PDM Workbench

PDM Workbench Release 18.0 for Aras Innovator

Installation & Administration Manual

Version 1

Copyright

Contact

T-Systems International GmbH
Business Unit PLM
Fasanenweg 5
70771 Leinfelden-Echterdingen
Germany

https://plm.t-systems.net/en-DE/pdm-workbench

☎ +49 (0) 40 30600 5544
✉ +49 (0) 3915 80125688

Email: *cmi_support@t-systems.com*

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This edition 18.0 of the manual obsoletes all previous editions.

Your Comments are Welcome

Please feel free to tell us your opinion; we are always interested in improving our publications. Mail your comments to:

T-Systems International GmbH
Business Unit PLM
Fasanenweg 5
70771 Leinfelden-Echterdingen
Germany

Email: *cmi_support@t-systems.com*

Preface

About this Manual

This manual provides installation and configuration information for the PDM Workbench. Before using this guide, be sure you understand:

- the Microsoft Windows operating system
- the administration of the CATIA V5 system
- the administration of the Aras Innovator system

Related Documents

The following manuals contain information about installation, administration, usage and customization of the PDM Workbench:

Manual Title	Version
PDM Workbench Installation & Administration Manual	*18.0*
PDM Workbench User Manual	*18.0*

Trademarks

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Table of Figures

CHAPTER 1

Overview

This chapter provides basic information about the installation of the *PDM Workbench*.

System Hardware and Software Requirements

Aras Server

Hardware

For the Aras Server hardware sizing please refer to Aras recommended hardware sizing document.

Please refer to *https://www.aras.com/support/documentation/*

and look for the Platform specifications document, e.g.

Aras Innovator 12.0 - Platform Specifications.pdf

Software

Aras Innovator 12

Server Installation of Aras Innovator 12.0 on the following operating systems:

- Windows Server 2012, Windows Server 2014, Windows Server 2016
- Detailed information see *Aras Documentation*: “Aras Innovator 12 Platform Specifications”

Aras Innovator 22 to 27

Server Installation of Aras Innovator on the following operating systems:

- Windows Server 2012, Windows Server 2016, Windows Server 2019
- Detailed information see *Aras Documentation*: “Aras Innovator xx Platform Specifications”

CATIA V5 Client

Hardware

The T-Systems CATIA V5 Aras Connector PDM Workbench does not introduce any additional requirements to the CAD Workstations. The CAD Workstation spec should be close to the proposed certified hardware spec as defined by Dassault Systèmes for CATIA V5.

Please refer to:

https://www.3ds.com/support/hardware-and-software/hardware-and-software-configurations/
for Graphics and CPU recommendations.

Select the respective CATIA V5 Release and Windows 10 64 bit as Operating System.

To process large CATIA Product Structures the CAD Workstation should have at least 32 GB RAM. For fast processing a SSD of sufficient size (500 GB) is recommended.

Software

On the CATIA client computers .NET 4.7.2 must be installed.

Starting with Aras Innovator 17 the following .NET Core 3.1 module must be installed:

- .NET Desktop Runtime

Starting with Aras Innovator 22 the following .NET 6.0 module must be installed:

- .NET Desktop Runtime

CATIA V5

CATIA V5 Client V5-6R2021, CATIA V5 Client V5-6R2022 SP1, and CATIA V5 Client V5-6R2023 on the following operating systems:

- Windows 10 (64 Bit) for CATIA V5 Client V5-6R2021, CATIA V5 Client V5-6R2022 SP1, and CATIA V5 Client V5-6R2023

Important notice:

CATIA V5-6R2014 SP2 has been retracted by Dassault Systèmes and is not supported. Please use SP3 instead.

Installation steps

This section describes which PDM Workbench modules (client and server) need to be installed.

On the client and the server two steps need to be performed each:

- Client installation: CATIA V5 Add-in (chapter 2)
- Client installation: License Manager (For the installation of “licman21” please refer to the *Licman 2.1 Installation Manual*.)
- Server installation: PDM Workbench data model and server methods (chapter 3)
- Server installation: PDM Workbench server DLL (chapter 4)

CHAPTER 2

Adapting CATIA V5

The PWBCATV5 module provided by T-Systems International GmbH extends the CATIA V5 functionality to communicate with the Aras Innovator PDM system.

You should perform the following steps with your CATIA system administrator.

The **PWBCATV5_Rxx_xx** module includes all of the supported platform data in a compressed file. Thus, you should choose an installation location for all CATIA V5 clients.

In the following example sections it is supposed that the software will be installed within the directory **C:\Program Files\T-Systems\PWBCATV5_Rxx_xx_Aras_xx** on Windows but you can surely choose any other destination for the module.

Within the installation you will need to supply the PDM specific installation package. The file name follows the naming convention **PWBCATV5_xx_Aras_xx.zip**.

Loading PWBCATV5 Software from CD-ROM

Windows 10

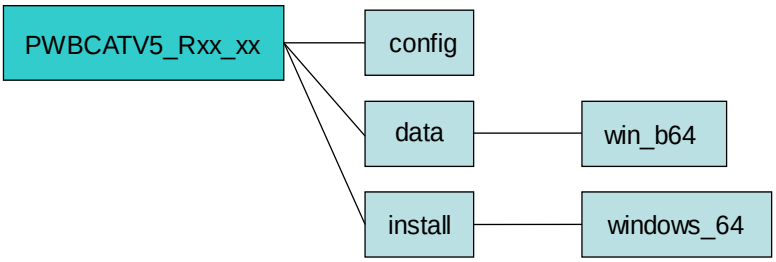
Use the Windows Explorer to locate the **D:\pwbcatv5\PWBCATV5_Rxx_xx.zip** file on the CD. Extract the content of the archive file to a temporary installation location.

PWBCATV5 Installation

After you have successfully transferred the installation files to your installation host; the following steps will install the files and configure your installation.

Configuring the installation

The **PWBCATV5_Rxx_xx** Installation Directory has the following structure:



Picture 1: Directory structure of the PDM Workbench installation files

The **config** directory contains readme files and special files needed by the installer or the installed program.

The **data** directory contains the binary distributions for the PWBCATV5 module for the supported operating system mnemonics.

The supported operation system and its mnemonic is:

Windows 10 (64 Bit)	win_b64

The **install** directory contains the sub directory **windows_64** with all necessary data for the installer program.

Windows 10 (64 Bit)

On **Windows 10 (64 Bit)** use the Windows Explorer to run the **setup.exe** in the directory **PWBCATV5_Rxx_xx\install\windows_64** of the installation package if you have installed the 64 Bit version of CATIA V5.

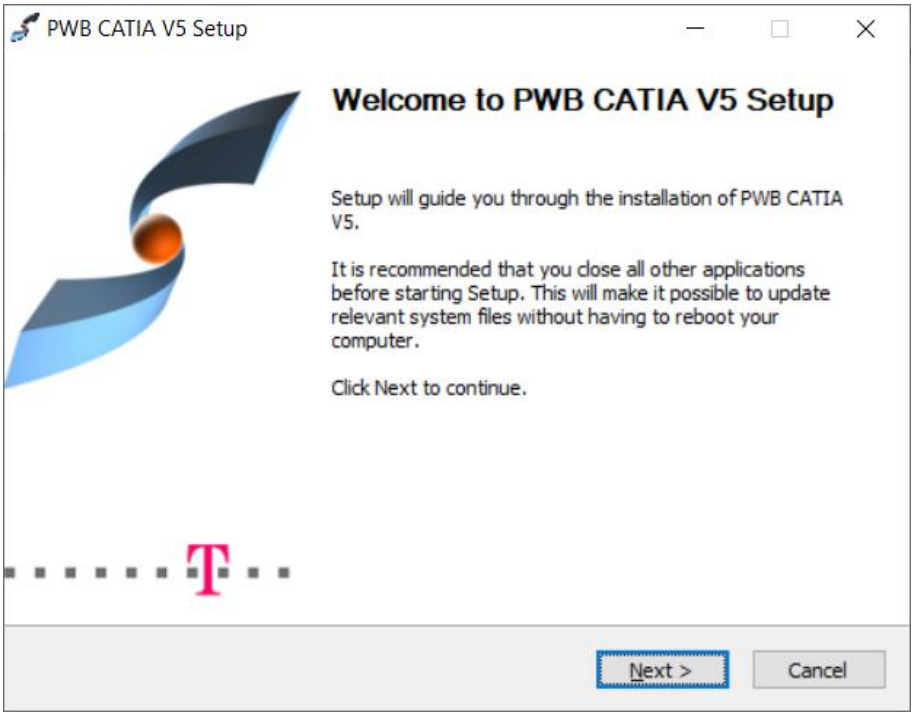
On **Windows 10** the User Account Control (UAC) will be triggered and you will have to agree that the setup program may make changes to the computer. The installer is signed with a "**T-Systems International GmbH**" certificate to ensure its integrity and source.

The setup will **NOT** modify the native installation of CATIA V5.

The licman21 license manager has to be installed on the CATIA V5 client host. For the installation of the license manager please refer to the *Licman 2.1 Installation Manual*.

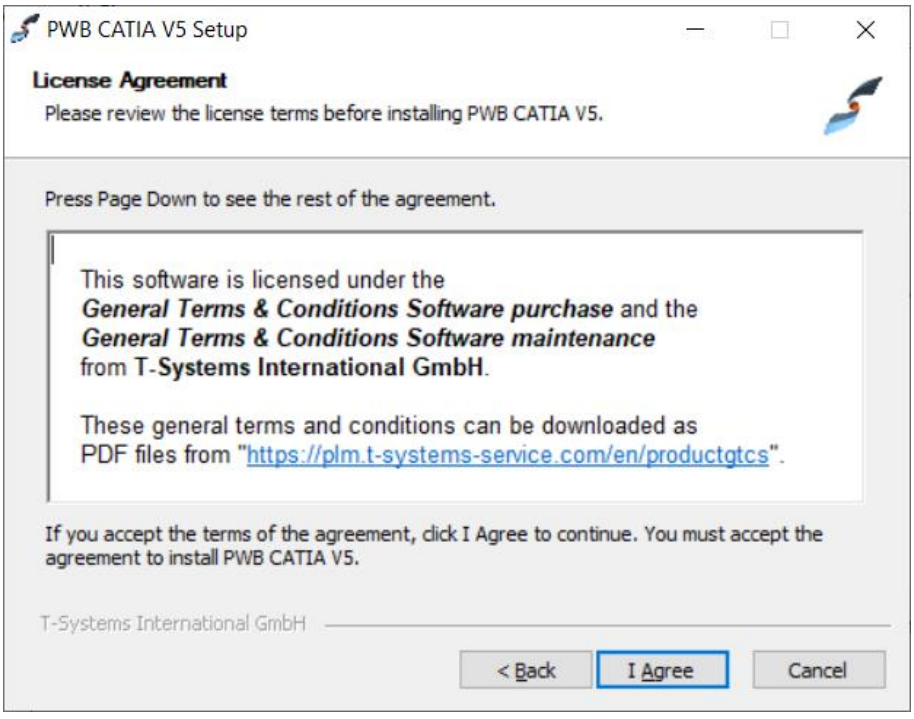
In the following the setup is shown step-by-step.

Installation process:



Picture 2: Welcome to the Installation

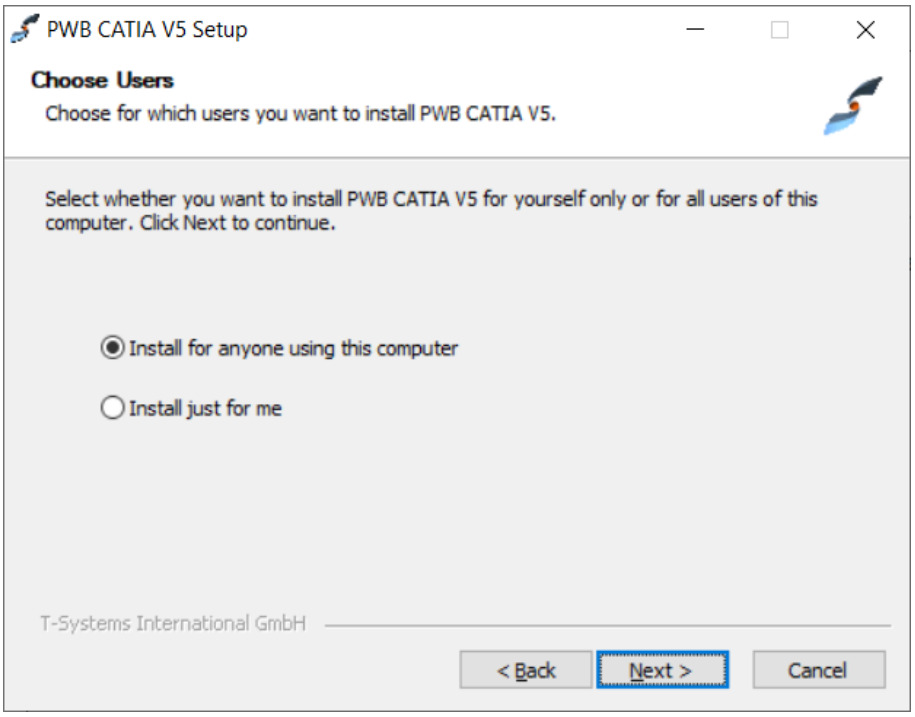
The installer software asks to approve the license terms (see *Picture 3: License Agreement*).



Picture 3: License Agreement

The installer software asks for the following input: **User scope**.

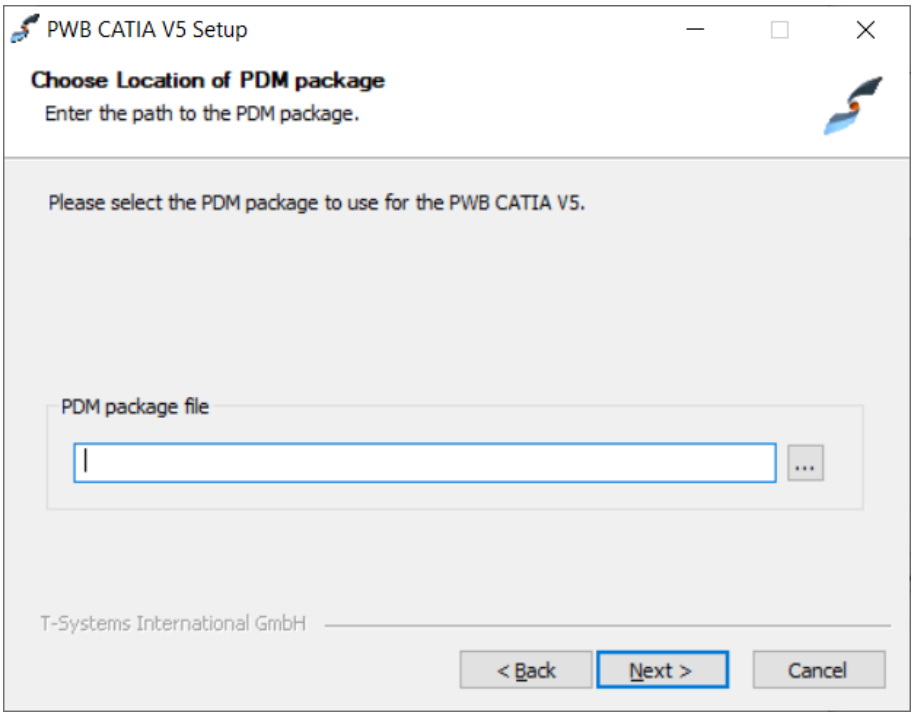
Next the installer will ask you to define the scope of the installation (see *Picture 4: Choose Users*). You can choose between an installation for anyone using the computer or just for the current user.



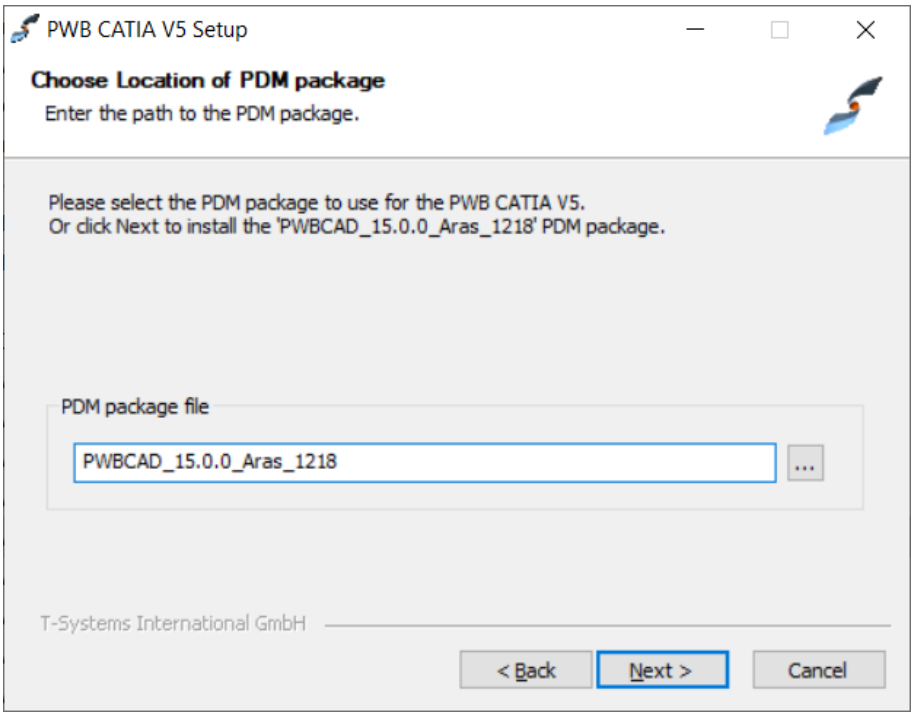
Picture 4: Choose Users

The installer software asks for the following input: **Location of the PDM package**.

The installer asks for the location of the PDM package to use (see *Picture 5: Choose Location of PDM package*). If a PDM package has previously been unpacked within the installer it will be offered to install this package directly (see *Picture 6: Choose Location of PDM package (with proposal)*).



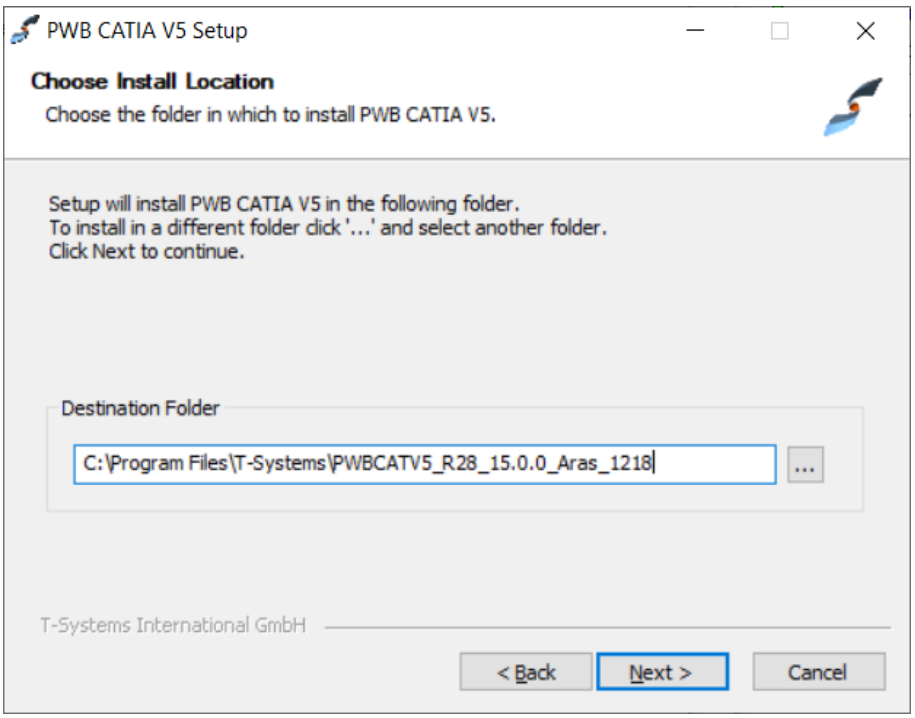
Picture 5: Choose Location of PDM package



Picture 6: Choose Location of PDM package (with proposal)

The installer software asks for the following input: **Installation directory**.

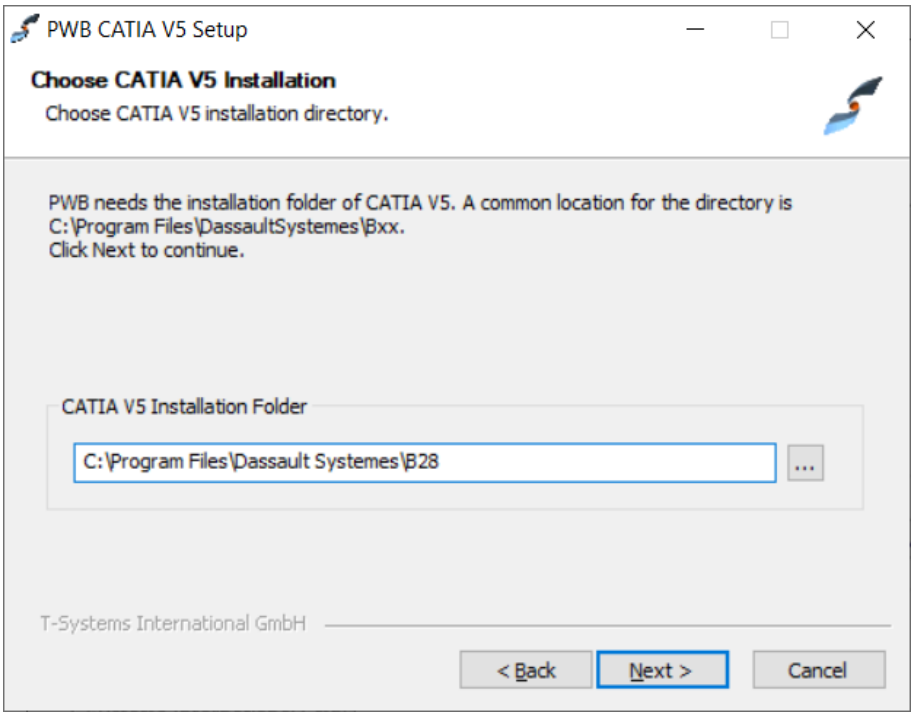
Next the installer will ask you for the target directory for the installation. You can use the given standard location or choose any other location (see *Picture 7: Choose Install Location*). The chosen folder must be empty or not existent.



Picture 7: Choose Install Location

The installer software asks for the following input: **CATIA installation directory**.

The installation path of the CATIA to use needs to be specified (see *Picture 8: Choose CATIA V5 Installation*).

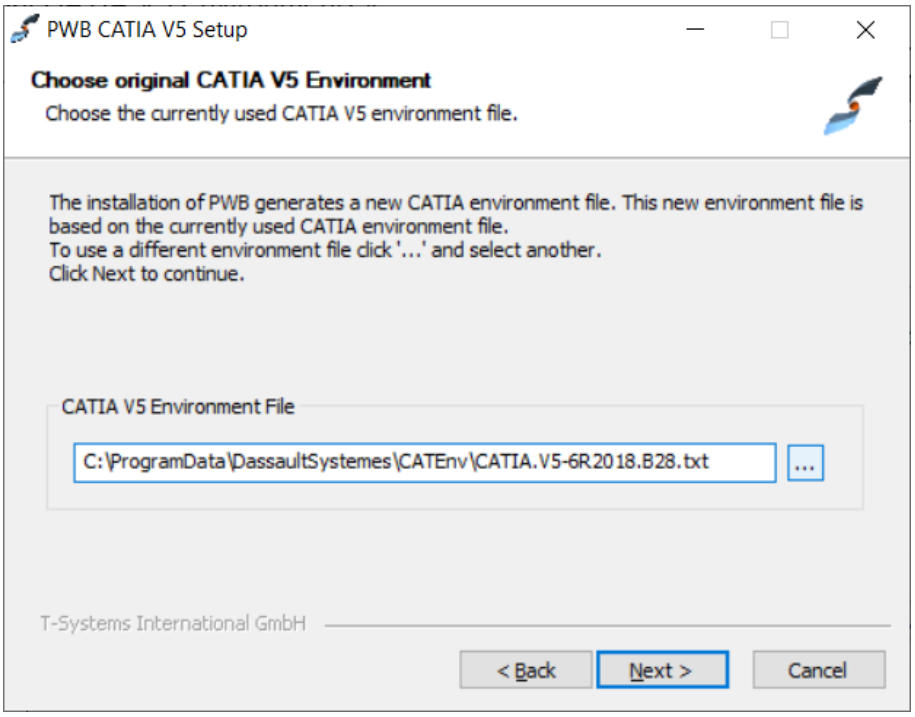


Picture 8: Choose CATIA V5 Installation

The installer software asks for the following input: **Original CATIA V5 Environment**.

Afterwards you will be asked for your CATIA V5 environment file (see *Picture 9: Choose original CATIA V5 Environment*).

The installation of PDM Workbench generates a new CATIA V5 environment file. This new environment file is based on the currently used CATIA V5 environment file.



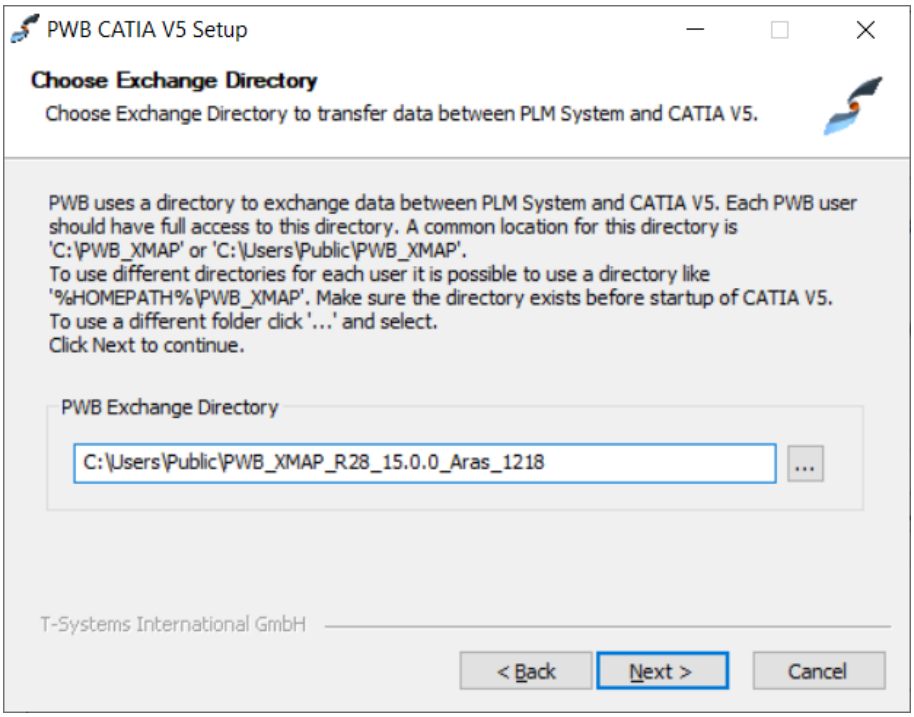
Picture 9: Choose original CATIA V5 Environment

The installer software asks for the following input: **PWB Exchange Directory**.

The PDM Workbench needs a temporary directory to perform the file transfer between CATIA and the PDM system. Make sure this directory exists for every PDM Workbench user on the CATIA client machine.

You can either use the standard location or choose any other location (see *Picture 10: Choose Exchange Directory*).

If it is planned to run more than one CATIA session at a time each session must use its own PWB Exchange Directory!

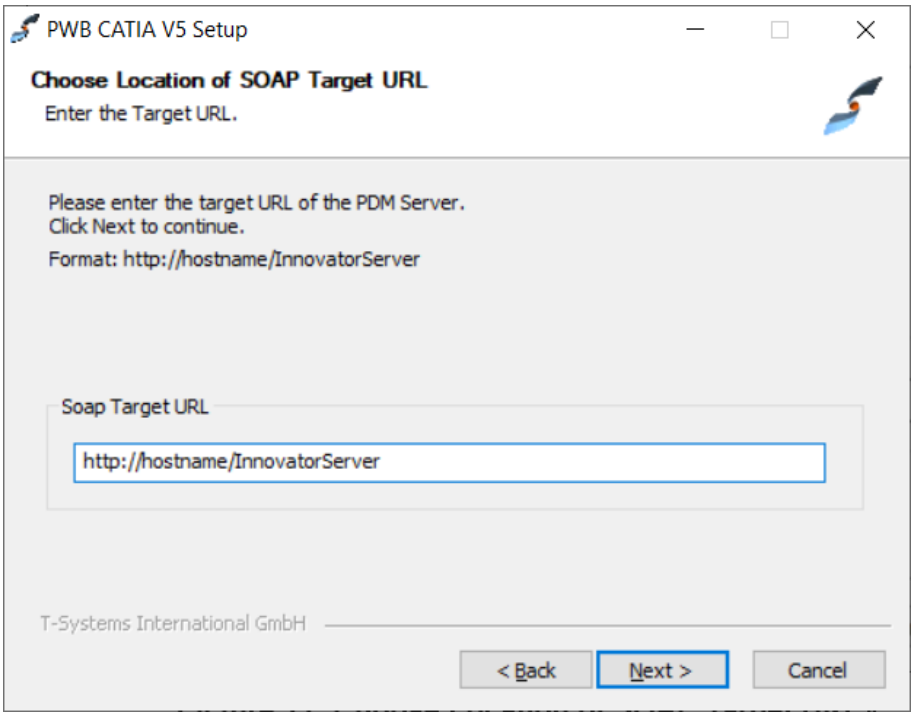


Picture 10: Choose Exchange Directory

The installer software asks for the following input: **SOAP Target URL**.

Finally you have to define the so called “Soap Target URL” for the PDM Server (see *Picture 11: Choose Location of SOAP Target URL*).

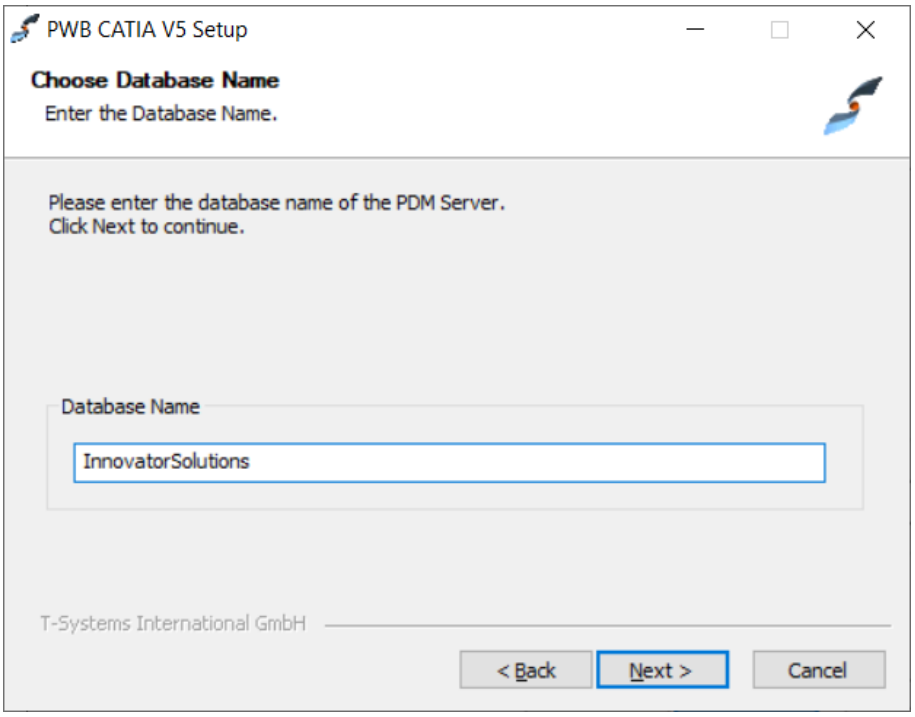
This URL defines the host on which the PDM Server is reachable.



Picture 11: Choose Location of SOAP Target URL

The installer software asks for the following input: **Database Name**.

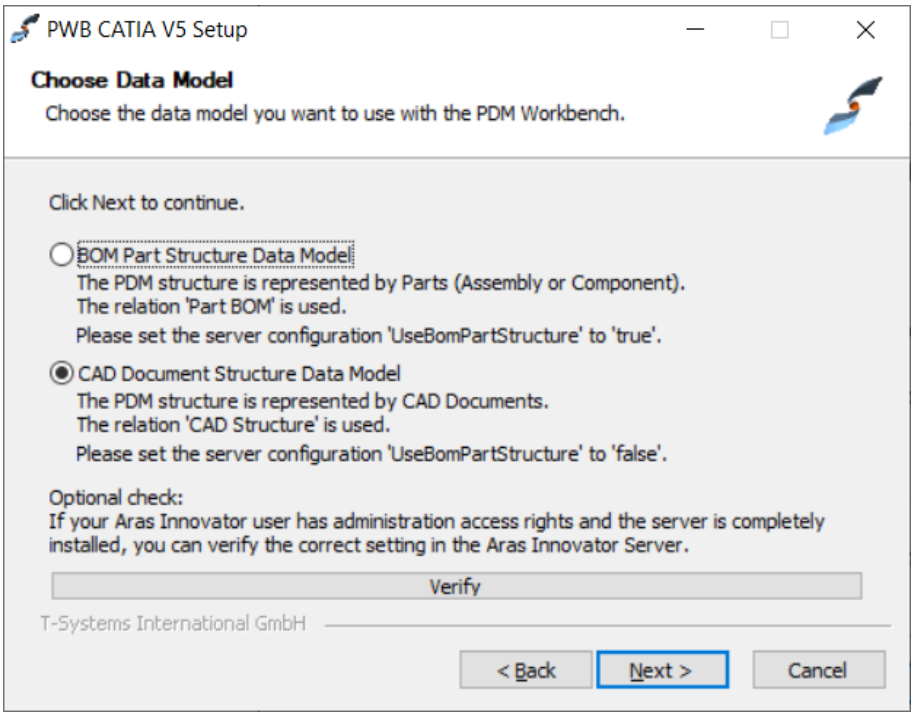
Now you have to add the Database Name (see *Picture 12: Choose Database Name*).



Picture 12: Choose Database Name

The installer software asks for the following input: **Data Model**.

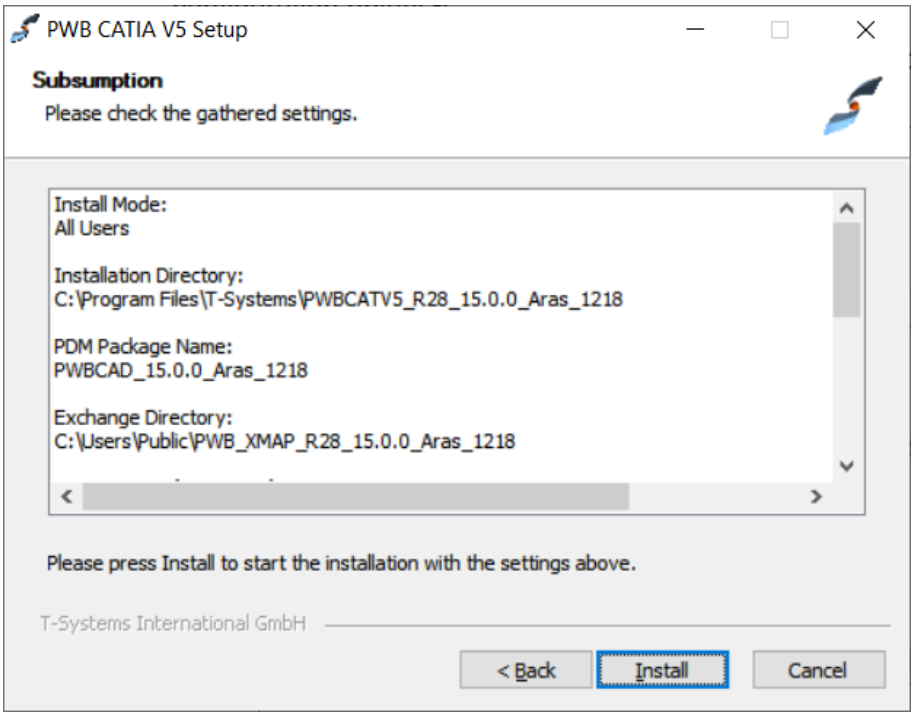
Finally you have to choose the data model to be used by the PDM Workbench (see *Picture 13: Choose Data Model*).



Picture 13: Choose Data Model

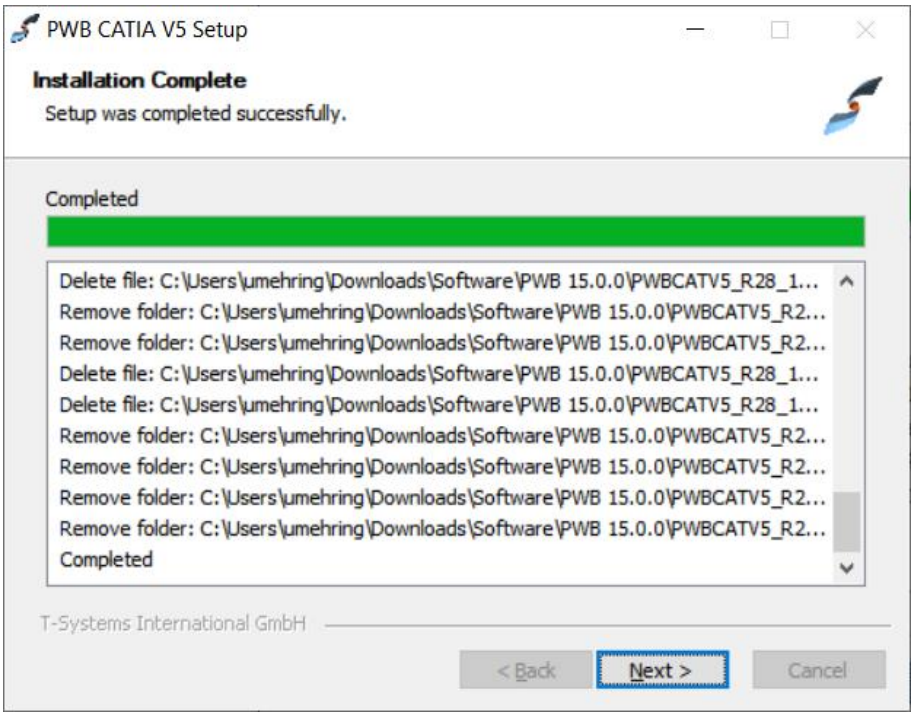
With the optional check you can directly log in into Aras Innovator with an administrative user and verify the setting of the data model (UseBomPartStructure) in the PWB configuration object.

After that you see the subsumption of your inputs before confirming them (see *Picture 14: Subsumption*).

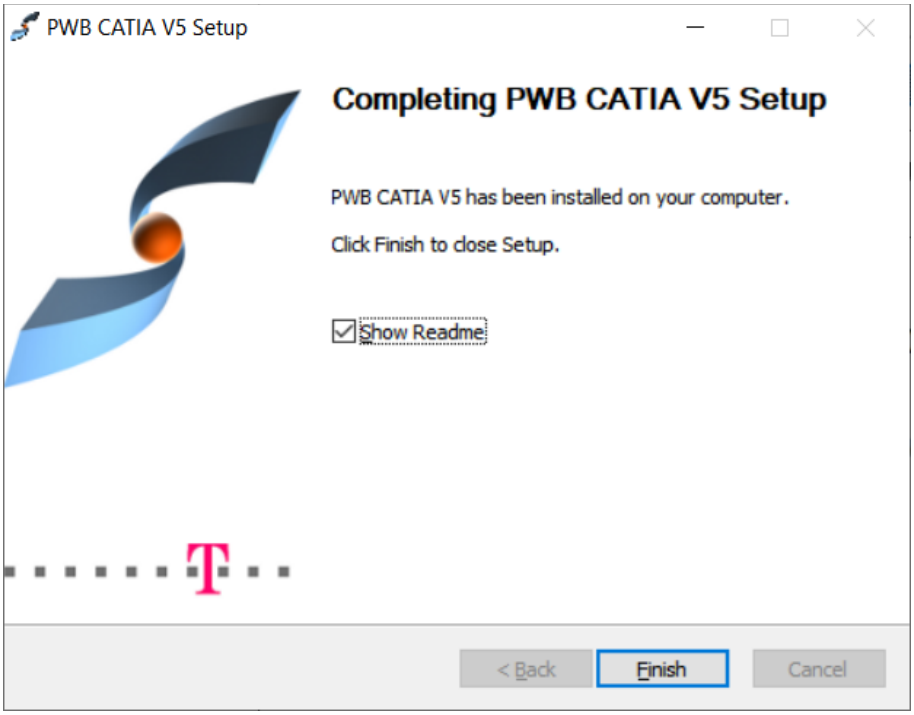


Picture 14: Subsumption

The installer will proceed in its process. The taken actions will be journalized (see *Picture 15: Installation progress*).



Picture 15: Installation progress



Picture 16: Installation finished

Silent Installation

It is possible to use a silent installation for the client installation.

Parameters

The following parameters are available for the silent installation:

Parameter name	Description	Sample value
/S	Activates the silent mode.	
/User= value	Installation only for yourself (“User”) or for all users of the computer (“Admin”). Default is the highest possible value.	Admin
/PdmPackageNamePath= (File full path)	The full path of the zip file or the directory which includes the PDM package.	D:\aras_client\PWBCAD_15.0.0_Aras_1218.zip D:\aras_client\PWBCAD_15.0.0_Aras_1218
/DeletePdmPackageInstallDir= (true|false)	Configures if the temporary PDM package installation directory will be deleted at the end of the installation process. The default value is “true”.	false
/TempDir= (Directory path)	Defines the temporary directory to which the PDM package will be unzipped/copied during the installation process. In the defined directory a sub-directory “pdm” will be created.	C:\temp
/CatiaInstDir= (Directory path)	The directory of the CATIA V5 installation.	C:\Program Files\Dassault Systemes\B28
/CatiaEnvFile= (File full path)	The full path of the currently used CATIA environment file.	C:\ProgramData\DassaultSystemes\CATEnv64\CATIA.V5-6R2018.B28.txt
/ExchangeMap= (Directory path)	The directory of the Exchange Directory.	C:\Users\Public\PWB_XMAP
/SoapTargetURL= (URL)	The SOAP target URL of the Aras server.	http://localhost/InnovatorServer
/DatabaseName= (Database Name)	The Database Name of the Aras server.	InnovatorSolutions
/DataModel = (CAD|BOM)	The data model. (Default value: “CAD”)	CAD
/D=(Directory path)	The target directory of the installation.	C:\Program Files\T-Systems\PWBCATV5_R28_15.0.0_Aras_1218

The parameters “/S” and “/SoapTargetURL” are required.

The parameter “/User” is optional. The highest possible value will be used as default value.

The parameter “/PdmPackageNamePath” is optional if the installation had run before. Then the last package will be used. If it is the first installation you have to provide the file path of the PDM package.

The parameter “/DeletePdmPackageInstallDir” is optional. The default value will be “true”.

The parameter “/TempDir” is optional. The temporary installation location directory “PWBCATV5_Rxx_xx\pdm” will be used as default value.

The both values for the CATIA installation are optional; the values can be fetched from the Windows registry.

The parameter “/ExchangeMap” is optional. The directory “C:\Users\Public\PWB_XMAP” will be used as default value.

The parameter “/DatabaseName” is optional. The value “InnovatorSolutions” will be used as default value.

The parameter “/DataModel” is optional. The value “CAD” will be used as default value.

The parameter “/D” is optional. A part of the value will be taken from the current directory. It must be the last parameter used in the command line and must not contain any quotes, even if the path contains spaces. Only absolute paths are supported.

If one value is not given and it is not possible to fetch a value from the system the installation process will be stopped and the error message can be found in the file *install.log*.

Usage

For the silent installation please open a command line window as administrator.

Inside the temporary installation location, locate the folder “PWBCATV5_Rxx_xx\install\windows _64” for an installation on a client with Windows 64 Bit.
Start the silent installation with a command line like this example:

```
Setup.exe /S /User=Admin
/PdmPackageNamePath=D:\aras_client\PWBCAD_15.0.0_Aras_1218.zip
/DeletePdmPackageInstallDir=false /TempDir="C:\temp"
/CatiaInstDir="C:\Program Files\Dassault Systemes\B28"
/CatiaEnvFile="C:\ProgramData\DassaultSystemes\CATEnv64\CATIA.V5-
6R2018.B28.txt" /ExchangeMap="C:\Users\Public\PWB_XMAP"
/SoapTargetURL="http://localhost/InnovatorServer"
/DatabaseName="InnovatorSolutions" /DataModel=BOM /D=C:\Program
Files\T-Systems\PWBCAD_15.0.0_Aras_1218
```

The log file of the installation will be stored in the current directory. There you can find the information about the installation process.

When the installation ended successful you will find the success message in this file.

Silent Un-Installation

It is possible to use a silent un-installation for the client un-installation.

Parameters

The following parameter is available for the silent un-installation:

Parameter name	Description	Sample value
/S	Activates the silent mode.	

The parameter “/S” is required.

Usage

For the silent un-installation please open a command line window as administrator.

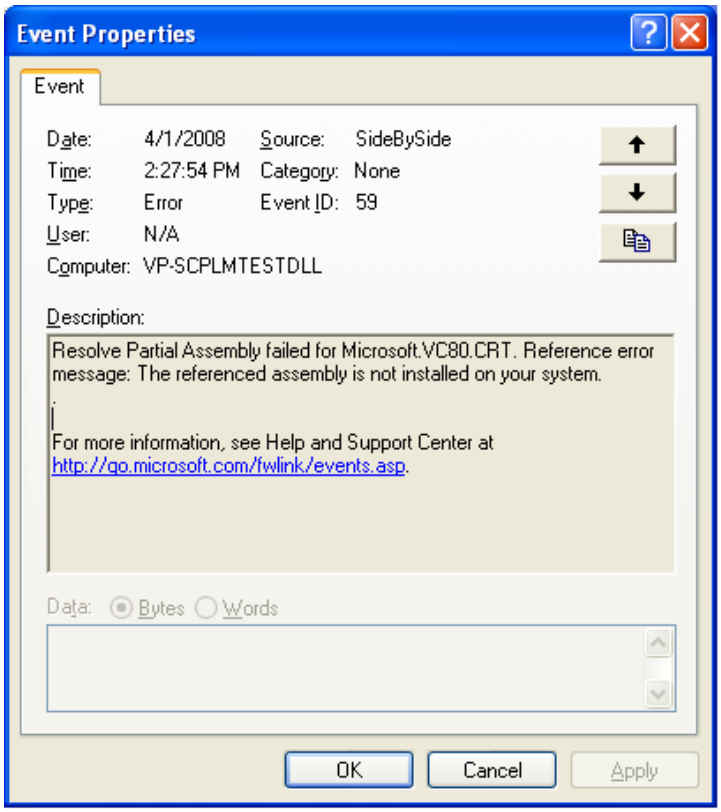
Start the silent un-installation with a command line like this example:

```
"C:\Program Files\T-Systems\PWBCAD_15.0.0_Aras_1218\uninstall.exe"
/S
```

Please use the full path of the file `uninstall.exe` of the installation you want to uninstall.

Troubleshooting R18 (64 Bit)

If your PDM Workbench Toolbar does not appear when starting up CATIA V5, please check Windows Event Viewer → System. Check if there is a SideBySide error like this.



Picture 17: Event Properties

This error indicates that you need additional Windows runtime libraries.

You can find these runtimes in one of the following directories:

```
PWBCATV5_R17_8.0.0\Windows_Runtime\x64\
(required for 64 Bit CATIA only)
PWBCATV5_R18_8.0.0\Windows_Runtime\x64\
(64 Bit CATIA)
PWBCATV5_R18_8.0.0\Windows_Runtime\x86\
(32 Bit CATIA)
```

There are two possibilities to install the new runtime:

Install the runtime libraries into the Windows installation (recommended).

This may need system privileges.

For 32 Bit PWB/CATIA you have to extract the package `vcredist_x86.zip` and execute the setup routine `vcredist_x86\vcredist_x86.exe`

For 64 Bit PWB/CATIA you have to extract the package `vcredist_x64.zip` and execute the setup routine `vcredist_x64\vcredist_x64.exe`

or

copy the additional libraries in a sub directory of the PWB CATIA V5 installation.

For 32 Bit PWB/CATIA you have to extract the package `Microsoft.VC80_x86.zip`. Copy the folder `Microsoft.VC80.CRT` to the binary location of the PWB CATIA module: `PWBCATV5_R18_32V00\intel_a\code\bin\Microsoft.VC80.CRT`

For 64 Bit PWB/CATIA you have to extract the package `Microsoft.VC80_x64.zip`. Copy the folder `Microsoft.VC80.CRT` to the binary location of the PWB CATIA module: `PWBCATV5_R18_32V00\win_b64\code\bin\Microsoft.VC80.CRT`

Testing the Installation

Windows

Windows 10: Use **Start → T-Systems PWB CATIA V5 Rxx yyy Innovator zzz → pwb_start** to launch CATIA V5.

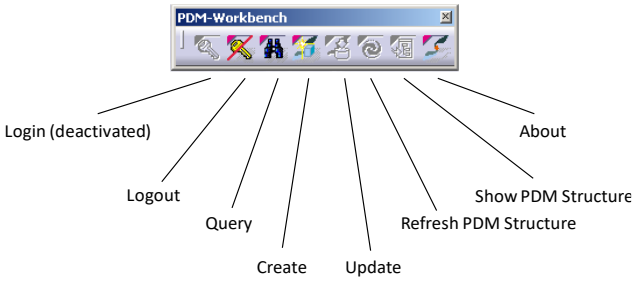
After the CATIA V5 has started the following message should appear in the command window:

```
debug on (level 1)
PDM Workbench: Module Number 1030 :
license successfully allocated
```

The License Module Number may vary.

Within CATIA V5 the following toolbar has to be visible:

Picture 18: PDM Workbench toolbar before the login

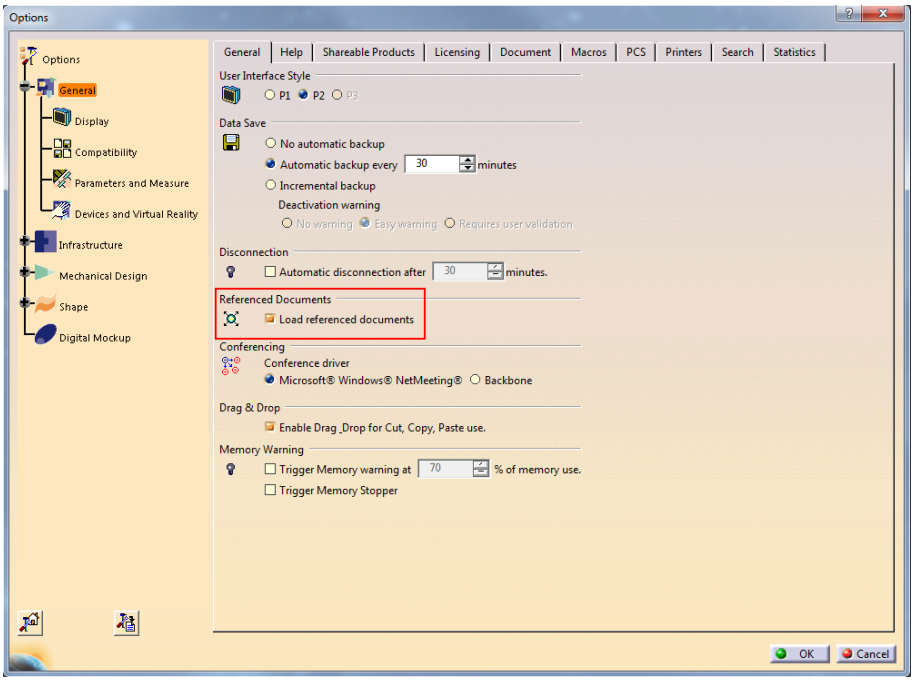


Picture 19: The PDM Workbench toolbar after the login

CATIA V5 Configuration

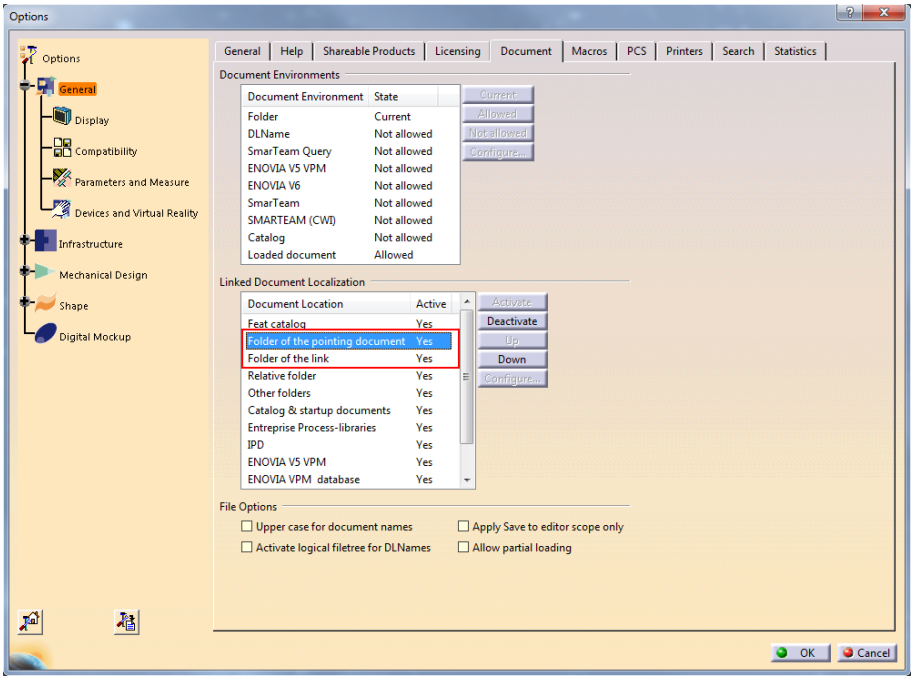
In the CATIA V5 Settings the following options have to be set as described below:

The *Load Referenced documents* option must be set in **Tools→Options→General** settings (see *Picture 20: CATIA V5 General→General Settings*).



Picture 20: CATIA V5 General→General Settings

In the *Linked Document Localization* the Options ***Folder of the pointing document*** and ***Folder of the link*** must be set to yes, and should be in this order (see *Picture 21: CATIA V5 General→Document Settings*).



Picture 21: CATIA V5 General→Document Settings

For PDM Workbench functionality please refer to the *PDM Workbench User Manual.*

Switching to the PWBSchema File suited for BOM Part Structures

The PDM Workbench installation package for the Aras Innovator clients also contains the PDM Workbench Schema file suited to the BOM Part Structure Data Model. It is named “PWBSchema_Aras_PartStruc.xml” and it resides in the “config” directory of the PDM specific installation package **PWBCAD_xx_Aras_xx.zip**, beside the files “PWBSchema.dtd” and “PWBSchema.xml”.

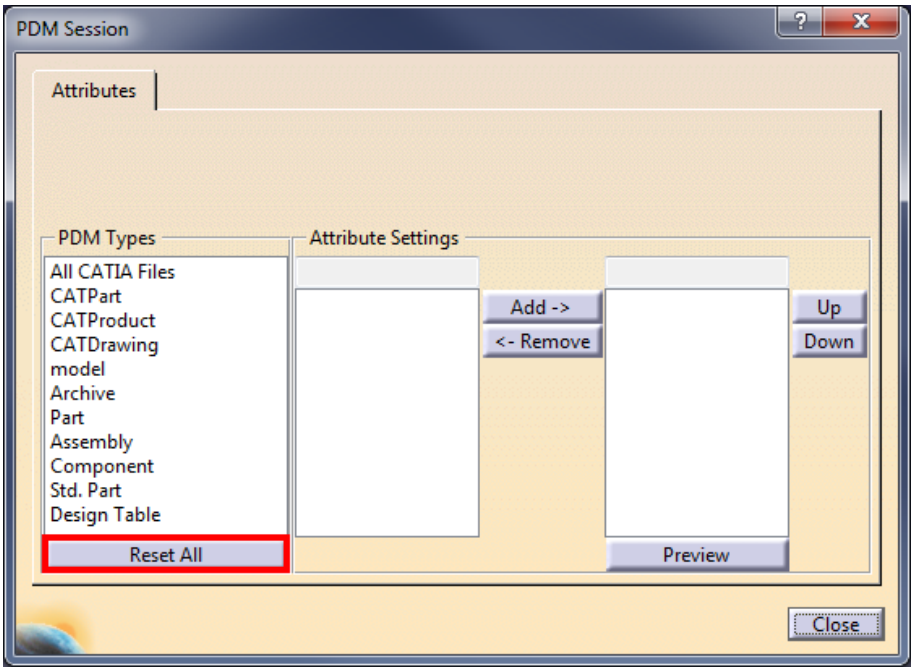
In order to use the BOM Part Structure Data Model please replace the file “PWBSchema.xml” in the installed PDM Workbench client directory (e.g. “C:\Program Files\T-Systems\PWBCATV5_R28_13.0.0_Aras_1209\config\PWBSchema.xml”) with the other configuration file. Please also make sure that the PDM Workbench environment file “catia_env.bat” contains the correct reference to the Schema file (e.g. “SET PWB_SCHEMA_FILE=%PWBDIR%\config\PWBSchema.xml”).

PWBSchema Modification

In case of an update of the CATIA client or changes in the PDM Workbench configuration file “PWBSchema.xml” it is necessary to refresh the List View Column definition for all classes.

Please log in into the PDM system.

Choose in CATIA V5 **Tools→Options** and there *General – Compatibility – PDM Workbench*. Click on “Customize List View”. The Configuration dialog opens (see *Picture 22: PDM Session Configuration dialog*).



Picture 22: PDM Session Configuration dialog

Please click the button “Reset All” in order to refresh the changes from the configuration file.

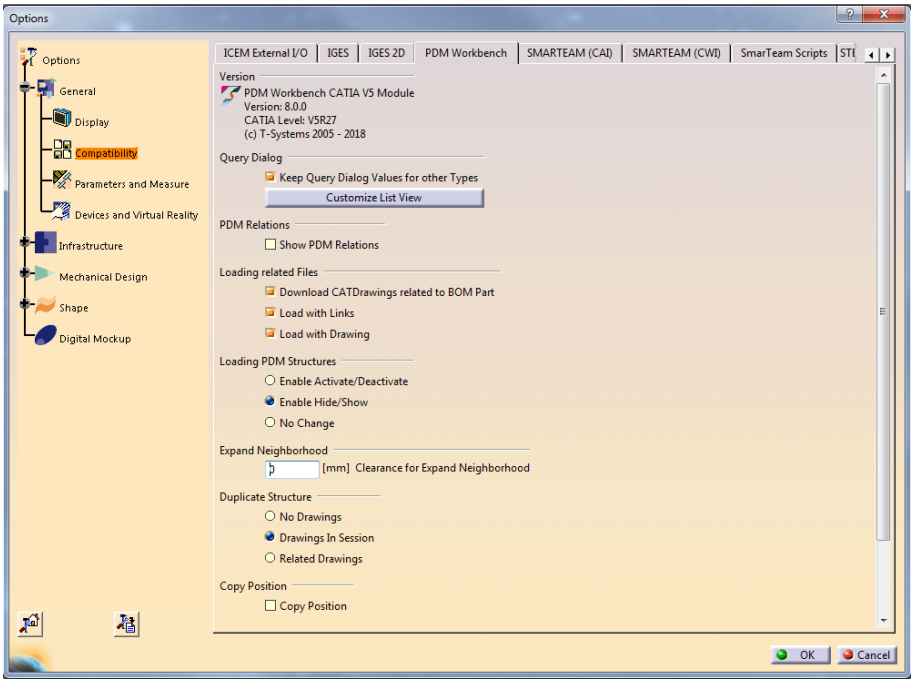
Setting of Environment Variables

The PDM Workbench software will use the following environment variables in the CATIA environment:

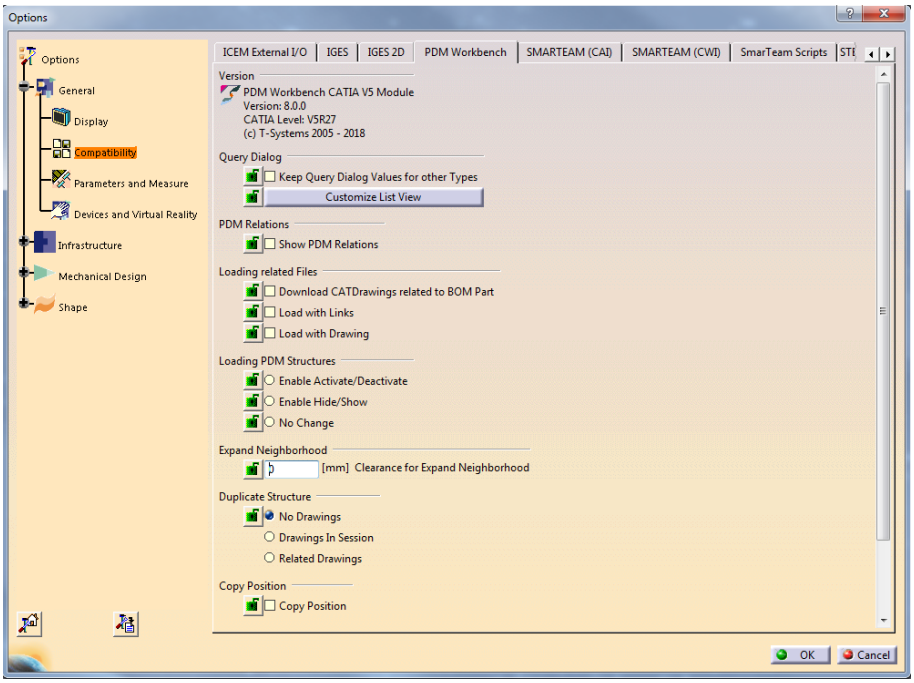
Environment variable	Comment
PWB_XMAP	The location of the exchange map directory. The exchange map directory must be unique for every started CATIA session on the same client.
PWB_SCHEMA_FILE	Path including file name of the XML configuration file.
PWB_SOAP_TARGET_URL	The URL of the web service. http://localhost/InnovatorServer
PWB_DATABASE_NAME	The name of the database, e.g. InnovatorSolutions
PWB_DEBUG	Set to “ON” to receive PWB debug output in the console.
PWB_ADDTEMP_PREFIX	The prefix for the rename of the Part Numbers and File Names for the “Add Temp” and “Open File Temporary” command. Default value is “TMP”.

Administrative Lock for PDM Workbench Preferences

An administrator can lock the PDM Workbench preferences similar to other CATIA preferences, using the CNEXT –admin interface:



Picture 23: PDM Workbench preferences (administrator view)



Picture 24: PDM Workbench preferences (user view)

The locked preferences will have the administrator's default values and cannot be changed by the users.

Installation without PWB specific environment variables

By default, the PWB installer uses your standard CATIA V5 installation and environment to create a new CATIA V5 start script and a new CATIA V5 environment file which also holds the information about the PDM Workbench installation.

If you use a CATIA V5 start center that allows you to add an additional path for some 3rd party CATIA V5 modules, but you don't have the possibility to add extra PDM Workbench environment variables you can install the PDM Workbench client without any additional environment variables.

1. Extract CATIA V5 specific package `PWBCATV5_R<XX>_<X>.<X>.<X>.zip` and copy the `win_b64` directory (`PWBCATV5_R<XX>_<X>.<X>.<X>\data\win_b64`) to your 3rd party CATIA V5 path.
2. Extract the Aras Innovator specific package `PWBCAD_<X>.<X>.<X>_Aras_<XXX>` and copy the content of `data\neutral\code\bin\` (`IOM.dll`, `PwbArasClientsCommon.exe`, `PwbArasFileClient.exe`, `PwbArasSoapClient.exe`) into `win_b64\code\bin\` of the previous copied directory.
3. From the extracted package `PWBCAD_<X>.<X>.<X>_Aras_<XXX>` copy the needed schema XML and DTD file to `win_b64\reffiles`.
    a. You have to copy the file PWBSchema.dtd
    b. If you want to use the CAD Structure data model, you have to copy the file `PWBSchema.xml`. If you want to use the BOM Part Structure data model, you have to copy `PWBSchema_Aras_PartStruc.xml` and rename it to `PWBSchema.xml`.
4. In the copied `PWBSchema.xml` file you have to adapt the following settings:

a. PWB exchange directory
```
<xmap value=… />
```
To use a user specific xmap you can use system environment variables like follows:
```
<xmap value=”${USERPROFILE}\xmap” />
```

b. Aras server URL
```
<soapTargetUrl value="…” />
```

c. Login data base(es)
```
<dataSource name="LoginDatabases" type="ValueList"
                    additionalValues="DefaultDatabase" >
  <value name="InnovatorSolutions" displayName="" />
</dataSource>
```

If you use the “Open in CATIA” functionality, you also have to create the file

`win_b64\code\bin\PwbListenerService.cfg` (By default the file `PwbListenerService.cfg` is installed in the directory config of the PDM Workbench client installation. If the config file is located in the same directory like `PwbListenerService.exe` this configuration will be used):

```
LISTENER_PORT=8181
CATIA_DIR=C:\Program Files\Dassault Systemes\B30
CATIA_ENV_FILE=<full path>\catiaenv.txt
```

with:

LISTENER_PORT: Port number to connect from Aras (default: 8181)

CATIA_DIR: Installation directory of native CATIA V5

CATIA_ENV_FILE: full path to a CATIA V5 environment file. This CATIA V5 environment must contain a PDM Workbench installation. It is possible to use a different CATIA V5 environment for the interactive CATIA V5 session.

The PwbListenerService must be installed manually. The service can be installed using Windows PowerShell:

```
PS C:\> New-Service -Name "PWBListenerService"
-DisplayName "PWBListener"
-BinaryPathName "<…>\win_b64\code\bin\PwbListenerService.exe" -
Description "Triggers PDM Workbench in CATIA V5 to load a
structure from Aras Innovator into CATIA V5"
-StartupType Automatic
```

Support user specific Exchange Directory when using “To Catia”

In previous releases (up to PWB 12) it was not possible to use user specific exchange directories when using the functionality “ToCatia”. Now it is possible to set the exchange directory in the start script of CATIA V5 like:

```
SET PWB_XMAP=%USERPROFILE%\xmap
```

The “ToCatia” functionality now uses the Windows temporary directory for some temporary files.

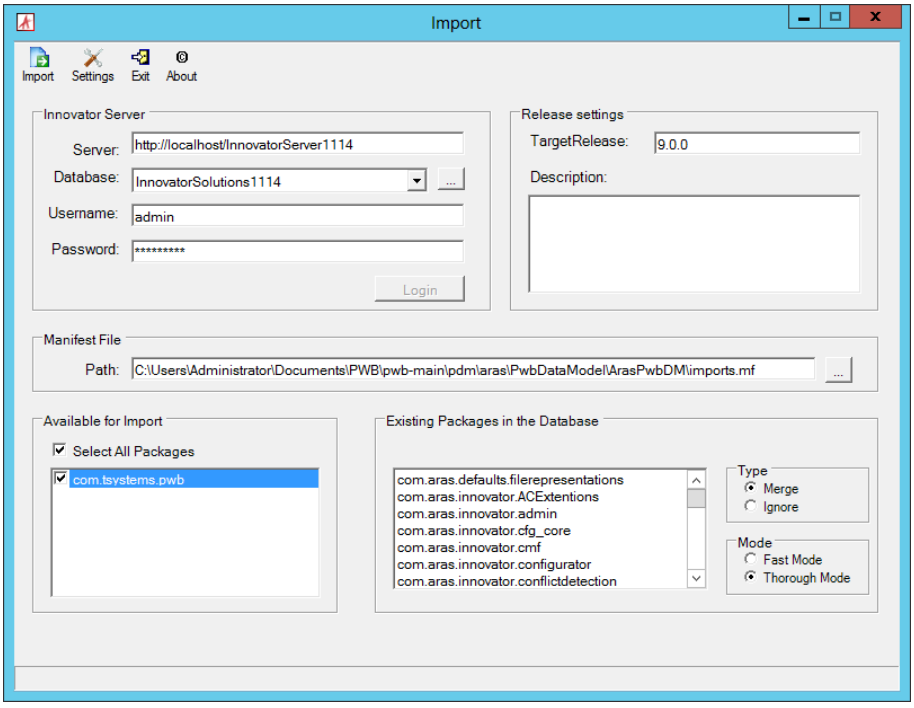
CHAPTER 3

PDM Workbench Data Model

Installation

The PDM Workbench data model and several server-side methods which call and support the main server functionality defined in the PDM Workbench server DLL (see *chapter 4*) need to be imported to Aras Innovator.

For this the “PwbDataModel_[XX.X].zip” file needs to be unpacked first. Then at least three packages need to be imported to Aras Innovator with the Aras Innovator import utility[1]:



Picture 25: PDM Aras Innovator import utility

[1] The import utility has to be downloaded from the Aras homepage and to be installed. Link: www.aras.com → Downloads → Downloads and Support → Additional Utilities → Package Import/Export Utilities

Standard Package

Please select the manifest files

- PwbDataModel_[XX.X]\ArasPwbDM\imports.mf
- PwbDataModel_[XX.X]\ArasPwbDM_PLM\imports.mf
- PwbDataModel_[XX.X]\ArasPwbDM_Core\imports.mf
- PwbDataModel_[XX.X]\ArasPwbDM_Cui_default\imports.mf

in the import utility in this order and perform the import (Type is “Merge”, Mode is “Thorough Mode”) (see *Picture 25: PDM Aras Innovator import utility*).

BOM Part Structure Configuration

For the “BOM Part Structure Configuration” functionality select the manifest files

- PwbDataModel_[XX.X]\Specific\StructureConfig\BomConfig\imports.mf
- PwbDataModel_[XX.X]\Specific\StructureConfig\BomConfig_PLM\imports.mf
- PwbDataModel_[XX.X]\Specific\StructureConfig\BomConfig_Core\imports.mf
- PwbDataModel_[XX.X]\Specific\StructureConfig\BomConfig_Cui_default\imports.mf

in the import utility in this order and perform the import (Type is “Merge”, Mode is “Thorough Mode”) (see *Picture 25: PDM Aras Innovator import utility*).

Open in CATIA

For the “Open in CATIA” functionality select the manifest file

PwbDataModel_[XX.X]\Specific\OpenInCAD\OpenInCATIA\imports.mf

in the import utility in this order and perform the import (Type is “Merge”, Mode is “Thorough Mode”) (see *Picture 25: PDM Aras Innovator import utility*).

If you have installed the “BOM Part Structure Configuration” functionality, you also need to select the manifest file

PwbDataModel_[XX.X]\Specific\OpenInCAD\OpenInCATIA_BomConfig\imports.mf

in the import utility in this order and perform the import (Type is “Merge”, Mode is “Thorough Mode”) (see *Picture 25: PDM Aras Innovator import utility*).

CHAPTER 4

PDM Workbench Server DLL

Copying the DLL

Please copy the files

```
PwbServerAddin.dll
PwbServerAddin.pdb (optional)
```

from the distribution package to the Aras Innovator server directory

```
C:\Program Files\Aras\Innovator\Innovator\Server\bin
```

or to the corresponding directory if the Aras Innovator server has been installed in a different directory.

Modifying the Server Configuration File

Also, please modify the file

```
C:\Program Files\Aras\Innovator\Innovator\Server\method-config.xml
```

by adding the highlighted lines:

```
...
<MethodConfig>
  <ReferencedAssemblies>
    <name>System.dll</name>
    <name>System.XML.dll</name>
    <name>System.Web.dll</name>
    <name>System.Data.dll</name>
    <name>System.Core.dll</name>
    <name>System.Configuration.dll</name>
    <name>System.Web.Extensions.dll</name>
    <name>$(binpath)/IOM.dll</name>
    <name>$(binpath)/InnovatorCore.dll</name>
    <name>$(binpath)/SPConnector.dll</name>
    <name>$(binpath)/ConversionManager.dll</name>
    <name>$(binpath)/FileExchangeService.dll</name>
    <name>$(binpath)/Conversion.Base.dll</name>
    <name>$(binpath)/Aras.TDF.Base.dll</name>
    <name>$(binpath)/Aras.ES.dll</name>
    <name>$(binpath)/PwbServerAddin.dll</name>
  </ReferencedAssemblies>
...

...
<Template name="CSharp" line_number_offset="35">
<![CDATA[using Aras.IOM;
using System;
```

```
using System.Collections;
using System.Collections.Generic;
using System.Data;
using System.Globalization;
using System.IO;
using System.Linq;
using System.Net;
using System.Text;
using System.Web;
using System.Web.SessionState;
using System.Xml;
using PwbServerAddin;

namespace $(pkgname)
{
...
```

CHAPTER 5

Client Customization

The display names in the CATIA V5 workshop can be changed.

The data model of the backend PDM system has to be defined for the CATIA V5 workshop.

The variable $CATIA_INSTALL_DIR defines the installation directory of the PDM Workbench CATIA client.

Display Names

The Native Language Support (NLS) files for the CATIA V5 workshop are placed in the following directory:

```
$CATIA_INSTALL_DIR\intel_a\resources\msgcatalog
```

or

```
$CATIA_INSTALL_DIR\win_b64\resources\msgcatalog
```

and the sub directories for the different languages.

There are several NLS files for the dialogs and commands.

The displays for the PDM Workbench Schema file (see above) are defined in the following files:

- PWBSchemaDisplayNames.CATNls
- PWBSchemaDisplayNames_Aras_Aras.CATNls where the first “Aras” corresponds with the “system” value and the second “Aras” corresponds with the “customization” value of the PDM systems in the PDM Workbench Schema file.

The displays for the error messages are defined in the following file:

- PWBUserErrors.CATNls

The displays in these NLS files can be changed.

Icons

The icons for the objects for the CATIA V5 workshop are placed in the following directory:

```
$CATIA_INSTALL_DIR\intel_a\resources\graphic\icons\normal
```

or

```
$CATIA_INSTALL_DIR\win_b64\resources\graphic\icons\normal
```

The icon names correspond to the names used in the PDM Workbench Schema file.

Data Model Definition

The configuration of the data model for Aras Innovator has to be done in the configuration file (PDM Workbench Schema file) to be used by the PDM Workbench module within CATIA V5.

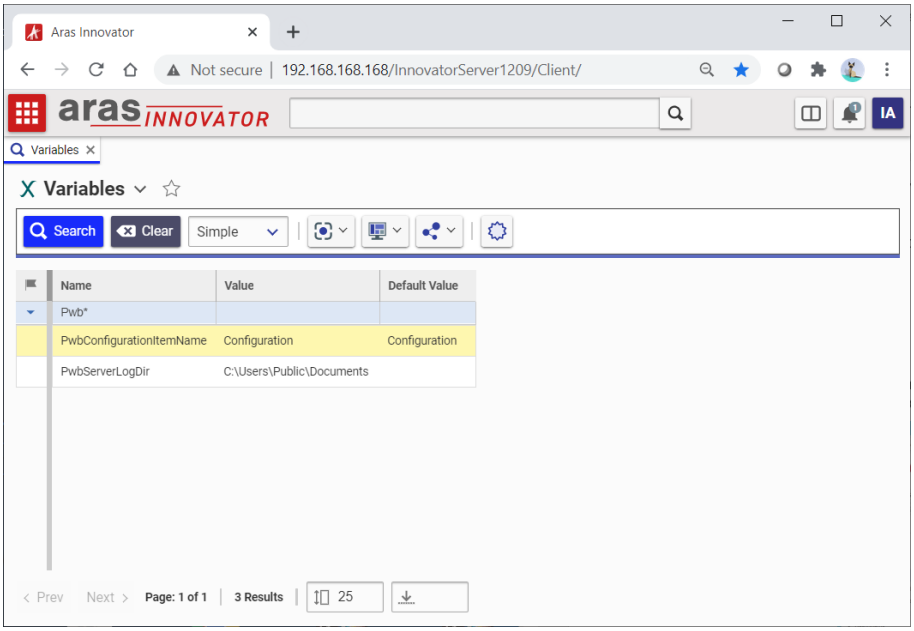
CHAPTER 6

Server Configuration

This chapter describes the configuration of the server side of the PDM Workbench integration.

Configuration Variables

The following Aras Innovator server configuration variables need to be set for PDM Workbench to work correctly:



Picture 26: Aras Innovator server configuration variables

- PwbConfigurationItemName

  The name of the PDM Workbench configuration item which contains additional configuration information, like the attribute mapping configuration. Please see “Configuration Items” for more details.

- PwbServerLogDir

  The absolute path of the directory into which the server log file should be written. If this variable is empty, then no server log file will be written.

PWB Logging on Server

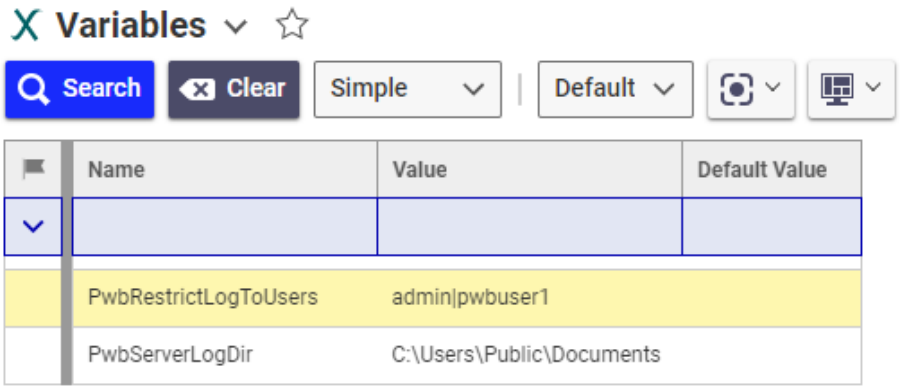
There are two changes in the PWB logging functionality on the Aras server:

- The name of the logfile now also holds the database name: <configured log dir>\PwbServerLog_<database-name>_<login-user>.txt

- The log can be restricted to specific users (this could be used to create a log file for a specific user in the production environment).

Configuration

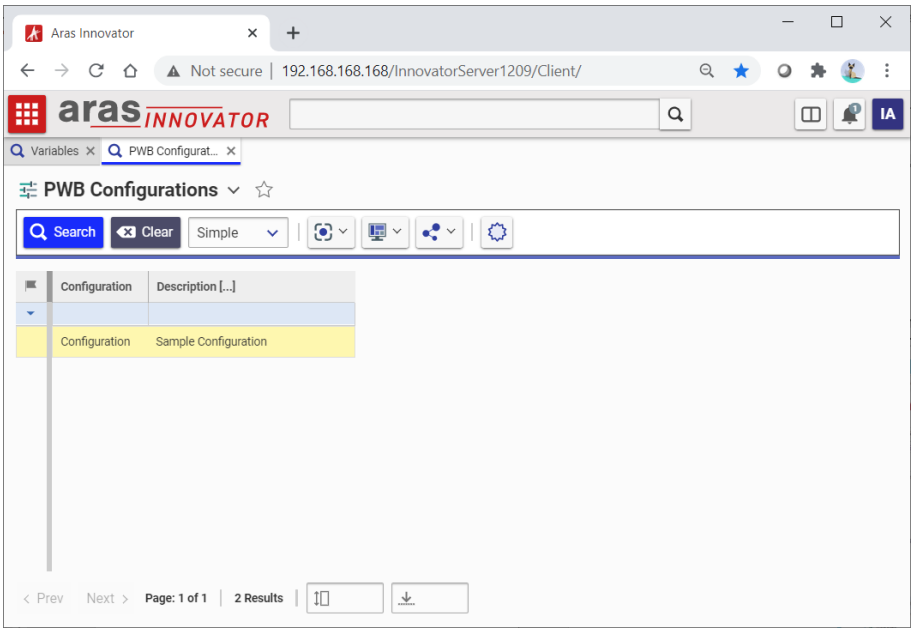
To enable general logging, set the Aras Innovator variable “PwbServerLogDir” to the log directory. To restrict the logging to a specific set of users, set the Aras Innovator variable “PwbRestrictLogToUsers” to a list of names (separated by ‘|’).



Picture 27: Logging configuration variables

Configuration Items

In order to define the environment variables and to configure the mapping of attributes between Aras Innovator and CATIA V5 a special configuration item (see *Picture 28: PWB Configuration item in Aras Innovator*) has to be used:



Picture 28: PWB Configuration item in Aras Innovator

Replacement of Class "ArasUtil" with Class "PwbServerAddin.PwbServerApi" in Custom Server Methods

The usage of the class "ArasUtil" in custom server methods is deprecated and should be replaced with calls to "PwbServerAddin.PwbServerApi". From PDM Workbench versions later than 5.0 on the usage of the class "ArasUtil" will not be possible anymore.

The definition

```
ArasUtil ArasUtilObj = new ArasUtil();
```

should be replaced with

```
var PwbServerApiObj = new PwbServerAddin.PwbServerApi(this);
```

The corresponding methods are the same, for the most part, except for two:

"GetValueByName" has been renamed to "GetValueOfVariable", and "HasIdentity" has been renamed to "CurrentUserHasIdentity".

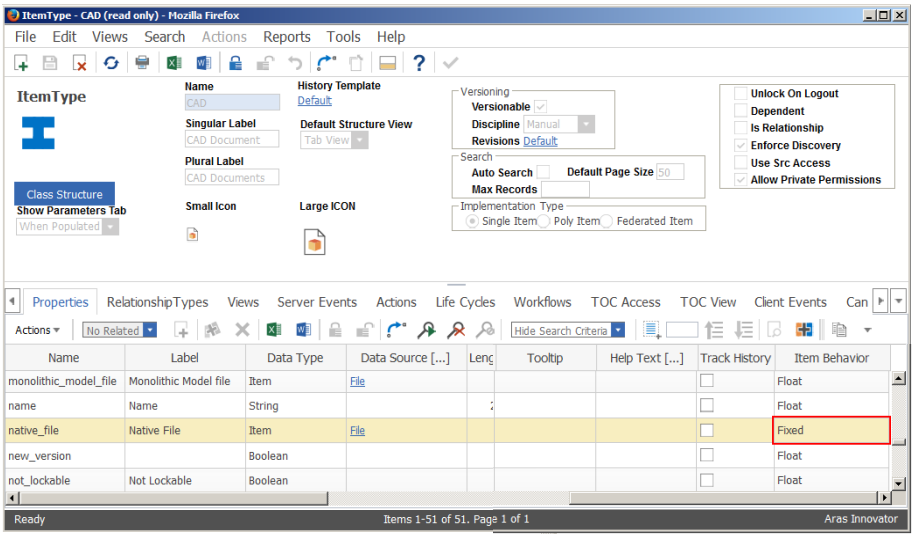
These are the methods of "PwbServerApi":

```
// Converts a string passed to the method to a dictionary.
IDictionary<string, string>
   DialogAttrsStringToDictionary(string ItemXmlString)

// Converts an item passed to the method to a dictionary.
IDictionary<string, string>
   DialogAttrsItemToDictionary(Item DialogItemObj)

// Converts a dictionary that may have been modified in the method back
// to an item, in order to return the information to the connector
// process.
Item DialogAttrsDictionaryToItem(
   IDictionary<string, string> DialogAttrs)

// Retrieves the value of an Innovator variable.
string GetValueOfVariable(string Name)

// Tests whether the user has a specific identity.
bool CurrentUserHasIdentity(string IdentityName)

// Retrieves the number of relationships of a specific type of an item.
int GetRelationshipCount(Item ParentItem, string RelationshipType)

// Retrieves the ID of the thumbnail file of a CAD item.
string GetThumbnailFileId(Item ItemObj)

// Retrieves the next string of the sequence.
// Used in the Autoname functionality.
string GetNextAutonameSequence(string SequenceName)

// Converts a string to a boolean value.
bool ParseBoolean(string BoolValue)

// Checks whether a string variable has the null value or is empty.
bool IsNullOrEmpty(string Str)

// Throws an exception if an item is null or Item.isError() is true.
void CheckItem(Item ItemObj)

// Throws an exception if an item is null or Item.isError() is true
// and adds a string to the error message.
void CheckItem(Item ItemObjToCheck, string ErrorStringIfFailed)
```

```
// Retrieves the version number of the PWB server API.
string GetApiVersion()
```

Making sure CAD/native_file definition is "Fixed"

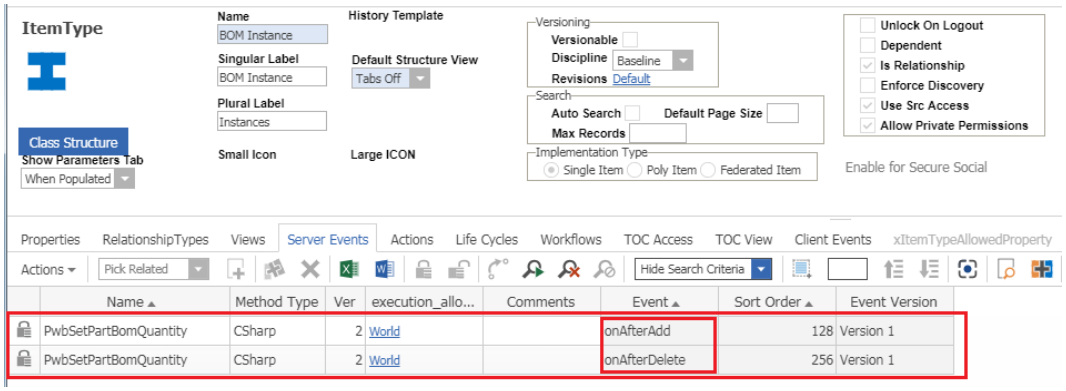
Please set the "Item Behavior" of the property "native_file" for the item type "CAD" to "Fixed", if it doesn't already have that value (see *Picture 29: Item Type "CAD*).



Picture 29: Item Type "CAD"

Automatically updating the "Part BOM" Quantity if Instances are deleted in the Innovator Web Client

For performance reasons the server events for updating the "Part BOM" quantity are not created anymore when the PWB data model is imported. If the quantity needs to be updated when instances are deleted in the Innovator Web Client please add the server events "onAfterAdd" and "onAfterDelete" for the method "PwbSetPartBomQuantity" for the item type "BOM Instance".



Picture 30: "BOM Instance" Server Events

CHAPTER 7

Configurations for specific functionalities

This chapter describes the configuration of the PDM Workbench for specific functionalities.

Standard Configuration

Exchange map

In the PDM Workbench Schema file the absolute path of the exchange map directory, where the downloaded CATIA files are stored, can be configured.

Example:

```
<xmap value="C:\PWB_XMAP" sizeThreshold="0" />
```

If the exchange map value is defined by the environment variable “PWB_XMAP”, then that takes precedence. The definition in the Schema file takes effect only if such a CATIA V5 environment variable does not exist.

If the attribute *sizeThreshold* exists in the schema and represents a numerical value larger than 0, the PDM Workbench will execute some clean-up actions at the end of the Load and Update commands. It means a size in megabyte. If the sum of the file sizes of all CATIA and jpg files in the exchange map directory is larger than this threshold, then some files, **which are not needed by your current CATIA session**, are automatically deleted - from oldest to newest - until the remaining file size sum is less than the threshold.

If you want to switch off the automatic clean-up actions, you can set the sizeThreshold to “0” or remove the attribute *sizeThreshold* from the PWB xml schema.

Optional.

SOAP target URL

In the Schema file the URL of the server process, that the PDM Workbench client uses for its SOAP requests, can be configured.

Example:

```
<soapTargetUrl value="http://hostname/InnovatorServer" />
```

If the soap target URL value is defined by the environment variable “PWB_SOAP_TARGET_URL”, then that takes precedence. The definition in the Schema file takes effect only if such a CATIA V5 environment variable does not exist.

Optional.

SOAP client call path environment variable

In the Schema file the name of the environment variable which contains the path to the Aras Innovator SOAP client executable has to be configured.

Example:

```
<externalSoapClientCallPathEnvVar
   value="PWB_SOAPCLIENT_PATH_ARAS" />
```

This variable is defined in the start script of the PDM Workbench, e.g.

```
SET PWB_SOAPCLIENT_PATH_ARAS=
   %PWBV5DIR%\code\bin\PwbArasSoapClient.exe
```

Mandatory.

File client call path environment variable

In the Schema file the name of the environment variable which contains the path to the Aras Innovator file client executable has to be configured.

Example:

```
<externalFileClientCallPathEnvVar
   value="PWB_FILECLIENT_PATH_ARAS" />
```

This variable is defined in the start script of the PDM Workbench, e.g.

```
SET PWB_FILECLIENT_PATH_ARAS=
   %PWBV5DIR%\code\bin\PwbArasFileClient.exe
```

Mandatory.

Maximum expansion level

In the Schema file the maximum expansion level can be defined. It describes how many levels, starting from the root node, will be expanded by the PDM Workbench.

Example:

```
<maxExpansionLevel value="30" />
```

If not set, then all levels of the assembly will be expanded.

Optional.

Read only

In the Schema file it can be configured that the loaded CATIA files are set to read-only if the PDM nodes are not modifiable.

Example:

```
<setReadOnly value="true" />
```

Default value: “false”

Optional. Possible values: “true”, or “false”.

Reload after update

In the Schema file it can be configured that the CATIA document will be reloaded after the update.

Example:

```
<neverReloadCatiaDocAfterUpdate value="true" />
```

Default value: “false”

Optional. Possible values: “true”, or “false”.

Allow loading different file versions

In the Schema file it can be configured that it is allowed to load different file versions in the CATIA session.

Example:

```
<allowLoadingDifferentFileVersion value="false" />
```

Default value: “true”

Optional. Possible values: “true”, or “false”.

Show out-of-date link info

In the Schema file it can be configured that the relation should be marked as out-dated, if a newer object exists.

Example:

```
<showOutOfDateLinkInfo value="true" />
```

Default value: “false”

Optional. Possible values: “true”, or “false”.

Update after create new CATIA file

In the Schema file it can be configured that the updated should be started after the create of a new CATIA file.

Example:

```
<startUpdateAfterCreateNewCatiaFile value="false" />
```

Default value: “true”

Optional. Possible values: “true”, or “false”.

Upload changed files at sync failure

In the Schema file it can be configured that the changed files are uploaded even if an error occurs in the update process.

Example:

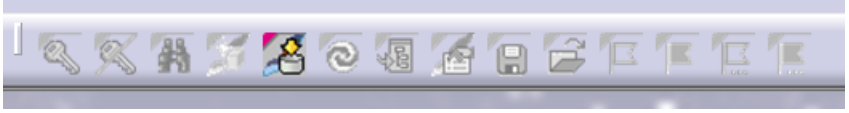
```
<uploadChangedFilesAtSyncFailure value="false" />
```

Default value: “false”

Optional. Possible values: “true”, or “false”.

Asynchronous File Upload

It is possible now to perform the file upload and the following steps like optional post-processing steps, after the new or modified CATIA files have been saved in the local PWB_XMAP directory, asynchronously. That means that the user can continue to work with CATIA after that step, only the connector functionality is deactivated during this time. This is shown by all the connector icons being deactivated, and the PDM Save icon blinking:



Picture 31: Toolbar during asynchronous file upload

The connector functionality will be active again after the update process has finished:

Picture 32: Toolbar after asynchronous file upload

This functionality can be switched on with the Schema file setting

```
<asyncPdmRequest value="true" />
```

Rollback on File Upload Error

This functionality is only available in CAD Document Structure Data Model.

On some Aras installations there are occasional problems to upload a file to Aras Innovator. This causes incomplete CAD Documents with missing native files.

If this functionality is activated it will roll back the incomplete CAD Documents in the case of an error.

To enable the feature you have to set “RollbackCadOnError” to “true” in the PWB configuration on Aras Innovator.

RollbackCadOnError	true

Picture 33: Sample RollbackCadOnError configuration

Required attributes

In the Schema file it can be configured if the wildcard (e.g. “*”) is an invalid value for required attributes.

If this setting is active it defines values as not valid for required query dialog attributes. For instance, if the item_number attribute is defined as required, then the setting above defines the query value of “*” as invalid for that attribute.

Example:

```
<requiredDialogAttributes value="true" />
```

Default value: “false”

Optional. Possible values: “true”, or “false”.

Maximum description attribute length

In the Schema file the maximum length of the description attribute can be defined.

Example:

```
<maximumDescriptionAttributeLength value="10" />
```

Optional.

Show data source NLS values

In the Schema file it can be configured if the NLS values of the data source should be shown.

Example:

```
<showDataSourceNlsValues value="true" />
```

Default value: “false”

Optional. Possible values: “true”, or “false”.

Rename existing files in exchange map

In the Schema file it can be configured if the existing files in the exchange map should be renamed at load.

Example:

```
<renameExistingExMapFilesAtLoad value="false" />
```

Default value: “true”

Optional. Possible values: “true”, or “false”.

Auto login on session expired

In the Schema file it can be configured if an auto login should be performed if the session has been expired.

Example:

```
<autoLoginOnSessionExpired value="true" />
```

Default value: “false”

Optional. Possible values: “true”, or “false”.

Session settings (contains setting for Windows Single-Sign On)

In the Schema file the session settings of the PDM Workbench can be defined. The following entries are supported.

Example:

```
<sessionSettings>
   <-- Set one of these two values as default.
       It can be changed in the CATIA session with
       Tools->Options->Compatibility->PDM Workbench. -->
   <queryMode name="listViewWindow" />
   <queryMode name="pwbWindow" />
   <-- Set one of these two values as default.
       It can be changed in the CATIA session with
       Tools->Options->Compatibility->PDM Workbench. -->
   <relationDisplayMode name="relDisplay" />
   <relationDisplayMode name="noRelDisplay" />
   <-- Set one of these three values. -->
   <passwordEncryption name="WinAuth" />
   <passwordEncryption name="MD5" />
   <passwordEncryption name="none" />
</sessionSettings>
```

Optional.

To enable single-sign-on on Windows please change the setting ‘sessionSettings/passwordEncryption/name’ from “MD5” to “WinAuth”.

The precondition is that single-sign-on has been configured correctly in Aras Innovator.

If single-sign-on has been configured then the 'PWBLoginUser' and 'PWBLoginPassword' definitions should be removed from the login dialog, because they are not needed anymore:

```
<form name="Login" info="ShowOnlyLoginData" >
      <frame displayName="NLS_UserData">
            <pwbFormAttribute name="PWBLoginUser"
            widgetType="SingleLineEditor" mode="update"
            visibleLength="10" required="true" entryAllowed="true"
            />
            <pwbFormAttribute name="PWBLoginPassword"
            widgetType="SingleLineEditor" mode="update"
            visibleLength="11" required="false" />
            <formAttribute name="LoginDatabase"
            widgetType="ComboBox" mode="update" visibleLength="10"
            required="true" entryAllowed="false" />
      </frame>
</form>
```

Use custom Login Token Provider

For Single Sign On, it is possible to use a custom login token provider to supply the access tokens.

Configuration

The custom login token URL has to be configured in the PWB Schema file:

```
<sessionSettings>
   <passwordEncryption name="WinAuth"
               customLoginTokenUrl="http://localhost:5000/token" />
</sessionSettings>
```

When using this setting it is also required to copy the DLL Newtonsoft.Json.dll from the Aras Innovator server to the binary path of each client (`<PWB_install_dir>\win_b64\code\bin`)

Language settings

In the Schema file the name and date format of the installed languages (NLS files) have to be configured.

Example:

```
<installedLanguages visibleLength="15">
   <language name="en_us" displayName="NLS_EN"
             dateFormat="PWB_Standard" />
</installedLanguages>
```

Mandatory.

Date format

In the Schema file the definition of the date format for the installed languages has to be stored.

Example:

```
<!-- PWB_Standard = YYYY-MM-DD -->
```

```
<dateFormat name="PWB_Standard" separator="-">
   <dateValue name="year" length="4" />
   <dateValue name="month" length="2" />
   <dateValue name="day" length="2" />
</dateFormat>
```

The order of the “dateValue” tags defines the format of the date. For each part of the date the length is defined in the tag.

Mandatory.

Key attribute

Internal attribute; do not change.

Class attribute

Internal attribute; do not change.

Relation attribute

Internal attribute; do not change.

Relationship attribute

Internal attribute; do not change.

Left relationship attribute

Internal attribute; do not change.

Right relationship attribute

Internal attribute; do not change.

Left relation class attribute

Internal attribute; do not change.

Right relation class attribute

Internal attribute; do not change.

Extended relation class attribute

Internal attribute; do not change.

Last modification date attribute

In the Schema file the name of the last modification date attribute can be defined.

Example:

```
<lastModificationDateAttribute name="last_mod_date" />
```

Default value: “last_mod_date”

Optional.

Mark superseded nodes

In the Schema file it can be configured if superseded nodes should be marked as outdated.

If this setting is set to “true” then superseded nodes (nodes where a newer generation exists) are colored magenta, like outdated nodes, where the CAD file has been modified by another user, instead of black.

Example:

```
<colorSupersededNodesAsOutdated value="true" />
```

Default value: “false”

Optional. Possible values: “true”, or “false”.

Part classes

In the Schema file a list of class names (possibly of size 1) of all part classes can be defined. It has to be defined if the class can have sub parts.

Example:

```
<partClasses>
   <partClassName name="/Part/Assembly" canHaveSubParts="true" />
   <partClassName name="/Part/Component" canHaveSubParts="false"/>
</partClasses>
```

Optional.

Select Type of additional Parts in Document mode

In the Schema file you can enable the functionality to select the type of additional parts in the CAD Document Structure Data Model.

You have to add the attribute `selectPartClassName="true"` to the *partClasses* XML tag.

Example:

```
<partClasses selectPartClassName="true">
   <partClassName name="/Part/Assembly" canHaveSubParts="true" />
   <partClassName name="/Part/Component" canHaveSubParts="false"/>
   <partClassName name="/Part/Standard" canHaveSubParts="false" />
</partClasses>
```

Optional.

Toolbar Configuration

In the Schema file the toolbar can be configured. It can be defined which toolbar entries have to be removed.

Example:

```
<removeToolbarIcons>
   <!-- available entries:
        "LocalWorkspace", "Register", "PreProcessCadStructure",
        "Update", "Synchronize", "Refresh", "SetSessionConfig",
        "NewPwbWindow", "About" -->
```

```
<icon name="LocalWorkspace" />
<icon name="Register" />
<icon name="PreProcessCadStructure" />
<icon name="Synchronize" />
<icon name="NewPwbWindow" />
<icon name="LocalSession" />
</removeToolbarIcons>
```

Optional.

Customer-Specific Environment

If customers use different CATIA releases, they can configure in the start script of the PDM Workbench which environment should be used. The designer will not be able to modify CAD files which have been created in different customer environments.

The CATIA environment can be defined in the Schema file. This definition can be done by one or more attributes, e.g. customer and project.

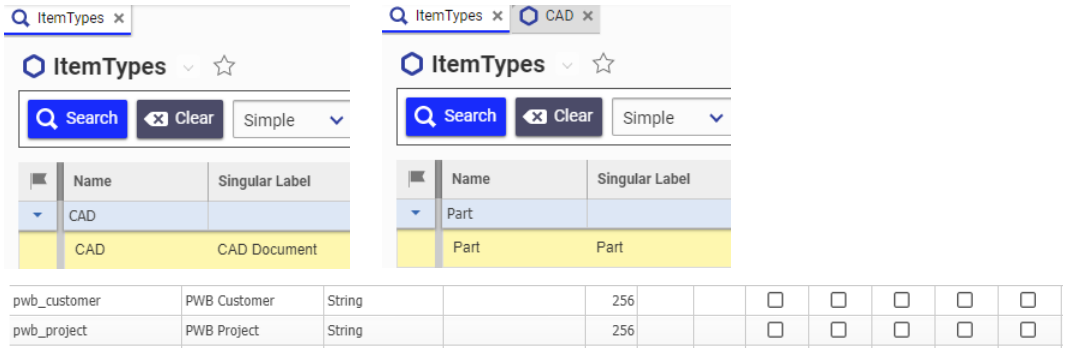
For loadOthersReadOnly="true", the user can query for any PDM object. PDM objects which do not fit to the configured environment variables are always loaded in ReadOnly mode. For this configuration the settings of defaultValue are ignored.

Example:

```
<catiaEnvironment loadOthersReadOnly="true">
   <envAttribute displayName="NLS_env_customer" pdm="pwb_customer"
                 env="PWB_ENVIRONMENT_CUSTOMER"
                 defaultValue="Default Customer" />
   <envAttribute displayName="NLS_env_project" pdm="pwb_project"
                 env="PWB_ENVIRONMENT_PROJECT"
                 defaultValue="Default Project"/>
</catiaEnvironment>
```

The values of these environment variables `PWB_ENVIRONMENT_CUSTOMER` and `PWB_ENVIRONMENT_PROJECT` must be defined in the start script of the PDM Workbench.

At the server for the Item Types CAD and Part the properties `"pwb_customer"` and `"pwb_project"` must be added:

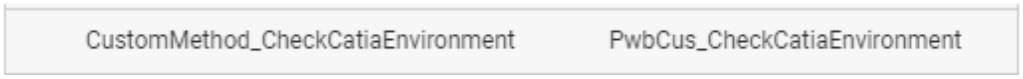


Picture 34: Add project and customer to the CAD and Part Item Type

Note that the `pwb_customer` and `pwb_project` properties are only examples and more properties could be added with different names.

With loadOthersReadOnly="true" it is possible to use a custom server method to check if an Item fits to the currently used catiaEnvironment.

Create a custom server method and set the value of the PWB Configuration setting “CustomMethod_CheckCatiaEnvironment” to your method name:



Picture 35: Sample CustomMethod_ CheckCatiaEnvironment configuration

Sample Method:

```
// Sample CustomMethod_CheckCatiaEnvironment
//
// This method is called before an Item is send to CATIA.
// The method checks if the Item fits to the currently
// used CATIA environment.
// If not, the Item can neigther updated nor claimed in CATIA.


var PwbServerApiObj = new PwbServerAddin.PwbServerApi(this);

Item ItemToCheck = this.getPropertyItem("ItemToCheck");
List<String> EnvironmentAttribueNames =
   PwbServerApiObj.StringToList(this.getProperty(
                                "EnvironmentAttribueNames"));
List<String> EnvironmentAttribueValues =
   PwbServerApiObj.StringToList(this.getProperty(
                                "EnvironmentAttribueValues"));

Item result = this.getInnovator().newItem();

if (ItemToCheck.getType()!= "CAD")
{
   // ignore CATIA environment settings
   result.setAttribute("EnvironmentOk", "true");
   return result;
}

if (EnvironmentAttribueNames != null &&
    EnvironmentAttribueValues != null &&
    EnvironmentAttribueValues.Count == EnvironmentAttribueNames.Count)
{
   for (int i = 0; i < EnvironmentAttribueNames.Count; i++)
   {
      string AttrValue = ItemToCheck.getProperty(
                         EnvironmentAttribueNames[i], "");
      if (AttrValue != EnvironmentAttribueValues[i] )
      {
         result.setAttribute("EnvironmentOk", "false");
         return result;
      }
   }
}

result.setAttribute("EnvironmentOk", "true");

return result;
```

Use case “Query” (loadOthersReadOnly="true")

The user can query for any PDM object.

Use case "Update"

Whenever the user creates new PDM items the strings from the environment variables are written into the specific PDM item attributes. Only new objects or PDM objects fitting to the configured environment variables can be updated.

Use case "Load" (loadOthersReadOnly="false")

In the "Load" or "Open" on PDM items a check is performed whether the value string of the specific item attributes is the same as the one read from the corresponding environment variables.

Only if the value is the same the files will be loaded in CATIA, otherwise the user will get an error message that the environment does not fit.

Use case "Load" (loadOthersReadOnly="true")

The "Load or "Open" will open all files in CATIA. If a PDM object does not fit to the configured environment settings, it is loaded in ReadOnly mode.

Data Model Configuration

The PWB Configuration item setting "UseBomPartStructure" indicates which data model will be used with the PDM Workbench.

The attribute has to be set to "true" in order to use the "BOM Part Structure Data Model". Otherwise the "CAD Document Structure Data Model" will be used.

UseBomPartStructure	true

Picture 36: Sample UseBomPartStructure configuration

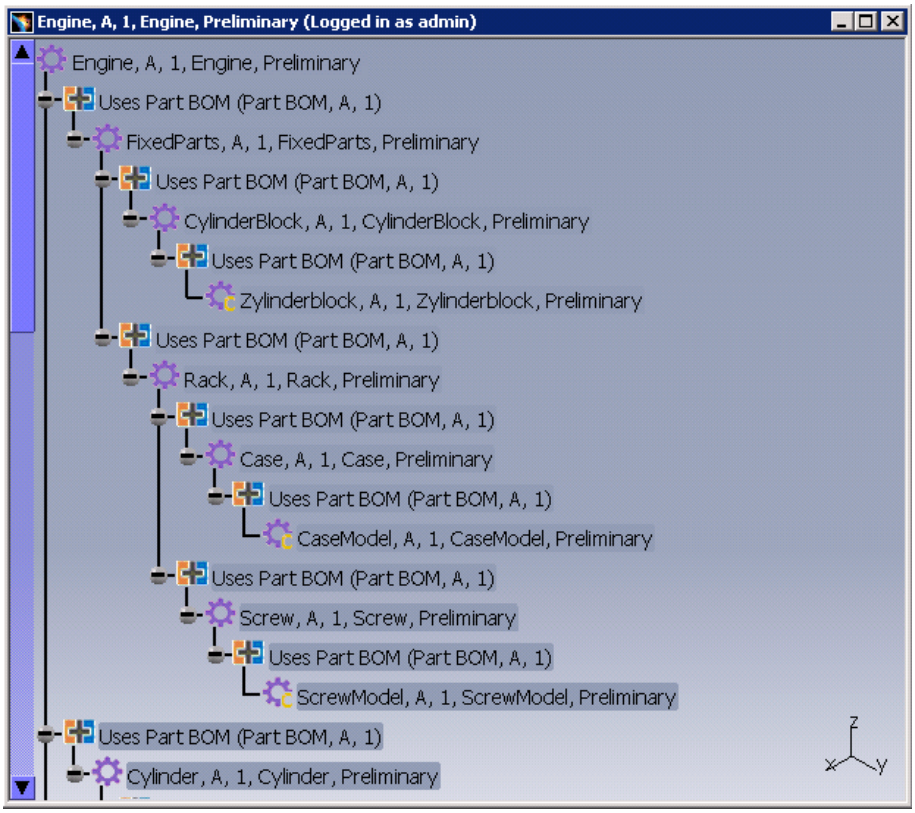
Default value: "false"

Optional. Possible values: "true", or "false".

BOM Part Structure Data Model

In the BOM Part Structure Data Model the PDM structure is represented by Parts (Assembly or Component). The relation "Part BOM" is used.

Each Part is described by a CAD Document which includes the CATIA file for a CATProduct, CATPart, or CATDrawing (see *Picture 37: Structure in the BOM Part Structure Data Model*).

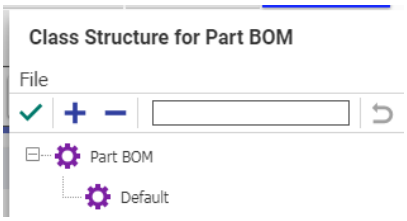


Picture 37: Structure in the BOM Part Structure Data Model

Support Part BOM Classification

It is possible to configure a relation type and classification for the BOM structure.

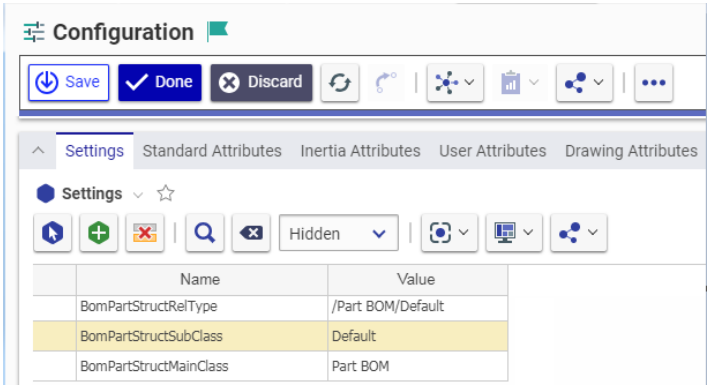
You have to create a special Part BOM type like /Part BOM/Default in the class structure of Part BOM:



Picture 38: Class structure of Part BOM

To use the special Part BOM relation /Part BOM/Default you have to set the PWB Configurations:

```
BomPartStructRelType    = "/Part BOM/Default"
                          (default value: "Part BOM")
BomPartStructSubClass   = "Default" (default value: "")
BomPartStructMainClass = "Part BOM" (default value: "Part BOM")
```



Picture 39: PWB Configuration – Special Part BOM relation

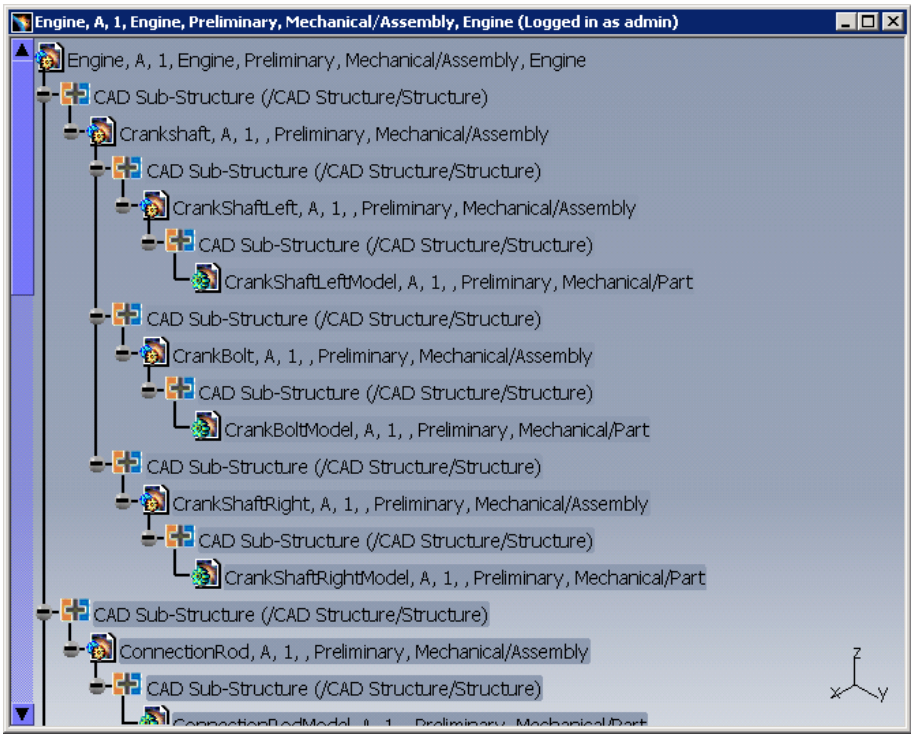
On the client you have to replace all occurrences of “Part BOM” in the PWBSchema.xml file, by “/Part BOM/Default”.

Do not forget the relations “Part BOM_LeftToRight” and “Part BOM_RightToLeft:” “Part BOM/Default_LeftToRight”, “Part BOM/Default_RightToLeft”.

CAD Document Structure Data Model

In the CAD Document Structure Data Model the PDM structure is represented by CAD Documents. The relation “CAD Structure” is used.

Each CAD Document includes the CATIA file for a CATProduct, CATPart, or CATDrawing (see *Picture 40: Structure in the CAD Document Structure Data Model*).



Picture 40: Structure in the CAD Document Structure Data Model

Client/Server “UseBomPartStructure” Setting Compatibility Check

There is an optional attribute in the PWBSchema tag of the Schema file: UseBomPartStructure=true|false

If it exists then, during login, it is checked against the 'UseBomPartStructure' setting on the server. If the values do not fit login is not possible.

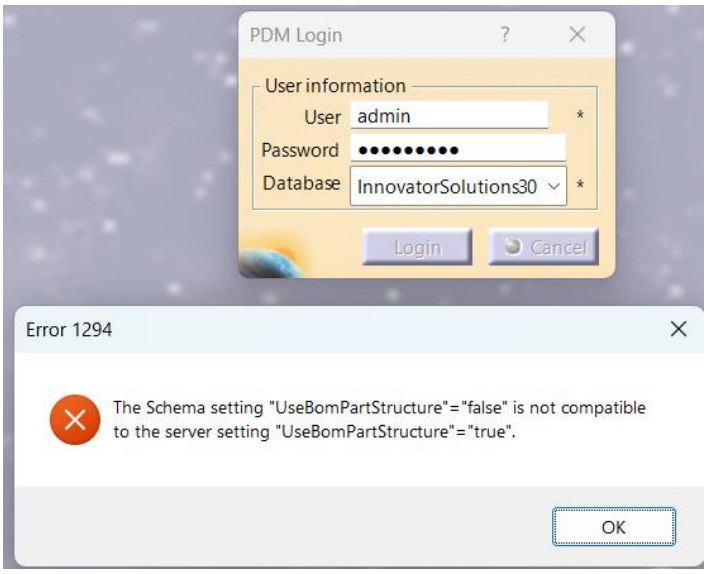
Configuration

Here the value is set to ‘false’ in the PWBSchema file:

```
<PWBSchemata>
      <PWBSchema system="Aras" customization="Aras" ...
      UseBomPartStructure="false" >
        ...
```

Usage

If the setting on the server is ‘true’ the user will get this error when trying to log in:



Picture 41: Configuration error at login

BOM Part Structure Configuration

The PWB Configuration item setting “BomPartStructureLockUnlockRelatedItem” sets the behavior of “Claim” and “Unclaim”.

Normally the “Claim” and “Unclaim” context menus in the CATIA window claim and unclaim only the CAD document. Also claiming and unclaiming a part or a CAD document in the PDM structure window only claims the item where the action was performed on. With this configuration setting this behavior changes such that claiming a part also claims its related CAD documents, or claiming a CATPart or CATProduct CAD document claims its related part, or both of these actions are activated. So, for instance, if this setting is set to “part” or to “both” then in the BOM structure mode claiming a CAD document, either explicitly in the PDM structure window, or in the CATIA window, also claims the corresponding part item.

BomPartStructureLockUnlockRelatedItem	cad

Picture 42: Sample BomPartStructureLockUnlockRelatedItem configuration

Default value: “both”

Optional. Possible values: “part”, “cad”, or “both”.

Different Life Cycle states for CAD and Part with “Promote”

The promotion of the Part and CAD items is optionally independent now. The setting “BomPartStructurePromoteRelatedItem”, which has the default value “cad”, can be set to “” (the empty string). With this setting promoting the part item does not automatically also promote the related “CAD” item.

Query Configuration

Configuring the size of the Query dialog

In the Schema file it is possible to configure the size of the Query dialog and its result column widths.

Left Part of query dialog in Pixel - Right part of query dialog [lines / characters].

Example:

```
<queryDialogDimensions attributeFrameHeight = "375"
                       attributeFrameWidth = "320"
                       resultListHeight = "25"
                       resultListWidth = "60" />
```

Optional.

In the definition of each query dialog the result column width can be defined for each attribute (default value: “15”).

Example:

```
<form name="Query">
   <formAttribute name="item_number"
                  ...
                  resultColumnWidth = "15" />
   ...
</form>
```

QueryOrderByAttribute

The PWB Configuration item setting “QueryOrderByAttribute” defines an attribute by which the query results are internally ordered. This is not noticeable by the user, but it can result in significant performance improvements when a query is performed if the attribute is in the database index.

QueryOrderByAttribute	id

Picture 43: Sample QueryOrderByAttribute configuration

Optional.

MaxQueryResults

The PWB Configuration item setting “MaxQueryResults” defines the maximum number of items that are retrieved in a single query. If more items exist the user is informed about that fact.

MaxQueryResults	100

Picture 44: Sample MaxQueryResults configuration

Optional.

Default sort criteria for query results

In the Schema file for every PDM item type an attribute can be configured to be the default sort order attribute. Query results for that item type are automatically sorted by that attribute.

The “object” definition can contain a new optional XML attribute: “defaultSortAttribute”.

Example:

```
<object name="Part" displayName="NLS_Part"
        icon="Aras_Part" defaultSortAttribute="item_number" >
```

This attribute has to contain the internal name (not the CATNls name) of an attribute of the item type, e.g. “item_number”. The query result will be sorted by the values of that attribute.

Display custom query buttons

In the Schema file the layout of the query dialog can be configured.

If the value is set to “true” the buttons will be display on the left side of the bottom of the dialog. In the default layout (value is “false”) the buttons are on the right side of the dialog.

Example:

```
<displayCustomQueryButtons value="true" />
```

Default value: “false”

Optional. Possible values: “true”, or “false”.

Modal dialog

In the Schema file it can be configured that the query dialog is modal. In this case the dialog has to be closed in order to continue working with the PDM Workbench.

Example:

```
<queryDialogIsModal value="true" />
```

Default value: “false”

Optional. Possible values: “true”, or “false”.

Check if no query attribute filled

In the Schema file it can be configured if a query with empty attributes should be possible.

If the value is set to “false” it is possible to perform a query without filling an attribute in the query dialog.

If the value is set to “true” it is necessary to fill at least one of the attributes in the query dialog.

Example:

```
<checkIfNoQueryAttrsFilled value="false" />
```

Default value: “true”

Optional. Possible values: “true”, or “false”.

Display string in query list view

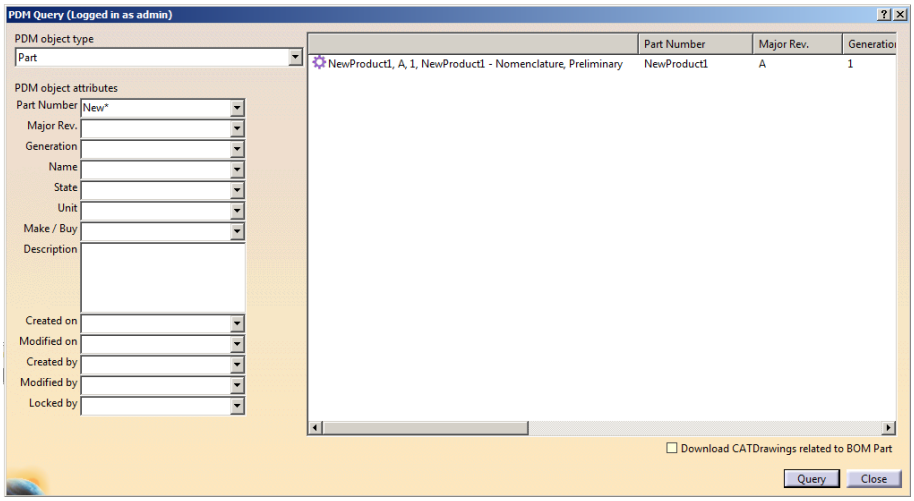
In the Schema file it can be configured if then display string of the object should be shown after the icon in the query list view.

Example:

```
<showDisplayStringInQueryListView value="true" />
```

Default value: “false”

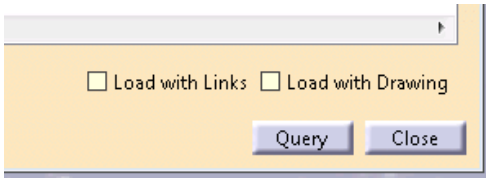
Optional. Possible values: “true”, or “false”.



Picture 45: Query list view dialog with Display String

Automatically loading CATDrawings or linked CATParts

It is possible to automatically load linked CATDrawings or CATParts when a CATPart or a CATProduct structure is loaded. There are two check boxed on the Query dialog where this behavior can be set.



Picture 46: “Load with Links” and “Load with Drawings” check boxes

The check boxes have to be enabled to be displayed:

```
<showLoadWithLinkInQuery value="true" />
```

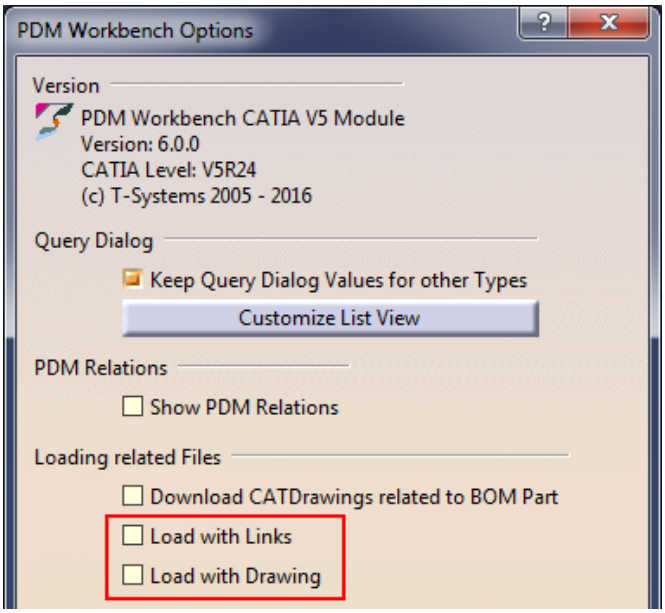
```
<showLoadWithDrawingInQuery value="true" />
```

As default they are not displayed.

Default value: “false”

Optional. Possible values: “true”, or “false”.

The default value of the check boxes can be set in the “PDM Workbench Options” dialog:

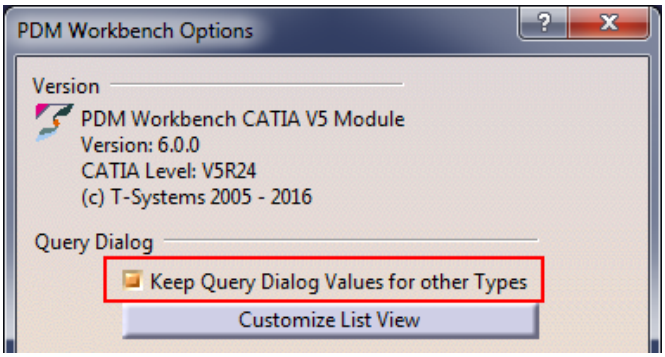


Picture 47: PDM Workbench options dialog with highlighted check boxes

Keep filter attribute values when changing the type

If the value of an attribute is set, and if the new type has an attribute with the same name, then the value is kept for the new type.

If the old behavior is wanted (not keeping the attribute values) then the check box “Keep Query Dialog Values for other Types” has to be un-checked in the PDM Workbench options dialog:



Picture 48: Query dialog setting in PDM Workbench options dialog

“Select Date” Enhancement in the Query Dialog

It can be complicated to write a date in the correct format into the date fields of the query dialog. With this functionality you can select the dates from a calendar widget.

In the file “PWBSchema.xml” the widget type of the attributes which represent a date, like “created_on” or “modified_on”, can be changed to “ComboBoxDate”:

```
<form name="Query">

   ...

   <formAttribute name="created_on"
                  widgetType="ComboBoxDate" mode="update"
                  visibleLength="15" required="false"
                  listViewRelevant="true"
                  entryAllowed="true"
                  dataSource="RecentlyUsedValueDataSource" />
```

```
    <formAttribute name="modified_on"
                   widgetType="ComboBoxDate" mode="update"
                   visibleLength="15" required="false"
                   listViewRelevant="true"
                   entryAllowed="true"
                   dataSource="RecentlyUsedValueDataSource" />

    ...
</form>
```

If this functionality is used a server method which pre-processes the query dialog attribute values has to be defined and configured in the settings of the PWB configuration item.

For example, if the server method is named “PwbCus_PreProcQryDlgAttrs”, then a setting with the name “CustomMethod_PreProcQryDlgAttrs” has to be defined, and it has to contain the name of the server method as the value:

CustomMethod_PreProcQryDlgAttrs	PwbCus_PreProcQryDlgAttrs

Picture 49: Custom method definition

This is the code of that method which processes the new date widget functionality:

```
   var PwbServerApiObj = new PwbServerAddin.PwbServerApi(this);
   Innovator InnovatorObj = this.getInnovator();

   string PdmType = this.getProperty("Type");
   string PdmClassification = this.getProperty("Classification");

   // Get all property names and data_types of that ItemType
   IDictionary<string, string> PropertyDict = null;
   PropertyDict = GetAllPropertyNamesTypes(InnovatorObj, PdmType);
   if (null == PropertyDict)
   {
      return InnovatorObj.newError("Could not retrieve properties of ItemType " +
PdmType);
   }

   // Get the query dialog attributes
   IDictionary<string, string> InputDialogDict = null;
   Item InputDialogItem = this.getPropertyItem("QueryDialogAttrs");
   if (InputDialogItem == null)
   {
      return InnovatorObj.newError("Could not retrieve query dialog attributes !");
   }
   else
   {
      InputDialogDict = PwbServerApiObj.DialogAttrsItemToDictionary(InputDialogItem);
      if (InputDialogDict == null)
      {
         return InnovatorObj.newError("Could not convert query dialog attributes !");
      }
   }

   // Define the resulting output dialog attributes
   IDictionary<string, string> OutputDialogDict = new Dictionary<string, string>();

   // Only adding to the output dialog if the attribute value has been changed
   foreach (KeyValuePair<string, string> Attribute in InputDialogDict)
   {
      string AttributeType = PropertyDict[Attribute.Key];

      if (AttributeType.Equals("date"))
      {
         // Check and convert date property values, if necessary
         // Example: Replace a '/' character by the '-' character)

         // Parse for specific syntax
         string ErrorString =
            "Only  \"DATE\",  \"< DATE\",  \"> DATE\",  \"DATE < DATE\",  or  \"DATE <<
DATE\"  " +
            "is allowed, where DATE can be a string like \"2017-11-03\".";
```

```
            string StringFromDialog = Attribute.Value;
            string[] DateValueArray = StringFromDialog.Split(' ');

            if ((DateValueArray.Length > 3) || (DateValueArray.Length < 1))
            {
               throw new Exception(ErrorString);
            }

            if (DateValueArray.Length == 1)
            {
               string AttrValAfterReplacement = Attribute.Value.Replace('/','-');

               if (AttrValAfterReplacement != Attribute.Value)
               {
                  string AmlAttrValAfterReplacement =
                     PwbServerApiObj.ReturnRegularAttrQueryString(
                        "", Attribute.Key, AttrValAfterReplacement);

                  OutputDialogDict.Add(Attribute.Key, AmlAttrValAfterReplacement);
               }
            }
            else if (DateValueArray.Length == 2)
            {
               // AML for 'later than' and 'earlier than'
               // AmlString += "<created_on condition=\"gt\">2016-10-
11T00:00:00</created_on>";
               // AmlString += "<created_on condition=\"lt\">2016-10-
11T00:00:00</created_on>";

               string Sign = DateValueArray[0];
               if (!((Sign == "<") || (Sign == ">")))
               {
                  throw new Exception(ErrorString);
               }

               string DateStr = DateValueArray[1];
               string DateStrAfterReplacement = DateStr.Replace('/','-');

               if (Sign == "<")
               {
                  if (-1 == DateStrAfterReplacement.IndexOf('T') )
                  {
                     DateStrAfterReplacement+="T23:59:59";
                  }

                  string AmlAttrValAfterReplacement =
                     PwbServerApiObj.ReturnLessThanAttrQueryString(
                        "", Attribute.Key, DateStrAfterReplacement);

                  OutputDialogDict.Add(Attribute.Key, AmlAttrValAfterReplacement);
               }
               else // ">"
               {
                  string AmlAttrValAfterReplacement =
                     PwbServerApiObj.ReturnMoreThanAttrQueryString(
                        "", Attribute.Key, DateStrAfterReplacement);

                  OutputDialogDict.Add(Attribute.Key, AmlAttrValAfterReplacement);
               }
            }
            else // Length == 3
            {
               // AML for 'between two dates'
               // AmlString += "<created_on condition=\"between\">2016-09-27T00:00:00 and
2016-11-17T00:00:00</created_on>";

               string Sign = DateValueArray[1];
               if (!((Sign == "<") || (Sign == "<<")))
               {
                  throw new Exception(ErrorString);
               }

               string DateStr1 = DateValueArray[0];
               string DateStrAfterReplacement1 = DateStr1.Replace('/','-');
```

```
                string DateStr2 = DateValueArray[2];
                string DateStrAfterReplacement2 = DateStr2.Replace('/','-');
                if (-1 == DateStrAfterReplacement2.IndexOf('T') )
                {
                   DateStrAfterReplacement2+="T23:59:59";
                }

                string AmlAttrValAfterReplacement =
                   PwbServerApiObj.ReturnBetweenAttrQueryString(
                      "", Attribute.Key, DateStrAfterReplacement1, DateStrAfterReplacement2);

                OutputDialogDict.Add(Attribute.Key, AmlAttrValAfterReplacement);
             }
          }
          else
          {
             // Only add the attribute if it is a date,
             // and if it has been changed during the processing
          }
       }

       Item OutputDialogItem = PwbServerApiObj.DialogAttrsDictionaryToItem(OutputDialogDict);

       return OutputDialogItem;
    }


    // Get the name and data_type of all properties of an ItemType
    private IDictionary<string, string> GetAllPropertyNamesTypes(Innovator Inn, string
    ItemType)
    {
       IDictionary<string, string> PropertyDict = null;

       string AML = "<AML><Item action='get' type='Itemtype' select='name'><name>"
                  + ItemType + "</name><Relationships>"
                  + "<Item action='get' type='Property' select='name,data_type'></Item>"
                  + "</Relationships></Item></AML>";

       Item ItemTypeItem = Inn.newItem();
       ItemTypeItem.loadAML(AML);
       Item ResultItem = ItemTypeItem.apply();

       Item PropertyItems = ResultItem.getRelationships();

       PropertyDict = new Dictionary<string, string>();
       int count = PropertyItems.getItemCount();
       int i;
       for (i=0; i<count; i++)
       {
          Item PropertyItem = PropertyItems.getItemByIndex(i);
          string PropertyName = PropertyItem.getProperty("name");
          string PropertyDataType = PropertyItem.getProperty("data_type");
          PropertyDict.Add(PropertyName, PropertyDataType);
       }

    return PropertyDict;
```

Special Context Menu for multi-select in Query Window

If multiple lines are selected the context menu contains the common subset of the node types.

Update Configuration

Optionally only showing the PDM Update Dialog when new Files exist

Can be switched on by the schema file setting

```
<setting name="ShowUpdateDialogOnlyIfNeeded" value="true"/>
```

Create dialogs

The PWB Configuration item setting “ShowCreateDialogsDuringUpdate” has to be set to “true” in order to show the create dialogs during the update process.

ShowCreateDialogsDuringUpdate	true

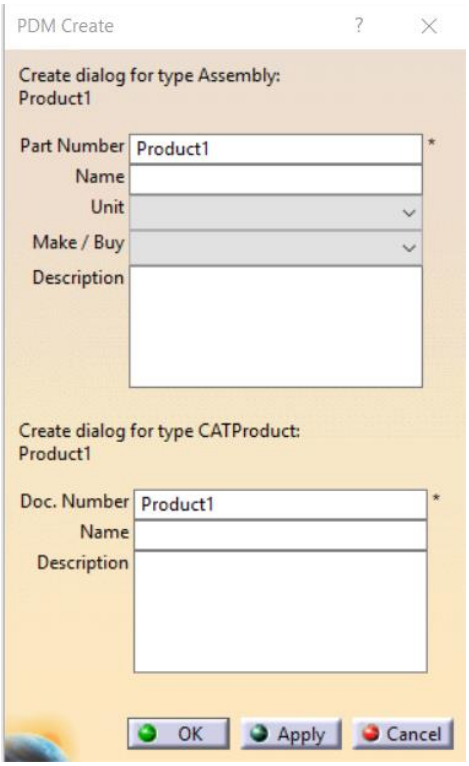
Picture 50: Sample ShowCreateDialogsDuringUpdate configuration

Default value: “true”

Optional. Possible values: “true”, or “false”.

Show Create Dialogs Multi Column

If a Part and a CAD are created together, the “PDM Create” dialog shows the combined dialogues of Part and CAD. The Part dialog above and the CAD dialog below.



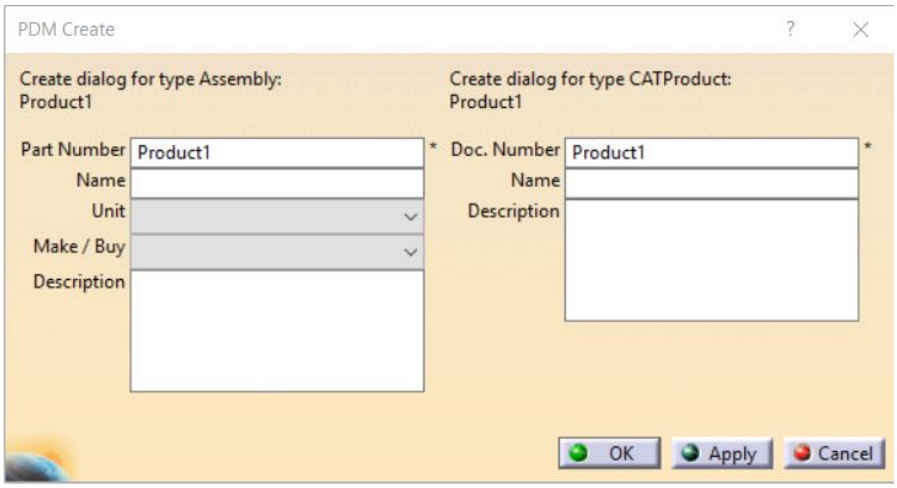
Picture 51: Combined “PDM Create” dialog, with the Part dialog above and the CAD dialog below.

To show the “PDM Create” dialog in two columns, with the Part dialog on the left and the CAD dialog on the right, the schema setting showCreateDialogsMultiColumn has to be enabled:

```
<showCreateDialogsMultiColumn value="true" />
```

Default value: “false”

Optional. Possible values: “true”, or “false”.



Picture 52: Combined "PDM Create" dialog, with the Part dialog on the left and the CAD dialog on the right.

Create version button

In the Schema file it can be configured if the "Create new file versions at update?" button appears in the update dialog.

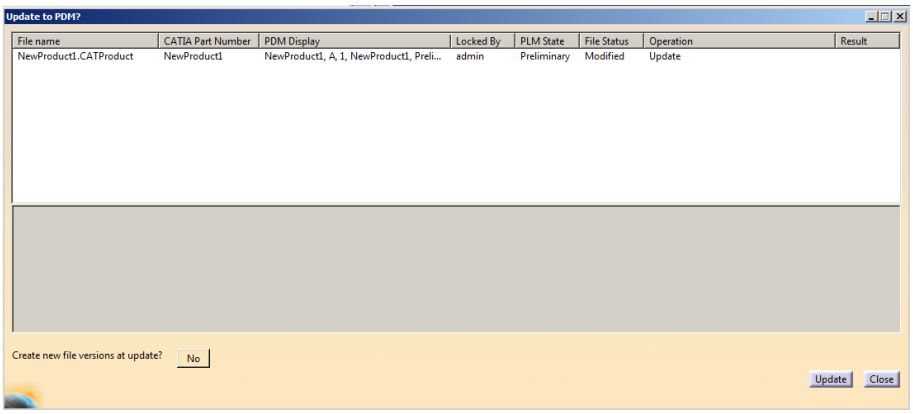
If the value of this setting is set to "false" the button does not appear in the update dialog. The default value (overwriting the existing document) will always be active.

Example:

```
<showCreateVersionAtUpdate value="false" />
```

Default value: "true"

Optional. Possible values: "true", or "false".



Picture 53: Update dialog with "Create new file versions at update?"

Default create version value

In the Schema file the default value of the "Create new file versions at update?" button can be configured.

If the value of this setting is set to "false" the default value of the button is "No".

If the value of this setting is set to "true" the default value of the button is "Yes".

Example:

```
<defaultCreateVersionAtUpdateValue value="true" />
```

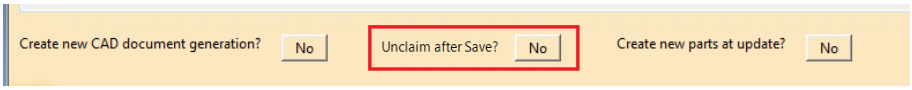
Default value: "false"

Optional. Possible values: "true", or "false".

Unclaim after Save

It is possible to automatically unclaim CAD documents after they have been updated in the PDM update process.

The user has to click on the “Unclaim after Save?” button to change the value to “Yes”.



Picture 54: Optional “Unclaim after Save” button

In the Schema file the setting “showUnlockAfterUpdate” has to be set to “true” to show the button in the Update dialog:

Example:

```
<showUnlockAfterUpdate value="true" />
```

Default value: “false”

Optional. Possible values: “true”, or “false”.

Show create parts

In the Schema file it can be configured if the “Create new parts at update?” button appears in the update dialog.

If the value of this setting is set to “false” the button does not appear in the update dialog.

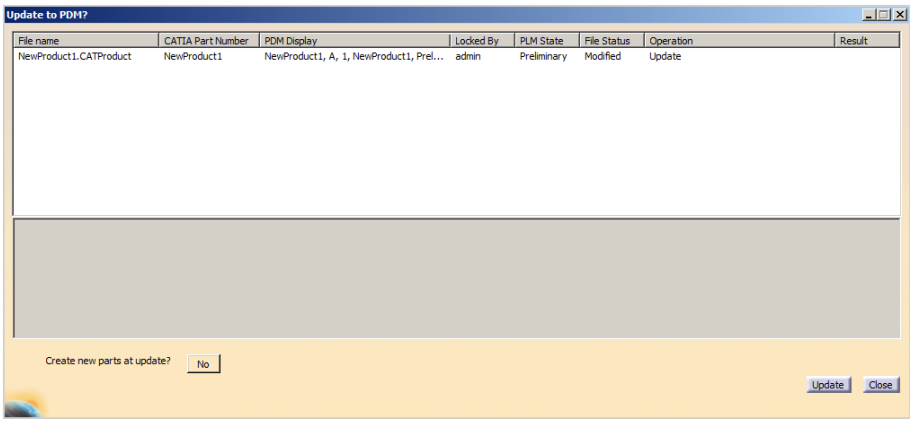
If the value of this setting is set to “true” the button appears in the update dialog.

Example:

```
<showCreatePartsAtUpdate value="true" />
```

Default value: “false”

Optional. Possible values: “true”, or “false”.



Picture 55: Update dialog with “Create new parts at update?”

Default create parts value

In the Schema file the default value of the “Create new parts at update?” button can be configured.

If the value of this setting is set to “false” the default value of the button is “No”.

If the value of this setting is set to “true” the default value of the button is “Yes”.

Example:

```
<defaultCreatePartsAtUpdateValue value="true" />
```

Default value: “false”

Optional. Possible values: “true”, or “false”.

Validate Structure before Update

It is possible to have a CAD structure validated by a server method before the update process is started.

Configuration

There is a new toolbar icon which can be activated by commenting out the line ‘`removeToolbarIcons’/’<icon name="PreProcessCadStructure" />`’ in the PWBSchema.xml file:

```
<removeToolbarIcons>
   <icon name="LocalWorkspace" />
   <icon name="Register" />
   <!-- <icon name="PreProcessCadStructure" /> -->
   <icon name="Synchronize" />
   <icon name="NewPwbWindow" />
   <icon name="SetSessionConfig" />
</removeToolbarIcons>
```

Additionally the server setting “CustomMethod_PreProcessCadStructure” has to be set to the name of a C# server method, for example “PwbCus_PreProcessCadStructure”:

CustomMethod_PreProcessCadStructure	PwbCus_PreProcessCadStructure

Picture 56: Sample CustomMethod_PreProcessCadStructure configuration

It is possible to have the Validate / Pre-process method be automatically called before update. In that case the server setting “PreProcessCadStructureBeforeUpdate” has to be set to “true”:

PreProcessCadStructureBeforeUpdate	true

Picture 57: Sample PreProcessCadStructureBeforeUpdate configuration

Usage

An example implementation of the validation or pre-process method for this, “Pwb_Sample_PreProcCadStructure”, exists.

Let Aras Innovator delete orphaned files created at update

If you update a file in Aras Innovator, the original file gets orphaned. By default, the PDM Workbench deletes these orphaned files at the end of the update process.

Starting with Aras Innovator 12 it is possible to use the Aras Innovator variable item: `Force.Delete.Orphaned.Files=1`

to delete orphaned files. To make sure there is no conflict between Aras Innovator and the PDM Workbench about the deletion of the files you have to set the PWB Configuration:

`DeleteOrphanFilesAtUpdate=false`

Add newly created and updated Part or CAD items to existing items

It is possible to link the Part and CAD items during the update process to an existing item. This can be done by using a custom method which is called at the end of the update process.

Examples:

1. The user wants to link a new top-level item to a selected Folder / Project item.
2. The user has several Change Items he has to work on. During the Update process the user selects the current Change Item he is working on from a list of his Change Items. This Change Item can be related to all updated Part or CAD items. This gives the possibility to understand later why a certain change was made.

The following Configuration shows a sample implementation to link a new top-level item to a selected Folder / Project item.

Configuration

There are two configuration points where a custom method can be called to configure this functionality.

One is called during login, and it returns the list of items (e.g. of a custom “Folder” type), to which CAD or Part items can be related to at the end of the update process.

The setting is “CustomMethod_PostProcUpdateInfo”, and its value has to be the name of a server-side C# method. Here is an example:

Picture 58: Sample “CustomMethod_PostProcUpdateInfo” configuration

This method is supposed to return the names and values of a list of items which are stored in the PDM Workbench session. Entries from this list are then displayed in the update dialog. The user can select one of the items in the list. The ID of the selected item is then passed to the custom method at the end of the update process. In this method the newly created Part and CAD items can be related to the passed folder item.

The structure of the returned items is supposed to be like this:

‘Item type name’ + ‘|||’ + ‘name of item 1’ + ‘|’ + ‘ID of item 1’ + ‘||’ + ‘name of item 2’ + ‘|’ + ‘ID of item 2’ etc.

The pipe symbols (‘|’) are used for dividing the different entries in the string:

```
TypeName|||Item Name 1|ItemId1||Item Name 2|ItemId2||Item Name 3|ItemId3
```

This is an example of an actual returned string:

```
PwbFolder|||Folder Five|20DB73D8447748CFA067C07019B35ED4||Folder
Four|AAD93194CA8E464FB74166BFAA34994A||Folder
One|44978F9365C149AEA194F040502A85D1||Folder
Six|60EA79EE3E9D46E0A80EE72F99D43F26||Folder
Three|28AEB80AEDCC4C799335D3E3073D023B||Folder
Two|1E45E5D172F54A8CA5C6A00C85DDFA9A
```

A sample method for this, “Pwb_Sample_ PostProcUpdateInfo”, exists.

The second configuration point is the method which relates the newly created part items to the selected folder item at the end of the update process. This method is called with information about the Part and CAD items which have been created and updated in the current update process.

The setting is “CustomMethod_PostProcUpdate”, and its value has to be the name of a server-side C# method. Here is an example:

Picture 59: Sample “CustomMethod_PostProcUpdate” configuration

The input information that is passed to the method looks like this:

<**UpdDlgSettings**>PwbFolder|28AEB80AEDCC4C799335D3E3073D023B</**UpdDlgSettings**>

<**RootNodeId**>B0AA1024532D42FB81916351006644CD</**RootNodeId**>

<**RootNodeFileName**>NewProduct3.CATProduct</**RootNodeFileName**>

<**RootPartId**>541AD2AB2F7249AFA46D91D7B75D7AAC</**RootPartId**>

<**RootNodePartNumber**>NewProduct3</**RootNodePartNumber**>

<**UpdatedFileIds**>EFE7E75D91804277917E9277D7725E85|44043BEF8305412A8CC7C06CD0524E9F|B0AA1024532D42FB81916351006644CD</**UpdatedFileIds**>

<**UpdatedFileNames**>NewPart4.CATPart|NewPart3.CATPart|NewProduct3.CATProduct</**UpdatedFileNames**>

<**UpdatedPartIds**>DD0C0CB5CDB74BE08463C21CA01D1D7F|B1AF4EBA36A447A8B820EEE811BB0890|541AD2AB2F7249AFA46D91D7B75D7AAC</**UpdatedPartIds**>

<**UpdatedPartNumbers**>NewPart3|NewPart4|NewProduct3</**UpdatedPartNumbers**>

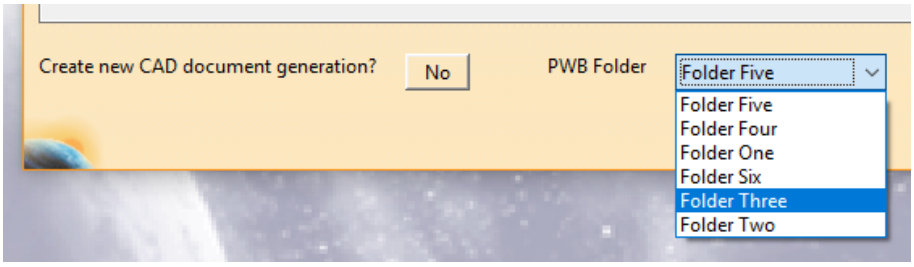
<**NewPartIds**>DD0C0CB5CDB74BE08463C21CA01D1D7F|B1AF4EBA36A447A8B820EEE811BB0890|541AD2AB2F7249AFA46D91D7B75D7AAC</**NewPartIds**>

<**NewFileIds**>44043BEF8305412A8CC7C06CD0524E9F|EFE7E75D91804277917E9277D7725E85|B0AA1024532D42FB81916351006644CD</**NewFileIds**>

A sample method for this, “Pwb_Sample_ PostProcUpdate”, which relates the root part item of the updated structure to the selected folder item, exists.

Usage

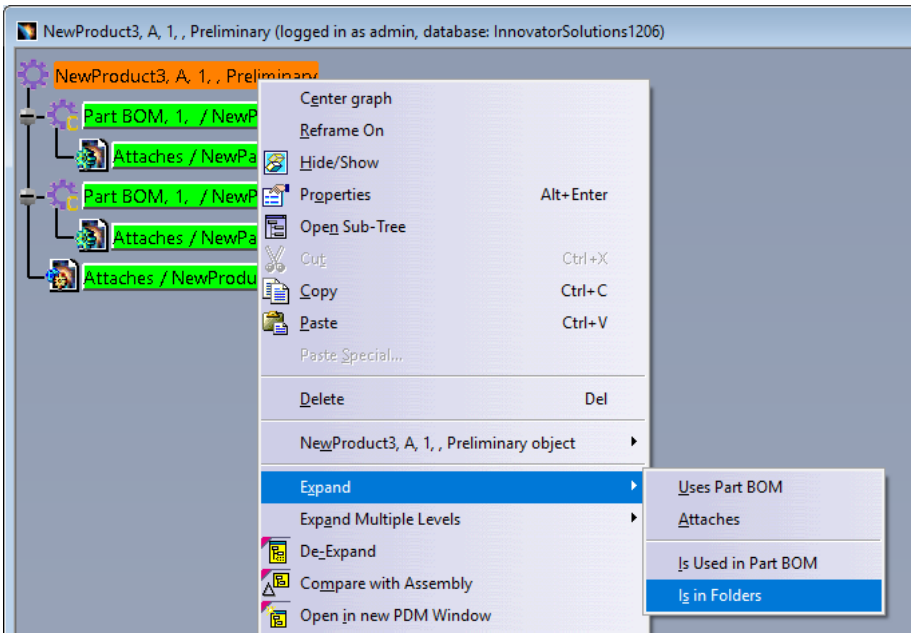
With the correct configuration the user can select an entry from a list of folder names in the update dialog. The list is the one returned by the custom method defined by the setting “CustomMethod_PostProcUpdate”:



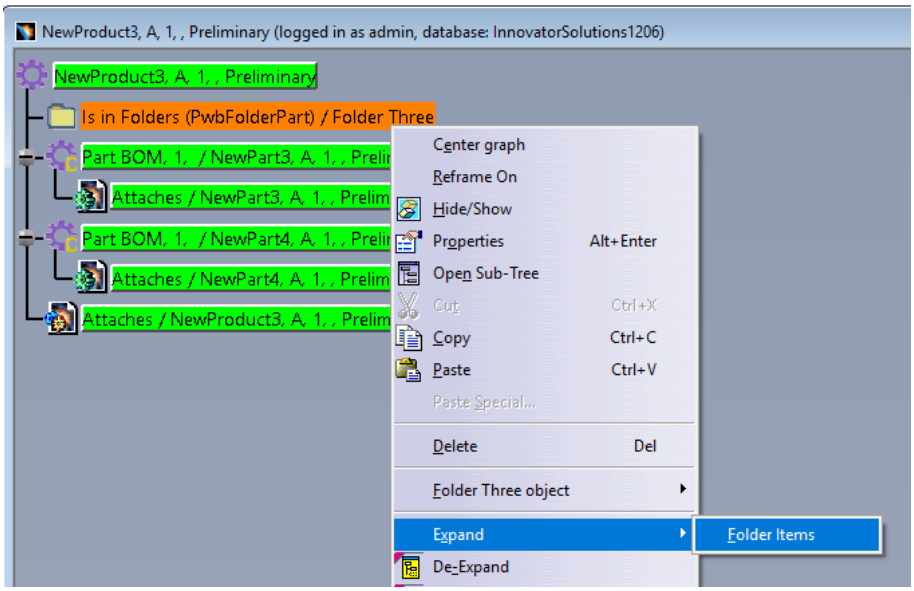
Picture 60: Folder list

The item that the user has selected will be the one that the newly created root Part item will be related to.

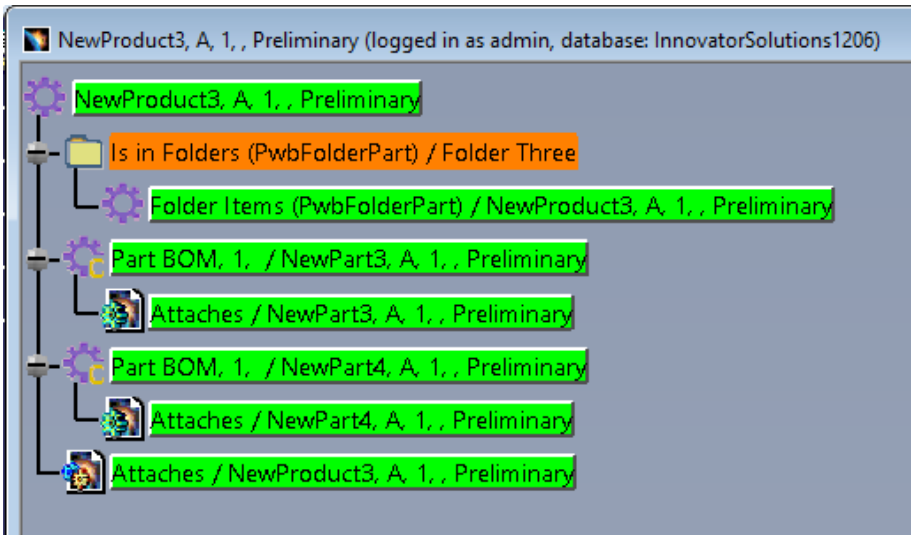
If the folder item and relationship is defined in the PWBSchema file the user can expand the relations in the PDM structure window and find out which folder, if any, a part item is related to, and which part items are related to a folder:



Picture 61: Expanding “Is in Folders” in the PDM structure window



Picture 62: Expanding “Folder Items” in the PDM structure window



Picture 63: Expanded folder items in the in the PDM structure window

Fetch Part Number allow manual input

By default “Fetch Part Number” and “Fetch Nomenclature” present a list of possible new Part Numbers / Nomenclatures from a custom method. If the user needs a different number, the default functionality cannot be used.

Now it is possible to enter a new number manually if the custom method does not return a fitting number.

Configuration

The functionality has to be enabled in the settings section of the PWB Schema file:

```
<settings>
   <setting name="FetchPnAllowManualInput" value="true"/>
   <setting name="FetchNomenclatureAllowManualInput" value="false"/>
   <setting name="FetchPnUseNomenclatureForInstanceName" value="true"/>
   <setting name="FetchPnInputWidth" value="32"/>
</settings>
```

with

FetchPnAllowManualInput: enable manual input for “Fetch Part Number”.

FetchNomenclatureAllowManualInput: enable manual input for “Fetch Nomenclature / Rename”.

FetchPnUseNomenclatureForInstanceName: set default state of check box to create instance name from Part Number or from Nomenclature.

FetchPnInputWidth: dimension of the input fields.

Clear pre-filled Attributes from Create Dialog

Depending on the attribute mapping, many attributes in the create dialogs for CAD and Part are pre-filled with current CATIA V5 properties. In some cases, like copy structure, this causes additional effort and increases the possibility of wrong values in Aras Innovator.

This functionality offers the possibility to show a button to clear the content of the pre-filled attributes from the create dialog.

Configuration

Configure the register form to

a) create a clear button (info="ShowClearButton") and

b) keep attribute values when clear (pwbAttrInfo="DoNotClear"):

```
<form name="Register" info="ShowClearButton" >
   <formAttribute name="item_number" displayName="NLS_document_number"
                  widgetType="SingleLineEditor" mode="update"
                  visibleLength="15" allowedLength="256" required="true"
                  pwbAttrInfo="DoNotClear"/>
   <formAttribute name="name" widgetType="SingleLineEditor" mode="update"
                  visibleLength="15"
                  required="false" />
   <formAttribute name="description" widgetType="MultiLineEditor"
                  mode="update" visibleLength="15"
                  required="false" />
</form>
```

Optional "Clear" Button in "Register" Dialogs of "CAD" Item Definitions

It is possible to add a "Clear" button to the "Register" dialogs of CATIA files. Clicking on this button clears all the values from the dialog attributes.

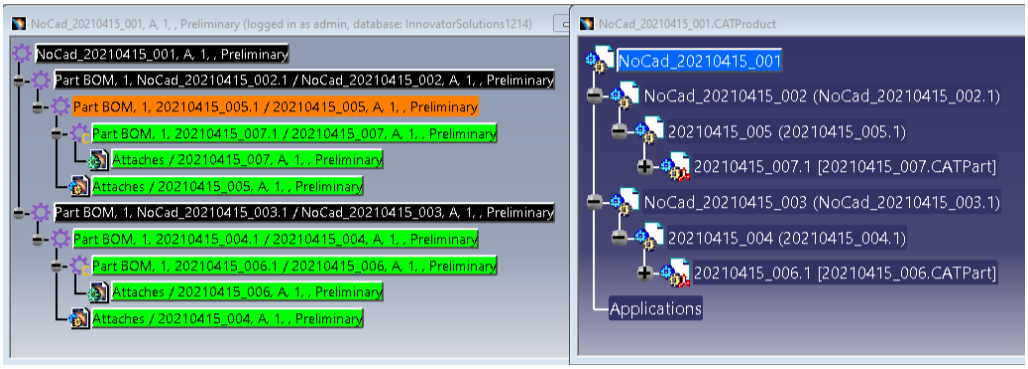
Configuration

```
<form name="Register" info="ShowClearButton">
   <formAttribute name="item_number" widgetType="SingleLineEditor" ... />
   <formAttribute name="name" widgetType="SingleLineEditor" ... />
   <formAttribute name="description" widgetType="MultiLineEditor" ... />
   <formAttribute name="is_template" widgetType="SingleCheckBox" ... />
   <formAttribute name="is_standard" widgetType="SingleCheckBox" ... />
</form>
```

Deny create of CAD at top level structure in BOM Part Structure Data Model

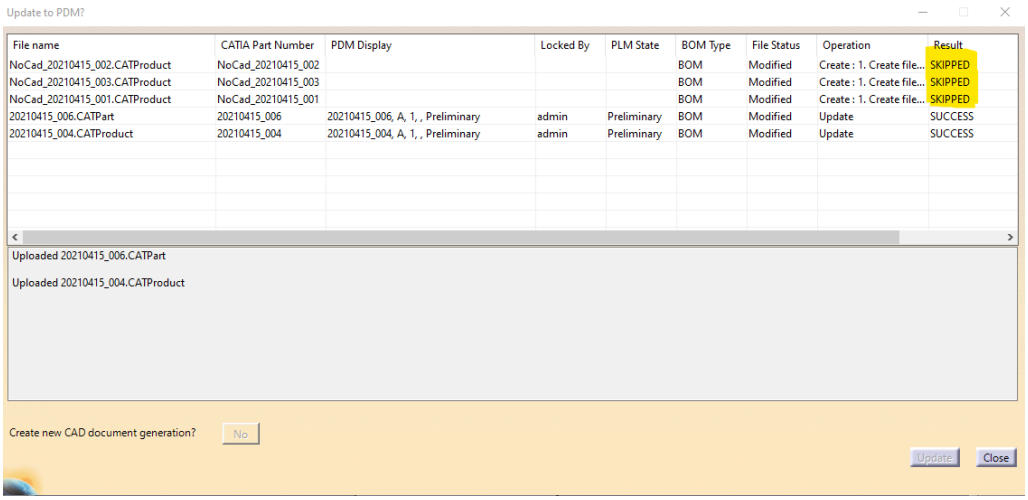
It is possible to create a top level Part structure in Aras Innovator without attached CADs. The structure can be loaded to CATIA, the missing CATIA files are created on the fly in CATIA.

This functionality allows to prevent the update of the top level Part structure, including the save of the "On the fly" created CATIA files.



Picture 64: Non CAD top level structure with on the fly created CATProducts

During update, the on the fly created CATProducts are skipped.



Picture 65: Update Non CAD top level structure -> Result SKIPPED

Configuration

Client:
Remove the following line in the PWB Schema file:
`<ignoreStructureChangeAtUpdateIfReadOnly value="true" />`
It is the default behavior now and cannot be configured anymore.

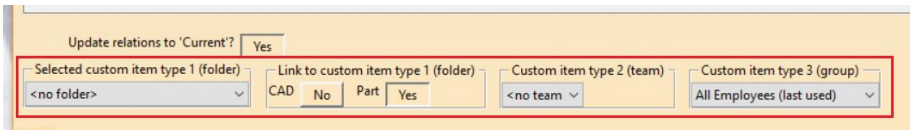
Server:
A custom method has to be created to determine if an item can be updated in CATIA.
The method name has to be set to the PWB Configuration setting:
CustomMethod_CheckCatiaAllowUpdate=<Method name>

Sample Custom method:

```
// Sample CustomMethod_CheckCatiaAllowUpdate
//
// This method is called before an Item is send to CATIA.
// If not, the Item can neigther updated nor claimed in CATIA.

Item result = this.getInnovator().newItem();

var PwbServerApiObj = new PwbServerAddin.PwbServerApi(this);

Item ItemToCheck = this.getPropertyItem("ItemToCheck");

if (ItemToCheck.getType()!= "Part")
{
    // ignore CATIA environment settings
    result.setAttribute("denyUpdate", "false");
    return result;
}

string AttrValue = ItemToCheck.getProperty("item_number", "");
if (0 == AttrValue.IndexOf("NoCad", 0, 5))
{
    result.setAttribute("denyUpdate", "true");
    return result;
}

result.setAttribute("denyUpdate", "false");
return result;
```

Custom Row in Update Dialog

There is an optional row for customer-specific widgets in the Update dialog:



Picture 66: Customer-specific Row in Update Dialog

Configuration

The widgets in the custom row are configured in the PWB Schema file.

Two widget types are possible: ‘Button’ for check buttons (values checked or unchecked) and ‘ComboBox’ for dropdown lists.

```
<form name="UpdDlgCustomFrame" info="visible=false|title=false" >
   <frame name="SelectedFolderFrame" info="visible=true|title=true" >
      <cusAttr name="SelectedFolder" widgetType="ComboBox"
               visibleLength="12" />
   </frame>
   <frame name="LinkToFolderFrame" info="visible=true|title=true" >
      <cusAttr name="LinkCad" displayName="NLS_LinkCad"
               widgetType="Button" />
      <cusAttr name="LinkPart" displayName="NLS_LinkPart"
               widgetType="Button" />
   </frame>
   <frame name="CustomTeamFrame" info="visible=true|title=true" >
      <cusAttr name="CustomTeam" widgetType="ComboBox"
               visibleLength="12" />
   </frame>
   <frame name="CustomGroupFrame" info="visible=true|title=true" >
      <cusAttr name="CustomGroup" widgetType="ComboBox"
               visibleLength="12" />
   </frame>
</form>
```

The NLS strings of the widgets are defined in the file “PWBSchemaDisplayNames_Aras_Aras.CATNls”:

```
UpdDlgCustomFrame = "Custom Frame";

SelectedFolderFrame = "Selected custom item type 1 (folder)";

LinkToFolderFrame = " Link to custom item type 1 (folder)";

NLS_LinkCad = "CAD";

NLS_LinkPart = "Part";

CustomTeamFrame = " Custom item type 2 (team)";

CustomGroupFrame = " Custom item type 3 (group)";
```

The values of the lists are retrieved from the server method configured as `CustomMethod_PostProcUpdateInfo` every time the main update dialog is created.

If a custom method corresponding to the setting `CustomMethod_CheckPostProcUpdate` exists, then this method is called before the update process starts. This method can be used to return an error in the case of invalid custom parameter combinations.

The selected custom widget values are sent to the method configured by the setting `CustomMethod_PostProcUpdate` which is called at the end of the update process.

A sample method for this, “Pwb_Sample_PostProcUpdateInfo”, exists.

Optional Refresh before Update

It is possible now to always automatically refresh the modified CAD documents before the PDM update process.

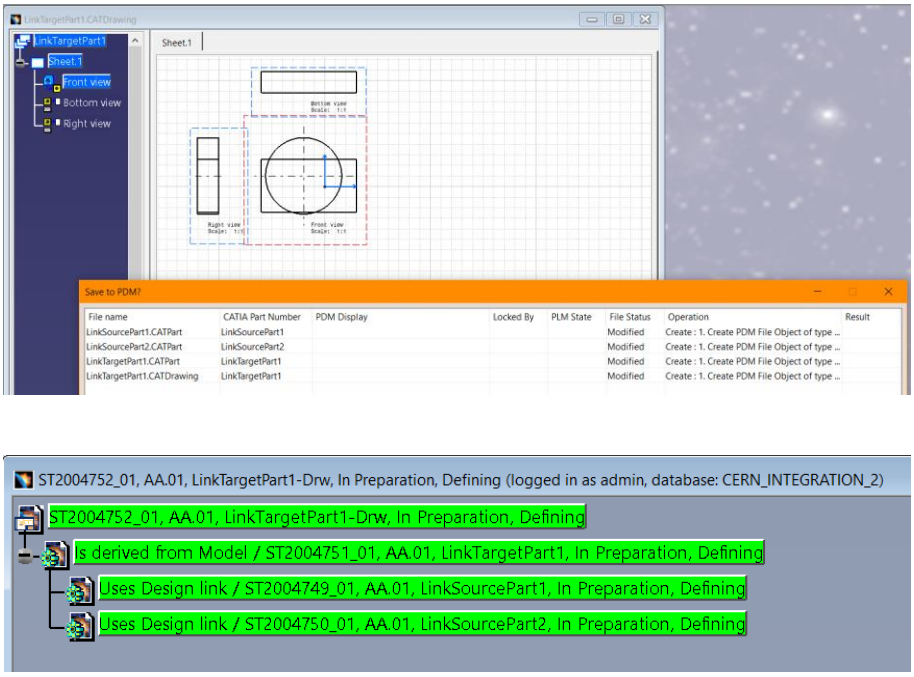
Configuration

PWBSchema.xml file:

```
<settings>
   <setting name="RefreshBeforeUpdate" value="true"/>
</settings>
```

Recursive Save of linked Documents

It is possible to recursively save linked CATIA files at PDM update. This works across the supported CATIA link types.



➔

Picture 67: CATIA documents saved recursively following links

Configuration

In the PWB Schema file the setting

```
<setting name="UpdateLinkedFiles" value="true"/>
```

has to be defined.

Also the settings

```
<setting name="UpdDrw-CheckLinked3DFiles" value="false"/>
```

```
<setting name="UpdPrt-CheckLinked3DFiles" value="false"/>
```

have to be changed accordingly, because the value “true” for these two settings conflicts with the “UpdateLinkedFiles” functionality.

Always save the ‘Path to Root’ CATProducts of modified CATParts

The option to update the parent CATProducts of modified CATParts in a CATProduct structure has been added. The behavior is as if the “path to root” of parent CATProduct nodes would have been manually modified by the user before clicking on the ‘PDM Save’ button.

Configuration

This behavior can be switched on by defining the setting `AlwaysUpdatePathToRoot` with the value `true` in the PWBSchema.xml file:

```
<settings>
      ...
      <setting name="AlwaysUpdatePathToRoot" value="true" />
      ...
</settings>
```

Usage

The PDM Update / Save behavior is as usual, except that the CATProducts on the path to root are set to 'modified' before the PDM save process.

Revise Configuration

Context action "Revise"

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="Revise" usedIn="PdmWindow" />
```

Modifiable attributes

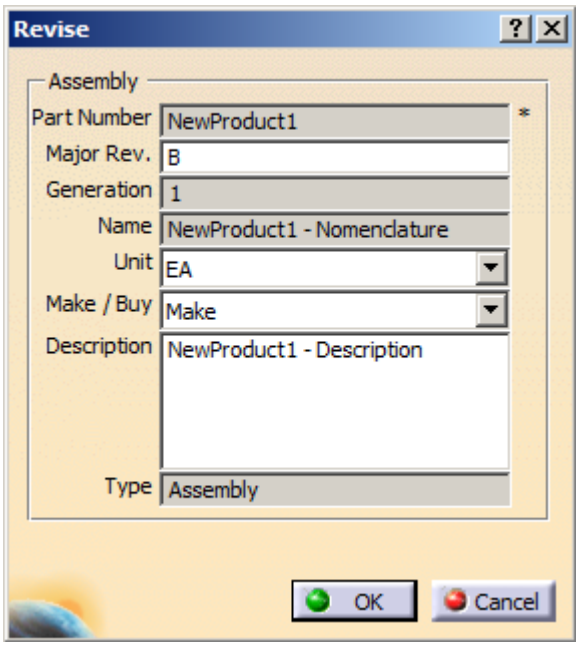
In the Schema file it can be configured which attributes can by additionally modified in the revise dialog.

Example:

```
<attrsModifiableAtRevise value="major_rev|description" />
```

These attribute values can be combined with the pipe "|".

Optional.



Picture 68: Revise dialog with modifiable attributes "major_rev" and "description"

Expand structure

In the Schema file it can be configured if the structure should be expanded before the revise.

Example:

```
<expandStructureForRevise value="true" />
```

Default value: “false”

Optional. Possible values: “true”, or “false”.

Revising as a different user (“ReviseAs”)

By default only administrators can directly promote the life cycle state of an item. The processes in some companies require that also regular designers should be able to promote items. For this it is possible to perform the “Revise” operation as a different user with the necessary permissions.

The PWB Configuration item setting “ReviseAs” has to be set to an identity with the necessary permissions, for instance “Aras PLM”:

ReviseAs	Aras PLM

Picture 69: Sample “ReviseAs” setting

Duplicate Configuration

Duplicate

By default, in the Duplicate process, all the attributes of the Create dialog are filled with the corresponding values of the item to be duplicated. It is now possible to configure that specific dialog attributes should not be pre-filled with that value.

Configuration

This behavior is defined by setting the XML attribute “pwbAttrInfo” of the dialog attribute to the value “ClearAtDuplicate” in the PWBSchema.xml file.

```
<form name="Register">
                    ...

      <formAttribute name="name" widgetType="SingleLineEditor"
                  mode="update" visibleLength="15" required="true"
                  pwbAttrInfo="ClearAtDuplicate" />

                    ...
</form>
```

Usage

For the defined attributes the values in the Create dialog will be empty.

Immediately start Update

When using the “Duplicate” command, the create dialog of the duplicated item is shown immediately. If you use a “Custom Row in Update Dialog”, it is possible to deactivate the immediately start of the create dialog to allow the user to choose the correct settings in the custom row of the update dialog.

Configuration

This behavior can be switched on by defining the setting `DuplicateCmdStartImmediately` with the value `false` in the PWB Schema file:

```
<settings>
  …
  <setting name="DuplicateCmdStartImmediately" value="false" />
  …
</settings>
```

Duplicate Structure Configuration

It is possible to duplicate CATProduct structures, not only single CATPart or CATProduct documents.

Context action "Duplicate Structure"

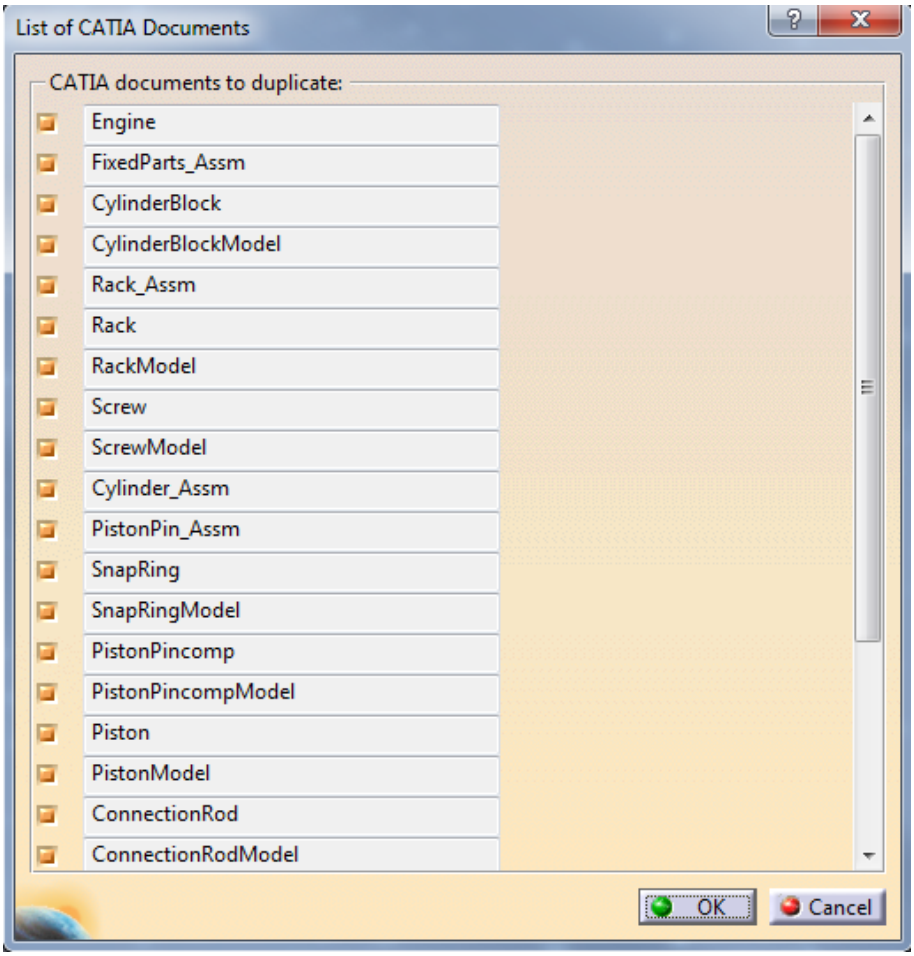
In the Schema file the context action can be enabled.

Example:

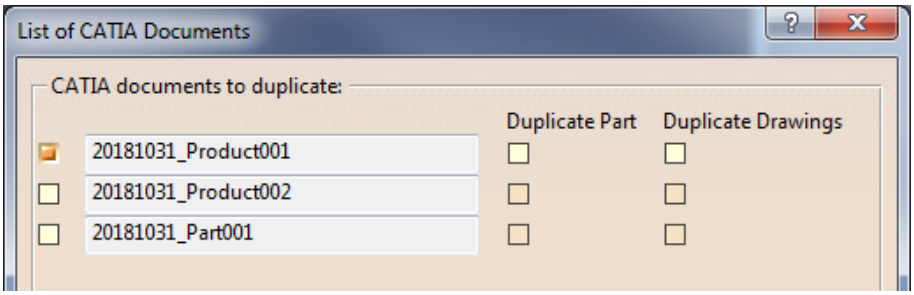
```
<contextAction name="DuplicateStructure" usedIn="PdmWindow|QueryDialog"/>
```

In the Schema file one of the following two variants can be configured. It is not possible to use both variants in the same PDM Workbench environment.

Variant A (only available in CAD Structure mode)



Picture 70: Duplicate structure - Variant A - Preselected list of documents



Picture 71: Duplicate structure - Variant A – Duplicate Part and Drawings

Example:

```
<duplicateStructureDialog onlySelectRootNode="false" height="500"
                          width="500" maxAttrLength="50"
                          includeParts="false" includeDrawings="false" />
```

with

`onlySelectRootNode: "true":` only the root node is selected

`"false":` all nodes are selected

`height:` height of the dialog in pixel

`width:` width of the dialog in pixel

`maxAttrLength:` the length of the part number field in characters

`includeParts:` set to “true” to display column “Duplicate Part”

`includeDrawings:` set to “true” to display column “Duplicate Drawings”

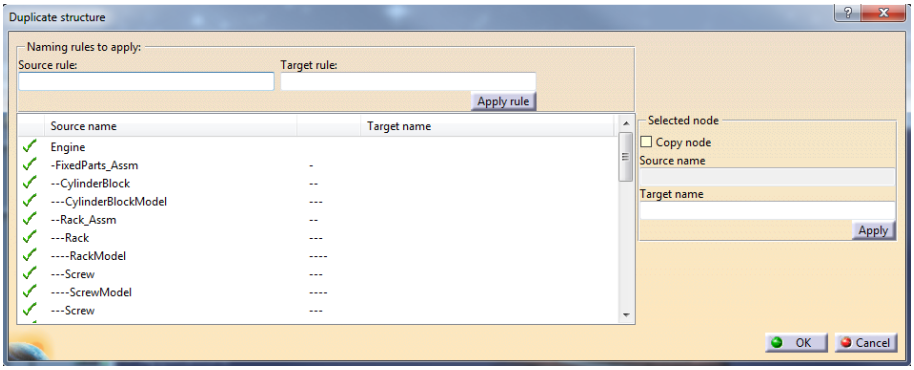
Optional.

```
<duplicateStructure useStructureDialog="false" disableSettings="true"/>
```

`useStructureDialog="false"` switches on the dialog for Variant A.

Optional.

Variant B



Picture 72: Duplicate structure - Variant B - Preselected list of documents

Example:

```
<duplicateStructure useStructureDialog="true" disableSettings="false" />
```

`useStructureDialog="true"` switches on the dialog for Variant B.

Optional.

```
<duplicateStructureRequest size="10000" />
```

Defines the number of CAT Documents to get the related Drawings for at one shot.

Default value: “10000”.

Optional.

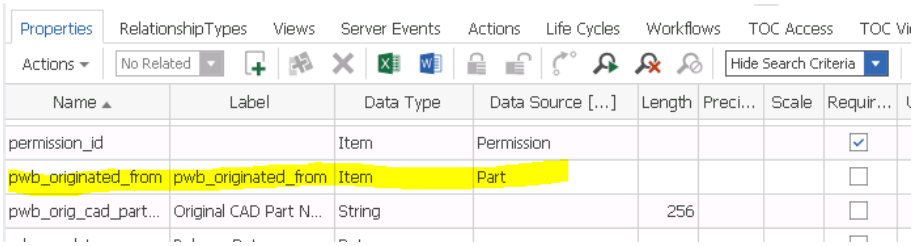
Duplicate Structure provides “originatedFrom” Property (in Variant B)

When using “Duplicate Structure” it is possible to add the original Item to a property in the new Item (CAD / Part).

Configuration

Add an Item property like “pwb_originated_from” to the Item Type “CAD”.

If you use the “BOM Part Structure Data Model” you have also to add the property to the Item Type “Part”.



Picture 73: Item Type “CAD” – Add property “pwb_originated_from”

Create the server method “PwbCus_PreProcDlgAttrs_OriginatedFrom” to pre-process the create dialog attributes. This method uses the property “pwb_originated_from”.

```
using (var PwbServerApiObj = new PwbServerAddin.PwbServerApi(this))
{
        string PdmType = this.getProperty("Type");
        string PdmClassification = this.getProperty("Classification");

        PwbServerApiObj.Log(
                "Called method -> '" + PdmType + "' / '" + PdmClassification + "'" );

        IDictionary<string, string> PartInputDialogDict = null;
        if (PdmType == "Part")
        {
                // Part dialog attributes
                Item PartInputDialogItem = this.getPropertyItem("PartDialogAttrs");
                if (PartInputDialogItem == null)
                {
                        return getInnovator().newError("" +
                                "Could not retrieve part dialog attributes!");
                }
                else
                {
                        PartInputDialogDict =
                                PwbServerApiObj.DialogAttrsItemToDictionary(
                                        PartInputDialogItem);
                        if (PartInputDialogDict == null)
                        {
                                return getInnovator().newError(
                                        "Could not convert part dialog attributes!");
                        }
                }
        }

        IDictionary<string, string> CadDocInputDialogDict = null;
        if (PdmType == "CAD")
        {
                // CAD dialog attributes
                // The CAD document dialog is only needed when a CAD type needs to be created
                Item CadDocInputDialogItem =
                        this.getPropertyItem("CadDocDialogAttrs");
                if (CadDocInputDialogItem == null)
                {
                        return getInnovator().newError(
                                "Could not retrieve CAD document dialog attributes!");
                }

                CadDocInputDialogDict =
                        PwbServerApiObj.DialogAttrsItemToDictionary(
                                CadDocInputDialogItem);
```

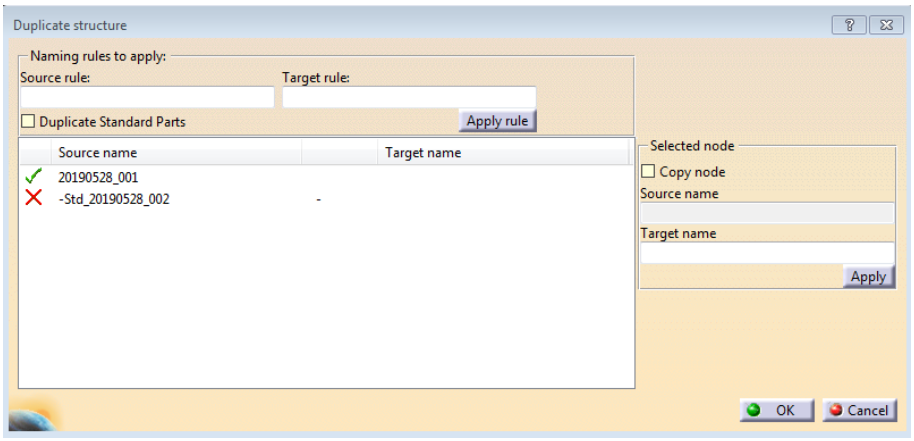
```
                if (CadDocInputDialogDict == null)
                {
                        return getInnovator().newError(
                                "Could not convert CAD document dialog attributes!");
                }
        }

        // CATIA standard properties
        // 'CadPartNumber', 'CadRevision', 'CadNomenclature', 'CadDefinition',
        // 'CadDescriptionReference', 'CadFileName'
        IDictionary<string, string> CatiaStdPropsDict = null;
        Item CatiaStdPropsItem = this.getPropertyItem("CadStdProps");
        if (CatiaStdPropsItem == null)
        {
                return getInnovator().newError(
                        "Could not retrieve CATIA standard properties!");
        }
        else
        {
                CatiaStdPropsDict =
                        PwbServerApiObj.DialogAttrsItemToDictionary(
                                CatiaStdPropsItem);
                if (CatiaStdPropsDict == null)
                {
                        return getInnovator().newError(
                                "Could not convert CATIA standard properties !");
                }
        }

        foreach (KeyValuePair<string, string> Attribute in CatiaStdPropsDict)
        {
                PwbServerApiObj.Log( "CATIA standard property '" +
                                 Attribute.Key + "'/'" + Attribute.Value + "'" );
        }

        // Resulting output dialog attributes
        IDictionary<string, string> OutputDialogDict = new Dictionary<string, string>();

        // First copying the dialog attributes
        foreach (KeyValuePair<string, string> Attribute in PartInputDialogDict)
        {
                PwbServerApiObj.Log("Part dialog attribute '" +
                                 Attribute.Key + "'/'" + Attribute.Value + "'" );
        }

        IDictionary<string, string> InputDialogDict = null;
        if ((PdmType == "CAD") || (PdmType == "Part"))
        {
                if (PdmType == "CAD")
                {
                        InputDialogDict = CadDocInputDialogDict;
                }
                else
                {
                        InputDialogDict = PartInputDialogDict;
                        if (CatiaStdPropsDict != null)
                        {
                                string OriginatedFromPartValue = null;
                                if (CatiaStdPropsDict.TryGetValue(
                                        "OriginatedFromPart",
                                         out OriginatedFromPartValue)
                                         && !String.IsNullOrEmpty(OriginatedFromPartValue))
                                {
                                        InputDialogDict.Add(
                                                "pwb_originated_from",
                                                OriginatedFromPartValue);
                                }
                        }
                }
        }

        Item OutputDialogItem =
                PwbServerApiObj.DialogAttrsDictionaryToItem(InputDialogDict);

        return OutputDialogItem;
}
```

The name of the server method must be set in the PWB Configuration setting:

```
CustomMethod_PreProcCreDlgAttrs =
                        PwbCus_PreProcDlgAttrs_OriginatedFrom
```

Duplicate Structure Handling of Standard Parts (in Variant B)

When you duplicate a structure which uses standard parts, it is most likely that the standard parts stay unchanged in the new structure. If you use the default PWB mechanism to handle standard parts, you can exclude the standard parts from the renaming.



Picture 74: Duplicate Structure Handling of Standard Parts

The check box “Duplicate Standard Parts” controls the default behavior for standard parts. The user can change the behavior of a single node by selecting the line.

This functionality is available in “CAD Document Structure Data Model” and “BOM Part Structure Data Model”.

Configuration

The appearance and the default state of the “Duplicate Standard Parts” check box can be configured in the PWB Schema.xml file.

```
<duplicateStructure useStructureDialog="true"
                    disableSettings="false"
                    showDuplicateStdParts="true"
                    defaultDuplicateStdParts="false" />
```

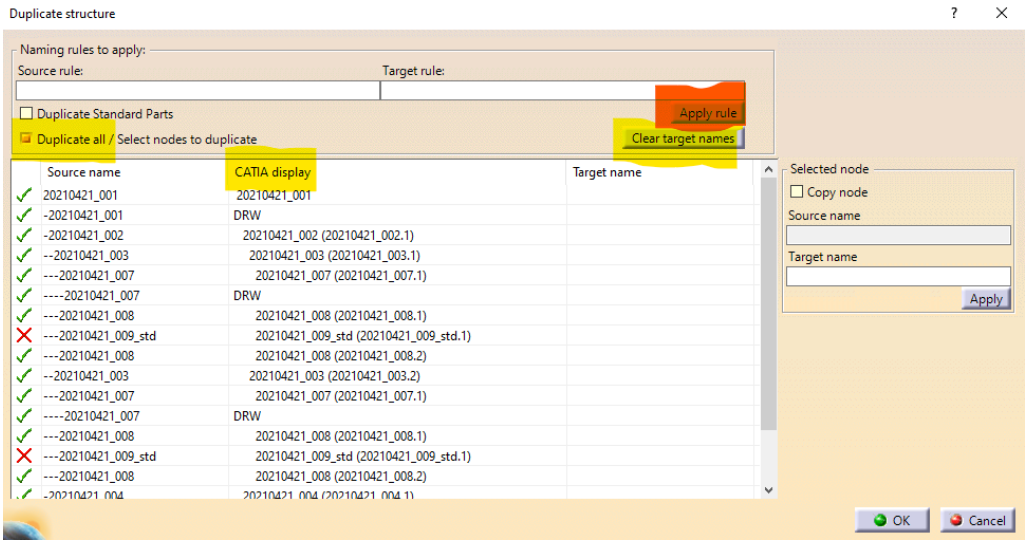
`showDuplicateStdParts = [true|false]` enables / disables the check box.

`defaultDuplicateStdParts = [true|false]` sets the default state of the check box

The settings are independent, it is possible to hide the check box and disable the copy of standard parts.

Duplicate Structure enhancements (in Variant B)

There are some new functionalities in the Duplicate structure dialog:

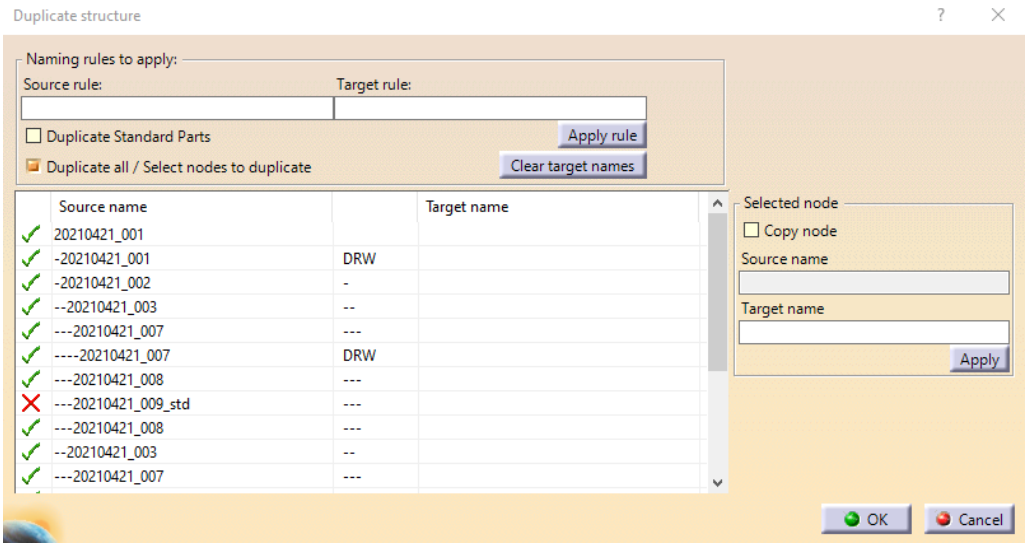


Picture 75: New function in the “Duplicate structure” dialog

1. Apply rule
   This function was changed. Now you can use the rule to create new target names multiple times. The target name is only modified if the rule hits the source name. If the source name is not hit by the rule, the target name will stay unchanged.
2. Clear target names
   This function clears all target names.
3. CATIA display
   This column shows the same text, like the nodes in the CATIA structure tree.
4. Duplicate all / Select nodes to duplicate
   By default all nodes except standard parts are selected to be duplicated. If you only want to duplicate some dedicated nodes and their path to root, you can uncheck the box. In this case, all nodes are excluded from the duplicate action. You can select the specific nodes and enable the “Copy node” manually.

Configuration

It is possible to disable the “CATIA display“ column. In this case the original column of the duplicate structure dialog is activated.



Picture 76: Duplicate structure dialog, hide “CATIA display” column

To disable the “CATIA display” column you have to set DuplicateStructureHideCatiaDisplay=true in the settings section of the PWB Schema file on the client:

```
<settings>
   …
   <setting name="DuplicateStructureHideCatiaDisplay"
            value="true"/>
</settings>
```

CATIA V5 Window Configuration

Properties dialog

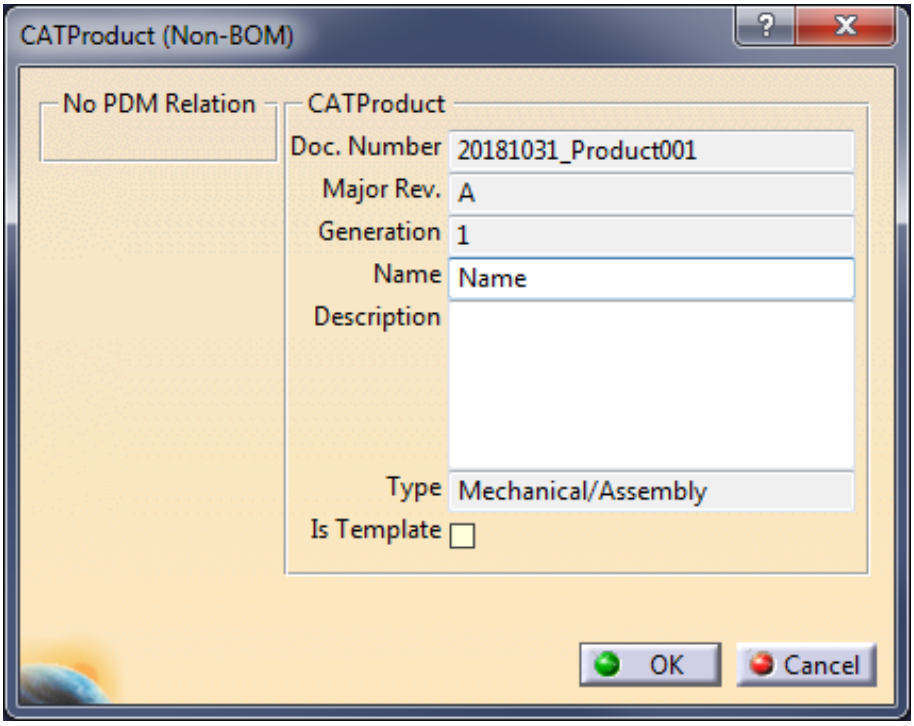
It is possible to configure the dialog to be displayed for the context action “PDM Workbench → PDM Properties”.

Example:

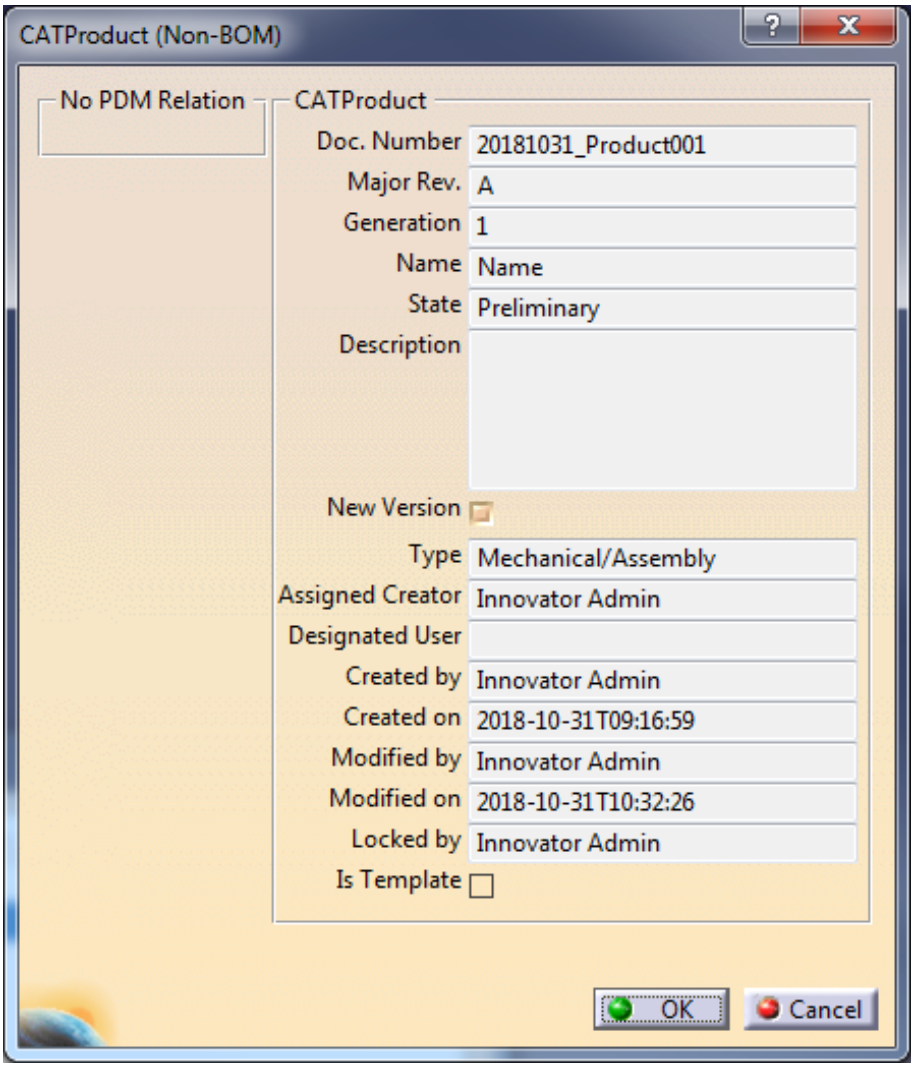
```
<catiaWindow pdmPropertiesDialog="Properties" />
```

Default value: “UpdateItem”.

Optional.



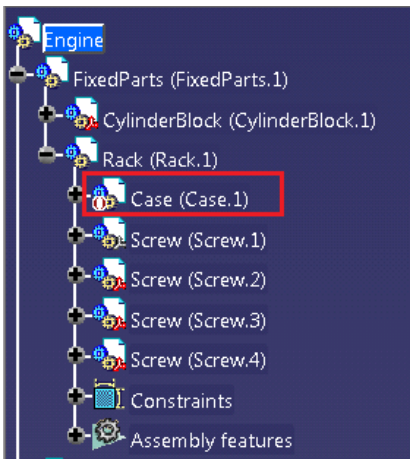
Picture 77: PDM Properties - UpdateItem



Picture 78: PDM Properties – Properties

Allow deactivated CATProduct and CATPart instances

It is possible to import and update a structure which contains deactivated nodes (“Case.1” in the picture, as opposed to “Screw.1”, where only the representation is deactivated).



Picture 79: CATProduct structure with a deactivated node

Previously, deactivated nodes were treated as not existing. With this new functionality the nodes can be treated like regular activated nodes.

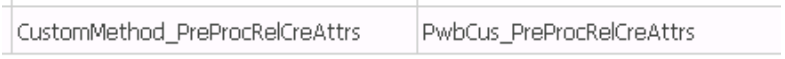
Also, the activation state of a CATPart or CATProduct instance can be passed to a custom method when the corresponding PDM relation is created, making it possible to different parameter values based on the activation state.

For switching on the management of deactivated nodes the value of the XML attribute “allowDeactivatedNodes” of the XML tag “catiaNodeBehaviorDefinitions” has to be set to “true”:

```
<catiaNodeBehaviorDefinitions ignoreLeafComponents="false"
                              allowDeactivatedNodes="true" >

    ...

</catiaNodeBehaviorDefinitions>
```

Optional.

For passing the activation state to a custom server method when a new CATIA instance is processed in the update process the server-side configuration setting “CustomMethod_PreProcRelCreAttrs” has to be set to the name of a server-side C# method, for example like this:



Picture 80: Setting for custom server method for processing activation state

```
using (var PwbServerApiObj = new PwbServerAddin.PwbServerApi(this))
{
        PwbServerApiObj.Log("PwbCus_PreProcRelCreAttrs");

        // Input information
        string Type = this.getProperty("Type");

        string LeftObjType = this.getProperty("LeftObjType");
        string LeftObjId = this.getProperty("LeftObjId");

        string RightObjType = this.getProperty("RightObjType");
        string RightObjId = this.getProperty("RightObjId");

        string InstanceIsActivatedInCad = this.getProperty("InstanceIsActivatedInCad");

        string MsgStr = "Type:'" + Type +
                        "', LeftObjType:'" + LeftObjType +
                        "', LeftObjId:'" + LeftObjId +
                        "', RightObjType:'" + RightObjType +
                        "', RightObjId:'" + RightObjId +
                        "', InstanceIsActivatedInCad:'" + InstanceIsActivatedInCad + "'";

        PwbServerApiObj.Log(MsgStr);

        Item InputPdmAttrsItem = this.getPropertyItem("InputPdmAttrs");
        if (InputPdmAttrsItem == null)
        {
                throw new Exception(
                   "PwbCus_PreProcRelCreAttrs -> InputPdmAttrsItem == null !");
        }

        IDictionary<string, string> InputPdmAttrsDict =
           PwbServerApiObj.DialogAttrsItemToDictionary(InputPdmAttrsItem);

        // Resulting output PDM attributes
        IDictionary<string, string> OutputPdmAttrsDict =
                new Dictionary<string, string>();

        foreach (KeyValuePair<string, string> Attribute in InputPdmAttrsDict)
        {
                PwbServerApiObj.Log("Attribute.Key:'" + Attribute.Key +
                                    "', Attribute.Value:'" + Attribute.Value + "'");

                OutputPdmAttrsDict.Add(Attribute.Key, Attribute.Value);
        }

        if (Type.Equals("CAD Structure"))
        {
                if (InstanceIsActivatedInCad.Equals("False"))
                {
                        // Add or modify attributes here
                }
        }
```

```
        Item OutputPdmAttrsItem =
                PwbServerApiObj.DialogAttrsDictionaryToItem(OutputPdmAttrsDict);

        return OutputPdmAttrsItem;
}
```

To get all properties of the child Item (avoid query) you have to add the setting PreProcRelInstCreAttrsGetAllChildAttrs to the settings section of the PWB Schema file:

```
<settings>
   <!-- <setting name="PreProcRelInstCreAttrsGetAllChildAttrs" value="true"/> -->
</settings>
```

PDM status information in the CATIA tree

A PDM status information can be displayed on product structure nodes within the CATIA tree. These nodes show an additional icon mask and additional text and tooltip text corresponding to some information from the PDM system.

Configuration

Edit the following dictionary file on the client, if necessary:
"<PWB Installation dir>\win_b64\code\dictionary\PWBUiCatiaMod.dico".
Remove the comment sign '#' at the beginning of the two lines

```
#CATProduct CATInit libPWBUiCatiaModLib
#ASMPRODUCT_node CATINavigModify libPWBUiCatiaModLib
```

Create two server PWB configuration settings for the CadTreeIconInfo:

Name	Value
CustomMethod_CadTreeIconInfo	Pwb_Sample_CadTreeIconInfo
CadTreeIconInfoNotInPdm	I_MaskNew| - Not in PDM| - Not in PDM

The value of the setting "CustomMethod_CadTreeIconInfo" defines the real name of the Aras Innovator server method, that you use for your customization.
A sample method for this, "Pwb_Sample_CadTreeIconInfo", exists. You can use this as the base for your own implementation.

The value of the setting "CadTreeIconInfoNotInPdm" defines the strings to be used, if a relevant CATIA node does not have a corresponding item in the PDM system (e.g. because that document was not yet stored in Aras Innovator).
The value is a multi-field string. The fields are separated by a vertical bar "|".
Field 1: The icon name (without the .bmp suffix)
Field 2: The text to be appended to the regular tree node text
Field 3: The text to be appended to the regular short help (Tooltip)
Example: *I_MaskNew*| - *Not in PDM*| - *Not in PDM*

The server method is called whenever an Aras CAD item information is retrieved by a PWB CATIA call to the Aras Innovator server. The CAD item information to be returned is provided to the server method and can be used by the server method to define the additional PDM info in the CATIA specification tree.
The method returns three strings: IconName, NodeText, HelpText (see example below).
The strings can be simple strings or multi-field strings (see "Released" case below).
Simple strings are faster processed on the client; they simply define what to show on the related CATIA node.
Multi-field strings lead to more processing on the client, but provide advanced capabilities:
Field 1: The string is used in regular cases
Field 2: The string is used, if the CATIA document in the current session is dirty (modified)

Field 3: The string is used, if the CATIA document in the current session is not dirty, but not synchronized with the Aras Innovator server information.
Strings over multiple lines (containing “\n”) are supported, but only for the HelpText wb(Tooltip) in simple strings and multi-field strings.

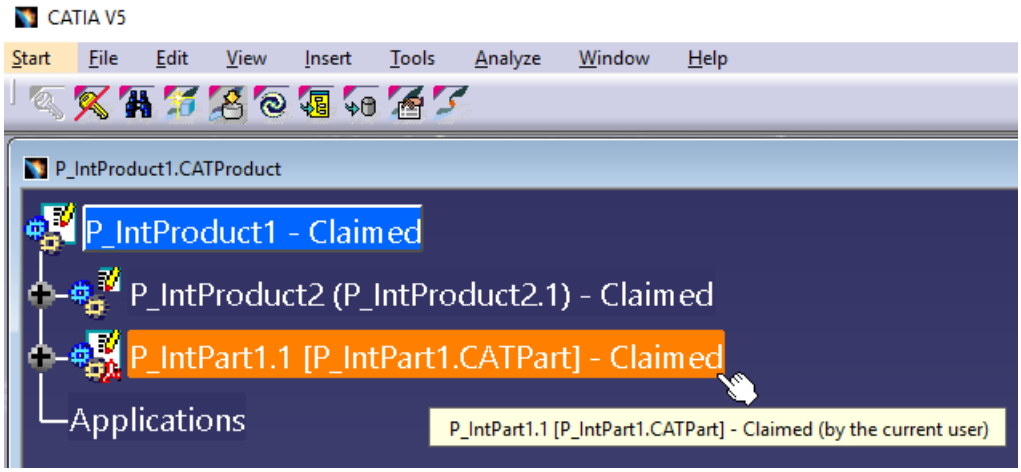
Additional Configuration when working with very large structures:
By default the icons / text in the CATIA Product Structure Navigation tree (PSN tree) is refreshed after every PDM Workbench action which could change any icon or text like claim or unclaim. To avoid these additional PSN tree refreshes you can disable this behavior with the following setting in the PWBSchema.xml file:

```
<settings>
      …
      <setting name="RefreshPsnTreeAfterAction" value="false" />
</settings>
```

If `RefreshPsnTreeAfterAction` is set to `false` the PSN tree is only refreshed if when native CATIA redraws it (like change of the workshop, …). This setting should only be used if there are performance issues about the refresh of the PSN tree.

Usage

If configured by the administrator, a PDM status information is displayed on product structure nodes within the CATIA tree:



Picture 81: PDM status information in the CATIA tree

These nodes show an additional icon mask in the upper right corner of the icon and additional text and tooltip text corresponding to some information from the PDM system.

PDM Structure Window Configuration

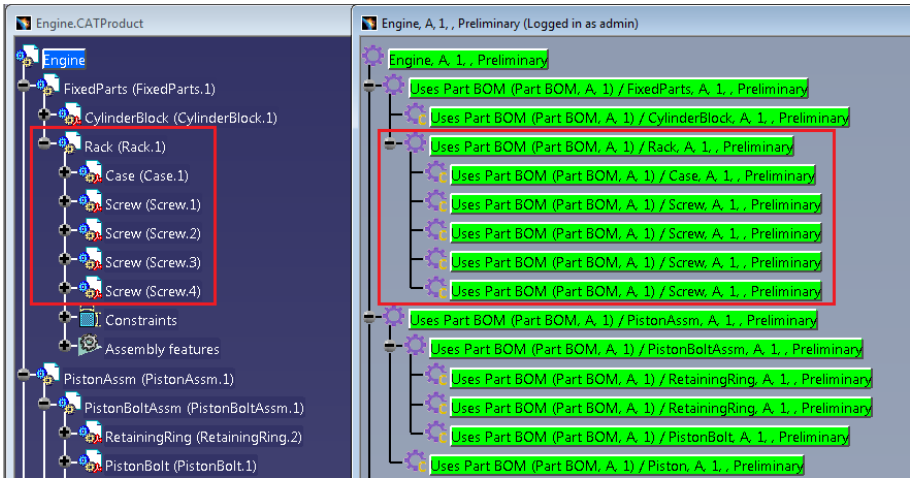
Displaying part structure instances as separate nodes

The display of the part structure in the PDM structure window can be changed such that every part instance is shown as a separate node.

The PWB Configuration item setting “UseSeparateRelationsForInstances” has to be set to “true” to switch on this functionality.

UseSeparateRelationsForInstances	true

Picture 82: Sample UseSeparateRelationsForInstances configuration



Picture 83: Every part instance is shown as separate node

Displaying attributes in PDM nodes in several lines

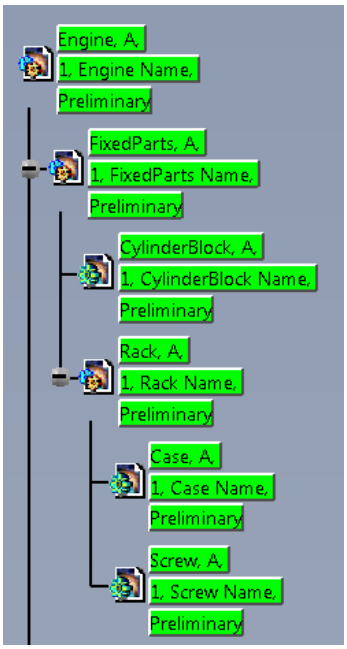
It is possible to display the PDM attribute values of nodes in the PDM structure window, like part number or part name, in several lines, as opposed to just one line.

It is also possible to define which PDM attribute values should be displayed on which line.

The Slash character (“/”) acts as a return character in the definition of the PDM attribute values to be displayed in the PDM structure window.

The following example shows two “/” characters, which means that the attribute values are displayed in three lines.

```
<description>
   <descAttribute name="item_number" />
   <descAttribute name="major_rev" />
   <descAttribute name="/" />
   <descAttribute name="generation" />
   <descAttribute name="name" />
   <descAttribute name="/" />
   <descAttribute name="state" />
</description>
```



Picture 84: PDM Node Attributes displayed in several Lines

PWB Window color

In the Schema file the background color of the PWB window can be configured. This tag contains the red, green, and blue values (0 - 255) of the color.

Example:

```
<pwbWindow>
   <pwbWindowColor red="143" green="155" blue="177" />
</pwbWindow>
```

If not set, then the CATIA V5 standard color will be used.

Optional.

Preselection of Nodes

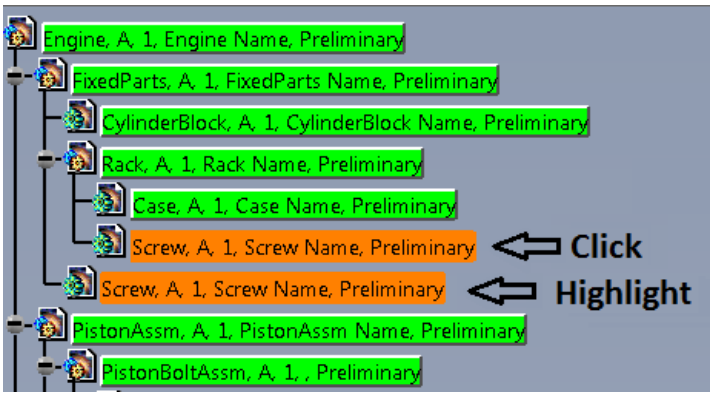
It is possible to switch off the automatic highlight of the PDM tree nodes which represent the same underlying PDM node.

In the Schema file you have to set the attribute `preselectSamePdmNode="false"` in the *pwbWindow* XML tag in order to change the behavior from the default (highlighting all related nodes) to not highlighting them.

Example:

```
<pwbWindow preselectSamePdmNode="false" >
   <pwbWindowColor red="143" green="155" blue="177" />
</pwbWindow>
```

In the default behavior related nodes are also highlighted when the user clicks on a PDM node.



Picture 85: Default highlight behavior

Context action "Delete relation"

PDM relations can be deleted in the PDM structure window with a single context menu action, even if the PDM relations are not displayed in the structure.

For any item the context action "Delete Relation" can be added in the Schema file:

```
<contextAction name="DeleteRelation" usedIn="PdmWindow" />
```

Comparing PDM Structure Trees

It is possible to compare two structures, or two generations of the same structure, displaying the differences between these two structures.

The functionality can be configured with the "pwbCompareStructureWindow" tag and the "nodeColors" sub-tag in the file "PWBSchema.xml":

```
<!-- possible colors for nodes in 'compare structure window':
"green", "red", "magenta", "cyan", "blue", "yellow", "black",
"white", "background" -->

<pwbCompareStructureWindow red="200" green="200" blue="150"
                           showSameChildNodes="false" >

   <nodeColors additionalNodes="green" missingNodes="red"
               sameNodesDifferentVersion="magenta"
               sameNodes="background" />

</pwbCompareStructureWindow>
```

The attributes "red", "green" and "blue" of the tag "pwbCompareStructureWindow" define the respective value, from 0 to 255, of the primary color. The three values define the color of the window background.

The attribute "showSameChildNodes" defines whether nodes which exist in both structures should be shown.

The attributes "additionalNodes", "missingNodes", "sameNodesDifferentVersion", and "sameNodes" of the tag "nodeColors" define the color of additional nodes, missing nodes, same nodes with a different generation, and the same nodes of one structure compared to the other structure, respectively. The values can be chosen from the fixed set "green", "red", "magenta", "cyan", "blue", "yellow", "black", "white", and "background".

Optional.

To use the functionality the context action "Compare with Assembly" has to be defined for "Part/Assembly" in the part BOM Part Structure Data Model and for "CAD/Mechanical/Assembly" in the CAD Document Structure Data Model.

Example:

```
<contextAction name="CompareStructure" usedIn="PdmWindow" />
```

Selecting Nodes in the PDM Structure Window

It is possible to select specific child nodes of a structure by defining logical AND or OR combinations of values of different attributes.

The dialog form “SelectChildNodes” has to be defined. It contains the attributes which can be used for selecting the nodes. This is an example definition of the dialog:

```
<form name="SelectChildNodes">
   <formAttribute name="item_number" widgetType="ComboBox" ... />
   <formAttribute name="major_rev" widgetType="ComboBox" ... />
   <formAttribute name="generation" widgetType="ComboBox" ... />
   <formAttribute name="name" widgetType="ComboBox" ... />
   <formAttribute name="state" widgetType="ComboBox" ... />
   <formAttribute name="description"
                  widgetType="MultiLineEditor" ... />
   <formAttribute name="created_on" widgetType="ComboBox" ... />
   <formAttribute name="modified_on" widgetType="ComboBox" ... />
   <formAttribute name="created_by_id" widgetType="ComboBox" ... />
   <formAttribute name="modified_by_id" widgetType="ComboBox" ... />
   <formAttribute name="locked_by_id" widgetType="ComboBox" ... />

   <formAttribute name="PwbSelectChildNodesCondition"
                  widgetType="RadioButtons" mode="update"
                  visibleLength="15" required="true"
                  entryAllowed="true" />
</form>
```

In addition to this definition the context action “Select Nodes” has to be defined for “Part/Assembly” or for “CAD/Mechanical/Assembly”.

Example:

```
<contextAction name="SelectNodes" usedIn="PdmWindow" />
```

Alternative Icons for PDM Structure Nodes

It is possible to define different icons for different PDM attribute values.

To switch on the functionality the value of the XML attribute “attrDepIcons” has to be set to “true”:

```
<pwbWindow preselectSamePdmNode="true" attrDepIcons="true" >
   <pwbWindowColor red="143" green="155" blue="177" />
</pwbWindow>
```

In addition to this, for each PDM item that should have attribute-dependent icons the definition string in the “icon” XML tag has to be changed to contain the PDM attributes whose values the icon should be dependent of. The syntax is to write the PDM attribute name contained in the square brackets (“[“ and “]”).

This is an example.

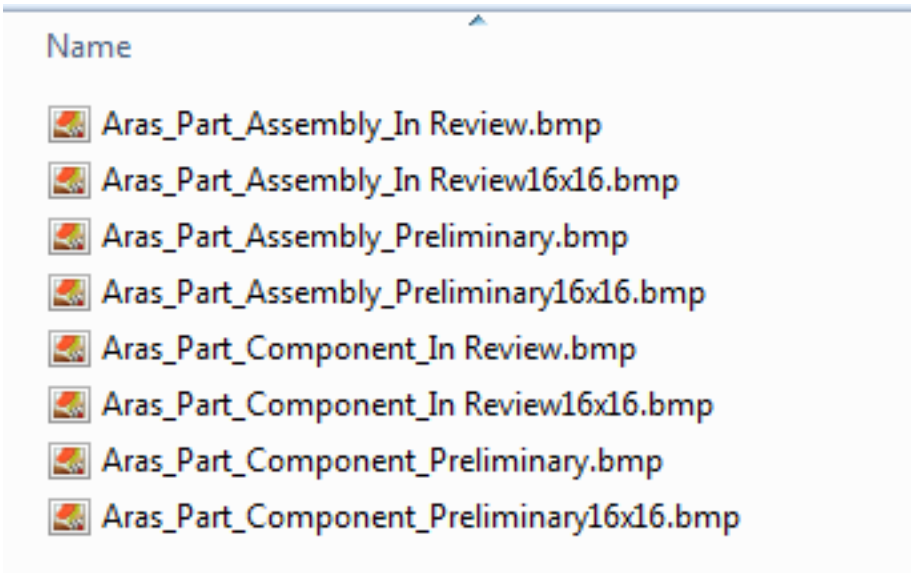
```
<object name="/Part/Assembly"
        displayName="NLS_Assembly" icon="Aras_Part" >
```

➔

```
<object name="/Part/Assembly"
        displayName="NLS_Assembly"
        icon="Aras_Part_[classification]_[state]" >
```

If this functionality is switched on the icons with the corresponding names will have to exist in the “win_b64\resources\graphic\icons\normal” directory, otherwise the PDM nodes will be displayed without icons.

These are example icon names:



Picture 86: Example icon names

Expand Configuration

Context action “Expand”

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="Expand" usedIn="PdmWindow|QueryDialog" />
```

Context action “Expand Multiple Levels”

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="MultipleExpand" usedIn="PdmWindow" />
```

Context action “Custom Expand”

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="CustomExpand" usedIn="PdmWindow" />
```

The custom expand for the object class has to be defined:

```
<customExpand>
   <pdmTreeRef name="PartToCatiaFilePdmTree" />
</customExpand>
```

The PDM tree has to be defined:

```
<pdmTree name="PartToCatiaFilePdmTree"
         displayName="NLS_PartToCatiaFilePdmTree">

   <pdmTreeRel class="Part CAD" direction="LEFT_TO_RIGHT">

      <pdmTreeObj
class="/CAD/Mechanical/Assembly|/CAD/Mechanical/Part|/CAD/cgr|/CAD
/Mechanical/Drawing|/CAD/Mechanical/cgr|/CAD/Mechanical/CatiaV4Mod
el">

         <pdmTreeObjPartToFileInfo partClass="Part|/Part/Assembly"
             fileClass="/CAD/Mechanical/Assembly"
             fileType="Main" />

         <pdmTreeObjPartToFileInfo partClass="Part|/Part/Assembly"
             fileClass="/CAD/Mechanical/Drawing"
             fileType="Auxiliary" />


         <pdmTreeObjPartToFileInfo partClass="/Part/Component"
             fileClass="/CAD/Mechanical/Part"
             fileType="Main" />

         <pdmTreeObjPartToFileInfo partClass="/Part/Component"
             fileClass="/CAD/Mechanical/cgr"
             fileType="Main" />

         <pdmTreeObjPartToFileInfo partClass="/Part/Component"
             fileClass="/CAD/Mechanical/CatiaV4Model"
             fileType="Main" />


         <pdmTreeObjPartToFileInfo partClass="/Part/Component"
             fileClass="/CAD/Mechanical/Drawing"
             fileType="Auxiliary" />

      </pdmTreeObj>

   </pdmTreeRel>

</pdmTree>
```

Context action "De-Expand"

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="DeExpand" usedIn="PdmWindow" />

<deExpand legacyMode="false" onlyChildNodes="false" />
```

Default values: "false" and "false"

Optional. Possible values: "true", or "false".

Context action "Expand Multiple Levels including Bom Children"

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="MultipleExpandWithBomChildren" usedIn="PdmWindow" />
```

Explicit display and control of 'AsSaved' and 'Current' expand resolutions

If a CAD structure is expanded with the 'Current' expand resolution the PDM structure window contains information about which generations of the CAD documents are saved (which generation would be retrieved with the 'AsSaved' expand resolution.

Also, in the update process the user can define whether the CAD Structure relations should be moved to the current generation of the child CAD document or not.

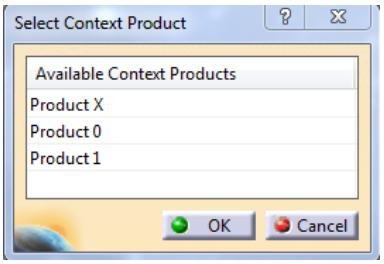
This information is shown by default. It can be switched off by setting the server configuration ‘ShowCadStrcExpResChildDocGenInfo’ to ‘false’.

Manage Context Products

A user can only work in one Context Product at one time. This Context Product is used to store newly created files to the correct vault.

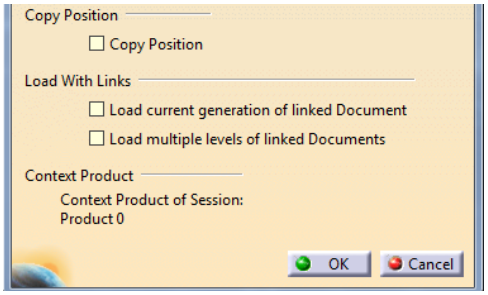
If the functionality is enabled, there must be at least one valid Context Product for every user.

The Context Product is set during login process in CATIA. If there are multiple valid Context Products, the user must select one. If there is no Context Product available for the user, the user cannot login.



Picture 87: Select Context Product

The currently used Context Product can be seen in the Options dialog of the PDM Workbench.



Picture 88: Currently used Context Product

Configuration

The possible Context Products for a user have to be determined in a custom method. The name of the custom method has to be set to the PWBConfiguration setting “CustomMethod_ContextProduct”. Setting the name of the custom method to the PWBConfiguration setting also enables the rest of the functionality.

CustomMethod_ContextProduct	PwbCus_ContextProductMethod

Picture 89: Sample CustomMethod_ContextProduct configuration

Sample Method:

```
Innovator InnovatorObj = this.getInnovator();

var userID = InnovatorObj.getUserID();
```

```
Item result = InnovatorObj.newItem("result");
result.setAttribute("ContextProduct", "Product X");
result.setAttribute("ContextProductId", "12345678901234567890");

var rand = new Random();
int count = rand.Next(5);
for (int i = 0 ; i < count ; i++)
{
   Item x_result = InnovatorObj.newItem("result");
   x_result.setAttribute("ContextProduct", "Product " + i.ToString());
   x_result.setAttribute("ContextProductId",
      (1234567890123456789 *(i+1)).ToString());
   result.appendItem(x_result);
}
return result;
```

The currently used `ContextProduct` and the corresponding `ContextProductId` is available in every custom methods that provides the cadProperties, like `CustomMethod_PreProcCreDlgAttrs`.

Use Environment variable for Context Product

A designer must select a Context Product during selection of the CATIA start script. To avoid a second select it is possible to use an environment variable to set the Context Product.

Configuration

Set the environment variable:

`PWB_CONTEXT_PRODUCT_ID=<Aras Id of the Context Product>`

As the name of the Context Product is shown in the PWB Options dialog you can also set the environment:

`PWB_CONTEXT_PRODUCT=<Display name of the Context Product>`

Note:
The functionality is enabled by setting the PWB server configuration "CustomMethod_ContextProduct" to a custom method. The environment variables are only evaluated if this setting is not empty.

Naming Configuration - Numbering

CadDocNumberAttr

The PWB Configuration item setting "CadDocNumberAttr" contains the name of the "CAD Document Number" attribute of the item type "CAD Document".

CadDocNumberAttr	item_number

Picture 90: Sample CadDocNumberAttr configuration

Default value: "item_number"

Optional.

PartNumberAttr

The PWB Configuration item setting “PartNumberAttr” contains the name of the “Part Number” attribute of the item type “Part”.

PartNumberAttr	item_number

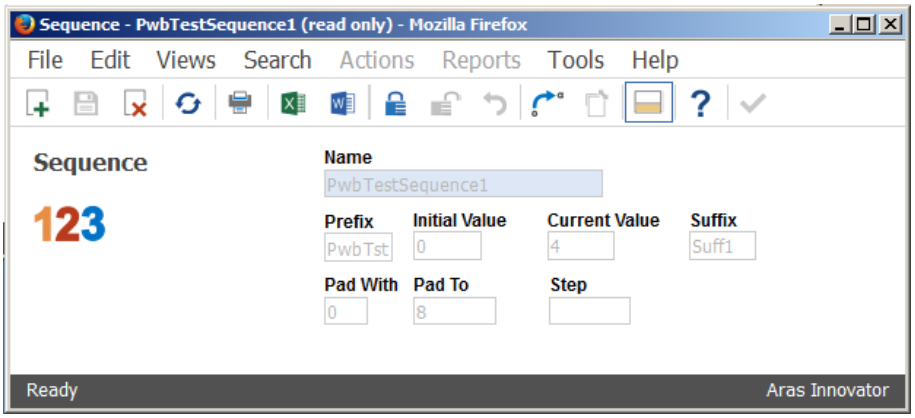
Picture 91: Sample PartNumberAttr configuration

Default value: “item_number”

Optional.

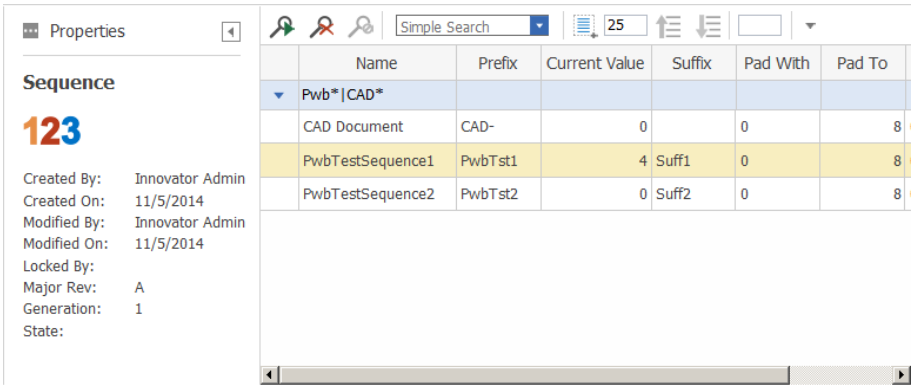
Autoname Support using Aras Innovator Sequence Items

First sequence items which should be used for the autoname functionality need to be created:



Picture 92: Sample Sequence item

The following sequence items will be used in the configuration example:



Picture 93: Sequence items used in example

Then the sequence items to be used need to be configured in the Schema file:

First an attribute with a data source which contains the names of the sequence items needs to be defined:

```
<attribute name="pwbAutonameRule" displayName="NLS_AutonameRule"
           dataSource="AutonameRules" />
```

```
<dataSource name="AutonameRules" type="ValueList">
   <value name="PwbTestSequence1" displayName="" />
   <value name="PwbTestSequence2" displayName="" />
   <value name="CAD Document" displayName="" />
</dataSource>
```

Then a corresponding form attribute has to be included in the login dialog …

```
<form name="Login" info="ShowOnlyLoginData" >
   <frame displayName="NLS_UserData">
      ...
      <formAttribute name="pwbAutonameRule"
                     widgetType="ComboBox"
                     mode="update" visibleLength="15"
                     required="false" entryAllowed="false" />
   </frame>
</form>
```

… and in the “Set PDM Configuration” dialog.

```
<form name="PdmSessionConfig">
   <formAttribute name="pwbAutonameRule" widgetType="ComboBox"
                  mode="update" visibleLength="15" required="false"
                  listViewRelevant="true" />
</form>
```

This will enable the user to select a sequence item name as an autoname rule either at login or later while working in the PDM Workbench session.

In order for the “Set PDM Configuration” dialog to appear the setting “SetSessionConfig” has to be removed from the “removeToolbarIcons” definition:

```
<removeToolbarIcons>
   <!-- "LocalWorkspace", "Register", "Update", "Synchronize", "Refresh",
        "SetSessionConfig", "NewPwbWindow", "About"
     -->
   <!-- <icon name="LocalWorkspace" /> -->
   <icon name="Register" />
   <!-- <icon name="Update" /> -->
   <icon name="Synchronize" />
   <!-- <icon name="Refresh" /> -->
   <!-- <icon name="SetSessionConfig" /> -->
   <icon name="NewPwbWindow" />
   <!-- <icon name="About" /> -->
</removeToolbarIcons>
```

The setting “UseServerMethodsForAutoname” has to be set to “false” in the active PWB Configuration item.

Optional.

Autoname functionality can use a server method

The autoname functionality can use a server method for obtaining a PDM-generated part or document number value.

The autoname functionality has to be configured in the file “PWBSchema.xml”.

The server method to be used needs to be configured in the Schema file:

First an attribute with a data source which contains the name of the server method needs to be defined:

```
<attribute name="pwbAutonameRule" displayName="NLS_AutonameRule"
           dataSource="AutonameRules" />


<dataSource name="AutonameRules" type="ValueList">
   <value name=" PwbAutonameMethod1" displayName="" />
</dataSource>
```

Then a corresponding form attribute has to be included in the login dialog …

```
<form name="Login" info="ShowOnlyLoginData" >
   <frame displayName="NLS_UserData">
      ...
      <formAttribute name="pwbAutonameRule"
                     widgetType="ComboBox"
                     mode="update" visibleLength="15"
                     required="false" entryAllowed="false" />
   </frame>
</form>
```

… and in the “Set PDM Configuration” dialog.

```
<form name="PdmSessionConfig">
   <formAttribute name="pwbAutonameRule" widgetType="ComboBox"
                  mode="update" visibleLength="15" required="false"
                  listViewRelevant="true" />
</form>
```

This will enable the user to select a sequence item name as an autoname rule either at login or later while working in the PDM Workbench session.

In order for the “Set PDM Configuration” dialog to appear the setting “SetSessionConfig” has to be removed from the “removeToolbarIcons” definition:

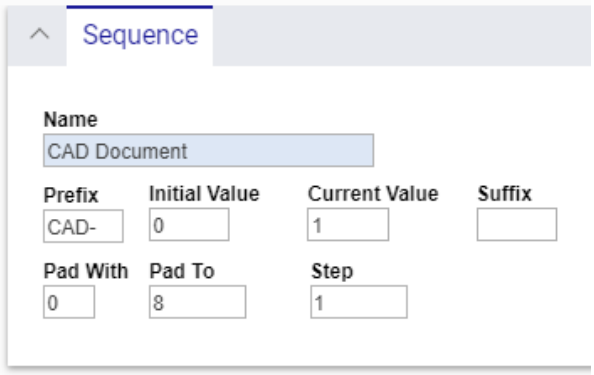
```
<removeToolbarIcons>
   <!-- "LocalWorkspace", "Register", "Update", "Synchronize", "Refresh",
        "SetSessionConfig", "NewPwbWindow", "About"
     -->
   <!-- <icon name="LocalWorkspace" /> -->
   <icon name="Register" />
   <!-- <icon name="Update" /> -->
   <icon name="Synchronize" />
   <!-- <icon name="Refresh" /> -->
   <!-- <icon name="SetSessionConfig" /> -->
   <icon name="NewPwbWindow" />
   <!-- <icon name="About" /> -->
</removeToolbarIcons>
```

The setting “UseServerMethodsForAutoname” has to be set to “true” (default) in the active PWB Configuration item.

An additionally server method whose name corresponds to the name configured in the file “PWBSchema.xml” (e.g. `"PwbAutonameMethod1"`; `"Server-Side"`; `"C#"`; `"Execution allowed to World"`) has to be defined on the Aras Innovator server.

The server method can use information from standard CATIA attributes of the CATIA files to be imported to PDM, or values from PDM Workbench dialogs.

In this example the Aras Sequence “CAD Document” is used for generating the number.



Picture 94: Sequence item “CAD Document”

Please check “Pwb_Sample_AutonameMethod” for a sample on which you can build your own custom autoname functionality.

Initial Version Strings

InitialVersionCadDoc

The PWB Configuration item setting “InitialVersionCadDoc” is the initial version string for the item type “CAD Document”.

InitialVersionCadDoc	A

Picture 95: Sample InitialVersionCadDoc configuration

Optional.

InitialVersionPart

The PWB Configuration item setting “InitialVersionPart” is the initial version string for the item type “Part”.

InitialVersionPart	A

Picture 96: Sample InitialVersionPart configuration

Optional.

Promote States

Context action “Promote”

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="Promote" usedIn="PdmWindow" />
```

PromoteSourceStates

The PWB Configuration item setting “PromoteSourceStates” is a list of the promote source states, separated by “|”.

Picture 97: Sample PromoteSourceStates configuration

Default value: “Preliminary|In Review”

Optional.

PromoteTargetStates

The PWB Configuration item setting “PromoteTargetStates” is a list of the promote target states, separated by “|”.

Picture 98: Sample PromoteTargetStates configuration

Default value: “In Review|Released”

Optional.

PromotePartSourceStates

The PWB Configuration item setting “PromotePartSourceStates” is a list of the promote source states for the item type Part, separated by “|”.

Picture 99: Sample PromotePartSourceStates configuration

This value will overwrite the default value of the PWB Configuration item setting “PromoteSourceStates”.

The settings “PromotePartSourceStates” and “PromotePartTargetStates” have to be defined together to set the Life Cycle States for the item type Part.

Optional.

PromotePartTargetStates

The PWB Configuration item setting “PromotePartTargetStates” is a list of the promote target states for the item type Part, separated by “|”.

Picture 100: Sample PromotePartTargetStates configuration

This value will overwrite the default value of the PWB Configuration item setting “PromoteTargetStates”.

The settings “PromotePartSourceStates” and “PromotePartTargetStates” have to be defined together to set the Life Cycle States for the item type Part.

Optional.

PromoteCADSourceStates

The PWB Configuration item setting “PromoteCADSourceStates” is a list of the promote source states for the item type CAD, separated by “|”.

PromoteCADSourceStates	Preliminary|In Review 3

Picture 101: Sample PromoteCADSourceStates configuration

This value will overwrite the default value of the PWB Configuration item setting “PromoteSourceStates”.

The settings “PromoteCADSourceStates” and “PromoteCADTargetStates” have to be defined together to set the Life Cycle States for the item type CAD.

Optional.

PromoteCADTargetStates

The PWB Configuration item setting “PromoteCADTargetStates” is a list of the promote target states for the item type CAD, separated by “|”.

PromoteCADTargetStates	In Review 3|Released 3

Picture 102: Sample PromoteCADTargetStates configuration

This value will overwrite the default value of the PWB Configuration item setting “PromoteTargetStates”.

The settings “PromoteCADSourceStates” and “PromoteCADTargetStates” have to be defined together to set the Life Cycle States for the item type CAD.

Optional.

Standard Part Functionality

StandardPartAdmin

The PWB Configuration item setting “StandardPartAdmin” defines the standard part administrator identity.

Only a standard part administrator can create or modify standard parts. A standard part administrator is defined as every identity which belongs to the identity which is set as the setting “StandardPartAdmin”. By default it is the identity “Standard Part Administrator”, which is added with the PDM Workbench installation:

StandardPartAdmin	Standard Part Administrator

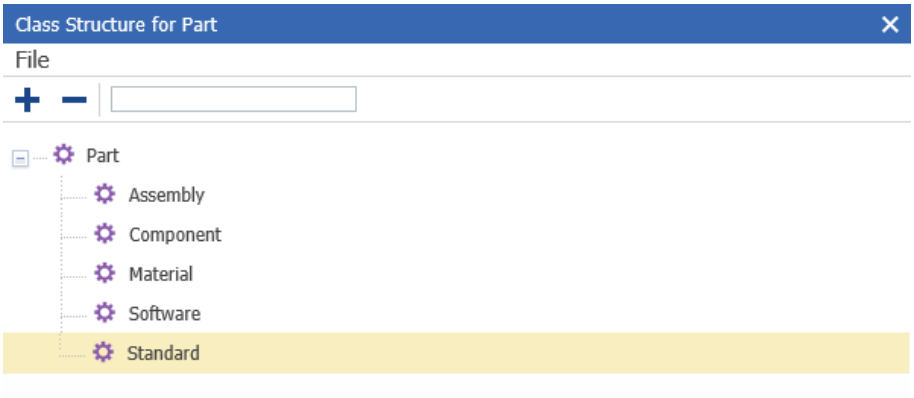
Picture 103: Sample StandardPartAdmin configuration

By default the “Innovator Admin” identity is a standard part administrator.

Standard Part functionality for BOM Part Structure Data Model

In part structure mode, it is possible to define part items and their corresponding CAD document items as standard parts. Standard parts are supposed to be parts which are used in a wide variety of different contexts and which are generally not modified by the designer, only used in the product structures that the designer works on.

An administrator has to add the SubClass “Standard” to the “Part” ItemType of Aras Innovator:



Picture 104: SubClass “Standard”

This SubClass “Standard” must be used for all Part items which should be considered as a standard part. It is NOT correct to use a “Component” Part item, attach a CAD item and just mark that CAD item as “is_standard”.

The CATParts which are related to standard parts can either be downloaded like the CATIA files which are related to other parts, or they can reside in a local directory which is accessible to CATIA V5.

This setting in the file “PWBSchema.xml” defines that the standard part CATParts are downloaded to the PWB_XMAP directory:

```
<standardPartFiles download="true" />
```

Optional.

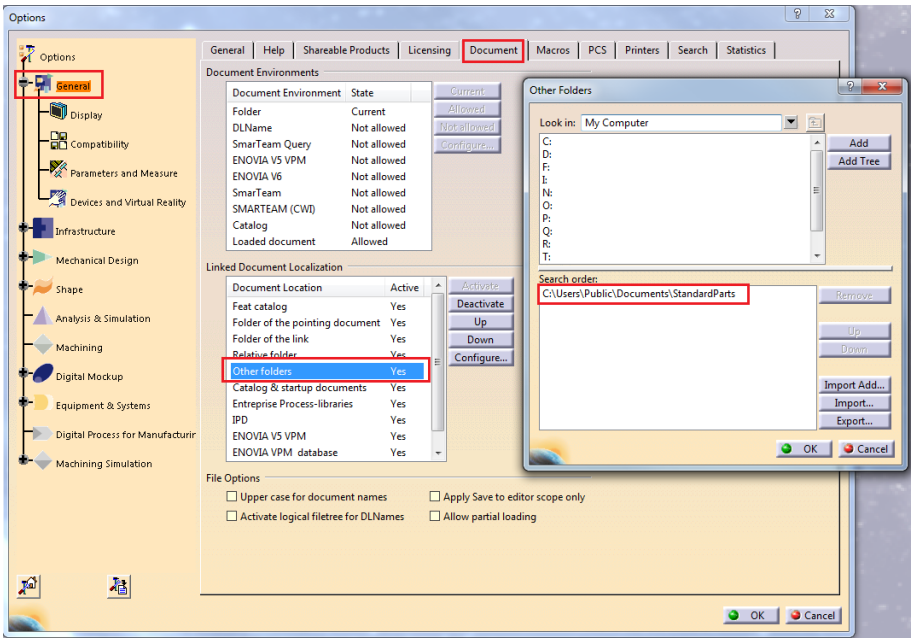
This setting defines that they are not downloaded, but taken from a local directory:

```
<standardPartFiles download="false"
                   localDir="C:\Users\Public\Documents\StandardParts" />
```

Optional.

For this setting three conditions need to be fulfilled:

1. The defined directory is accessible in the CATIA V5 environment.
2. The standard part CATPart files reside in that directory.
3. CATIA V5 needs to be set up to be able to use files from that directory.



Picture 105: Making CATParts in a local folder accessible

Another setting makes it possible to import structures containing standard part CATParts to PDM even if those standard parts have not been loaded in the PDM Workbench session.

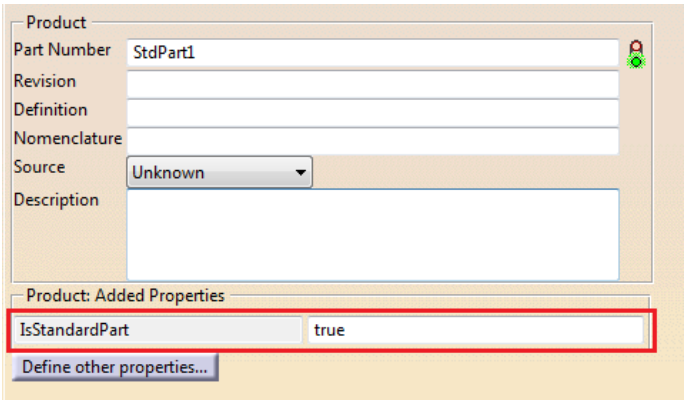
Normally CATIA files which are not loaded from PDM are treated as new items, and new CAD documents and parts are created for them in the update process. If CATParts contain a certain definition as a user-defined attribute they are treated as standard parts, and the update process queries for existing standard part items in the database instead of trying to create a new part item. If such a standard part item is found it is related to the parent part.

In the file “PWBSchema.xml” it is possible to define the name of the user-defined attribute which defines a standard part CATPart file, for instance “IsStandardPart”:

```
<standardPartUserDefPropAttribute name="IsStandardPart" />
```

Optional.

A user-defined attribute with the same name has to be defined in the CATPart file. If the value is any of the strings “true”, “TRUE”, or “1”, then the CATPart is considered to be a standard part CATPart.



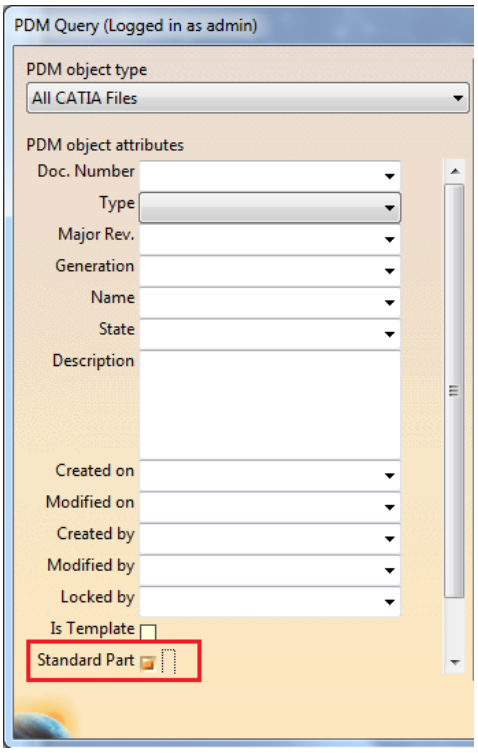
Picture 106: Defining a CATPart as a standard part

In that case the update process does not try to create a new part which corresponds to the CATIA document, but it queries for an existing standard part in PDM instead.

Standard Part functionality for CAD Document Structure Data Model

The standard part functionality has been extended to work with CAD document structures.

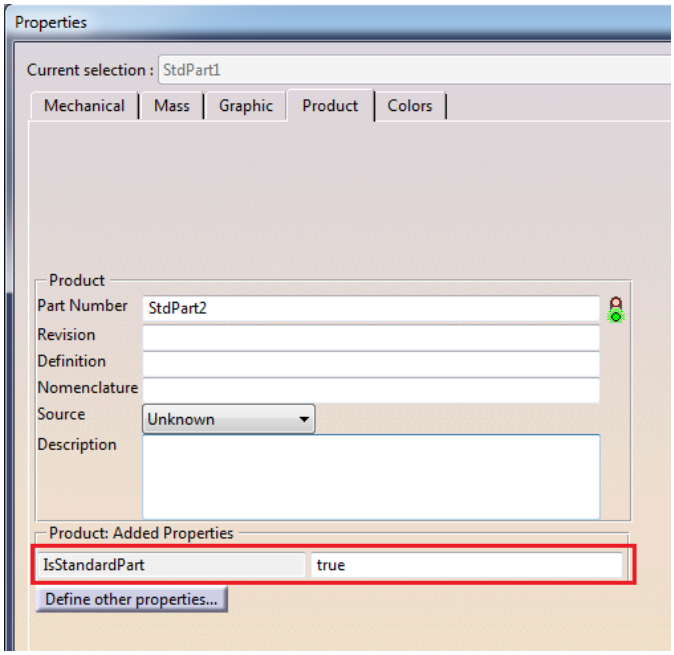
There is a new check box which defines whether a CAD document is defined as a standard part item:



Picture 107: "Standard Part" check box for CAD documents

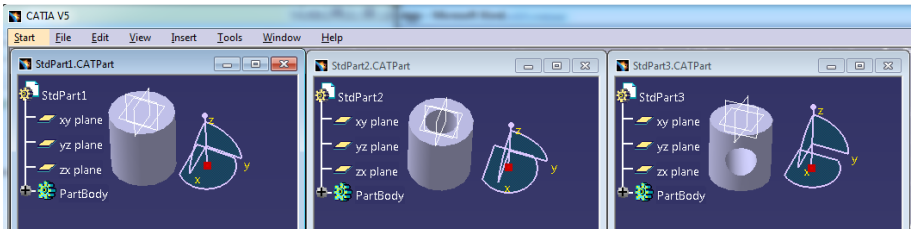
As in the part structure mode standard part items are treated differently than regular CAD document items. Standard part CATParts (CATProducts are not allowed) are defined by two things:

1. The PDM attribute "is_standard" ("Standard Part") is set to "1".
2. In the CATPart there is a user-defined CATIA property with the name "IsStandardPart" and the value of "true".



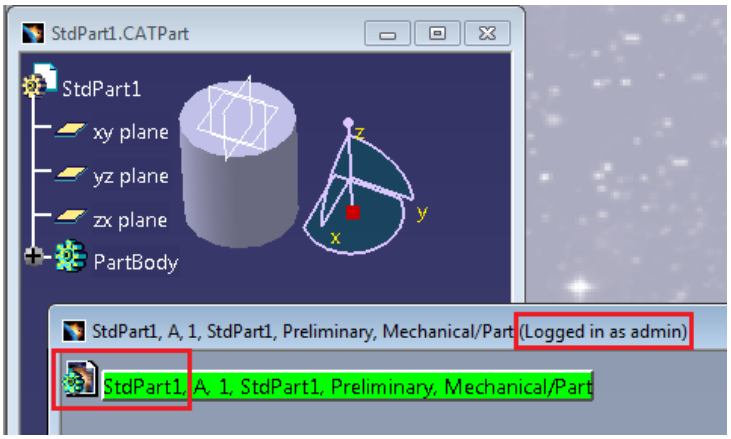
Picture 108: “IsStandardPart” user-defined property

In this example there are three CATParts which are defined as standard parts: “StdPart1.CATPart”, “StdPart2.CATPart”, and “StdPart3.CATPart”:



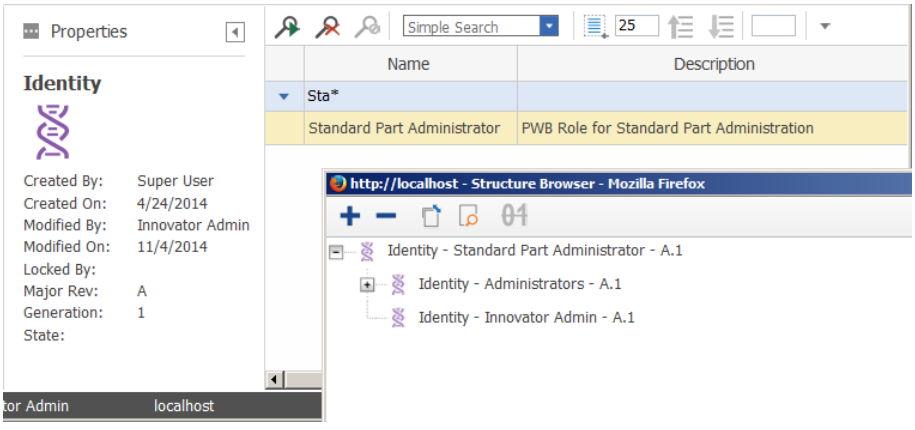
Picture 109: Three example standard part CATParts

Standard part items can only be created by a user which is defined as standard part administrator.



Picture 110: User is logged in as administrator

By default “Innovator Admin” is a standard part administrator, that is, a member of the identity “Standard Part Administrator”:



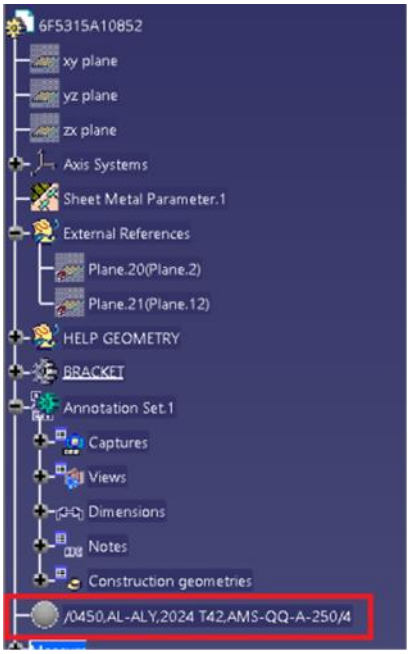
Picture 111: The Standard Part Administrator identity

Material

This functionality reads used materials of a CATPart and provides a custom method to handle this information in Aras Innovator.

There are multiple possibilities in CATIA where materials can be specified, only the following locations are checked according to the following rules:

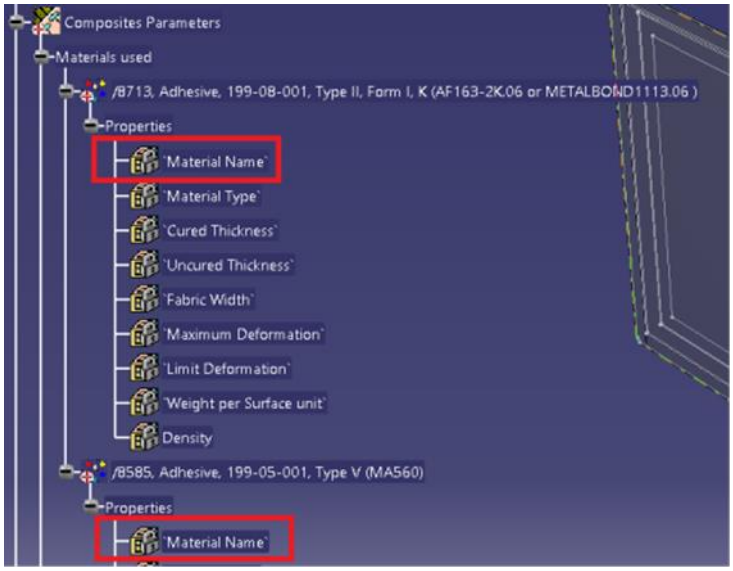
1) Look for Material at CATPart.



Picture 112: Material located at CATPart

If there is a Material we take this material and stop.

2) If there is no Material at CATPart level, look for materials in “Composites Parameters”.



Picture 113: Material located at Composite Parameters

Read out all Material Names from the “Composites Parameters”.

3) If there is no Material at CATPart and “Composites Parameters”

Picture 114: Material located at Bodies

Read out the Material information at the available Bodies.

Configuration

Create a custom server method to handle the material information and set the value of the PWB Configuration setting “CustomMethod_SaveUsedMaterials” to your method name:

CustomMethod_SaveUsedMaterials	PWBCus_SaveUsedMaterials

Picture 115: Sample CustomMethod_SaveUsedMaterials configuration

Template custom method “PWBCus_SaveUsedMaterials”:

```
using (var PwbServerApiObj = new PwbServerAddin.PwbServerApi(this))
{
        string CAD_Id = this.getID();
        string CAD_Class = this.getType();
        PwbServerApiObj.Log(
                "PWBCus_SaveUsedMaterials -> CAD_Id:'" +
                CAD_Id + "', CAD_Class:'" + CAD_Class + "'");

        string Part_Id = this.getAttribute("Part_OBID", "");
        string Part_Class = this.getAttribute("Part_Class", "");

        PwbServerApiObj.Log(
                "PWBCus_SaveUsedMaterials -> Part_Id:'" +
                Part_Id + "', Part_Class:'" + Part_Class + "'");

        int MaterialCount = 0;
        int.TryParse(this.getAttribute("materialCount"),
           System.Globalization.NumberStyles.Integer,
```

```
            System.Globalization.CultureInfo.InvariantCulture,
            out MaterialCount);

        for (int i = 0; i < MaterialCount; i++)
        {
                Item material = this.getPropertyItem("material_" + i.ToString());
                if (material == null)
                {
                        continue;
                }
                string MaterialName = material.getAttribute("name", "");
                string IsVisible = material.getAttribute("visibility", "");
                string Location = material.getAttribute("location", "");
                PwbServerApiObj.Log(
                        "PWBCus_SaveUsedMaterials -> material:'" +
                        MaterialName +
                        "', IsVisible:'" + IsVisible +
                        "', Location:'" + Location + "'");
        }

        Item result = getInnovator().newItem("result");
        result.setAttribute("message", "materials handled");

        return result;
}
```

Management of CATIA Templates

TemplateFileAdmin

The PWB Configuration item setting “TemplateFileAdmin” defines the template file administrator identity.

Mandatory. Can be removed if the following server events are removed:

PwbCheckTemplateFilePermissions	CSharp	6	World	Check user permissions to change template files
PwbCheckTemplateFilePermissions	CSharp	6	World	Check user permissions to change template files
PwbCheckTemplateFilePermissions	CSharp	6	World	Check user permissions to change template files
PwbCheckTemplateFilePermissions	CSharp	6	World	Check user permissions to change template files
PwbCheckTemplateFilePermissions	CSharp	6	World	Check user permissions to change template files

Picture 116: Template file administrator

Server configuration

CAD documents with the attribute “is_template” having the value “1” and their related file items have to be imported to PDM. This can be done with a batch process, or with the PDM Workbench integration itself.

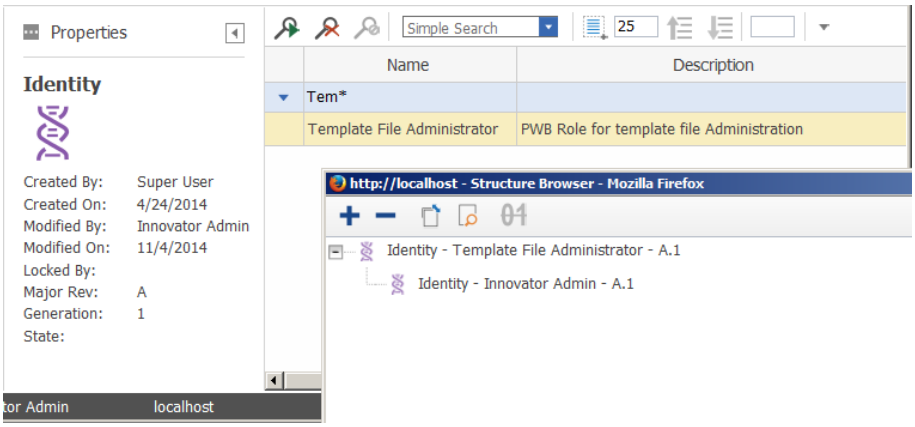
For this, the user has to be in a special template file administrator group.

This group can be configured as follows:

The configuration variable “TemplateFileAdmin” in the “Settings” tab of the active PWB configuration item has to contain the name of an identity as its value, for instance “Template File Administrator”:

TemplateFileAdmin	Template File Administrator

Picture 117: Template file administrator configuration variable



Picture 118: The Template File Administrator identity

If this identity contains the user which is currently logged in, then the user is a template file administrator and has the rights to create and modify template file documents.

For regular users existing template file documents are read-only (black text background).

One way of creating template file documents in Innovator with PDM Workbench is this:

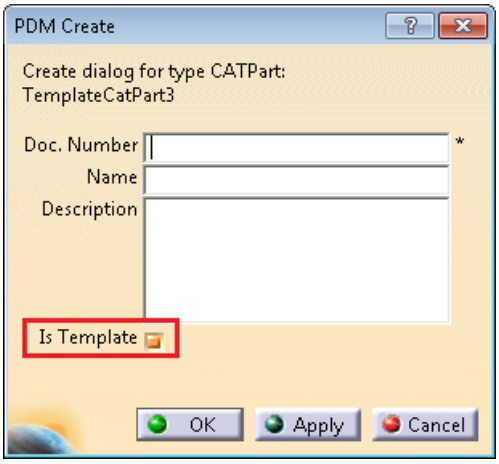
1. Make sure the following settings are set in the active PWB configuration item, at least temporarily:

UseBomPartStructure	false
ShowCreateDialogsDuringUpdate	true

Picture 119: PWB Configuration variables for template creation

2. Log in to Innovator with PDM Workbench as a template file administrator.
3. Open a CATIA file which is supposed to be used as a PDM template document in CATIA V5.
4. Click on the Update icon in the PDM Workbench toolbar to create the CAD document and to upload the file.

Since the two settings are set to the values described in step 1 only a CAD document will be created, and a create dialog is shown to the user:

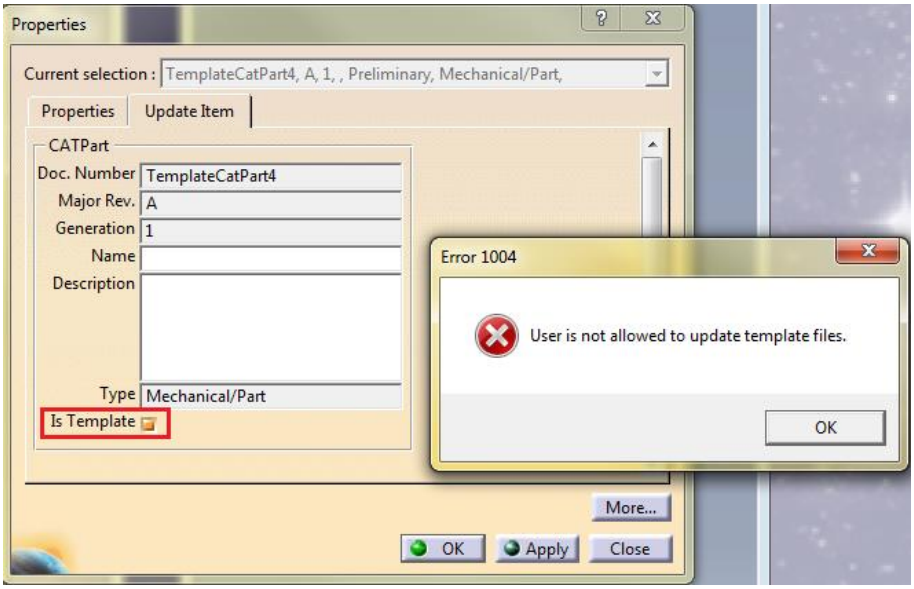


Picture 120: Create dialog containing "Is Template" checkbox

The document number has to be entered, and it is important that the "Is Template" attribute is checked.

Another possibility would be to first create the template file as a regular file, and to change the “is_template” attribute afterwards. In this case the “ShowCreateDialogsDuringUpdate” setting does not have to be set to “true”. Even the “UseBomPartStructure” setting can be set to “true”, but in this case a Part item is created, too. This Part item may have to be deleted later, because it should probably not be in the bill of materials.

Only a template file administrator can change the “is_template” attribute value of a CAD document item. A regular user will get this error message:



Picture 121: Template file creation error message

For a regular user template file CAD document items are read-only, and they also can not be claimed by a regular user.

Client configuration

In the Schema file the configuration *templateFiles* has to exist and it has to contain the attribute `loadFrom="PDM"`:

```
<templateFiles loadFrom="PDM"
               catPrt="PwbCatPrtTmplFileNames"
               catPrd="PwbCatPrdTmplFileNames"
               catDrw="PwbCatDrwTmplFileNames" />
```

The values of the XML attibutes *catPrt*, *catPrd*, and *catDrw* have to contain the names of data source definitions of the type “ValueList” which contain the file names of the CATPart, CATProduct, and CATDrawing template files:

```
<dataSource name="PwbCatPrtTmplFileNames" type="ValueList">
   <value name="TemplateCatPart1.CATPart" />
   <value name="TemplateCatPart2.CATPart" />
</dataSource>

<dataSource name="PwbCatPrdTmplFileNames" type="ValueList">
   <value name="TemplateCatProduct1.CATProduct" />
   <value name="TemplateCatProduct2.CATProduct" />
</dataSource>

<dataSource name="PwbCatDrwTmplFileNames" type="ValueList">
```

```
   <value name="TemplateCatDrawing1.CATDrawing" />
   <value name="TemplateCatDrawing2.CATDrawing" />
</dataSource>
```

The first file in each of these lists is the default template, and that template file is used when the template file functionality is switched on, and if a part structure with no related CAD documents is loaded to CATIA.

The old template file functionality, where locally accessible files are used, is turned on by a definition like this in the Schema file:

```
<templateFiles loadFrom="C:\Users\Public\PDM-Workbench\Templates"
               catPrt="PwbCatPrtTmplFileNames"
               catPrd="PwbCatPrdTmplFileNames"
               catDrw="PwbCatDrwTmplFileNames" />
```

In this definition the absolute file path which is defined as the value of the *loadFrom* XML attribute has to contain the CATIA files which are defined in the data sources which are referenced in the XML attributes *catPrt*, *catPrd*, and *catDrw*.

Optional.

If `loadFrom="PDM"` is set, then CAD documents with the same document number (without the file extension) and the PDM attribute “is_template” having the value “1” have to be defined in Innovator, and they have to be related to File items with the same file name (with the file extension).

Additionally the “Create” dialog definitions for the PDM types for CATPart, CATProduct, and CATDrawing files need to contain the form attribute for the template.

Here an example is given for the CATPart type:

```
<form name="Create">
   <formAttribute name="CatPrtTemplate" widgetType="ComboBox"
                  mode="update" visibleLength="30" required="false" />
</form>
```

The referenced attribute with the name “CatPrtTemplate” needs to contain two specific definitions: A data source which contains the names of the template files (as described above), and a specific information that this attribute contains information about CATPart template files (shown in red below).

```
<attribute name="CatPrtTemplate" displayName="NLS_CatPrtTemplate"
           dataSource="PwbCatPrtTmplFileNames"
           pwbAttrInfo="CatPrtTemplateListAttr" />
```

When the template files for one of the three types should not be used, e.g. no template support for CATDrawings, then the value “catDrw” has to be removed from the “templateFiles” tag and the form attribute for the template has to be removed from the create dialog.

Template File Support for 'Create Part' with Templates depending on the Part Type

Originally the ‘Create’ functionality only creates the ‘Part’ business item in the database when a part type is selected, without a corresponding CAD document item.

An extension of the ‘Create’ functionality allows to create ‘Part’ items with their corresponding CAD document, and the native file of this CAD document can be based on a list of template files which is defined specifically for this part type.

These part items can also be created in the context of a parent assembly.

The ‘Create’ functionality will create both the CAD document and the corresponding part, with the part having the “default” classification, that is, the first entry in the part definition list in the PWBSchema.xml file with the fitting ‘canHaveSubParts’ value:

```
<partClasses baseClassName="Part">
```

```
   <partClassName name="/Part/Design/Assembly/Mechanical"
                  canHaveSubParts="true" />
   <partClassName name="/Part/Design/Harness"
                  canHaveSubParts="true" />
   <partClassName name="/Part/Design/Component"
                  canHaveSubParts="false" />
   <partClassName name="/Part/Standard"
                  canHaveSubParts="false"/>
</partClasses>
```

Configuration

For the new functionality two new entries have to be defined in the global 'settings' definition:

`CreatePartsWithCadFile`: 'true' defines that when a BOM part item is created a corresponding CAD document item with a native CATIA file is also created. This CATIA file can be based on a template file.

`ContextCreateParts`: 'true' defines that the "PDM Create in Context" functionality includes part types too, not only the CATProduct and CATPart types.

```
...
<settings>
   <setting name="CreatePartsWithCadFile" value="true" />
   <setting name="ContextCreateParts" value="true" />
</settings>

<object name="Part" displayName="NLS_Part" icon="Aras_Part">
   <description>
   ...
```

Also, if specific template files should be associated with a part type, an object-specific setting with the name 'TemplateFileNameDataSource' and the value of a string list data source should be defined. The list should contain the names of the template CATIA files which correspond to this part type:

```
<object name="/Part/Design/Assembly/Mechanical"
        displayName="NLS_Assembly" icon="Aras_Part" >
   <settings>
      <setting name="TemplateFileNameDataSource"
               value="TmplFileNames-Assembly-Mechanical" />
   </settings>
   ...
</object>

<object name="/Part/Design/Harness"
        displayName="NLS_Harness" icon="Harness" >
   <settings>
      <setting name="TemplateFileNameDataSource"
               value="TmplFileNames-Harness" />
   </settings>
...
</object>
```

```
<object name="/Part/Design/Component"
        displayName="NLS_Component" icon="Aras_Component" >
   <settings>
      <setting name="TemplateFileNameDataSource"
               value="TmplFileNames-Component" />
   </settings>
   ...
</object>
```

The data sources should also be defined in the PWBSchema.xml file:

```
<!-- All CATProduct template files -->
<dataSource name="PwbCatPrdTmplFileNames" type="ValueList">
   <value name="TemplateCatProduct1.CATProduct" />
   <value name="TemplateCatProduct2.CATProduct" />
   <value name="Assembly-Mechanical-1.CATProduct" />
   <value name="Assembly-Mechanical-2.CATProduct" />
   <value name="Harness-1.CATProduct" />
   <value name="Harness-2.CATProduct" />
</dataSource>

<!-- All CATPart template files -->
<dataSource name="PwbCatPrtTmplFileNames" type="ValueList">
   <value name="TemplateCatPart1.CATPart" />
   <value name="TemplateCatPart2.CATPart" />
   <value name="Component-1.CATPart" />
   <value name="Component-2.CATPart" />
</dataSource>

<!-- Template files specific to part types -->
<dataSource name="TmplFileNames-Assembly-Mechanical" type="ValueList">
   <value name="Assembly-Mechanical-1.CATProduct" />
   <value name="Assembly-Mechanical-2.CATProduct" />
</dataSource>

<dataSource name="TmplFileNames-Harness" type="ValueList">
   <value name="Harness-1.CATProduct" />
   <value name="Harness-2.CATProduct" />
</dataSource>

<dataSource name="TmplFileNames-Component" type="ValueList">
   <value name="Component-1.CATPart" />
   <value name="Component-2.CATPart" />
</dataSource>
```

Thumbnail Configuration

Create thumbnails from types

The PWB Configuration item setting “CreateThumbnailsFromTypes” is a list of file extensions for which the thumbnails should be created by update, separated by “|”.

CreateThumbnailsFromTypes	.CATPart|.CATDrawing

Picture 122: Sample CreateThumbnailsFromTypes configuration

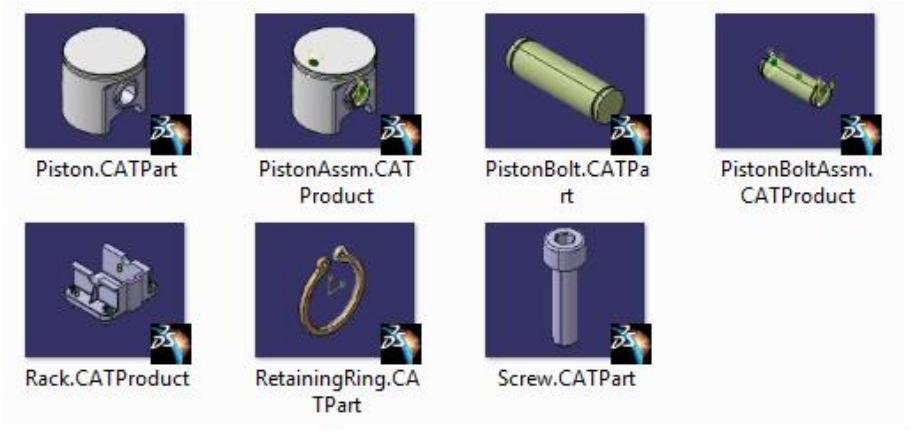
Default value: “.CATPart|.CATDrawing”

Optional.

Create thumbnails by CATIA

It is possible to let CATIA generate the thumbnail pictures internally, instead of using the pictures used by Windows.

This is an example of thumbnails of CATIA files in the Windows Explorer:



Picture 123: Windows Thumbnails

In some cases, due to some configuration of the Windows registry, the thumbnails in the Windows Explorer are not shown correctly. In this case there will be no thumbnails associated to the CAD documents in PDM either.

With this setting the thumbnail pictures are created inside CATIA, so they are independent of the Windows setting.

In addition, with this setting it is possible to have thumbnail pictures for CGR and CATIA V4 files too, which would not be possible otherwise.

Configuration in the file “PWBSchema.xml”.

Example:

```
<createThumbnailwithWindows value="true" />
```

Default value: “false”

Optional. Possible values: “true”, or “false”.

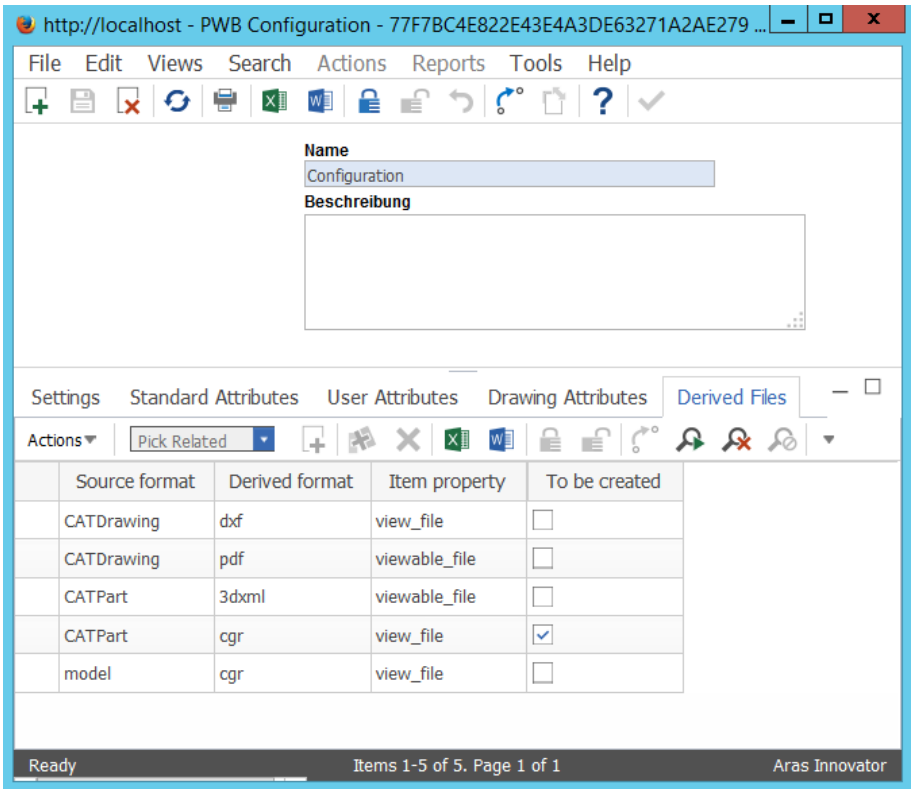
Derived Files Configuration

Derived files tabulator

There is a “Derived Files” tab in the PWB Configuration item. The customer can define there the derived file formats to be created per source format and its storage property.

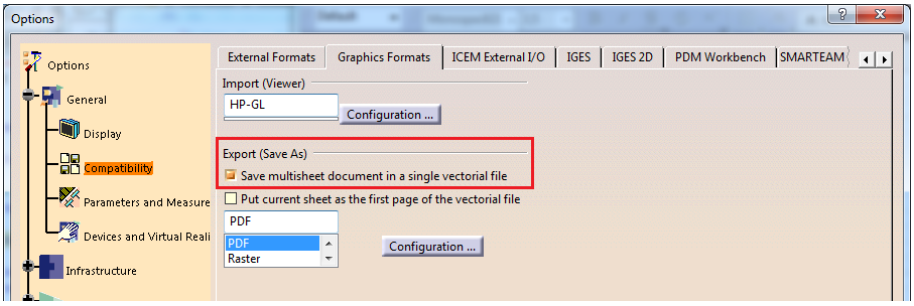
The storage property must be a file item property, which is defined on the CAD item, like “viewable_file” or “view_file”.

The PDM Workbench provides the capability to create and store derived files when a user is uploading new or modified CAD files to Aras Innovator. These derived files are created in a CATIA SaveAs operation of the current PDM Workbench user’s CATIA session. Take care, that each defined SaveAs operation results in a single file with the same name as the source file but a different suffix. If CATIA creates multiple files from a single CATIA file during a SaveAs operation, then this type is not supported here.



Picture 124: “Derived Files” tab

Example for single generated PDF file: Only one PDF for a CATDrawing can be stored in Aras as viewable_file (derived file). Therefore, all sheets of a CATDrawing must be stored in a single PDF. The following CATIA setting enables this option:



Picture 125: Activate multisheet option in CATIA V5
Tools→Options→General→Compatibility→Graphics Formats

Please note that the old configuration settings ‘UpdateDerivedPdfFile’ and ‘UpdateDerived3DxmlFile’ are not supported anymore.

Additional CAD Document Types

Design tables

The PWB Configuration item setting “UseDesignTables” configures the use of Design Tables with the PDM Workbench. The use of Design Tables in Aras Innovator can be enabled or disabled in PDM Workbench.

Please note that when Design Tables are disabled from PDM Workbench, they can still be used in CATIA, but they are not synchronized and uploaded to Aras Innovator.

UseDesignTables	true

Picture 126: Sample UseDesignTables configuration

Default value: “false”

Optional. Possible values: “true”, or “false”.

When design table files are created in PDM they can now be renamed according to the CATIA file that they are related to. It is now also possible to relate one design table document to multiple CATPart documents.

Configuration

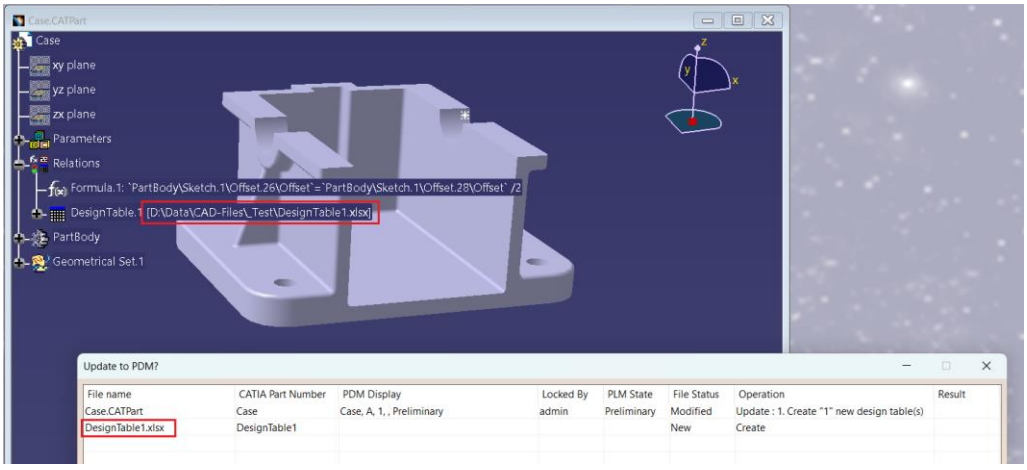
By default the first design table document will be named like the CAD document it is related to, and additional design table documents will be named like the CAD document plus “_” plus an index (1, 2, 3, etc.).

It is possible to customize this behavior by setting a custom method for the server setting ‘CustomMethod_PreProcCreDlgAttrs’. A sample method for this (‘Pwb_Sample_PreProcDlgAttrs’) exists.

Usage

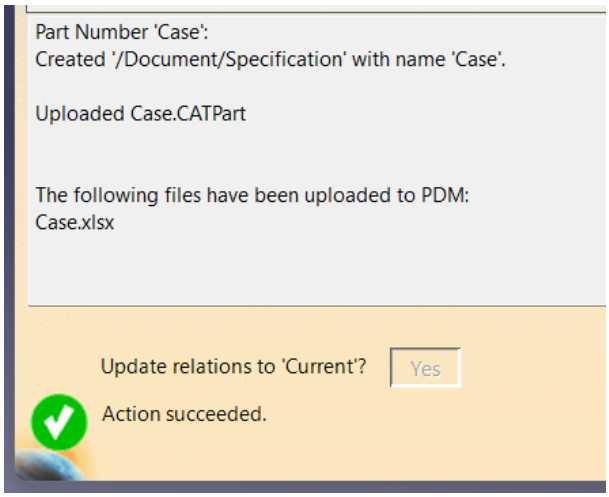
In this example two design tables are related to the file ‘Case.CATPart’.

The first design table file is originally named ‘DesignTable1.xslx’:



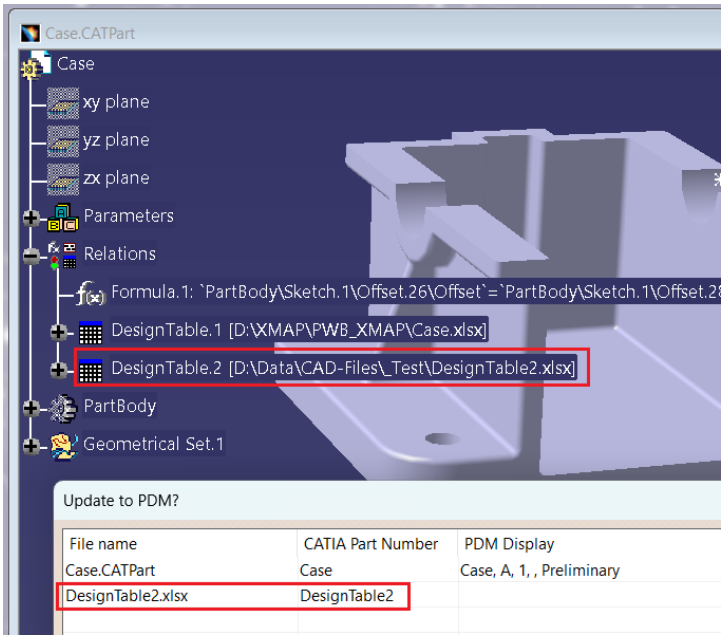
Picture 127: Adding first design table

PDM update renames the design table file to ‘Case.xslx’:



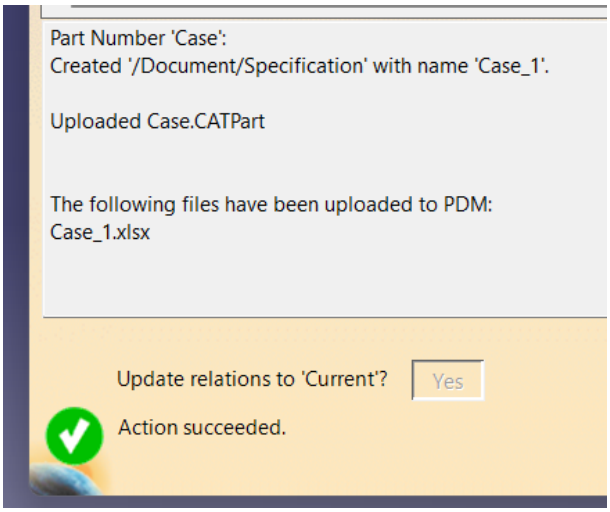
Picture 128: Renamed first design table file.

A second design table file (‘DesignTable2.xslx) is related:



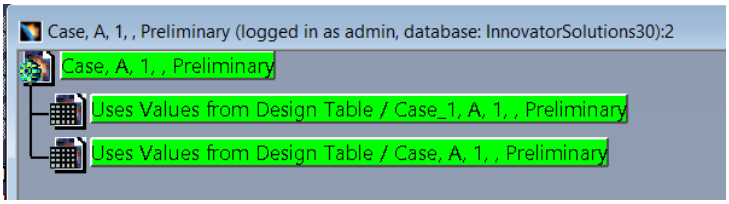
Picture 129: Adding second design table

PDM update renames the design table file to ‘Case_1.xslx’:

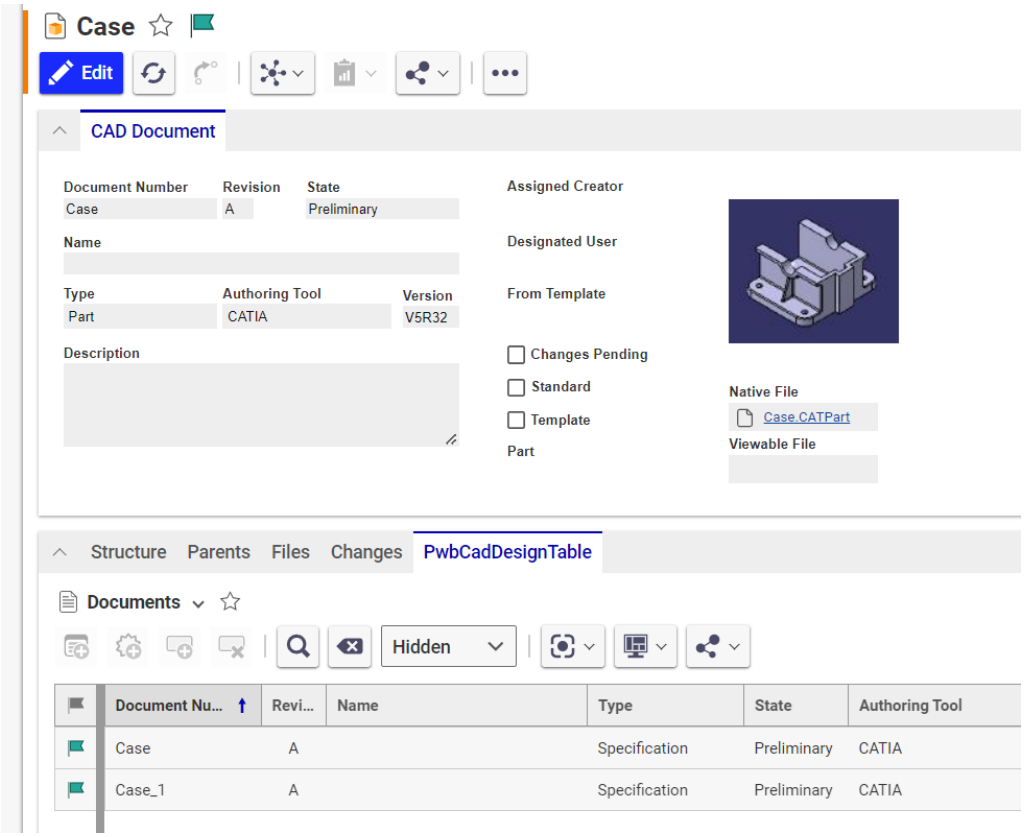


Picture 130: Renamed second design table file.

Both design table documents are related in PDM:



Picture 131: Display of related design tables in the PWB structure window



Picture 132: Display of related design tables in the Aras Innovator web client

Archives

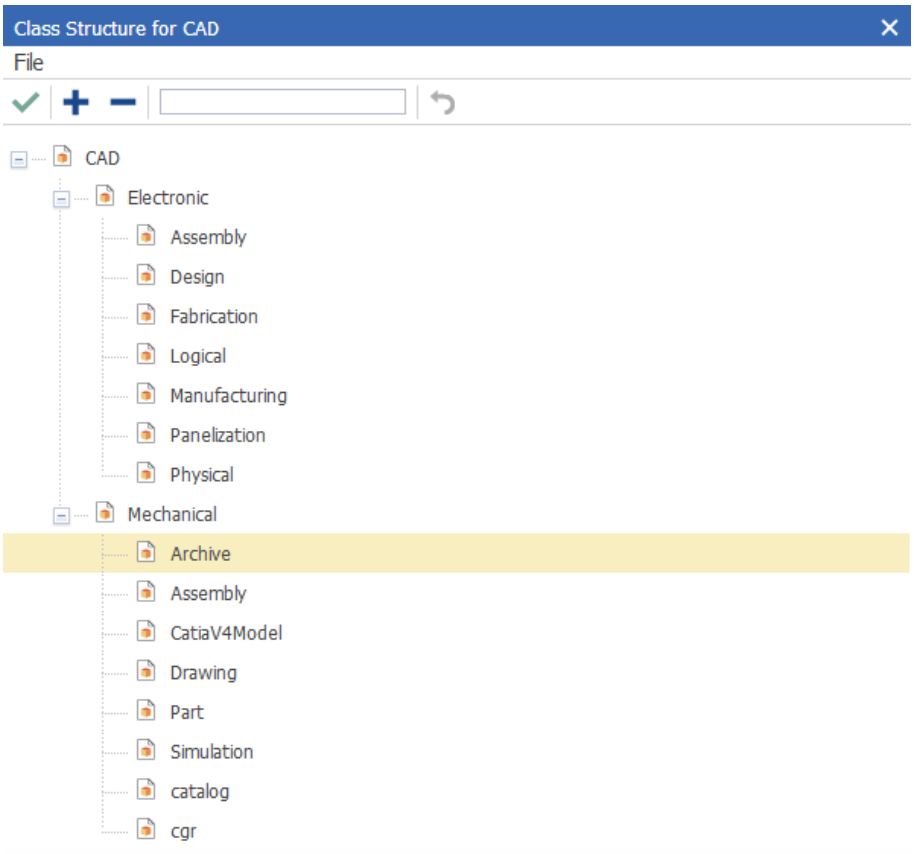
It is possible to compress a complete CATProduct sub-structure into one Zip file and to manage this compressed file in PDM. This makes it possible to hide a complicated CATProduct structure in one CAD document if it is not necessary to manage the structure information in PDM.

The PWB Configuration item setting “UseArchives” has to be set to “true”:

UseArchives	true

Picture 133: Sample UseArchives configuration

If archives are used a new classification for the item type CAD needs to be defined, for instance “Mechanical/Archive”.



Picture 134: Add Mechanical/Archive to CAD

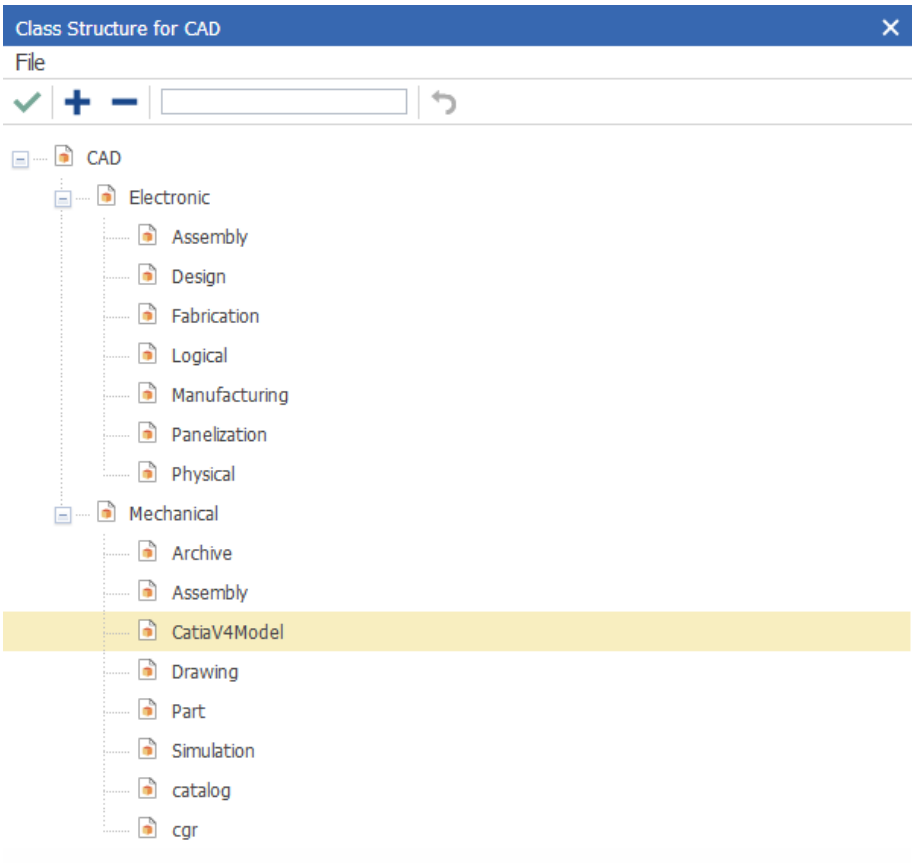
In the Schema file the same classification has to be defined.

Example:

```
<object name="/CAD/Mechanical/Archive"
        displayName="NLS_Archive"
        icon="Aras_Archive">
```

CATIA V4 models

If structures which contain CATIA V4 models are used a new classification for the item type CAD needs to be defined, for instance “Mechanical/CatiaV4Model”.



Picture 135: Add Mechanical/CatiaV4Model to CAD

In the Schema file the same classification has to be defined.

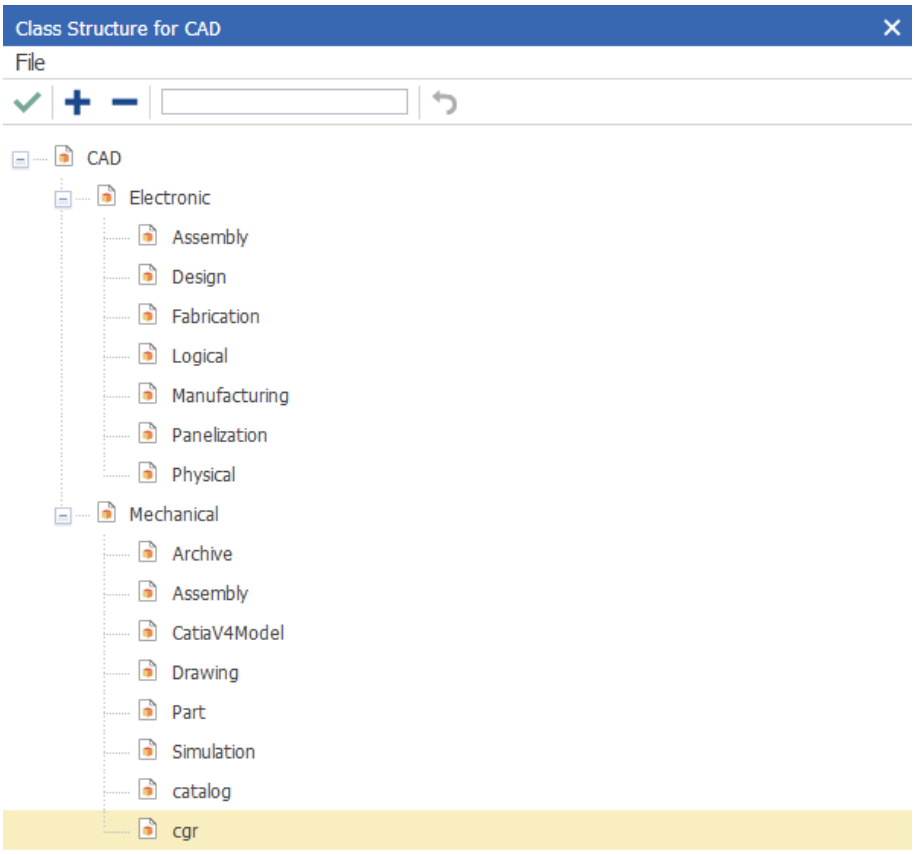
Example:

```
<object name="/CAD/Mechanical/CatiaV4Model"
        displayName="NLS_model"
        icon="model">
```

CGRs as native files

CGR files are fully supported as native files, including assigning them a new CATIA part number, PDM attribute mapping, “Insert PDM Node” functionality, and replacing the representation with a different file and updating the new representation.

A new classification for the item type CAD needs to be defined, for instance “Mechanical/cgr”.



Picture 136: Add Mechanical/cgr to CAD

In the Schema file the same classification has to be defined.

Example:

```
<object name="/CAD/Mechanical/cgr"
        displayName="NLS_cgr"
        icon="cgr">
```

CATIA Catalogs

CATIA Catalogs for CATParts are supported. The catalogs can be created and updated by a “Standard Part Administrator”. The catalog functionality supports CATParts used as “Standard Parts”, as “Templates” or CATParts holding a “Power Copy”.

The Catalog functionality adds the catalog keywords PWB_CAD and for Bom CATParts PWB_PART. The values of these keywords must not be changed by a user.

During open a catalog in CATIA Catalog Editor or Catalog Browser using PDM Workbench, placeholder files for the referenced CATParts in Aras are automatically created in the PDM Workbench exchange directory. The actual geometry of a referenced CATPart will be fetched from Aras as soon as the geometry is needed by the native CATIA Catalog functionality.

In the Schema file the context actions can be enabled.

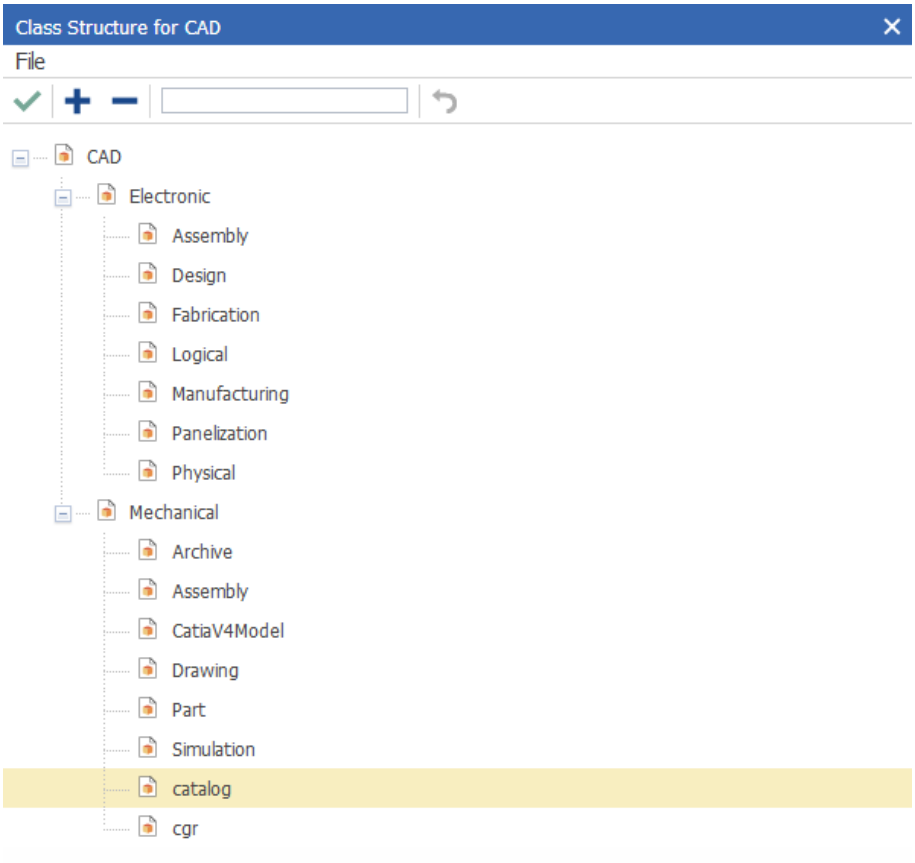
Example:

```
<contextAction name="OpenCatalog" usedIn="QueryDialog"
               defaultAction="true" />
```

The element `defaultAction="true"` defines this context action is action to be performed by double-clicking on an object of this type.

```
<contextAction name="OpenCatalogForEdit" usedIn="PdmWindow|QueryDialog" />
```

A new classification for the item type CAD needs to be defined, for instance “Mechanical/catalog”.



Picture 137: Add Mechanical/catalog to CAD

In the Schema file the same classification has to be defined.

Example:

```
<object name="/CAD/Mechanical/catalog"
        displayName="NLS_catalog"
        icon="catalog">
```

Support floating content in Catalog

By default, the Catalog points to a fixed Aras Innovator version of the contained Aras CAD (Part). If this functionality is enabled, you will get the latest version of the corresponding CAD (Part).

Configuration

In the PWB Configuration you have to add the setting “UseFloatingCatalogContent”:

UseFloatingCatalogContent	true

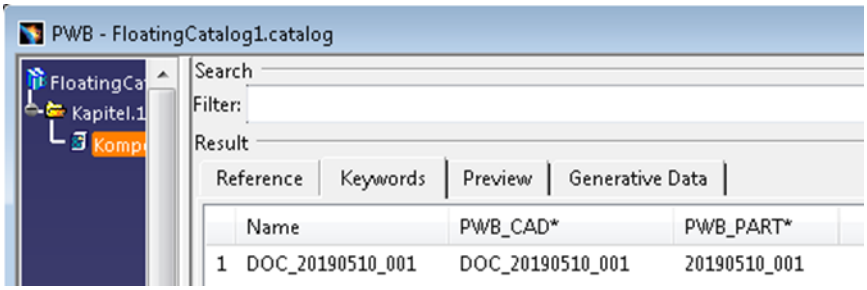
Picture 138: PWB Configuration – “UseFloatingCatalogContent”

Default value: “false”

Optional. Possible values: “true”, or “false”.

Configurable Catalog Keywords

By default the identifying attributes (id or item_number when using floating catalog content) are stored in the values of PWB_CAD and PWB_PART (for BOM Part).



Picture 139: Configurable Catalog Keywords

It is possible configure different catalog keywords to store these values. In case of useBomPartStructure = true, if only BOM CATParts are used in the catalog it is also possible to remove the keyword for the CAD.

Configuration

The changes are done in the PWB Configuration.

To change the PWB_PART keword you have to add the setting “CatalogPartIdentifier”:

CatalogPartIdentifier	<Your Keyword>

Picture 140: PWB Configuration – “CatalogPartIdentifier”

Default value: “PWB_PART”

Optional.

To change the PWB_CAD keyword you have to add the setting “CatalogCadIdentifier”:

CatalogCadIdentifier	<Your Keyword>

Picture 141: PWB Configuration – “CatalogCadIdentifier”

Default value: “PWB_CAD”

Optional.

If “CatalogCadIdentifier” is set to an empty value, the keyword is not used (only for useBomPartStructure = true).

Custom method to handle Catalog references

The standard PDM Workbench Catalog functionality stores the Aras Innovator Id or item_number (depending on the configuration) of the referenced items as a keyword inside the catalog file. This means this information is not available in Aras Innovator.

Thanks to this functionality it is possible to make this data available in Aras Innovator using a custom method which is called during update of a catalog.

Configuration

To enable this functionality, you must create a custom method to handle the referenced items of a catalog.

The PWB Configuration setting “CustomMethod_ProcessCatalogContent” must point to the method name of your custom method:

CustomMethod_ProcessCatalogContent	PwbCus_ProcessCatalogContent

Picture 142: Sample “CustomMethod_ProcessCatalogContent” configuration

The following method will write the referenced Id or item_number of the referenced items to a log file. If you work in CAD Structure mode, the list of referenced Parts is always empty.

```
/*
Sample method PwbCus_ProcessCatalogContent
This method allows to create / update links to referenced items in a catalog
Set PWB Configuration CustomMethod_ProcessCatalogContent = PwbCus_ProcessCatalogContent
*/
using (var PwbServerApiObj = new PwbServerAddin.PwbServerApi(this))
{
   string CAD_Id = this.getID();
   string CAD_Type = this.getType();
   string CAD_Classification = this.getProperty("classification");

   PwbServerApiObj.Log(
      "PwbCus_ProcessCatalogContent -> CAD_Id:'" + CAD_Id +
      "', CAD_Class:'/" + CAD_Type + "/" + CAD_Classification + "'");

   int referencedPartCount = 0;

   int.TryParse(this.getAttribute("referencedPartCount"),
      System.Globalization.NumberStyles.Integer,
      System.Globalization.CultureInfo.InvariantCulture,
      out referencedPartCount);

   for (int i = 0; i < referencedPartCount; i++)
   {
      String referencedPart =
         this.getAttribute("referencedPart_" + i.ToString());
      if (String.IsNullOrEmpty(referencedPart))
      {
         continue;
      }

      PwbServerApiObj.Log(
         "PwbCus_ProcessCatalogContent -> referencedPart:' " +
         referencedPart);
   }

   int referencedCadCount = 0;

   int.TryParse(this.getAttribute("referencedCadCount"),
      System.Globalization.NumberStyles.Integer,
      System.Globalization.CultureInfo.InvariantCulture,
      out referencedCadCount);

   for (int i = 0; i < referencedCadCount; i++)
   {
      String referencedCad =
         this.getAttribute("referencedCad_" + i.ToString());
      if (String.IsNullOrEmpty(referencedCad))
      {
         continue;
      }

      PwbServerApiObj.Log(
         "PwbCus_ProcessCatalogContent -> referencedCad:' " +
         referencedCad);
   }

   Item result = getInnovator().newItem("result");
   result.setAttribute("message", "Catalog Content handled ");

   return result;
}
```

CATProcess

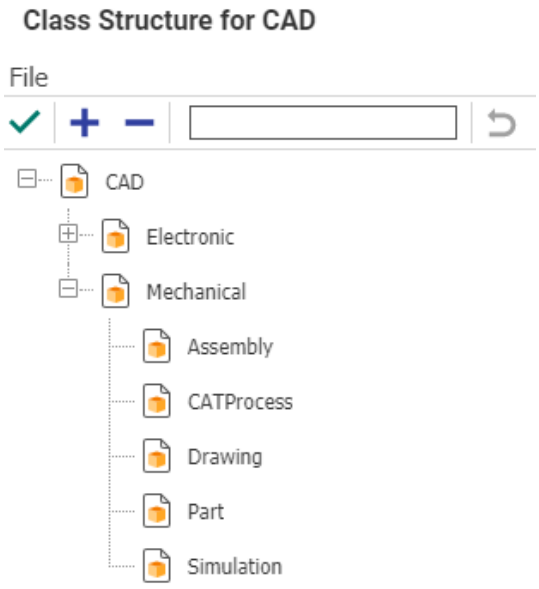
CATProcess can be updated and loaded from Aras. If the CATProcess uses external references in the CATProcess Product List or in the CATProcess Resources List, PDM Workbench creates a relation to the refenced items during update and downloads the referenced items during load.

Configuration

To use CATProcess documents with the PDM Workbench, the Aras classifications of CAD and CAD Structure must be extended. As the PWB Schema file already holds the necessary object and relation definition, it is necessary to use the same names or also to change the CATProcess definition in the PWB Schema file.

Item type CAD:

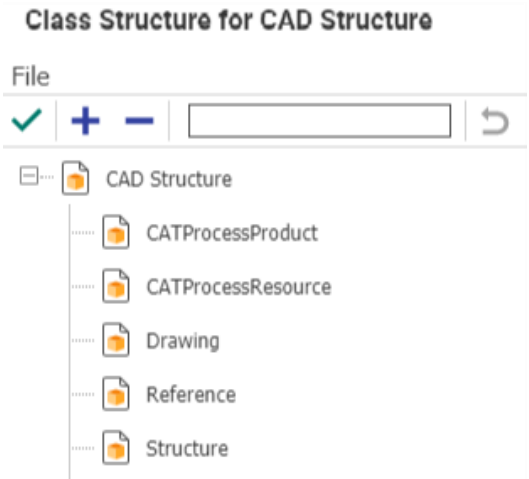
Add the sub class CATProcess to /CAD/Mechanical:



Picture 143: Sub class /CAD/Mechanical/CATProcess

Item type CAD Structure

Add the sub classes CATProcessProduct and CATProcessResource to CADStructure:



Picture 144: Sub classes /CAD Structure/CATProcessProduct and /CAD Structure/CATProcessResource

To use a different relation for the CATProcess – ProductList you must add the setting CadProcessProductRelType to the PWB Configuration.
Default value: “/CAD Structure/CATProcessProduct”.
If CadProcessProductRelType is set to an empty value, the CATProcess ProductList will be ignored by PDM Workbench.
If you use a different value must also change the value in the PWB Schema file.

To use a different relation for the CATProcess – ResourcesList you must add the setting CadProcessResourcesRelType to the PWB Configuration.
Default value: “/CAD Structure/CATProcessProduct”.
If CadProcessResourcesRelType is set to an empty value, the CATProcess ResourcesList will be ignored by PDM Workbench. This can be useful if you manage the tools in the CATIA environment.
If you use a different value must also change the value in the PWB Schema file.

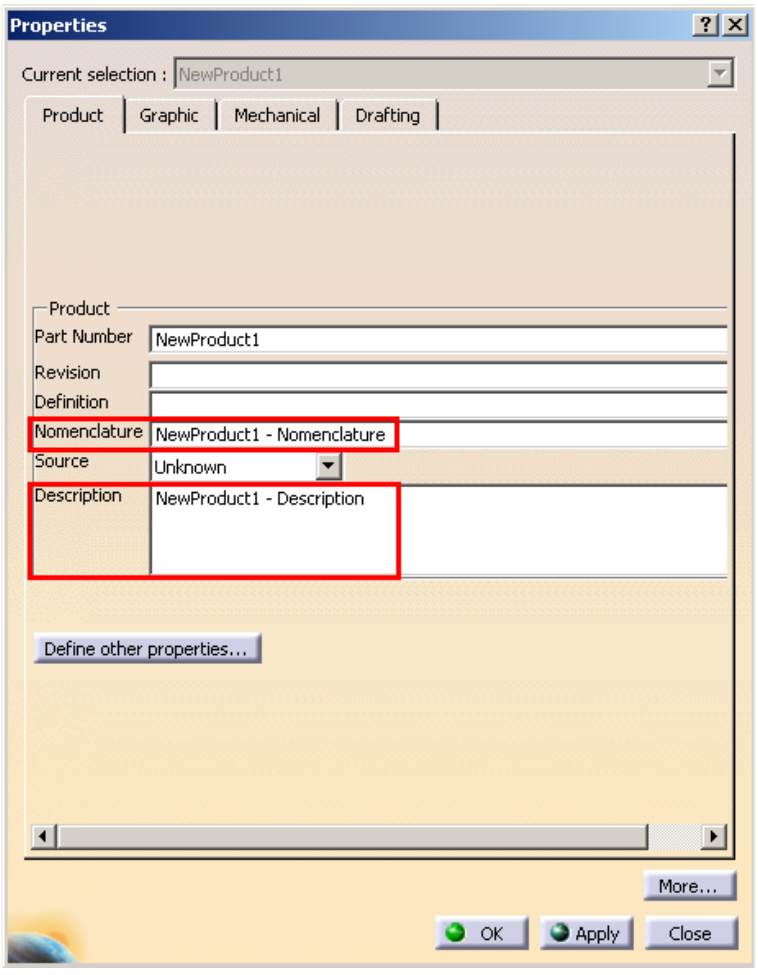
Attribute Mapping Configuration

Standard attribute mapping

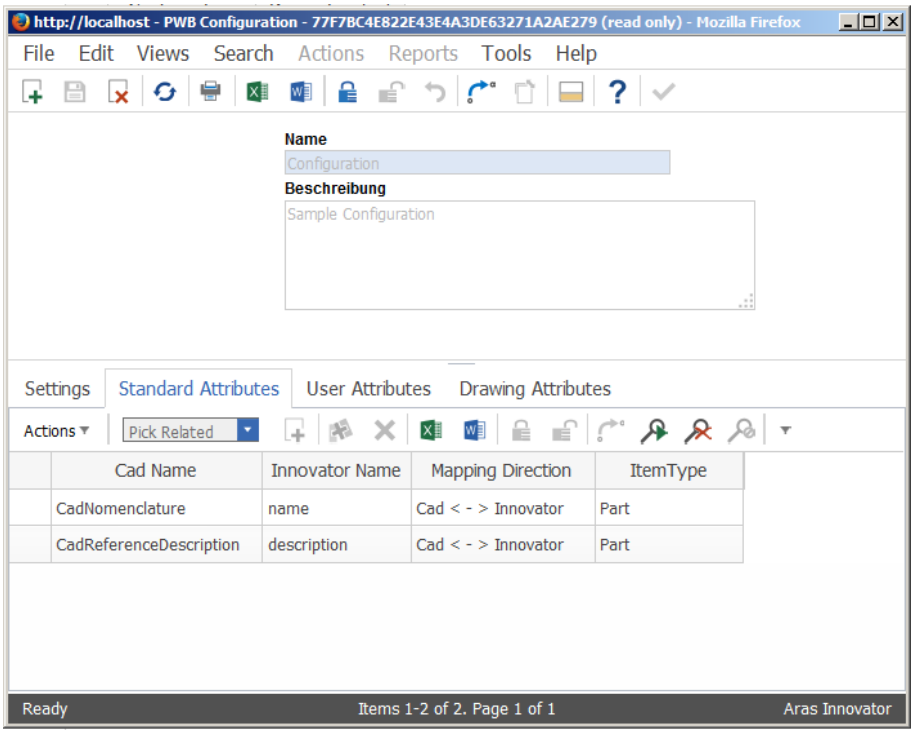
Here is a description of how to configure the attribute mapping:

CATIA standard and user-defined properties can be mapped to PDM attributes.

In the following example the standard CATIA attributes “Nomenclature” and “Description” are mapped to the attributes “name” and “description” of the Aras Innovator part object (see *Picture 145: Standard attributes in the “Properties” dialog* and *Picture 146: Configuration of standard attributes in Aras Innovator*).

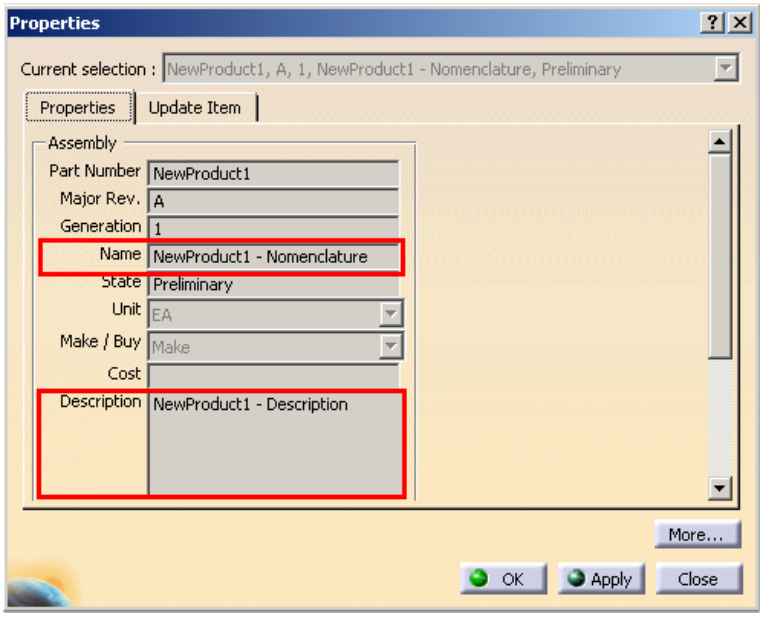


Picture 145: Standard attributes in the “Properties” dialog

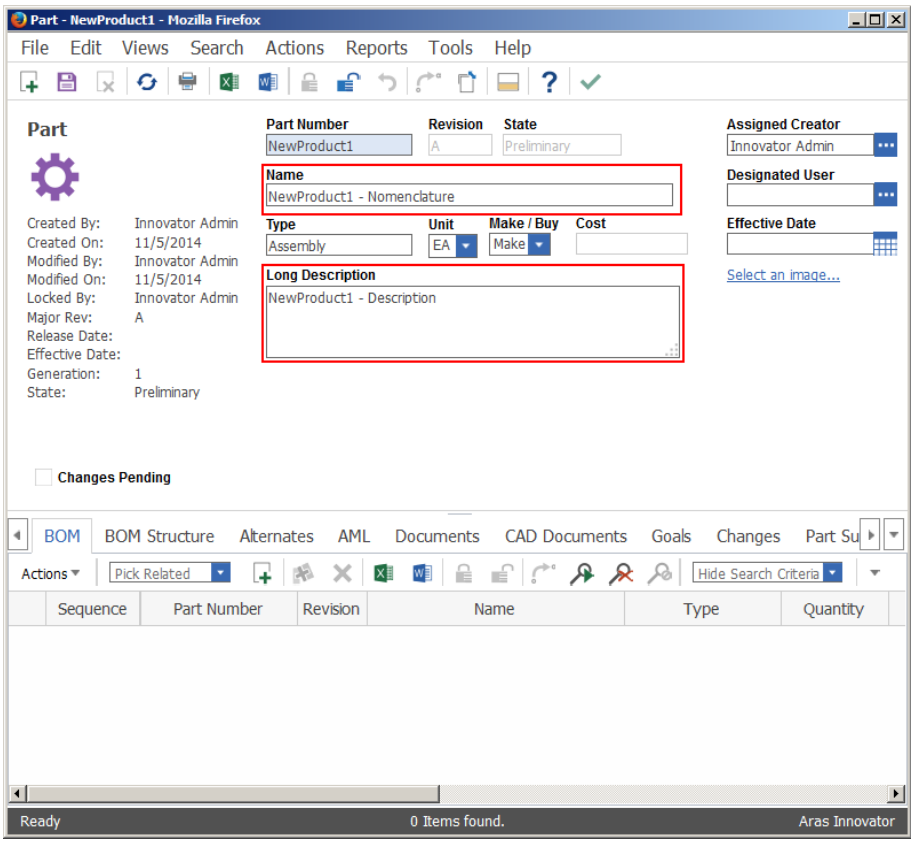


Picture 146: Configuration of standard attributes in Aras Innovator

After creating the part with Update the defined CATIA attribute values have been written to the PDM part object (see *Picture 147: Standard attributes in the “Properties” dialog of the PDM node* and *Picture 148: Standard attributes in Aras Innovator window*).



Picture 147: Standard attributes in the “Properties” dialog of the PDM node

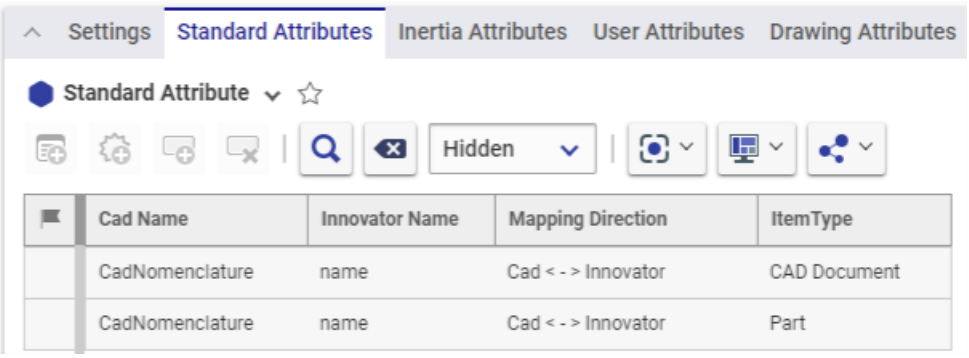


Picture 148: Standard attributes in Aras Innovator window

Allow mapping of Part and CAD property to the same CATIA Standard attribute

By default, you can either map a Part or a CAD property to a CATIA standard attribute like Nomenclature, Definition, Revision, and Reference Description. This causes a problem if you work in BOM Part Structure Data Model with additional Non-Bom CATIA files. For instance, if you map the value of the Part property “name” to the CATIA attribute “Nomenclature” you cannot map any CAD property to the same CATIA attribute. This means the CATIA attribute “Nomenclature” cannot be controlled by any Aras Innovator property for a Non-BOM CATIA file.

This functionality allows to define a property mapping for both types:



Picture 149: Mapping of CATIA attribute Nomenclature from CAD and Part

The mapping of the Part property is handled with a higher priority. This means only if there is no Part, the mapping of the CAD will be used.

The mapping direction from CATIA to Aras Innovator is not affected.

Configuration

This behavior is only active when using the following PWB settings:

UseBomPartStructure=true

UseNonBom3DCadDocs=true

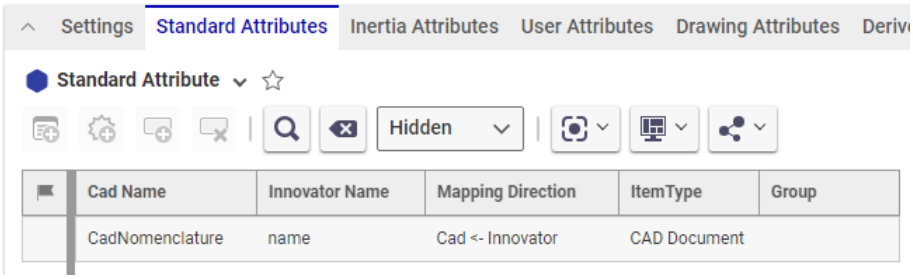
To disable the functionality, you have to set DisableUniqueStdAttributeCheck=false in the PWB configuration.

Not setting mapped 'CATIA Standard Attribute' values in the Create Dialog

By default all attributes that are mapped to a CATIA Standard attribute (CadNomenclature, CadRevision, CadDefinition, CadReferenceDescription) are prefilled in the create dialog with the current CATIA value. To disable the mapping set `pwbAttrInfo="DoNotUseCatiaValue"` to the formAttribute.

Example:

The Aras Innovator attribute "name" is mapped to the CATIA Standard attribute "CadNomenclature" for the item type "CAD Document":

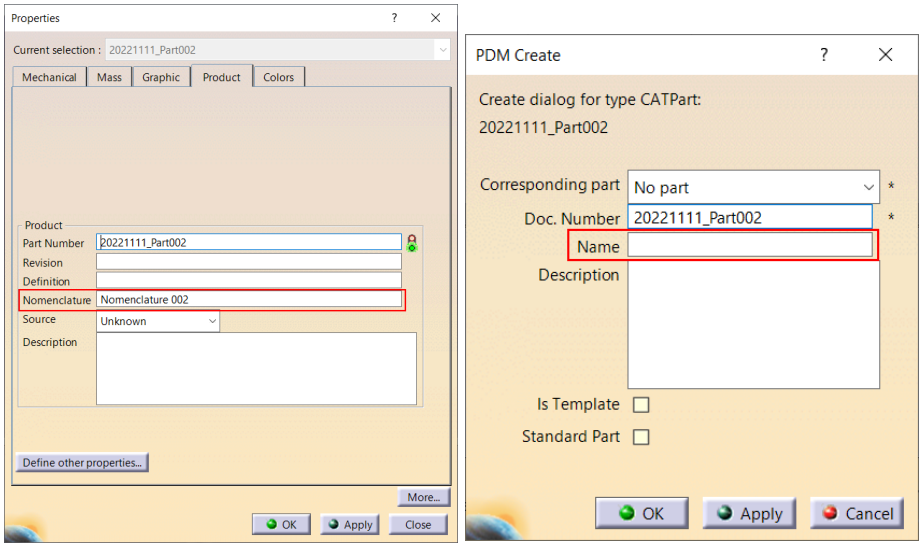


Picture 150: PWB Configuration – Standard Attribute Mapping

In the PWB Schema file is defined, that the Aras Innovator attribute "name" should not be mapped to CATIA V5:

```
<formAttribute name="name" widgetType="SingleLineEditor"
               mode="update" visibleLength="15"
               required="false"
               pwbAttrInfo="DoNotUseCatiaValue" />
```

As result you can see that the defined Nomenclature of CATIA V5 is not pre-filled in the Create dialog:



Picture 151: CATIA V5 Properties of the CATPart and the Create Dialog

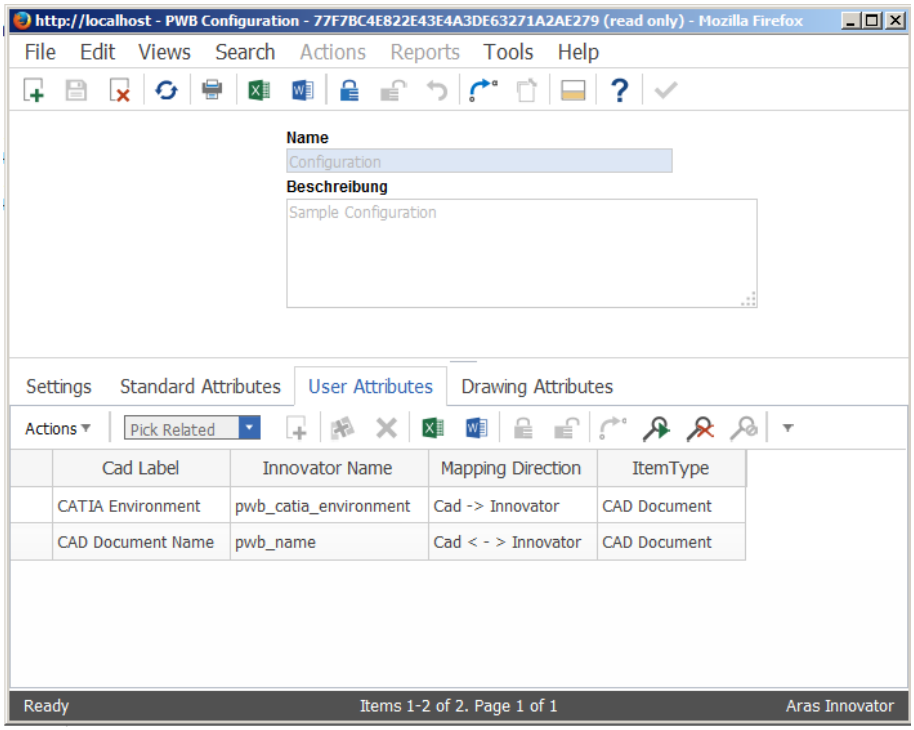
Prefill CATIA Revision attribute in register / create dialog

If the “Standard Attribute” “CADRevision” is mapped to an Aras Innovator attribute like “major_rev” in the PWB Configuration object, and the “major_rev” attribute is shown in the create dialog, the dialog will be prefilled with the value of the CATIA Revision attribute. If a “data source” in the PWB Schema file restricts the possible values, only a valid value will be mapped.

```
<formAttribute name="major_rev" widgetType="ComboBox" mode="update"
               visibleLength="15"  required="true" entryAllowed="false"
               dataSource="RevisionDataSource"
               pwbAttrInfo="DoNotUseCatiaValue" />
```

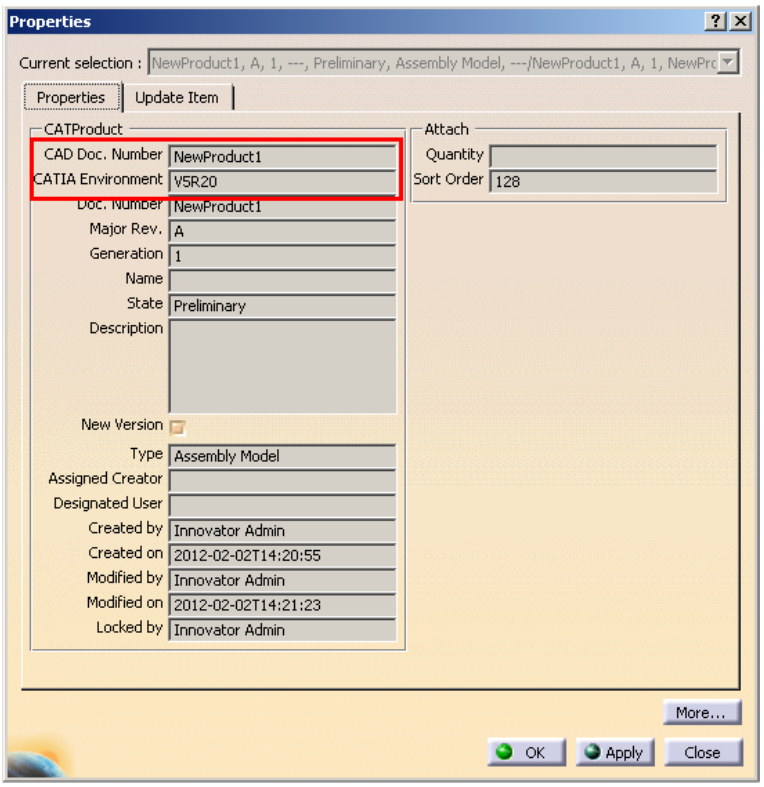
User attribute mapping

User-defined CATIA properties can also be mapped (see *Picture 152: Configuration of user-defined attributes in Aras Innovator*).

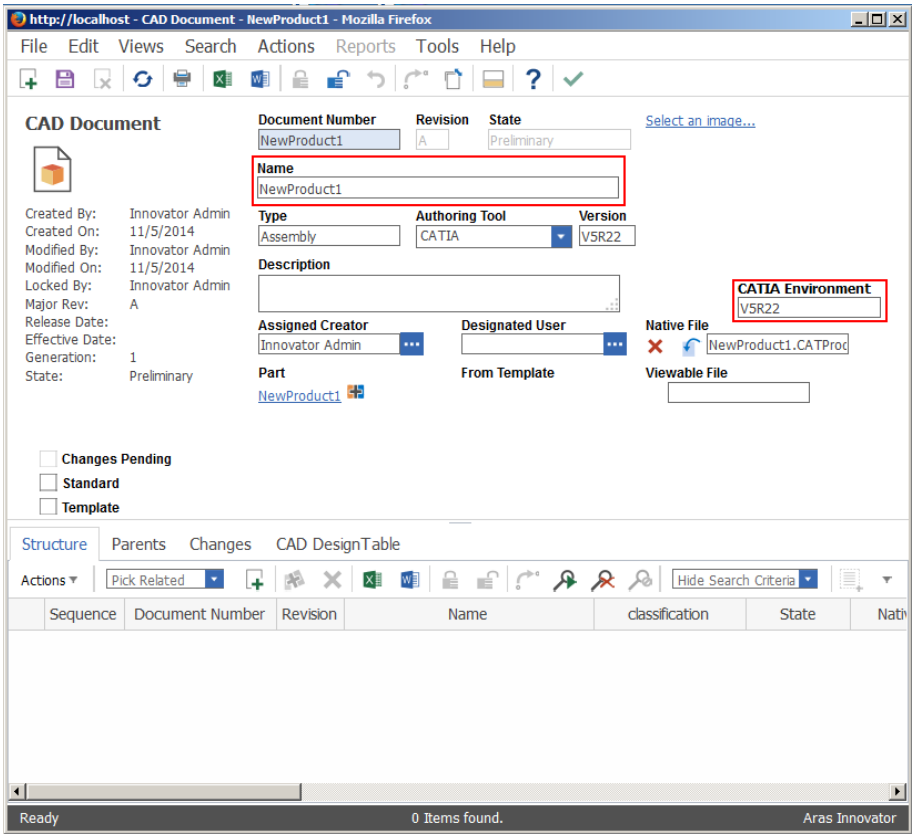


Picture 152: Configuration of user-defined attributes in Aras Innovator

While the structure is imported the values are written to the defined attributes of the Aras Innovator CAD document object (see and *Picture 153: User-defined attributes in the “Properties” dialog of the PDM node* and *Picture 154: User-defined attributes in Aras Innovator window*).

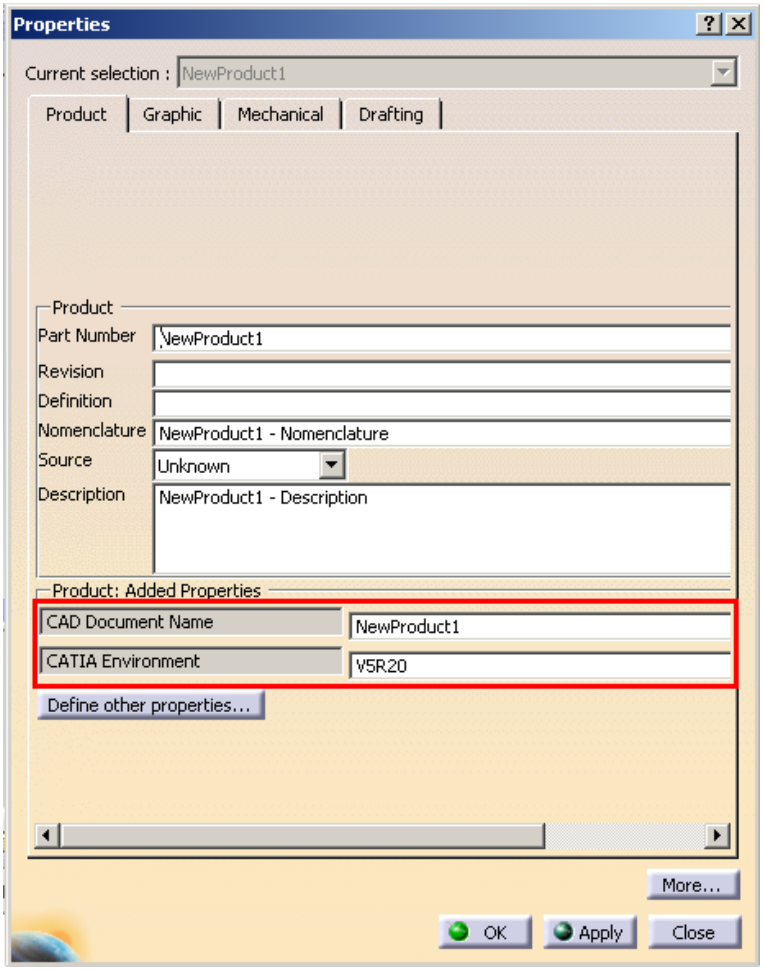


Picture 153: User-defined attributes in the "Properties" dialog of the PDM node



Picture 154: User-defined attributes in Aras Innovator window

After the import or after loading the structure it can be shown that the values are written from the PDM attributes into the CATIA files (see *Picture 155: User-defined attributes in the "Properties" dialog*).



Picture 155: User-defined attributes in the “Properties” dialog

CATIA user defined attributes

Several user defined properties can be filled by CATIA. These properties have to be defined in the Schema file. During the update process in CATIA the property values are filled.

Example:

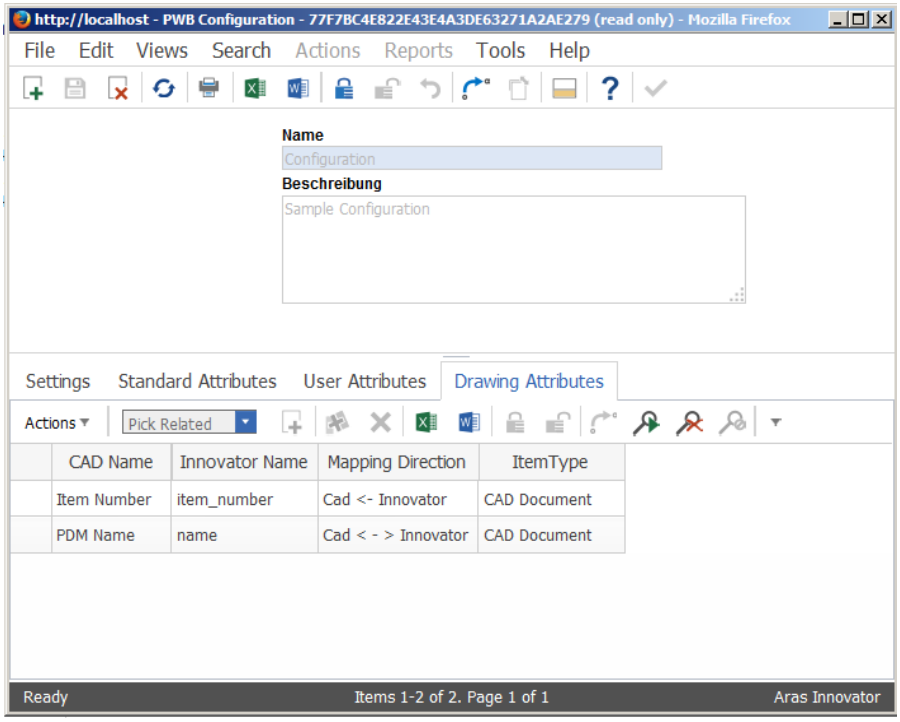
```
<updateCatiaUserDefinedProperties>

   <userDefinedProperty catiaInfo="CatiaLevel"
                        propertyDisplayName="CATIA Environment" />

   <userDefinedProperty catiaInfo="Mass"
                        propertyDisplayName="The Mass" />

   <userDefinedProperty catiaInfo="Volume"
                        propertyDisplayName="The Volume" />

   <userDefinedProperty catiaInfo="Density"
                        propertyDisplayName="The Density" />

   <userDefinedProperty catiaInfo="Area"
                        propertyDisplayName="The Area" />

</updateCatiaUserDefinedProperties>
```

Optional.

When the values should to be sent to Aras they have to be mapped before. For details see the section above (see *Picture 152: Configuration of user-defined attributes in Aras Innovator*).

Drawing attribute mapping

The mapping attribute definition for drawings is done in the PWB Configuration.

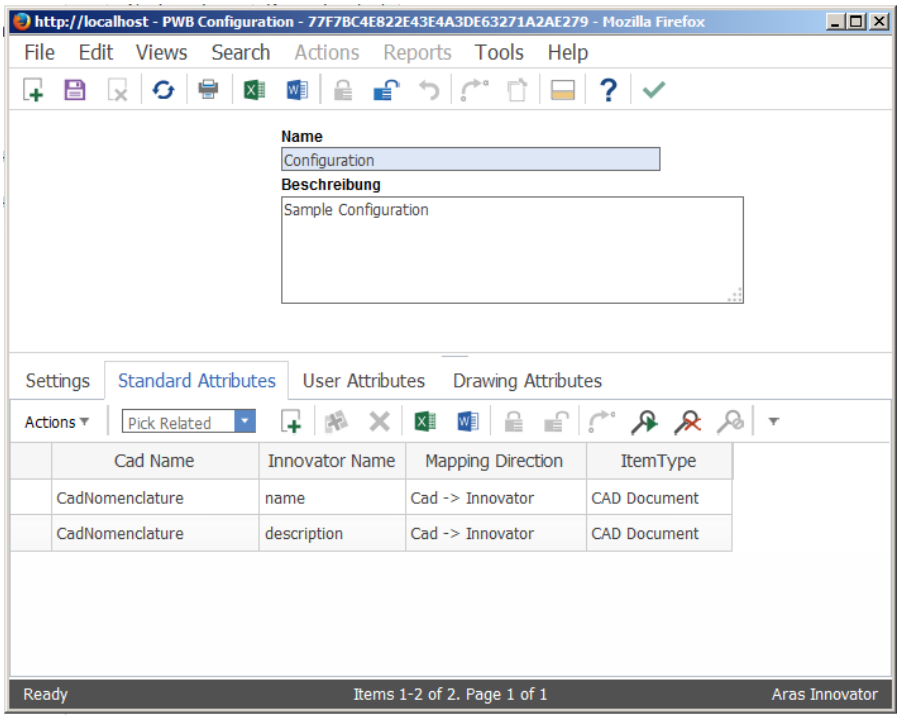


Picture 156: Configuration of drawing attributes in Aras Innovator

Extended attribute mapping functionality

It is possible to define multiple assignments for the same CATIA property in the CAD to PDM direction.

The attribute mapping in the PWB Configuration item can contain multiple PDM attributes for the same CATIA attribute.



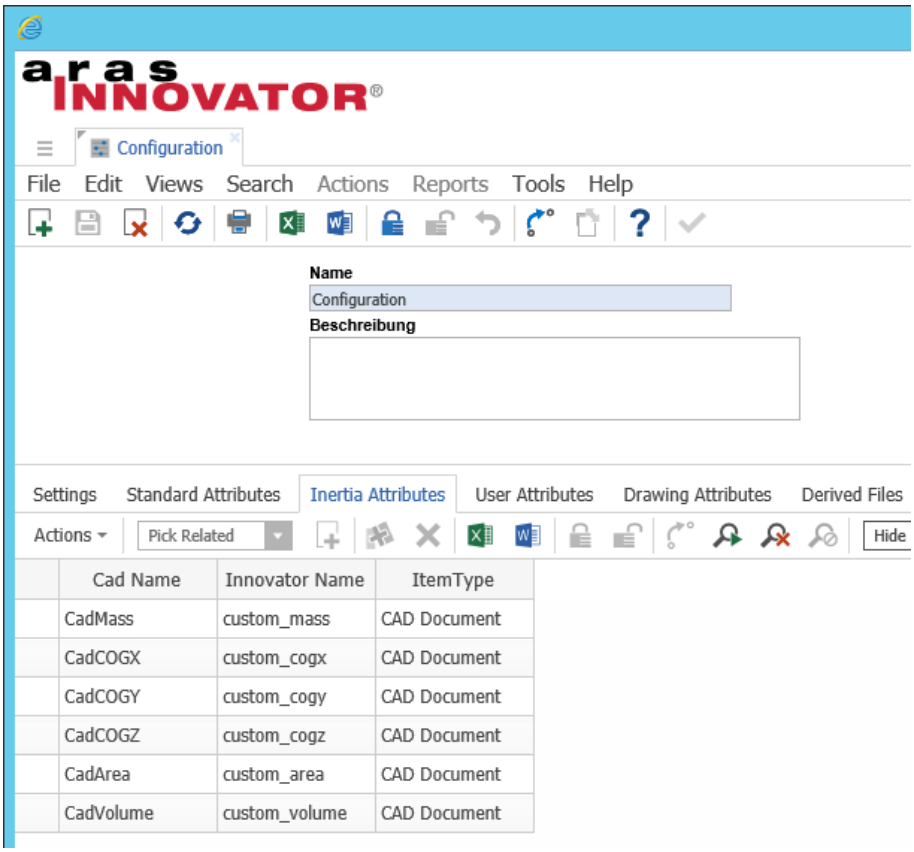
Picture 157: Example PWB Configuration attribute mapping

Inertia attribute mapping

You can configure the server to let the CAD client calculate and provide some inertia attribute values (like the center of gravity) when the CAD file is uploaded to the PDM system. These values can be mapped to properties of your CAD or Part items in Aras Innovator.

A CATIA V5 DMU Space Analysis 2 (SPA) license is required to calculate inertia values within CATIA. If you do not have this license available in your CATIA license configuration, you should not configure the inertia attribute mapping in the PWB configuration of Aras Innovator. The PWB Update process will not try to calculate inertia values then.

If you have the license available, you can define which inertia attribute should be mapped to which Aras Innovator property during the PWB Update process. This is similar to the mapping of CATIA standard properties like nomenclature, but always in the direction CAD to PDM only.



Picture 158: Sample inertia attributes mapping

The inertia values can be displayed in CATIA in different units, but they are always calculated, transferred to and stored in Aras Innovator in SI units:

- Mass in kg (kilogram)
- Area in m² (square meter)
- Volume m³ (cubic meter)
- COG position in m (meter)

If you want to display the values differently in Aras Innovator, you have to perform your own GUI customization there.

PDM to CAD Attribute Mapping only for CATIA Files claimed by the User

Changed PDM attribute values should only be written into CATIA files that are claimed by the user. This behavior should be optional.

The behavior that read-only nodes should not automatically be modified is the new default behavior. The old behavior, writing differing PDM attribute values to read-only CATIA files, can be switched on by defining a global setting `AttributeMappingForReadOnlyNodes` with the value “true”:

```
<settings>
   <setting name="AttributeMappingForReadOnlyNodes"
            value="true" />
</settings>
```

Add Temp Configuration

Context action “Add Temp”

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="AddTemp" usedIn="PdmWindow" />
```

AddTemp prefix

In the Schema file the prefix for the rename of the Part Numbers and File Names for the “Add Temp” and “Open File Temporary” command can be defined.

Example:

```
<addTempPrefix value="TMP" />
```

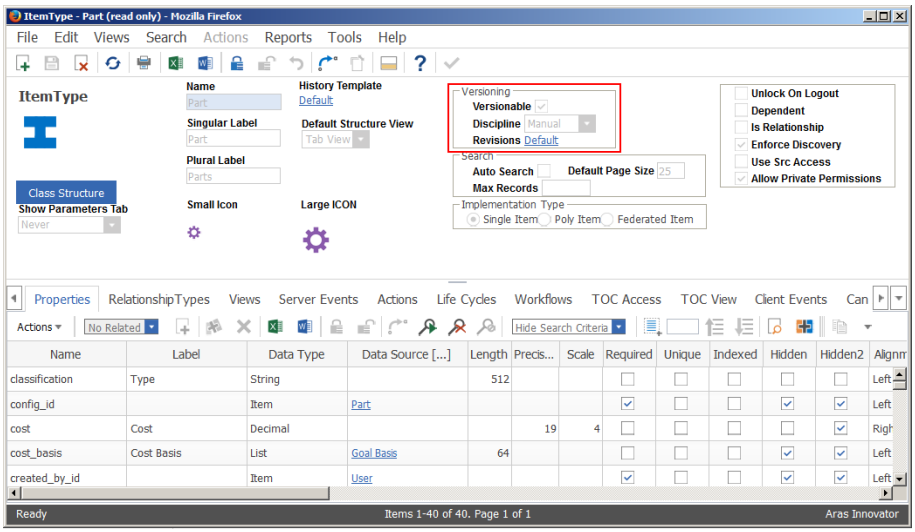
If the add temp prefix value is defined by the environment variable “PWB_ADDTEMP_PREFIX”, then this one takes precedence. The definition in the Schema file takes effect only if such a CATIA V5 environment variable does not exist.

Default value: “TMP”

Optional.

Versioning Configuration

Please set the versioning discipline for the item types “Part” and “CAD” (and “Document”, if you want to manage Design Tables) to “Manual”. Now the new generation of a Part and CAD document will not be created automatically by Aras Innovator in case of an update (see *Picture 159: Item Type “Part”*).



Picture 159: Item Type "Part"

Context action "Create new generation"

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="CreateNewVersion" usedIn="PdmWindow" />
```

Context action "Delete newest generation"

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="DeleteNewestVersion" usedIn="PdmWindow" />
```

Context action "Unlink and delete newest generation"

This function is a combination of "delete Part CAD relation" and "delete newest CAD generation".

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="UnlinkAndDeleteNewestVersion"
               usedIn="PdmWindow" />
```

Only one new Generation of a CAD Document per "Claim" Action

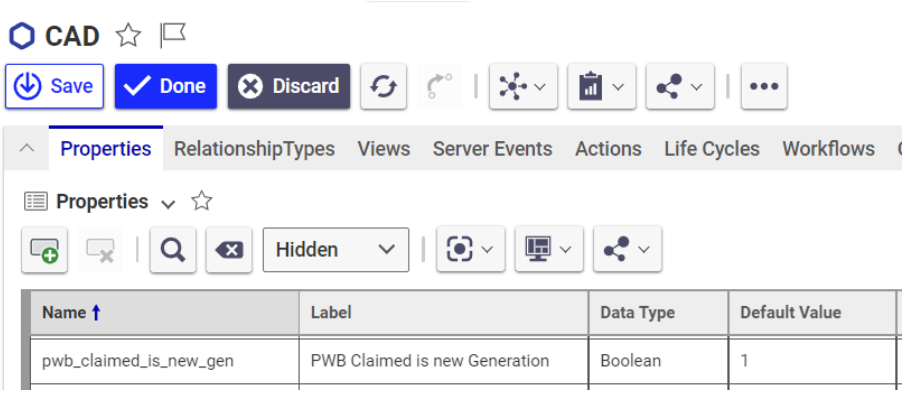
A new functionality can be configured where only one new generation of a CAD document will be created for a claimed document. This new generation will be created at the first update after the claim. Further updates will overwrite the newly created generation. If a new generation of the CAD document should be created explicitly then the user has to unclaim the CAD document and claim it again before performing the next update.

CAD document generations which are read-only, for example because they are released or frozen can be claimed if they are current. In this case the new generation will be created by the claim process, and the first update will not create another new generation.

If an already claimed CAD document becomes read-only later, then a new generation of the CAD document will be created at update, since the claimed generation cannot be overwritten.

This functionality is switched on if the CAD document type has a Boolean attribute which corresponds to the server setting ‘ClaimedIsNewGenAttr’.

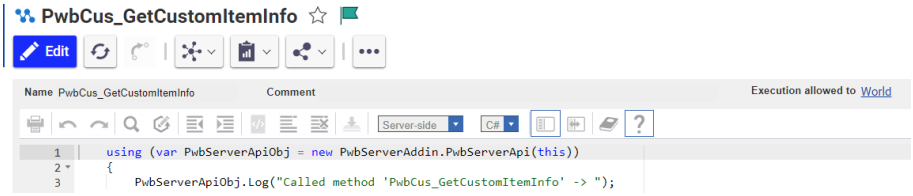
For example:



➔

Picture 160: Switching on the “One Generation per Claim” functionality

If the default behavior needs to be changed the default implementation can be overwritten by defining a C# server method whose name corresponds to the value of the server PWB setting ‘CustomMethod_GetCustomItemInfo’:



➔

Picture 161: Setting “CustomMethod_GetCustomItemInfo” and custom method “PwbCus_GetCustomItemInfo”

This method returns the information whether to create a new generation or not.

This is the default implementation which can be overwritten:

```
using (var PwbServerApiObj = new PwbServerAddin.PwbServerApi(this))
{
        PwbServerApiObj.Log("Called method 'PwbCus_GetCustomItemInfo' -> ");

        string PdmActionStr = getProperty("PdmAction");
        PwbServerApiObj.Log(" -> PdmActionStr:'" + PdmActionStr + "'");

        string InputObjsStr = getProperty("CustomItemInfoInputObjs");
        PwbServerApiObj.Log(" -> InputObjsStr:'" + InputObjsStr + "'");

        IDictionary<string, IDictionary<string, string>> ConfigDict =
                new Dictionary<string, IDictionary<string, string>>();

        var ItemList = PwbServerApiObj.QueryItemsForCustomItemInfo(InputObjsStr);
        foreach (var ItemObj in ItemList)
        {
                PwbServerApiObj.Log(
          "  -> '" + ItemObj.getType() + "' / '" + ItemObj.getID() + "'");
```

```
                IDictionary<string, string> CurrentItemConfigDict;
                GetItemConfigSettings(PwbServerApiObj, ItemObj, out
CurrentItemConfigDict);

                ConfigDict.Add(ItemObj.getID(), CurrentItemConfigDict);
        }

        IDictionary<string, string> OutputInfoDict = new Dictionary<string, string>();

        OutputInfoDict.Add(
                        "CustomItemInfoObjConfigSettings",
                        PwbServerApiObj.StringDictDictToString(ConfigDict));

        return PwbServerApiObj.DialogAttrsDictionaryToItem(OutputInfoDict);
}
}

private void GetItemConfigSettings(
                PwbServerAddin.PwbServerApi PwbServerApiObj,
                Item ItemObj,
                out IDictionary<string, string> ItemConfigDict)
{
        ItemConfigDict = new Dictionary<string, string>();

        // By default, the same calls as in the hardcoded server method.
        int LockStatus = ItemObj.getLockStatus();

        bool IsEditAllowed = (LockStatus == 1);
        bool IsClaimAllowed = (LockStatus == 0);
        bool ClaimAsNewGeneration = false;

        // Check for standard parts and for template files
        if ((PwbServerApiObj.ItemIsStandardPart(ItemObj)) &&
                (!PwbServerApiObj.IsUserStandardPartAdmin()))
        {
                IsEditAllowed = false;
                IsClaimAllowed = false;
        }

        if ((PwbServerApiObj.ItemIsTemplateFile(ItemObj)) &&
                (!PwbServerApiObj.IsUserTemplateFileAdmin()))
        {
                IsEditAllowed = false;
                IsClaimAllowed = false;
        }

        // Released items
        if ((ItemObj.getProperty("is_released") == "1") &&
                String.IsNullOrEmpty(ItemObj.getProperty("source_id"))) // not a relation
        {
                IsEditAllowed = false;
                IsClaimAllowed = false;
                ClaimAsNewGeneration = false;
        }

        // Superseded items should also not be modified.
        if (PwbServerApiObj.ItemIsSuperseded(ItemObj))
        {
                IsEditAllowed = false;
                IsClaimAllowed = false;
        }

        // Reconnected items must not be modified
        if (PwbServerApiObj.IsInReconnectContext())
        {
                IsEditAllowed = false;
                IsClaimAllowed = false;
        }

        if (IsEditAllowed || IsClaimAllowed)
        {
                PwbServerApiObj.CheckForEnvironmentAttributes(
                        ItemObj,
                        ref IsEditAllowed,
                        ref IsClaimAllowed,
                        ref ClaimAsNewGeneration);
```

```
        }

        // Debug info
        ItemConfigDict.Add("ItemNumber", ItemObj.getProperty("item_number", ""));
        ItemConfigDict.Add("Type", ItemObj.getType());
        ItemConfigDict.Add("Id", ItemObj.getID());

        ItemConfigDict.Add(
                        "IsUpdateAllowed",
                        (ItemObj.getProperty("pwb_update_allowed") == "1") ? "true" :
"false");

        ItemConfigDict.Add(
                        "ClaimedIsNewGen",
                        (ItemObj.getProperty("pwb_claimed_is_new_gen") == "1") ? "true" :
"false");

        bool IsReleased = (ItemObj.getProperty("is_released") == "1");
        bool UpdateAllowed = !IsReleased;

        if (!UpdateAllowed)
        {
                ClaimAsNewGeneration = true;
        }

        bool NewGenHasAlreadyBeenCreated =
      (ItemObj.getProperty("pwb_claimed_is_new_gen") == "1");

        bool CreateNewGenAtUpdate = ((!UpdateAllowed) || (!NewGenHasAlreadyBeenCreated));

        ItemConfigDict.Add("IsEditAllowed", IsEditAllowed.ToString().ToLower());
        ItemConfigDict.Add("IsClaimAllowed", IsClaimAllowed.ToString().ToLower());
        ItemConfigDict.Add("ClaimAsNewGeneration",
                        ClaimAsNewGeneration.ToString().ToLower());
        ItemConfigDict.Add("CreateNewGenAtUpdate",
                        CreateNewGenAtUpdate.ToString().ToLower());
```

Load Configuration

Context action "Load"

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="LoadStructure" usedIn="PdmWindow|QueryDialog"
               defaultAction="true" />
```

The element `defaultAction="true"` defines this context action is action to be performed by double-clicking on an object of this type.

Context action "Load (Current)"

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="LoadStructureCurrent" usedIn="QueryDialog" />
```

Context action "Load in Context"

It is possible to only load selected nodes of a structure to CATIA.

In the Schema file the *contextAction* tag with the name "LoadInContext" has to be defined for the needed structure nodes, for example for "/CAD/Mechanical/Part" and "/CAD/Mechanical/Assembly".

Example:

```
<contextAction name="LoadInContext" usedIn="PdmWindow" />
```

Open Configuration

Context action "Open in new PDM Window"

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="OpenInNewPdmWindow"
               usedIn="PdmWindow|QueryDialog" />
```

Context action "Open File"

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="Open" usedIn="PdmWindow|QueryDialog"
               defaultAction="true" />
```

The element `defaultAction="true"` defines this context action is action to be performed by double-clicking on an object of this type.

Context action "Open File with Link"

In the Schema file the context action can be enabled.

Example:

```
<contextAction name=" OpenWithLinks" usedIn="PdmWindow"
               defaultAction="true" />
```

The element `defaultAction="true"` defines this context action is action to be performed by double-clicking on an object of this type.

Context action "Open File temporarily"

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="TempOpen" usedIn="PdmWindow|QueryDialog" />
```

CATDrawing: Loading referenced Data as "Current"

It is possible to load the 3D data (CATParts or CATProduct structures) which are referenced by a CATDrawing as "Current" instead of "As Saved", which is the default.

In the Schema file this functionality is enabled by defining these "contextAction" definitions for the "/CAD/Mechanical/Drawing" object definition.

Example:

```
<contextAction name="OpenDrawingWithRelated3D"
               usedIn="PdmWindow|QueryDialog" />
<contextAction name="OpenDrawingWithRelated3DCurrent"
               usedIn="PdmWindow|QueryDialog" />
```

Context action "Open related drawings"

This action is available in the CATIA V5 window. It allows to open related CATDrawings for the selected object.

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="OpenRelatedDrawings" />
```

Show Neighborhood Configuration

Bounding box definition

In the Schema file the names of the bounding box attributes can be defined.

Example:

```
<boundingBoxAttributes>
   <boundingBoxXMinAttr name="x_min" />
   <boundingBoxXMaxAttr name="x_max" />
   <boundingBoxYMinAttr name="y_min" />
   <boundingBoxYMaxAttr name="y_max" />
   <boundingBoxZMinAttr name="z_min" />
   <boundingBoxZMaxAttr name="z_max" />
</boundingBoxAttributes>
```

When all bounding box attributes are defined, the bounding box functionality is enabled, otherwise the functionality is disabled.

Optional.

Context action "Show Neighborhood"

In the Schema file the context action can be enabled.

Example:

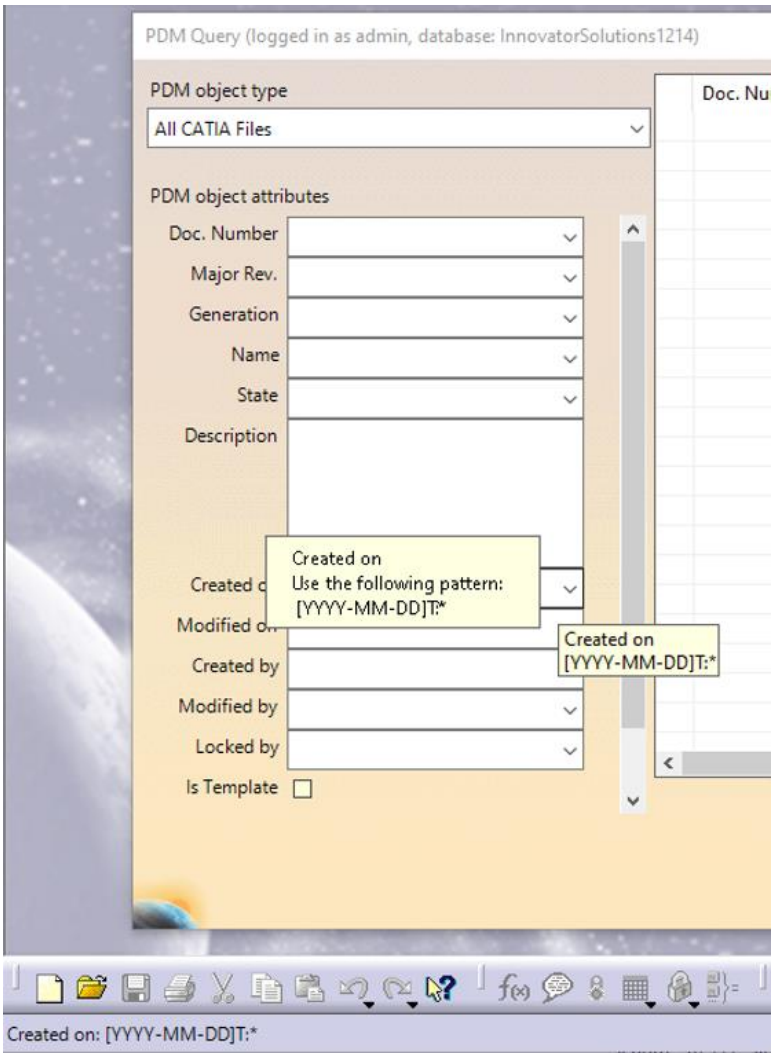
```
<contextAction name="ShowNeighbor" usedIn="PdmWindow|QueryDialog" />
```

Use Tooltip for Attributes in PDM Workbench Dialogs

If you use query, create, update item or any other PDM Workbench functionality where you must fill in some attributes, you often have to follow special patterns for the attributes.

Now it is possible to configure a help text for every attribute. If needed you can use different help for each kind of dialog.

The help can be configured as tooltip, as text in the status bar and as help which is displayed when using "What's This" or "?" of the dialog:



Picture 162: Display help for PWB attributes

Configuration

If you want to use the same help texts for an attribute in all kinds of dialogs, you can just add the help texts to the file PWBSchemaDisplayNames_Aras_Aras.CATNls (To create a multi-line help it is possible to use “\n” or a linebreak):

```
NLS_created_on = "Created on";
NLS_created_on.Help = "Created on: [YYYY-MM-DD]T:*";
NLS_created_on.ShortHelp = "Created on\n[YYYY-MM-DD]T:*";
NLS_created_on.LongHelp = "Created on
Use the following pattern:
[YYYY-MM-DD]T:*";
```

<NLS_attribute>.Help … This text is displayed in the status bar.

<NLS_attribute>.ShortHelp … This text is displayed as tooltip.

<NLS_attribute>.LongHelp … This text is displayed when using “What’s This”.

To use a different help text for an attribute in the context of a special dialog you need to define a special displayName for the attribute in the context of the dialog in the PWB Schema:

```
<object name="[Name]" displayName=”[NLS_name]" icon="[icon]">
  …
```

```
  <form name="[Form name]">
      …
            <formAttribute name="attribute name"
           displayName="NLS_name for attribute in form" … />
    …
      </form>
      …
</object>
```

Then add the new displayName with its Help, ShortHelp and LongHelp to the file PWBSchemaDisplayNames_Aras_Aras.CATNls.

Example:

PWB Schema file:

```
<object name="/CAD/Mechanical/Assembly"
displayName="NLS_CATProduct" icon="CATProduct">
      …
  <form name="Register">
           <formAttribute name="item_number"
       displayName="NLS_item_number_CAD_Register"
       widgetType="SingleLineEditor" mode="update"
       visibleLength="15" required="true" />
           …
</form>
</object>
```

PWBSchemaDisplayNames_Aras_Aras.CATNls:

```
NLS_item_number_CAD_Register = "Doc. Number";
NLS_item_number_CAD_Register.Help = "Doc. Number: XXX.YYY-ZZZ";
NLS_item_number_CAD_Register.ShortHelp = "Doc. Number:
Pattern: XXX.YYY-ZZZ";
NLS_item_number_CAD_Register.LongHelp = "Doc. Number:
Pattern: XXX.YYY-ZZZ
Where
XXX ... Main Project
YYY ... SUB Project
ZZZ ... individual number";
```

Link Support

Link Management

When designing, the user can create many types of links between CATIA features or between a CATIA feature and a foreign object. Some of these links are presented to the user in the “Edit Links” command, others are not shown in the CATIA UI.

The information about the CATIA links, which are pointing from an object in one document to an object in another document (“external link”), can be retrieved and transferred to Aras Innovator.

Previous PDM Workbench releases supported the transfer of CATIA links between a CATDrawing and a CATProduct or CATPart (“Drawing” link in Aras Innovator) and between a CATPart and a CATPart (“Reference” link in Aras Innovator). Furthermore, regular product structure links and design table links were supported. This is still the default behaviour with this PDM Workbench release.

This PDM Workbench release provides the new capability to detect and transfer all CATIA external link types as they are provided and grouped by CATIA.

Configuration

Create the server PWB Configuration setting to use basic link management (default).

UseAllCatiaLinkTypes	false

Picture 163: PWB Configuration setting “UseAllCatiaLinkTypes” - false

The default value is “false”.

Only the following sub-classes of the Aras Innovator ItemType “CAD Structure” are used:

- Reference
- Drawing

Create the server PWB Configuration setting to use all CATLinkTypes:

UseAllCatiaLinkTypes	true

Picture 164: PWB Configuration setting “UseAllCatiaLinkTypes” - true

The following sub-classes of the Aras Innovator ItemType “CAD Structure” are created:

- Contextual
- Reference (Original CATIA link type “Design”)
- Drawing (Original CATIA link type “Downstream”)
- IsComposedOf
- Product
- Reference
- Result
- RuleBase

For compatibility reasons links between CATDrawings and their original 3D geometry files are still created as “Drawing”, and non-context links between two CATPart files are by default still created as “Reference”.

With the following two server settings (value ‘true’) the original internal CATIA link names of ‘Downstream’ for drawing links and ‘Design’ for CATPart reference links will be created instead:

UseOrigCatiaLinkTypeName-Drawing	true
UseOrigCatiaLinkTypeName-Reference	true

Picture 165: PWB Configuration settings “UseOrigCatiaLinkTypeName-Drawing” and “UseOrigCatiaLinkTypeName-Reference”

The default values are “false”.

Possibility to filter Relation Definitions in Schema File depending on Configuration Settings

It is possible to filter ‘relation’ definitions in the PWBSchema.xml file depending on client environment variables, settings in the PWB Schema file (<setting> … </setting>), or PWB Configuration settings on the server.

This is used for not showing certain classifications of CATIA link relations depending on server settings.

Example:

```
<!-- possible values for 'onlyIfDefined':
                                                    "client-envvar",
"client-setting", "server-setting" -->
<relation
   name="/CAD Structure/Reference"
        displayName="NLS_CADStructure_Reference"
        icon="Aras_Relation" createAllowed="true"
        expandAllowed="true" info="AsSaved"
        onlyIfDefined="server-setting:UseOrigCatiaLinkTypeName-Reference=false" >
        ...
</relation>
```

Basic drawing link support

The drawing link functionality has to be switched on by defining the Schema file setting

```
<updateCatiaLinksInPdm value="true" />
```

Optional.

In addition to that, an additional form attribute has to be defined in the “Register” form of the CATDrawing object definition. This attribute has to have the attribute `displayOnly="true"` to indicate that it is not an actual PDM attribute, only a display attribute in the dialog:

```
<formAttribute name="LinkedMainGeometryFile" widgetType="ComboBox"
               mode="update" visibleLength="15" required="false"
               listViewRelevant="false" displayOnly="true" />
```

The corresponding attribute definition has to contain the XML attribute `pwbAttrInfo="MainDrwGeometryFile"`, and it has to refer to a data source which contains some special definitions:

```
<attribute name="LinkedMainGeometryFile"
           displayName="NLS_LinkedMainGeometryFile"
           dataSource="LinkedGeometryFiles"
           pwbAttrInfo="MainDrwGeometryFile" />
```

The data source definition which is referred has to contain the definition `additionalValues="GeometryFilesLinkedInSession"`:

```
<dataSource name="LinkedGeometryFiles" type="ValueList"
            additionalValues="GeometryFilesLinkedInSession" />
```

If the configuration is set up correctly then the user will see an additional list widget in the register dialog for CATDrawings which enables him to select one of the linked 3D geometry files (see *PDM Workbench User Manual*).

Download related 3D File

In the Schema file it can be configured if with the loading of the drawing file the reference 3D file should also be downloaded and opened in CATIA.

Example:

```
<downloadDrawingRelated3DFile value="true" />
```

Default value: “false”

Optional. Possible values: “true”, or “false”.

Option to block the update if linked file is not saved

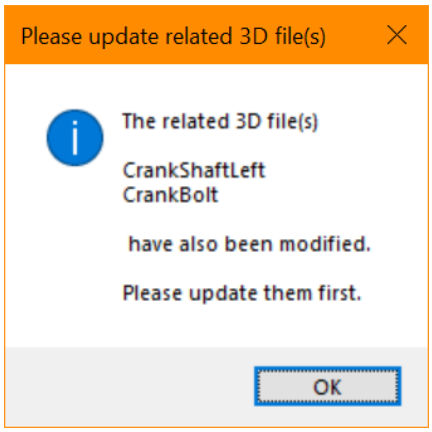
Configuration

The PWBSchema.xml setting “UpdDrw-CheckLinked3DFiles” has to be set to the value “true”. The same applies to the setting “UpdPrt-CheckLinked3DFiles”.

```
<settings>
      <setting name="UpdDrw-CheckLinked3DFiles" value="true"/>
      <setting name="UpdPrt-CheckLinked3DFiles" value="true"/>
</settings>
```

Usage

When the user tries to update a CATDrawing which has links to CATParts that are loaded in the CATIA session, or a CATPart which has reference links to other CATParts, then the information to update those CATParts first is presented:



Picture 166: Information about CATParts to be updated

Duplicate related drawings

When a CATPart or a CATProduct is duplicated with the PDM Workbench, the related CATDrawing will also be duplicated if the part number of the CATPart/CATProduct is the prefix of the CATDrawing, e.g. “Part1Drw” is related to “Part1” and has the correct prefix.

In the Schema file the length of the prefix to be compared can be defined.

Example:

```
<duplicateRelatedDrawings charsToCompare="25" />
```

Default value: “0”

Optional.

Basic Multi-Model Link Support

In the Schema file the multi-model link functionality can be switched on, similar to the drawing link functionality.

Example:

```
<updateCatiaLinksInPdm value="true" />
```

Default value: “false”

Optional. Possible values: “true”, or “false”.

Representation Types

It is possible to define an attribute on the CAD document item type which defines the so-called “rep type”, that is, the representation type. Only CAD documents with the default rep types will be loaded to the CATIA session.

This functionality only applies to the part structure mode.

Part CAD Filter

The PWB Configuration item settings “RepTypeAttribute”, “Default3DRepType”, and “Default2DRepType” have to be set.

The PWB Configuration item setting “RepTypeAttribute” has to be set to the internal attribute name of a list attribute which is defined on the type “CAD”. The list should contain all the values that are possible for the rep type attribute.

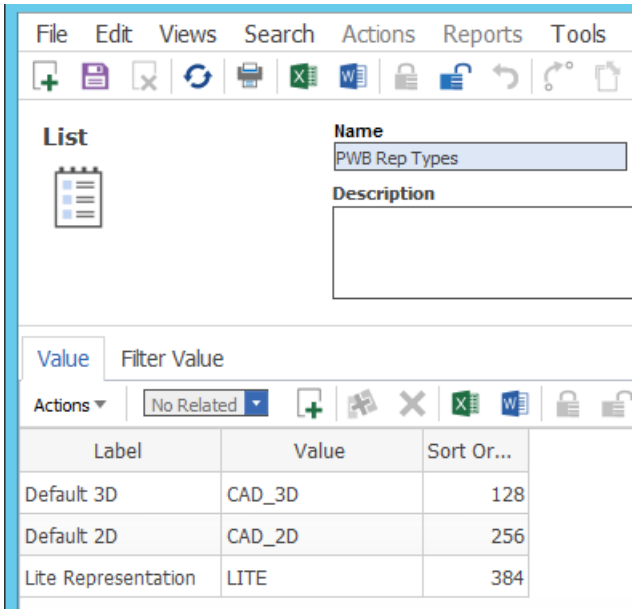
pwb_rep_type	pwb_rep_type	List	PWB Rep Types

Picture 167: Example rep type attribute

RepTypeAttribute	pwb_rep_type
Default2DRepType	CAD_2D
Default3DRepType	CAD_3D

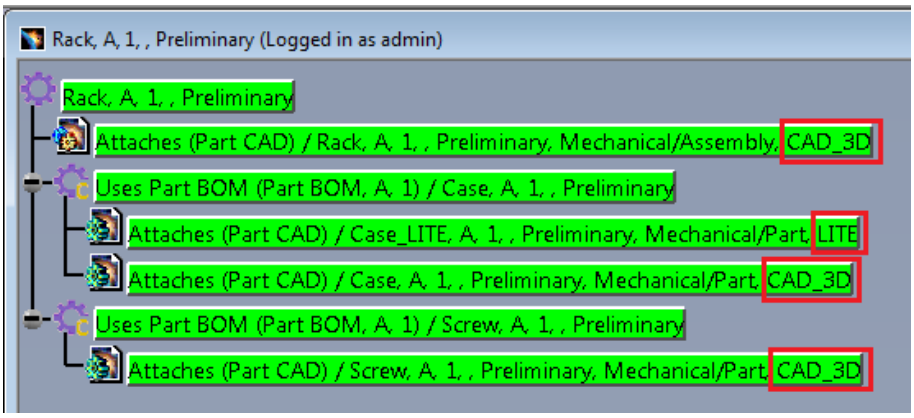
Picture 168: Example rep type value list

The PWB Configuration item settings “Default3DRepType” and “Default2DRepType” have to be set to the default type for 3D geometry files (CATParts and CATProducts) and 2D geometry files (CATDrawings), respectively.



Picture 169: Sample Part CAD filter configuration

If this functionality is switched on, then newly created CAD documents will automatically have the rep type attribute value set to their default value. The value can be changed to a different value (e.g. “LITE”). Only CAD documents with the default rep type value will be loaded.

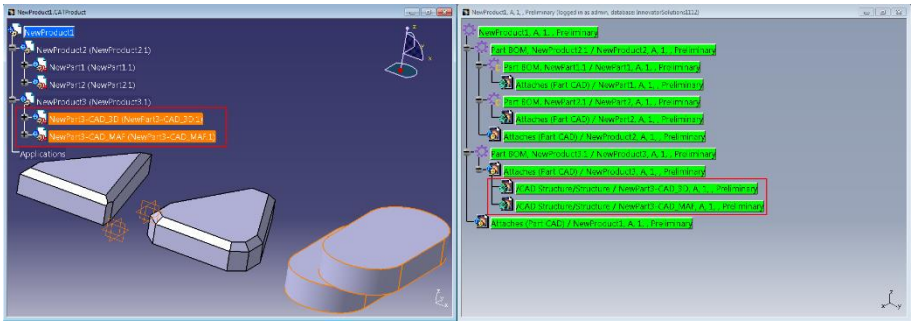


Picture 170: Different rep type values on CAD documents in a structure

Additional Rep Types

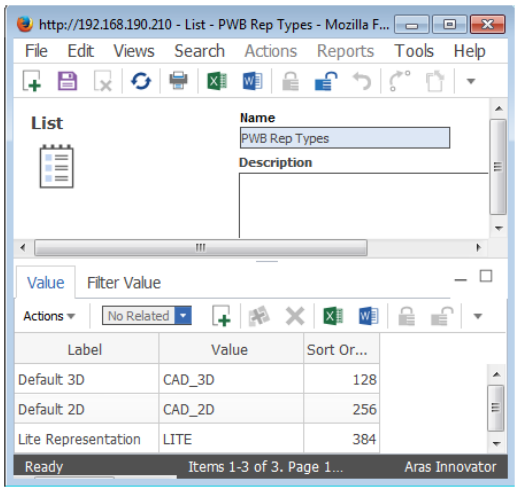
It is possible to load additional 3D rep types in addition to e.g. “CAD_3D” in the CATProduct structure at the same time.

This is only possible when the different 3D rep type CATParts are defined as non-BOM CAD documents. BOM-relevant CAD documents are the CAD items that are related directly to the part item with the “Part CAD” relation. Non-BOM CAD documents are the “CAD Structure/Structure” child nodes of the BOM-relevant CAD documents:

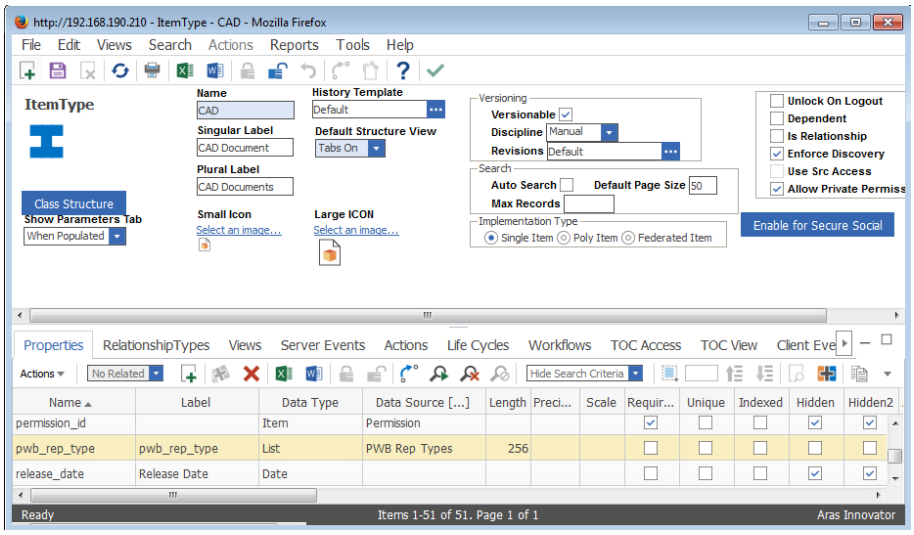


Picture 171: Two CATParts with different rep types related to the same part loaded at the same time

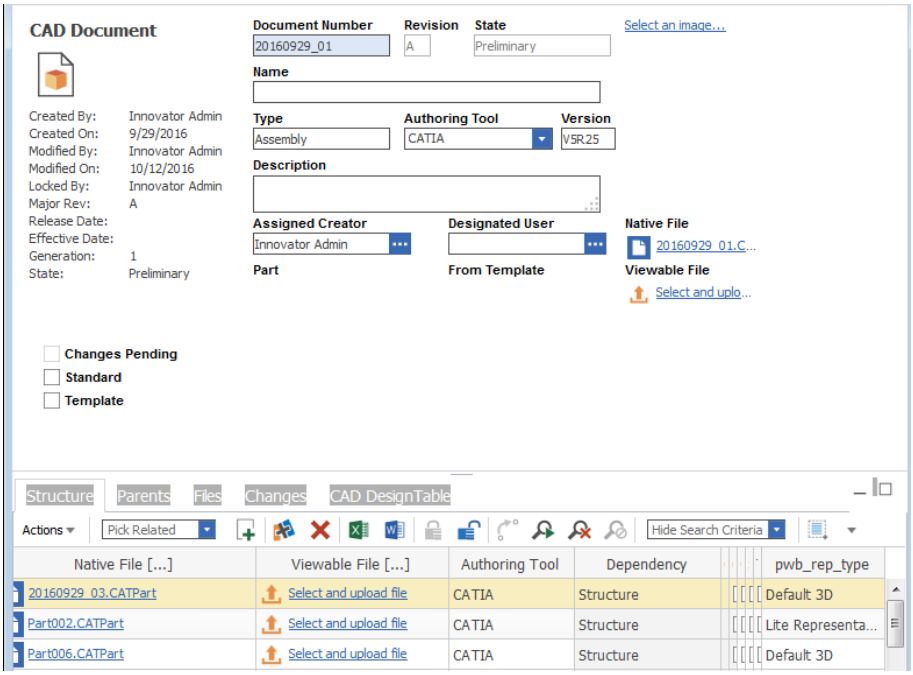
To use the Rep Type Filter functionality, you have to create a list of rep types in Aras and assign the list to the pwb_rep_type attribute at CAD. Then you can change the pwb_rep_type of a CAD Document.



Picture 172: Create / Update list of Rep Types



Picture 173: Assign Rep Type List to CAD



Picture 174: Change pwb_rep_type

On the client you have to add the list of filter3dRepTypes to the file “PWBSchema.xml”. This is a subset of the pwb_rep_type list that only holds 3D rep types.

Example:

```
<filter3dRepTypes>
   <repType3d name="CAD_3D" />
   <repType3d name="CAD_MAF" />
   <repType3d name="LITE" />
   <repType3d name="CAD_KIN" />
   <repType3d name="CAD_WFR" />
</filter3dRepTypes>
```

Optional.

Attach additional Non-Bom CATParts to Part

When using the BOM Part Structure Data Model only one CATPart can be attached to an Aras Part (Component). This new functionality extends this behavior and allows you to have additional Non-BOM CATParts attached to an Aras Part (Component).

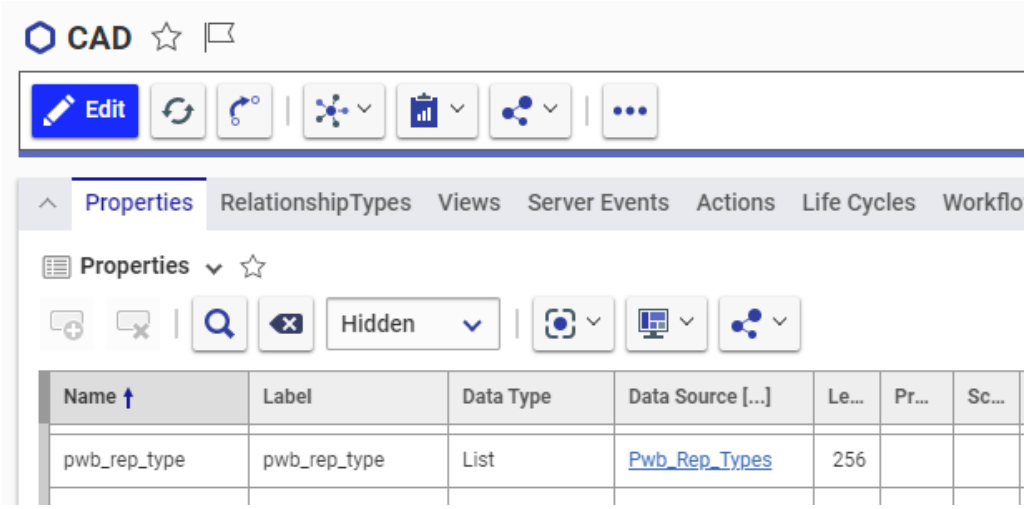
When loading the Component, the additional CATParts are only loaded into the CATIA session if they are referenced by a CATIA file which is part of the normal BOM structure. It is also possible to load a Non-BOM CATPart directly.

To create a Non-BOM CATPart it is now possible to set the PLM type of a CATPart. There is also a new functionality to relate the active Non-BOM CATPart to an Aras Part.

To use the functionality the usage of Non-BOM CATIA files in BOM mode must be enabled.

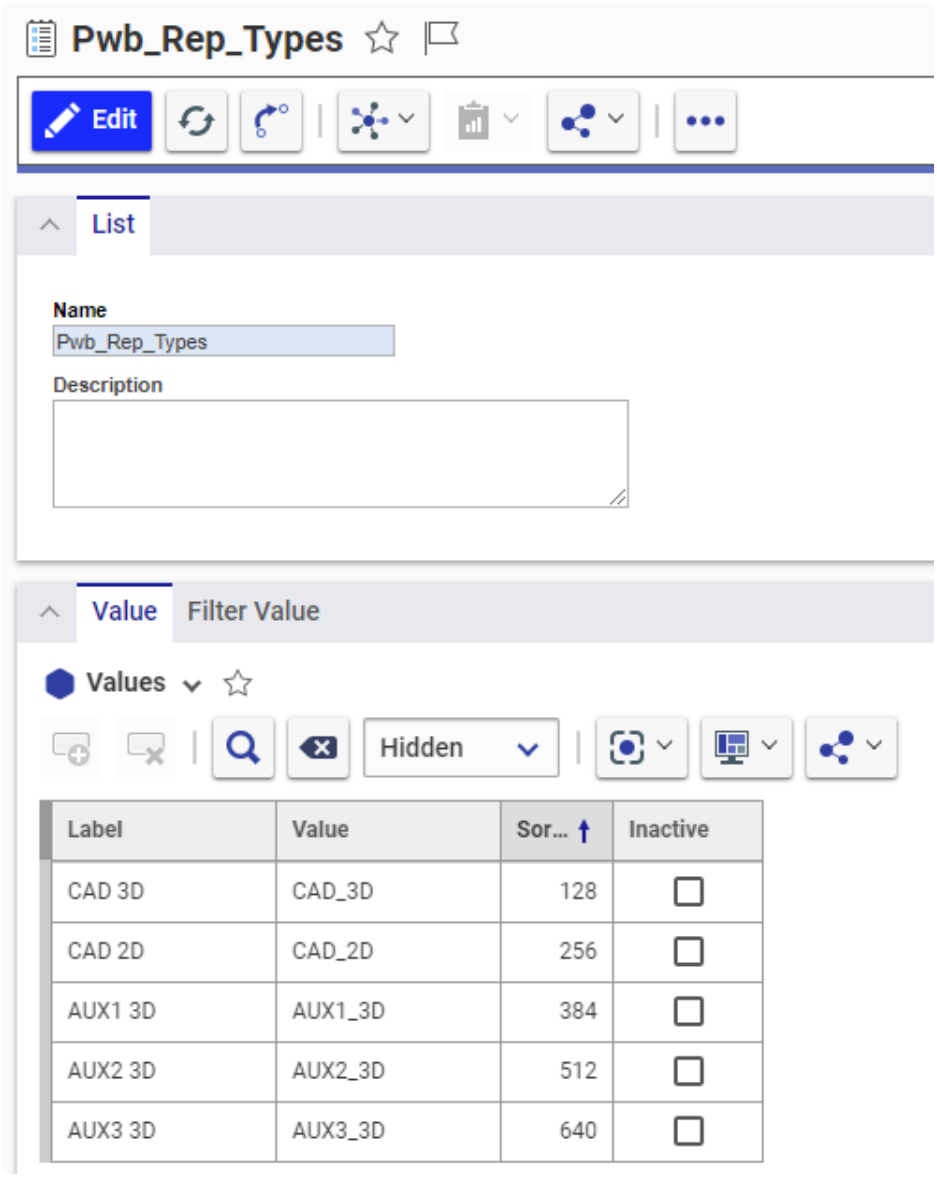
On the server side the following configuration is required:

The functionality uses an additional property at of the CAD item to hold the representation type.



Picture 175: Configuration on Item Type “CAD”

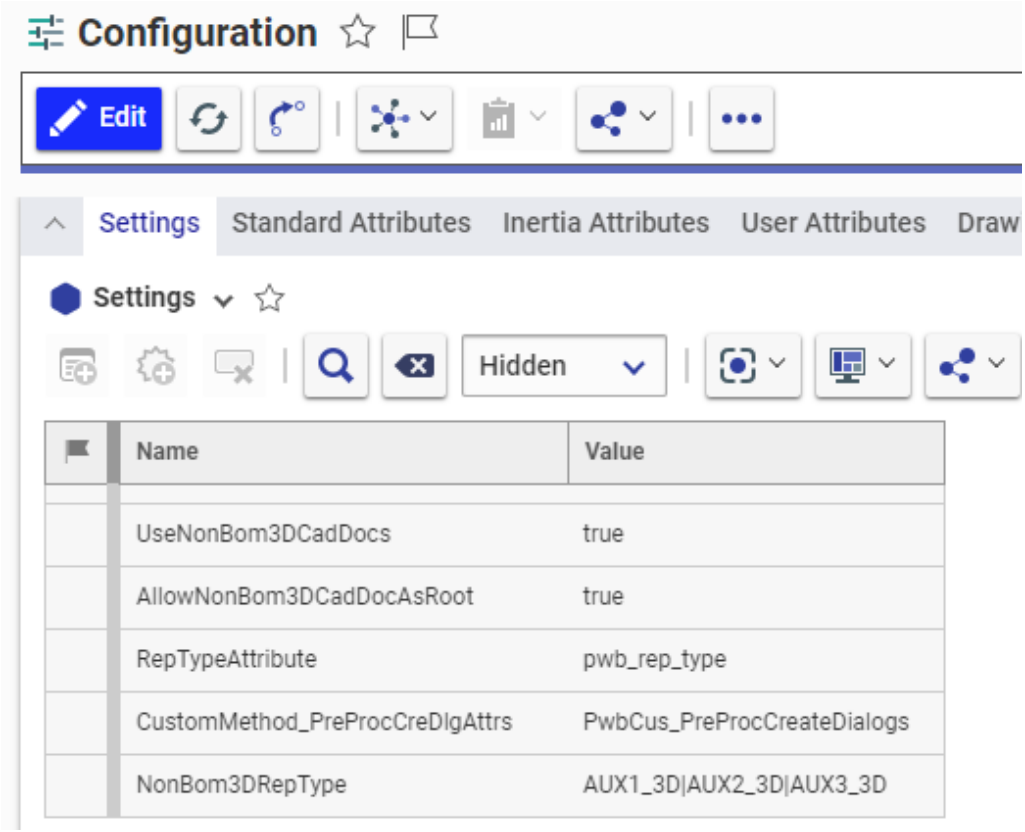
With a list of valid representation types:



Picture 176: List of valid representation types

For the normal CATParts / CATDrawings PDM Workbench uses the representation types CAD_3D and CAD_2D (default).

The property name which holds the representation type and some other settings must be configured in the PDM Workbench Configuration:



Picture 177: Configurations for Representation Types in the PWB Configuration

- UseNonBom3DCadDocs=true
  General allow the usage of Non-BOM CATIA files when using BOM Part Structure Data Model.
- AllowNonBom3DCadDocAsRoot=true
  Allow the usage of a Non-BOM CATIA file in its own window.
- RepTypeAttribute=pwb_rep_type
  Property at the Item Type “CAD” that holds the representation type.
- NonBom3DRepType=AUX1_3D|AUX2_3D|AUX3_3D
  List of Representation Types (separated by ‘|’) that indicate a Non-BOM CATPart.
- (Default3DRepType=CAD_3D)
  Representation Type that indicates a normal BOM CATIA file (if set, the value must not be empty).
- (Default2DRepType=CAD_2D)
  Representation Type that indicates a CATDrawing.
- CustomMethod_PreProcCreDlgAttrs=PwbCus_PreProcCreateDialogs
  Automatically set the Representation Type without selecting it in the Create dialog of a CATPart.

Sample custom method to set the representation type to AUX_3D for a non BOM CATPart:

```
using (var PwbServerApiObj = new PwbServerAddin.PwbServerApi(this))
{
   string PdmType = this.getProperty("Type");
   string PdmClassification = this.getProperty("Classification");

   PwbServerApiObj.Log("Called method -> '" + PdmType +
                  "' / '" + PdmClassification + "'" );

   IDictionary<string, string> PartInputDialogDict = null;
```

```
if (PdmType == "Part")
{
   // Part dialog attributes
   Item PartInputDialogItem = getPropertyItem("PartDialogAttrs");
   if (PartInputDialogItem == null)
   {
      return getInnovator().newError(
         "Could not retrieve part dialog attributes !");
   }
   else
   {
      PartInputDialogDict =
         PwbServerApiObj.DialogAttrsItemToDictionary(
            PartInputDialogItem);
      if (PartInputDialogDict == null)
      {
         return getInnovator().newError(
            "Could not convert part dialog attributes !");
      }
   }
}

IDictionary<string, string> CadDocInputDialogDict = null;
if (PdmType == "CAD")
{
   // CAD dialog attributes
   // The CAD document dialog is only needed when a CAD type
   // needs to be created
   Item CadDocInputDialogItem =
      this.getPropertyItem("CadDocDialogAttrs");
   if (CadDocInputDialogItem == null)
   {
      return getInnovator().newError(
         "Could not retrieve CAD document dialog attributes !");
   }

   CadDocInputDialogDict =
      PwbServerApiObj.DialogAttrsItemToDictionary(
         CadDocInputDialogItem);
   if (CadDocInputDialogDict == null)
   {
      return getInnovator().newError(
         "Could not convert CAD document dialog attributes !");
   }
}

// CATIA standard properties
// 'CadPartNumber', 'CadRevision', 'CadNomenclature',
// 'CadDefinition', 'CadDescriptionReference', 'CadFileName',
// 'CadIsBomNode'
IDictionary<string, string> CatiaStdPropsDict = null;
Item CatiaStdPropsItem = this.getPropertyItem("CadStdProps");
if (CatiaStdPropsItem == null)
{
   // return getInnovator().newError(
   //   "Could not retrieve CATIA standard properties !");
}
else
{
   CatiaStdPropsDict =
      PwbServerApiObj.DialogAttrsItemToDictionary(
         CatiaStdPropsItem);
   if (CatiaStdPropsDict == null)
   {
      // return getInnovator().newError(
      //   "Could not convert CATIA standard properties !");
   }
}

// Resulting output dialog attributes
IDictionary<string, string> OutputDialogDict = new Dictionary<string, string>();

IDictionary<string, string> InputDialogDict = null;
if ((PdmType == "CAD") || (PdmType == "Part"))
{
   if (PdmType == "CAD")
   {
      InputDialogDict = CadDocInputDialogDict;

      if (CatiaStdPropsDict != null)
      {
```

```
            string CadFileName = null;
            if (CatiaStdPropsDict.TryGetValue(
                  "CadFileName", out CadFileName) &&
               !String.IsNullOrEmpty(CadFileName) &&
               CadFileName.EndsWith(".CATPart"))
            {
               string IsBomNode = null;
               if (CatiaStdPropsDict.TryGetValue(
                     "CadIsBomNode", out IsBomNode) &&
                  !String.IsNullOrEmpty(IsBomNode))
               {
                  if (IsBomNode == "false")
                  {
                     List<string> NonBomRepTypes = new List<string>();
                     NonBomRepTypes.Add("AUX1_3D");
                     NonBomRepTypes.Add("AUX2_3D");
                     NonBomRepTypes.Add("AUX3_3D");

                     string currentRepType = null;
                     if (InputDialogDict.TryGetValue(
                           "pwb_rep_type", out currentRepType) &&
                        !String.IsNullOrEmpty(currentRepType))
                     {
                        if (!NonBomRepTypes.Contains(currentRepType))
                        {
                           InputDialogDict.Remove("pwb_rep_type");
                           InputDialogDict.Add("pwb_rep_type", NonBomRepTypes[0]);
                        }
                     }
                     else
                     {
                        InputDialogDict.Remove("pwb_rep_type");
                        InputDialogDict.Add("pwb_rep_type",
                                            NonBomRepTypes[0]);
                     }
                  }
                  else
                  {
                     InputDialogDict.Remove("pwb_rep_type");
                     InputDialogDict.Add("pwb_rep_type", "CAD_3D");
                  }
               }
               else
               {
                  InputDialogDict.Remove("pwb_rep_type");
                  InputDialogDict.Add("pwb_rep_type", "CAD_3D");
               }
            }
         }
      }
      else
      {
         InputDialogDict = PartInputDialogDict;
      }
   }

   Item OutputDialogItem =
      PwbServerApiObj.DialogAttrsDictionaryToItem(
         InputDialogDict);

   return OutputDialogItem;
}
```

On the Client the following settings are required in the Schema.xml file:

```
<settings>
      …
      <!-- enable the possibility to register a new CATPart as -->
      <!-- non BOM and relate it to the selected Aras Part -->
      <setting    name="RelateNonBomToPartEnableRegisterNew"
            value="true"/>
</settings>
```

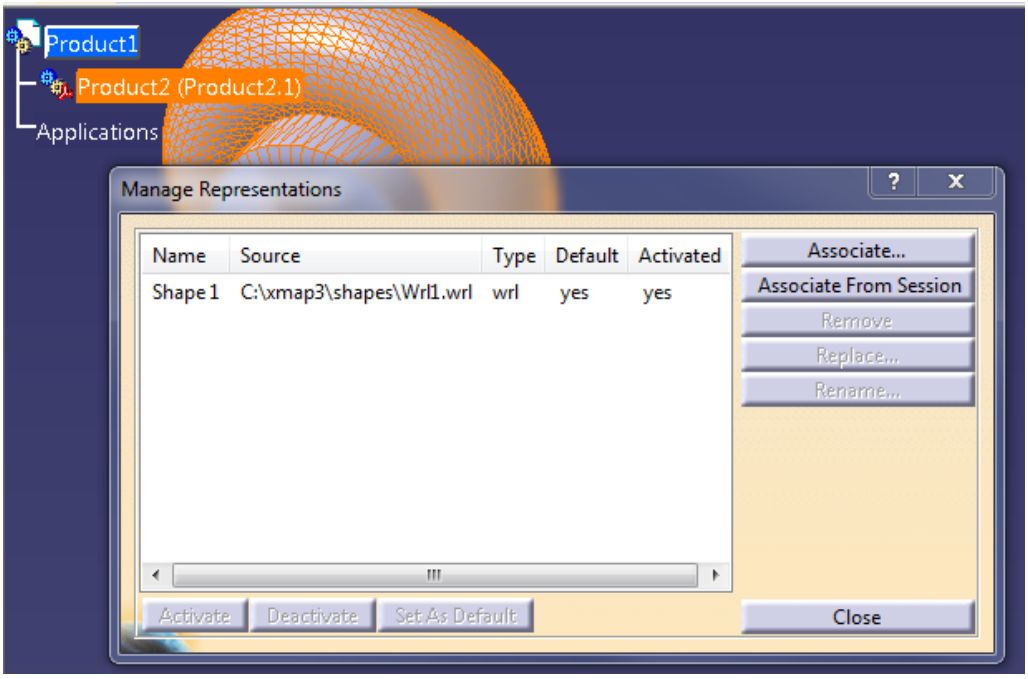
```
<object name="/Part/Component" displayName="NLS_Component"
        icon="Aras_Component" >
      …
<contextAction    name="RelateNonBomToPart"
              usedIn="QueryDialog"/>
…
</object>

<object name="/CAD/Mechanical/Part" displayName="NLS_CATPart"
        icon="CATPart" isDefaultFor="CATPart">
…
<contextAction name="SetPdmType" />

<form name="Query">
…
      <formAttribute    name="pwb_rep_type" widgetType="ComboBox"
                mode="output" visibleLength="15" required="false"
                entryAllowed="true" dataSource="RepType" />
</form>
…
</object>

…
<attribute  name="pwb_rep_type" displayName="NLS_pwb_rep_type"
            dataSource="RepType" />

…
<dataSource name="RepType" type="ValueList">
<value name="AUX1_3D" displayName="AUX1_3D" />
<value name="AUX2_3D" displayName="AUX2_3D" />
<value name="AUX3_3D" displayName="AUX3_3D" />
<value name="CAD_3D" displayName="CAD_3D" />
</dataSource>
```

If you are using a custom method to get the filtered models of a Part (CustomMethod_GetFilteredModelsForParts) you have to make sure this method does not return CADs using the property `pwb_rep_type="AUX1_3D|AUX2_3D|AUX3_3D"`.

Support generic Shape Representations

Depending on the CATIA installation it is possible to add a geometry file of a type like CATShape, jt, pkg, wrl, STL or others as a representation to a Component. The present functionality supports to store these additional geometry files in Aras Innovator. The extra geometry files are treated as read-only files, just like CATIA V4 model files.

It is possible to configure up to five additional types to be supported.

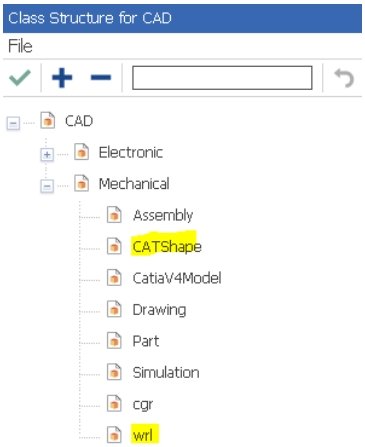


Picture 178: Manage Representations

Configuration

Server

To use additional file types like CATShape or wrl, new classifications for the item type CAD need to be defined.



Picture 179: Class Structure "CAD" – Added "CATShape" and "wrl"

The PWB Configuration item settings "GenericShapeTypeX" have to be set to the type, where X is a number from 1 to 5.

The PWB Configuration item settings "GenericShapeExtensionX" have to be set to the corresponding file extension, where X is a number from 1 to 5.

To generate thumbnails in CATIA for the new types, you have to extend the "CreateThumbnailsFromTypes" in the PWB Configuration.

GenericShapeType1	/CAD/Mechanical/CATShape
GenericShapeExtension1	CATShape
CreateThumbnailsFromTypes	.CATPart|.CATDrawing|.CATShape|.model|.cgr|.wrl
GenericShapeType2	/CAD/Mechanical/wrl
GenericShapeExtension2	wrl

Picture 180: PWB Configuration – "CreateThumbnailsFromTypes"

Client

The new types have to be configured in the PWBSchema.xml file on the client. The easiest thing is to orientate yourself by the definition of the CATIA V4 model.

Checks

Check file versions in structure

In the Schema file it can be configured that the file versions should be checked in the structure.

Example:

```
<checkFileVersionsInStructure value="true" />
```

Default value: "true"

Optional. Possible values: "true", or "false".

Check CATParts in Visualization mode

In the Schema file it can be configured that it will be checked for CATParts loaded in Visualisation mode.

Example:

```
<checkCatPartsInVisuMode value="false" />
```

Default value: "true"

Optional. Possible values: "true", or "false".

Check CATIA PartNumbers before update

In the Schema file it can be configured that the CATIA part numbers are checked for invalid characters before update.

Example:

```
<checkCatiaPartNumbersBeforeUpdate value="false" />
```

Default value: "true"

Optional. Possible values: "true", or "false".

Check for CAD owner

In the Schema file it can be configured if it is possible to load structures which have been created by a different CAD integration ("external_owner" attribute value is not "T-Systems.Mechanical.CATIA").

If this setting is set to "true" then it is not possible to load structures from a different integration.

Example:

```
<checkForCadOwner value="true" />
```

Default value: “false”

Optional. Possible values: “true”, or “false”.

Check for CAD document CATIA release at PDM update

In the Schema file a new functionality can be switched on that asks the user before overwriting a file which has been created with a lower release of CATIA V5.

Example:

```
<checkAuthoringToolVersion value="true" />
```

Default value: “false”

Optional. Possible values: “true”, or “false”.

Optional check for broken links at update

Normally creating a CATProduct with broken links in PDM gives warnings. It is possible to configure the integration to give errors instead, thereby stopping the update process.

In the Schema file the following has to be added in order to stop Synchronize if there are broken links at new CATProducts.

Example:

```
<allowBrokenLinkAtNewProduct value="false" />
```

Default value: “true”

Optional. Possible values: “true”, or “false”.

Delete relations of non-loaded instances

Normally you can only delete relations during PWB Update if the relation was loaded by the PDM Workbench. With this functionality it is possible to delete relations which are not loaded.

In the PWB Configuration you have to add the setting “DeleteNotLoadedInstances”:

DeleteNotLoadedInstances	true

Picture 181: PWB Configuration – “DeleteNotLoadedInstances”

Default value: “false”

Optional. Possible values: “true”, or “false”.

Check CAD Links

When CATIA documents with 3D links need to be imported this functionality helps the user to determine which documents have to be imported in which order, and which documents have to be in the CATIA session so the links are created correctly.

To retrieve the CAD documents which already exist in PDM by default the CAD document number is compared to the CATIA file name. If the CAD documents in PDM have been assigned a PDM-generated number then the original file name has been overwritten. If the original file name has been saved in another PDM attribute this other attribute can be queried instead.

If, for instance, the original file name has been saved in the “name” attribute of the CAD document, then this functionality can be configured to query for the “name” attribute when comparing the value with the CATIA file name.

For this the PWB Configuration item setting “CadLinkCheckQueryAttribute” can be set to a different PDM attribute, e.g. “name”.

CadLinkCheckQueryAttribute	name

Picture 182: Sample CadLinkCheckQueryAttribute configuration

Context action “Check CAD Links”

This action is available in the CATIA V5 window. It allows to check the CAD links for the selected object.

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="CheckCadLinks" />
```

Miscellaneous Context Actions

Context action “Properties”

The context action “Properties” is default and not explicitly defined in the Schema file.

The context action “Properties” has a window with two tabs for “Properties”, and “UpdateItem”. The corresponding dialog forms must also be defined for that class.

Context action “Unclaim”

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="CheckIn" usedIn="PdmWindow|QueryDialog" />
```

Context action “Claim”

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="CheckOut" usedIn="PdmWindow|QueryDialog" />
```

Context action “Unclaim all”

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="CheckInAll" usedIn="PdmWindow" />
```

Context action “Claim all”

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="CheckOutAll" usedIn="PdmWindow" />
```

Disable Confirmation Messages for Claim/Unclaim actions

Can be switched on by the schema file setting

```
<setting name="DisableConfirmPromptOnClaimUnclaim" value="true"/>
```

Then the confirmation message will not be shown if the Claim/Unclaim action was successfully performed.

Optional Availability of Claim and Unclaim Toolbar Icons in the Toolbar

Can be switched on by the schema file setting

```
<setting name="EnableClaimUnclaimMenu" value="true"/>
```

Context action "Duplicate"

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="Duplicate" usedIn="PdmWindow|QueryDialog" />
```

Context action "Duplicate-Delete"

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="DuplicateDelete" usedIn="PdmWindow|QueryDialog" />
```

Context action "Duplicate-Supersede"

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="DuplicateSupersede" usedIn="PdmWindow" />
```

Context action "Insert PDM Node"

This action is available in the CATIA V5 window. It allows to insert an item directly into the CATIA structure of the selected object.

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="Insert" />
```

Insert from Aras Innovator keep query dialog

Changed behavior of the query dialog. Now the query dialog stays open. The user can insert multiple items from the same query dialog.

Configuration

To get the old behavior you have to add the setting InsertFromArasCloseAfterInsert to the settings section of the PWB Schema file.

```
<settings>
      <setting name="InsertFromArasCloseAfterInsert"
value="true"/>
</settings>
```

Context action "Replace Node"

This action is available in the CATIA V5 window. It allows to replace the selected item in the CATIA structure.

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="Replace" />
```

Context action "Execute"

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="Execute" usedIn="PdmWindow" />
```

Context action "Update structure relations"

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="UpdateSubCmpRels" usedIn="PdmWindow" />
```

Context action "Update parent relation"

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="UpdateParentCmpRel" usedIn="PdmWindow" />
```

Context action "Newest Generation Info"

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="NewestVersionInfo" usedIn="PdmWindow" />
```

Context action "Update Item"

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="UpdateItem" usedIn="PdmWindow|QueryDialog" />
```

Context action "PDM Create in Context"

This action is available in the CATIA V5 window. It allows to create a new item directly in the CATIA structure.

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="ContextCreate" />
```

Context action "Highlight"

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="Highlight" usedIn="PdmWindow" />
```

Context action "Copy element attributes"

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="CopyAttributes" usedIn="PdmWindow|QueryDialog" />
```

Context action "Delete"

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="DeleteItem" usedIn="PdmWindow" />
```

Context action "Synchronize to BOM"

In the Schema file the context action can be enabled.

Example:

```
<contextAction name="SyncStrucFileToPart" usedIn="PdmWindow|QueryDialog"/>
```

A custom server method can be implemented for this functionality. A sample method for this, "Pwb_Sample_SyncCadToBom", exists. The name of the custom method can be configured in server setting "CustomMethod_SyncCadToBom'.

Non-BOM CATParts and CATProducts

In the part structure mode it is now possible to define CATParts and CATProducts in the CATIA structure to be defined as not BOM-relevant. In this case no corresponding part items will be created in PDM.

The PWB Configuration item setting "UseNonBom3DCadDocs" has to be set to "true":

UseNonBom3DCadDocs	true

Picture 183: Sample UseNonBom3DCadDocs configuration

Performance Optimization for non-BOM CATParts in BOM Part Structure Data Model

When using `UseBomPartStructure=true` and `UseNonBom3DCadDocs=true`, `GetFilteredCadDocsForParts()` first expands the normal CADs for the structure and after this it expands the NonBom structure for each CAD (CATProduct). This should be done in an optional custom code. This would allow to improve the performance if a) there are only free NonBom CATParts which are not attached to any CATProduct and b) if there are NonBom sub-structures only for special CADs.

Configuration

Added server setting `ExpandNonBomCadInBom=false` (default = `true`).

Support for the new CAD Structure Instance Handling introduced in Aras Innovator 9.4 and 10.0

A new relation with the name “CAD Instance” has been introduced, which contains instance information for “CAD Structure” relations.

By default the new CAD Instance relation is used to store CATIA instance information.

If the setting “UseCadInstance” in the used PWB Configuration item is set to “false” then the old instance handling (using three attributes on “CAD Structure” to store the instance name, the instance description, and the transformation matrix) is used.

UseCadInstance	true

Picture 184: Sample UseCadInstance configuration

“CAD is Master for Instances” Functionality

The PDM Workbench always controls instances by PDM. It reads the instance information from PDM (position, instance name, number of instances). It stores all instance information in PDM, by creating instances.

With this functionality, when a CAD structure is loaded from PDM, the instance information from the CATProduct file is taken, the instance information from PDM is ignored.

At PDM Update the instance information in PDM is updated from the current values of the CATProduct, as before. The difference is that the PDM Workbench Load process is not dependent of the correct, or even existing, instance information in the CAD structure to be loaded.

Configuration

The server setting “UseCadIsMaster” has to be defined and set to “true” to enable the new behavior.

Custom Method for set-based create of Instance Names

In BOM mode (PWB Configuration setting `UseBomPartStructure=true`) the new set-based method replaces the existing method defined in the PWB Configuration setting `CustomMethod_PreProcRelInstCreAttrs`.

Configuration

To customize the values of the BOM Instance properties (instance name and instance description) you must set the value of the PWB Configuration setting `CustomMethod_PreProcBomInstAttrs` to the name of your custom method:

Name	Value
CustomMethod_PreProcBomInstAttrs	PwbCus_PreProcBomInstAttrs

Picture 185: PWB Configuration Setting “CustomMethod_PreProcBomInstAttrs”

Sample method to set the instance name:

```
// Sample custom method PwbCus_PreProcBomInstAttrs
```

```
//
// PWB Configuration
// CustomMethod_PreProcRelInstances = PwbCus_PreProcBomInstAttrs
//
// This method creates a instance names for BOM Instances that
// uses item_number.
using (var PwbServerApiObj = new PwbServerAddin.PwbServerApi(this))
{
   PwbServerApiObj.Log("PwbCus_PreProcBomInstAttrs");

   // Input information
   Item SourceItem = this.getPropertyItem("SourceItem");
   if (SourceItem == null)
   {
      throw new Exception(
         "PwbCus_PreProcBomInstAttrs -> SourceItem == null !");
   }

   Item TargetItem = this.getPropertyItem("TargetItem");
   if (TargetItem == null)
   {
      throw new Exception(
         "PwbCus_PreProcBomInstAttrs -> TargetItem == null !");
   }

   Item RelationItem = this.getPropertyItem("RelationItem");
   if (RelationItem == null)
   {
      PwbServerApiObj.Log("PwbCus_PreProcBomInstAttrs -> RelationItem == null");
   }

   Item Instances = this.getRelationships();
   if (Instances == null)
   {
      throw new Exception(
         "PwbCus_PreProcBomInstAttrs -> Instances == null !");
   }

   // existing instance names for Relation
   List<string> instanceNames = PwbServerApiObj.StringToList(
      this.getProperty("InstanceNames", ""));

   // depending on some other customization it is possible that
   // item_number is already available in TargetItem
   string targetPN = TargetItem.getProperty("item_number", "");
   if (String.IsNullOrEmpty(targetPN))
   {
      // try to get targetPN from existing instance names to
      // avoid additional select in Aras
      if (instanceNames != null && instanceNames.Count > 0 &&
         !String.IsNullOrEmpty(instanceNames[0]))
      {
         PwbServerApiObj.Log("instanceNames[0] -> " + instanceNames[0]);

         // GetFileNameWithoutExtension can be only used if
         // there are no slashes or backslashes
         // in a saved instance name in Aras
         int position = instanceNames[0].LastIndexOf(':');
         if (-1 == position)
         {
            targetPN = Path.GetFileNameWithoutExtension(
               instanceNames[0]);
         }
         else
         {
            targetPN = Path.GetFileNameWithoutExtension(
               instanceNames[0].Substring(position + 1));
         }
      }
      else
      {
         // for the first instance we have to fetch the
         // targetPN from Aras
         TargetItem.setAction("get");
         TargetItem.setAttribute("select", "item_number");
         Item Result = TargetItem.apply();
```

```
      targetPN = Result.getProperty("item_number");
   }
}

// The Characters ':' and '!' cannot be used inside an instance
// name
targetPN = targetPN.Replace(':', '_').Replace('!', '_');

if (Instances.isCollection())
{
   PwbServerApiObj.Log(
      "PwbCus_PreProcBomInstAttrs -> Instances == Collection");

   int j = 1;
   for (int r = 0; r < Instances.getItemCount(); r++)
   {
      var Instance = Instances.getItemByIndex(r);
      PwbServerApiObj.Log(
         "PwbCus_PreProcBomInstAttrs -> " + "Instances -> Instance " + r);

      string existingEmbeddedPrefix = "";
      var origInstancename = Instance.getProperty(
         "pwb_cad_instance_name", "");
      int position = origInstancename.LastIndexOf(':');
      if (position != -1)
      {
         existingEmbeddedPrefix =
            origInstancename.Substring(0, position + 1);
      }

      PwbServerApiObj.Log(
         "PwbCus_PreProcBomInstAttrs -> " +
         "Instances -> origInstancename " + origInstancename);

      for (int i = j; ; i++)
      {
         if (instanceNames == null ||
            !instanceNames.Contains(existingEmbeddedPrefix
               + targetPN + "." + i))
         {
            Instance.setProperty(
               "pwb_cad_instance_name",
               existingEmbeddedPrefix + targetPN
               + "." + i);
            j = i + 1;
            break;
         }
      }
   }
}
else
{
   PwbServerApiObj.Log(
      "PwbCus_PreProcBomInstAttrs -> " + "Instances == Singel Item");

   string existingEmbeddedPrefix = "";
   var origInstancename = Instances.getProperty(
      "pwb_cad_instance_name", "");

   int position = origInstancename.LastIndexOf(':');
   if (position != -1)
   {
      existingEmbeddedPrefix =
         origInstancename.Substring(0, position + 1);
   }
   for (int i = 1; ; i++)
   {
      if (instanceNames == null || !instanceNames.Contains(
         existingEmbeddedPrefix + targetPN + "." + i))
      {
         Instances.setProperty("pwb_cad_instance_name",
            existingEmbeddedPrefix + targetPN + "." + i);
         break;
      }
   }
}
```

```
    return this;
}
```

Configurable CATIA Components Support

It is possible to load and update CATProduct structures which contain embedded CATIA components. Depending on the part number prefix the embedded component nodes can either be “skipped”, that is, the node is treated as if it does not exist, but its child nodes are processed, or they can be “ignored”, that is, the node and all its child nodes are treated as if they do not exist.

The configurable node behavior functionality has to be switched on by defining the Schema file setting “catiaNodeBehaviorDefinitions”:

```
<catiaNodeBehaviorDefinitions>
   <catiaNodeBehavior catiaNodeType="EmbeddedComponent"
                      partNumberPrefix="SKIP_" behavior="SkipNode" />
   <catiaNodeBehavior catiaNodeType="EmbeddedComponent"
                      partNumberPrefix="IGN_" behavior="IgnoreNode" />
</catiaNodeBehaviorDefinitions>
```

Optional.

The behavior settings “SkipNode” and “IgnoreNode” are allowed.

Support Electrical / Tubing

With this functionality it is possible to use functions like “Electrical Harness”, “Electrical Wire Routing”, “Piping Design”, “Tubing Design”, … of the CATIA “Equipment & Systems Engineering” section.

In the Schema file the following settings have to be made:

a) To allow leaf components of any type:

```
<catiaNodeBehaviorDefinitions ignoreLeafComponents="true" />
```

b) To allow special types of components:

```
<catiaNodeBehaviorDefinitions ignoreLeafComponents="false" >
   <catiaNodeBehavior catiaNodeType="ElecWireLight"
                      behavior="IgnoreNode" />
</catiaNodeBehaviorDefinitions>
```

Support for Relating a new CATIA File to an existing Part

The currently active CATIA document (only CATParts or CATDrawings) can be related to an existing BOM part item. If there is already a corresponding CAD document related to the part the document’s file can be overwritten.

For part items the context action “Relate active File to Part” can be added in the Schema file.

Example:

```
<contextAction name="RelateToPart" usedIn="QueryDialog" />
```

Local Workspace Information

It is possible to check the status of the CATIA documents which are downloaded to the local working directory (PWB_XMAP). A list displays the local files and information about their corresponding CAD documents in PDM if they exist.

The icon which opens the window which contains the list of files/documents can be switched on by removing the entry “LocalWorkspace” from the “removeToolbarIcons” definition in the file “PWBSchema.xml”.

Example:

```
<removeToolbarIcons>
   <!-- <icon name="LocalWorkspace" /> -->
   <icon name="Register" />
   <icon name="Synchronize" />
   <icon name="NewPwbWindow" />
</removeToolbarIcons>
```

Optional.

The PDM attributes which are shown can be configured in the file “PWBSchema.xml”.

This is an example configuration:

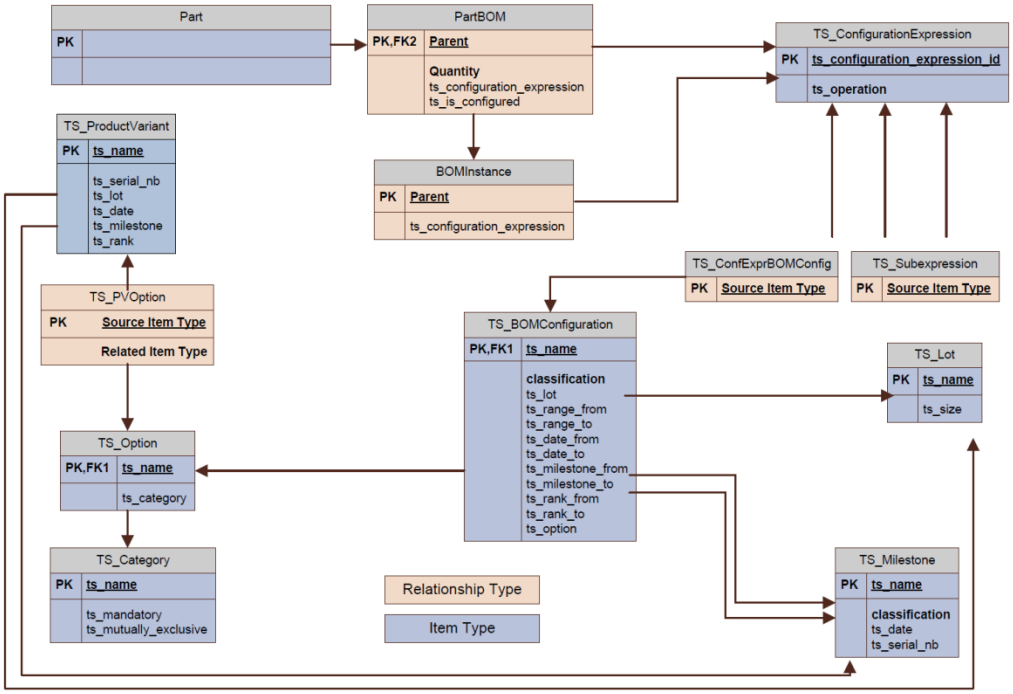
```
<form name="LocalWorkspace" defaultSortAttribute="filename">
   <formAttribute name="modified" visibleLength="8" required="false"
                  listViewRelevant="true" />
   <formAttribute name="filename" visibleLength="10" required="false"
                  listViewRelevant="true" />
   <formAttribute name="item_number" visibleLength="10"
                  required="false" listViewRelevant="true" />
   <formAttribute name="major_rev" visibleLength="6" required="false"
                  listViewRelevant="true" />
   <formAttribute name="generation" visibleLength="6" required="false"
                  listViewRelevant="true" />
   <formAttribute name="name" visibleLength="10" required="false"
                  listViewRelevant="true" />
   <formAttribute name="state" visibleLength="10" required="false"
                  listViewRelevant="true" />
   <formAttribute name="description" visibleLength="10"
                  required="false" listViewRelevant="true" />
   <formAttribute name="created_on" visibleLength="10"
                  required="false" listViewRelevant="true" />
   <formAttribute name="modified_on" visibleLength="10"
                  required="false" listViewRelevant="true" />
   <formAttribute name="created_by_id" visibleLength="10"
                  required="false" listViewRelevant="true" />
   <formAttribute name="modified_by_id" visibleLength="10"
                  required="false" listViewRelevant="true" />
   <formAttribute name="locked_by_id" visibleLength="10"
                  required="false" listViewRelevant="true" />
</form>
```

Configuration of BOM Part Structure

In the BOM part structure mode it is possible to create product configurations where, depending of the currently set configuration context, only a sub-set of the product structure is expanded and loaded. With this functionality it is possible to create and to work on different configurations of the same product.

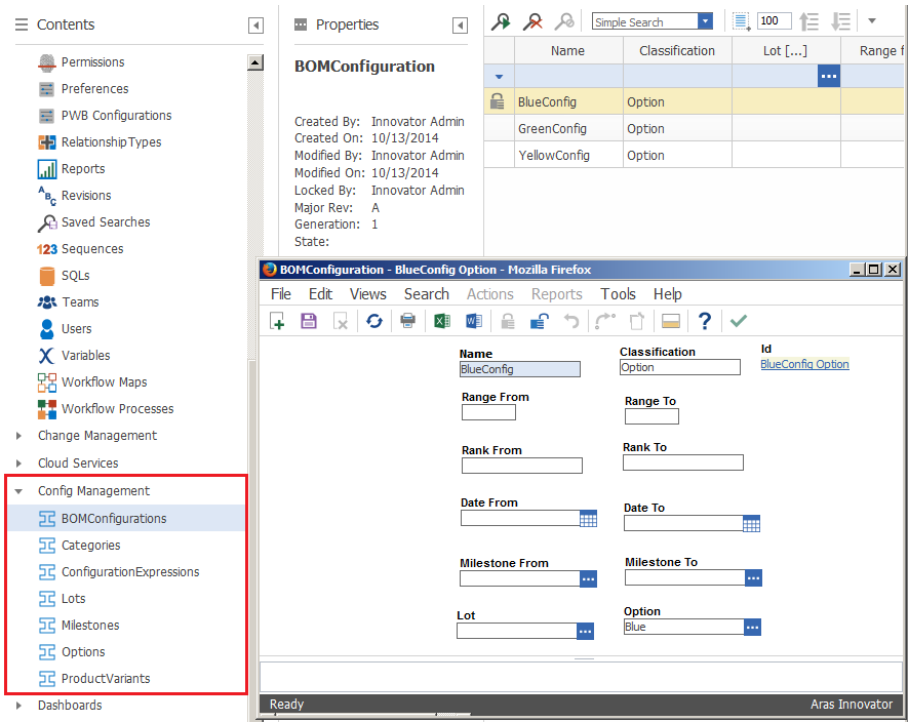
Using the BOM part structure configuration costs additional license fees.

In addition to the three standard PDM Workbench packages which have to be imported with the Aras Innovator import tool (ArasPwbDM, ArasPwbDM_PLM, and ArasPwbDM_Core), two additional packages have to be imported: BomConfig and BomConfig_PLM. These two packages contain the item types which are used by the BOM configuration management functionality:



Picture 186: BOM Configuration Management Type Overview

Importing the packages will enable the administrator to access the types in the Aras Innovator web client and to use them to create different product configurations.



Picture 187: BOM Configuration Management Types in Aras Innovator

Possibility to call a Server Method for a PDM Item

It is possible to call custom server methods with a PDM item and optionally with a dialog as input.

The file “PWBSchema.xml” has to contain the line

```
<customContextAction name="PwbCustomServerMethod"
                     usedIn="PdmWindow|QueryDialog"
                     confirm="true"
                     multiple="false"
                     dialog="Query" />
```

after the `<contextAction ... />` definitions of an object.

The *dialog* attribute is optional and refers to a “form” definition of the same “object” in the file “PWBSchema.xml”.

The *confirm* and the *multiple* attributes are also optional, and they make it possible to not show the confirmation dialog to the user (`confirm="false"`) and to pass all items of a multi-selection to the method at once, and only call the method once (`multiple="true"`).

If the file “PWBSchemaDisplayNames_Aras_Aras.CATNls” contains the NLS string for the server method, for instance

```
PwbCustomServerMethod = "Custom Server Method";
```

then the NLS name is shown to the user.

Please check “Pwb_Sample_ContextAction” for a sample on which you can build your own custom action code (`multiple="false"`).

Reconnect at Update

Up to version 9.0 the “Reconnect” functionality was combined with the “Auto Name” functionality. Now the “Reconnect” functionality is no longer connected with the “Auto Name” functionality.

The following setting in the file “PWBSchema.xml” enables the button “Import with Reconnect” in the Update dialog:

```
<!-- show reconnect at update functionality -->
<showReconnectAtUpdate value = "true" />
```

Create a new Aras Innovator server method “PwbReconnectAtUpdate”, which searches for an existing CAD in Aras Innovator.

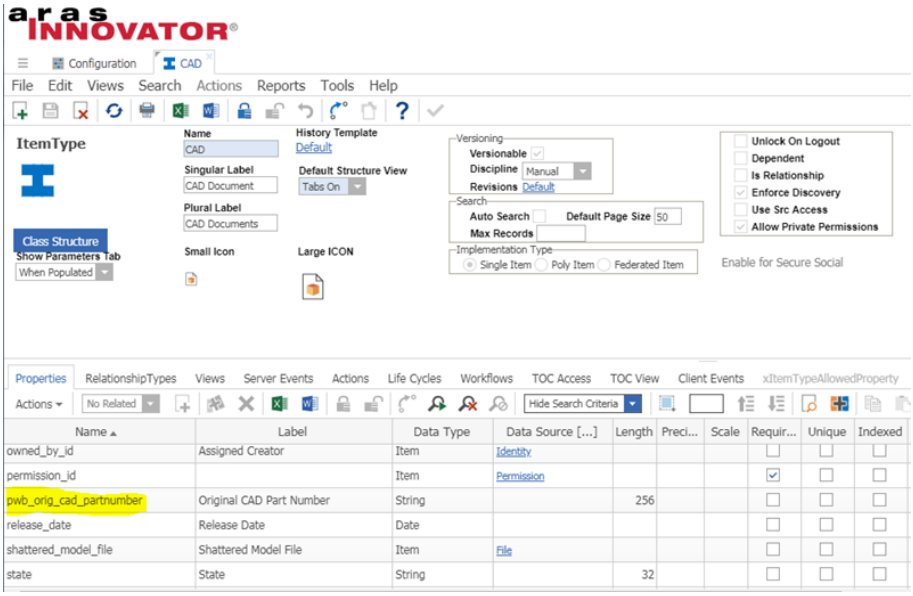
If you want to use a different name for the method, you have to set the name in the PWB Configuration setting “ReconnectAtUpdateMethod”:

ReconnectAtUpdateMethod	<Your Method name>

Picture 188: PWB Configuration setting “ReconnectAtUpdateMethod”

If you want to use the original CATIA Part Number to find the items to be reconnected, you have to configure the following:

Create a new String property for CAD that holds the original CATIA Part number:



Picture 189: Item Type “CAD” – Add property “pwb_orig_cad_partnumber”

If you use the “BOM Part Structure Data Model” you also have to create the String property in the Part type.

In the PWB Configuration you have to add the setting “OrigCadPartnumberAttr”.

OrigCadPartnumberAttr	pwb_orig_cad_partnumber

Picture 190: PWB Configuration – “OrigCadPartnumberAttr”

If this property is set, the original CATIA Part number is stored during create.

A sample method for this, “Pwb_Sample_CadTreeIconInfo”, exists. You can use this as the base for your own implementation.ost

Sample

To use the original CATIA Part Number during reconnect, you can implement the method “PwbReconnectAtUpdate” like follows:

```
var PwbServerApiObj = new PwbServerAddin.PwbServerApi(this);

Innovator InnovatorObj = this.getInnovator();

// ignore default CATIA Part Numbers for reconnect
var PartnumbersToIgnoreHashSet = new HashSet<string>();

PartnumbersToIgnoreHashSet.Add("Part1");
PartnumbersToIgnoreHashSet.Add("Part2");
PartnumbersToIgnoreHashSet.Add("Part3");
PartnumbersToIgnoreHashSet.Add("Part4");
PartnumbersToIgnoreHashSet.Add("Part5");
PartnumbersToIgnoreHashSet.Add("Part6");
PartnumbersToIgnoreHashSet.Add("Part7");
PartnumbersToIgnoreHashSet.Add("Part8");
PartnumbersToIgnoreHashSet.Add("Part9");
PartnumbersToIgnoreHashSet.Add("Product1");
PartnumbersToIgnoreHashSet.Add("Product2");
PartnumbersToIgnoreHashSet.Add("Product3");
PartnumbersToIgnoreHashSet.Add("Product4");
PartnumbersToIgnoreHashSet.Add("Product5");
PartnumbersToIgnoreHashSet.Add("Product6");
PartnumbersToIgnoreHashSet.Add("Product7");
PartnumbersToIgnoreHashSet.Add("Product8");
PartnumbersToIgnoreHashSet.Add("Product9");


// Preparing the input information
string ReconnectAtUpdate = this.getProperty("ReconnectAtUpdate");
string PdmType = this.getProperty("Type");
string PdmClassification = this.getProperty("Classification");

Item CatiaStdPropsItem = this.getPropertyItem("CadStdProps");
IDictionary<string, string> CatiaStdPropsDict = null;
if (CatiaStdPropsItem != null)
{
   CatiaStdPropsDict =
      PwbServerApiObj.DialogAttrsItemToDictionary(CatiaStdPropsItem);
}

Item CadDocInputDialogItem = this.getPropertyItem("CadDocDialogAttrs");
IDictionary<string, string> CadDocInputDialogDict = null;
if (CadDocInputDialogItem != null)
{
   CadDocInputDialogDict =
      PwbServerApiObj.DialogAttrsItemToDictionary(CadDocInputDialogItem);
}

Item PartInputDialogItem = this.getPropertyItem("PartDialogAttrs");
IDictionary<string, string> PartInputDialogDict = null;
if (PartInputDialogItem != null)
{
   PartInputDialogDict =
      PwbServerApiObj.DialogAttrsItemToDictionary(PartInputDialogItem);
}

string OrigCatiaPartNumber = null;

if (PdmType == "CAD")
{
   if (PdmClassification == "Mechanical/Assembly" ||
      PdmClassification == "Mechanical/Part" )
   {
      if (CadDocInputDialogDict != null &&
         CadDocInputDialogDict.ContainsKey("item_number"))
      {
         OrigCatiaPartNumber = CadDocInputDialogDict["item_number"];
      }
      else if (CatiaStdPropsDict != null)
      {
         OrigCatiaPartNumber = CatiaStdPropsDict["CadPartNumber"];
      }
   }
```

```
   else
   {
      if (CadDocInputDialogDict != null)
      {
         OrigCatiaPartNumber = CadDocInputDialogDict["item_number"];
      }
   }
}
else
{
   if (PdmClassification == "Assembly" || PdmClassification == "Component" )
   {
      if (PartInputDialogDict != null &&
         PartInputDialogDict.ContainsKey("item_number"))
      {
         OrigCatiaPartNumber = PartInputDialogDict["item_number"];
      }
      else if (CatiaStdPropsDict != null)
      {
         OrigCatiaPartNumber = CatiaStdPropsDict["CadPartNumber"];
      }
   }
   else
   {
      if (CadDocInputDialogDict != null)
      {
         OrigCatiaPartNumber = CadDocInputDialogDict["item_number"];
      }
   }
}

if (!String.IsNullOrEmpty(OrigCatiaPartNumber) &&
   !PartnumbersToIgnoreHashSet.Contains(OrigCatiaPartNumber))
{
   Item QueryItem = InnovatorObj.newItem(PdmType, "get");
   QueryItem.setProperty(PwbServerApiObj.OrigCadPartnumberAttr(),
                         OrigCatiaPartNumber);
   if (PdmClassification != null)
   {
      QueryItem.setProperty("classification", PdmClassification);
   }
   Item ExistingPdmItem = QueryItem.apply();

   if (ExistingPdmItem != null)
   {
      if (ExistingPdmItem.isError())
      {
         return null;
      }
      else if (ExistingPdmItem.isCollection())
      {
         return InnovatorObj.newError(
                "ReconnectAtUpdate Failed: Multiple Items of type '"+PdmType+
                "/" +PdmClassification + "' with '"
                + PwbServerApiObj.OrigCadPartnumberAttr() + "' = '"
                + OrigCatiaPartNumber + "' found");
      }
   }
   return ExistingPdmItem;
}
return null;
```

Update existing reconnect functionality from older PDM Workbench versions

If you already use the reconnect functionality, you have to change the following in your customization:

- Create the new Server method “PwbReconnectAtUpdate”
- Copy the code from your existing auto name rule into the new method
- Delete the stuff about the Dictionary “OutputInfoDict”
- Instead do a query for an existing item using the “AutonameValue”:

```
Item QueryItem = InnovatorObj.newItem(PdmType, "get");
QueryItem.setProperty("item_number", AutoNameValue);
if (PdmClassification != null)
```

```
{
   QueryItem.setProperty("classification", PdmClassification);
}
Item ExistingPdmItem = QueryItem.apply();
if (ExistingPdmItem != null)
{
   if (ExistingPdmItem.isError())
   {
      return null;
   }
   else if (ExistingPdmItem.isCollection())
   {
      return InnovatorObj.newError(
                "ReconnectAtUpdate Failed: Multiple Items: "+PdmType+
                "/" +PdmClassification + "' with 'item_number' = '"
                + AutoNameValue + "' found");
   }
}
return ExistingPdmItem;
```

If the auto name rule was only needed for reconnect, the settings for the auto name rule can be removed from the PDM Workbench Schema file.

Clean up / Housekeeping of PWB_XMAP Directory

The XMAP is a directory, which is used as a local storage by the PDM Workbench. It must exist and its path must be defined either by the environment variable “PWB_XMAP” or by the *xmap* value attribute of the PDM Workbench Schema file.

The XML tag *xmap* is optional. If it does not exist in the Schema file, the XMAP path must be defined by the environment variable “PWB_XMAP”. If both values are set (environment variable and xml XMAP attribute *value*), the environment variable is taken.

An additional optional attribute (*sizeThreshold*) was introduced now for the *xmap* element in the Schema file. If the xmap attribute *sizeThreshold* exists in your schema and represents a numerical value larger than 0, the PDM Workbench will execute some clean-up actions at the end of the Load and Update commands.

A numerical value for *sizeThreshold* larger than “0” means a size in megabyte. If the sum of the file sizes of all CATIA and jpg files in the exchange map directory is larger than this threshold, then some files, **which are not needed by your current CATIA session**, are automatically deleted - from oldest to newest - until the remaining file size sum is less than the threshold.

If you want to switch off the automatic clean-up actions, you can set the *sizeThreshold* to “0” or remove the xmap attribute *sizeThreshold* from your Schema file.

To enable the automatic clean-up functionality, you have to add the attribute *sizeThreshold* to the XML tag *xmap* and define a numerical value larger than “0” for the attribute *sizeThreshold*, which is the size in megabytes. A value of “0” means that the functionality is switched off.

Example:

```
<PWBSchema system="Aras" customization="Aras"
           displayName="NLS_System"
           visibleLength="15" allowedLength="64">

   ...

   <xmap value="C:\PWB_XMAP" sizeThreshold="200" />
```

This means, that your exchange map directory is “C:\PWB_XMAP” and a *sizeThreshold* of 200 Megabyte is active for this directory.

Example of setting a system environment variable and defining an XMAP *sizeThreshold*:

```
   <xmap value="%LOCALAPPDATA%\PWB_XMAP" sizeThreshold="200" />
```

This means, that your exchange map directory is “%LOCALAPPDATA%\PWB_XMAP” (as resolved by the Windows system) and a *sizeThreshold* of 200 Megabyte is active for this directory.

A numerical value for *sizeThreshold* larger than “0” means a size in Megabyte. If the sum of the file sizes of all CATIA and jpg files in the exchange map directory is larger than this threshold, then some files, **which are not needed by your current CATIA session**, are automatically deleted at the end of the Load and Update commands - from oldest to newest - until the remaining file size sum is less than the threshold.

If you want to switch off the automatic clean-up actions, you can set the *sizeThreshold* to “0” or remove the XMAP *sizeThreshold* attribute from your PDM Workbench Schema file.

Attention:
The clean-up process will potentially **delete** all CATIA and jpg files from the exchange map directory, which are not needed by your current CATIA process. If you activate the *sizeThreshold*, you will get an automatic clean-up, but you have to make sure that all users do not manually store files in that directory and that no other CATIA process is using the same directory at a time, because the files there could be deleted.

The exchange map directory should be exclusively used by the PDM Workbench in a single CATIA process, if you activate the *sizeThreshold*.

Setting Configuration Information on Structure Relations

It is possible to set configuration information (configuration expression items) to “Part BOM” and “BOM Instance” relations in the PDM structure window.

The PWB Configuration item setting “UseSeparateRelationsForInstances” has to be set to “true”:

UseSeparateRelationsForInstances	true

Picture 191: Setting for configuration information on structure relations

In the Schema file a *contextAction* tag with the name “SetConfigInfoOnRelations” has to be added to the “Part BOM” relation definition.

Example:

```
<contextAction name="SetConfigInfoOnRelations" usedIn="PdmWindow" />
```

Also, the definition of the “TS_ConfigurationExpression” object has to be added to the Schema file.

Example:

```
<object name="TS_ConfigurationExpression"
        displayName="NLS_TS_ConfigurationExpression"
        icon="Aras_BomConfigItem" >

<description>
      <descAttribute name="ts_name" />
</description>

<action name="Query" />

…

<form name="Query">
      <formAttribute name="ts_name" widgetType="SingleLineEditor"
       mode="update" visibleLength="15"  required="false"
       listViewRelevant="true" />
```

```
      <formAttribute name="ts_operation"
       widgetType="SingleLineEditor" mode="update"
       visibleLength="15" required="false"
       listViewRelevant="true" />
</form>
   ...
</object>
```

Excluding Child Node Types for Creation

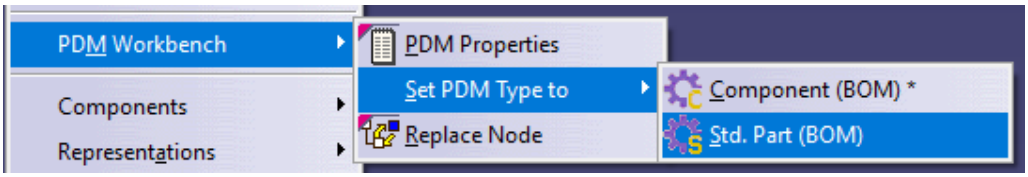
Before a new CATIA structure is imported to PDM the desired type of the PDM node can be defined. Generally, all the available PDM types can be set on the child nodes.

With this functionality it is possible to exclude certain types from being shown in the context menu. The setting “DisallowChildNodeTypesForCreate” can be defined for an assembly node, and the list of disallowed children PDM node types can be defined as the setting value, divided by the “|” character.

Example:

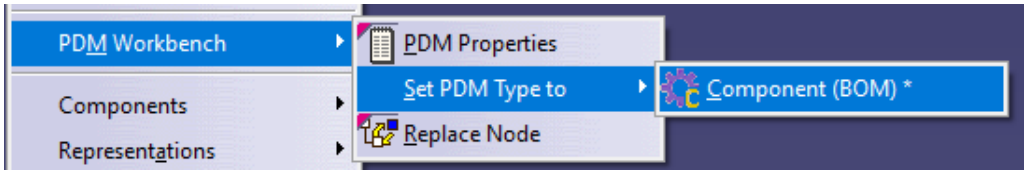
```
<object name="/Part/Assembly" displayName="NLS_Assembly"
icon="Aras_Part" >

  <settings>
    <setting name="DisallowChildNodeTypesForCreate"
             value="/Part/Standard|/Part/StdContainer"/>
  </settings>

  <description>
    ...
```

Here the context menu is shown without the setting above:



Picture 192: All PDM Types can be selected

Here the context menu is shown with the setting above:



Picture 193: Only a sub-set of the PDM Types can be selected

Use Server method for Quantity

For some relations it may necessary to set the quantity manually instead of using the quantity of the CATIA PSN structure.

Configuration

Create a server method that counts the relevant BOM Instances, example “PwbCus_UpdateQuantity”:

```
var PwbServerApiObj = new PwbServerAddin.PwbServerApi(this);

string Type = this.getType();

if (Type == "Part BOM")
{
    int count = PwbServerApiObj.GetRelationshipCount(this, "BOM Instance");
    this.setProperty("quantity", count.ToString());
    return this.apply("update");
}
else
{
    return this.getInnovator().newError("PwbUpdateQuantity: Relation Type: '"
                                        +Type+"' not supported");
}
```

The name of the server method must be set in the PWB Configuration setting “UpdateQuantityMethod”:

UpdateQuantityMethod	PwbCus_UpdateQuantity

Picture 194: PWB Configuration – “UpdateQuantityMethod”

Released Cache Mode

The PDM Workbench can efficiently use CGR cache files, which are stored in the Aras Innovator database, for the geometrical visualization of product structures. This is useful when loading large product structures in visualization mode to CATIA.

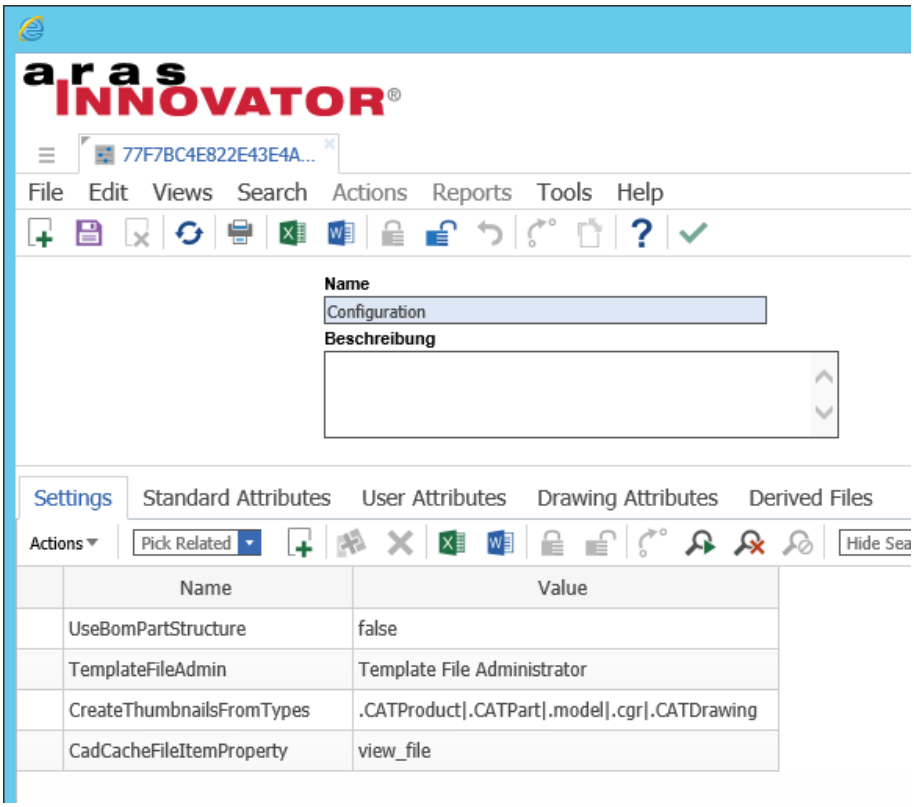
The PWB cache mode uses CATIA tools to create CGR cache files based on native files like CATIA V5 CATParts or CATIA V4 models, uses Aras Innovator to store and manage these files linked to a CAD document item in Aras and uses the CATIA released cache capability to provide the data to the user when loading a product structure.

Step1: Define the file item property for cache files

The CGR cache files have to be stored in PDM on a file item property of the CAD item (CAD Document) or the customized item type that you use instead of the CAD item type.

There already exist several file item properties (Data Type = Item, Data Source = File) on the Aras CAD item type. The property native_file is reserved for the original file, e.g. a CATPart. You can select one of the others (e.g. viewable_file, view_file, etc.) or customize the CAD item type to provide an additional property for the PWB cache files, e.g. pwb_cache_file.

We use the view_file property in our example and therefore set “CadCacheFileItemProperty” to “view_file” in the PWB configuration settings on the Aras server.



Picture 195: "CadCacheFileItemProperty" configuration

If "CadCacheFileItemProperty" does not exist in your configuration settings or its value is an empty string, then the PWB cache mode is recognized as switched off.

Step 2: Create the cgr cache files

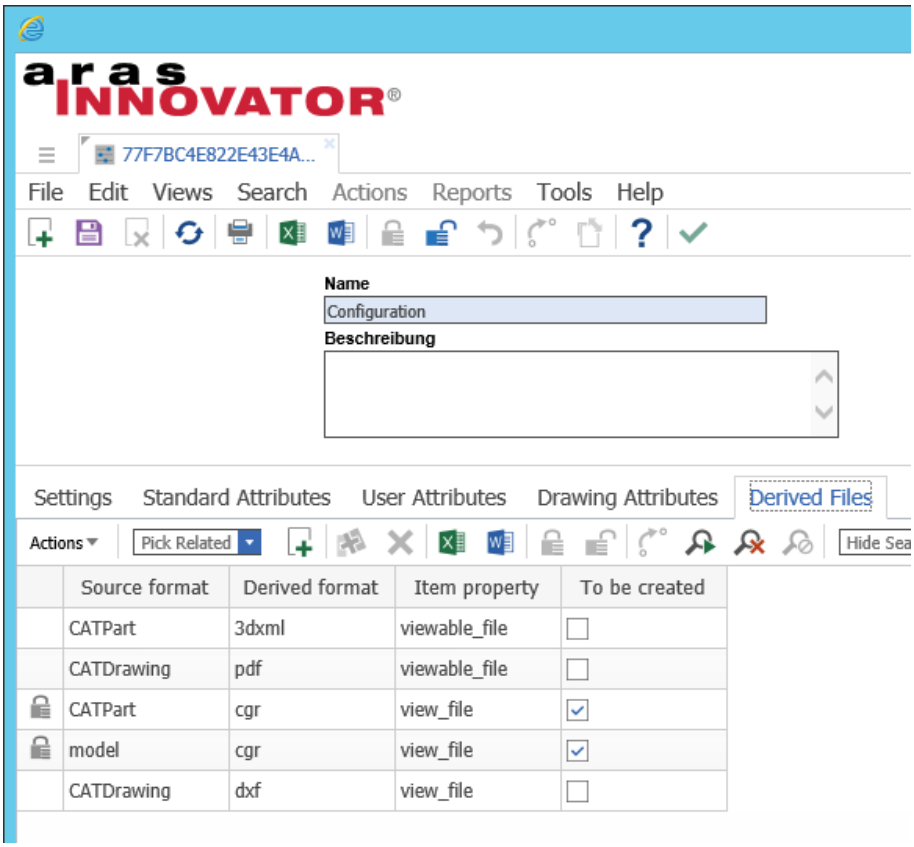
The CGR cache files can be created in an external process like the regular CATIA CATDMUUtility or on the user's machine when uploading a native file (CATPart, model) or as a combination of both processes, e.g. CATDMUUtility for existing objects and the user's machine for any new update.

External process:

You can use the Aras Conversion Server capability and setup a task which extracts the native file from a CAD item of your choice, runs the CATIA CATDMUUtility to generate a CGR file for that native file and then stores the resulting CGR file on the file item property of your choice (s. above).

Internal process:

The PWB provides the capability to create and store derived files when a user is uploading new or modified files to Aras. These derived files are created in a CATIA SaveAs operation of the current PWB user's CATIA session. Each SaveAs operation must result in a single file with the same name as the source file but a different suffix.



Picture 196: Setting the derived file creation to “view_file”

Some examples are provided in the PWB Aras data model and can be picked and modified to your requirements. You can also create new lines, as these are regular Aras relations.

This feature can be used to automatically create and store a CGR cache file for some selected native file formats. Take care that the defined item property value for your CGR files corresponds to the CadCacheFileItemProperty value that you defined above. Otherwise, the CGR files would be created and stored in Aras Innovator, but cannot be used as PWB cache files (which could also be a scenario).

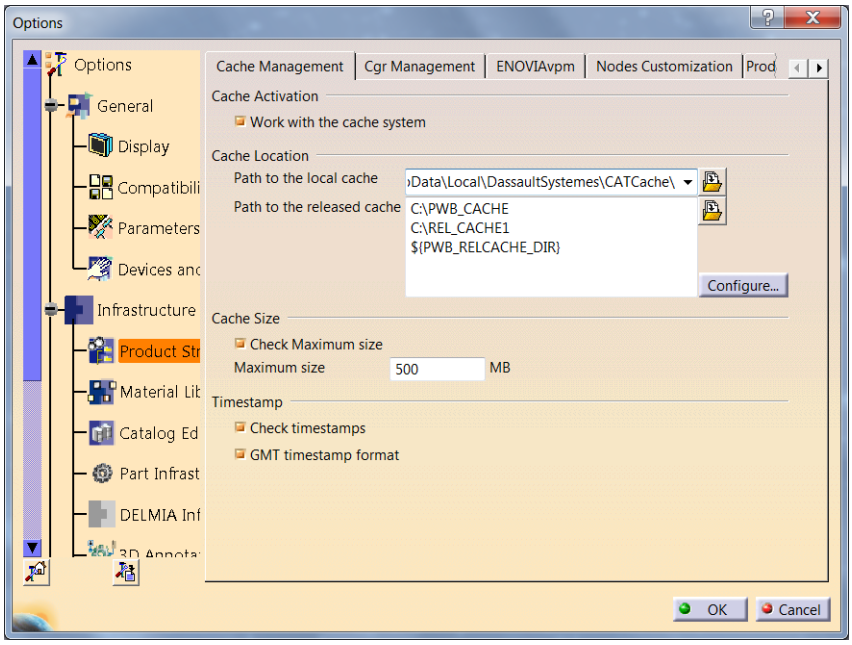
Step 3: Provide and declare a CATIA released cache directory for PWB

The user or an administrator has to create a local directory on the user’s machine, which is exclusively used for PWB cache files (e.g. C:\PWB_CACHE).

Furthermore, this directory has to be declared in the CATIA Tools+Options released cache setting (s. examples in the picture below).

If you have declared multiple directories in that CATIA setting list and you cannot or do not want to use the first directory in the list as your PWB released cache directory, then you can set the system environment variable “PWB_RELCACHE_DIR” to the directory string that you want to use. If the environment variable “PWB_RELCACHE_DIR” is not set, then the first directory in the list is used.

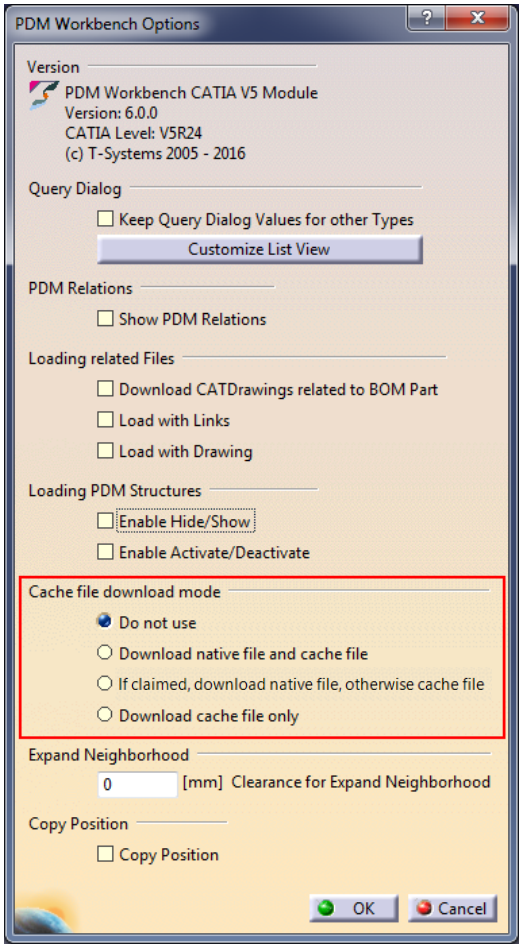
You need a CATIA DMU Navigator license to configure or view this released cache setting in CATIA.



Picture 197: Defining the CATIA Released Cache directory

Step 4: Set the cache file download mode in user settings

Each user can define the personal download mode related to cache files in the PDM Workbench settings.



Picture 198: Setting the Released Cache PWB options

You should set it according to your regular or current task. Any change will have immediate effect - from the next download on - for files, which do not exist in the local PDM Workbench exchange directory or are out of date there.

• Do not use.
This is the mode of previous PDM Workbench releases. Only native files will be downloaded from the server, even if cache files are provided there.

This mode can still make sense, if you regularly perform a detailed design based on a small number of loaded files.

• Download native file and cache file.
Both files are downloaded for each CAD item, the native file and the cache file.

This mode makes sense, if you want a fast initial visualization of your product, but usually switch most or all of it to design mode later.

• If claimed, download native file, otherwise cache file.
The download will distinguish between items, which are claimed by the current user, and other files.

It only makes sense for small product structures and if your work methodology is in a way, that you generally claim all items in PDM that you expect to work on, before you load a product structure to CATIA.

• Download cache file only.
The native file would not be locally available for immediate access, but can be downloaded on demand later.

This mode makes sense for design reviews, where you need the visualization data only, and for loading large product structures, where you might switch only a small portion of it to design mode later.

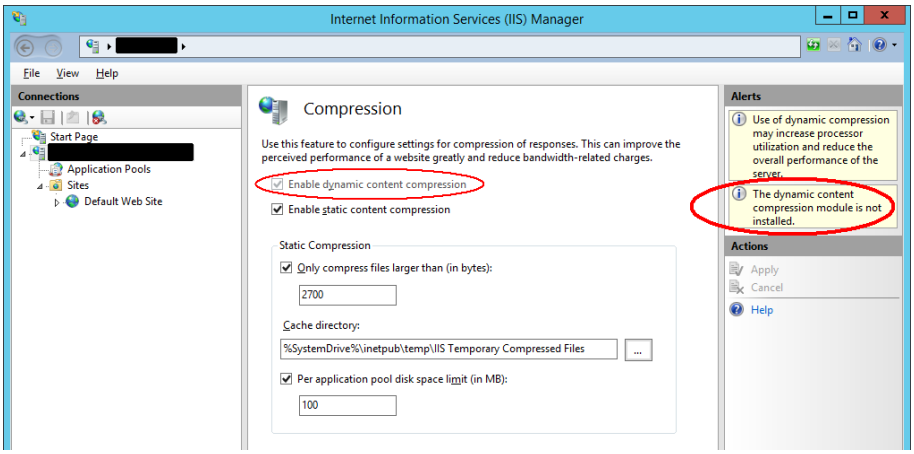
HTTP Compression

The dynamic content compression of http requests and responses is supported.

Configuration

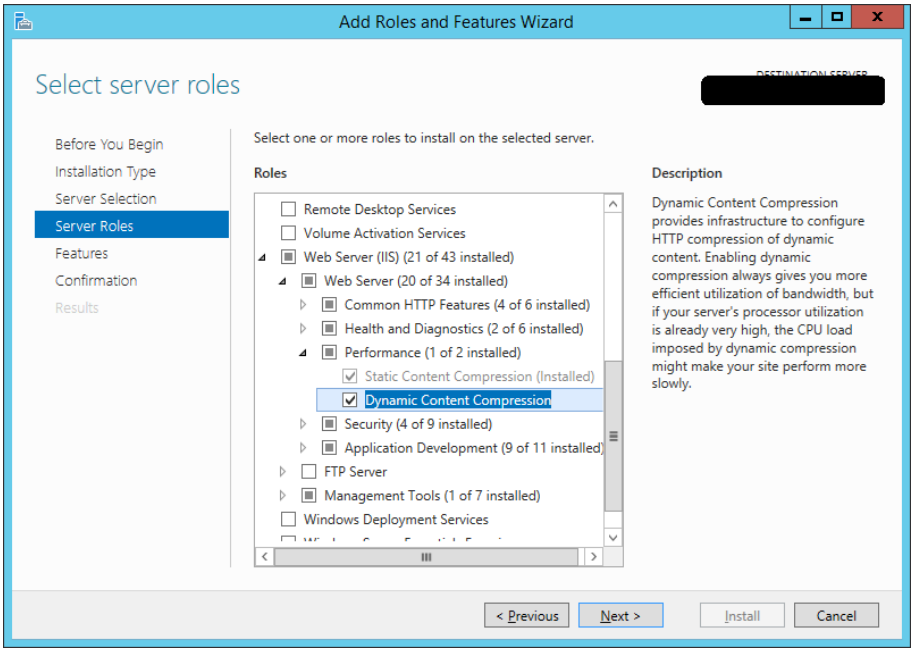
The dynamic content compression feature of the Microsoft IIS has to be installed and activated on the Aras Innovator server(s).

Check that the dynamic content compression is activated (see *Picture 199: IIS – Compression settings*).



Picture 199: IIS – Compression settings

Install the “Dynamic Content Compression” (see *Picture 200: IIS - Install dynamic compression module*).



Picture 200: IIS - Install dynamic compression module

Set the environment variable `PWB_HTTP_COMPRESSION` to “gzip” or “deflate” for the PDM Workbench Client processes.

“Open in CATIA” from the Aras Innovator Client

Single CAD or part items, or structures, can be loaded in CATIA from the Aras Innovator web client.

The precondition for this functionality is that CATIA V5 is started with PDM Workbench, and the user is logged in.

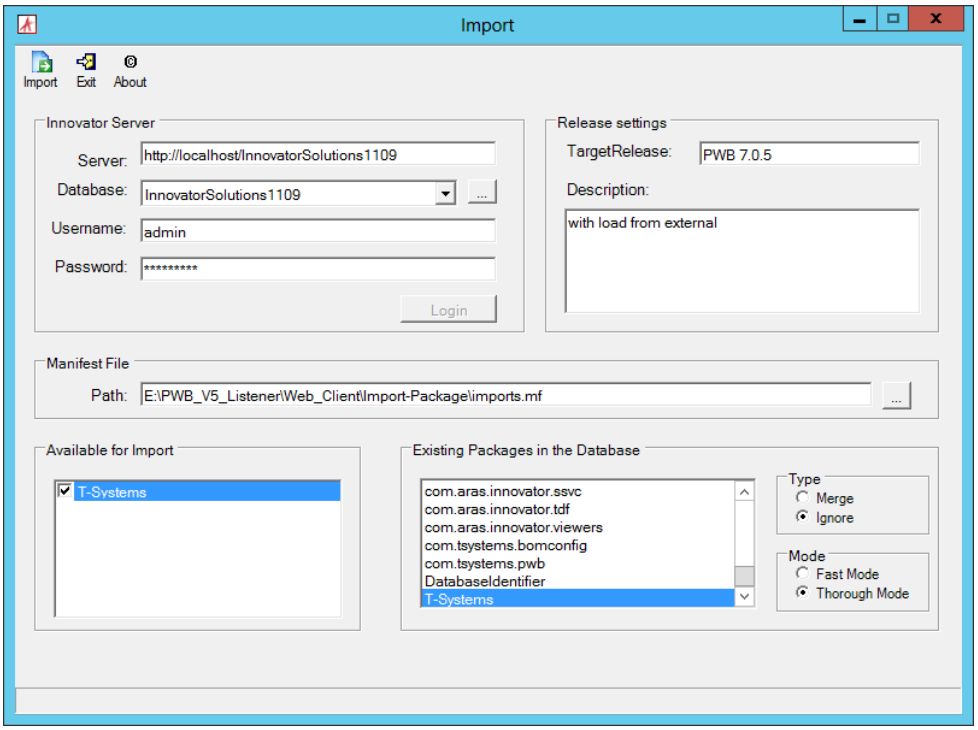
Configuration in Aras Innovator

Import the following packages to the Aras Innovator environment with the Aras Innovator Package Import Utility:

“PwbDataModel_[XX.X]\Specific\OpenInCAD\ OpenInCAD \imports.mf” -
Basic package for OpenInCAD.

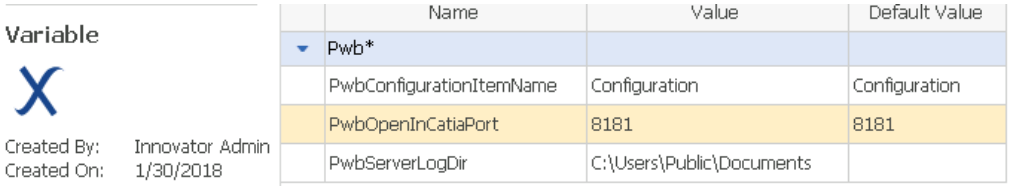
“PwbDataModel_[XX.X]\Specific\OpenInCAD\OpenInCATIA\imports.mf” -
The "Open in CATIA" functionality.

“PwbDataModel_[XX.X]\Specific\OpenInCAD\OpenInCATIA_BomConfig\imports.mf” -
Additional package if the "BOM Part Structure Configuration" functionality is installed.



Picture 201: Import utility

In Aras Innovator the variable “PwbOpenInCatiaPort” has to be set to a specific port, for example “8181”, which is used by the listener service:



Picture 202: Innovator variables

Installation of the PDM Workbench Listener

The listener is installed during the installation of the CATIA V5 package for the PDM Workbench.

The installation steps can be done manually, too. Please see the following section for details.

In this example, the PDM Workbench client is installed in this directory:

`C:\Program Files\T-Systems\PWBCATV5_R29_11.0.0_Aras_1200`

By default, the log files of the PwbListenerService are located in the LocalService's temp path (default: `C:\Windows\temp\PwbListenerService`). If set the Windows system environment variable `PWB_V5_LISTENER_LOGDIR` will change the Log directory.

So, for a successful installation of the listener service these three files have to be in `C:\Program Files\T-Systems\PWBCATV5_R29_11.0.0_Aras_1200\win_b64\code\bin`

- PwbListenerService.exe
- Fleck.dll
- PwbListenerService.cfg

By default, the configuration file PwbListenerService.cfg has to be located in the same directory like the executable PwbListenerService.exe.

To use a different location of the configuration file you can set the Windows system environment variable `PWB_V5_LISTENER_CONFIG` to the full path and filename of the configuration file.

The “PwbListenerService.cfg” configuration file has to contain values for the port number, the PDM Workbench exchange map directory, the CATIA V5 installation directory, the PDM Workbench installation directory, and the name of the PDM Workbench CATIA environment file, which was created during the PDM Workbench installation.

This is an example content of that configuration file:

```
---------------------------------------------------------------
LISTENER_PORT=8181
PWB_XMAP=C:\Users\Public\PWB_XMAP
CATIA_DIR=C:\Program Files\Dassault Systemes\B29
PWB_DIR=C:\Program Files\T-Systems\PWBCATV5_R29_11.0.0_Aras_1200
CATIA_ENV_FILE=pwbcatiaenv
---------------------------------------------------------------
```

Install the PwbListenerService.exe as a service

Open a command (cmd) window as administrator

A windows service can be installed with the sc tool or the .NET installutil, please refer to:

https://docs.microsoft.com/en-us/dotnet/framework/windows-services/how-to-install-and-uninstall-services

or

https://support.microsoft.com/en-us/help/251192/how-to-create-a-windows-service-by-using-sc-exe

Installation with sc.exe:

```
>sc create PwbListenerService binPath= "%PWB_DIR%\win_b64\code\bin\PwbListenerService.exe"
start= auto DisplayName= PWBListener
>sc description PwbListenerService "Triggers PDM Workbench in CATIA V5 to load a structure
from Aras Innovator into CATIA V5"
>sc start PwbListenerService
The service can be uninstalled again with
>sc delete PwbListenerService
```

Installation with .NET installutil.exe:

```
>C:\Windows\Microsoft.NET\Framework\v4.0.30319\InstallUtil.exe
%PWB_DIR%\win_b64\code\bin\PwbListenerService.exe
The service can be uninstalled again with
>C:\Windows\Microsoft.NET\Framework\v4.0.30319\InstallUtil.exe /u
%PWB_DIR%\win_b64\code\bin\PwbListenerService.exe
```

Please check in the services.msc snapin that the PWBListener is running and start the service if necessary.

For changing values in the configuration file “PwbListenerService.cfg” stop the PWB listener service, change the values in the file, and start the service again.

Open in CATIA uses dynamic setting how to fetch Properties from Aras Innovator

By default, Open in CATIA expects all needed PDM properties to be available in the AML passed to the PWBListener via Web Socket.

If you create a custom AML for example from an external DMU application and you don’t have all necessary properties, it is possible to send a lean AML that only holds the structure defining properties.

Configuration

To enable this feature, you must add the property FetchPropertiesDuringLoad to the PWBToCatiaCmd or the PWBAddTempToCatiaCmd command:

```
// default, open expanded structure
var command = "COMMAND:PWBToCatiaCmd";

// change command to "PWBAddTempToCatiaCmd"
if (addTemp === true) {
    command = "COMMAND:PWBAddTempToCatiaCmd";
}

// advise PWB to fetch the properties from the db during load
command += "|FetchPropertiesDuringLoad";

socket.send(command);
socket.send(structure);
socket.close();
```

If you activate the PWB Configuration setting `SendToCadUseAmlAttributes=false`, the properties are always fetched from PDM during load.

Open in Aras in CATIA V5 Client

Single CAD or part items can be loaded in the Aras Innovator web client from CATIA.

Configuration

When using “Open in Aras” an additional “helper window” is displayed even if the session is already open. It is possible to close this window automatically after the Item is opened.

Modify the file (beginning with Aras 24) `\Innovator\Client\Modules\aras\startup\deepLinking.ts` in your Aras code tree.

Modify the file (Aras 14 to Aras 23) `\Innovator\Client\Modules\aras.innovator.core.MainWindow\deepLinking.ts` in your Aras code tree.

Modify the file (up to Aras 12) `\Innovator\Client\Modules\aras.innovator.core.MainWindow\deepLinking.js` in your Aras code tree.

Around line 26 you can add an additional snippet of code to close the window if an Aras Innovator instance is already open.

```
if (!deepWindowIframe.src) {
        deepWindowIframe.src = 'deepLinking.aspx';
   // Close this window if Innovator is already open
   var objWin = window.self;
   objWin.open('','_self','');
   objWin.close();
}
```

Picture 203: File “deepLinking.ts or .js”

Save the `deepLinking.ts or .js` file and restart the IIS.

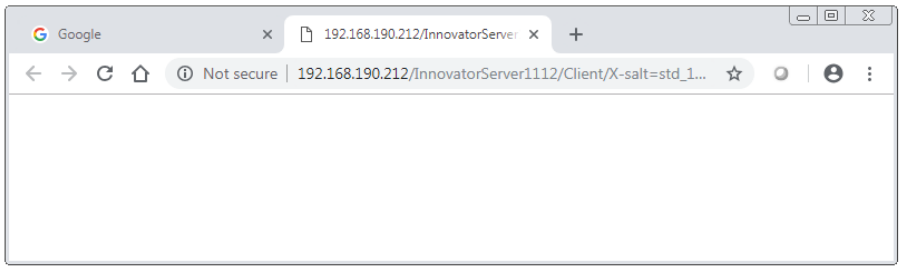
At all clients the browsers cache of the default browser must be cleared to enforce the use of the changed script.

Please note that this proposed change was tested in Aras Innovator 11.0 SP12, 11.0 SP15 and Aras 12.0 up to SP9 and Aras 17.

For later Aras Innovator version this behavior may be changed.

For Aras Innovator 11 only

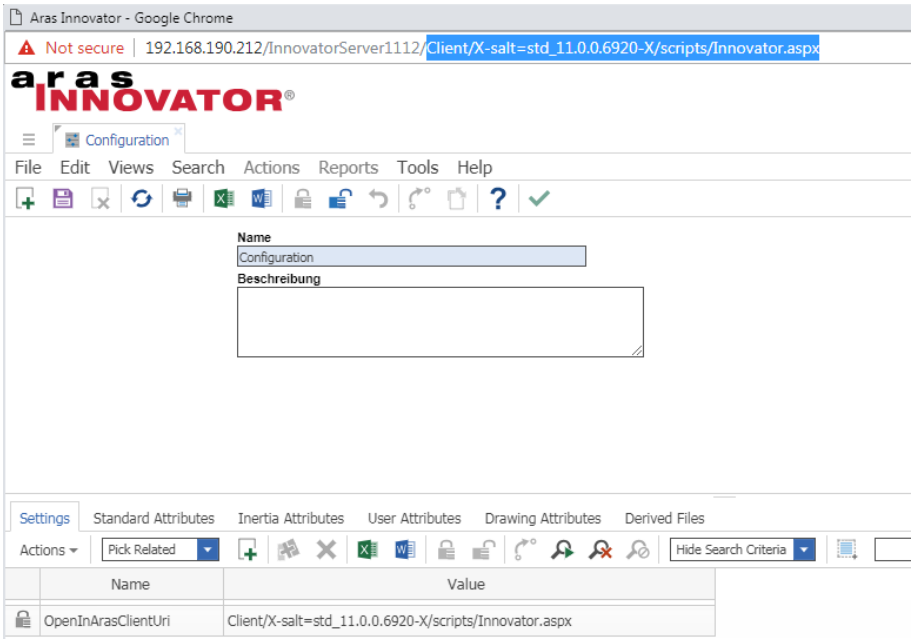
With Aras Innovator 11 the “Open In Aras” functionality opens a new empty tab in an additional default browser window.



Picture 204: Empty tab

To avoid this window, you must set the PWB Configuration “OpenInArasClientUri” to the client part of your Aras installation. You can obtain the value from the URL in the Aras Innovator Window:

http://192.168.190.212/InnovatorServer1112/Client/X-salt=std_11.0.0.6920-X/scripts/Innovator.aspx



Picture 205: Aras Innovator web client with Client URL

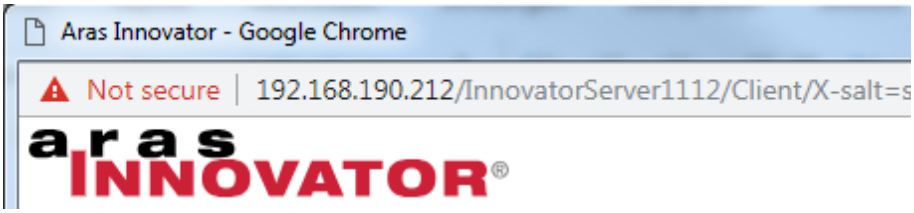
This setting must not exist in Aras Innovator 12.

To make sure the window handling works correctly an additional default browser window must exist (this could be the initial browser window of the Aras Innovator login).

Window Management

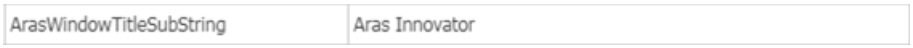
If you use “Open in Aras” this functionality brings the Aras Innovator window on top.

By default the Aras Innovator window uses “Aras Innovator …” as window title:



Picture 206: Window title “Aras Innovator”

If your customization uses a different window title you have to set the PWB Configuration “ArasWindowTitleSubString” to your window title.



Picture 207: PWB Configuration setting “ArasWindowTitleSubString”

Open in Aras Innovator in AICD environment

The AICD Cloud environment is split up in different URLs for Server, Client, CAD Client, Authentification server and Vault.

Example:

Your AICD instance lives at

https://aicdpartner.aras.com/tsystems/

Your server endpoint is:

https://s-aicdpartner.aras.com/tsystems/

To use this server you have to configure PWB_SOAP_TARGET_URL like:

```
SET PWB_SOAP_TARGET_URL=
  https://s-aicdpartner.aras.com/tsystems/InnovatorServer.aspx
```

By default PDM-Workbench uses the same URL to open an item in the web client. In case of AICD environment you need a different URL to send an Item to the web client, therefore you must set PWB_ARAS_CLIENT_TARGET_URL in the start script of CATIA:

```
SET PWB_ARAS_CLIENT_TARGET_URL=
  https://aicdpartner.aras.com/tsystems
```

Open in Aras - Allow configurable web-browser

By default, the open in Aras functionality uses the default web browser. Now it is also possible to configure a different browser to open the selected object in Aras.

If a special browser is configured, it is also possible to configure special browser options for this browser.

Configuration

To configure a web-browser the following environment variable must be set on the CATIA client (this can be done in the environment script of the PDM Workbench `catia_env.bat`)

```
SET PWB_WEBBROWSER=<browser>
```

Optional a second environment variable can be set to specify the browser options:

```
SET PWB_WEBBROWSER_OPTIONS=<browser options>
```

Example:

```
SET PWB_WEBBROWSER=msedge
SET PWB_WEBBROWSER_OPTIONS=--inprivate
```

Configurable properties for CustomMethod_PreProcRelInstCreAttrs

Now it is possible to configure a set of Aras Innovator properties of the child to be available in `CustomMethod_PreProcRelInstCreAttrs`. Beside these Aras Innovator properties the CATIA Part Number of the child is also available (like Nomenclature).

Configuration

The list of required properties must be configured in the settings section of the PWB Schema file. To set multiple properties you have to use “|” as delimiter:

```
<settings>
   <setting name="PreProcRelInstCreAttrsUseChildProps"
            value="item_number|classification"/>
</settings>
```

In your custom method you can access the properties like:

```
Item TargetItem = this.getPropertyItem("TargetItem");
string targetPN = TargetItem.getProperty("item_number", "");
string classification =
       TargetItem.getProperty("classification", "");
```

Creating and deleting Relations without updating the Source Item

It is possible now to create and delete relations without applying “AML update” to the source item.

Configuration

The server setting `CreateDeleteRelsUpdSrcItem` has the default value 'false'. The old behavior can be changed back by setting the value to 'true'.

Align CAD Structures with multiple versions of the same CAD

By default, it is not possible to load a multilevel CAD Structure which holds different versions of the same CAD. Because it is not possible to load different versions of the same CATIA file (with equal file names) into CATIA at the same time.

This functionality aligns the structure by using the latest version of the CAD concerned in the structure for all occurrences.

Configuration

To enable the behavior, the server setting `AlignVersionsInCadStructure` must set be to `true`.

Deny load if the same file is loaded in different version

If a different version of a CATPart / CATProduct (from Aras Innovator) is already loaded in CATIA, the user is asked to close this file before loading the new structure from Aras Innovator. If the file was loaded from disk, the Aras Innovator meta data are applied to the already loaded file.

Note: CATParts loaded in visualization mode are not handled as loaded. This means, the geometry will be downloaded from Aras Innovator. If such a CATPart is loaded into design mode the correct geometry is shown.

Automatic Save of PWB Session File

It is possible to save the current PDM information to a local session file. If the same user is logged in with an empty CATIA (no windows open), this session can be restored. Now it is possible to save the session automatically during every load from PDM and after update.

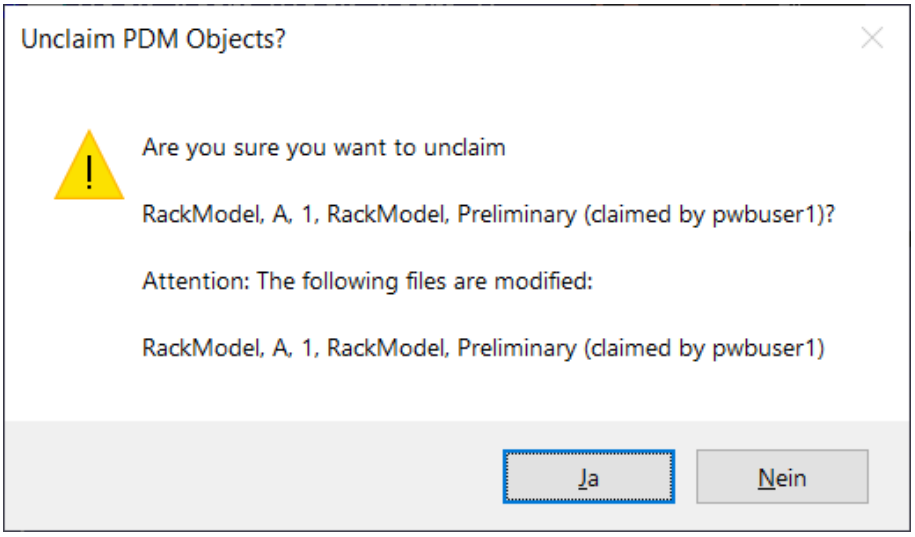
Configuration

To enable the functionality, you must set `QuickSaveLocalPwbSession` in the `settings` section of the PWB Schema file on the CATIA client.

```
<settings>
   ...
   <setting name="QuickSaveLocalPwbSession" value="true" />
</settings>
```

Warning when the User wants to unclaim modified Files

There is a new functionality which warns the user when he is about to unclaim CATIA files that are modified in the session:



Picture 208: Warning Dialog at Unclaim

Configuration

This functionality is switched on by this PWB Schema file setting:

```
<setting name="ModifiedFilesAtCheckInWarning" value="true" />
```

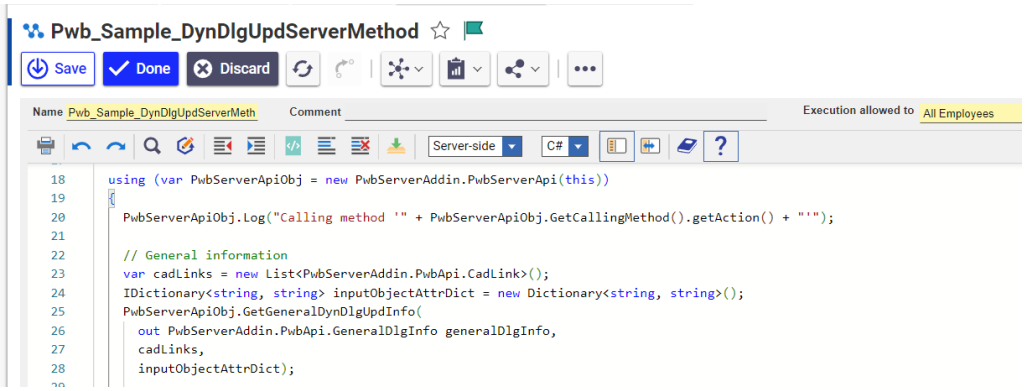
Dynamic Dialog Functionality

It is possible to have user dialogs which are not defined in a static way in the PWBSchema.xml file, but defined dynamically in a custom Aras Innovator server method. This makes it possible to dynamically define at runtime both the dialog attribute definitions and their values.

Configuration

A custom C# server method which is called by the connector and which returns the dialog information depending on the content of the call has to be defined.

A sample method for this, “Pwb_Sample_DynDlgUpdServerMethod”, exists.



Picture 209: Sample dynamic dialog custom server method

This method has to be defined in the ‘PWBSchemata / PWBSchema / dynDlgServerMethod’ XML attribute in the PWBSchema.xml file, as shown in this example:

```
<PWBSchemata>
    <PWBSchema system="Aras" customization="Aras" serverConfig=""
    displayName="NLS_System" visibleLength="15" allowedLength="64"
    UseBomPartStructure="false"
    dynDlgServerMethod="Pwb_Sample_DynDlgUpdServerMethod" >
    <!-- <PWBSchema system="Aras" customization="Aras" serverConfig=""
    displayName="NLS_System" visibleLength="15" allowedLength="64"
    UseBomPartStructure="false" > -->
```

The XML code in green shows the regular definition without the dynamic dialog functionality commented out.

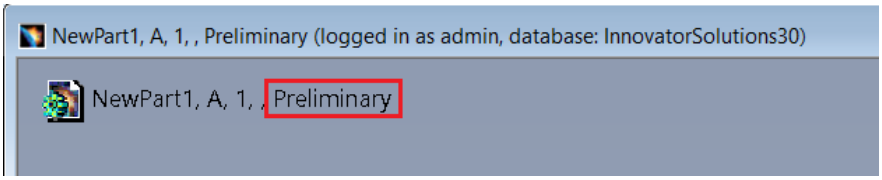
The dialog definitions in the PWBSchema.xml file are the same as before, except they contain no attribute definitions, since the dialog content is requested from the Aras Innovator server dynamically:

```
<object name="/CAD/Mechanical/Part" displayName="NLS_CATPart"
icon="CATPart" isDefaultFor="CATPart">
      ...
    <!-- Define custom context action(s) with dialog-->
    <!-- If using dynamic dialogs (dynDlgServerMethod defined) use empty
    dialog definition for custom action -->
    <customContextAction name="Pwb_Sample_ContextAction"
    usedIn="PdmWindow|QueryDialog" confirm="false"
    dialog="Pwb_Sample_ContextActionDynDlg" />
    <customContextAction name="Pwb_Sample_DynContextPromote"
    usedIn="PdmWindow|QueryDialog" confirm="false"
    dialog="Pwb_Sample_ContextPromoteDlg" />

    <!-- If not using dynamic dialogs use dialog definition using
    attributes -->
    <!--
    <customContextAction name="Pwb_Sample_ContextAction"
    usedIn="PdmWindow|QueryDialog" confirm="false"
    dialog="Pwb_Sample_ContextActionFixedDlg" />
```

```
      -->
    ...
<!-- Dialog definitions without any attributes: -->
    <form name="Pwb_Sample_ContextActionDynDlg" />
    <form name="Pwb_Sample_ContextPromoteDlg" />

    <form name="Pwb_Sample_ContextActionFixedDlg">
      <formAttribute name="item_number" displayName="NLS_item_number"
      widgetType="SingleLineEditor" mode="output" ... />
          ...
      <formAttribute name="classification" widgetType="SingleLineEditor"
      mode="output" visibleLength="15" required="false" />
    </form>
```

Usage

An example is shown with the custom context action method ‘Pwb_Sample_ContextPromoteDlg’. The starting point is a CAD document in the ‘Preliminary’ lifecycle state:

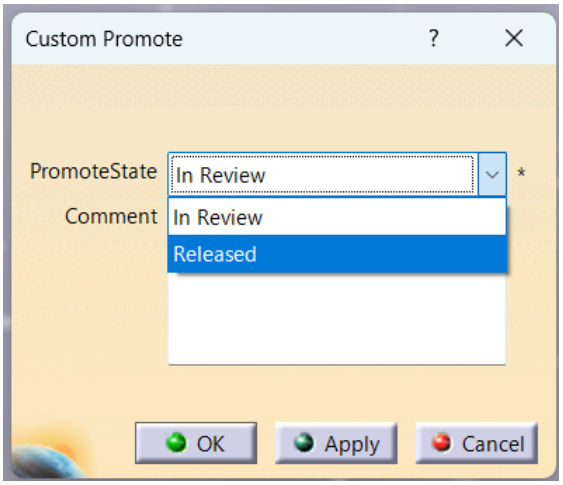


Picture 210: CAD document in ‘Preliminary’ state

The user clicks on the custom action “Custom Promote”:

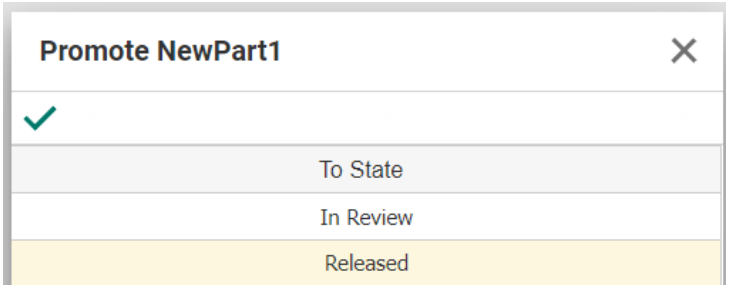
Picture 211: “Custom Promote” custom action

A dialog appears with the currently available target lifecycle states based on the current ‘Preliminary’ lifecycle state of the CAD document:



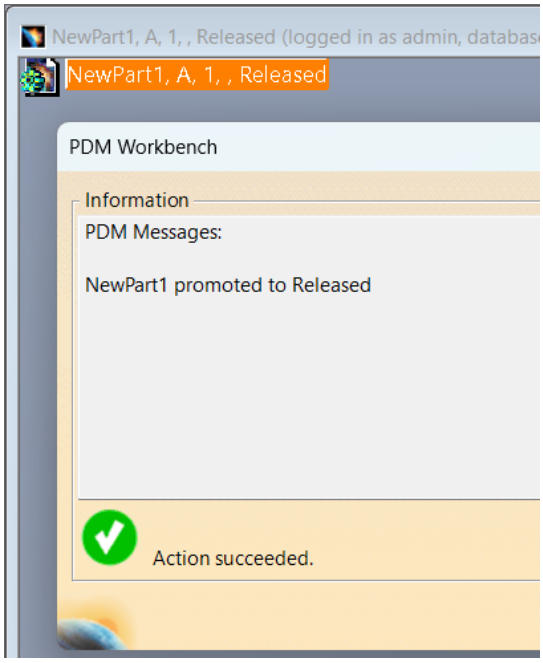
Picture 212: Lifecycle states in dialog based on ‘Preliminary’

These are the same states that are available in the Aras Innovator web client:



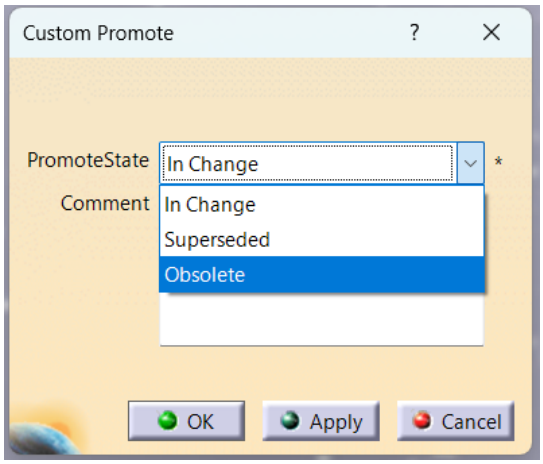
Picture 213: Lifecycle states in browser based on ‘Preliminary’

If the user clicks on “Custom Promote” the CAD document is promoted to the selected lifecycle state:



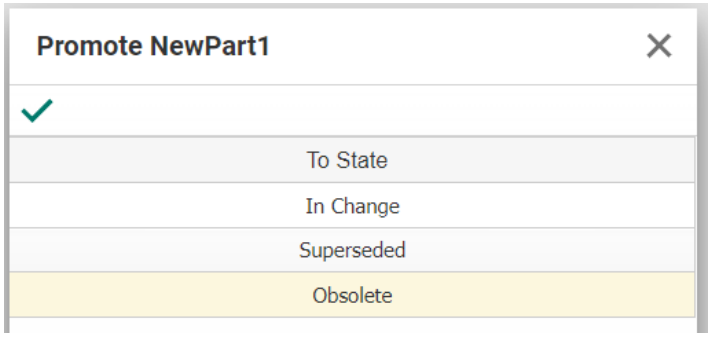
Picture 214: Result of “Custom Promote” action

Selecting “Custom Promote” again now shows different target lifecycle states based on the different current lifecycle state ‘Released’:



Picture 215: Lifecycle states in dialog based on ‘Released’

Again, this is the same as in the Aras Innovator web client.



Picture 216: Lifecycle states in browser based on ‘Released’

New Version 2.0 of the Connector Server API

public class **PwbServerApi**
Member of **PwbServerAddin**
Summary:
Main class for PWB server API functionality.

New methods:

public **void SyncToBomApi**(
string *Type*, **string** *Id*, out **System.Collections.Generic.List<string[]>** *Messages*)
Summary:
Synchronizes a CAD Structure to BOM, that is, updates a structure of 'Part BOM' and 'BOM Instance' relation from a 'CAD Structure' and 'CAD Instance' structure as the input.
Parameters:
Type: Type of selected object. Currently only 'CAD' is supported.
Id: Aras id of selected object.
Messages: User messages: List of [MessageText][MessageType].

public **string** **GetDrawingType**()
Summary:
Returns the connector drawing type string. By default it is "/CAD/Mechanical/Drawing", but it can be configured by defining the server setting "CATDrawingType".
Returns:
The connector drawing type string.

public **void GetGeneralDynDlgUpdInfo**(
out **PwbServerAddin.PwbApi.GeneralDlgInfo** *GenlDlgInfo*,
[**System.Collections.Generic.List<PwbServerAddin.PwbApi.CadLink>** *CadLinks* = null],
[**System.Collections.Generic.IDictionary<string, string>** *InputObjectAttrDict* = null])
Summary:
Class for general data which is not associated to one particular dialog (primary or secondary dialog).
Parameters:
GenlDlgInfo: General CAD attribute information.
CadLinks: CAD link types and target document ids from the CAD session.
InputObjectAttrDict: Attributes of a PDM object which may be passed to the method, like the item being duplicated. Does not always contain data, depending on the use case.

public **PwbServerAddin.PwbApi.Dlg** **GetDynDlgFromClient**(
PwbServerAddin.PwbApi.DlgOrdinal *DialogOrdinal*)
Summary:
Retrieves the primary or secondary dialog object which has been sent from the client. 'null' if it doesn't exist. The secondary dialog only exists in the 'PdmUpdate' context, if a Part item is being created in addition to the CAD item.
Parameters:
DialogOrdinal: 'Primary' or 'Secondary'.

Returns:
The dialog if it exists, or 'null' otherwise.

public **PwbServerAddin.PwbApi.Dlg** **CreateNewDynDlg**(
PwbServerAddin.PwbApi.DlgOrdinal *DialogOrdinal*, **string** *ClassStr*, **string** *FormStr*)
Summary:
Creates a new dialog object to be returned to the client.
Parameters:
DialogOrdinal: The primary dialog, or the secondary (the Create dialog of the Part item in 'Update PDM').
ClassStr: Corresponds to <object name="..." in the PWBSchema.xml file.
FormStr: Corresponds to <form name="..." in the PWBSchema.xml file.

public **void** **SetDynDlgOutputInfo**(
PwbServerAddin.PwbApi.DlgOrdinal *DialogOrdinal*, **PwbServerAddin.PwbApi.Dlg** *DialogToReturn*)
Summary:
Defines the dialog to be returned as the primary or secondary dialog to the client.
Parameters:
DialogOrdinal: Primary or secondary.
DialogToReturn: The dialog object.

public **bool** **IsCadDoc**(**string** *PdmClass*)
Summary:
Returns whether the class string refers to a CAD document.
Parameters:
PdmClass: The class string, as defined in the PWBSchema.xml file, for example "/CAD/Mechanical/Assembly".
Returns:
'true' if it is a CAD, otherwise 'false'.

public **bool** **IsPart**(**string** *PdmClass*)
Summary:
Returns whether the class string refers to a Part item.
Parameters:
PdmClass: The class string, as defined in the PWBSchema.xml file, for example "/Part/Assembly".
Returns:
'true' if it is a Part item, otherwise 'false'.

public **void** **SetAutonameValue**(**string** *autonameValue*)
Summary:
Sets the string which is set as the automatically generated item number of a new CAD or Part item.
Parameters:
autonameValue: The item number of the new item to be created.

PwbServerAddin.PwbApi.GeneralDlgInfo

Summary:

Class for general data which is not associated to one particular dialog (primary or secondary dialog).

public **Aras.IOM.Item** **GetDialogInputItem**(
PwbServerAddin.PwbApi.InputItem *inputItemType*)
Summary:
Retrieves a specific item which has been passed as input. The input item type 'CorrespondingPdmObj' exists for the dialog context 'ContextAction', and 'DuplicateSourceFile' and possibly 'DuplicateSourcePart' exist for the dialog context 'Duplicate'.
Parameters:
inputItemType: Can be 'CorrespondingPdmObj', 'DuplicateSourceFile', or 'DuplicateSourcePart'.
Returns:
The item which corresponds to the input item type if it exists, 'null' otherwise.

public **System.Collections.Generic.List<Aras.IOM.Item>** **GetDialogInputItemList**(
PwbServerAddin.PwbApi.InputItemList *inputItemListType*)

Summary:
Returns a list of items. Currently the only valid input value is 'BomPartsInSession' for the dialog context 'Create'.
Parameters:
inputItemListType: Only 'BomPartsInSession' is valid.
Returns:
The list of Part items in the CAD session, if any exist.

public System.Collections.Generic.IList<string> **GetUdpNames**()
Summary:
A list of the user-defined property names.
Returns:
The names in a string list.

public string **GetUdpValue**(string *name*)
Summary:
The value of a specific user-defined property.
Parameters:
name: The UDP name.
Returns:
The UDP value corresponding to the name.

public string **CadComponentName** { get; }
Summary:
The CAD component name (Context=Create).

public string **CadDefinition** { get; }
Summary:
The CAD definition (Context=Create).

public string **CadDescriptionReference** { get; }
Summary:
The CAD reference description (Context=Create).

public string **CadFileName** { get; }
Summary:
The CAD file name (Context=Create).

public string **CadFileType** { get; }
Summary:
The CAD file type, for example "CATDrawing".

public string **CadNomenclature** { get; }
Summary:
The CAD nomenclature (Context=Create).

public string **CadPartNumber** { get; }
Summary:
The CAD part number, usually mapped to the Innovator item number (Context=Create).

public string **CadPsnSpecType** { get; }
Summary:
The internal CAD specification type (Context=Create).

public string **CadRevision** { get; }
Summary:
The CAD revision (Context=Create).

public PwbServerAddin.PwbApi.DlgContext **Context** { get; }
Summary:

The context in which the server method is called. Possible values are 'Create', 'PdmUpdate', 'Duplicate', and 'ContextAction'.

public **string** **ContextProduct** { get; }
Summary:
Context product, needed for specific use cases.

public **string** **ContextProductId** { get; }
Summary:
Context product ID, needed for specific use cases.

public **string** **OriginatedFromCad** { get; }
Summary:
For 'Context=Duplicate' the ID of the original CAD item.

public **string** **OriginatedFromPart** { get; }
Summary:
For 'Context=Duplicate' the ID of the original Part item, if it exists.

public class **CadLink**

Member of **PwbServerAddin.PwbApi**

Summary:

Information about internal CAD links.

public **string** **CadId** { get; set; }
Summary:
The ID of the CAD document where the link points to.

public **string** **CadType** { get; set; }
Summary:
The type, including the classification, of the CAD document the link points to.
Example: "/CAD/Mechanical/Part".

public **string** **Type** { get; set; }
Summary:
The type string, corresponds to the classification of the 'CAD Structure' relation.

public class **Dlg**

Member of **PwbServerAddin.PwbApi**

Summary:

Class representing dialog information which is dynamically returned to the user.

public **string** **Key** { get; }
Summary:
The dialog key. Only "Primary" or "Secondary" are currently valid.

public **string** **Class** { get; }
Summary:
The dialog class. Corresponds to the object name in the PWBSchema.xml file. Example values are "/CAD/Mechanical/Part" or "/Part/Component".

public **string** **Form** { get; }
Summary:
The dialog form. Corresponds to the form name in the PWBSchema.xml file. Example values are "Create" or "Register".

public **string** **ChangedAttribute** { get; }

Summary:
The name of the changed attribute that triggered the call of the server method.

public **string** **NewAttributeValue** { get; }
Summary:
The new value of the changed attribute that triggered the call of the server method.

public **PwbServerAddin.PwbApi.CorrespondingPartAction** **Action** { get; }
Summary:
The 'CorrespondingPart' action.

public **string** **ActionData** { get; }
Summary:
Optional additional 'CorrespondingPart' action data, like for example a part type, or an item ID.

public **System.Collections.Generic.IDictionary<string, string>** **InputValueDict** { get; }
Summary:
Dictionary containing the dialog attribute input values.

public **System.Collections.Generic.IDictionary<string, string>** **InputTypeDict** { get; }
Summary:
Dictionary containing the dialog attribute input widget types, for example "String", "StringList" or "Boolean".

public **void BeginDialog**()
Summary:
Has to be called before adding information to the dialog.

public **void AddDlgAttrWidget**(
System.Collections.Generic.IDictionary<string, string> *xmlAttrs*,
[**System.Collections.Generic.List<PwbServerAddin.PwbApi.Dlg.ListValueEntry>** *values* = null])
Summary:
Adding information about one attribute widget to the dialog.
Parameters:
xmlAttrs: Dictionary containing the dialog XML attributes. Example (like in the PWBSchema.xml file):
name="item_number" widgetType="ComboBox" mode="update" visibleLength="15" required="false"
listViewRelevant="true" entryAllowed="true"
values: List containing the values of a list widget.

public **void AddActionDlgAttrWidget**(
System.Collections.Generic.IDictionary<string, string> *xmlAttrs*,
System.Collections.Generic.List<PwbServerAddin.PwbApi.Dlg.ActionListValueEntry> *actionValues*)
Summary:
Adds a widget performing a specific action to the dialog. Currently only "name"="PwbCorrespondingPart" is allowed.
Parameters:
xmlAttrs: Dictionary containing the dialog XML attributes
actionValues: Currently only the actions NoPart, CreateCorrespondingPart, QueryForCorrespondingPart, RelateCorrespondingPart, FirstPartInSession, and DisplayMessage are allowed.

public **void AddAttributeValues**(
System.Collections.Generic.IDictionary<string, string> *StringAttrValues*,
System.Collections.Generic.IDictionary<string, System.Collections.Generic.List<string>>
StringListAttrValues)
Summary:
Adding values to the dialog to be returned to the user.
Parameters:
StringAttrValues: Values of "String" type attributes.
StringListAttrValues: Values of "StringList" type attributes.

public **void AddControlSettings**(

System.Collections.Generic.Dictionary<PwbServerAddin.PwbApi.ControlSetting, string> *ControlSettings*)
Summary:
Adding control setting which trigger specific actions on the client. Currently only NoPart, CreateCorrespondingPart, QueryForCorrespondingPart, RelateCorrespondingPart, FirstPartInSession, and DisplayMessage are allowed.
Parameters:
ControlSettings: A dictionary containing control settings and an optional data string.

public **void EndDialog**()
Summary:
Has to be called after adding the last piece of information to the dialog.

CHAPTER 8

Client Schema File Configuration

This chapter describes the configuration of the client side of the PDM Workbench integration.

Structure of the Schema File

The main purpose of the PDM Workbench Schema file is to define which subset of the objects, relations, and attributes in the PDM system should be made available to the design engineer who is working with CATIA V5 and who needs to save the CATIA files he is working on in a PDM system.

The classes of PDM objects that the user can query, create, etc. will be defined in the Schema file, as well as the dialogs which contain these objects' attributes and the PDM relations which relate the PDM objects to each other.

The Schema file can be edited with a text editor, or a XML editor.

At the root of the Schema XML file, there is the tag *PWBSchemata*. Its child tags are named *PWBSchema*. The information about every PDM system that can be accessed is defined inside this *PWBSchema* tag. There is one *PWBSchema* tag for every PDM system and every PDM system customization that can be accessed from the PDM Workbench.

```
<!-- root tag -->
<PWBSchemata>
   <!-- out-of-the-box Aras -->
   <PWBSchema system="Aras" customization="Aras"
              serverConfig="" displayName="NLS_System" visibleLength="15">
   ...
   </PWBSchema>

   <!-- customization of Aras -->
   <PWBSchema system="Aras" customization="PDM-Customization"
              serverConfig="" displayName="NLS_System" visibleLength="15">
   ...
   </PWBSchema>
</PWBSchemata>
```

Attributes of the tag "PWBSchema":

- "system" Contains the short name of the PDM system. Supported is "Aras" for Aras Innovator.

- “customization” Contains the name of the customization. If the PDM system is used out of the box without any customization, then the convention is to use the short name as defined for the attribute *system*.
- “serverConfig” This attribute is optional. If it exists and its value is not an empty string, then it defines the name of the PWB Configuration item to be used on the server. This capability can be used to provide multiple PWB Configuration items on the server and let the client define which one to use.
  If the attribute *serverConfig* is not set or its value is an empty string, then the relevant name of the PWB Configuration item to be used on the server is defined by the Aras variable “PwbConfigurationItemName”.
- “displayName” Contains the NLS (native language support) name of the PDM system or customization that is defined in the tag *PWBSchema*.
- “visibleLength” Contains the visible length of the display name to be shown in the dialogs of CATIA V5.
- “allowedLength” Contains the allowed length of the values inserted in the text editor widgets in characters.

NLS Support for Display Names

Many XML tags (*PWBSchema*, *frame*, *language*, *object*, *relation*, *attribute*, etc.) have an attribute with the name *displayName*. The string that represents the value of that attribute defines the language-specific display name for that object that the PDM Workbench users can see. The language-specific name is defined in the files “PWBSchemaDisplayNames.CATNls” and “PWBSchemaDisplayNames_SYSTEM_CUSTOMIZATION.CATNls”, where “SYSTEM” is the value of the attribute *system* and “CUSTOMIZATION” is the value of the attribute *customization*. For *system*=“Aras” and *customization*=“Aras” the name of the CATNls file would be “PWBSchemaDisplayNames_Aras_Aras.CATNls”. That file contains the NLS names specific for that PDM system or customization, while “PWBSchemaDisplayNames.CATNls” contains the general definitions that apply to all PDM systems.

In this case, the value for the frame's display name “NLS_UserData” is defined in the file “PWBSchemaDisplayNames_Aras_Aras.CATNls”:

File “**PWBSchema.xml**”:

```
...
<PWBSchema system="Aras" customization="Aras" displayName="NLS_System"
           visibleLength="15">
...
```

File “**PWBSchemaDisplayNames_Aras_Aras.CATNls**”:

```
...
NLS_System = "Aras Innovator";
...
```

Configuration settings

Now the configuration of the PDM Workbench can be defined in the Schema file.

The tags are described in detail in the previous chapter. In this list you can see if the configuration is optional or mandatory.

xmap	optional	see “Exchange map” on page 35
soapTargetUrl	optional	see “SOAP target URL” on page 35
externalSoapClientCallPathEnvVar	optional	see “SOAP client call path environment variable” on page 35
externalFileClientCallPathEnvVar	mandatory	see “File client call path environment variable” on page 36
addTempPrefix	optional	see “AddTemp prefixAdd Temp Configuration” on page 128
catiaWindow	optional	see “CATIA V5 Window Configuration” on page 76
pwbWindow	optional	see “PWB Window color” on page 82
pwbCompareStructureWindow	optional	see “Comparing PDM Structure Trees” on page 83
maxExpansionLevel	optional	see “Maximum expansion level” on page 36
colorSupersededNodesAsOutdated	optional	see “Mark superseded nodes” on page 42
setReadOnly	optional	see “Read only” on page 36
neverReloadCatiaDocAfterUpdate	optional	see “Reload after update” on page 36
checkForCadOwner	optional	see “Check for CAD owner” on page 150
checkFileVersionsInStructure	optional	see “Check file versions in structure” on page 150
checkCatPartsInVisuMode	optional	see “Check CATParts in Visualization mode” on page 150
checkCatiaPartNumbersBeforeUpdate	optional	see “Check CATIA PartNumbers before update” on page 150
allowLoadingDifferentFileVersion	optional	see “Allow loading different file versions” on page 37
downloadDrawingRelated3DFile	optional	see “Download related 3D File” on page 138
showOutOfDateLinkInfo	optional	see “Show out-of-date link info” on page 37
startUpdateAfterCreateNewCatiaFile	optional	see “Update after create new CATIA file” on page 37

uploadChangedFilesAtSyncFailure	optional	see “Upload changed files at sync failure” on page 37
checkAuthoringToolVersion	optional	see “Check for CAD document CATIA release at PDM update” on page 151
createThumbnailwithWindows	optional	see “Create thumbnails by CATIA” on page 107
allowBrokenLinkAtNewProduct	optional	see “Optional check for broken links at update” on page 151
displayCustomQueryButtons	optional	see “Display custom query buttons” on page 50
requiredDialogAttributes	optional	see “Required attributes” on page 38
queryDialogIsModal	optional	see “Modal dialog” on page 50
checkIfNoQueryAttrsFilled	optional	see “Check if no query attribute filled” on page 50
showDisplayStringInQueryListView	optional	see “Display string in query list view” on page 51
maximumDescriptionAttributeLength	optional	see “Maximum description attribute length” on page 38
showDataSourceNlsValues	optional	see “Show data source NLS values” on page 38
showCreateVersionAtUpdate	optional	see “Create version button” on page 57
defaultCreateVersionAtUpdateValue	optional	see “Default create version value” on page 57
queryDialogDimensions	optional	see “Configuring the size of the Query dialog” on page 49
duplicateStructureDialog	optional	see “Duplicate Structure Configuration” on page 70 and 71
duplicateStructure	optional	see “Context action “Duplicate Structure”” on page 70
duplicateStructureRequest	optional	see “Duplicate Structure Configuration” on page 71
showReconnectAtUpdate	optional	see “Reconnect at Update” on page 163
showUnlockAfterUpdate	optional	see “Unclaim after Save” on page 58
showCreatePartsAtUpdate	optional	see “Show create parts” on page 58

defaultCreatePartsAtUpdateValue	optional	see “Default create parts value” on page 58
showCreateDialogsMultiColumn	optional	See “Show create dialogs multi column” on page 51
renameExistingExMapFilesAtLoad	optional	see “Rename existing files in exchange map” on page 39
duplicateRelatedDrawings	optional	
showLoadWithLinkInQuery	optional	see “Automatically loading CATDrawings or linked CATParts” on page 51
showLoadWithDrawingInQuery	optional	see “Automatically loading CATDrawings or linked CATParts” on page 51
removeToolbarIcons	optional	see “Toolbar Configuration” on page 42
filter3dRepTypes	optional	see “Additional Rep Types” on page 141
catiaEnvironment	optional	see “Customer-Specific Environment” on page 43
autoLoginOnSessionExpired	optional	see “Auto login on session expired” on page 39
sessionSettings	optional	see “Session settings” on page 39
installedLanguages	mandatory	see “Language settings” on page 40
dateFormat	mandatory	see “Date format” on page 40
lastModificationDateAttribute	mandatory	see “Last modification date attribute” on page 41
standardPartUserDefPropAttribute	optional	see “Standard Part functionality for BOM Part Structure Data Model” on page 94
partClasses	optional	see “Part classes” on page 42
standardPartFiles	optional	see “Standard Part Functionality” on page 94
boundingBoxAttributes	optional	see “Bounding box definition” on page 134
catiaNodeBehaviorDefinitions	optional	see “Configurable CATIA Components Support” on page 159

templateFiles	optional	see “Management of CATIA Templates” on page 101
updateCatiaUserDefinedProperties	optional	see “CATIA user defined attributes” on page 125
updateCatiaLinksInPdm	optional	see “Link Support” on page 136 and “Basic Multi-Model Link Support” on page 139
attrsModifiableAtRevise	optional	see “Modifiable attributes” on page 68
expandStructureForRevise	optional	see “Expand structure” on page 69

“object”: 1 - n

This tag contains the definition of a PDM object class which can be used (queried, created, etc.) by the user.

The definition of PDM object classes, their corresponding dialogs and the actions that can be performed on them are described in the chapter **PDM Objects**.

“relation”: 1 - n

This tag contains the definition of PDM relation classes that can be accessed (expanded, created, etc.) by the user.

The definition of PDM relation classes, their corresponding dialogs and the actions that can be performed on them are described in the chapter **PDM Relations**.

“attribute”: 0 - n

The definition of PDM attributes that are referenced in dialogs.

Attributes and dialog forms are explained in the chapter **PDM Attributes and Form Attributes**.

“pwbAttribute”: 0 - n

The definition of attributes that do not correspond directly to PDM attributes of PDM objects.

Attributes and dialog forms are explained in the chapter **PDM Attributes and Form Attributes**.

“dataSource”: 0 - n

Data sources contain attribute values. By assigning data sources to attributes default values for these attributes can be defined.

Data sources are explained in the chapter **Data Sources**.

PDM Attributes and Form Attributes

Every PDM attribute that is displayed in a dialog form should be defined in an *attribute* tag.

The *attribute* definition contains the following attributes:

- “name” Mandatory, must correspond to the PDM attribute's name.
- “displayName” Mandatory. As described in “NLS Support for Display Names” the NLS string for the “displayName” XML attribute is defined in the CATNls file specific to the PDM system and the customization.
- “dataSource” Optional. The data source includes the possible values for this attribute.
- “isFileName” Optional. If is set to “true” the value of the corresponding input file name is checked about illegal[2] characters when creating a file.
- “isPartNumber” Optional.
- “autoName” Optional.
- “isDerived” Optional.

Example:

```
<attribute name="name" displayName="NLS_Name" isFileName="true"
           isPartNumber="true" autoName="true" />

<attribute name="current" displayName="NLS_current"
           dataSource="LifeCycleStates" />

<attribute name="revision" displayName="NLS_Revision" />
```

A form definition contains form attributes which reference the previously defined PDM attribute.

The *form* attribute definitions contain the following attributes:

- “name” Mandatory, must correspond to the PDM attribute's name.
- “displayName” Optional. As described in “NLS Support for Display Names” the NLS string for the “displayName” XML attribute is defined in the CATNls file specific to the PDM system and the customization. If not defined here the display name of the “attribute” tag will be used.
- “mode” Possible values are “output” (read-only), “update” (can be modified), or “select” (e.g. for combo boxes).

  Default is “output”.
- “visibleLength” Optional, the length of the text editor widget in characters.
- “allowedLength” Optional, the length of the value that can be inserted in the text editor widget in characters.
- “required” “true” or “false”. If “true”, then a value must be set.

[2] Filenames must not contain control characters, non-printable characters and any of the following characters: *?:;\/<>|

Default is “false”.

- “widgetType” — Possible values are “SingleLineEditor”, “MultiLineEditor”, “ComboBox”, “SingleCheckBox”, “CheckBoxes”, “RadioButtons”, “SingleSelectorList”, “MultiSelectorList”, “NameValueList”, “Date”.

  Default is “SingleLineEditor”.
- “embeddedObjAttr” — Optional. If the PDM attribute refers to a different PDM attribute in a contained object attribute, then this XML attribute's value contains that object attribute's name.
- “embeddedAttribute” — Optional. The name of the PDM attribute of the embedded object. If “embeddedObjAttr” is set, then “embeddedAttribute” must be set, too.
- “dataSource” — Optional. The value defines the link to a data source that is more special than the linked data source in the <attribute> tag.
- “listViewRelevant” — “true” or “false”. If “true”, then the attribute will appear in the query list view.

  This attribute should only be added to “Query” forms. Please refer to the *PDM Workbench User Manual* for more information.

  Default is “false”.
- “displayOnly” — Possible values are “true” or “false”. If “true”, then the display value of the value of the data source will be used.
- “entryAllowed” — Possible values are “true” or “false”. If “true”, then the user can enter a text additional to the attached data source.

Example:

```
<form name="Query">

   <formAttribute name="name" widgetType="SingleLineEditor"
                  mode="update" visibleLength="15" required="false"
                  listViewRelevant="true" />
```

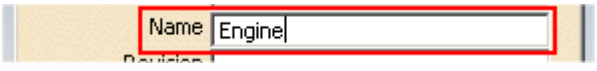
Form definitions generally refer to classes of PDM objects (query form, properties form, etc.). The definition of PDM object classes is described in chapter **PDM Objects**.

Description of the Widget Types

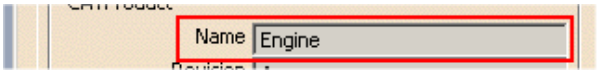
There are nine different widget types available to build up dialogs with. All widget types except “SingleLineEditor”, “MultiLineEditor” and one mode of “NameValueList” can only be used on attributes that have certain kinds of Data Sources attached. Data Sources are a container of a limited set of values.

The detailed explanation of Data Sources you can find in chapter **Data Sources**.

SingleLineEditor — Supports “update” and “output” mode.
Can be used for attributes with no data source attached and also for attributes with data sources of type “SingleValue”.

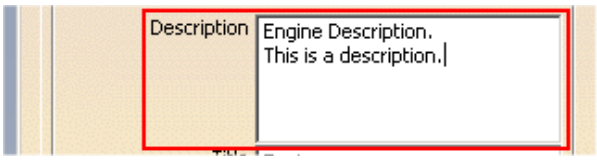


Picture 217: Single Line Editor Widget, update mode



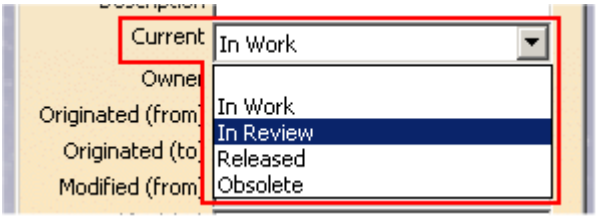
Picture 218: Single Line Editor Widget, output mode

MultiLineEditor Supports “update” and “output” mode.
Can be used for attributes with no data source attached and also for attributes with data sources of type “ValueList”.



Picture 219: Multi Line Editor Widget, update mode

ComboBox Supports “select” and “output” mode.
This widget type can only be used for attributes with data sources of type “ValueList”, “BooleanValueList” or “invokeMessage” if this message returns a set of values.

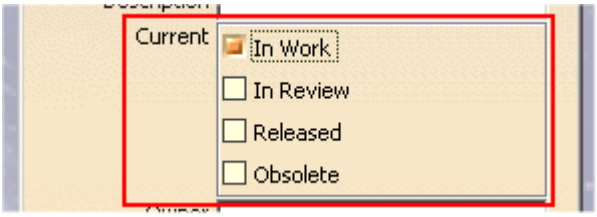


Picture 220: Combo Box Widget, select mode

SingleCheckBox Supports “select” and “output” mode.
Needs an attribute with a data source of type “BooleanValueList”.
This widget should be used only for required attributes or for attributes that are only displayed, already set to a value and cannot be updated.

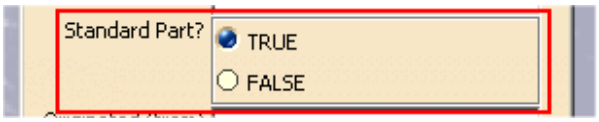
Picture 221: Single Check Box Widget, select mode

CheckBoxes Supports “select” and “output” mode.
Possible for attributes with data sources which contain several values (type “ValueList”, “BooleanValueList” or “invokeMessage”) and where the user can select more than one value.



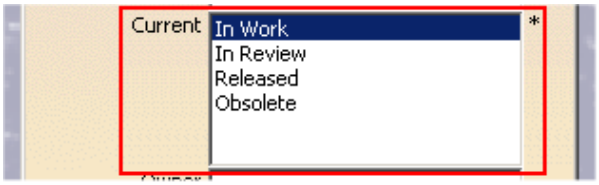
Picture 222: Check Boxes Widget, select mode

RadioButtons Supports “select” and “output” mode.
Possible for attributes with a data source of type “ValueList”, “BooleanValueList” or “invokeMessage” where only one value can be selected at one time.
They should be used for required attributes only, because one value has always to be selected.



Picture 223: Radio Buttons Widget, select mode

SingleSelectorList Supports “select” and “output” mode.
It represents a list with one column where one item is selectable.
It can be used for all attributes with attached data sources of type “ValueList”, “BooleanValueList” or “invokeMessage”.



Picture 224: Single Selector List Widget, select mode

MultiSelectorList Supports “select” and “output” mode.
It represents a list with one column where several items are selectable.
(The multi-selector list looks like the single-selector list, except that more than one item of the list can be selected.)
It can be used for all attributes with attached data sources of type “ValueList”, “BooleanValueList” or “invokeMessage”.

NameValueList Supports “select”, “update” and “output” mode.
It represents a list with two columns (e.g. for name value sets)

→ when working in update mode the widget type can be used for all attributes within the Schema file (no data source needed). The user can change every single column item (columns can be empty).

→ when working in select mode the widget type can only be used for attributes with data sources of type “NameValueList” attached.
(widget acts as a filter then)

Login Form

This tag contains a description of the “Login” form. It defines the attributes needed for logging in to the PDM system. Generally it contains the attributes “login name”, “password”, and “database” at least, though other attributes like “group” can be defined if it is necessary for the PDM system.

Example:

```
<form name="Login" info="ShowOnlyLoginData">
   <frame displayName="NLS_UserData">
      <pwbFormAttribute name="PWBLoginUser" widgetType="ComboBox"
                        mode="update" visibleLength="10" required="true"
                        entryAllowed="true" dataSource="UserNames" />
      <pwbFormAttribute name="PWBLoginPassword"
                        widgetType="SingleLineEditor" mode="update"
                        visibleLength="10" required="false" />
      <formAttribute name="LoginDatabase" widgetType="ComboBox"
                     mode="update" visibleLength="10" required="true"
                     entryAllowed="false" />
   </frame>
```

```
</form>
```

The XML tags inside the *frame* tag describe how the attributes “user” and “password” are displayed in the login dialog.

Mandatory.

PDM Objects

XML tags *object* define PDM object classes that can be used in the PDM Workbench application. They represent the subset of objects defined within the PDM system which are needed in a PDM-CAD integration.

An *object* XML tag contains the following attributes:

- “name” The internal PDM class name.
- “displayName” The class name that is shown to the user.
- “icon” The icon that represents the class in the PDM window and the list window.

Example:

```
<object name="/Part/Assembly" displayName="NLS_Assembly" icon="Aras_Part">
```

For the icon to be displayed correctly in the PDM window a bitmap file with the name of the icon (in this example “Aras_Part.bmp”) must exist in the subdirectory “resources\graphic\icons\normal” of the CATIA V5 directory (e.g. “intel_a” on Windows 32 Bit CATIA installation, and “win_b64” on Windows 64 Bit CATIA installation).

The list view window needs a bitmap file with the file name (icon name) + “16x16.bmp”, in this example “Aras_Part16x16.bmp”.

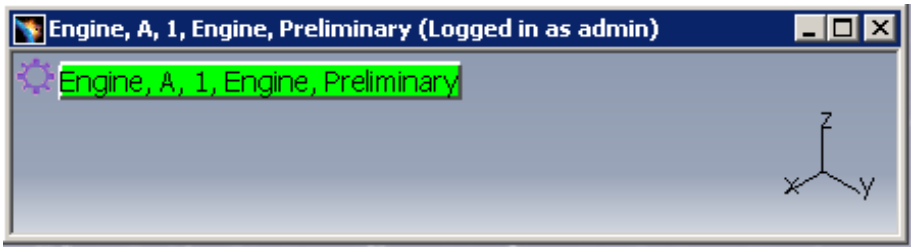
As described in “NLS Support for Display Names” the NLS string for the XML attribute *displayName* is defined in the CATNls file specific to the PDM system and the customization.

Description of PDM Objects

The tag *description* defines which of the attributes of the class should be displayed beside the icon. In this example, these are the attributes “item_number”, “major_rev”, “generation”, “name”, and “state”.

Example:

```
<description>
   <descAttribute name="item_number" />
   <descAttribute name="major_rev" />
   <descAttribute name="generation" />
   <descAttribute name="name" />
   <descAttribute name="state" />
</description>
```



Picture 225: PDM Node in PWB window

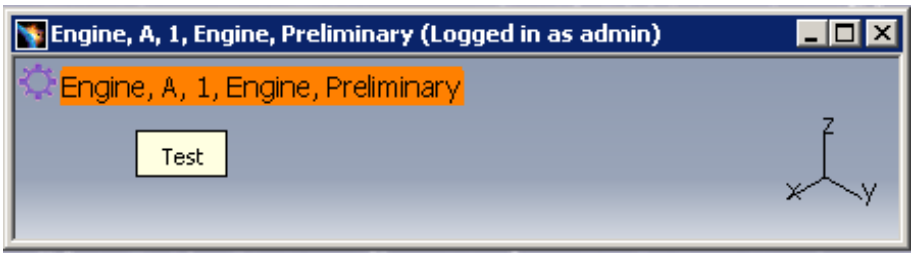
Tooltip of PDM Objects

The tag *tooltipAttribute* defines which string has to be shown as tooltip for the object. The value can be the name of an attribute of the object. If this value is empty, then the description defined in the chapter above will be used.

Example:

```
<tooltipAttribute name="description" />
```

The attribute “description” has the value “Test”.



Picture 226: Tooltip of PDM Node in PWB window

Actions on PDM Objects

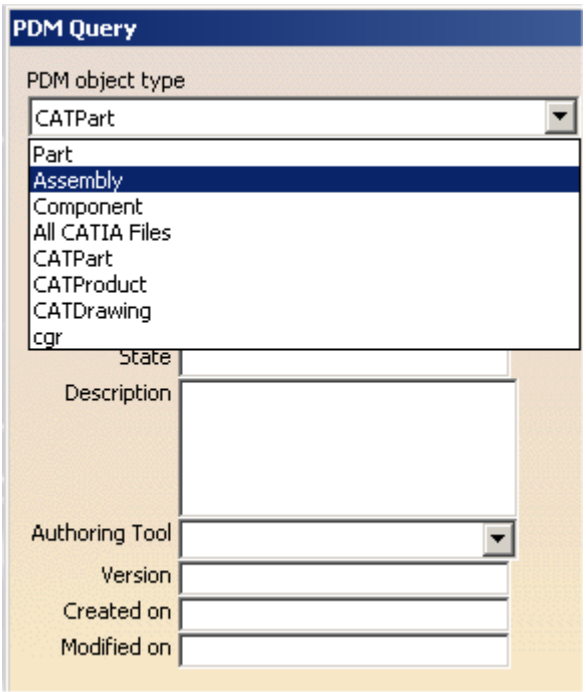
Actions that can be performed with PDM objects have to be defined in the Schema file. There are two kinds of actions: So-called toolbar actions, which are started by clicking on an icon in the PDM Workbench toolbar, and context actions, which are started by right-clicking on the node and selecting one of the context menu items.

Toolbar actions are defined with an “action” tag. The action “Query” can be defined on any object type.

Example:

```
<!-- * all PWB toolbar actions permitted for this object * -->
<action name="Query" />
```

If, for instance, the action “Query” is defined for the object type “/Part/Assembly”, then, when the user clicks on the “Query” toolbar icon, the type “Assembly” (display name) is included in the query dialog list, otherwise it is not.



Picture 227: Select PDM object type in “PDM Query” dialog

Context Actions

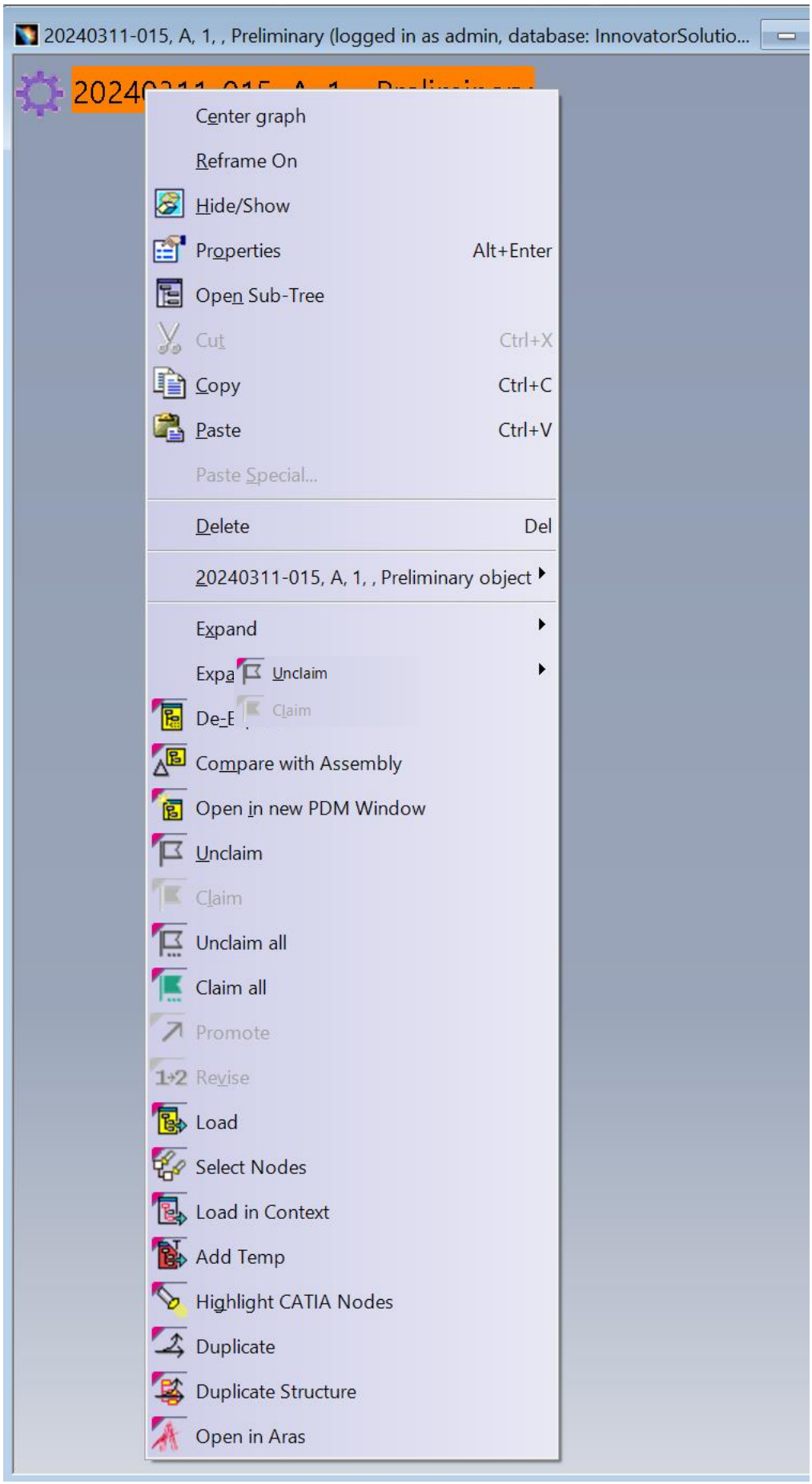
Context actions are declared similarly to toolbar actions. For context actions, the tag “contextAction” is used.

Example:

```
<!-- * all PWB context actions permitted for this object * -->
<contextAction name="CheckIn" usedIn="PdmWindow|QueryDialog" />
<contextAction name="CheckOut" usedIn="PdmWindow|QueryDialog" />
<contextAction name="CheckInAll" usedIn="PdmWindow|QueryDialog" />
<contextAction name="CheckOutAll" usedIn="PdmWindow|QueryDialog" />
<contextAction name="Highlight" usedIn="PdmWindow" />
```

The attribute “usedIn” defines where the context action is shown. The attribute value “PdmWindow” activates the action in the PDM window. The attribute value “QueryDialog” activates the action in the result list view of the query dialog. These two attribute values can be combined with the pipe “|”.

If a certain context action is defined for a PDM object class in the Schema file, then the corresponding context menu entry for object nodes of that class exists.



Picture 228: Context actions for the type /Part/Assembly - Example

Some things to keep in mind regarding the definition of context actions:

If the context action “Unclaim” (CheckIn) is defined, then the dialog forms “CheckInNew” and “CheckIn” must also be defined.

If the context action “Claim” (CheckOut) is defined, then the dialog form “CheckOut” must also be defined.

The context action “Load” (LoadStructure) should only be defined on part objects.

The following context actions are available:

Context action name	**Description**
Properties	see “Context action “Properties”” on page 152
CheckIn	see “Context action “Unclaim”” on page 152
CheckOut	see “Context action “Claim”” on page 152
CheckInAll	see “Context action “Unclaim all”” on page 152
CheckOutAll	see “Context action “Claim all” on page 152
Duplicate	see “Context action “Duplicate”” on page 153
DuplicateStructure	see “Duplicate Structure Configuration” on page 70
DuplicateDelete	see “Context action “Duplicate-Delete”” on page 153
DuplicateSupersede	see “Context action “Duplicate-Supersede”” on page 153
Insert	see “Context action “Insert PDM Node”” on page 153
Replace	see “Context action “Replace Node”” on page 153
Expand	see “Context action “Expand”” on page 85
MultipleExpand	see “Context action “Expand Multiple Levels”” on page 85
CustomExpand	see “Context action “Custom Expand”” on page 85
DeExpand	see “Context action “De-Expand”” on page 86
MultipleExpandWithBomChildren	see “Context action “Expand Multiple Levels including Bom Children”” on page 86
CompareStructure	see “Comparing PDM Structure Trees” on page 83
Promote	see “Context action “Promote”” on page 92
Revise	see “Context action “Revise”” on page 68
Execute	see “Context action “Execute”” on page 154

UpdateSubCmpRels	see “Context action “Update structure relations”” on page 154
UpdateParentCmpRel	see “Context action “Update parent relation”” on page 154
LoadStructure	see “Context action “Load”” on page 132
LoadStructureCurrent	see “Context action “Load (Current)”” on page 132
LoadInContext	see “Context action “Load in Context”” on page 132
AddTemp	see “Context action “Add Temp”” on page 128
OpenInNewPdmWindow	see “Context action “Open in new PDM Window”” on page 133
Open	see “Context action “Open File”” on page 133
OpenWithLinks	see “Context action “Open File with Link”” on page 133
TempOpen	see “Context action “Open File temporarily”” on page 133
OpenDrawingWithRelated3D	see “CATDrawing: Loading referenced Data as “Current”” on page 133
OpenDrawingWithRelated3DCurrent	see “CATDrawing: Loading referenced Data as “Current”” on page 133
OpenRelatedDrawings	see “Context action “Open related drawings”” on page 134
OpenCatalog	see “CATIA Catalogs” on page 114
OpenCatalogForEdit	see “CATIA Catalogs” on page 114
NewestVersionInfo	see “Context action “Newest Generation Info”” on page 154
UpdateItem	see “Context action “Update Item”” on page 154
ContextCreate	see “Context action “PDM Create in Context”” on page 154
Highlight	see “Context action “Highlight”” on page 154
CopyAttributes	see “Context action “Copy element attributes”” on page 155
DeleteItem	see “Context action “Delete”” on page 155
DeleteRelation	see “Context action “Delete relation”” on page 83
CreateNewVersion	see “Context action “Create new generation”” on page 129
DeleteNewestVersion	see “Context action “Delete newest generation”” on page 129
UnlinkAndDeleteNewestVersion	see “Context action “Unlink and delete newest generation”” on page 129

RelateToPart	see “Support for Relating a new CATIA File to an existing Part” on page 159
ShowNeighbor	see “Context action “Show Neighborhood”” on page 134
SyncStrucFileToPart	see “Context action “Synchronize to BOM”” on page 155
SelectNodes	see “Selecting Nodes in the PDM Structure Window” on page 84
CheckCadLinks	see “Context action “Check CAD Links”” on page 152
SetConfigInfoOnRelations	see “Setting Configuration Information on Structure Relations” on page 167

Disabling context menu items in the CATIA structure window

In the corresponding “contextAction” definition the XML attribute “removeFromCatiaWindow” needs to be set to “true”:

```
<contextAction name="CheckIn" usedIn="PdmWindow|QueryDialog"
               removeFromCatiaWindow="true" />
```

If that is done the corresponding context action will not be available in the CATIA window anymore. It may still be available as a context menu in the PDM structure window or as a context menu in the query dialog result list.

PDM Object Forms

The following forms can be defined for an object class:

“Query”, “Properties”, “UpdateItem”, “CheckInNew”, “CheckIn”, “CheckOut”

The “CheckIn” and “CheckOut” forms do not have to contain any attributes, they just need to be defined.

Example:

```
<form name="Query">
   <formAttribute name="item_number" widgetType="SingleLineEditor"
                  mode="update" visibleLength="15" required="false"
                  listViewRelevant="true" />
   <formAttribute name="major_rev" widgetType="SingleLineEditor"
                  mode="update" visibleLength="15" required="false"
                  listViewRelevant="true" />
   <formAttribute name="generation" widgetType="SingleLineEditor"
                  mode="update" visibleLength="15" required="false"
                  listViewRelevant="true" />
   <formAttribute name="name" widgetType="SingleLineEditor" mode="update"
                  visibleLength="15" required="false"
                  listViewRelevant="true" />
   <formAttribute name="state" widgetType="SingleLineEditor" mode="update"
                  visibleLength="15" required="false"
                  listViewRelevant="true" />
   <formAttribute name="unit" widgetType="ComboBox" mode="update"
                  visibleLength="15" required="false" />
   <formAttribute name="make_buy" widgetType="ComboBox" mode="update"
                  visibleLength="15" required="false" />
   <formAttribute name="description" widgetType="MultiLineEditor"
                  mode="update" visibleLength="15" required="false"
                  listViewRelevant="true" />
```

```
   <formAttribute name="created_on" widgetType="SingleLineEditor"
                  mode="update" visibleLength="15" required="false"
                  listViewRelevant="true" />
   <formAttribute name="modified_on" widgetType="SingleLineEditor"
                  mode="update" visibleLength="15" required="false"
                  listViewRelevant="true" />
</form>
```

PDM Relations

XML tags *relation* define PDM relation classes that can be used in the PDM Workbench application. They represent the subset of the relations defined in the PDM system that are needed in PDM-CAD integration.

As with the “object” XML tags, a “relation” XML tag contains the following attributes:

- “name” The internal PDM class name.
- “displayName” The class name that is shown to the user.
- “icon” The icon that represents the class in the PDM window and the list window.
- “createAllowed” Defines whether relations of this class can be created by the user. Relations are created by copying and pasting object nodes. If “createAllowed” is “true”, then, at paste, the relation class is included in the list of applicable relations, otherwise it is not. Please refer to the *PDM Workbench User Manual* for more information.
- “expandAllowed” Defines if it is allowed to expand this relation class explicitly in the context action “Expand”.

Example:

```
<relation name="Part BOM" displayName="NLS_PartBOM"
          icon="Aras_Relation" createAllowed="true"
          expandAllowed="true">
```

As for the PDM object classes, a bitmap file for the icon must exist in the CATIA icon subdirectory (“IconName.bmp” and “IconName16x16.bmp”).

As described in “NLS Support for Display Names” the NLS string for the “displayName” XML attribute is defined in the CATNls file specific to the PDM system and the customization.

Description of PDM Relations

As with PDM object definitions, the *description* tag defines which of the attributes of the class should be displayed beside the icon.

In this example the attributes “Class”, “major_rev”, and “generation” are defined as the description.

Example:

```
<description>
   <descAttribute name="Class" />
   <descAttribute name="major_rev" />
   <descAttribute name="generation" />
</description>
```

"Relationship" tags

The tags *leftToRightRelationship* and *rightToLeftRelationship* define the relationships for the two sides of the relation. They contain the following XML attributes:

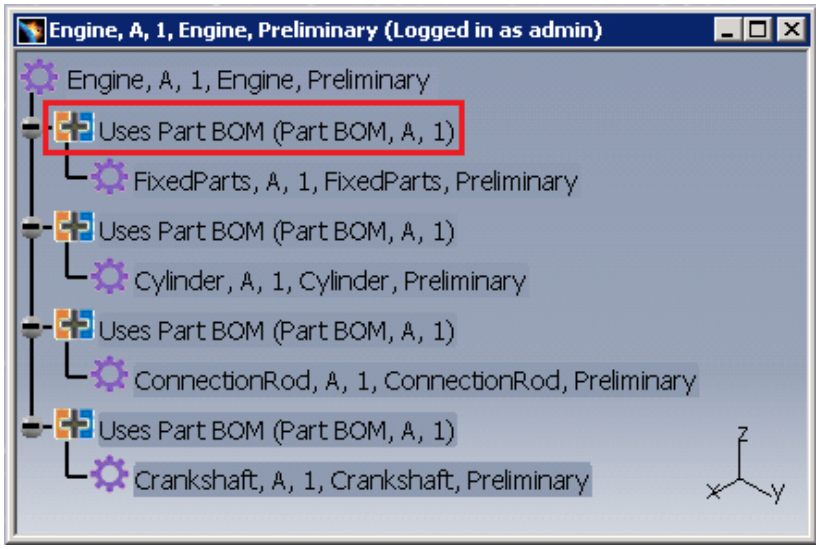
- "name" The internal PDM relationship name.
- "displayName" The relationship name that is shown to the user.
- "multipleExpand" If "multipleExpand" is "true", then the relationship appears in the "Expand Multiple Levels" context menu, otherwise it does not. For this the context action "Expand Multiple Levels" must be defined on the PDM object. The default value is "false".

Example:

The Aras relation "Part BOM" has the relationships "Part BOM_LeftToRight" (display name is "Uses Part BOM") and "Part BOM_RightToLeft" (display name is "Is Used in Part BOM").

```
<leftToRightRelationship name="Part BOM_LeftToRight"
                         displayName="NLS_PartBOM_LeftToRight"
                         multipleExpand="true" />

<rightToLeftRelationship name="Part BOM_RightToLeft"
                         displayName="NLS_PartBOM_RightToLeft"
                         multipleExpand="true" />
```

The text that describes a relation icon is the display name of the expanded relationship ("Part BOM" in this example) as well as the parameters defined in the "description" XML tag in parentheses "Class", "major_rev", and "generation" in this example).



Picture 229: Relation icon with relationship and description attribute

The display of a relationship name in the PDM tree can be switched off by defining the XML attribute "showNameInPdmTree" with the value "false" for a relationship definition:

```
<relation name="/CAD Structure/Structure"
          displayName="NLS_CADStructure_Structure"
          icon="Aras_Relation"
          createAllowed="true" expandAllowed="true" info="AsSaved">

   ...

   <leftToRightRelationship
             name="/CAD Structure/Structure_LeftToRight"
             displayName="NLS_CADStructure_Structure_LeftToRight"
             multipleExpand="true"
             showNameInPdmTree="false" />
```

```
   <rightToLeftRelationship
            name="/CAD Structure/Structure_RightToLeft"
            displayName="NLS_CADStructure_Structure_RightToLeft"
            multipleExpand="true" />
```

"Left and Right Object" Classes

The tags *leftObject* and *rightObject* define which object classes are valid for this relation.

In the following example the relation is between CATIA parts:

```
<leftObject name="/Part/Assembly" />

<rightObject name="/Part/Assembly" />

<rightObject name="/Part/Component" />
```

PDM Relation Forms

The following forms can be defined for a relation class:

"Properties", "UpdateItem", "Create"

The definition of the dialog forms for relations is similar to the definition of the dialog forms for objects.

Example:

```
<form name="UpdateItem">

   <formAttribute name="reference_designator"
                  widgetType="SingleLineEditor" mode="update"
                  visibleLength="15" />

</form>
```

Data Sources

Data sources describe a static set of values that are already known when writing the Schema file. The set of these values will never change during the lifetime of the PDM Workbench.

Data Source "Value" tag

The *value* tag of static data sources contains the following XML tags:

- "name" The PDM name of the attribute.
- "displayName" The dialog display name of the attribute.
- "booleanValue" "true" or "false" to assign the correct value to the attribute names (this tag is only used for type "BooleanValueList").
- "valueName" The PDM name of the value attribute (this tag is only used for type "NameValueList").
- "displayValue" The dialog display name of the value attribute (this tag is only used for type "NameValueList").

Static data sources can be of type:

SingleValue: the data source contains only one static element.

Example:

```
<dataSource name="Autoname" type="SingleValue">

   <value name="autoname" displayName="NLS_Autoname" />
```

```
</dataSource>
```

ValueList: the data source contains a set of static value elements.

Example:

```
<dataSource name="LifeCycleStates" type="ValueList">
   <value name="Preliminary" displayName="NLS_Preliminary" />
   <value name="Review" displayName="NLS_Review" />
   <value name="Approve" displayName="NLS_Approve" />
   <value name="Released" displayName="NLS_Released" />
</dataSource>
```

Starting with Aras Innovator 12 SP8 there is a new feature "Inactive List Values". This feature allows the Aras Innovator administrator to inactivate List values going forward, while retaining the values as set on existing data. In Aras Innovator web client, starting in SP8, the List dropdown (and type-ahead) knows to omit any inactive values when setting new values, in a form or in a grid. When using a List dropdown (and type-ahead) for searching, the inactive values still appear.

In the PWBSchema file, list values in a data source of type “ValueList” can have the XML attribute “pdmInfo”. If this attribute has the value “InactiveListValue” the list entry is removed from dialogs which update an item. It is still present in other dialogs, like the query dialog. The default value is “ActiveListValue”.

Example:

```
<dataSource name="Unit" type="ValueList">
   <value name="EA" displayName="NLS_EA" />
   <value name="IN" displayName="NLS_IN"/>
   <value name="FT" displayName="NLS_FT" pdmInfo="InactiveListValue" />
   <value name="MM" displayName="NLS_MM"/>
   <value name="CM" displayName="NLS_CM"/>
   <value name="M" displayName="NLS_M"/>
</dataSource>
```

BooleanValueList: the data source contains exactly the value pair “true” and “false”.

Example:

```
<dataSource name="PlusOrMinus" type="BooleanValueList">
   <value name="+" displayName="NLS_ValueSetPlus" booleanValue="true" />
   <value name="-" displayName="NLS_ValueSetMinus" booleanValue="false" />
</dataSource>
```

NameValueList: the data source contains a list of name-value pairs.

Example:

```
<dataSource name="Test" type="NameValueList">
   <value name="test1" displayName="NLS_test1" valueName="test1_value"
          displayValue="NLS_test1_value" />
   <value name="test2" displayName="NLS_test2" valueName="test2_value"
          displayValue="NLS_test2_value" />
</dataSource>
```

Complete example of using a data source tag:

The attribute “CheckedOut” can be assigned exactly to “true” or “false”. Within the dialog this will be expressed by showing a “+” or a “-“ sign. Therefore we define a data source called “PlusOrMinus” and attach this container to the attribute description.

```
<attribute name="CheckedOut" displayName="NLS_CheckedOut"
           dataSource="PlusOrMinus" />

<dataSource name="PlusOrMinus" type="BooleanValueList">

   <value name="+" displayName="NLS_ValueSetPlus" booleanValue="true" />

   <value name="-" displayName="NLS_ValueSetMinus" booleanValue="false" />

</dataSource>
```

CHAPTER 9

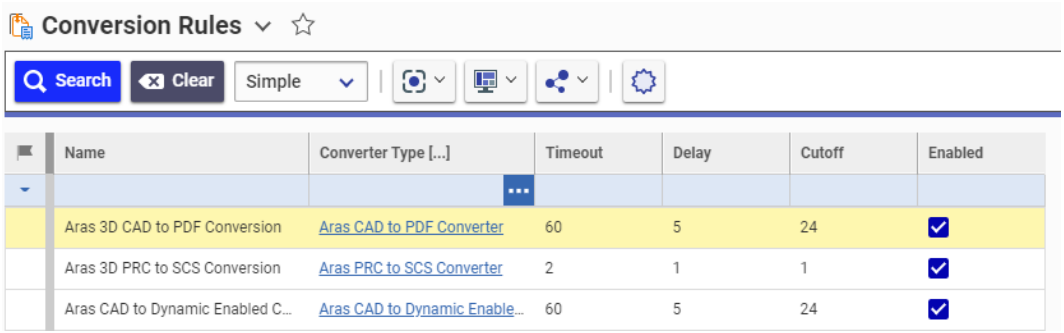
Troubleshooting

This chapter lists error conditions and describes possible sources of such failures and how to solve them.

Invalid CAD Instances with Aras 3D CAD to PDF Conversion

This issue has been observed in Aras Innovator SP14 and higher.

If the Aras 3D CAD to PDF Conversion is enabled in your Aras Innovator environment,



please check the following method:

CR_3DCADtoPDF_SetFiles

```
At the end of the method, you can find the following code:
// When CAD assembly was converted for opening by 'Dynamic HOOPS Viewer'
appropriate 'CAD Instance'
// items should be created based on information from assembly tree XML
created by HOOPS converter
if (dynamicAssemblyEnabled)
{
	CCO.Utilities.WriteDebug(
		"_CR_3DCADtoPDF_SetFiles","dynamicAssemblyEnabled = true" );
	string rootCadId = depIds.ToArray()[0];
	string inParams =
	@"<root_cad_id>{0}</root_cad_id><master_xml_id>{1}</master_xml_id>
	";
	string res = string.Format(
		CultureInfo.InvariantCulture, inParams, rootCadId,
		files["shatteredModel"]);

	Item methodResult = inn.applyMethod(
		"CR_3DCADtoDyn_CreateCadInstances", res);
}
```

It is here deliberately written that ‘CAD Instance” items will be created. This is done in the method CR_3DCADtoDyn_CreateCadInstances.
PDM Workbench already creates CAD Instances. Additonal CAD instances will compromise the CAD Structure.

Change the line

```
if (dynamicAssemblyEnabled)
```

to

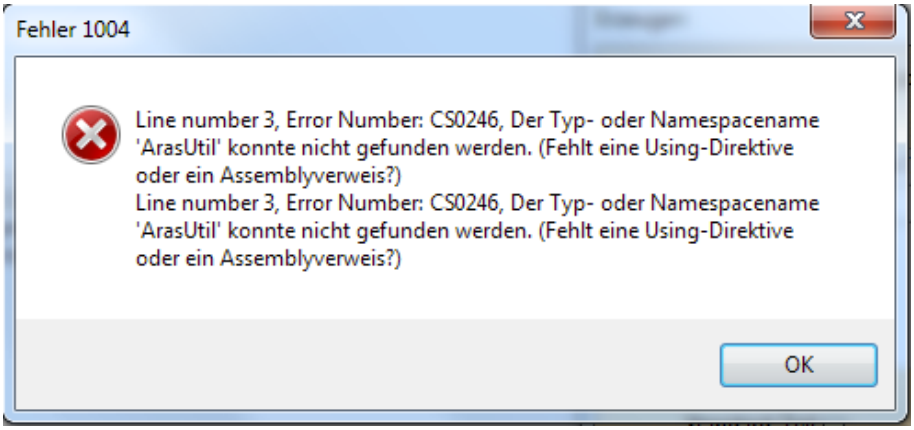
```
if (false)
```

In newer versions of Innovator the code looks like this:

```
// When CAD assembly was converted for opening by 'Dynamic HOOPS Viewer'
appropriate 'CAD Instance'
// items should be created based on information from assembly tree XML
created by HOOPS converter
if (dynamicAssemblyEnabled || streamingAssemblyEnabled)
{
	methodResult =
		_dataAccessLayer.CreateCadInstances(
			depIds, _files["shatteredModel"]);

	if(methodResult.isError())
	{
		return methodResult;
	}
}
```

Please comment out the call of "_dataAccessLayer.CreateCadInstances" and the corresponding error handling here.

Type or Namespace "ArasUtil" could not be found …



Picture 230: Name space could not be found

Please replace calls of the class "ArasUtil" with calls to "PwbServerAddin.PwbServerApi".

The usage of the class "ArasUtil" in custom server methods is now allowed anymore and has to be replaced with calls to "PwbServerAddin.PwbServerApi".

Locking CAD Documents in CATIA fails when the Conversion Server is installed.

In some cases locking CAD documents in CATIA fails with this server stack trace:

```
PdmObject.PerformAction (Lock)
ArasUtil.AddOwner -> LockStatus:'0'
```

```
ArasUtil.AddOwner -> caught exception:'An item with the same key has
already been added.'

   at System.Collections.Generic.Dictionary`2.Insert(TKey key, TValue
value, Boolean add)

   at
System.Linq.Enumerable.ToDictionary[TSource,TKey,TElement](IEnumerable`1
source, Func`2 keySelector, Func`2 elementSelector, IEqualityComparer`1
comparer)

   at Aras.Server.Core.FileContainerItemsOnAfterUpdate.Main(XmlDocument
inDom, XmlDocument outDom, Object eventData) in
E:\Builds\Innovator_RELS11-0-SP11\6812-RELS11-0-
SP11\Innovator.git\CompilableCode\Core\InternalMethods\Files\FileContainer
ItemsOnAfterUpdate.cs:line 67
```

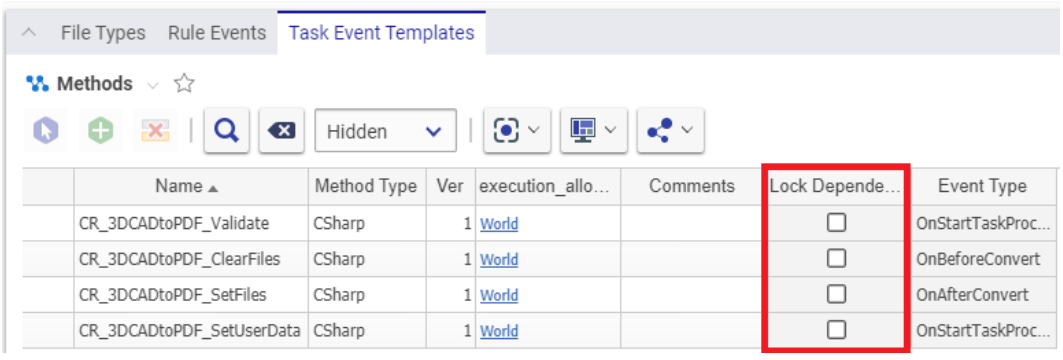
If that happens please create the server setting “EnableFileCloneCreation” and set it to the value “false”. That should fix the issue.

Conversion Tasks fail for updated or new CAD files from PDM Workbench

The Aras 3D CAD to PDF Conversion may fail after Update from PDM Workbench. In this case please check the “Aras 3D CAD to PDF Conversion” Rule:

Picture 231: “Aras 3D CAD to PDF Conversion” Rule

Edit the Rule and uncheck all checkboxes for “Lock Dependency” in the Task Event Templates Tab.



Picture 232: “Uncheck Lock Dependencies Aras 3D CAD to PDF Conversion” Rule