization ID	Version	Name	Effectivity Context	Effectivity Type	Effectivity Qualifier	Effectivity Range
<input type="checkbox"/> 0000004067	Demo Organization	C (Design)	PANTRY CABINET	 KITCHEN-001, Organization ID: Demo Organiz...	Serial		008 -

(0 objects selected)

Effectivity (2 of 2 total objects)

Number	Organization ID	Version	Name	Effectivity Context	Effectivity Type	Effectivity Qualifier	Effectivity Range
<input type="checkbox"/> 0000004067	Demo Organization	B (Design)	PANTRY CABINET	 KITCHEN-001, Organization ID: Demo Organiz...	Serial		001 - 007
<input type="checkbox"/> 0000004067	Demo Organization	B (Design)	PANTRY CABINET	 KITCHEN, Organization ID: Demo Organiz...	Date		7/30/2010 -

(0 objects selected)



Be aware - Sibling Propagation ...

Actions ▾ **Change Task** - 00082, A
 Change Notice: [Change Notice - 00082, A](#)
 Name: Incorporate new Junction exten...
 Description: Set effectivity from 20/12/2007 onward...
 Assignee: Peter Product Manager
 State: Open - Implementation - Under Review
[More Attributes](#)

General ▾ **Related Objects** ▾ History ▾

Affected Objects (1 of 1 total object)

Number	Version	Actions	Name	State	Last
PTC-00001	A.5 (Design)	Actions	Cryo Assembly	Released	24/10/07

(0 objects selected)

Resulting Objects (2 of 2 total objects)

Number	Version	Actions	Name
0000000582	A.1 (Design)	Actions	New Junction Extension
PTC-00001	B.2 (Design)	Actions	Cryo Assembly

(0 objects selected)

New rev of assembly,
swapping in a new
component.

Effectivity of these 2 new
items set for 20/12/2007-
with NO structure
propagation

Rev A of assembly now has
it's effectivity close down to
the previous day

Effectivity (1 of 1 total object)

Number	Version	Name	Effectivity Context	Effectivity Type	Effectivity Qualifier	Effectivity Range
PTC-00001	A (Design)	Cryo Assembly		Date		24/10/2007 - 19/12/2007

(0 objects selected)

Effectivity (1 of 1 total object)

Number	Version	Name	Effectivity Context	Effectivity Type	Effectivity Qualifier	Effectivity Range
PTC-00001	B (Design)	Cryo Assembly		Date		20/12/2007 -

(0 objects selected)

Rev B of assembly is effective
as specified in the change
notice

... and the effect of Recursive Sibling Propagation ... be careful ..








Change Management Baseline Report

Physical Object
Number: PTC-00001

Date: 2007-12-24 11:13:46 GMT

Physical Object Name: Cryo Assembly

Physical Object Hierarchy						Supporting Documents							Changes		
Hierarchy	Part Number	Part Name	Org ID	Quantity	Units	Doc Type	Document Number	Org ID	Version	Release Date	Effective Date	Change Notice	A/D	Effectivity	Change Notice
0	PTC-00001	Cryo Assembly	Demo Organization	1.0	each		PTC-00001	Demo Organization	B.2	2007-12-24	20/12/2007 -	00082			
1	0000000544	Cryo Fitting	Demo Organization	1.0	each		0000000544	Demo Organization	A.1		24/10/2007 - 19/12/2007				
1	0000000582	New Junction Extension	Demo Organization	1.0	each		0000000582	Demo Organization	A.1	2007-12-24	20/12/2007 -	00082			
1	0000000564	Link	Demo Organization	1.0	each		0000000564	Demo Organization	A.1		24/10/2007 - 19/12/2007				
1	0000000542	Bottle	Demo Organization	2.0	each		0000000542	Demo Organization	A.1		24/10/2007 - 19/12/2007				

NOTE: The closure of effectivity on version A of the assembly has propagated down to it's components, which are also re-used in version B

So if you were wondering why propagation is only available as part of the change process, here is a good example why – the result of effectivity propagation need to be considered and hence this why we use a change process to manage this ...



Ad-hoc Effectivity

Effectivity can be edited, added or remove on the Part Info Page

- Why?
 - Last minute changes in delivery or production schedule
 - Typo in Change Notice

Actions **Part** - 0000004065, Demo Organization, C.1 (Design)

Name: Light Fixture, Recessed

State: In Work - **Released** - Canceled

Status: Checked in

Modified By: demo on 2010-06-03 10:00

Location: / [Config Management](#)

Default Trace Code: Serial Number

[More Attributes](#)

Add new Effectivity or Remove existing Effectivity

Define the effectivity parameters for selected objects:

Effectivity (1 of 1 total object)

<input type="checkbox"/>	Number	Organization ID	Version	Name	Effectivity Context	Effectivity Type	Effectivity Qualifier	Effectivity Range
<input type="checkbox"/>	0000004065	Demo Organization	C (Design)	Light Fixture, Recessed	KITCHEN-001, Organization ID: Demo Organiz...	Date		8/25/2010

(0 objects selected)












Edit Effectivity



Using Effectivity

Similar to Baselines, Effectivity can be used to:

- Set the Configuration Specification to show product structure in PSE, PSB
- Determine the items to gather using the Collector
- Determine what to compare in Multi-Level BOM Compare
- Change Management Baseline Report

Change Management Baseline Report														
Physical Object Number: KITCHEN-001										Date: 2010-06-03 16:17:39 EDT				
Physical Object Name: KITCHEN														
Co	Physical Object Hierarchy						Supporting Documents					Changes		
	Hierarchy	Part Number	Part Name	Org ID	Quantity	Units	Doc Type	Document Number	Org ID	Version	Release Date	Effectivity Context/Effective Date	Change Notice	A/D
0		KITCHEN-001	KITCHEN	Demo Organization	1.0	each		KITCHEN-001	Demo Organization	C.1	2010-06-03	KITCHEN-001 8/25/2010	00521	
1		0000004068	PANTRY PULL OUT	Demo Organization	1.0	each		0000004068	Demo Organization	D.1	2010-06-03	KITCHEN-001 8/25/2010	00521	
1		0000004070	DRAWER	Demo Organization	12.0	each		0000004070	Demo Organization	C.1	2010-06-03	KITCHEN-001 8/25/2010	00521	
1		0000004063	Hinge	Demo Organization	28.0	each		0000004063	Demo Organization	B.1	2010-06-03	KITCHEN-001 8/25/2010	00521	
1		0000004061	Paint	Demo Organization	4.0	liters		0000004061	Demo Organization	D.1	2010-06-03	KITCHEN-001 8/25/2010	00521	
1		0000004067	PANTRY CABINET	Demo Organization	2.0	each		0000004067	Demo Organization	D.1	2010-06-03	KITCHEN-001 8/25/2010	00521	
1		0000004065	Light Fixture, Recessed	Demo Organization	1.0	each		0000004065	Demo Organization	C.1	2010-06-03	KITCHEN-001 8/25/2010	00521	
1		0000004069	DOOR	Demo Organization	4.0	each		0000004069	Demo Organization	C.1	2010-06-03	KITCHEN-001 8/25/2010	00521	
1		0000004062	Primer	Demo Organization	4.0	liters		0000004062	Demo Organization	B.1	2010-06-03	KITCHEN-001 8/25/2010	00521	
1		0000004066	Light Bulb, CFL, 14W	Demo Organization	1.0	each		0000004066	Demo Organization	B.1	2010-06-03	KITCHEN-001 8/25/2010	00521	
1		0000004064	Door pull	Demo Organization	14.0	each		0000004064	Demo Organization	C.1	2010-06-03	KITCHEN-001 8/25/2010	00521	

Configuration Management 101

Configuration Basics –

- Why we need these tools

Baselines

Effectivity

Configurations

Appendix

- Preferences



Configurations & Instances

Configurations are used to define the versions of the parts used to create a Part Instance.

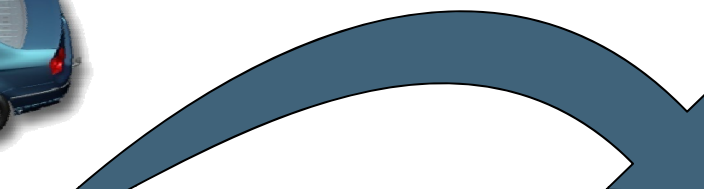
- The Part configuration allows you to track the versions of parts that are used to manufacture a specific line of end item parts for record keeping and ongoing maintenance of that end item part in the field.

An instance identifies, by serial number, a unique manufactured instance of a part, built according to a specific configuration. It allows you to identify exactly which part is used in that instance. Once the end item is built, the instance becomes a record that can be used to indicate changes to that particular copy of the end item part while it is in service. If the instance is changed (for example, one part is replaced by another), the replacement part is recorded in the instance.

Part instances can be created for parts that are traced by:

- Serial Number
- Lot Number
- Lot and Serial Number

Easier to show....



Sedan, Rev A

Chassis, Rev A

Engine, Rev B

Transmission, Rev A

Interior, Rev C

Sedan, VIN XYZ10

Chassis, Rev A

Engine, SN-10028

Transmission, SN-10

Interior, Rev C

But wait – what about Effectivity?

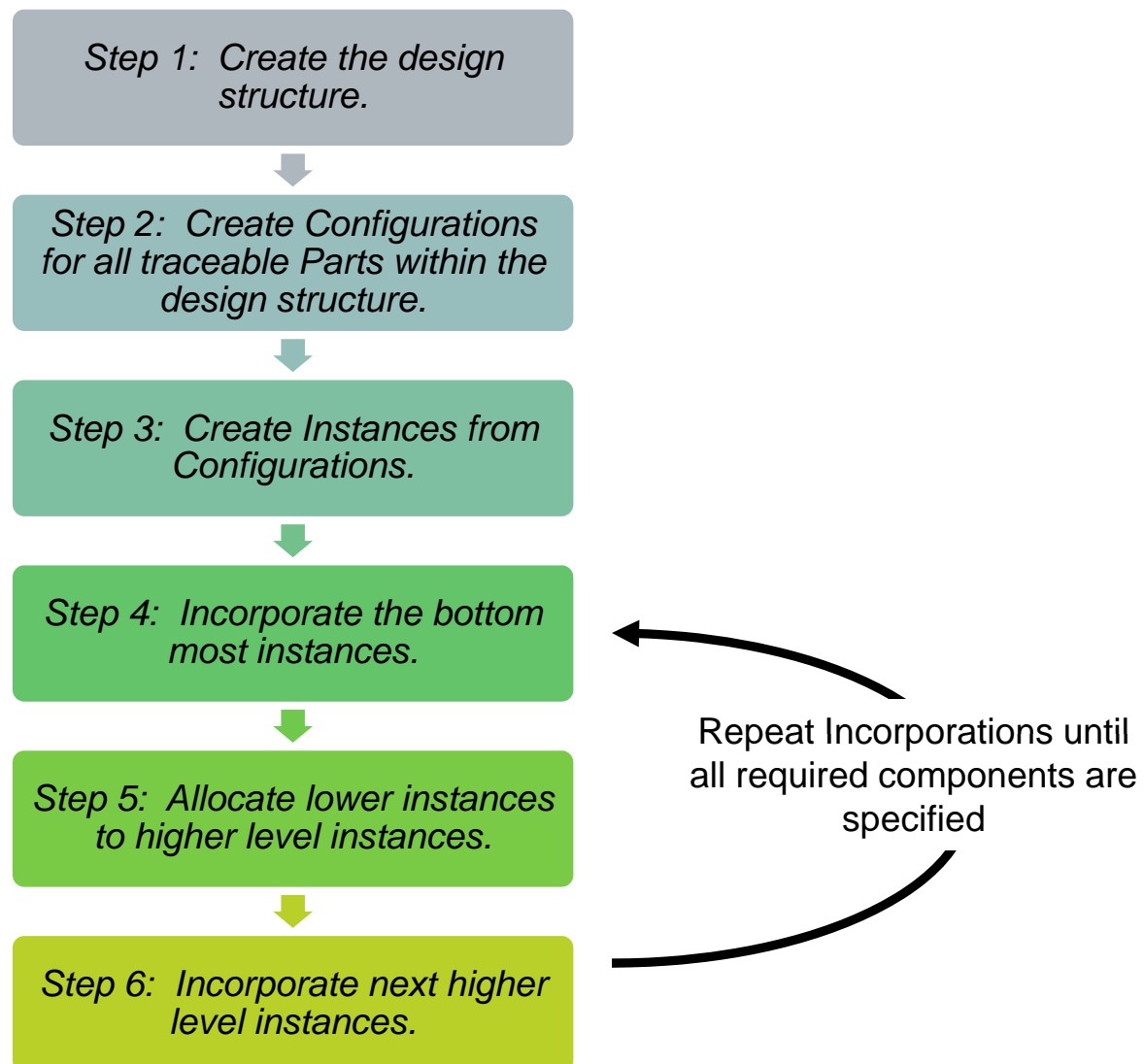
Effectivity tells you what ranges of Serial or Lot numbers can be used for a given revision

Instances track exactly which Serial or Lot number are used for a specific manufactured item.

Example uses for Configurations and Instances:

- There is a need to trace which components are in which fielded item
- There is a need to trace components for warranty, regulatory or customer requirement

Steps in Configurations and Instances



Creating the Configuration

New Part Configuration - Microsoft Internet Explorer

New Part Configuration

Base Part Number: 0000000141
 Base Part Version: A
 Base Part Name: End Item 2
 *Part Configuration Name:
 Description:
 Populate: ☒ Basic
☐ Full

* Indicates required fields.

Ok Cancel

BASIC: Only populates parts into the configuration that are traceable
FULL: Populate all parts irrespective of trace code

Create a Configuration from a specific traceable Part.

Product Structure

Copy Add to Project Save As Promote Move Expand One Expand All

	Name	Actions	Number	Organization ID	Version	Context	State	Quantity	Trace Code	Find Number	Line	Reference Designator
<input checked="" type="checkbox"/>	End Item 2		0000000141		A.2	GOLF_CART	In Work					
<input type="checkbox"/>	Component 5		0000000185		A.1 (Design)	GOLF_CART	In Work	1 each	untraced	1	10	
<input type="checkbox"/>	Component 6		0000000182		A.1 (Design)	GOLF_CART	In Work	1 each	untraced	2	20	

Creating the Instance

The screenshot shows the Windchill software interface. On the left, the 'Product Structure Explorer' is open, showing a tree view of the product structure. The 'Actions' menu is open, and 'New Part Instance' is highlighted. A blue callout bubble points to this menu item with the text: 'Create a new part Instance from the info page of a Part or Configuration.'


The 'New Part Instance' dialog box is open, showing the following information:

- Steps:** 1. Set Attributes, 2. Set Additional Attributes
- Base Part Number:** 0000000141
- Base Part Version:** A
- Base Part Name:** End Item 2
- * Serial Number:** (empty text box)
- * Manufacturer ID:** Demo Organization (with a 'Find...' button)
- Available Configurations:** E12-Config1 (dropdown menu)
- Buttons:** Back, Next, Finish, Cancel

At the bottom of the dialog, there is a table with the following columns: Organization ID, Version, Context, State, Quantity, Trace Code, Find Number, Line, Reference Designator.

Organization ID	Version	Context	State	Quantity	Trace Code	Find Number	Line	Reference Designator
41	A.2	GOLF_CART	In Work					
85	A.1 (Design)	GOLF_CART	In Work	1 each	untraced	1	10	
82	A.1 (Design)	GOLF_CART	In Work	1 each	untraced	2	20	


Part Instances – Support Documents

Actions  **Part Instance - SN0001, A**

Base Part Number: [PTC-00001](#)
 Base Part Name: Cryo Assembly
 Base Part Version: B.2
 Configuration Name: [Cryo Design Std 1](#)
 State: In Work - Released - Canceled
 Last Modified: 2007-12-24 12:32 GMT
 Estimated Incorporation Date:
 Start Incorporation Date:
 End Incorporation Date:
 Traced By: Serial Number
[More Attributes](#)

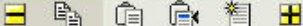
Structure General ▼ **Related Objects ▼** History ▼ Collaboration ▼

Described By Documents (0 of 0 total objects) Current View: **Default** ▼ ?



<input type="checkbox"/>	Number	Version	Name	Context	State	Last Modified
No Objects to Display (0 objects selected)						

References Documents (0 of 0 total objects) Current View: **Default** ▼ ?



<input type="checkbox"/>	Number	Version	Name	Context	State	Last Modified
No Objects to Display (0 objects selected)						

Use Cases

- Test Results
- Conformance Certification
- Repair Records
- Calibration Records

Also relate to Change objects:

- Variances
- Problem Reports
- Change Requests
- Change Notices

Allocating a Part

Add New or use an Existing Serial Number

Product Structure

Number	Actions
0000001021	Actions
0000001022	Actions
0000001029	Actions
0000001023	Actions
0000001029	Actions
0000001024	Actions
0000001029	Actions
0000001025	Actions
0000001026	Actions
0000001027	Actions
0000001028	Actions

Allocate New Part Instance

Steps: 1. Allocate New Part Instance 2.

Serial Number: 001
 Manufacturer ID: Demo Organization
 Revision: A

Base Part Number: 0000001021
 Organization ID: Demo Organization
 Base Part Name: DESTROYER

Part Number: 0000001029
 Organization ID: Demo Organization
 Part Name: CUPHOLDER

* Serial Number: 101

Manufacturer ID: Demo Organization

Available Configurations: cup01

Allocate Existing Part Instance

Serial Number: 001
 Manufacturer ID: Demo Organization
 Revision: A

Base Part Number: 0000001021
 Organization ID: Demo Organization
 Base Part Name: DESTROYER

Part Number: 0000001029
 Organization ID: Demo Organization
 Part Name: CUPHOLDER

* Available Instances:

- 031
- 032
- 030
- 033
- 034
- 035
- 036
- 037
- 038
- 039
- 040
- 101

* Indicates required fields.

* Indicates required fields.

Back Next Finish Cancel

1 each	Serial Number
1 each	Untraced
1 each	Untraced
1 each	Untraced
1 each	Untraced

Incorporating the Part

What date did the part go into service

Product Structure

Copy Add to Project Expand One Expand All Collapse Show Documents Hide Documents Show Replacements Hide Replacements

Number	Actions	Version	Name
0000001021	Actions	A.2 (Design)	DESTROYER
0000001022	Actions	A.2 (Design)	BRIDGE
0000001029	Actions	A.1 (Design)	CUPHOLDER
0000001023	Actions	A.2 (Design)	COMMS
0000001029	Actions	A.1 (Design)	CUPHOLDER
0000001024	Open in ProductView	A.2 (Design)	ENGINE ROOM
0000001025	Incorporate	A.2 (Design)	WEAPONS
0000001026	De-allocate	A.2 (Design)	MESS HALL
0000001027	Actions	A.2 (Design)	SICK BAY
0000001028	Actions	A.2 (Design)	CAPTAINS QUARTERS

Incorporate Part Instance

Serial Number: 101
 Manufacturer ID: [Demo Organization](#)
 Revision: A

Base Part Number: 0000001029
 Organization ID: [Demo Organization](#)
 Base Part Name: CUPHOLDER

*Incorporation Date: 2010-06-02 yyyy-mm-dd

☒ Start
☐ Estimated

* Indicates required fields.

OK Cancel

Start: Current or earlier date when part was incorporated
 Estimated: Planned date to incorporate (Can be future)

Instance Details

Instances Can support Soft Attributes

Parts in Instances can be updated:

- With new Revisions
- With Alternate and Substitues

Replacements shows
Alternates and
Substitues

Latest: [More...](#) [Edit](#)

Related Reports: [- Pick a Report -](#)

Product Structure

Copy Add to Project Expand One Expand All Collapse Show Documents Hide Documents Show Replacements Hide Replacements Refresh

	Number	Actions	Version	Name	Sourcing Status	Part Instance	Start Incorporation	Qua
	0000001021	① Actions ▼	A.2 (Design)	DESTROYER		001, Demo Organization A		
	0000001022	① Actions ▼	A.2 (Design)	BRIDGE				1 ea
	0000001029	① Actions ▼	A.1 (Design)	CUPHOLDER	No AML	031, Demo Organization A	2010-06-02 00:00:00 EDT	1 ea
	0000001023	① Actions ▼	A.2 (Design)	COMMS				1 ea
	0000001029	① Actions ▼	A.1 (Design)	CUPHOLDER	No AML	101, Demo Organization A		1 ea
	0000001024	① Actions ▼	A.2 (Design)	ENGINE ROOM				1 ea
	0000001025	① Actions ▼	A.2 (Design)	WEAPONS				1 ea
	0000001026	① Actions ▼	A.2 (Design)	MESS HALL				1 ea
	0000001027	① Actions ▼	A.2 (Design)	SICK BAY				1 ea
	0000001028	① Actions ▼	A.2 (Design)	CAPTAINS QUARTERS				1 ea

Wrap-Up

We covered three ways to help manage Configurations

- Baselines
- Effectivity
- Configurations and Instances

There is no one size, one answer solution

- Evaluate and Plan for your needs
- War game real world examples in test environments
- Consider downstream and upstream needs

Customer Visits

Every year, PTC Product Management visits hundreds of customers

Purpose of Visits

- Listen to your needs
- Understand your processes and products

You can help shape the future of PTC products!

Interested in hosting a PTC customer visit?

- Email your Product Manager
- Drop off a business card with customer visit written on the back

Email me at:

- jzemsky@ptc.com



"Courage is what it takes to stand up and speak; Courage is also what it takes to sit down and listen"

- Winston Churchill

Questions?



Configuration Management 101

Configuration Basics –

- Why we need these tools

Baselines

Effectivity

Configurations

Appendix

- Preferences



Preferences for Effectivity

Preference	Values	Description
Enable Recursive Sibling Propagation	Yes/No	Enables propagation of effectivity statements down a product structure for statements which result from a sibling propagation operation.
Enable Sibling Propagation	Yes/No	Enables propagation of effectivity statements to siblings.
Enable Structure Propagation	Yes/No	Enables propagation of effectivity statements down a product structure.
Include Work in Process Parts for Part Configuration Specification for Structure Propagation	Yes/No	Includes work in process parts for the part configuration specification used in structure propagation of effectivity statements.
Lifecycle State of Part Configuration Specification for Structure Propagation	Released	Lifecycle state of the part configuration specification used in structure propagation of effectivity statements.
Lot number format	wt.eff.format.DefaultUnitEffFormat	Lot number format
Serial number format	wt.eff.format.NumericUnitEffFormat	Serial number format
View of Part Configuration Specification for Structure Propagation	(Select from Views or blank)	View of the part configuration specification used in structure propagation of effectivity statements.

Effectivity Format - wt.eff.format.NumericUnitEffFormat

This format supports fixed-length (max. length of 18) effectivity statements consisting of only numerical digits (0-9).

Use this format if your unit effectivity statements consist of only numbers and have a fixed length. This format implements the various comparisons and range arithmetic logic by converting the range value to an equivalent number. Hence all range value characters must be digits (0-9)

This format accepts the following configurable parameters:

- **Length**
 - Description: Enforces effectivity statements adhering to this format, to have a fixed length. This format supports a maximum length of 18 digits.
 - Type: Positive Integer (Number), less than 18.
 - Special Values: 0. This value states that the effectivity range values do not have a fixed length.
 - Required: Yes
 - Default: N/A
 - Examples: 3, 6, 8.

Effectivity formats in this package are driven by parameters that dictate operations they support. See the Windchill Customizer's Guide for explanation on how to specify the format a traceable business object supports along with the parameters it accepts.

Example:

wt.eff.format.NumericUnitEffFormat| length=3

Gives Serial effectivity of length 3 – numbers 000 - 999

Effectivity Format - wt.eff.format.DefaultUnitEffFormat

This format represents the default format for unit effectivity statements if no other effectivity format is supplied and thus acts like a placeholder. Since it is unaware of the actual format of effectivity statements, it provides rudimentary implementations of the various format-related operations.

This format accepts the following configurable parameters:

•length

- Description: Enforces effectivity statements adhering to this format, to have a fixed length.
- Type: Positive Integer (Number).
- Special Values: 0. This value states that the effectivity range values do not have a fixed length.
- Required: No (If not specified, range values can have an arbitrary length)
- Default: 0
- Examples: 3, 6, 8.

•contains-whitespace

- Description: Specifies whether effectivity range values contain space(s).
- Type: Boolean.
- Required: No (If not specified range values can contain space characters)
- Default: true. Allows spaces to be part of the effectivity range values.
- Other values: false. Does not allow spaces to be part of effectivity range values.

Effectivity formats in this package are driven by parameters that dictate operations they support. See the Windchill Customizer's Guide for explanation on how to specify the format a traceable business object supports along with the parameters it accepts.

The only parameter this format supports is the length of effectivity range values.

Use this effectivity format, if you do not intend to take advantage of any of the format-related capabilities like range value validation, comparisons and range arithmetic.



WORLD EVENT
2010

2010