

Inventor iLogic-Vault | Quickstart Library

Version 2020.3

Solutions Engineer PDM|PLM – Autodesk Central Europe

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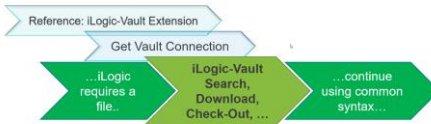


Agenda

iLogic-Vault Command Library

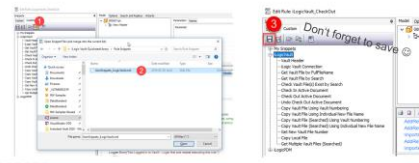
Features & Benefits

Workflow | iLogic-Vault Interaction



Add iLogic-Vault Snippet Library

- Add/Merge snippets into your existing library



Definite and Indefinite Variants

Managing Unique Variants and Re-Use

- Scenario 2 – Indefinite assembly variants
 - 2 components, range of sizes, 1 digit, 2 materials each

2,09 Mio variants



Component	Search-Dir	Variant-Range	Variant-Material	Variant
Flange	ISO-1	ISO-1	ISO-1	ISO-1
Flange	ISO-2	ISO-2	ISO-2	ISO-2
Flange	ISO-3	ISO-3	ISO-3	ISO-3
Flange	ISO-4	ISO-4	ISO-4	ISO-4
Flange	ISO-5	ISO-5	ISO-5	ISO-5
Flange	ISO-6	ISO-6	ISO-6	ISO-6
Flange	ISO-7	ISO-7	ISO-7	ISO-7
Flange	ISO-8	ISO-8	ISO-8	ISO-8
Flange	ISO-9	ISO-9	ISO-9	ISO-9
Flange	ISO-10	ISO-10	ISO-10	ISO-10
Flange	ISO-11	ISO-11	ISO-11	ISO-11
Flange	ISO-12	ISO-12	ISO-12	ISO-12
Flange	ISO-13	ISO-13	ISO-13	ISO-13
Flange	ISO-14	ISO-14	ISO-14	ISO-14
Flange	ISO-15	ISO-15	ISO-15	ISO-15
Flange	ISO-16	ISO-16	ISO-16	ISO-16
Flange	ISO-17	ISO-17	ISO-17	ISO-17
Flange	ISO-18	ISO-18	ISO-18	ISO-18
Flange	ISO-19	ISO-19	ISO-19	ISO-19
Flange	ISO-20	ISO-20	ISO-20	ISO-20

iLogic | Application Sample

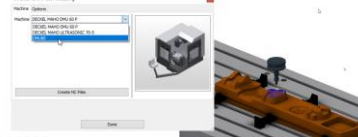
Filter-Types / Variants



Inventor CAM – Vault – iLogic Design Automation

Automate NC Code Output and Vault File Management

- Activate Inventor CAM-Setup Assembly
 - Select Machine
- Automation
 - Reads available Machines from Vault
 - Download post processor definition



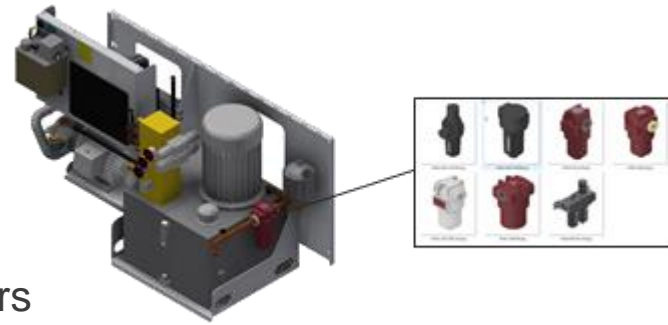
What's New

Tips & Tricks

Features & Benefits

The background is a light blue gradient. On the left, there are several overlapping, curved, translucent blue shapes that resemble stylized waves or abstract architectural elements. On the right, there is a 3D bar chart with several blue bars of varying heights, some of which are slightly tilted. The overall aesthetic is clean, modern, and professional.

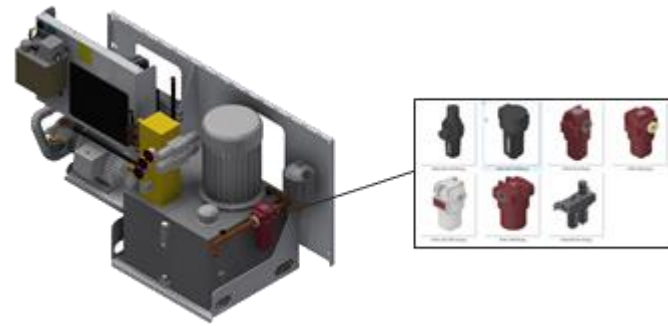
iLogic Vault | Features



- ✓ Enable Rule – Vault Interactions
 - ✓ Search files in Vault by one to many property-value pairs
 - ✓ Supports AND | OR conditions for multiple search criteria
 - ✓ Get latest file(s) by Vault path (NEW 2019.1/2020.0 Check-out Option)
 - ✓ Get latest files from Vault as a search result
 - ✓ Get new files as copy of vaulted files (NEW 2019.1 / 2020.0)
 - ✓ Get new file numbers from Vault (NEW 2019.1 / 2020.0)
 - ✓ Check-Out / Check-In / Undo Check-Out
 - ✓ Get Thumbnails as image object or image file by search or by name (**New 2020.1.0**)
 - ✓ Option to update *Part Number* for all copy functions (**New 2020.2.0**)

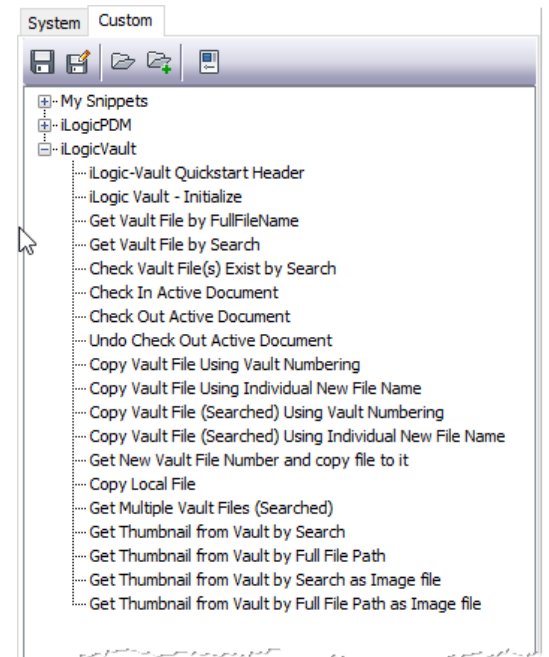
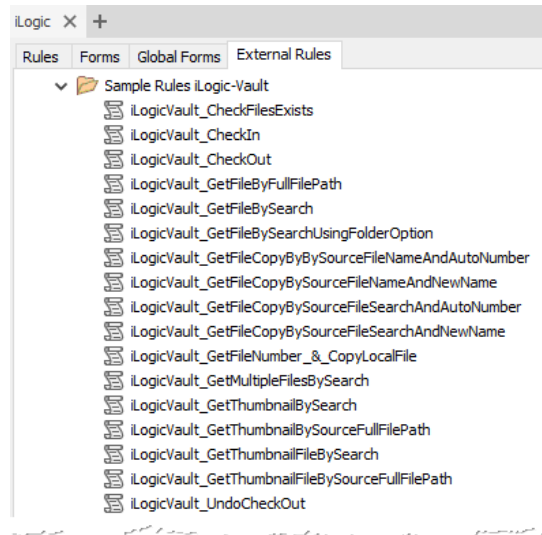
iLogic Vault | Benefits

- ✓ Continue Using Known iLogic Rule Syntax
 - ✓ *Classic & Managed Components* approach
- ✓ Identify matching components by search criteria
 - ✓ File naming independency
 - ✓ File path independency
- ✓ Create “Dynamic” variant definitions
 - ✓ Fill iLogic variant selections by search results
- ✓ Add new derivatives to Vault and skip source template changes



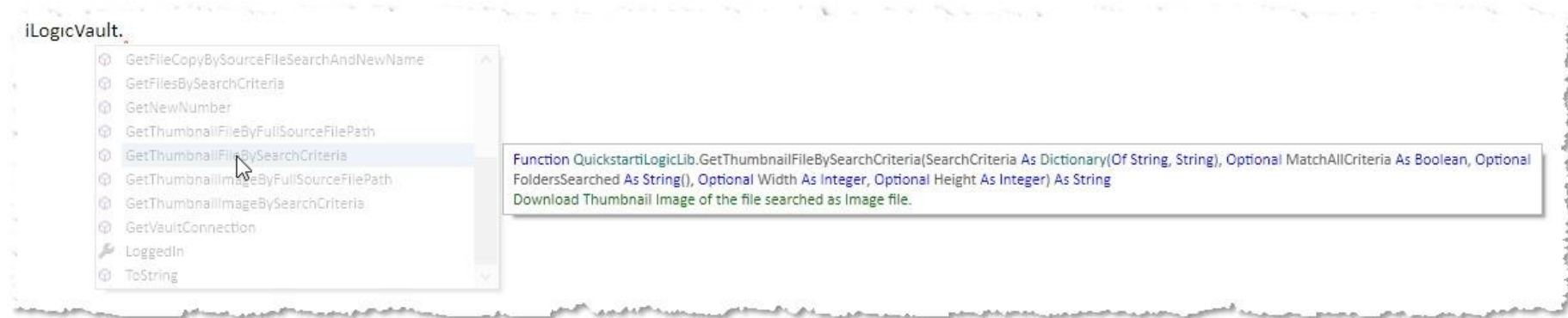
iLogic-Vault | Content

- iLogic application extension „QuickstartiLogicLibrary.dll“
- Sample rule for each function
- Snippet library to quickly reuse function calls



iLogic-Vault | Intellisense

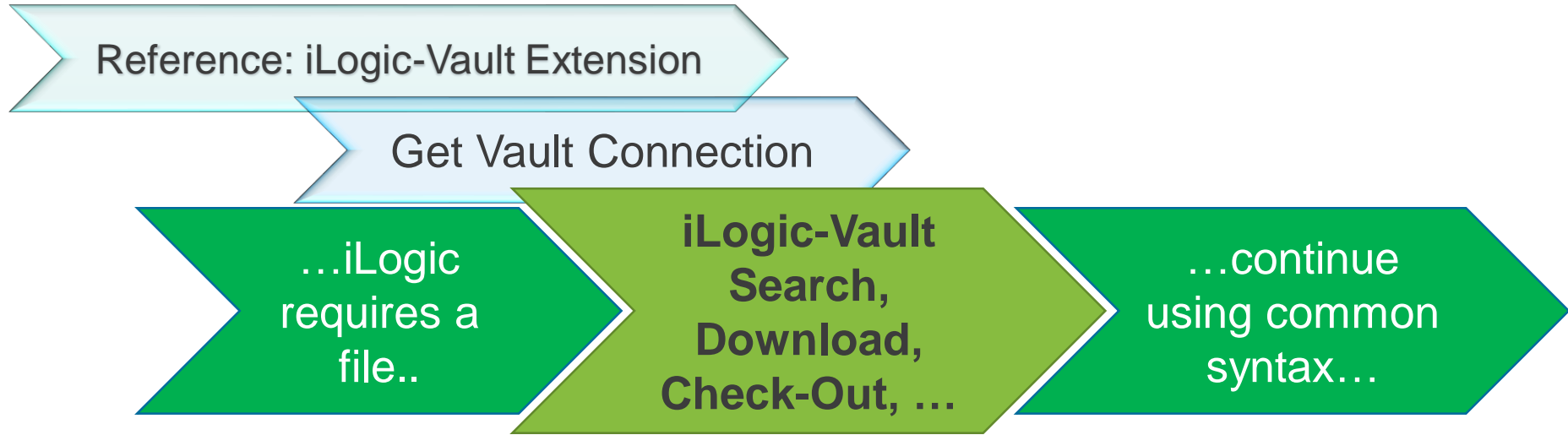
- Library includes documentation enabling Intellisense





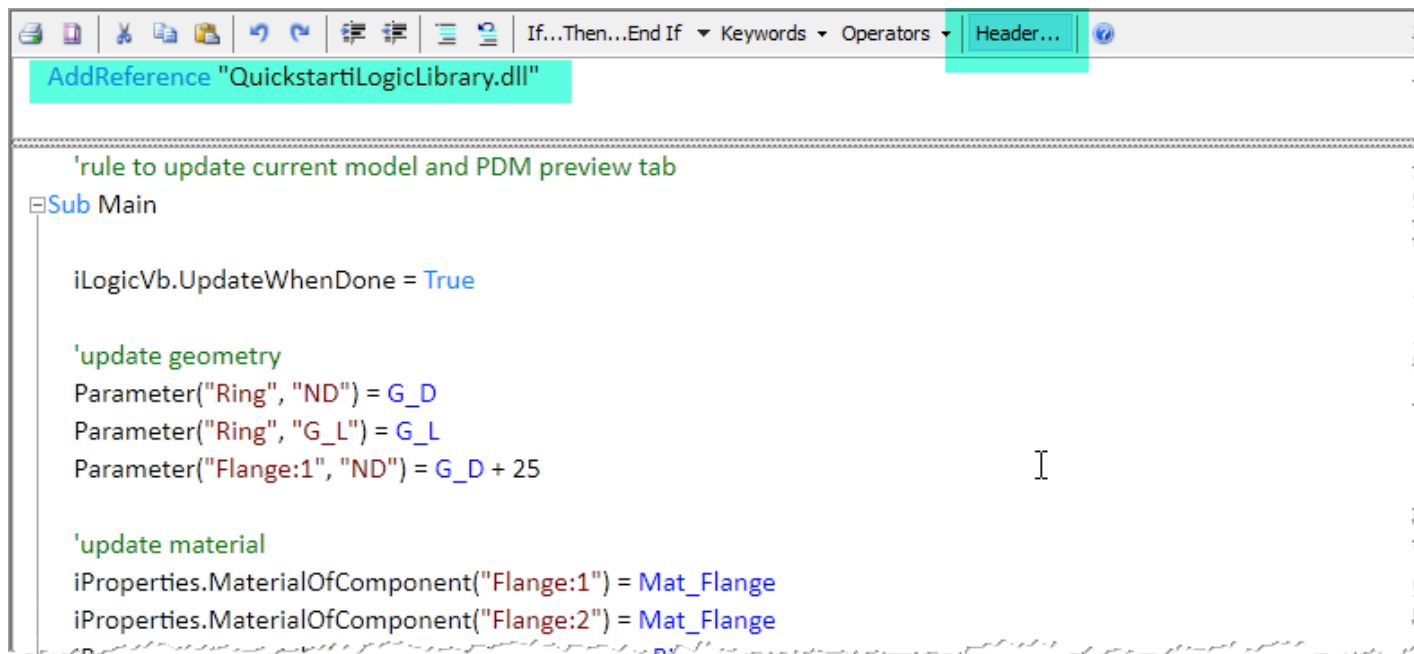
iLogic-Vault Interaction | General Workflow

Workflow | iLogic-Vault Interaction



Workflow | iLogic-Vault Interaction

Reference: iLogic-Vault Extension



The screenshot shows the iLogic rule editor interface. The title bar includes icons for file operations and a menu bar with 'If...Then...End If', 'Keywords', 'Operators', and 'Header...'. The main text area contains the following code:

```
AddReference "QuickstartiLogicLibrary.dll"

'rule to update current model and PDM preview tab
Sub Main

    iLogicVb.UpdateWhenDone = True

    'update geometry
    Parameter("Ring", "ND") = G_D
    Parameter("Ring", "G_L") = G_L
    Parameter("Flange:1", "ND") = G_D + 25

    'update material
    iProperties.MaterialOfComponent("Flange:1") = Mat_Flange
    iProperties.MaterialOfComponent("Flange:2") = Mat_Flange
```

Workflow | iLogic-Vault Interaction

Reference: iLogic-Vault Extension

Get Vault Connection

```
'enable iLogicVault commands and validate user's login state  
Dim iLogicVault As New QuickstartiLogicLibrary.QuickstartiLogicLib  
If iLogicVault.LoggedIn = False  
    Logger.Error("Not Logged In to Vault! - Login first and repeat executing this rule.")  
    Exit Function  
End If
```

Workflow | iLogic-Vault Interaction


Reference: iLogic-Vault Extension

Get Vault Connection

iLogic-Vault Functions

- ... Get Vault File by FullFileName
- ... Get Vault File by Search
- ... Check Vault File(s) Exist by Search
- ... Check In Active Document
- ... Check Out Active Document
- ... Undo Check Out Active Document
- ... Copy Vault File Using Vault Numbering
- ... Copy Vault File Using Individual New File Name
- ... Copy Vault File (Searched) Using Vault Numbering
- ... Copy Vault File (Searched) Using Individual New File Name

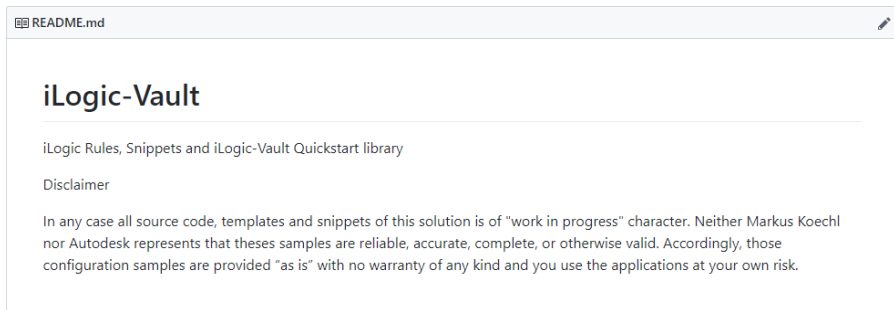
- ... Get New Vault File Number and copy file to it
- ... Copy Local File
- ... Get Multiple Vault Files (Searched)
- ... Get Thumbnail from Vault by Search
- ... Get Thumbnail from Vault by Full File Path
- ... Get Thumbnail from Vault by Search as Image file
- ... Get Thumbnail from Vault by Full File Path as Image file



Setup Your Inventor iLogic Environment

iLogic Vault | Download Options

- [ReadMe](#)



- [Download Library](#)

- iLogic-Vault Library
- Code Snippets
- Sample Rules



iLogic-Vault Quickstart Library.zip

- [Download Development Project and Sources – GitHub](#)

Add Library Extension

- Copy QuickstartiLogicLibrary.* to iLogic default extension folder

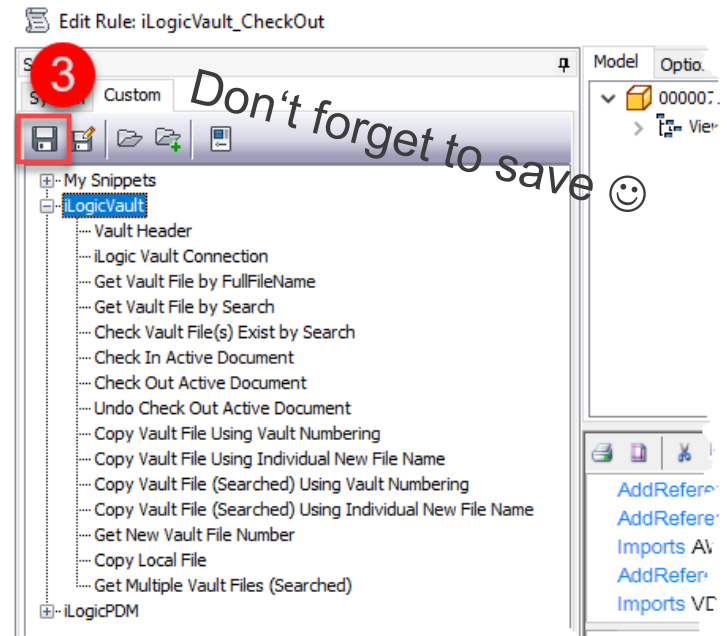
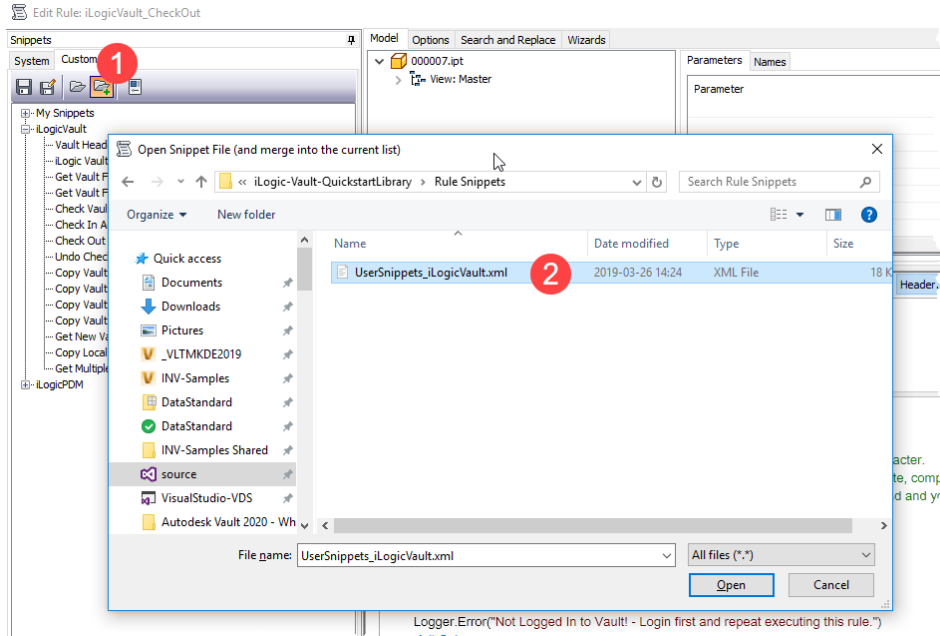
Check matching major release

The screenshot shows a Windows File Explorer window with the address bar set to `Windows (C:) > Program Files > Autodesk > Inventor 2020 > Bin > iLogicAdd`. The file `QuickstartiLogicLibrary.dll` is selected. A red box highlights the year `2020` in the address bar. To the right, the 'QuickstartiLogicLibrary.dll Properties' dialog box is open, showing the 'Details' tab. The 'File description' is 'QuickstartiLogicLibrary' and the 'Product version' is '2020.25.2.0', with the year `2020` highlighted by a red box.

Property	Value
Description	
File description	QuickstartiLogicLibrary
Type	Application extension
File version	2020.25.2.0
Product name	QuickstartiLogicLibrary
Product version	2020.25.2.0
Copyright	Copyright © 2019 Autodesk, Markus Ko...
Size	21,0 KB
Date modified	2019-06-11 14:40
Language	Language Neutral
Original filename	QuickstartiLogicLibrary.dll

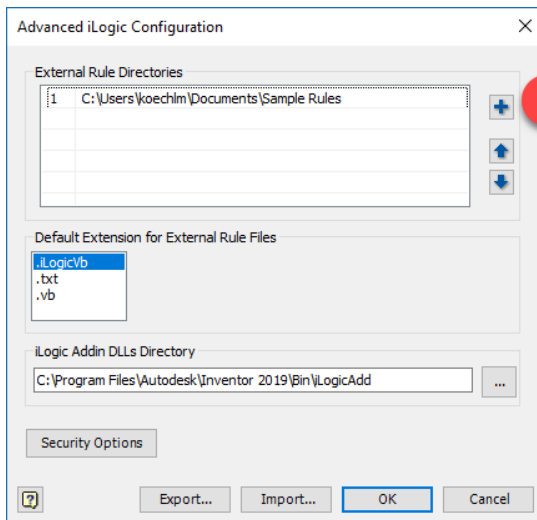
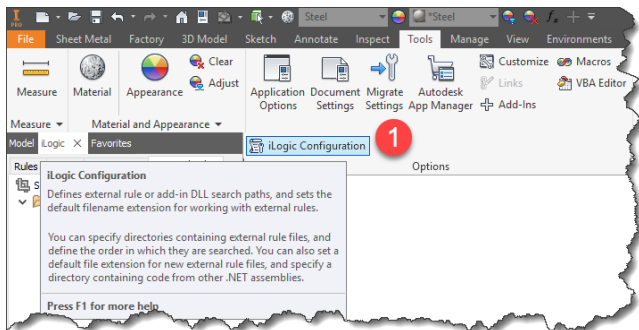
Add iLogic-Vault Snippet Library

- Add/Merge snippets into your existing library

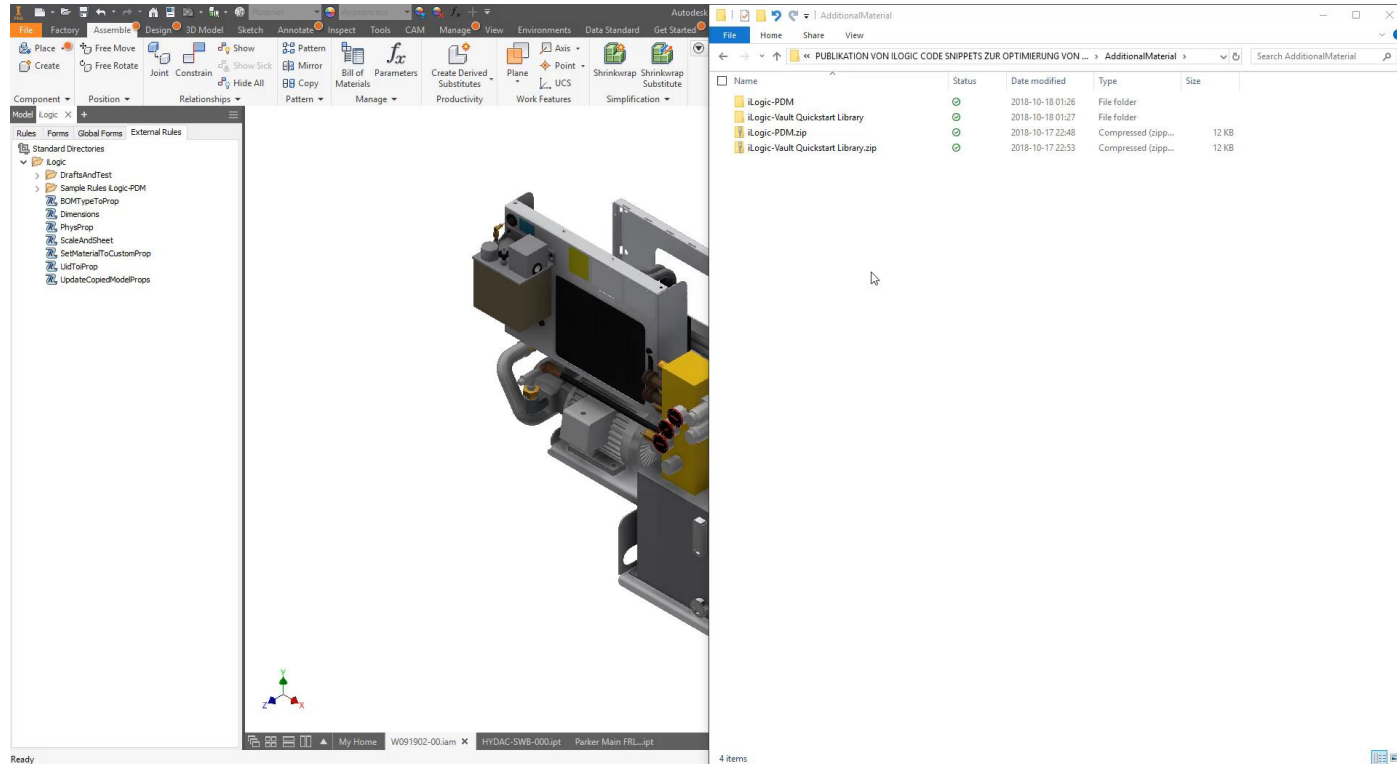



Add Samples

- Configure External Rules directory



iLogic-Vault Quickstart Library | Installation





Indefinite Variants

Managing Unique Variants and Re-Use

Definite and Indefinite Variants

Managing Unique Variants and Re-Use

- Scenario 1 – Definite assembly variants
 - 2 components, 70 sizes, 2 materials each



280 variants

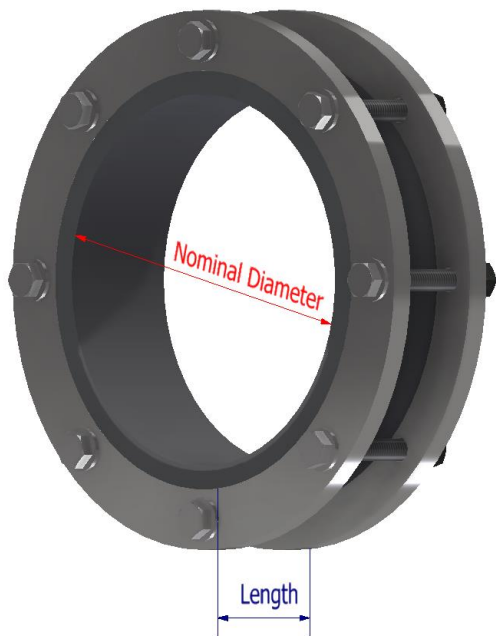
Component	Variants Dm	Variants Length	Variants Material	Variants	
Flange	14		2		
Ring		5	2		
Assembly Variants					280
Flange Diameter	120		1.4510 X3CrTi17		
	130		1.1191 C45E		
	140				
	150				
	160				
	170				
	180				
	190				
	200				
	210				
	220				
	230				
	240				
	250				
Ring Length		50	PA6 - black		
		60	POM/Delin® 150		
		70			
		80			
		90			

Definite and Indefinite Variants

Managing Unique Variants and Re-Use

- Scenario 2 – Indefinite assembly variants
 - 2 components, range of sizes, 1 decimal, 2 materials each

2,09 Mio variants

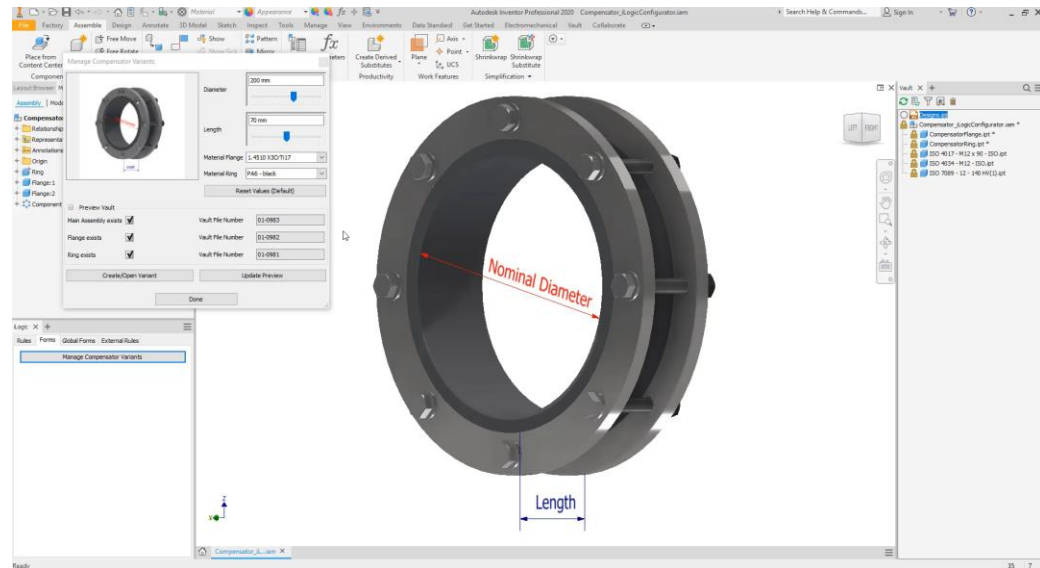


Component	Variants Dm	Variants Length	Variants Material	Variants	
Flange	1301,0		2		
Ring		401,0	2		
Assembly Variants				2,09E+06	
Component	Variants Dm	Variants Material		Component	Variants Length
Flange Diameter	120,0	1.4510 X3CrTi17		Ring Length	50,0
	120,1	1.1191 C45E			50,1
	120,2				50,2
	120,3				50,3
	120,4				50,4
	120,5				50,5
	120,6				50,6
	120,7				50,7
	120,8				50,8
	120,9				50,9
	121,0				51,0
	121,1				51,1
	121,2				51,2
	121,3				51,3
	121,4				51,4

Definite and Indefinite Variants

Managing Unique Variants and Re-Use

- iLogic-Vault outperforms manual or iPart/iAssembly workflows for both scenarios
 - Check unique components
 - Check unique assemblies
- ⇒ Re-Use or create component(s)
- ⇒ Open/create individual assembly

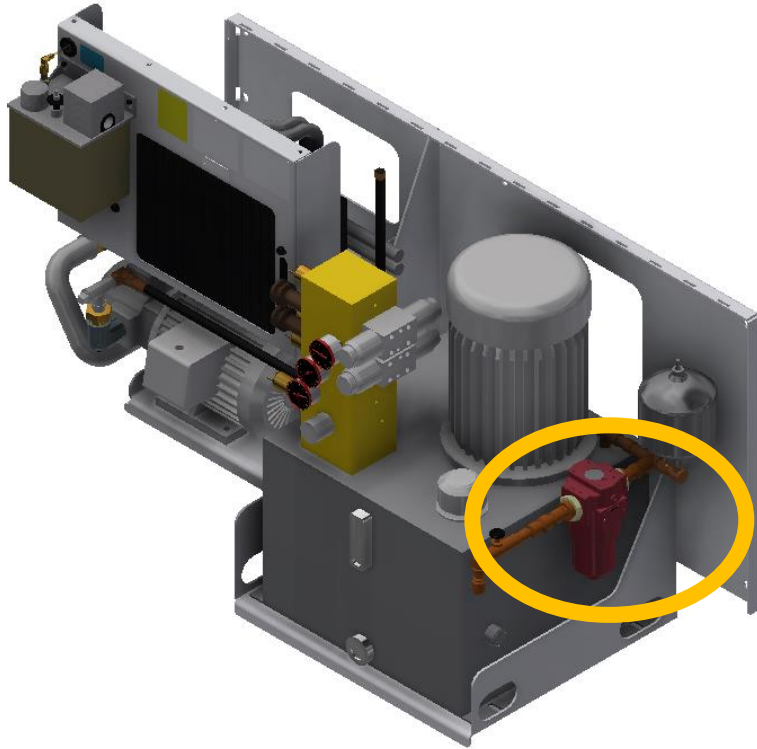




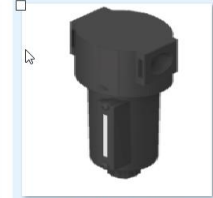
Application Sample | Hydro Power Supply

iLogic | Application Sample

Filter-Types / Variants



Bimba AP20-C4A1DGF.png



Bimba AP20-FO4A0D.png



HYDAC-DF_30_TB.png



HYDAC-DFN_40.png



HYDAC-LFN_LFNF_40_1B.png



HYDAC-SWB-000.png



Parker Main FRL Unit.png

Workflow iLogic – No Vault Interaction

Static Selection List of Filters

Parameters					
	Parameter Name	Consumed by	Unit/Type	Equation	Nominal Va
+	Model Parameters				
-	User Parameters				
▶	FilterType		Text	HYDAC-DFN_40	
				HYDAC-LFN_LFNF_40_IB	
				Parker Main FRL Unit	
				HYDAC-SWB-000	
				HYDAC-DFN_40	
				HYDAC-DF_DFF_500_TF	
				HYDAC-DF_30_TB	
				Bimba AP20-FO4A0D	
				Bimba AP20-C4A1DGF	

Workflow iLogic – No Vault Interaction

Static Selection
List of Filters

Select Filter

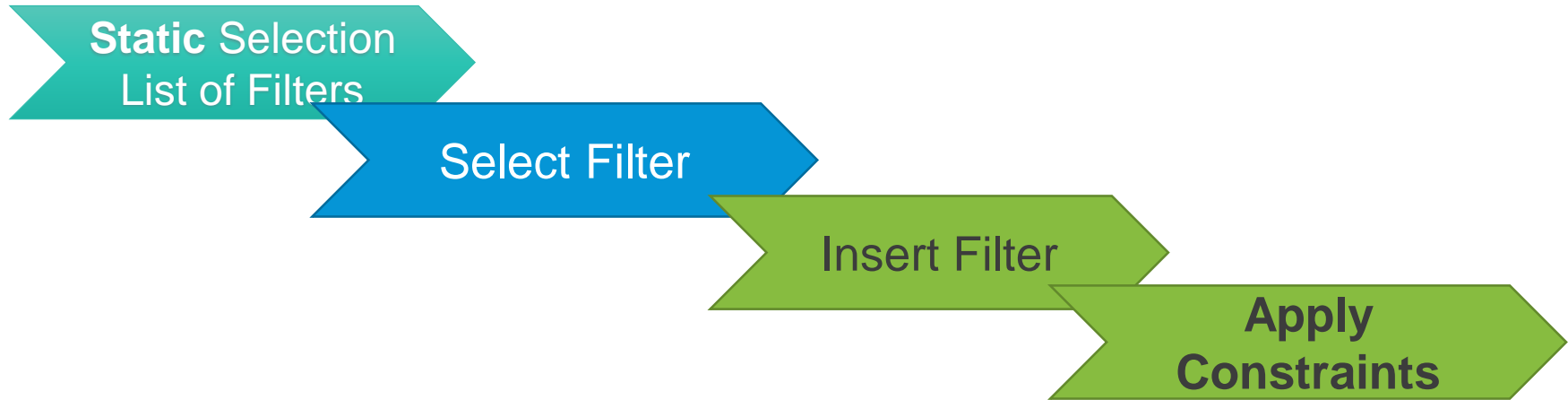


Workflow iLogic – No Vault Interaction



```
ThisAssembly.BeginManage("Group Filter")  
Components.Add("Filter", FullFileName)  
ThisAssembly.EndManage("Group Filter") I
```

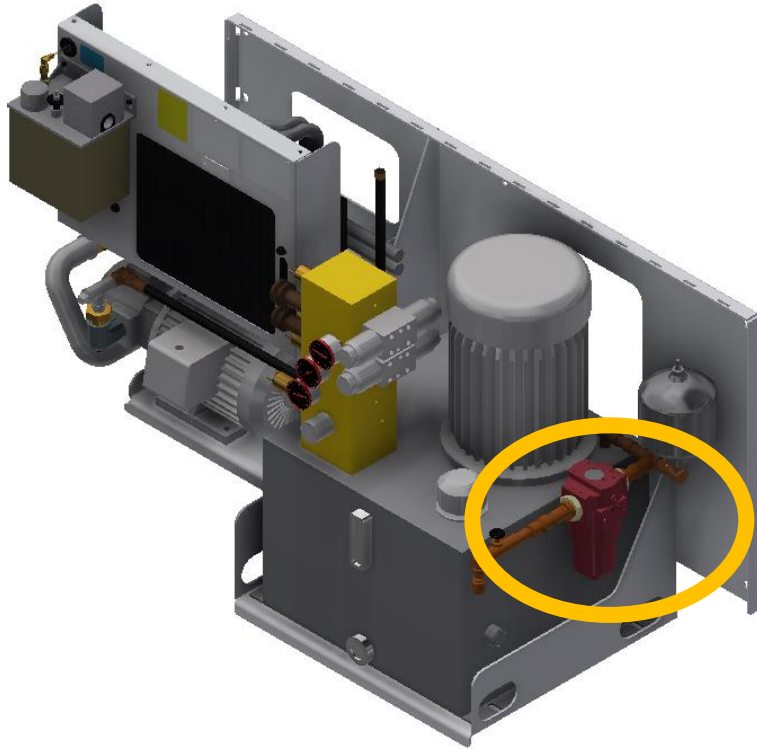
Workflow iLogic – No Vault Interaction



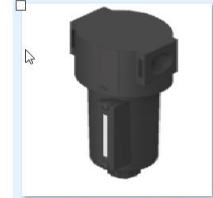
```
Constraints.AddInsert("Insert1", "W0000133-03-I:1", "In", "Filter", "Filter_In",  
axesOpposed := True, distance := 0.0, lockRotation := False, biasPoint1 := Nothing, biasPoint2 := Nothing)  
Constraints.AddInsert("Insert2", "W0000133-03-O:1", "Out", "Filter", "Filter_Out",  
axesOpposed := True, distance := 0.0, lockRotation := False, biasPoint1 := Nothing, biasPoint2 := Nothing)
```

iLogic-Vault | Application Sample

Filter-Types / Variants



Bimba AP20-C4A1DGF.png



Bimba AP20-FO4A0D.png



HYDAC-DF_30_TB.png



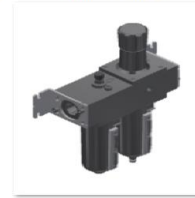
HYDAC-DFN_40.png



HYDAC-LFN_LFN_40_1B.png



HYDAC-SWB-000.png



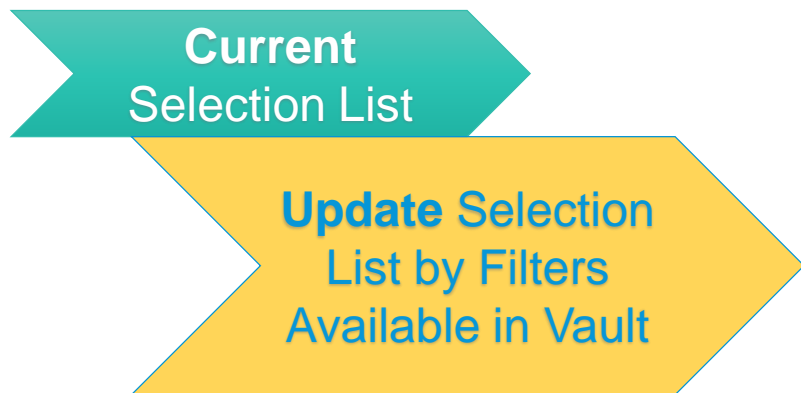
Parker Main FRL Unit.png

Workflow iLogic – Using Vault Interaction

Current Selection List

Parameters					
	Parameter Name	Consumed by	Unit/Type	Equation	Nominal v
+	Model Parameters				
-	User Parameters				
▶	FilterType		Text	HYDAC-DFN_40	
				HYDAC-DFN_40	
				HYDAC-SWB-000	
				Parker Main FRL Unit	

Workflow iLogic – Using Vault Interaction



'Build one to many name/value pairs of Property/Value as search criteria;

```
Dim mSearchParams As New System.Collections.Generic.Dictionary(Of String, String) 'add UDP.DisplayName, Value Pairs
```

```
mSearchParams.Add("Part Family", "FAM-00000") 'applies to all filters
```

```
Dim mVaultFiles As String()
```

```
mVaultFiles = iLogicVault.mCheckFilesExistBySearchCriteria(mVltCon, mSearchParams, False) _
```

Workflow iLogic – Using Vault Interaction

Current
Selection List

Update Selection
List by Filters
Available in Vault

Select Filter



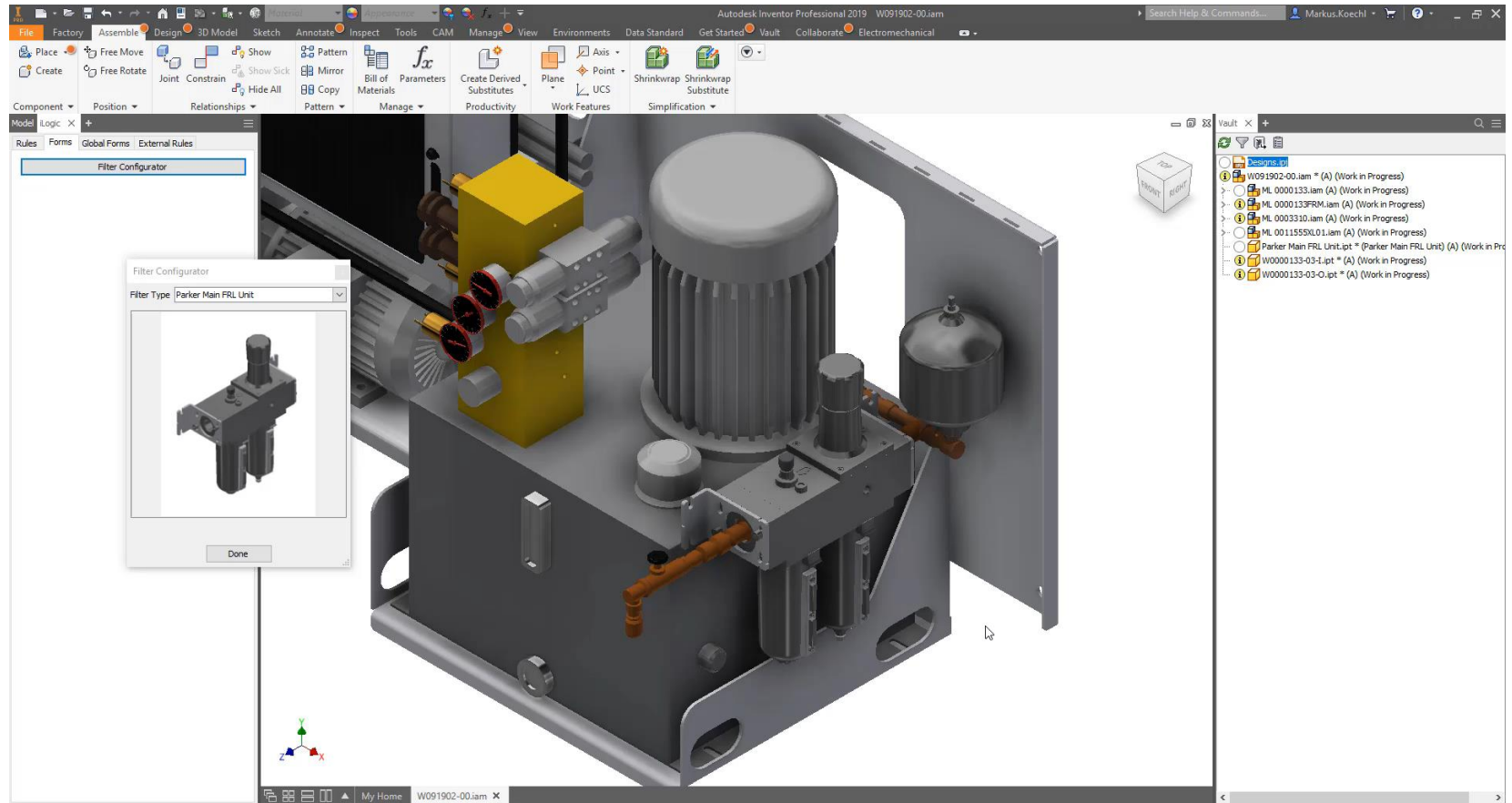
Workflow iLogic – Using Vault Interaction




'Build one to many name/value pairs of Property/Value as search criteria
mSearchParams = New System.Collections.Generic.Dictionary(Of String, String)
mSearchParams.Add("Part Family", "FAM-00000") 'applies to all filters
mSearchParams.Add("Name", FilterType)
'...add as many as required to enable a unique search result

mVaultFile = iLogicVault.mGetFilebySearchCriteria(mVltCon, mSearchParams)

Workflow iLogic – Using Vault Interaction



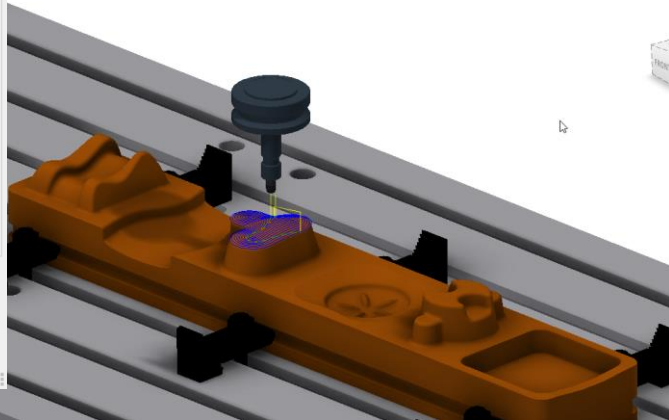
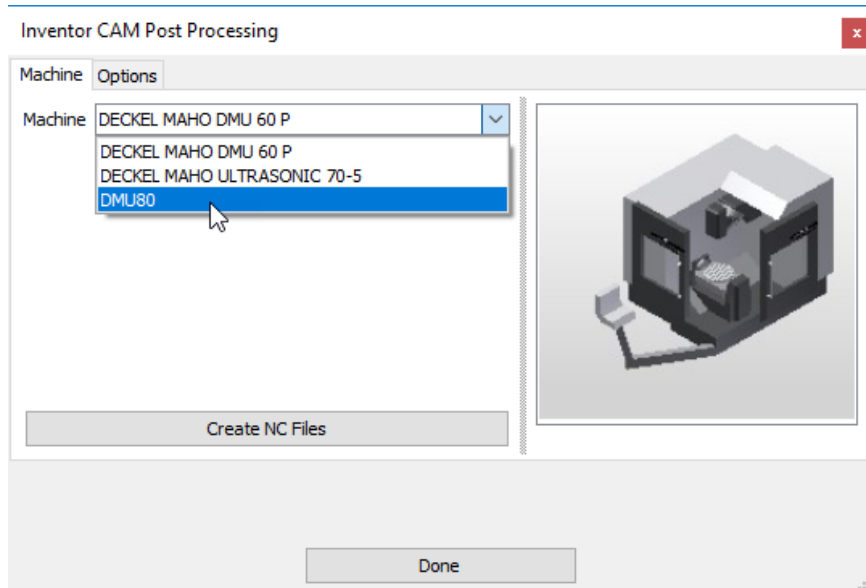
The background features a complex 3D architectural design. On the left, a large, light blue, curved structure resembling a modern building or a piece of furniture dominates the foreground. Behind it, a series of vertical, light blue bars of varying heights form a bar chart. The right side of the image is characterized by a diagonal split, with a darker blue, angular structure on the right and a lighter blue, curved structure on the left. The overall color palette is a range of blues, from light to dark, set against a white background.

Application Sample – Inventor CAM - Vault

Inventor CAM – Vault – iLogic Design Automation

Automate NC Code Output and Vault File Management

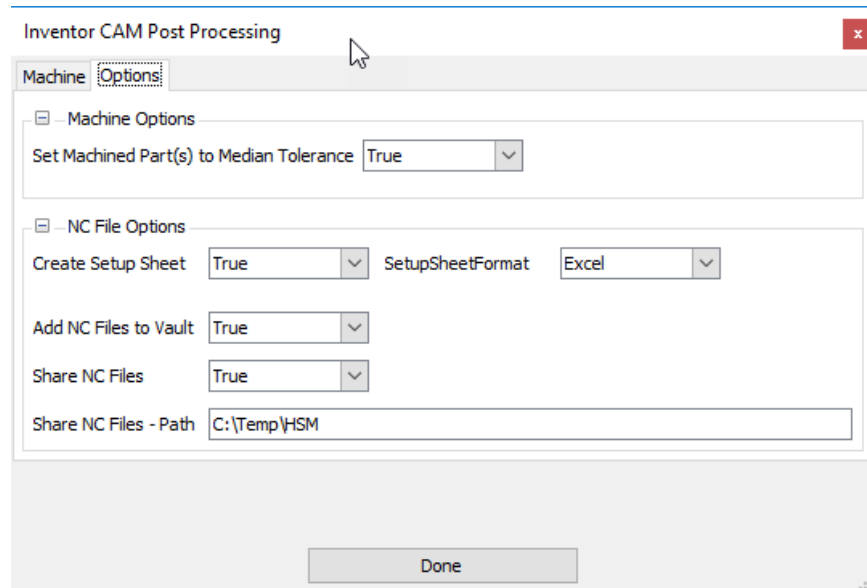
- Activate Inventor CAM-Setup Assembly
 - Select Machine
- Automation
 - Reads available Machines from Vault
 - Download post processor definition



Inventor CAM – Vault – iLogic Design Automation

Automate NC Code Output and Vault File Management

- Activate Inventor CAM-Setup Assembly
 - Select Options



Create NC Files

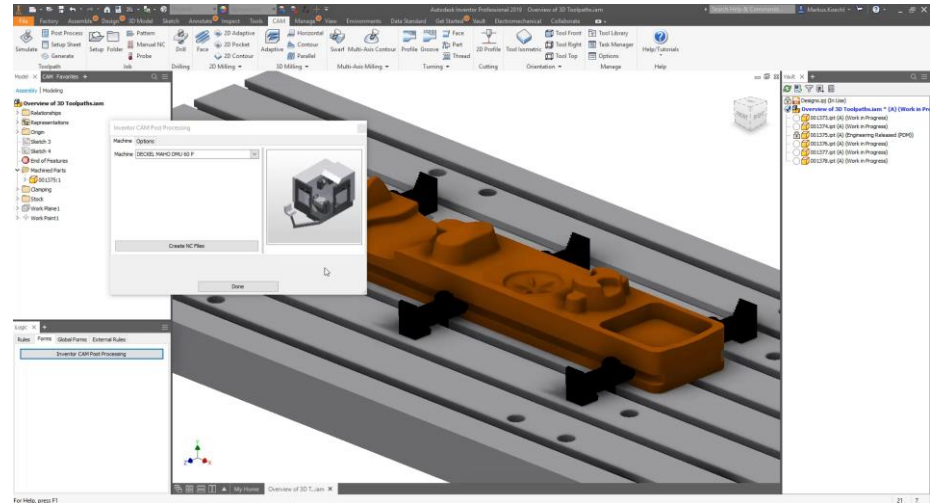


- Automation Machining - Tolerance
 - Iterates one to many work pieces activating median tolerance
- Automation NC-File
 - Create NC file for selected machine
 - Create Setup Sheet
 - Add Machine/NC Code to Vault
 - Copy NC Code/Setup to external share

Inventor CAM – Vault – iLogic Design Automation

Automate NC Code Output and Vault File Management

- Video
 - Create NC output for 1 to n machines
 - Check-in to Vault
 - Include output into Manufacturing Release process





What's New

What's New | Update 2.1 – Search Behavior

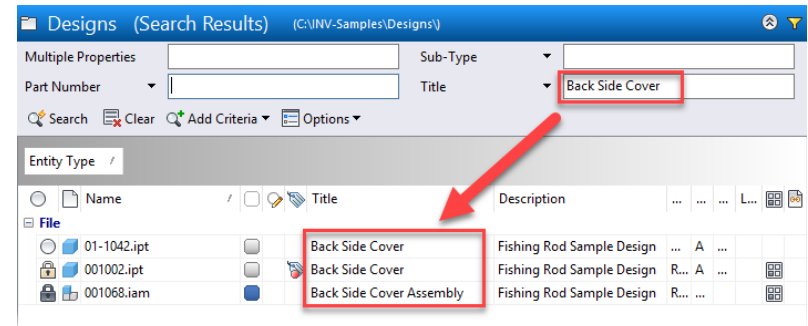
Library Version Number 2020.25.2.1

- Optimized Search Behavior

- Search Operator “Equals”
- Apply “AND” | “OR” Condition
- Search all field types
 - Text
 - Date
 - Boolean
- Extend range for text search using “*”

- Legacy Search Behavior*

- Aligned to Vault Query Builder*
- Search operator = “Contains”*























- Allowed using “And” | “Or” criteria*
- Search text field type only*

What's New | Update 2.1 – Search Behavior

Library Version Number 2020.25.2.1

- Example Scenario/Data Set

	 Name	/		 Part Number	Title
 File					
	 01-1042.ipt			01-1042	Back Side Cover
	 001002.idw			001002	Back Side Cover
	 001002.idw.pdf			001002	Back Side Cover
	 001002.ipt			001002	Back Side Cover
	 001068.iam			001068	Back Side Cover Assembly

What's New | Update 2.1 – Search Behavior

New Search Behavior – Example 1: Part Number **AND** Title

- Multiple Criteria
 - Part Number = „001002“
 - Title = „Back Side Cover“
- Option
 - Match All Criteria = „**True**“

	Name	Part Number	Title
File			
	01-1042.ipt	01-1042	Back Side Cover
	001002.idw	001002	Back Side Cover
	001002.idw.pdf	001002	Back Side Cover
	001002.ipt	001002	Back Side Cover
	001068.iam	001068	Back Side Cover Assembly



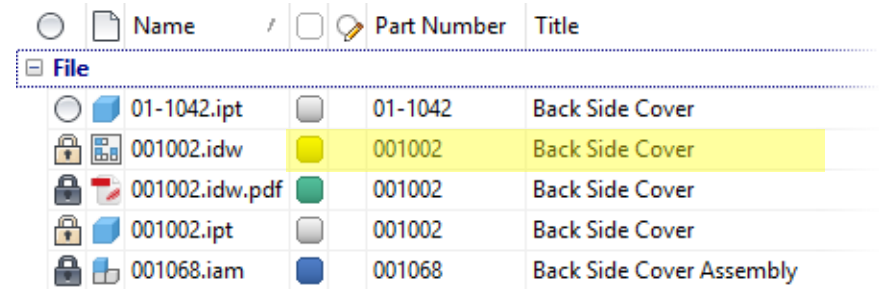
iLogic Log X +

```
INFO| 1: >>-----
INFO|iLogic-Vault file search found:
001002.idw.pdf
001002.idw
001002.ipt
```

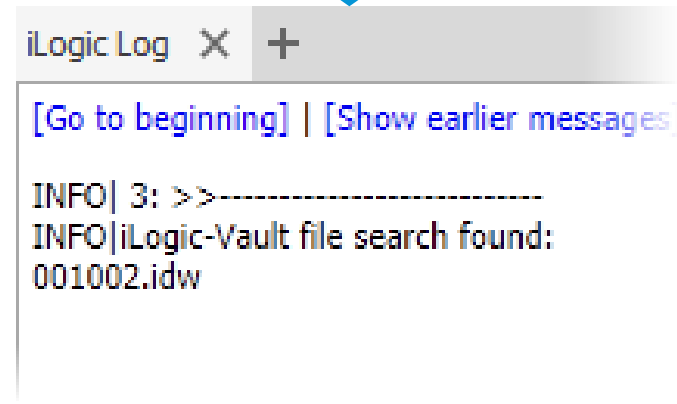
What's New | Update 2.1 – Search Behavior

New Search Behavior – Example 2: Part Number **AND** Title **AND** Category Name

- Multiple Criteria
 - Part Number = „001002“
 - Title = „Back Side Cover“
 - Category Name = „Drawing Inventor“
- Option
 - Match All Criteria = „**True**“

















Name	Part Number	Title
01-1042.ipt	01-1042	Back Side Cover
001002.idw	001002	Back Side Cover
001002.idw.pdf	001002	Back Side Cover
001002.ipt	001002	Back Side Cover
001068.iam	001068	Back Side Cover Assembly



What's New | Update 2.1 – Search Behavior

New Search Behavior – Example 3: Part Number **OR** Title

- Multiple Criteria
 - Part Number = „001002“
 - Title = „Back Side Cover“
- Option
 - Match All Criteria = „False“

	 Name		Part Number	Title
 File				
	01-1042.ipt		01-1042	Back Side Cover
	001002.idw		001002	Back Side Cover
	001002.idw.pdf		001002	Back Side Cover
	001002.ipt		001002	Back Side Cover
	001068.iam		001068	Back Side Cover Assembly



iLogic Log X +

```
INFO| 4: >>-----  
INFO|iLogic-Vault file search found:  
001002.idw.pdf  
001002.idw  
01-1042.ipt  
001002.ipt
```


What's New | Update 2.1 – Search Behavior

New Search Behavior – Example 4: Part Number Equals **OR** Title **Starts with**

- Multiple Criteria
 - Part Number = „001002“
 - Title = „Back Side Cover*“
- Option
 - Match All Criteria = „False“

	Name	Part Number	Title
File			
	01-1042.ipt	01-1042	Back Side Cover
	001002.idw	001002	Back Side Cover
	001002.idw.pdf	001002	Back Side Cover
	001002.ipt	001002	Back Side Cover
	001068.iam	001068	Back Side Cover Assembly



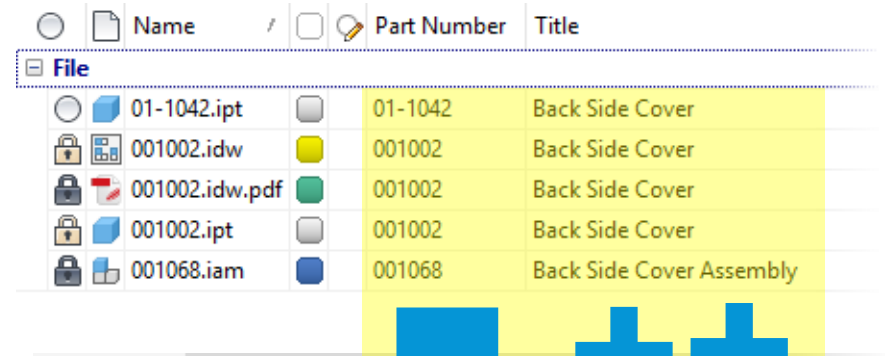
iLogic Log X +

```
INFO| S: >>
INFO|iLogic-Vault file search found:
001002.idw.pdf
001002.idw
01-1042.ipt
001002.ipt
001068.iam
```

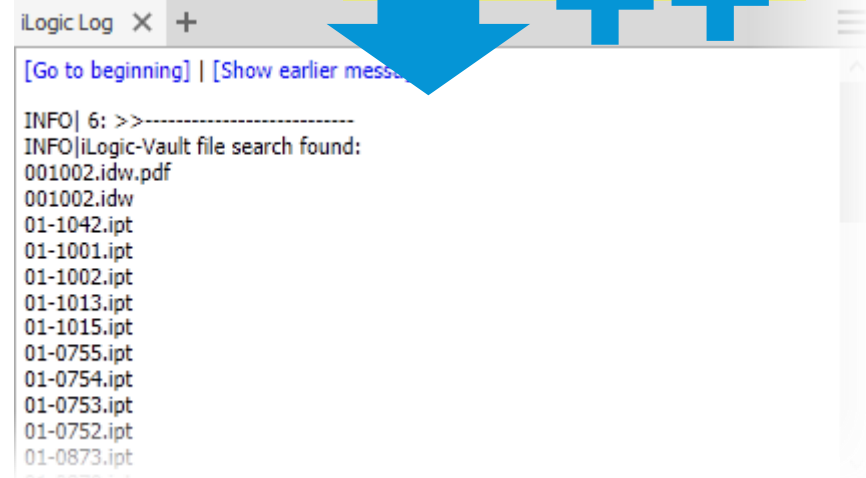
What's New | Update 2.1 – Search Behavior

New Search Behavior – Example 5: Part Number Equals **OR** Title **Contains**

- Multiple Criteria
 - Part Number = „001002“
 - Title = „*Side*“
- Option
 - Match All Criteria = „False“



	Name	Part Number	Title
File			
	01-1042.ipt	01-1042	Back Side Cover
	001002.idw	001002	Back Side Cover
	001002.idw.pdf	001002	Back Side Cover
	001002.ipt	001002	Back Side Cover
	001068.iam	001068	Back Side Cover Assembly



iLogic Log X +

[Go to beginning] | [Show earlier messages]

INFO| 6: >>-----
INFO|iLogic-Vault file search found:
001002.idw.pdf
001002.idw
01-1042.ipt
01-1001.ipt
01-1002.ipt
01-1013.ipt
01-1015.ipt
01-0755.ipt
01-0754.ipt
01-0753.ipt
01-0752.ipt
01-0873.ipt

What's New | Update 2.1 – Search Behavior

New Search Behavior – Example 6: Search Data Type **Boolean**

- Multiple Criteria
 - Part Number = „001002“
 - Linked to Item = **“True”**
- Option
 - Match All Criteria = „True“

'Build one to many name/value pairs of Property/Value as search criteria;

```
mSearchParams.Add("Part Number", "001002")
```

```
mSearchParams.Add("Linked to Item", True)
```

```
mVaultFiles = iLogicVault.CheckFilesExistBySearchCriteria(mSearchParams, True)
```

What's New | Update 2.1 – Search Behavior

New Search Behavior – Example 7: Search Data Type **Date**

- Single Criteria
 - Initial Release Date = **"09/20/2019 15:10:34"**
- Option [no impact for single criteria]
 - Match All Criteria = Default, True, or False

'Prepare the DateTime value as search criteria;

Dim mDateStr As String = "2019-09-20 15:10:34" 'seconds are the expected precision to search Vault Date type field

Dim mDate As Date = Date.Parse(mDateStr) 'parse to date type for UTC conversion

mDateStr = mDate.ToUniversalTime().ToString("MM/dd/yyyy HH:mm:ss") 'convert the UTC time to Vault internal date/time format MM/dd/yyyy HH:mm:ss

'Build one to many name/value pairs of Property/Value as search criteria;

mSearchParams.Add("Initial Release Date", mDateStr)

What's New | Update 2 – New Features & Functions

Library Version Number 2020.25.2.0

- New Search Option “FolderPaths”
 - Limit scope of search to one to many folders or folder tree
 - E.g., search only \$/Designs/ and \$/Libraries/ tree
- Get Thumbnails of Vault Files by Search, by Name and Download
 - image file
 - or image object (custom dialogs only).
- Intellisense Support for iLogicVault Commands

iLogicVault.

A screenshot of a software interface showing a list of commands under the 'iLogicVault.' namespace. The list includes: GetFileCopyBySourceFileSearchAndNewName, GetFilesBySearchCriteria, GetNewNumber, GetThumbnailFileByFullSourceFilePath, GetThumbnailFileBySearchCriteria (highlighted with a mouse cursor), GetThumbnailImageByFullSourceFilePath, GetThumbnailImageBySearchCriteria, GetVaultConnection, LoggedIn, and ToString. Each command is preceded by a small circular icon with a gear-like symbol.

- GetFileCopyBySourceFileSearchAndNewName
- GetFilesBySearchCriteria
- GetNewNumber
- GetThumbnailFileByFullSourceFilePath
- GetThumbnailFileBySearchCriteria
- GetThumbnailImageByFullSourceFilePath
- GetThumbnailImageBySearchCriteria
- GetVaultConnection
- LoggedIn
- ToString

Function QuickstartLogicLib.GetThumbnailFileBySearchCriteria(SearchCriteria As Dictionary(Of String, String), Optional MatchAllCriteria As Boolean, Optional FoldersSearched As String(), Optional Width As Integer, Optional Height As Integer) As String
Download Thumbnail Image of the file searched as Image file.

What's New | Update 2 - Changes

Library Version Number 2020.25.2.0

- Simplified Rule Syntax
 - Single line header
 - Single line Vault Log-In/connection status verification
- Function return values aligned to common iLogic objects “String” and “List(of String)”
- Function names aligned to the iLogic naming convention

⇒ **Note - Legacy code requires updating**

What's New | Update 3 - Changes

Library Version Number 2020.25.3.0

Version required to support Autodesk.VltInvSrv.iLogicSampleJob ([Pre-Release 2020](#))

- Custom Job to execute external or internal iLogic rules
- New method to re-use existing connections of Job Processor while running iLogic rule
 - Job to hand-over rule arguments

```
Function QuickstartiLogicLib.ReuseConnection(DbSrvName As String, FISrvName As String, VaultName As String, UserId As Long, Ticket As String) As Boolean  
For VaultInventorServer application only: Re-uses the job processors log-in user Id and ticket for iLogic-Vault interactions within rules.
```

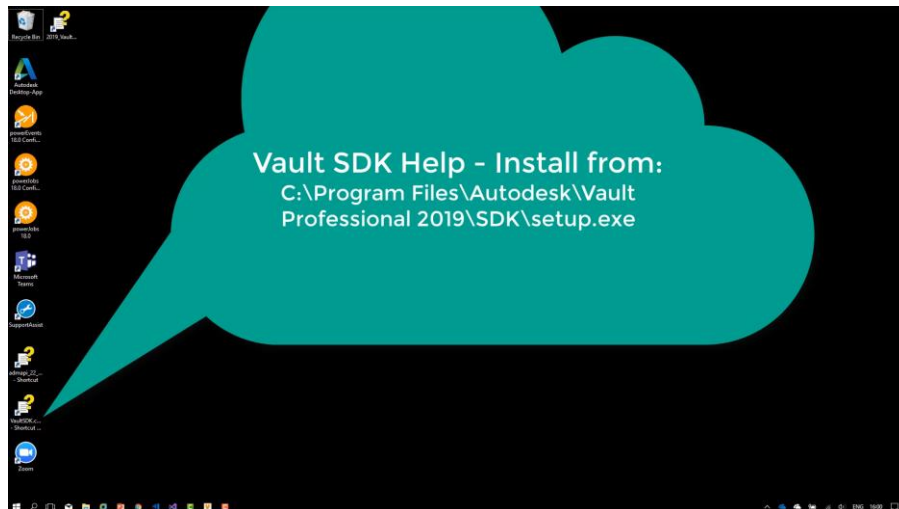
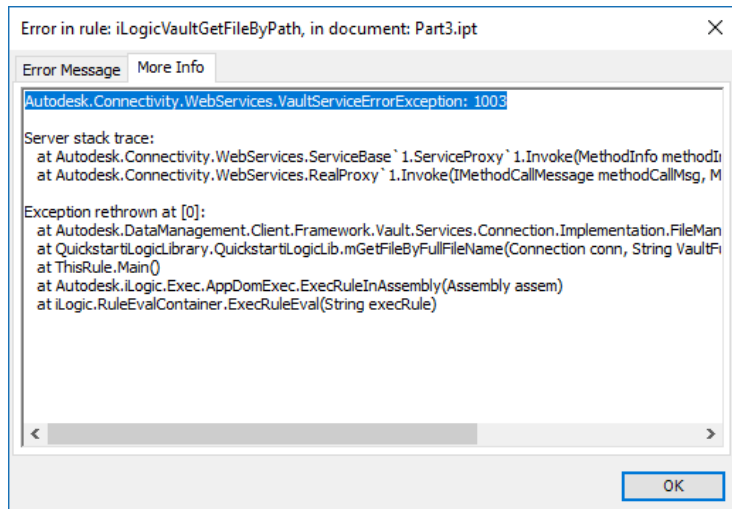
- Custom Job template includes sample rule *VaultJobRuleConnected.iLogicVb*



Tips & Tricks

Lookup Vault Error Codes

- What can you do if you encountered an error message from Vault?





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