

PL11664 - Behaviors 301 for the Jedi Master

Irvin Hayes Jr
Product Manager

Ralf Walter
Principal Engineer

Irvin Hayes Jr.

- 25 years of IT Support and technical leadership
- Work with key customers or prospects to identify unsolved problems
- Assess and investigate different technologies to solve given market problems
- Lead user experience and development teams



"I am a person that is constantly driven by technology. Technology is a field I find completely exciting and I can't learn enough of it."



irvin.hayes@autodesk.com



@ihayesjr



<https://www.linkedin.com/in/irvin-hayes-jr-294b255>

Ralf Walter

- 20 years as Software Engineer at Autodesk
- Worked at AT&T Network Systems specialized in CAD productivity applications for AutoCAD users
- Experience with AutoCAD, AutoCAD Mechanical, Mechanical Desktop, Inventor, Simulation, and, currently, Vault.



"Technology. Bring it."



ralf.walter@autodesk.com



<https://www.linkedin.com/in/ralf-walter-8207bb78>

Class summary

This class is essential for those who want to become a Jedi Master in creating and administering Vault Behaviors. The main focus of this class is to cover Vault Behavior administration and become a master in behaviors. This class the third of a series of three Vault Behavior classes focusing on creation and administration of categories, lifecycles, revisions, and properties. After this class, you will have a strong presence in the force of Vault Behaviors.

Key learning objectives

At the end of this class, you will be able to:

- Create and manage Properties
- Create and manage Revision Schemes
- Create and manage Lifecycles
- Bring it all together with Categories

Related Classes

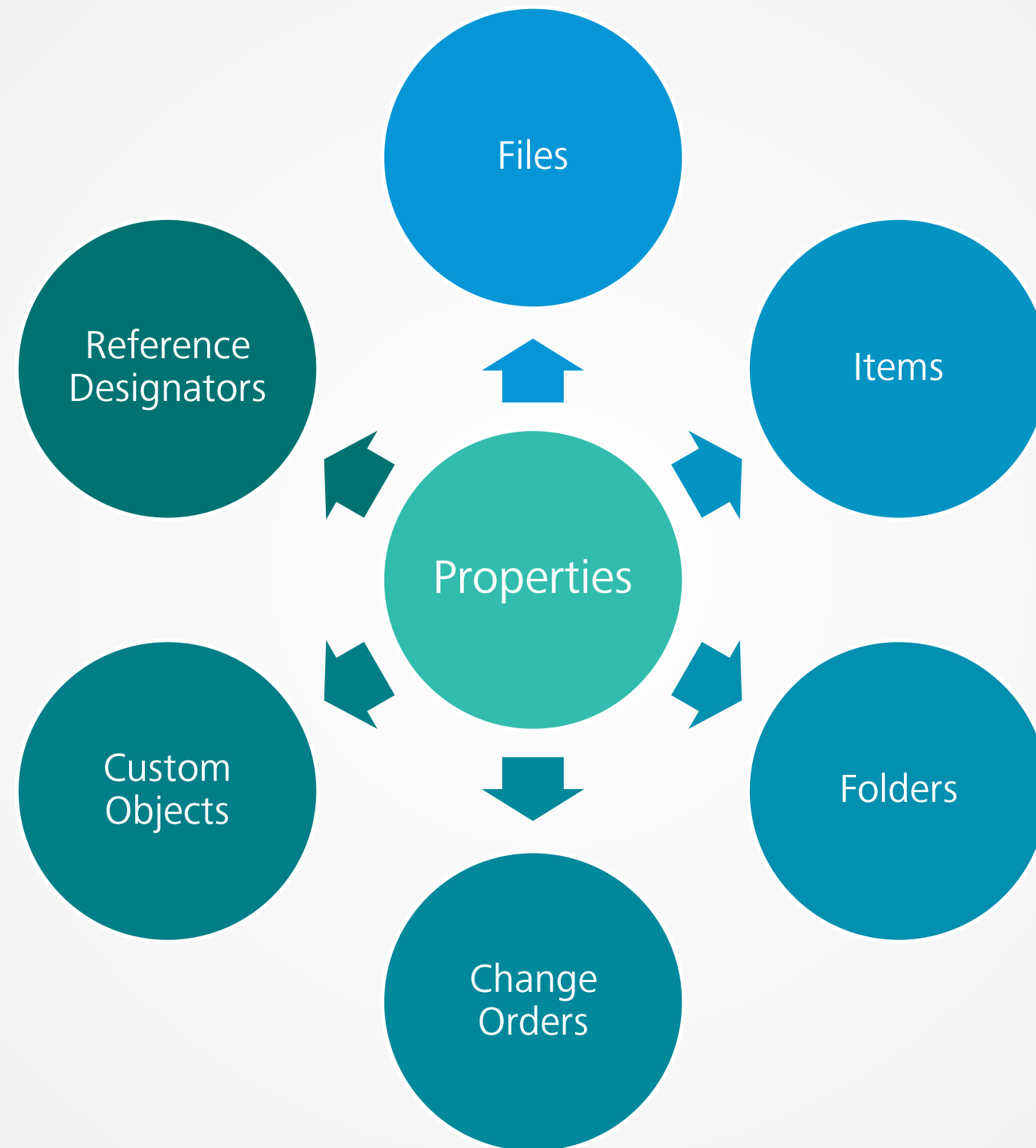
- PL10597 - Behaviors 101 for the Younglings
- PL11233 - Behaviors 201 for the Padawan Learners
- Other Vault Classes
 - PL10593 - Data Management Avengers III
 - PL11224 - Moving from Files to Items in Vault—Part 1
 - PL11458 - Moving from Files to Items in Vault—Part 2
 - PL11319 - Evolve with Vault: What's New in Vault 2016
 - PL11369 - Vault Data Standard 2016—An Introduction
 - PL11377 - Into the Habit Hole—Advanced Data Standard Configuration and Customization

Property Administration

What are Properties?

- Properties are text based strings, numeric values or dates making up non-visual object identifiers, enabling users to describe object characteristics, search on and identify objects.

Property Associations

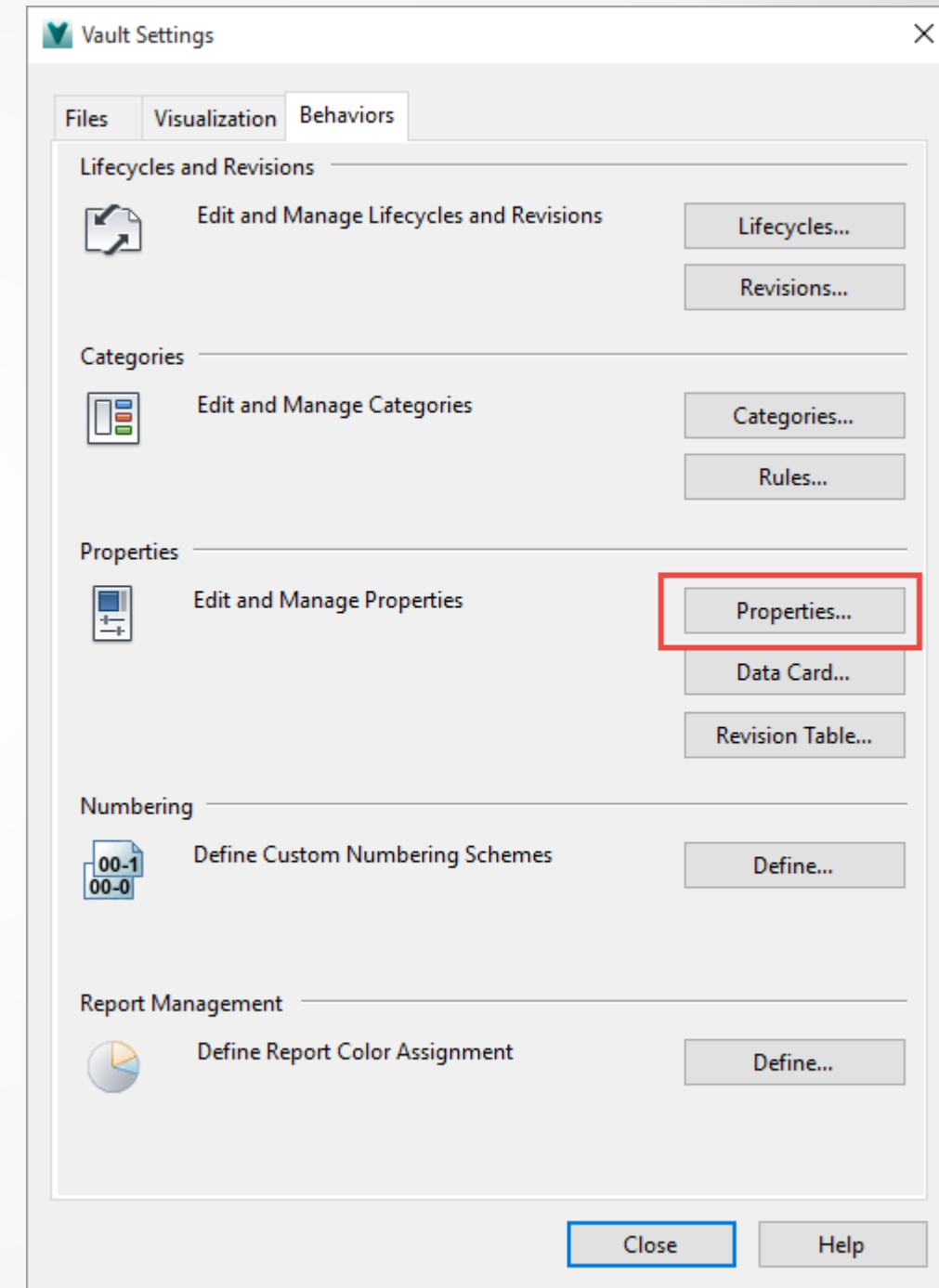


Company ABC Example

- Starting a new project with external partner
- Need to use custom properties for extra information
 - Owner
 - Source

Property Administration

- Tools -> Administration
-> Vault Settings
- Behaviors Tab



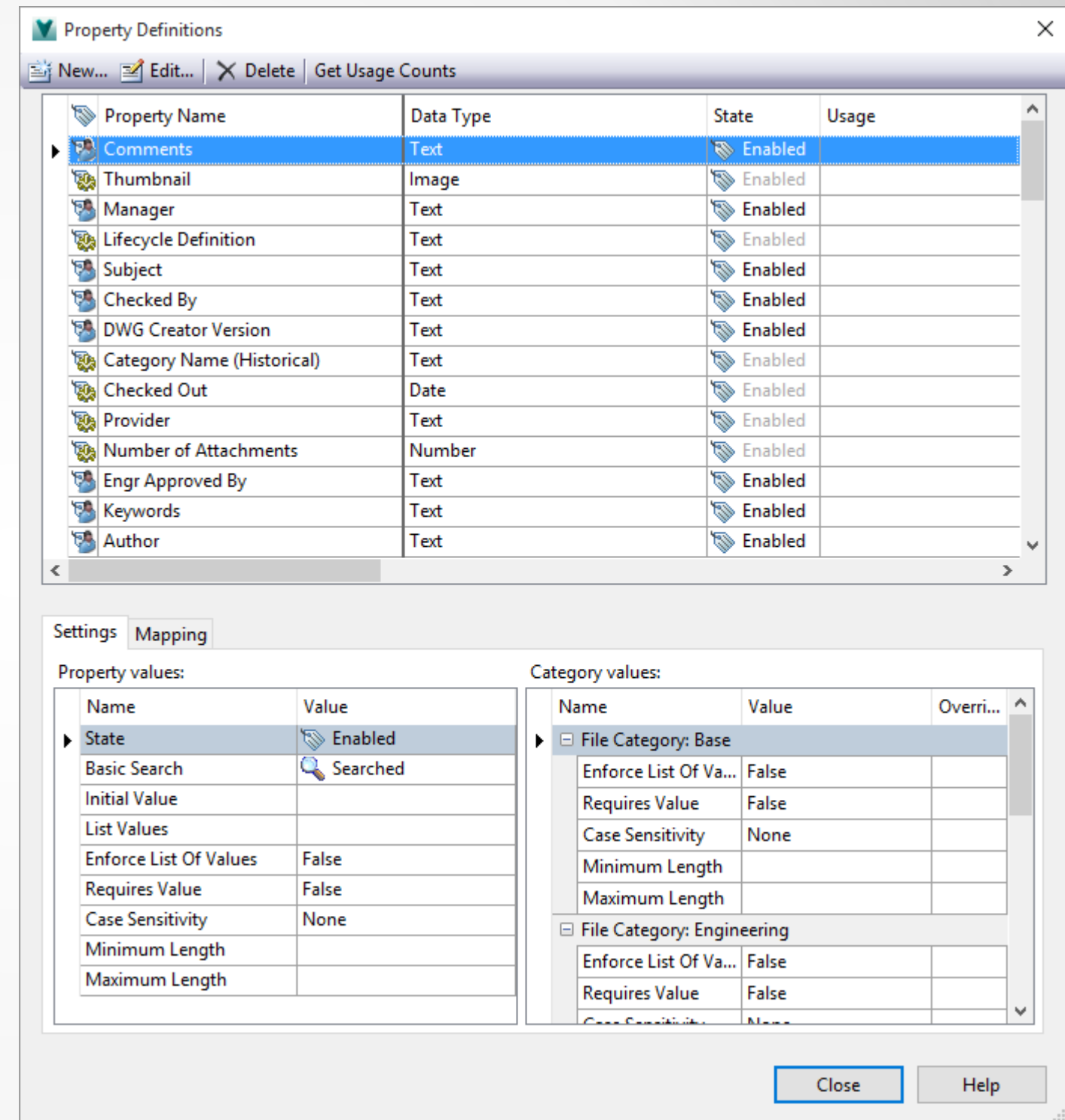
Property Overview

Types of Property

- System
- User Defined

Supported Data Types

- Text
- Number
- Boolean
- Date



Property Definitions Dialog

- Property Name
- Data Type
 - Text, Number, Boolean or Date
- State
 - Enabled or Disabled
- Usage

Property Name	Data Type	State	Usage
Effectivity	Text	Enabled	0
User Status	Text	Enabled	0
Author	Text	Enabled	2619
Mfg Approved By	Text	Enabled	0
Property Compliance (Historical)	Number	Enabled	
Checked Out By	Text	Enabled	
Version	Number	Enabled	
Checked Out	Date	Enabled	
Part Number	Text	Enabled	2644
Number of Attachments	Number	Enabled	
Thumbnail	Image	Enabled	
Rev Number	Text	Enabled	0
Material	Text	Enabled	2281
Category Name (Historical)	Text	Enabled	

Property Definitions Dialog

- Basic Settings
 - State
 - Basic Search
 - Initial value
 - Static, Mapped
 - List Values
 - Text, Number Data Types

Settings Mapping

Property values:

Name	Value
▶ State	Enabled
Basic Search	Searched
Initial Value	
List Values	
Enforce List Of Values	False
Requires Value	False
Case Sensitivity	None
Minimum Length	
Maximum Length	

Category values:

Name	Value	Overri...
▶ File Category: Base		
Enforce List Of Va...	False	
Requires Value	False	
Case Sensitivity	None	
Minimum Length		
Maximum Length		
File Category: Engineering		
Enforce List Of Va...	False	
Requires Value	False	
Case Sensitivity	None	

Property Definitions Dialog

- Enforce List of Values
- Requires Value
- Case Sensitivity
- Minimum Length
- Maximum Length
- Override by Category
- Used in Property Compliance evaluation - Policy

Settings Mapping

Property values:

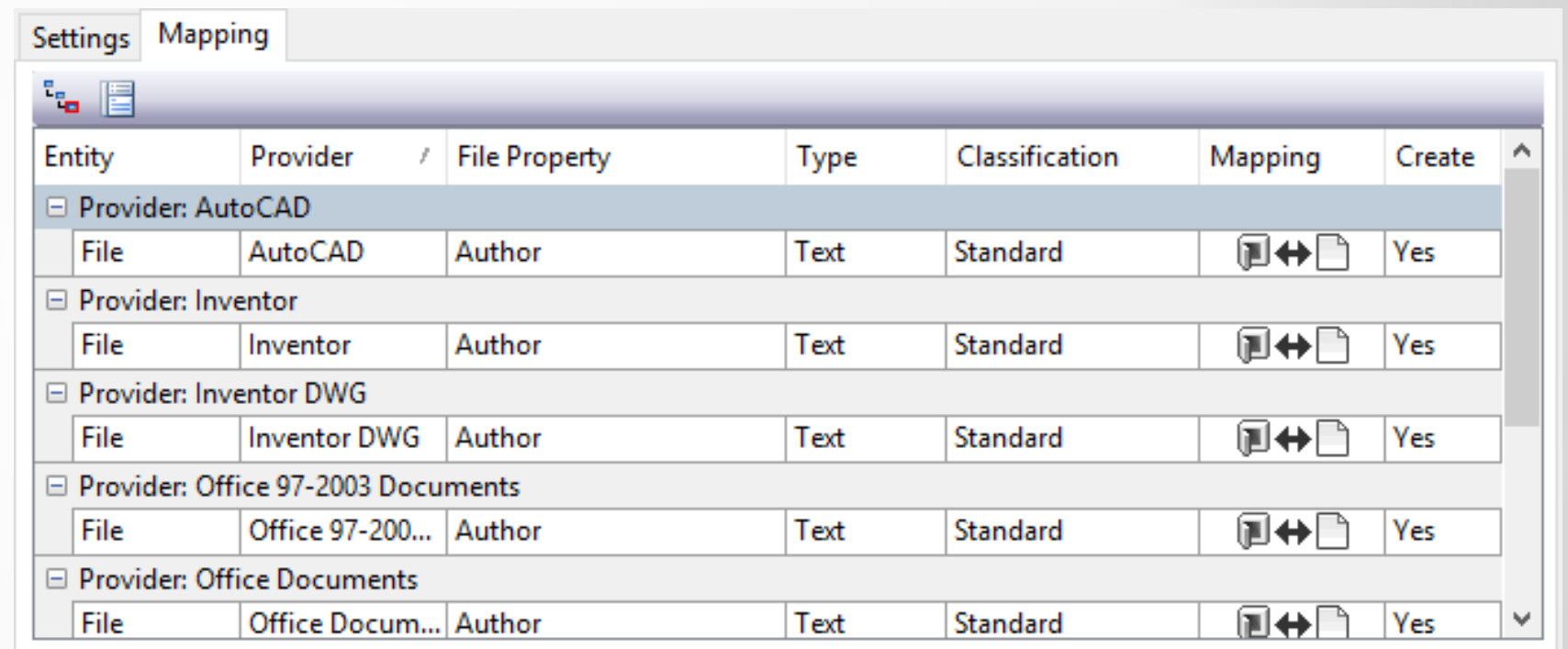
Name	Value
State	Enabled
Basic Search	Searched
Initial Value	
List Values	
Enforce List Of Values	False
Requires Value	False
Case Sensitivity	None
Minimum Length	
Maximum Length	

Category values:

Name	Value	Overri...
File Category: Base		
Enforce List Of Va...	False	
Requires Value	False	
Case Sensitivity	None	
Minimum Length		
Maximum Length		
File Category: Engineering		
Enforce List Of Va...	False	
Requires Value	False	
Case Sensitivity	None	

Property Definitions Dialog

- Create the required Read and Write Mappings
 - ← Read Only
 - Write Only
 - ↔ Read & Write (default)
- UDP mapped to a File Property



Entity	Provider	File Property	Type	Classification	Mapping	Create
Provider: AutoCAD						
File	AutoCAD	Author	Text	Standard	↔	Yes
Provider: Inventor						
File	Inventor	Author	Text	Standard	↔	Yes
Provider: Inventor DWG						
File	Inventor DWG	Author	Text	Standard	↔	Yes
Provider: Office 97-2003 Documents						
File	Office 97-200...	Author	Text	Standard	↔	Yes
Provider: Office Documents						
File	Office Docum...	Author	Text	Standard	↔	Yes

Content Providers

- “Provide” the File Properties used for mappings
- Write Mapping enabled if Provider supports write back
- Pre-Configured Providers installed:
AutoCAD, Inventor, Office, Revit, etc.
- iFilter used if no Provider

New (Property)

Name:

Type:

Associations:

Settings Mapping

Entity	Provider	File Property	Type	Classification	Mapping	Create
Click here to add a new mapping						
File	Inventor	Engineer	Text	Standard		No
File	Inventor	Manager	Text	Standard		No

Where Used

Entity	Used By Property	Mapping
File	Manager	
File	Owner	

OK Cancel Help

Property Mappings

- Mappings are listed in Top Down Priority Order
- Read Mappings processed in priority order

Engineer->Manager
if no value

Initial Value Mapping*

Initial Value*

*only used for initial creation

New (Property)

Name: Owner

Type: Text

Associations: File

Settings Mapping

Entity	Provider	File Property	Type	Classification	Mapping	Create
*					Click here to add a new mapping	
File	Inventor	Engineer	Text	Standard		No
File	Inventor	Manager	Text	Standard		No

Where Used

Entity	Used By Property	Mapping
File	Manager	
File	Owner	

OK Cancel Help

Property Mappings

- Where Used displays the Write Mappings for the selected File Property
- Mappings are listed in “Write” Priority Order
- Create Option only for Write Mappings

The screenshot shows the 'New (Property)' dialog box with the 'Mapping' tab selected. The 'Name' field is 'Owner', 'Type' is 'Text', and 'Associations' is 'File'. Below the tabs, there is a table for mappings. The 'Where Used' section shows a table with columns 'Entity', 'Used By Property', and 'Mapping'.

Entity	Provider	File Property	Type	Classification	Mapping	Create
* Click here to add a new mapping						
File	Inventor	Engineer	Text	Standard		No
File	Inventor	Manager	Text	Standard		No

Entity	Used By Property	Mapping
File	Manager	
File	Owner	

Buttons: OK, Cancel, Help

Property Mappings

- Used in Property Compliance evaluation
 - Equivalence Compliance
 - Both Read and Write Mappings are evaluated

What happens when a File is added

1. Indexed and Properties extracted
2. Read Mappings, Initial Values are applied to all UDPs
3. Assigned a Category based on category assignment rules
4. Adds UDPs by associated with this Category
5. Property Compliance is evaluated on the file's properties
6. Search Indexes built (in background)

Property Compliance

Policy Compliance

- Policy configured in Settings section of Property Definition
- Evaluated for Files, Items, Folders and Custom Objects
- If in violation, a warning symbol adjacent to this property value will be displayed

Edit (User Defined) - Owner

Name: Owner
Type: Text
Associations: File

Settings Mapping

Property values:

Name	Value
State	Enabled
Basic Search	Searched
Initial Value	
List Values	
Enforce List Of Values	False
Requires Value	False
Case Sensitivity	None
Minimum Length	
Maximum Length	

Category values:




Name	Value	Overr...
File Category: Base		
Enforce List Of V...	False	
Requires Value	False	
Case Sensitivity	None	
Minimum Length		
Maximum Length		
File Category: Engineering		
Enforce List Of V...	True	✓
Requires Value	True	✓
Case Sensitivity	None	
Minimum Length		
Maximum Length		

OK Cancel Help

Equivalence Compliance

- Evaluated for Files only
- Equivalence ensures that the derived File Property and UDP values match
- Both Read and Write Mappings are evaluated
- If in violation, a warning symbol adjacent to this property value will be displayed

Compliance Icons

No icon	Compliant
	Non-compliant (Policy failure, Equivalence failure or both)
	Pending - Object (e.g. File/Item) is queued for a Property Compliance check
	Evaluation failed

Equivalence Compliance

Read Mappings

- Provider Property Mappings processed in priority order
Engineer-> Manager
- If no value, the empty value is used
- This is then compared against the UDP value (Owner)

Edit (User Defined) - Owner

Name:

Type:

Associations:

Settings **Mapping**

Entity	Provider	File Property	Type	Classification	Mapping	Create
Click here to add a new mapping						
File	Inventor	Engineer	Text	Standard		No
File	Inventor	Manager	Text	Standard		No

Where Used

Entity	Used By Property	Mapping
File	Engineer	
File	Owner	

OK Cancel Help

Equivalence Compliance

Write Mappings

- UDP Mappings processed in priority order
Engineer-> Owner
- If no value, the empty value is used
- This is then compared against the File Property (Engineer)

Edit (User Defined) - Owner

Name:

Type:

Associations:

Settings **Mapping**

Click here to add a new mapping

Entity	Provider	File Property	Type	Classification	Mapping	Create
* File	Inventor	Engineer	Text	Standard		No
File	Inventor	Manager	Text	Standard		No

Where Used

Entity	Used By Property	Mapping
File	Engineer	
File	Owner	

OK Cancel Help

Equivalence Compliance

Write Mappings – Use of “Create”

Create = true

- Absence of the property in the file treated as a blank value and compared against the value of the UDP

Create = false

- Equivalence will only be evaluated if file property value exists

The screenshot shows the 'Edit (User Defined) - Owner' dialog box. The 'Name' field is 'Owner', 'Type' is 'Text', and 'Associations' is 'File'. The 'Mapping' tab is active, displaying a table with columns: Entity, Provider, File Property, Type, Classification, Mapping, and Create. There are two rows of mappings. Below the table is a 'Where Used' section with a table showing 'Entity', 'Used By Property', and 'Mapping'.

Entity	Provider	File Property	Type	Classification	Mapping	Create
* Click here to add a new mapping						
File	Inventor	Engineer	Text	Standard	↔	Yes
File	Inventor	Manager	Text	Standard	↔	No


Entity	Used By Property	Mapping
File	Engineer	↔
File	Owner	↔

Buttons: OK, Cancel, Help

When property compliance is evaluated

- Immediately when the changes to an object are committed to Vault.
 - e.g. Add/Check In of a file

Queued for Evaluation

- Property Definition modified by the user
 - All objects associated with this Property Definition are queued
- Evaluation executed by ADMS Server in the background
- Queued objects will have the Pending icon  displayed

How to resolve Compliance Violations

Policy failure

- Edit UDP to be compliant
- Read only Mapping: Modify the File property (or change Policy configuration)

Equivalence failure:

- Write Mapping Failures: Edit Property or Synchronize Properties
- Read Mapping Failure: Property File Re-Index or next Check In.

Lifecycle Administration

What is a Lifecycle?

- A lifecycle describes the process or stages an object passes through from innovation to production or construction.
- Applied to
 - Files, Folders, Custom Objects & Items

Company ABC Example - Continue

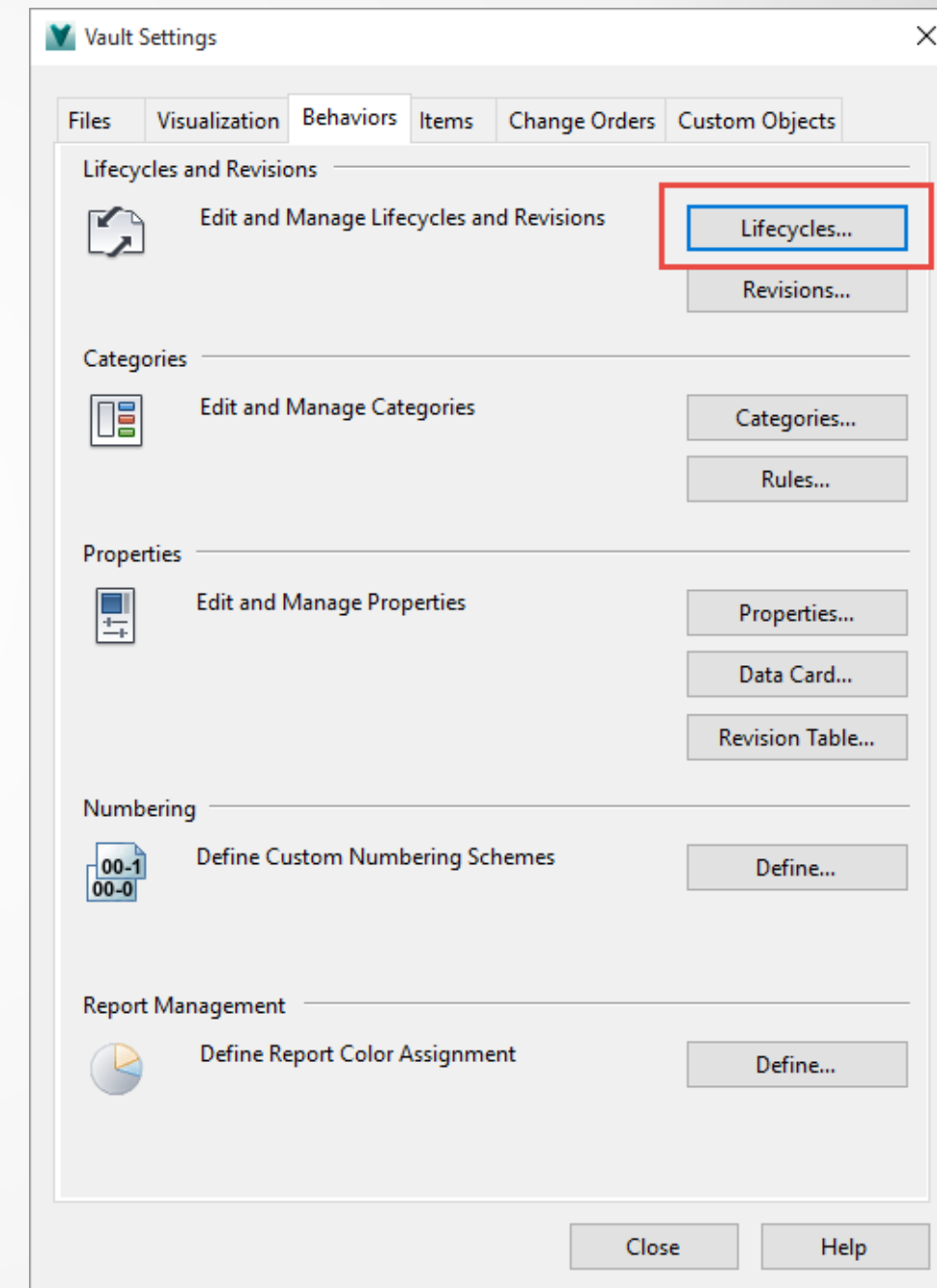
- Need 2 new Lifecycle Definitions
 - Technical Document Lifecycle



- Manufacturing Release Process
 - Copy of an existing lifecycle

Lifecycle Administration

- Tools -> Administration -> Vault Settings
- Behaviors Tab



Lifecycle Definitions

- Consider as 'Routings'
- Use as 'Templates'
- Several included:
 - Basic Release Process
 - Flexible Release Process
 - Simple Release Process
 - Long Lead Time Release Process
 - Long Lead Time Release Process with Change Order
 - Item Release Process

The screenshot shows the 'Lifecycle Definitions' dialog box. At the top, there is a filter dropdown set to '<All Lifecycle Definitions>' and a toolbar with buttons for 'New...', 'Copy...', 'Edit...', 'Delete', and 'Assign...'. Below this is a table listing various lifecycle processes. The 'Flexible Release Process' is selected. Below the table, the 'Lifecycle Details' section is visible, showing 'Lifecycle States' with a table of states. The 'General' tab is active, displaying the 'State Name' as 'Work in Progress' and the 'State Description' as 'State for free-form design creation and modifications'. At the bottom right, there are 'Close' and 'Help' buttons.

Name	Description
Basic Release Process	Basic manufacturing lifecycle process for release control
Flexible Release Process	Flexible manufacturing lifecycle process for release control
Simple Release Process	Simple lifecycle process for document control
Long Lead Time Release Process	A process for releasing long lead time manufacturing projects
Long Lead Time Release Process with C...	A process for releasing long lead time manufacturing projects with Change O...
Item Release Process	Item lifecycle process for release control

Name	Description
Work in Progress	State for free-form design...
For Review	State for targeted design r...
Released	State for controlling acces...
Quick-Change	State for controlling acces...
Obsolete	State for retirement

Lifecycle States

- Name applied to describe the stage of Work of files:
 - Work In Progress
 - For Review
 - Pre-Release
 - Released
 - Quick Change
 - Obsolete

Lifecycle Definition

WIP For Review Quick-Change Released Obsolete

Lifecycle Details

Lifecycle States:

✓	Name	Description
✓	Work in Progress	State for free-form design...
	For Review	State for targeted design r...
	Released	State for controlling acces...
	Quick-Change	State for controlling acces...
	Obsolete	State for retirement

General Transitions Security Control Comments

State Name:
Work in Progress

State Description:
State for free-form design creation and modifications

Lifecycle States

- States can be renamed
- Create new states
- Optionally removed
 - Through the Remove option
 - OR through transition rules
- State names appear throughout Vault

Lifecycle Details

Lifecycle States:

+ × ✓ | ↑ ↓

✓	Name	Description
✓	Work in Progress	State for free-form design...
	For Review	State for targeted design r...
	Pre-Release	State for controlling acces...
	Released	State for controlling acces...
	Quick-Change	State for controlling acces...
	Obsolete	State for retirement

General Transitions Security Control Comments

Edit...

State		State
Work in Progress	➡	For Review
Work in Progress	➡	Pre-Release
Work in Progress	➡	Released
Work in Progress	➡	Quick-Change
Work in Progress	➡	Obsolete
Work in Progress	⬅	For Review
Work in Progress	⬅	Pre-Release
Work in Progress	⬅	Released
Work in Progress	⬅	Quick-Change
Work in Progress	⬅	Obsolete

Lifecycle Transitions

- Configurable transition between states
- Define the next available state
- Each transition has optional criteria
 - Enforce company standards
 - Prevent transition until criteria met
 - Property based

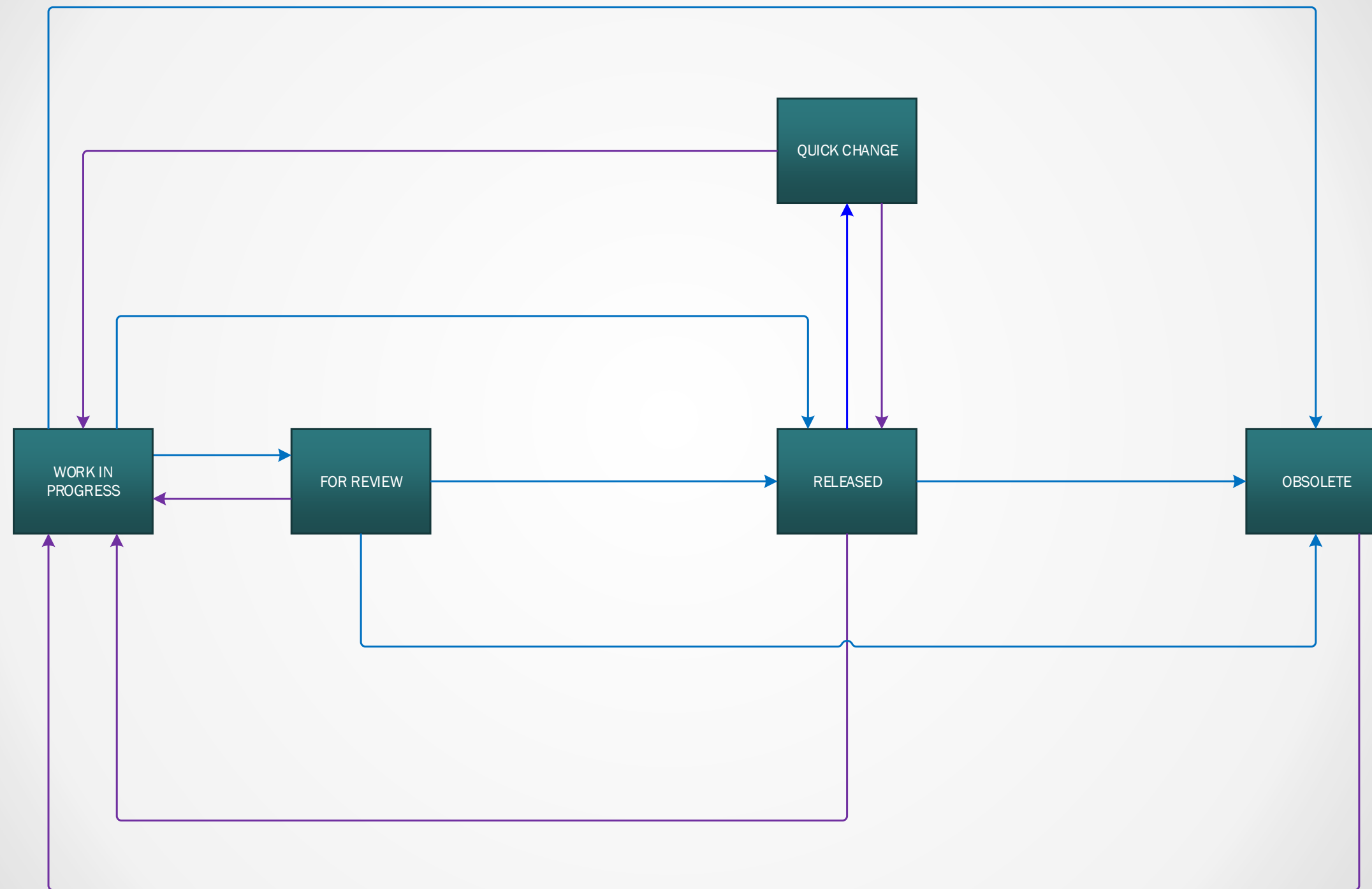
The screenshot displays the 'Transitions' tab of a configuration window. It features a table of transitions and a detailed 'Transition' dialog box.

State	State
Work in Progress	For Review
Work in Progress	Pre-Release
Work in Progress	Released
Work in Progress	Quick-Change
Work in Progress	Obsolete
Work in Progress	For Review
Work in Progress	Pre-Release
Work in Progress	Released
Work in Progress	Quick-Change
Work in Progress	Obsolete

The 'Transition' dialog box shows the following configuration:

- From State:** Work in Progress
- To State:** Released
- Criteria:** All Properties
- Property:** (empty dropdown)
- Condition:** (empty dropdown)
- Value:** (empty text box)
- Buttons:** Add, Replace, Remove
- Text Area:** Property Compliance is Compliant
- Buttons:** OK, Cancel, Help

Lifecycle State Transitions



Lifecycle Transition Actions

- Transitions have several options for actions including Revision 'bumping' and Synchronizing Properties

The 'Transition' dialog box is shown with the 'Actions' tab selected. The 'From State' is 'Work in Progress' and the 'To State' is 'Released'. The 'Filter' is set to 'All'. The 'Actions' list includes:

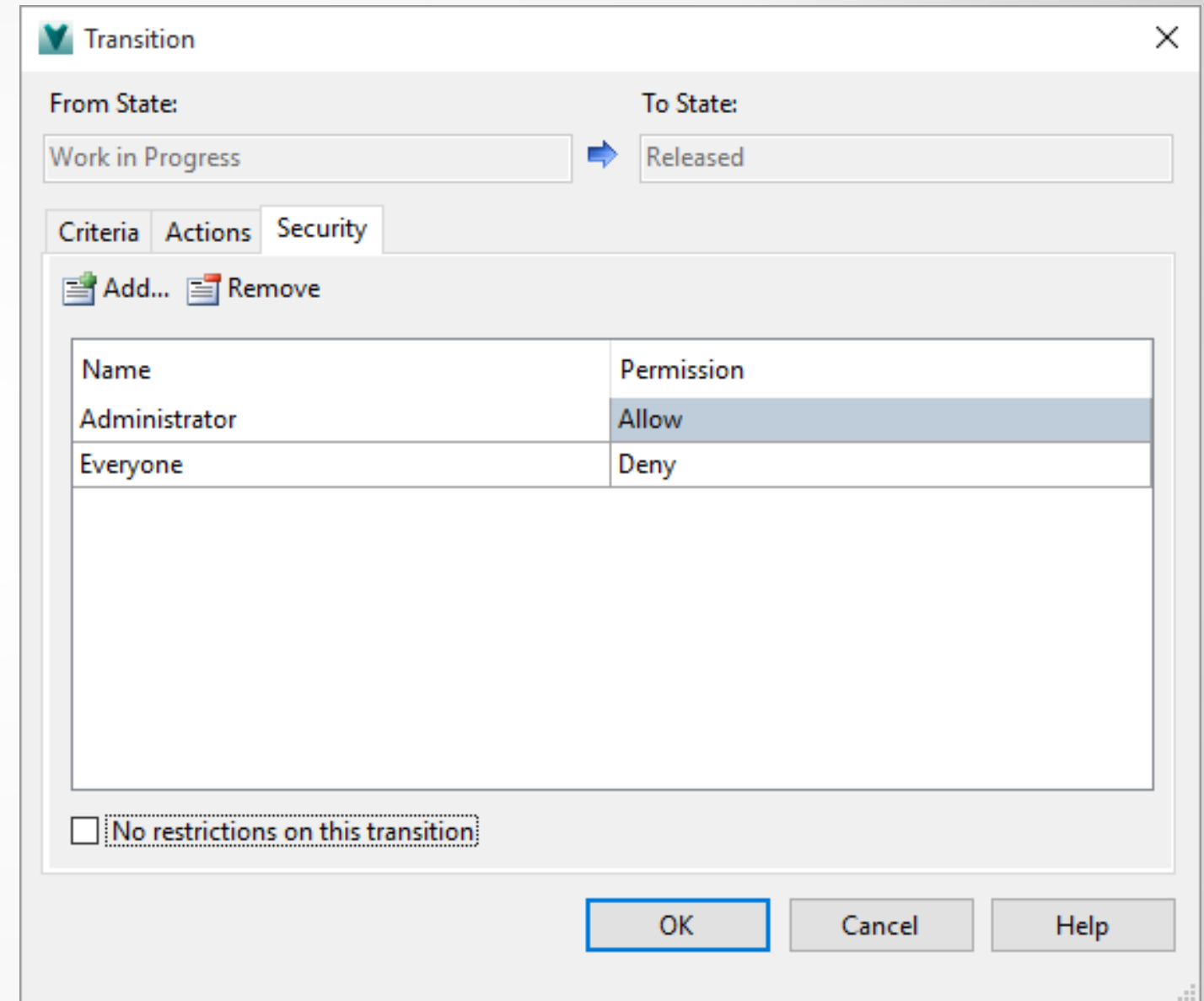
- ☐ Bump primary revision
- ☐ Synchronize properties using Job Server
- ☒ Check that dependent child files are "Released"
- ☒ Check that dependent child folders are "Released"
- ☒ Check that contained files are "Released"
- ☒ Check that linked files are "Released"
- ☒ Check that linked folders are "Released"
- ☒ Check that linked custom objects are "Released"
- ☐ Check that linked items are "Released"
- ☐ Check that children are not "Obsolete"

Buttons: OK, Cancel, Help

The 'Transition' dialog box is shown with the 'Security' tab selected. The 'From State' is 'Work in Progress' and the 'To State' is 'Released'. The 'Security' section contains the text: 'There are no security restrictions for this transition.' and a checkbox labeled 'No restrictions on this transition' which is checked. Buttons: OK, Cancel, Help

Lifecycle Transition Security

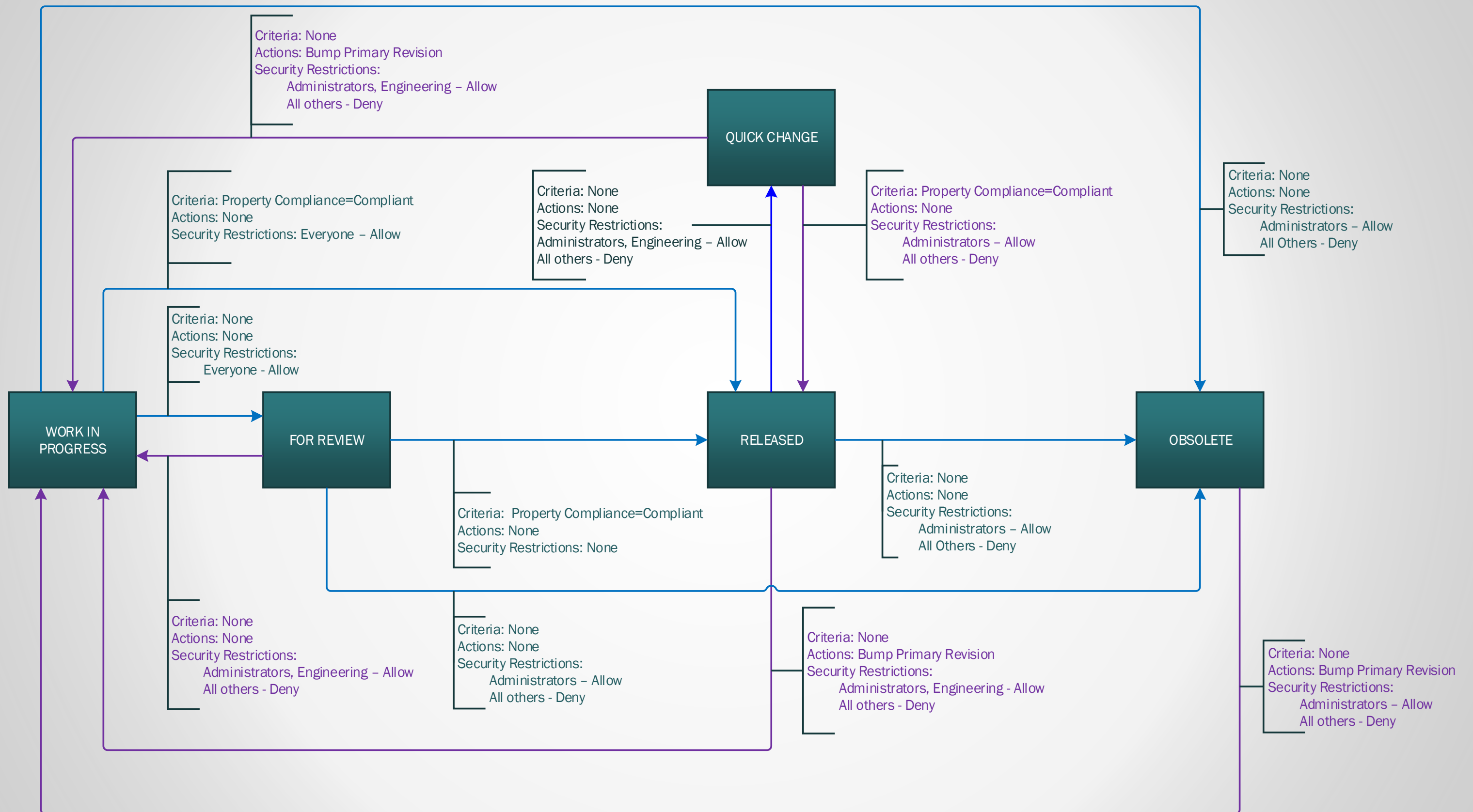
- User Groups are either allowed or denied ability to transition



The image shows a 'Transition' dialog box with a close button (X) in the top right corner. It has two input fields: 'From State:' with the value 'Work in Progress' and 'To State:' with the value 'Released', connected by a blue arrow. Below these are three tabs: 'Criteria', 'Actions', and 'Security', with 'Security' being the active tab. Under the 'Security' tab, there are 'Add...' and 'Remove' buttons. A table lists user groups and their permissions:

Name	Permission
Administrator	Allow
Everyone	Deny

Below the table is a checkbox labeled 'No restrictions on this transition' which is currently unchecked. At the bottom right are three buttons: 'OK', 'Cancel', and 'Help'.



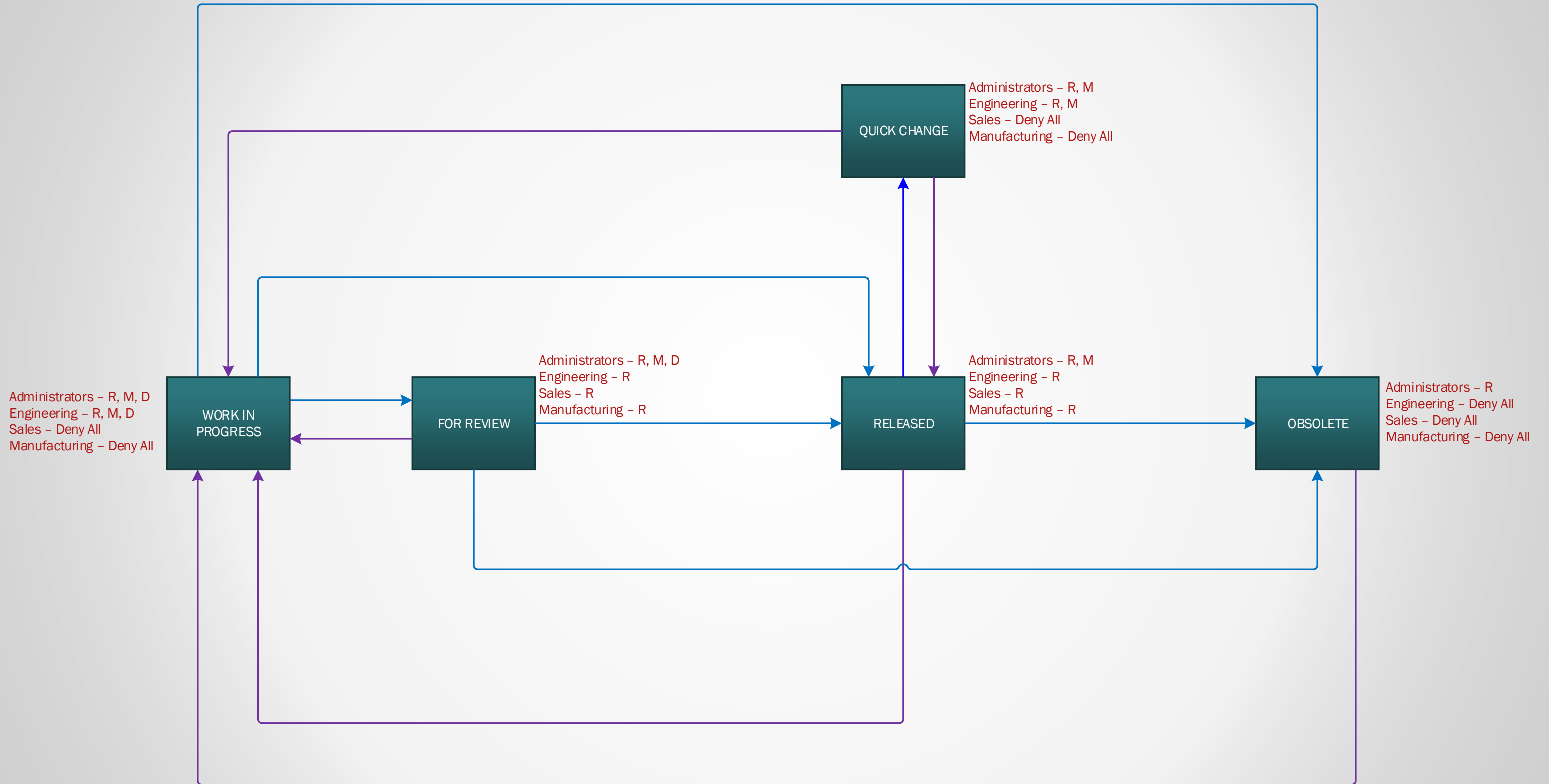
Lifecycle Security

- Lifecycle definition can be configured to meet company standards
- Range from Full Control to No Access
- Provide a granular level of security to files

The screenshot shows a software window with five tabs: General, Transitions, Security, Control, and Comments. The Security tab is active. It contains a list of users with a header 'Name' and a single entry 'Everyone' with a user icon. Below the list are 'Add...' and 'Remove' buttons. A permissions table is also present, with columns for 'Permission', 'Allow', and 'Deny'. The table lists 'Read', 'Modify', and 'Delete' permissions, all of which are checked under the 'Allow' column. At the bottom, there is a checkbox labeled 'No state-based security' which is currently unchecked.

Permission	Allow	Deny
Read	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Modify	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Delete	<input checked="" type="checkbox"/>	<input type="checkbox"/>

☐ No state-based security



Control

- Declare a Release or Obsolete state
- Purge implications
- Several options for files NOT to purge
 - All
 - First and Last
 - Last
 - None

The image displays two screenshots of the 'Lifecycle Details' dialog box, specifically the 'Control' tab. The dialog box is divided into several sections: 'Lifecycle States', 'General', 'Transitions', 'Security', 'Control', and 'Comments'. The 'Control' tab is selected in both screenshots.

Top Screenshot: The 'Lifecycle States' table shows 'Work in Progress' selected. The 'Control' section has the following settings:

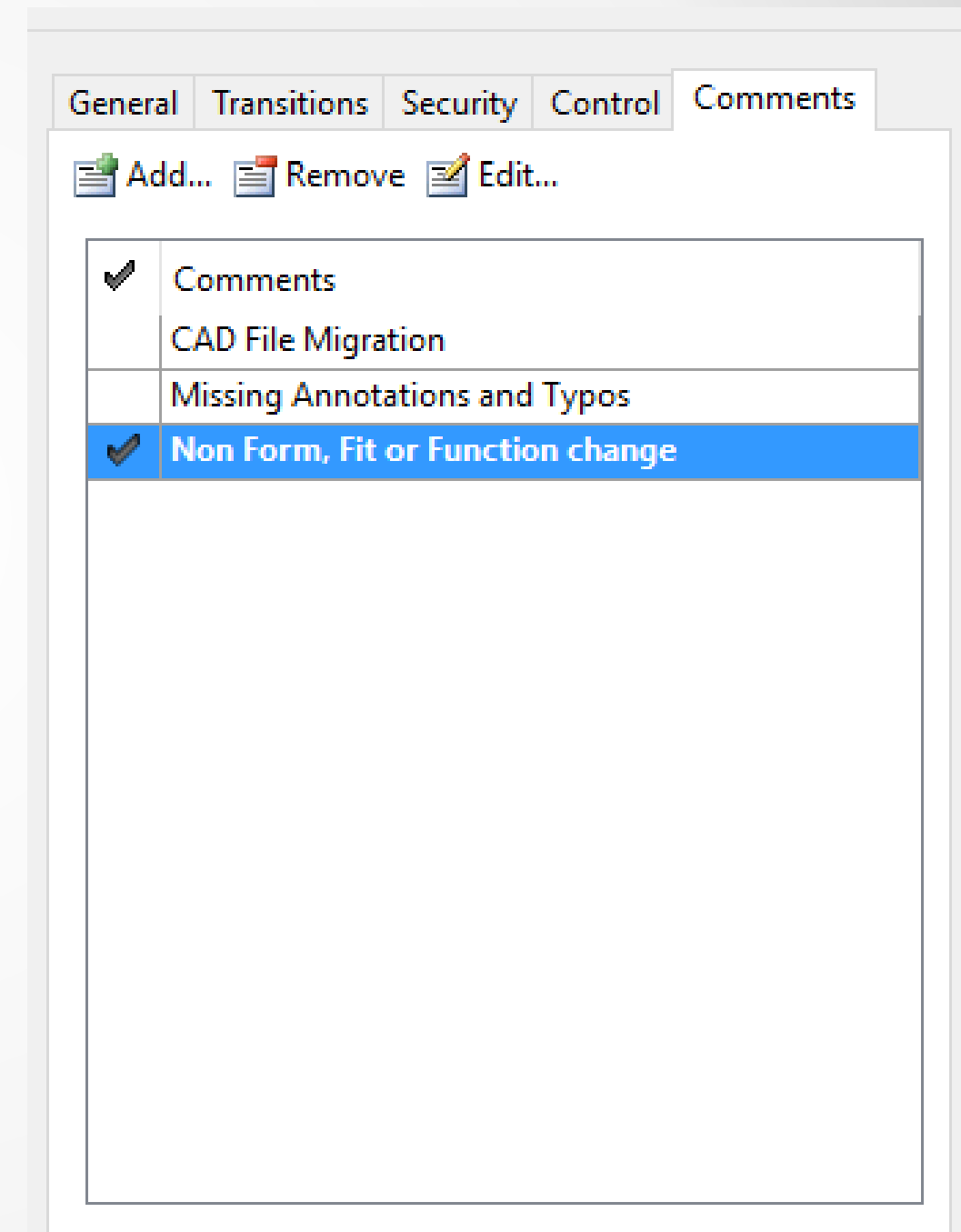
- ☐ This is a "Released" state
- ☐ This is an "Obsolete" state
- Controlled versions (do not purge):
 - ☐ All
 - ☐ First and last
 - ☒ Last
 - ☐ None
- All versions in this state will be removed during a purge, except the last version in each series.
- Use in states where a record that the version was in this state is the important information.

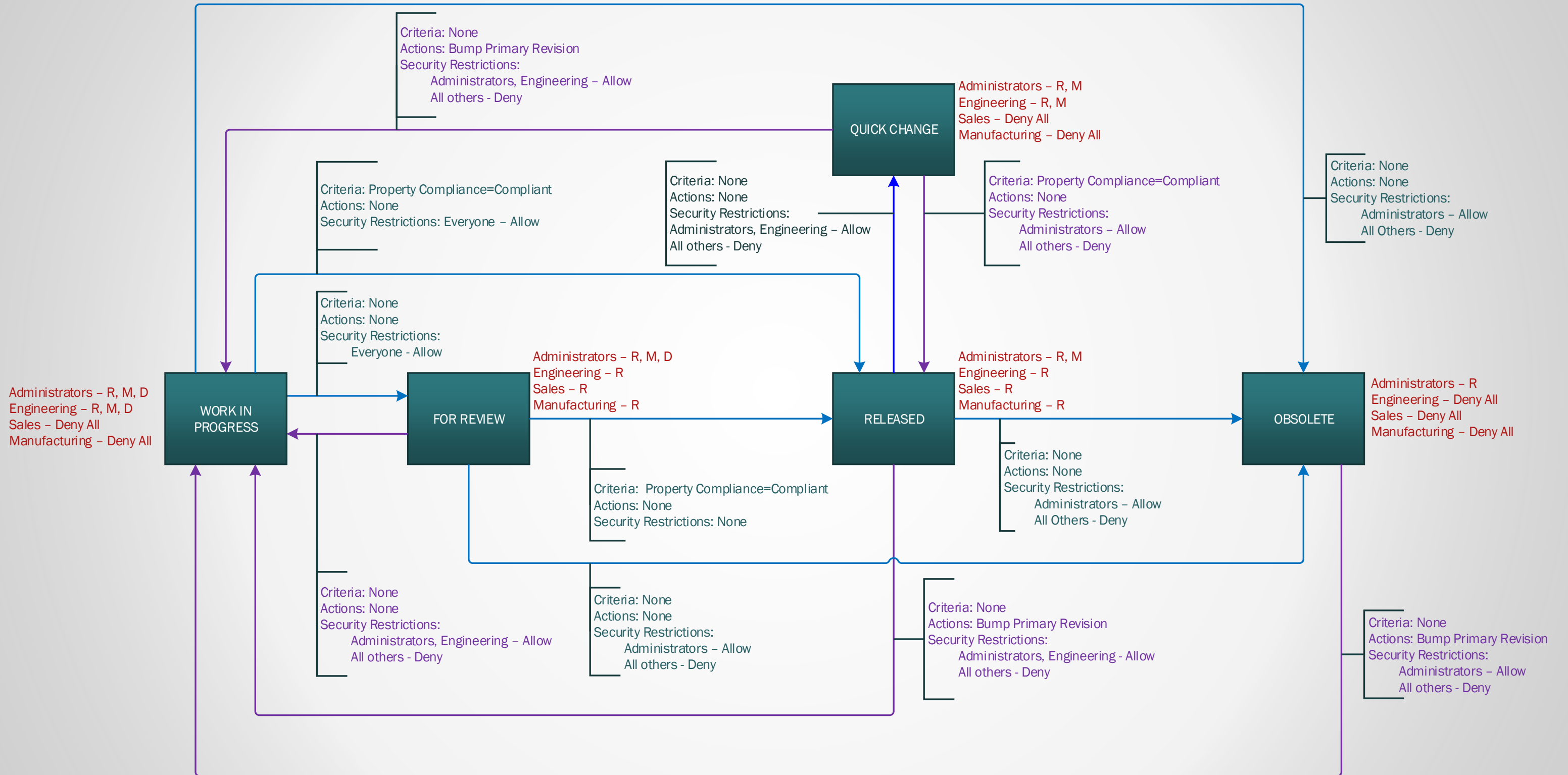
Bottom Screenshot: The 'Lifecycle States' table shows 'Released' selected. The 'Control' section has the following settings:

- ☒ This is a "Released" state
- ☐ This is an "Obsolete" state
- Controlled versions (do not purge):
 - ☒ All
 - ☐ First and last
 - ☐ Last
 - ☐ None
- No versions in this state will be removed when a purge is performed.
- Use in states where not many versions will be created or where each version is critical.

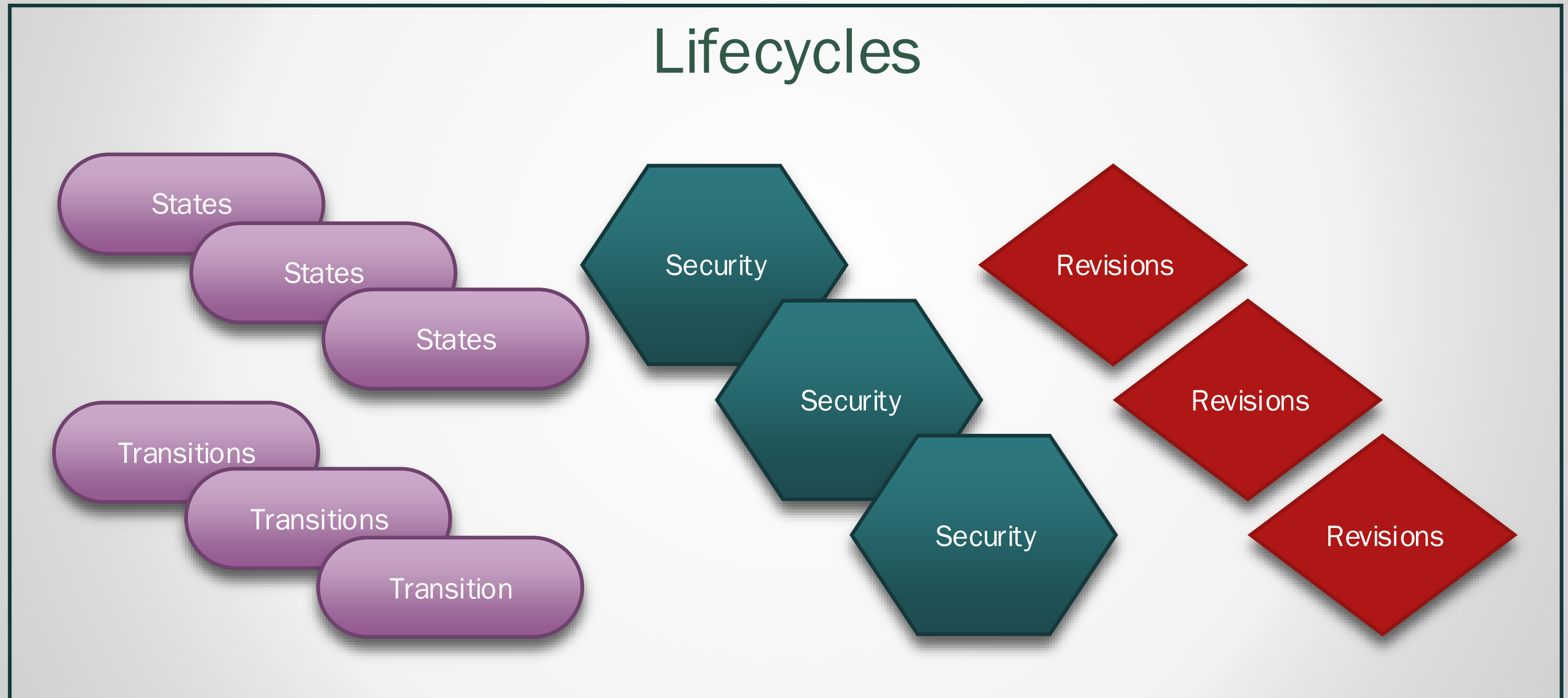
Comments

- Each state has options for description and comment
- Appears in CAD add-in and Vault
- Align with Company terminology





Lifecycle Summary



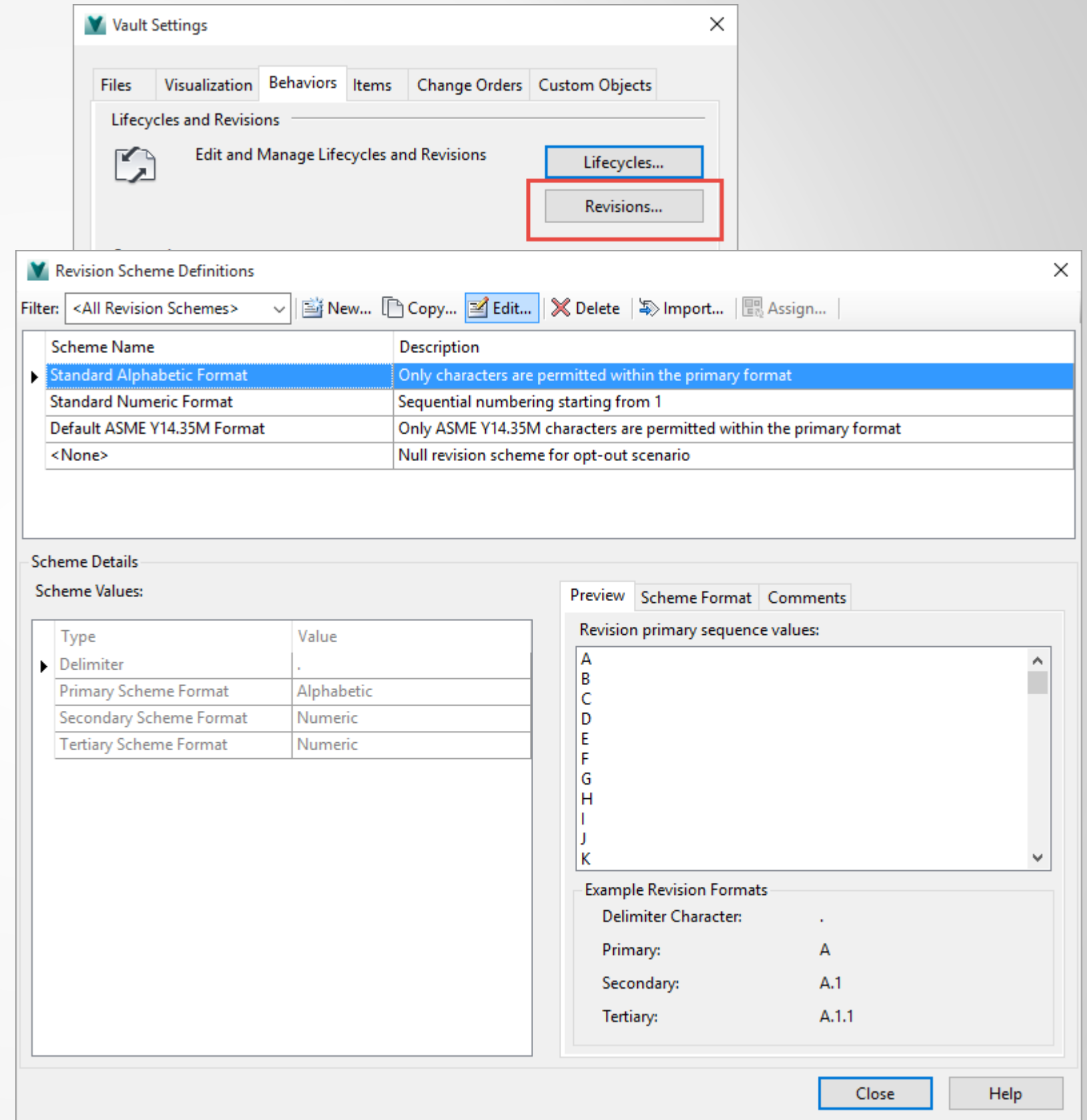
Revision Administration

Company ABC Example - Continue

- Need Revision Scheme to comply with RebelA Compliance Specification

Revision Administration

- Pre-defined revision schemes
- Create new schemes
 - Import from text file
- Can be copied or edited



Revision Administration

- Name
- Set Categories
- Set Description
- Limited to 255 characters for Name and Description

Definition Name:	Description:
<input type="text" value="New Revision"/>	<input type="text"/>
Category:	
<input type="text" value="None selected"/>	

Revision Administration

- Set Primary, Secondary & Tertiary format
- Set Delimiter

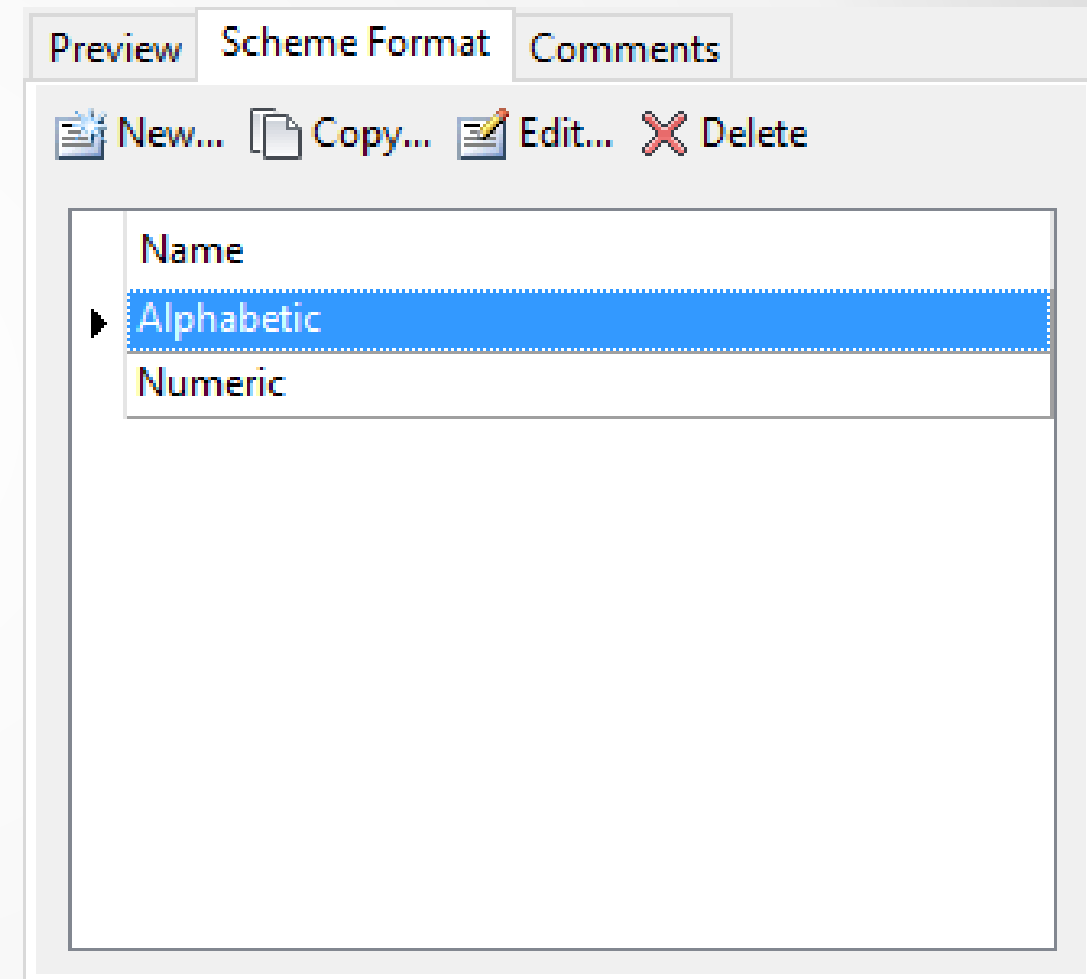
Scheme Details

Scheme Values:

Type	Value
▶ Delimiter	.
Primary Scheme Format	Default ASME Y14.35M
Secondary Scheme Format	Numeric
Tertiary Scheme Format	Numeric

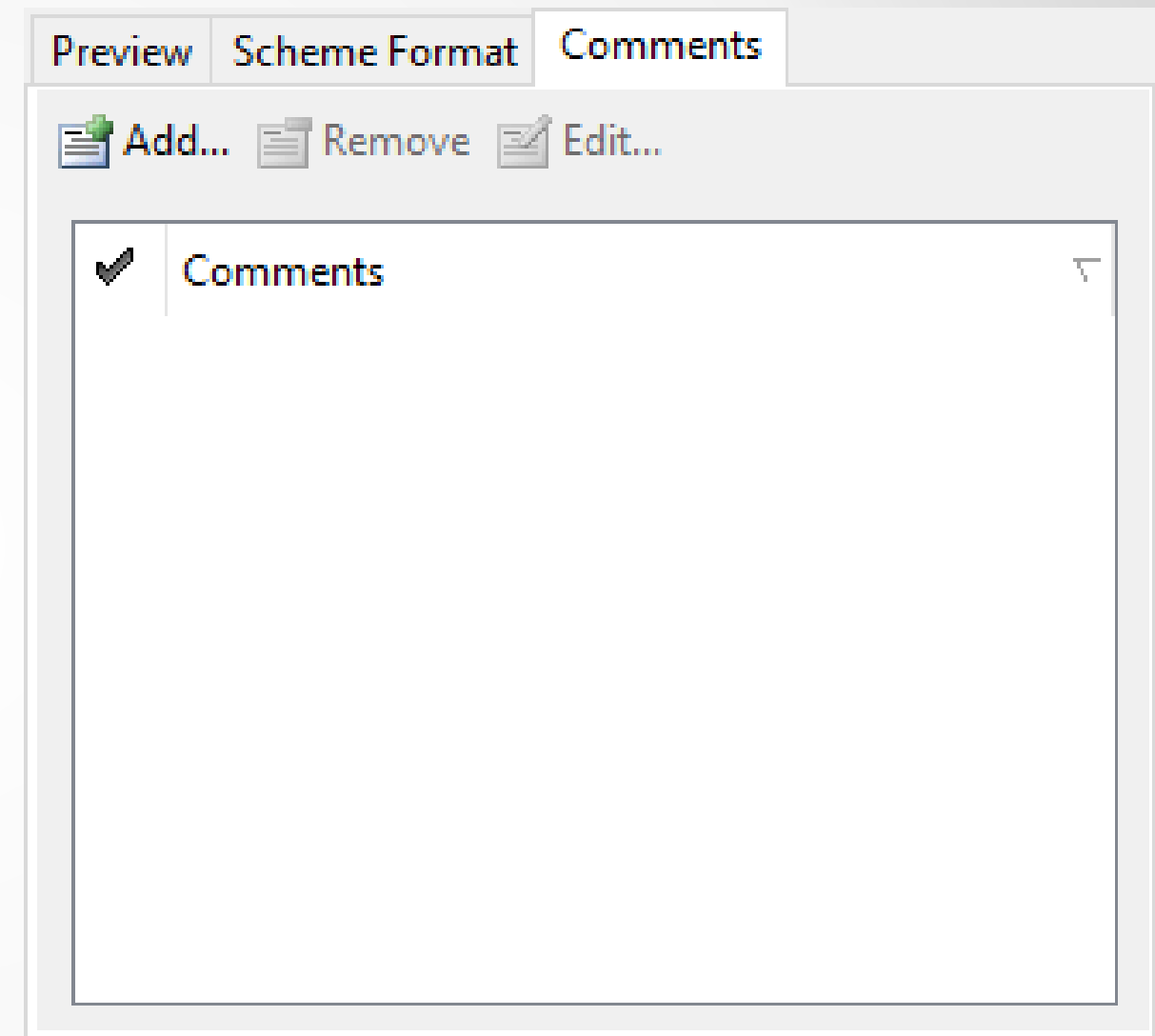
Revision Administration

- Select the scheme formats for revision
- Create or Import a new format



Revision Administration

- Multiple comments per scheme
- Set when revision is applied



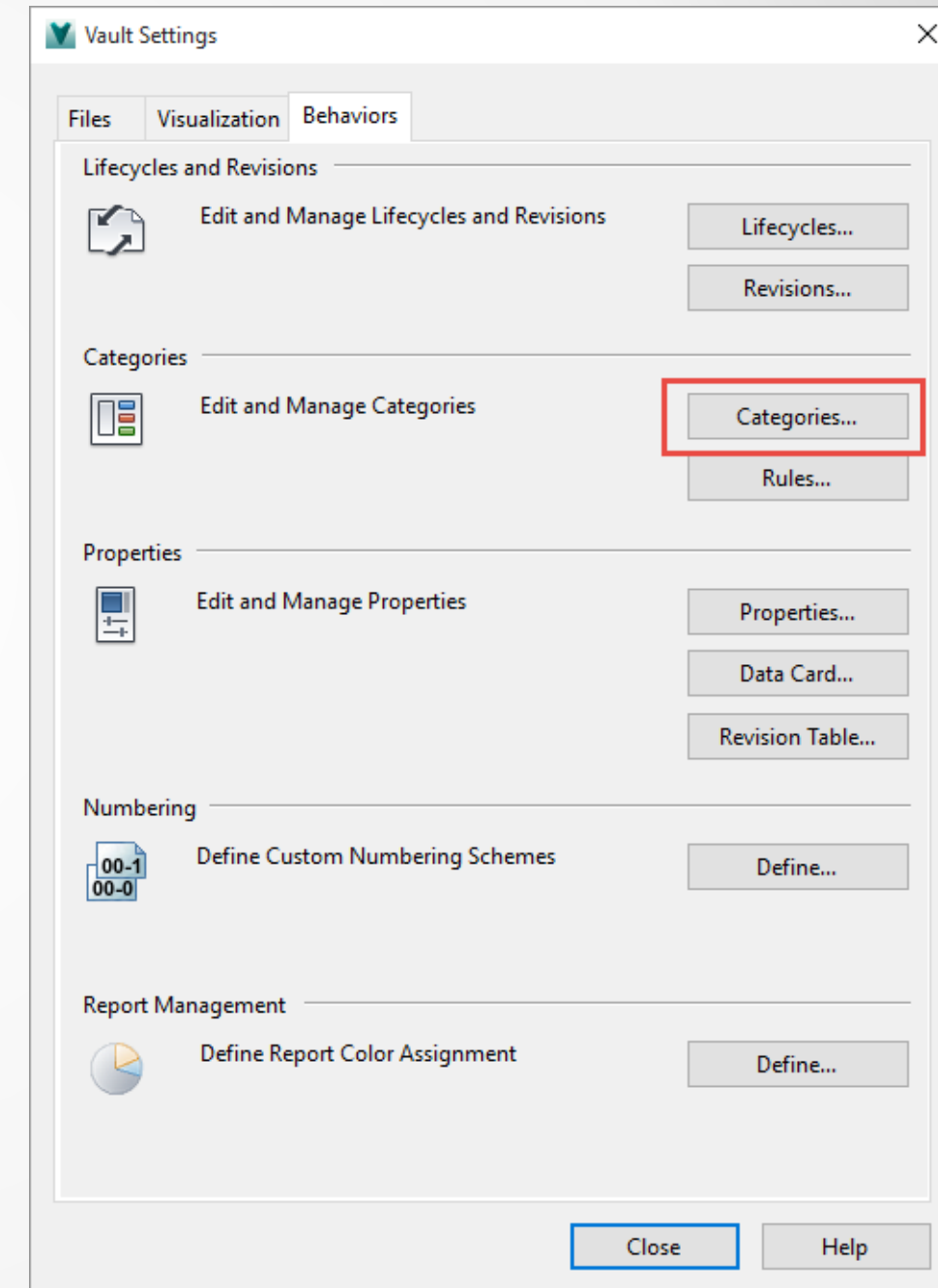
Category Administration

Company ABC Example - Continue

- New Category for Technical Documents
- Rules for Category assignment upon check-in

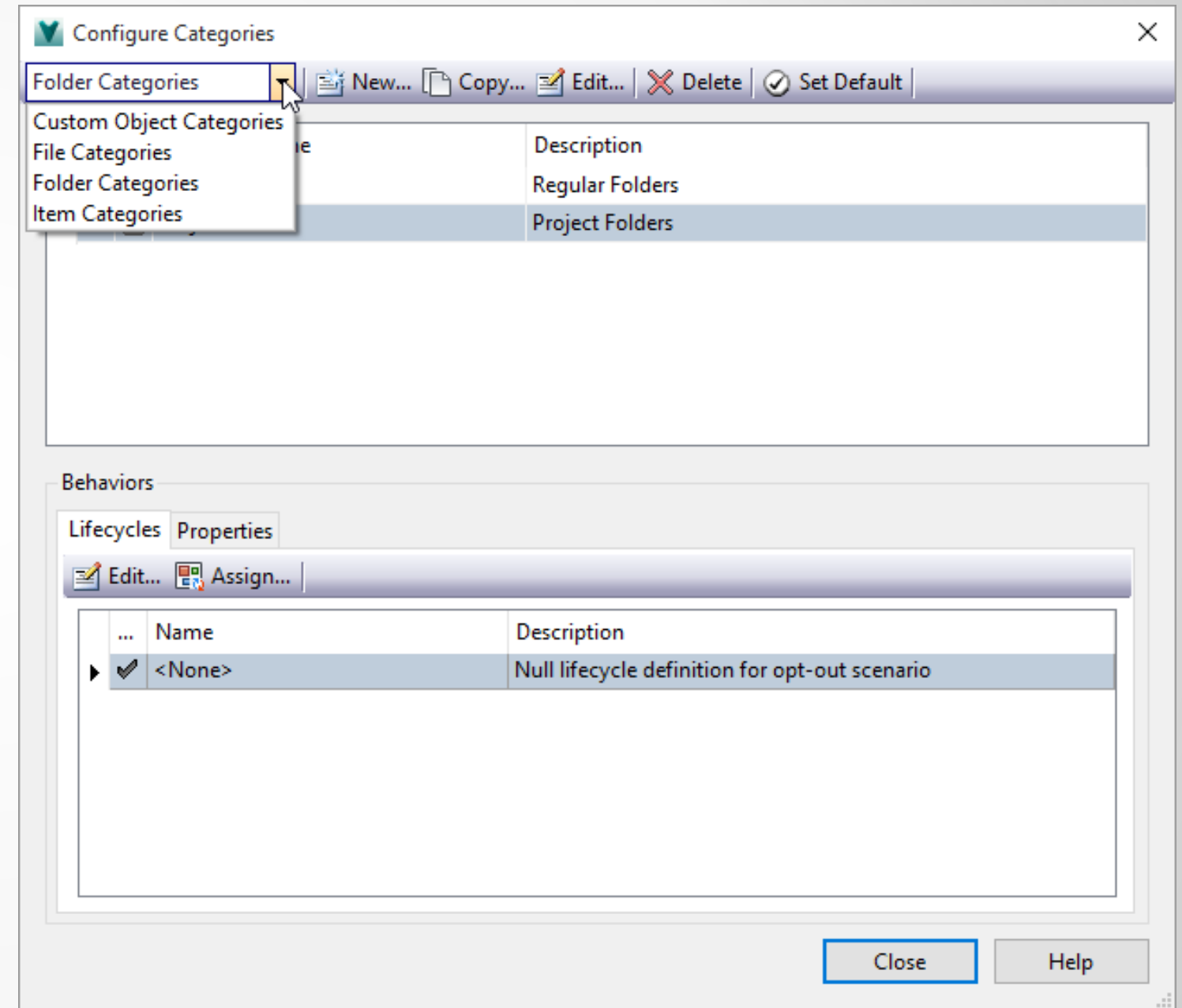
Category Administration

- Tools -> Administration -> Vault Settings
- Behaviors Tab



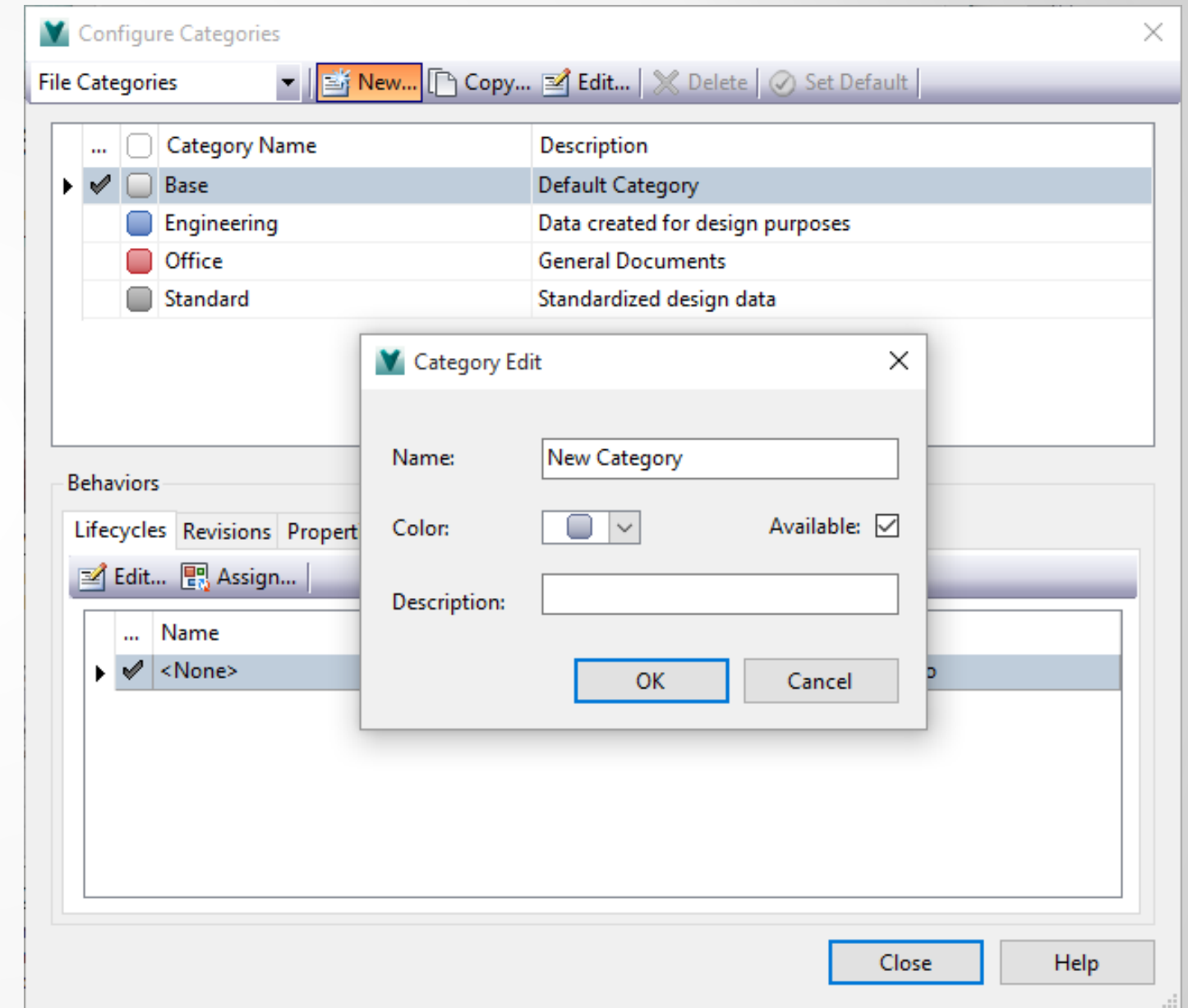
Category Administration

- Select the category association
 - Folder, Custom Object, File or Item



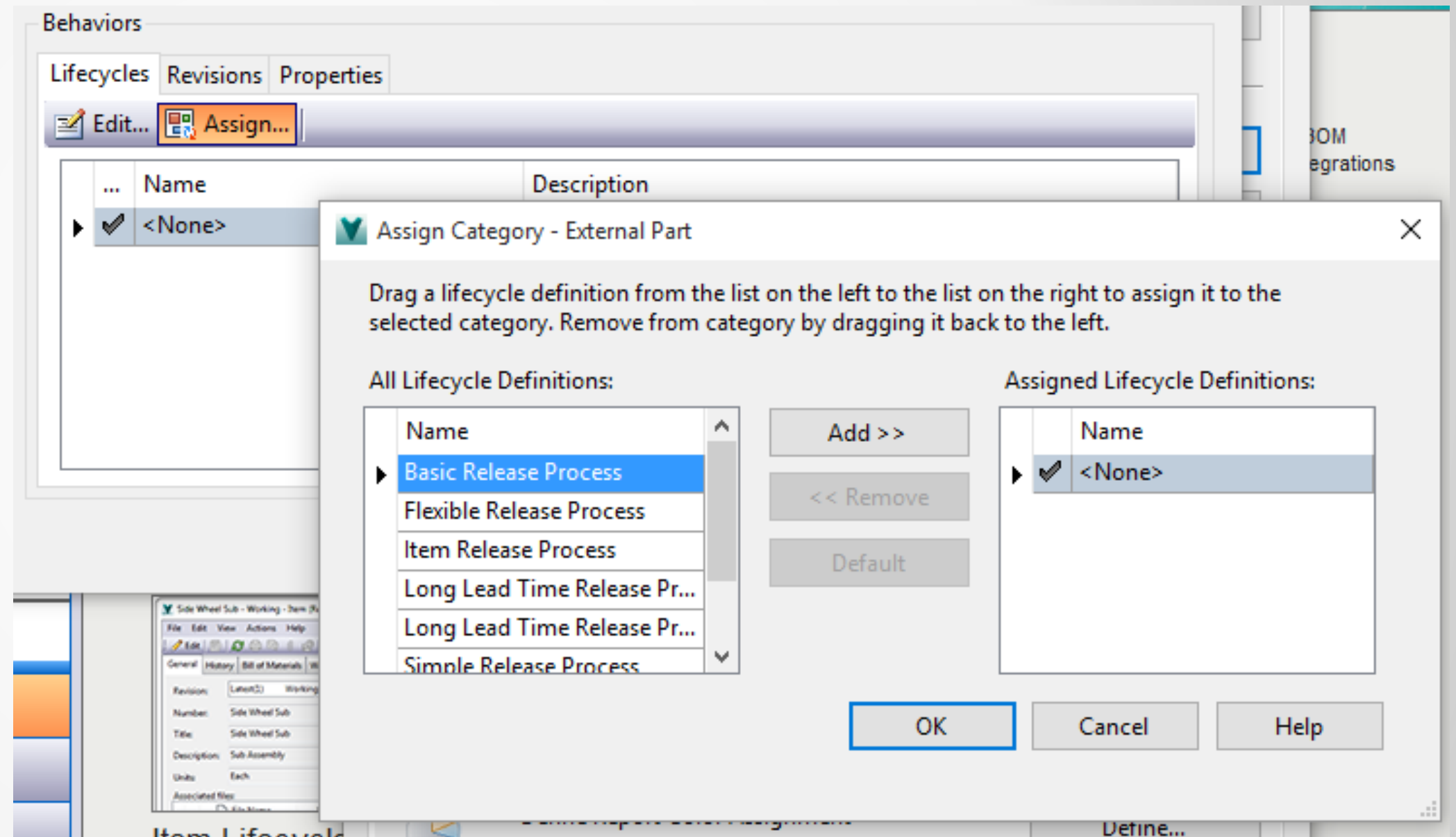
Category Administration

- Click New
- Set Category Name
- Color
- Description
- Set the Available box



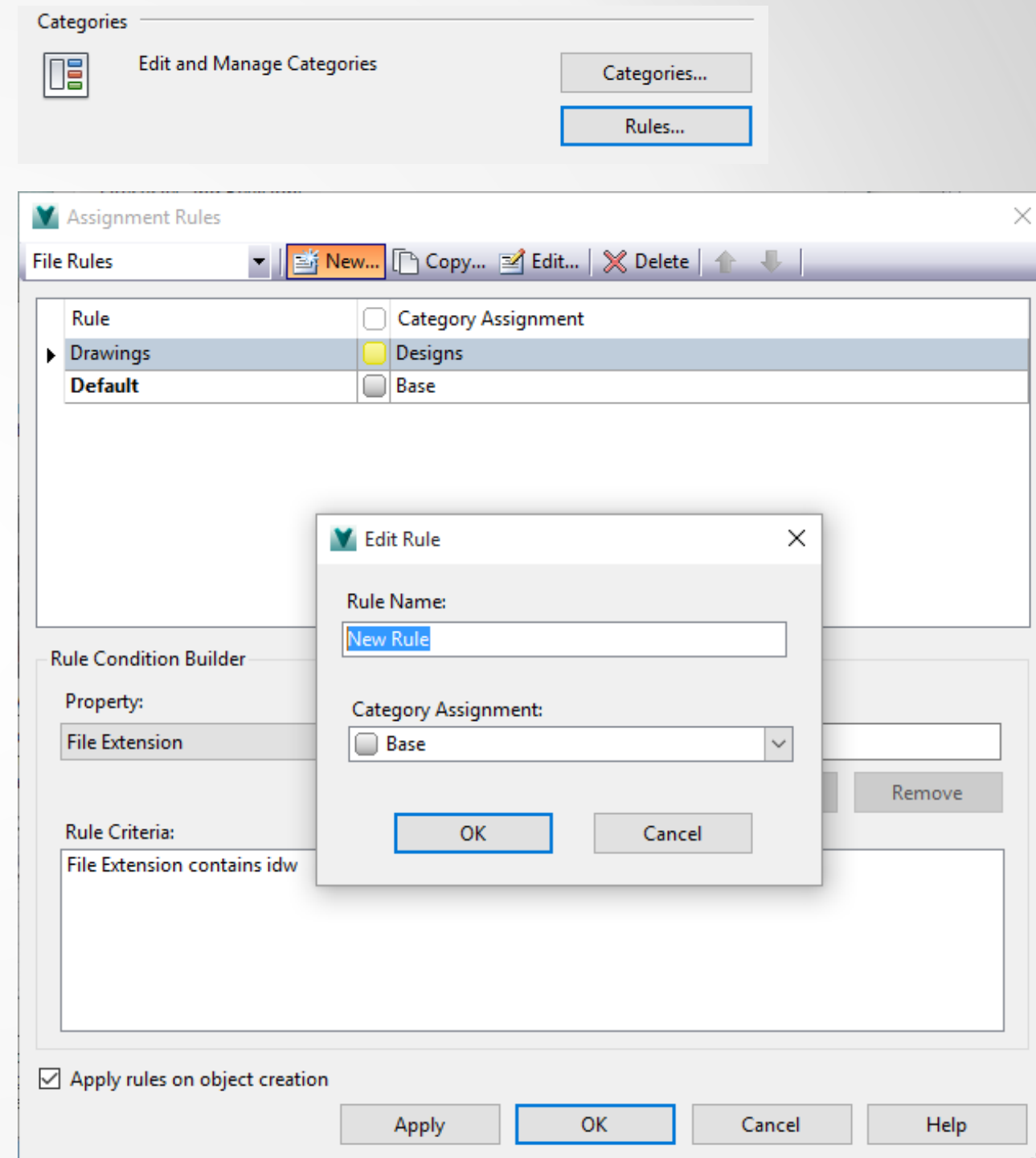
Category Administration

- Assign Lifecycle, Revisions & Properties
- Set the default Lifecycle



Category Rules

- Auto assign category based on a rule
- Select Rule association
- Set Name
- Set Category Assignment



Category Rules

- Rules based on Property condition
- Check Apply rules on object creation
 - Files and Custom Objects only

Rule Condition Builder

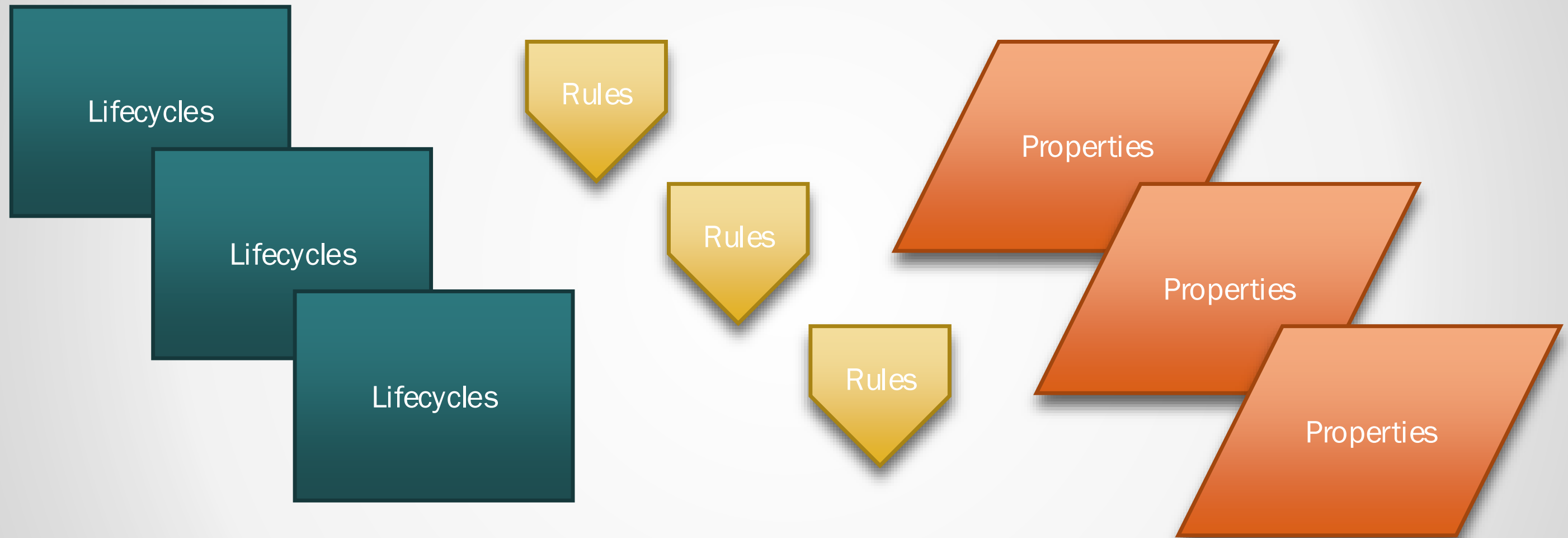
Property:	Condition:	Value:
File Extension	is	iam
		<input type="button" value="Add"/> <input type="button" value="Replace"/> <input type="button" value="Remove"/>

Rule Criteria:

File Extension is iam

☒ Apply rules on object creation

Categories



Summary

Key learning objectives

You are now able to:

- Create and manage Properties
- Create and manage Revision Schemes
- Create and manage Lifecycles
- Create and use Categories

Additional Material

- Tutorial
- Lifecycle Template (Visio)

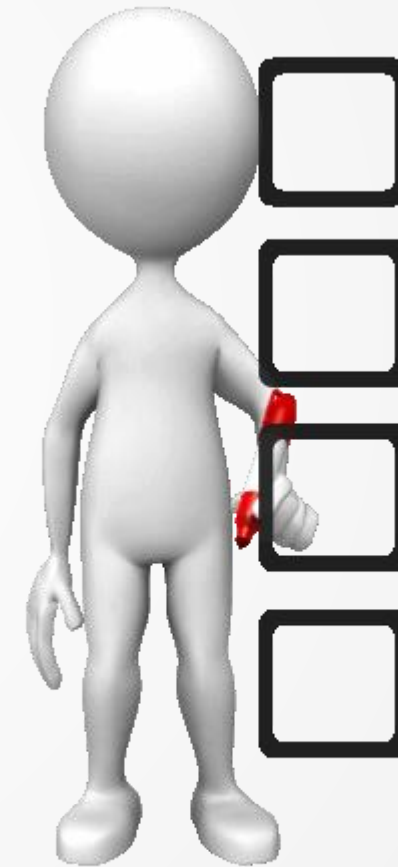


Please Fill Out Your Surveys

Make sure your voice is heard by completing your surveys!

Please take the time to complete your survey for this and every class you attend at Autodesk University.

Autodesk uses this information to know what classes to offer in the future.



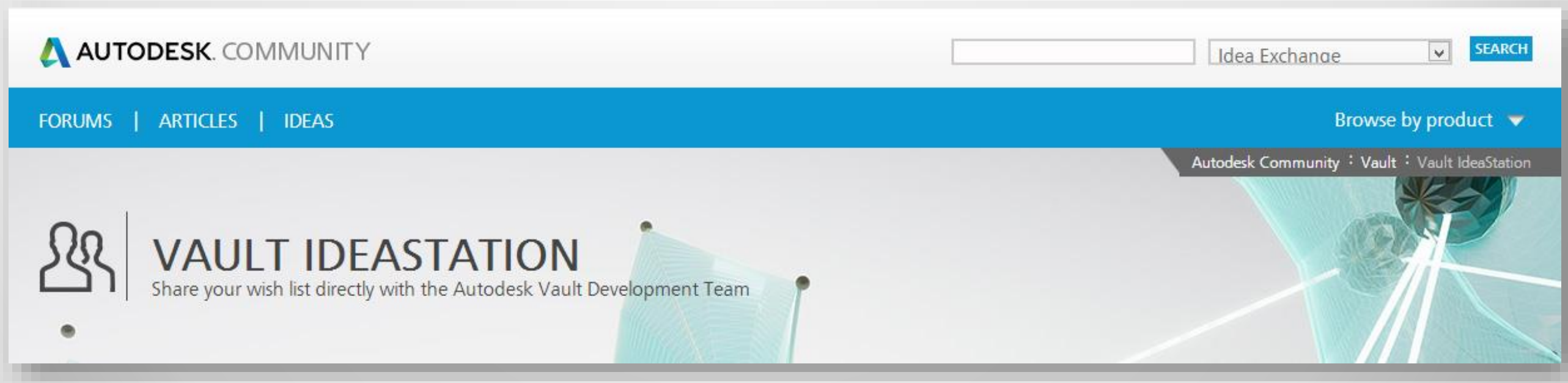
More Questions? Visit the AU Answer Bar

- Seek answers to all of your technical product questions by visiting the **Answer Bar**.
- Open daily 8am-10am and Noon-6pm and located just outside of Hall C on Level 2.
- Staffed by Autodesk developers, QA, & support engineers ready to help you through your most challenging technical questions.



Got An Idea? Share it!

- Share your idea directly with the Autodesk Vault Development Team
- Community can support ideas to surface the most relevant



Resources – Autodesk Vault Flipboard Magazine



Resources – Under the Hood

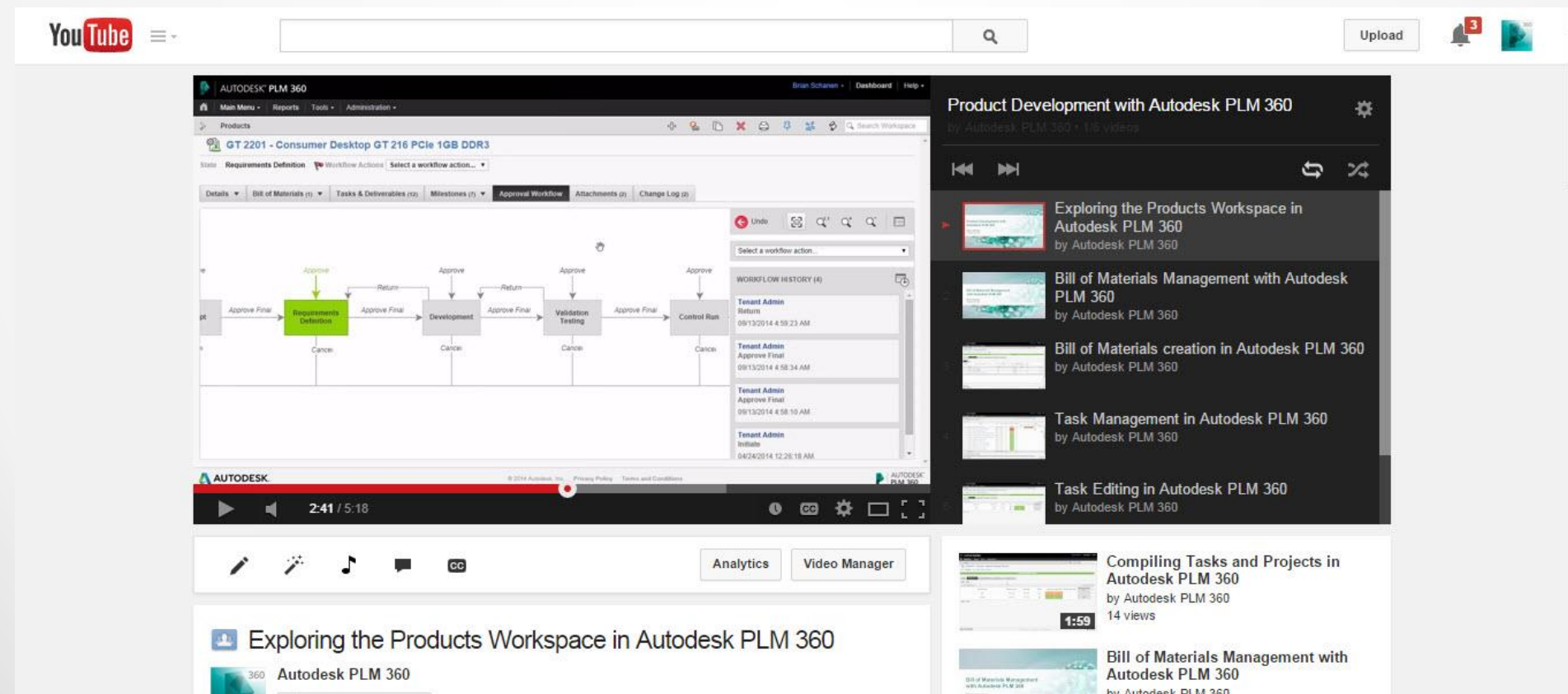
- Autodesk Vault and Autodesk PLM 360
- Brian Schanen, Allan O’Leary, Irvin Hayes and Michelle Stone
- Great source of tips and tricks for Vault and PLM 360
- <http://underthehood-autodesk.typepad.com/blog/>



Resources – PLM TV



- Autodesk PLM 360 Tutorials for everyone
- Great source of tips and tricks for PLM 360
- <https://www.youtube.com/user/AutodeskPLM360>



Resources – Cracking The Vault

- Autodesk Vault
- Run by Autodesk Support employees
- Great source for problem solving
- <http://crackingthevault.typepad.com/>



Resources – It's All Just Ones and Zeros

- Blog for Vault API developers
- Autodesk developers
- <http://justonesandzeros.typepad.com/>
- <http://www.youtube.com/user/ItsAllJust1sAnd0s>

