



BEST PRACTICES FOR SUPPORTING CHANGE MANAGEMENT WITH FLEXIBLE CHANGE ASSOCIATION

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Presenter's Title

Date

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BEST PRACTICES FOR SUPPORTING CHANGE MANAGEMENT WITH FLEXIBLE CHANGE ASSOCIATION

- ❑ Change Management Process Overview
- ❑ Flexible Change Associations
- ❑ Windchill 11 Change Management Enhancements
- ❑ Windchill Change Management Roadmap

“There is no engineering of successful systems without any changes; they are the rule and not the exception in product development.”

Ernst Fricke

CHANGE MANAGEMENT PTC LIVE SESSIONS

- Change Management Process overview - 2012
- Implementing the Process, OCM & Measuring Change - 2013
- Configuring Change Management – 2014
- Executing the Change process – Getting more value 2015

Executing the Change process – Getting more value

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Process steps to highlight gaining efficiency and ease in the Change Process

- Creating the Change Request (Type Layout)
- Analyze the Change Task (Native Task Templates)
- Speeding up Change Notice creation (CN Templates)
- Validate the data on the Change (Business Rules)
- Execute WIP updates efficiently (Supersede & Mass Change)
- Managing your Work (Tweak Task Lists)



Defining your Change Management process

Organizational
Change
Management

Change Management Configuration points

Scale and Scope

• Find the right balance for your organization

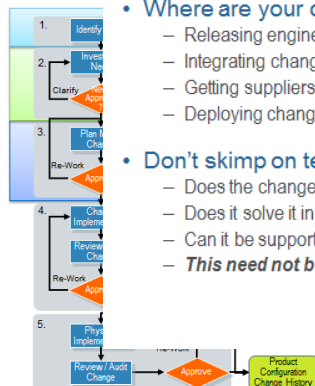
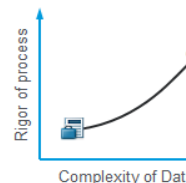
- There is no single right solution
- Understand your organizations needs and pains
- Look at others examples

• Where are your challenges?

- Releasing engineering deliverables that are correct?
- Integrating changes into manufacturing?
- Getting suppliers and partners aligned with changes?
- Deploying changes to service and support?

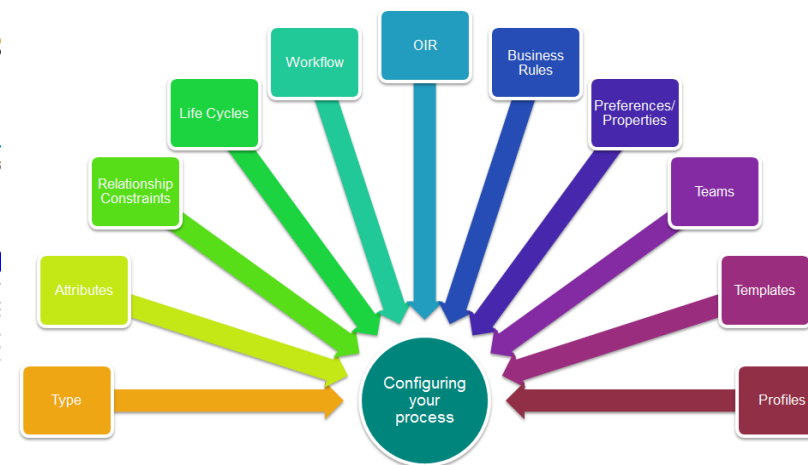
• Don't skimp on technical and business justification

- Does the change solve the technical need?
- Does it solve it in a way that is cost efficient?
- Can it be supported by service?
- **This need not be a slow or complex process**



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Tools to leverage in meeting your needs



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Change Management Process Overview

- **Step 1: Identify Need**
 - Describe and document product problem, enhancement or opportunity
 - Identify product items affected by problem
 - Submit problem report
- **Step 2: Investigate Need**
 - Validate problem report for clarity and accuracy
 - Analyze the "Need"
 - Develop and review solutions proposals
 - Develop business justification including impact, risk and cost for solutions
 - Approve or reject solution proposals
 - Communicate decision
- **Step 3: Change Planning**
 - Plan scope of change e.g., (minor vs. major)
 - Develop detailed plan for change including tasks, resources, scheduling
 - Approve or reject detailed plan
 - Communicate decision

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KEY CAPABILITIES FOR CHANGE MANAGEMENT



Change Management Best Practices

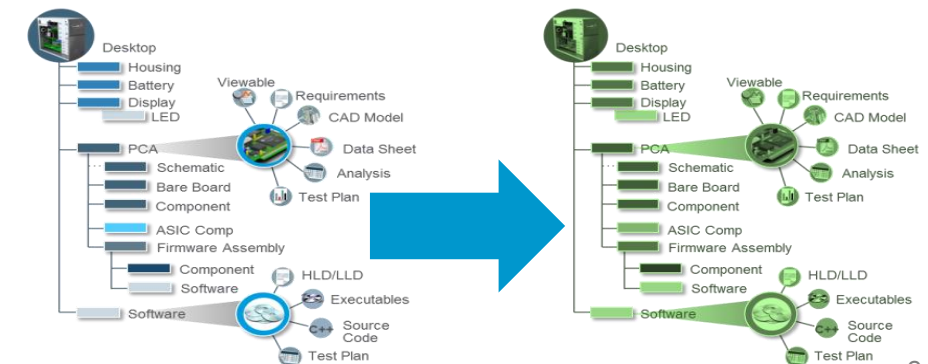
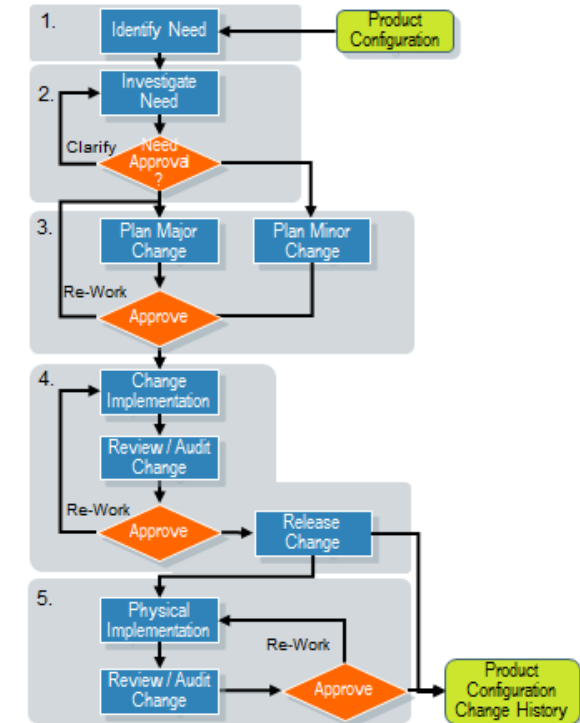
- Standardized, automated change management
- Integrated, cross discipline change management
- Integrated product issue management
- Deviation / waiver management

Key Change Management Capabilities

Pre-configured change objects	OOTB change that links product information directly to problem reports, change requests and change notices	Consistent and predictable change processing
Automatic routing of change tasks	Workflow driven tasks based on templates	Improved efficiency
Capture electronic signatures and audit trails	Change records, including sign-offs, markups and comments connected to product data	Traceability into changes
Automatic synchronization with manufacturing systems	Publish updated information to downstream systems when changes are resolved	Closed-loop changes / up-to-data manufacturing information
Business Rules	Automatically check 'actions' to ensure objects are meet process rules	Ensure processes follow company policies

CHANGE MANAGEMENT VISION

- Scalable Change processes – Simple to Complex
 - Provide consistent, highly flexible process execution
 - Scale from Simple to Robust change processes via configuration
 - Deliver Enterprise - coordination, access, visibility -
 - Early and often view to key stake holders
 - Cross-discipline involvement
- Productivity & Planning - Changing the Change Game
 - Manage WIP data throughout the change process
 - Simplified process execution for users
 - Impact analysis across configurations
- Improving Decision Quality
 - Visibility to other Changes and previous decisions
 - Help companies prepare the data to deliver repeatable, high quality decisions
 - Ensure good decision quality
 - Automated/Integral Platform Validation with Change
 - Validating rule changes
 - Validating design changes



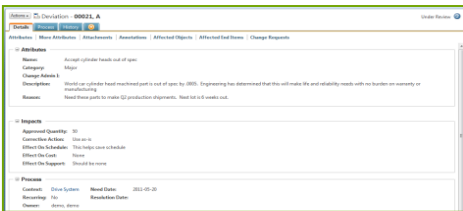
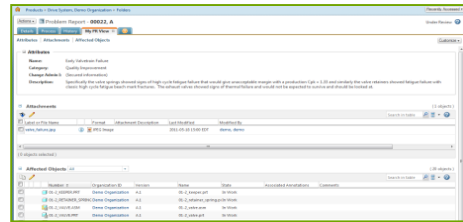
WINDCHILL CHANGE MANAGEMENT PROCESS OVERVIEW



•Three processes: **FAST** (simplified oversight), **FULL** (full CRB / CIB review) and **BASIC** (very light weight CN)

•Problem Report

—capture an issue or opportunity (Optional step)



•Deviation or Waiver

—capture an “temporary” change for product or process (Optional step)

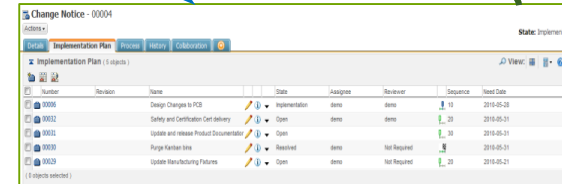
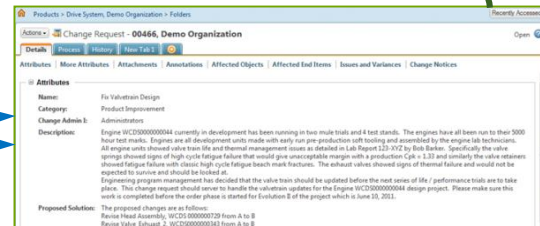
Close out PR

Close out CR

Close out CT

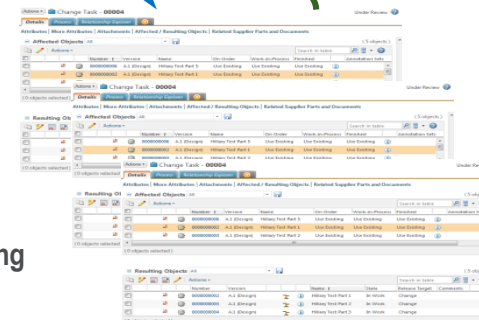
•Change Request

- Evaluate Technical and Business Justification
- Plan Minor or Major change (Fast track or Full track)
- Change Review Board



•Change Notice

- Create and execute Implementation Plan
- Change Implementation Board
- Release changes
- Audit results

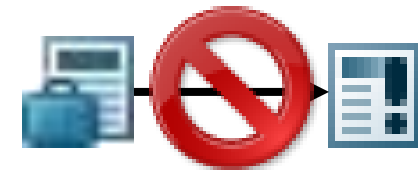
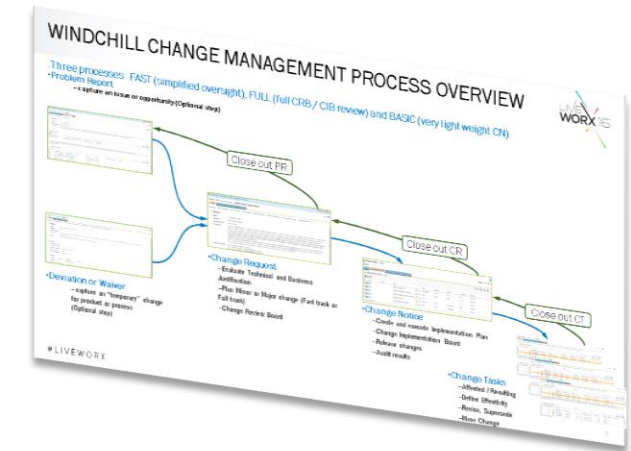


•Change Tasks

- Affected / Resulting
- Define Effectivity
- Revise, Supersede
- Mass Change

KEY TAKE-AWAYS

- Key Challenges for Change Management
 - Simplify user adoption
 - Make it easy to execute the change process
 - Simplify creation and execution of the process
 - Companies have needs for flexible change process
 - Configuring change relationships takes
 - Customization
 - Workflow configuration
 - Configurable Links
 - Need to align to change processes in other tools

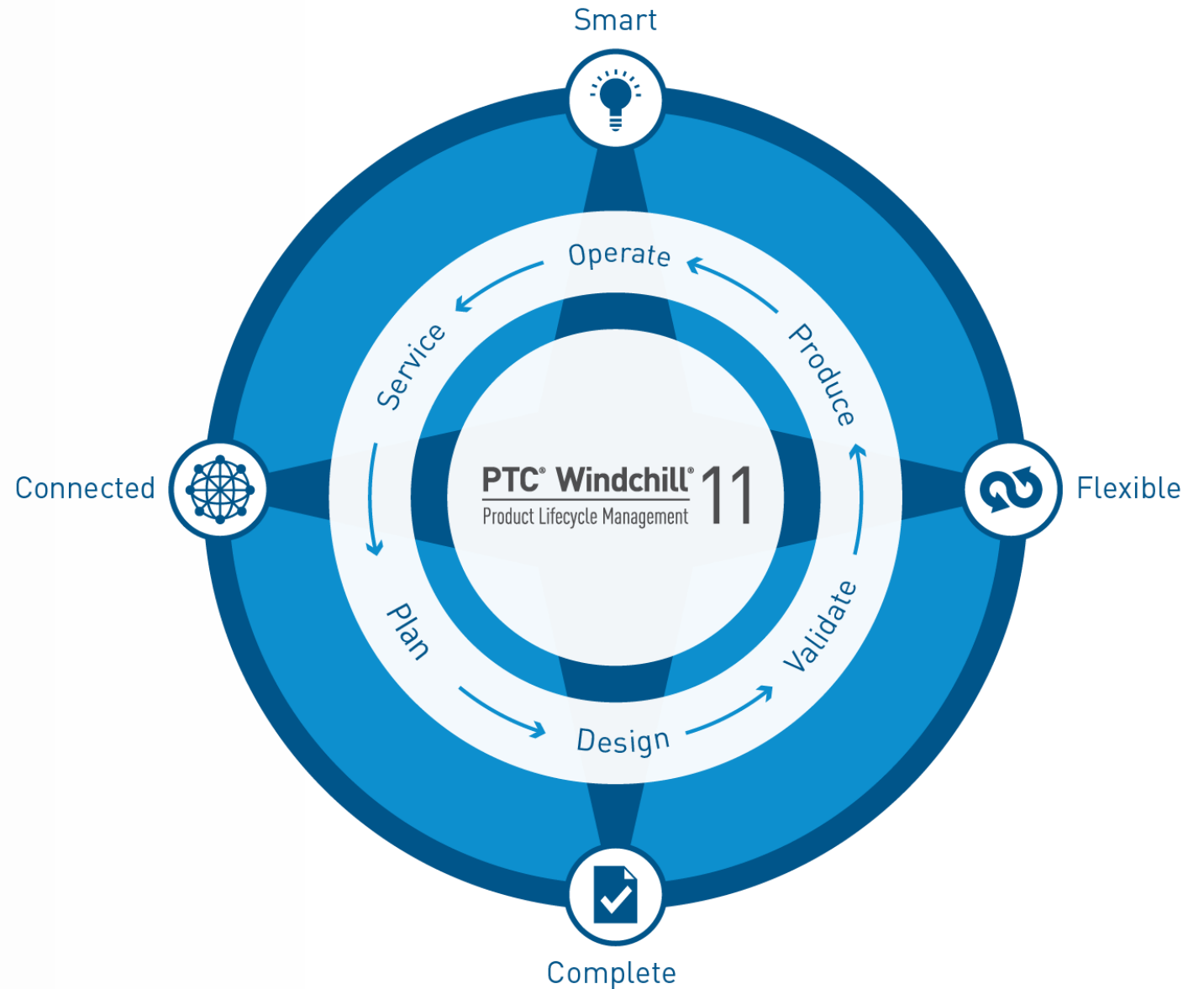


BEST PRACTICES FOR SUPPORTING CHANGE MANAGEMENT WITH FLEXIBLE CHANGE ASSOCIATION

- ❑ Change Management Process Overview
- ❑ Flexible Change Associations
- ❑ Windchill 11 Change Management Enhancements
- ❑ Windchill Change Management Roadmap

PTC® Windchill® 11

Smart Connected PLM

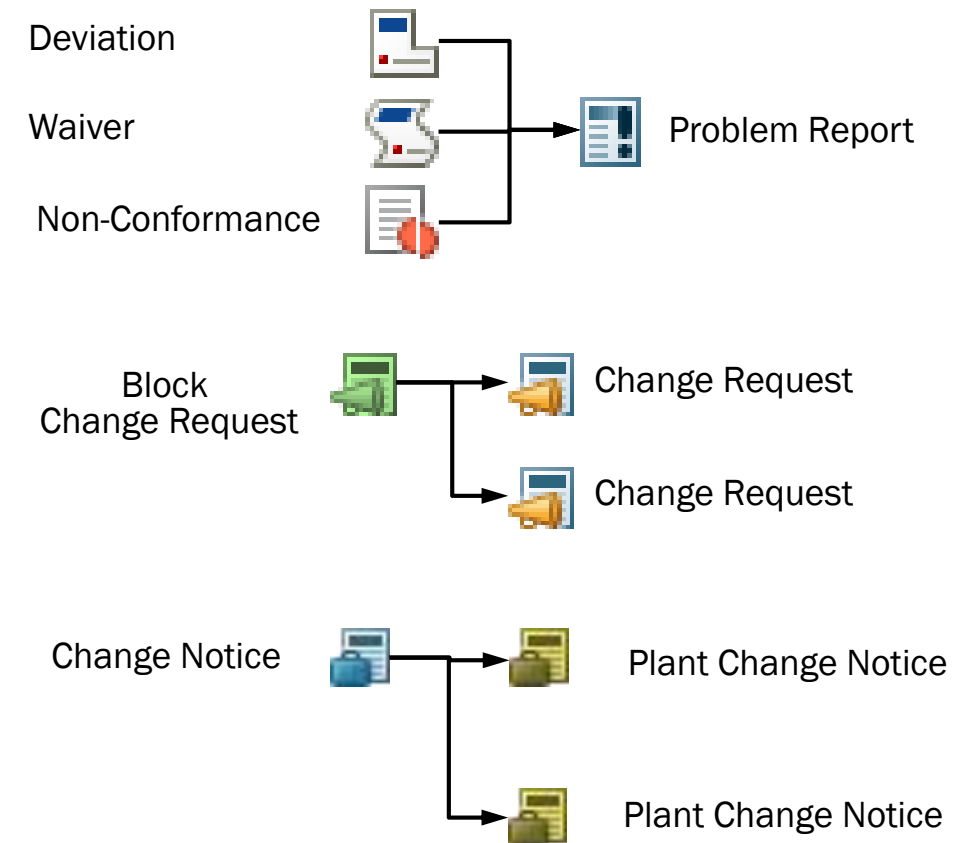


CHANGE MANAGEMENT PROCESS- FLEXIBLE CHANGE ASSOCIATIONS



- Process Flexibility Improvements
 - Provide the ability to configure Change Associations between Change objects
 - Create Associations that support specific change process needs
 - **For Example:** Link a Problem Report to a Change Notice
 - Easily build processes between Change objects and subtypes
 - Provide constraints to enforce the use of correct types and cardinality on the links
- Benefits:
 - Improved ability for an organization to easily configure their Change Management process needs
 - Reduced Customization and Easier Upgrades

Easily Support Change Relationships

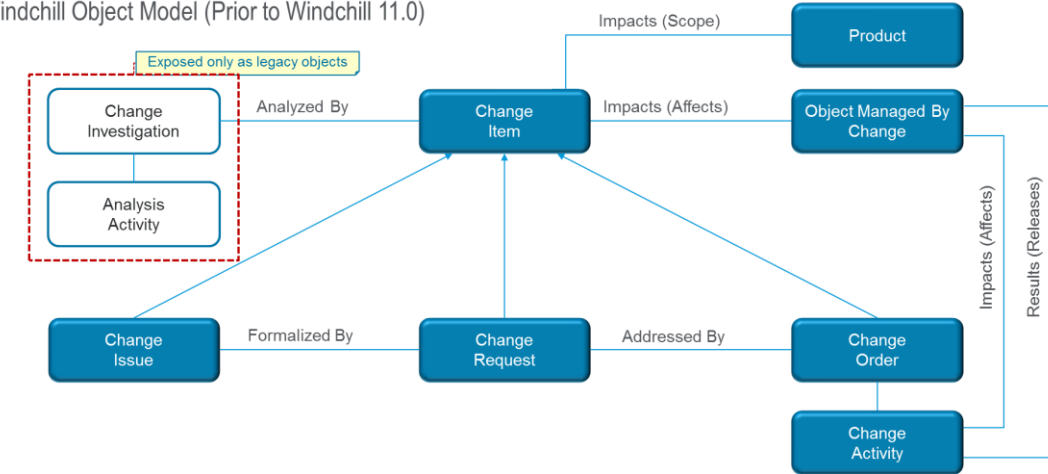


CHANGE MANAGEMENT OBJECT MODEL UPDATES

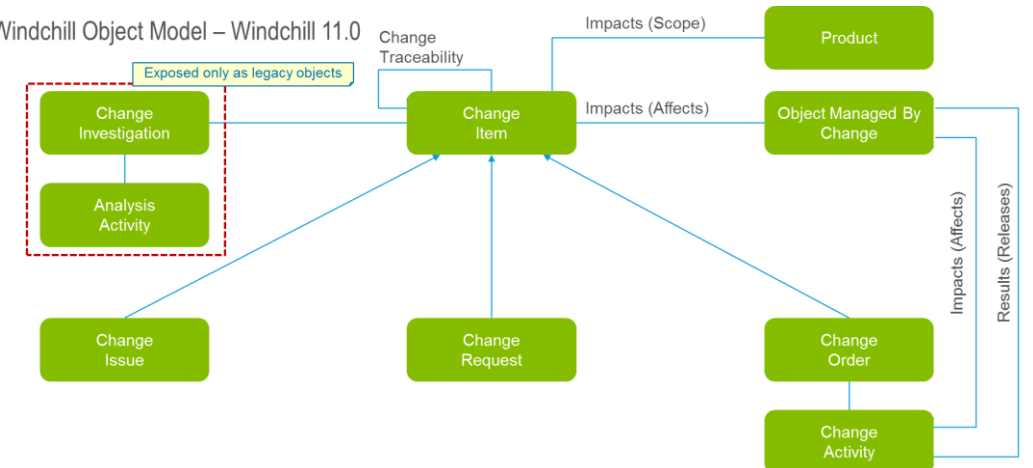


- Previous Change Management Model
 - Companies desired additional relationships in their Change Management process beyond what was supplied
 - Required Customization – For example related a Problem Report to a Change Notice or a CAPA to a Change Request
- Windchill 11.0 Updates
 - Simple to now configure Associations between Change Objects
 - Create Associations of Change and Quality Types and Soft types
 - Support running with Legacy Associations, New Change Associations or Mixed mode
 - Simple to define and supported with existing workflow, reports, Import/Export, Packages, and ESI

Windchill Object Model (Prior to Windchill 11.0)



Windchill Object Model – Windchill 11.0



- Three modes of operation are available
 - Legacy Mode
 - Everything on the system behaves as it did on the previous version with respect to the AddressedBy2 and FormalizedBy model.
 - This is the **default phase** for systems upgraded to Windchill 11.0 or later.
 - Mixed Mode
 - All new change objects use the FlexibleChangeLink model. For new objects, the Windchill user interface and services enforce the change association rules that exist. Any objects that had existed on the system before moving to the Mixed phase use the AddressedBy2 and FormalizedBy model.
 - Flexible Mode
 - For a new Windchill 11.0 system this will be the default mode.
 - For existing users this mode will be available in the Athens release. During this phase, AddressedBy2 and FormalizedBy links are converted to use the FlexibleChangeLink model. If links have a role object that is not a FlexibleChangeItem, they are not converted.
 - When this mode is available, a utility will be provided to convert change objects that are still using the old model.

FLEXIBLE CHANGE ASSOCIATIONS – ENABLING FOR EXISTING CUSTOMERS



- New Windchill 11 Systems
 - Flexible Model will be the default
- Customers moving to Windchill 11 from existing versions
 - Can decide to stay in Legacy mode
 - Can move to Hybrid mode
 - Requires running the FlexibleChangeConverter utility:
 - » From a Windchill shell run:
 - » `java wt.change2.flexible.FlexibleChangeConverter -convert`
 - In the Windchill Athens release a utility that enables customers to move from Hybrid mode to purely Flexible mode will be available
 - In a future Major release this will be done for users as part of a migration step



FLEXIBLE CHANGE ASSOCIATIONS – REPORTING

- Query Builder reports will need to be updated for the new Relationships
- Best Practice available in Help
 - “Flexible Change Links for Query Builder”
 - http://support.ptc.com/cs/help/windchill_hc/wc110_hc/index.jspx?id=WCCG_BusLogicCust_ChangeMgmt_FlexChangeLinks&action=show

PTC® Windchill

link to this page

Windchill Start using Windchill 11.0 with these free tutorials!

Flexible Change Links for Query Builder

You have an existing report that displays Legacy Change Associations (wt.change2.FormalizedBy or wt.change2.AddressedBy2) and you have an existing report that displays Legacy Change Associations (wt.change2.AddressedBy2 or wt.change2.FormalizedBy2) and you have an existing report that displays Legacy Change Associations (wt.change2.AddressedBy2 or wt.change2.FormalizedBy2).

Scope/Applicability/Assumptions

The scope of this information is to outline recommendations for creating a Query Builder Report that displays Flexible Change Associations to replace Legacy Change Associations (wt.change2.AddressedBy2 or wt.change2.FormalizedBy2).

Intended Outcome

The intended outcome of this information is to help provide guidance on how to create a report template that uses Flexible Change Links to display Flexible Change Associations.

Solution

New link types are available to support a Query Builder Report Template for associated Change Objects using Flexible Change Links.

Prerequisite Knowledge

To complete this process you must have an understanding of the following:

- Flexible Change Links
- Associated Change Objects
- Report Templates
- Change Objects

Solution Elements

Element	Type	Description
wt.change2.FlexibleChangeLink	Class	Abstract link for flexible associations between two FlexibleChangeItem objects. FlexibleChangeItem objects include Problem Reports, Variances, Change Requests, and

Edit Report Template - Change Process Link : PR - CR

Properties Tables and Joins Select or Constrain Criteria Sort

Main Type: -- not selected --

Remove Unused Tables and Joins

Problem Report


Change Request...

Role AObject Ref

Change Process Link

Role BObject Ref

View Report Save As

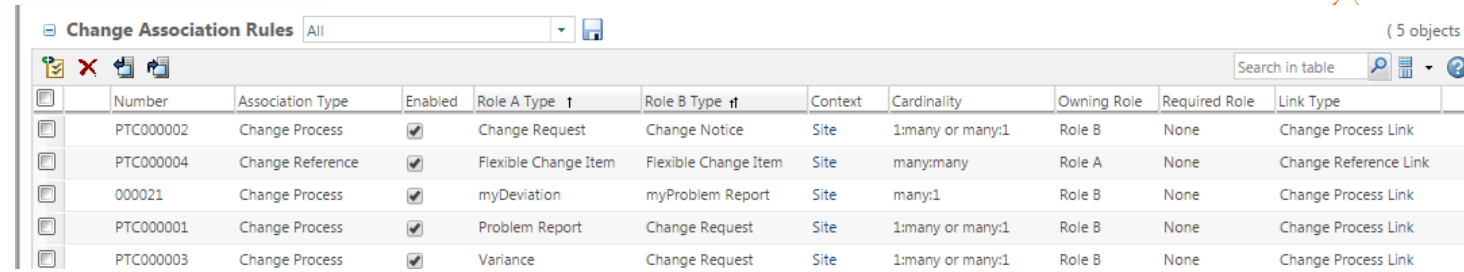


EASY TO DEFINE CHANGE ASSOCIATIONS

- Manage Change Associations
 - Business Rules Tab (Site Level)
 - Can be supported at the Organization level

`wt.associationRules.enableOrganizationRules`

- Select the Change (or Quality) objects for the new relationship
- Define attributes of the new relationship
 - Cardinality: 1:1, 1:many, many:1, many:many
 - Owning Role – Select the role that owns the rule
 - Required Role – Select the role that requires the rule
- Link Type
 - Change Process Link – Process links support closure through a workflow process, so the objects can be closed at the same time if each object is in the correct state. Use these where a process needs to be synchronized
 - Change Reference Link – Reference links are references to other objects and do not support closure through a workflow process. These are used to where supporting information is needed.



The screenshot shows a table titled 'Change Association Rules' with a search bar and a '(5 objects)' indicator. The table contains the following data:

	Number	Association Type	Enabled	Role A Type ↑	Role B Type ↑	Context	Cardinality	Owning Role	Required Role	Link Type
<input type="checkbox"/>	PTC000002	Change Process	<input checked="" type="checkbox"/>	Change Request	Change Notice	Site	1:many or many:1	Role B	None	Change Process Link
<input type="checkbox"/>	PTC000004	Change Reference	<input checked="" type="checkbox"/>	Flexible Change Item	Flexible Change Item	Site	many:many	Role A	None	Change Reference Link
<input type="checkbox"/>	000021	Change Process	<input checked="" type="checkbox"/>	myDeviation	myProblem Report	Site	many:1	Role B	None	Change Process Link
<input type="checkbox"/>	PTC000001	Change Process	<input checked="" type="checkbox"/>	Problem Report	Change Request	Site	1:many or many:1	Role B	None	Change Process Link
<input type="checkbox"/>	PTC000003	Change Process	<input checked="" type="checkbox"/>	Variance	Change Request	Site	1:many or many:1	Role B	None	Change Process Link

Supported for:

- Change Request
- Change Notice
- Problem Report
- Variance—Deviation or Waiver
- CAPA Request
- Nonconformance
- Customer Experience

CHANGE ASSOCIATION PROCESS CLOSURE



- As delivered any new Change Object will behave consistently to prior releases
 - For Example – Resolving a Change Notice will Resolve a Change Request
- New Capabilities added to Synchronize process closure via configuration.
 - No customization required to support a variety of closure based upon Change Associations
 - Close processes top down and bottom up
 - Updated Helper methods
 - Change Workflow Closure Best Practice in Windchill Help
- Add a Synch Robot to look for Parent or Child closure depending upon need
 - Enables new possibilities – Cancel a CR can cancel related CN

```
• When listening for "PARENT CHANGE OBJECT STATE CHANGE":  
if(com.ptc.windchill.pdmlink.change.server.impl.WorkflowProcessHelper.isRelatedParentsInStates (primaryBusinessObject,  
new String[]{"RESOLVED"})) {  
    result = "Resolved";  
}
```

DEMONSTRATION



BEST PRACTICES FOR SUPPORTING CHANGE MANAGEMENT WITH FLEXIBLE CHANGE ASSOCIATION

- ☐ Change Management Process Overview
- ☐ Flexible Change Associations
- ☐ Windchill 11 Change Management Enhancements
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CHANGE ANNOTATION USABILITY



- Proposed Changes to a Design may be added to a Change using Visual or Structural annotations
 - By default, these annotations may be modified by others during the change process
 - These annotations can be locked based on customer workflow process in previous releases
- Enhancement – In WC 11 - Annotations associated to the Change may be locked and/or unlocked at various points in the Workflow with new Helper API.
 - Prevent updates to an annotation to maintain the initial annotation proposal
- Technique –
 - Add Workflow Robot at appropriate times in the Workflow process to Lock or Unlock the Annotations
 - Examples in Help

```
wt.fc.collections.WTSet changeObjects =  
wt.fc.collections.CollectionsHelper.singletonWTSet(primaryBusinessObject);  
wt.change2.ChangeLockHelper.service.  
lockRelatedMaterials(revisedChangeObjects, wt.change2.ChangeApplicationLock.  
LOCK_SUPPORTINGMATERIAL);
```

- Benefits: Provide clarity and traceability to the information used to assess the change

WORKFLOW PROCESS MANAGER- HTML

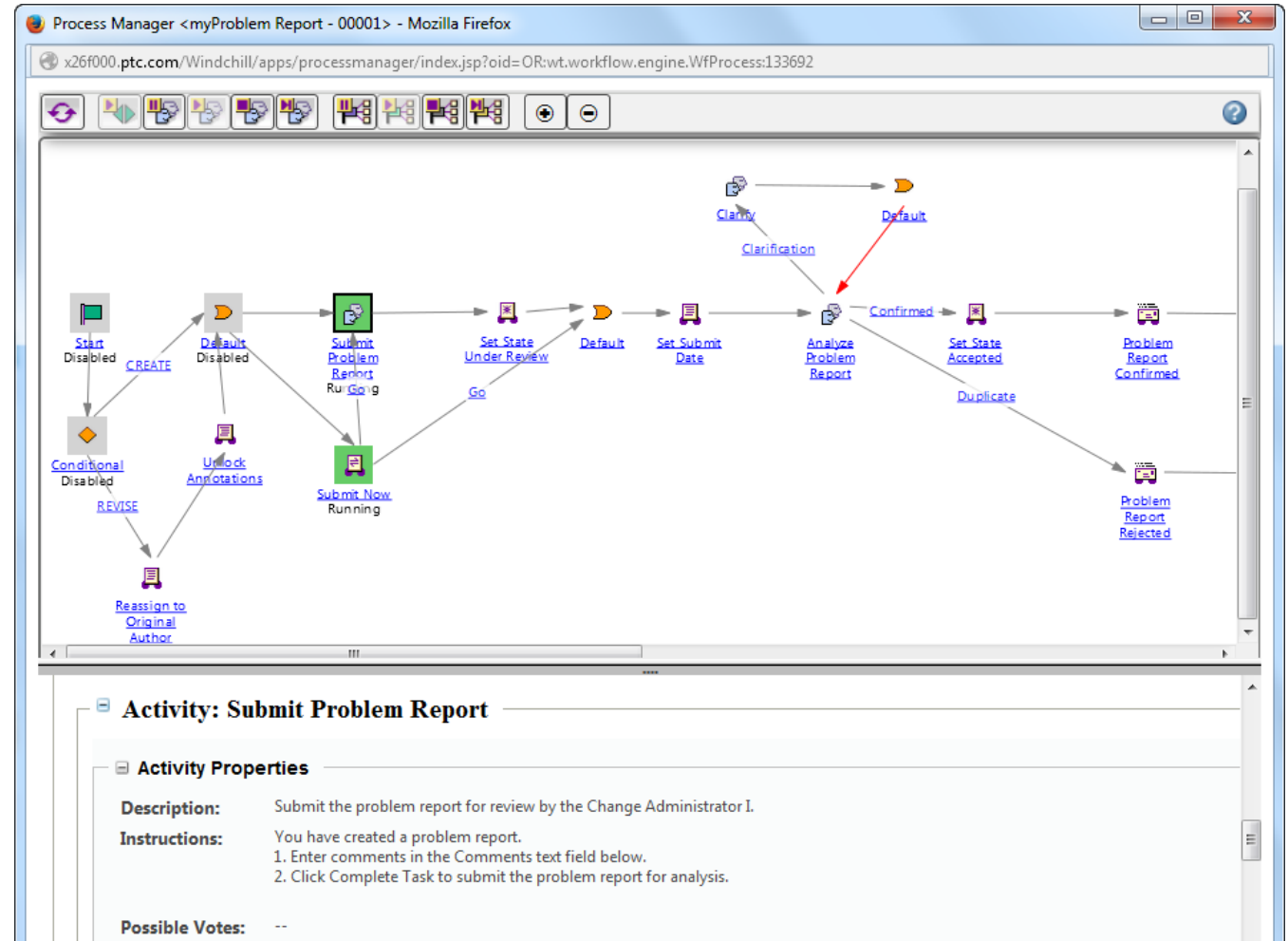


- Workflow Process Manager has been converted to HTML
 - Reduce end-user Java applet interaction
 - New Zoom-in/out action

Routing/Process History

<input checked="" type="checkbox"/>	Name	Version	Status	Initiated
<input checked="" type="checkbox"/>	Problem Report Workflow 00001_A.1		Running	Demo, U
(1 objects selected)				

[Terminate Process](#)
[Open Process Manager](#)
[Open Process Monitor](#)



CHANGE MANAGEMENT WORKFLOWS – NATIVE TASK TEMPLATES



- OOTB Change Management Workflow now leverage Native Task Templates (added in WC 10.2 M030) for many of the Workflow Activities
 - Reduce navigation for users by providing actions and information about the Change in the Workflow Activity
- Notes on using the OOTB Workflow Task Templates
 - Currently takes two steps to enable using the Native Task Templates
 - Set Preference (under Workflow)
 - Use task form template to generate the task details page to YES
 - Disable Default Templates
 - This will allow all the Templates to render correctly when using mixed Legacy and Native Templates

The screenshot shows a configuration window titled 'Templates' with a dropdown menu set to 'Task Form Templates'. Below the title bar is a toolbar with icons for delete, eye, refresh, and save. The main area contains a table with columns: Name, Task Type, Type, PBO Class, Visibility, and Enabled. There are two rows of data: 'default' and 'Analyze Change Request'.

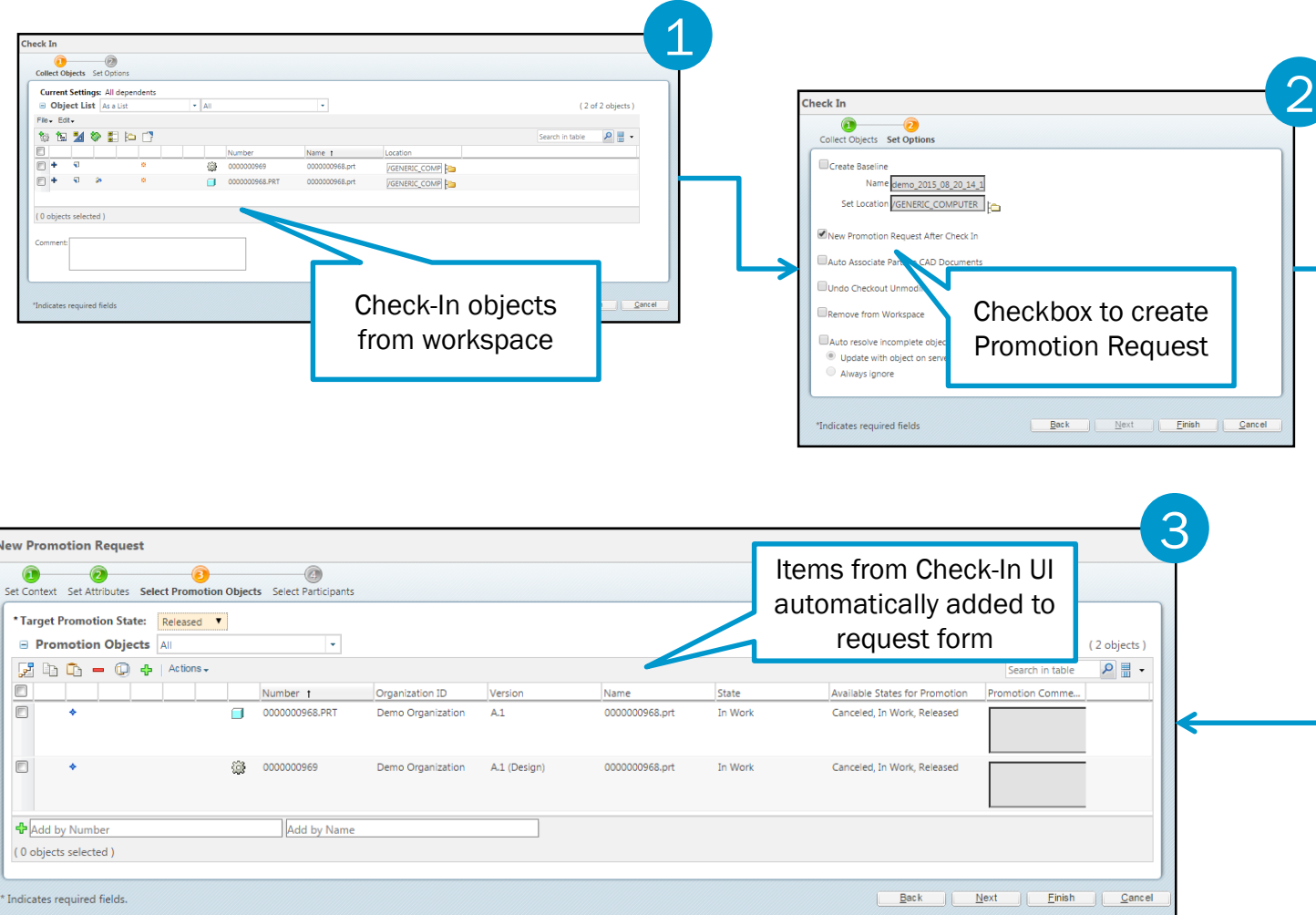
Name	Task Type	Type	PBO Class	Visibility	Enabled
default	Default	Native	wt.fc.WTObject	Show	No
Analyze Change Request	Default	Native	wt.change2.WTChangeReques...	Show	Yes

ENHANCED PROMOTION REQUEST ACCESS



Create Promotion Request during check-in process

- Automatically launches Create New Promotion Request form
- Items from check-in form automatically added to Promotion Objects list



EXPANDED PROMOTION REQUEST PROCESS



- Comment rows for each item in the Promotion Table
- Define a Need Date for the Promotion Request
- Incorporate Native Task Template in the OOTB Promotion Request Workflows
- Broaden Business Rule support for Promotion Request
 - Leverage “Checked Out” Business Rule check in Promotion Request workflows
 - Support for Attribute Business Rules with Promotion Requests

*Target Promotion State: Released

Promotion Objects All

Number	Version	Name	State	Promotion Comments	Available
01-2_CAM_EXHAUST.ASM	A.1	01-2_cam_exhaust.asm	In Work	Update CAM assembly	Canceled
01-2_CAM_EXHAUST.PRT	A.1	01-2_cam_exhaust.prt	In Work	Refine CAM profile per new lab results	Canceled
WCDS000494	A.1 (Design)	01-2_cam_exhaust.asm	In Work	Update CAM assembly	Canceled
WCDS000666	A.1 (Design)	01-2_cam_exhaust.prt	In Work	Refine cam profile per lab test results from exhaust gas analysis and next gen EPA Tier 2 testing	Canceled

+ Add by Number Add by Name

(0 objects selected)

Actions Task - 01-51328_outer_race.prt, WCDS000100, A.1, 2015-05-051430833748705-Approve Pr

Details Promotion Objects

Promotion Objects

Promote Status	Number	Version	Name	Promote...	Promotion Comments	Context
	WCDS000033	A.1 (Design)	01-2_valve_shim.prt	In Work	Work is complete let...	Drive System
	WCDS000098	A.1 (Design)	01-33110.prt	In Work	Please review updat...	Drive System
	WCDS000100	A.1 (Design)	01-51328_outer_race.prt	In Work	Check race clearances	Drive System
	WCDS000226	A.1 (Design)	01-51282a.prt	In Work		Drive System

(0 objects selected)

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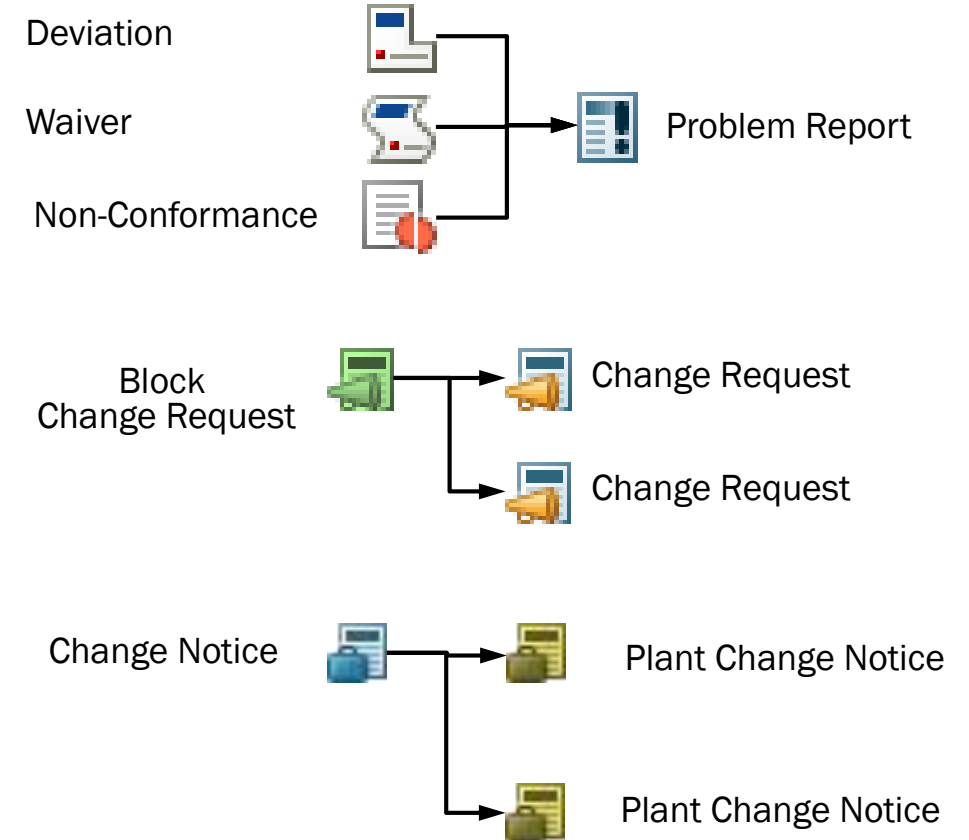
WINDCHILL 11.0 M010 CHANGE MANAGEMENT



- Change Task Association Rules
- Change Management Concurrency Control
- Change Association enhancements
 - Convert “Legacy” Links to Change Association links
 - Support Resolution States
 - Manual Closure of Change Processes
 - Usability improvements
 - Improve Type selection in Association Rule configuration
 - Search and Table view improvements for related Changes

SUMMARY

- Change Management processes
 - Deliver consistent execution and traceability to the Enterprise
- Flexible Change Associations
 - Improve Adoption and Lower Training costs by simplifying process creation
 - Easily Configure the Change Process to meet the Enterprise needs
- Change Management enhancements
 - Increase Value-added Time by automating steps
 - Decrease errors with simplified process flow





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