BETA
SIMULATION SOLUTIONS

physics on screen

ANSA
PRE PROCESSOR

Teamcenter Utilities

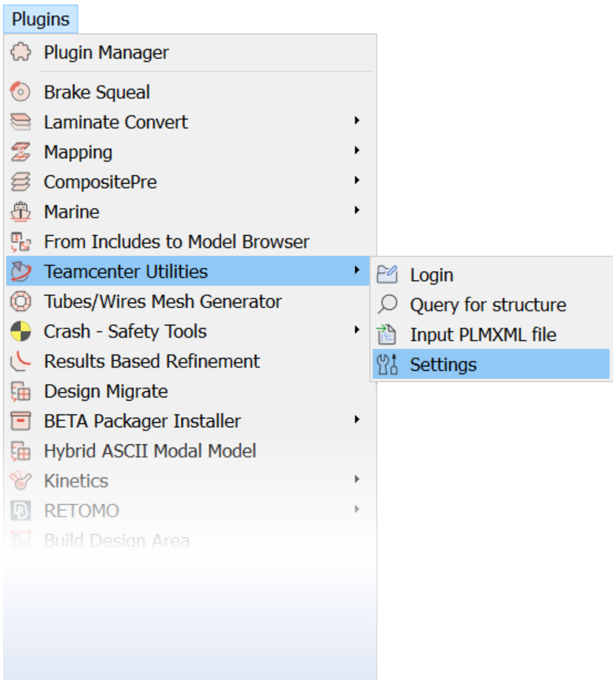
Table of Contents

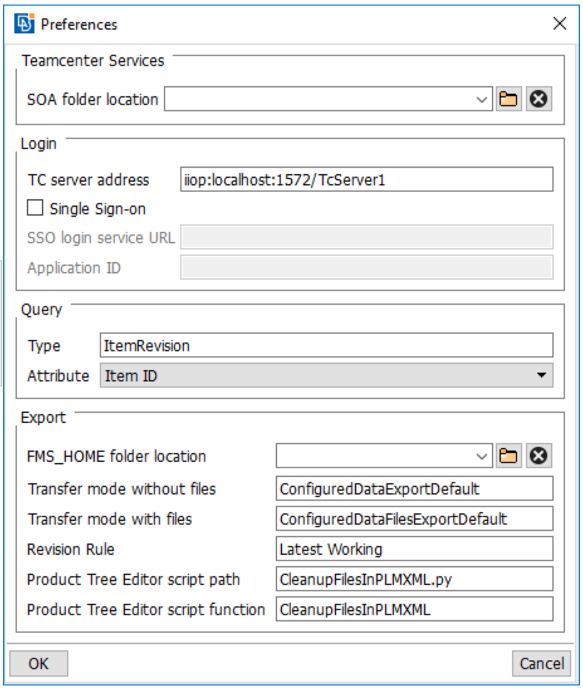
1. Introduction

Teamcenter Utilities is a tool whose intention is to connect to Teamcenter directly through ANSA and export a CAD structure. The functionality offers a direct bridge to Teamcenter, providing a simple interface and a clear understanding of the workflow.

2. Settings

The user is required to fill in several necessary settings in order for the utilities to function properly. The Preferences shown below are explained one by one:





Preferences

Teamcenter Services

SOA folder location

Login

TC server address: iiop:localhost:1572/TcServer1

☐ Single Sign-on

SSO login service URL

Application ID

Query

Type: ItemRevision

Attribute: Item ID

Export

FMS_HOME folder location

Transfer mode without files: ConfiguredDataExportDefault

Transfer mode with files: ConfiguredDataFilesExportDefault

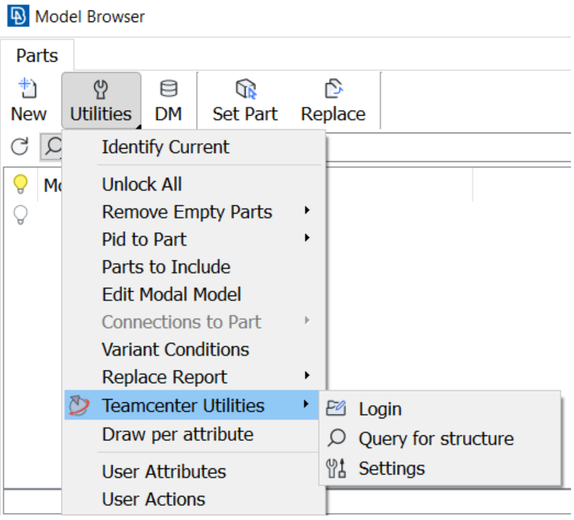
Revision Rule: Latest Working

Product Tree Editor script path: CleanupFilesInPLMXML.py

Product Tree Editor script function: CleanupFilesInPLMXML

OK Cancel

Note that the *Teamcenter Utilities* menu is also available through the Model Browser in the *Parts* tab.



2.1. Teamcenter Services

SOA folder location:

Teamcenter SOA: Introduction

Service Oriented Architecture (SOA) framework is offered by many enterprise product vendors due to advantages of interoperability as well reusability. Teamcenter also offers SOA framework for customization as well for integration with other applications. Teamcenter SOA supports the C++ programming language, which is the one that suits our needs.

Setting up the plugin for use with the Teamcenter SOA Framework:

The API libraries are present in the soa_client.zip file on the Teamcenter software distribution image. The libraries are present inside soa_client for respective supported programming language Java, C++ and C#. This ZIP needs to be extracted to some directory which is going to be used for launching the plugin. The Settings need to point to the directory that corresponds to the **C++** language and the respective OS, e.g. Linux, Windows. A hint for Windows is that the target directory should contain dll files, e.g. the libtcsoacommon.dll file. An example directory for this setting is: *C:/LIB/Teamcenter/soa_client/cpp/libs/wntx64/*

The plugin is currently compatible with the soa_client that is distributed with version **11.5.0.12**. Using the plugin with any other version of the libraries will not be possible. This however doesn’t prohibit using the plugin with a newer version of Teamcenter.

Installation instructions for the 11.5.0.12 SOA client:

The Tc11.5.0.12 release may also be installed if any of the following releases have been installed:

- Tc11.2.0 which is the base version of the Tc11.2 product, as the patches are cumulative
- Tc11.2.1 (Service Pack)
- Tc11.2.1_patch_1 (Patch)
- Tc11.2.2 (Service Pack)
- Tc11.2.2_patch_1 (Patch)
- Tc11.2.3 (Service Pack)
- Tc11.2.3_patch_x
- Tc11.3 (Minor Release – previously known as a Service Pack)
- Tc11.3.0_patch_x (Patch)
- Tc11.4 (Minor Release – previously known as a Service Pack)
- Tc11.4.0_patch_x (Patch)
- Tc11.5 (Minor Release – previously known as a Service Pack)
- Tc11.5.0_patch_2 (Patch)
- Tc11.5.0_patch_3 (Patch)
- Tc11.5.0_patch_4 (Patch)
- Tc11.5.0_patch_5 (Patch)
- Tc11.5.0_patch_6 (Patch)
- Tc11.5.0_patch_7 (Patch)
- Tc11.5.0_patch_8 (Patch)
- Tc11.5.0_patch_9 (Patch)
- Tc11.5.0_patch_10 (patch)

Example installation instructions:

The base version for this version is Teamcenter 11.2. The steps that need to be followed are the following:

1. Download the Teamcenter 11.2.0 SOA client.
2. Download the Teamcenter 11.5.0 patch 12 SOA client and overwrite the previous.

2.2. Login

TC server address

Example links are in case of two-tier: iiop:localhost:1572/TcServer1

in case of four-tier: http://teamcenterserver/tc

Both two-tier and four-tier are supported.

Single Sign-on

The Teamcenter may be configured to operate in a SSO environment, where the users don’t have to login to Teamcenter directly, instead they login to the SSO login URL. The users can then launch additional Teamcenter applications without supplying further authentication. This persistent authentication is called SSO (Single Sign On).

SSO login service URL

The URL of the SSO login page (should be equal to the TC_SSO_LOGIN_URL environment variable on the server). The TC_SSO_LOGIN_URL directs the rich client to use the Security Services application client library to obtain an appToken from the SSO applet. If the applet is not already running, a browser is launched on the given URL to start a Security Services session. This environment variable is set in the rich client’s properties file. For the two-tier rich client, the file is the client_specific.properties file. For the four-tier rich client, the file is the site_specific.properties file. This environment variable should be set only if Security Services is enabled via the TC_SSO_SERVICE environment variable.

Application ID

The application ID associated with the client application (should be equal to the TC_SSO_APP_ID environment variable on the server). This environment variable is used when multiple Teamcenter sites are served by a single identity provider, or Security Services is configured to use an ID other than Teamcenter (this is the default when the TC_SSO_APP_ID environment variable is not set). When the multiple sites have different sets of users authorized to use the application for each installation, or different identifications in each installation, this environment variable is used to identify which installation is authenticated. This environment variable is set in both the tc_profilevars file for the server, and the client’s site_specific.properties file. This environment variable should be set only if Security Services is enabled via the TC_SSO_SERVICE environment variable.

2.3. Export

2.3.1. FMS_HOME

If you are running in two tier mode, make sure you have an FSC set up on your machine. This is required because the *Teamcenter Utilities* use transient volumes to transfer files during deployment. Ensure that the FMS_HOME environment variable is pointing to the correct location, to a valid FMS server directory, e.g. *C:\swbase\plmsw\tc10t2\tcss*. Usually the FMS_HOME points to the Teamcenter installation location \fcc or \tcss.

2.3.2. Transfer Modes

TransferMode objects control the related data exported into a PLM XML document. Specifies the name of the transfer mode used to export the objects. This transfer mode specifies the traversal rules, filter rules, and property sets to be used for export. It determines what is exported from the system. The user is requested to decide on a TransferMode while exporting a PLMXML from Teamcenter. The suggested TransferMode is the preference that's set up in the *"Transfer mode without files"*.

2.3.3. Revision Rule

Specifies the revision rule applied to export the PLMXML. If this option is not specified, the default revision rule is applied, as specified in the TC_config_rule_name preference, which is usually the "Latest Working" revision rule.

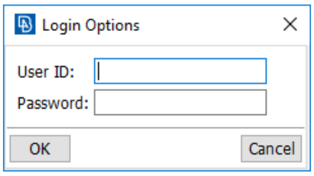
2.3.4. Product Tree Editor script

The tool exports a PLMXML and then imports it into the Product Tree Editor. The user can define a script function that will be applied before opening the Product Tree Editor. For more information see the General Settings for the Product Tree Editor, in the Post actions script section.

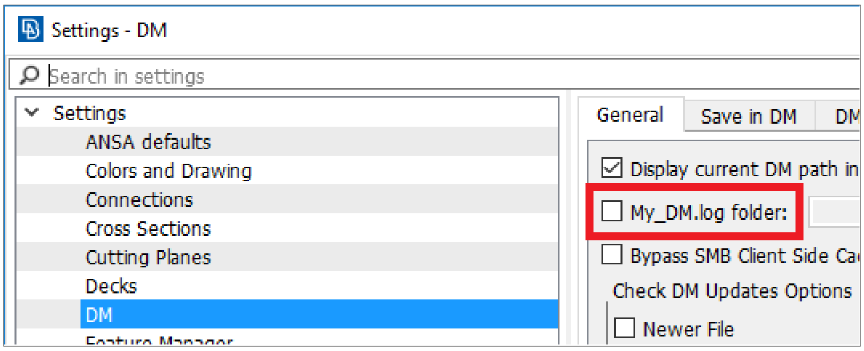
The intention of this script function is to remove all Part Files that are not relevant to the user's application. For example, the files that aren't jt or prt shouldn't be kept. Another case is for parts that correspond to Nuts, Studs, Welds, etc and are irrelevant to the user and should not be translated with CAD to ANSA should also have no Part Files. The code is open and available in the auxiliaries directory so that the users can make their own actions.

3. Login

Now that all the settings are setup and the *Teamcenter Utilities* have all the necessary info on how to operate, it is the user's first task to Login to Teamcenter. Note that if the setup is SSO, this step is no longer necessary.



The user will login to Teamcenter using the window above. If all goes well, the message *"Login was successful."* will be printed in the Info window. In case of errors or problems, the message *"Password verification failed. Could not login."* will be printed. More detailed information on the errors is available in the terminal or in the log file under *.BETA\ANSA\version_x.x.x\DM\My_DM.log*. The previous file is always useful when trying to better understand errors that are found while using the *Teamcenter Utilities*. The user can always specify their own path for the log file using the following ANSA Setting:



☑ Display current DM path in

□ My_DM.log folder:

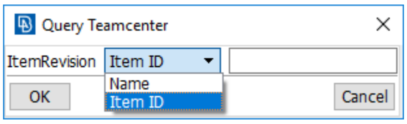
□ Bypass SMB Client Side Ca

Check DM Updates Options

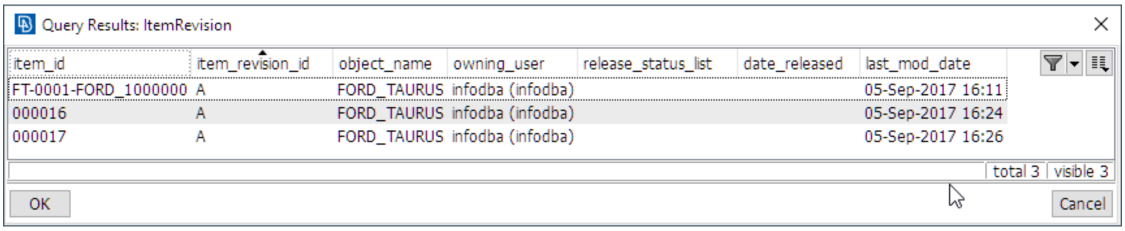
□ Newer File

4. Query for structure

This is the main functionality of the Utilities. The intention of this function is to query Teamcenter for a specific Object, request it’s hierarchy in a PLMXML format and import it in the Product Tree Editor.



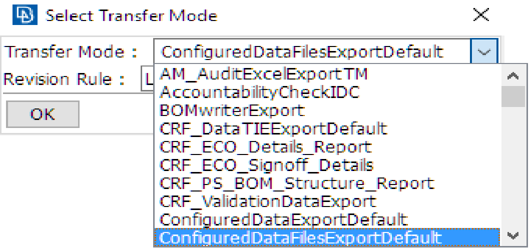
The user will need to input what they wish to search Teamcenter for, either through an Item ID or through an Item’s Name, e.g. “*TAURUS*”. The results are then shown in the window below:



item_id	item_revision_id	object_name	owning_user	release_status_list	date_released	last_mod_date
FT-0001-FORD_1000000	A	FORD_TAURUS	infodba (infodba)			05-Sep-2017 16:11
000016	A	FORD_TAURUS	infodba (infodba)			05-Sep-2017 16:24
000017	A	FORD_TAURUS	infodba (infodba)			05-Sep-2017 16:26

total 3 visible 3

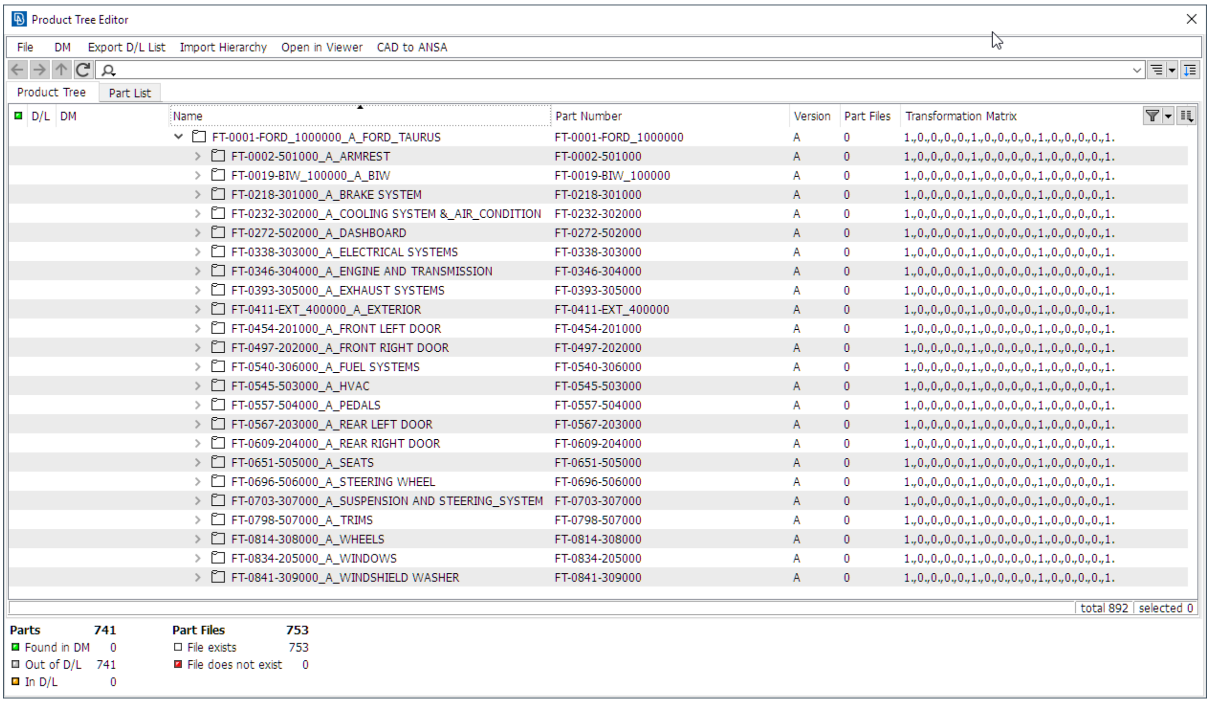
Double clicking on any of the items above will start the process for exporting the structure from Teamcenter. Notice that information is constantly being printed in the Info window, the terminal and the TC-ANSA.log file. The next step is to select which Transfer Mode will be applied to the export functionality. All Transfer Modes are queried and are given as options to the user with the one defined in the Settings window as a suggestion:


Select Transfer Mode

Transfer Mode : ConfiguredDataFilesExportDefault

The structure and any files will be exported from Teamcenter once the OK button is pressed.

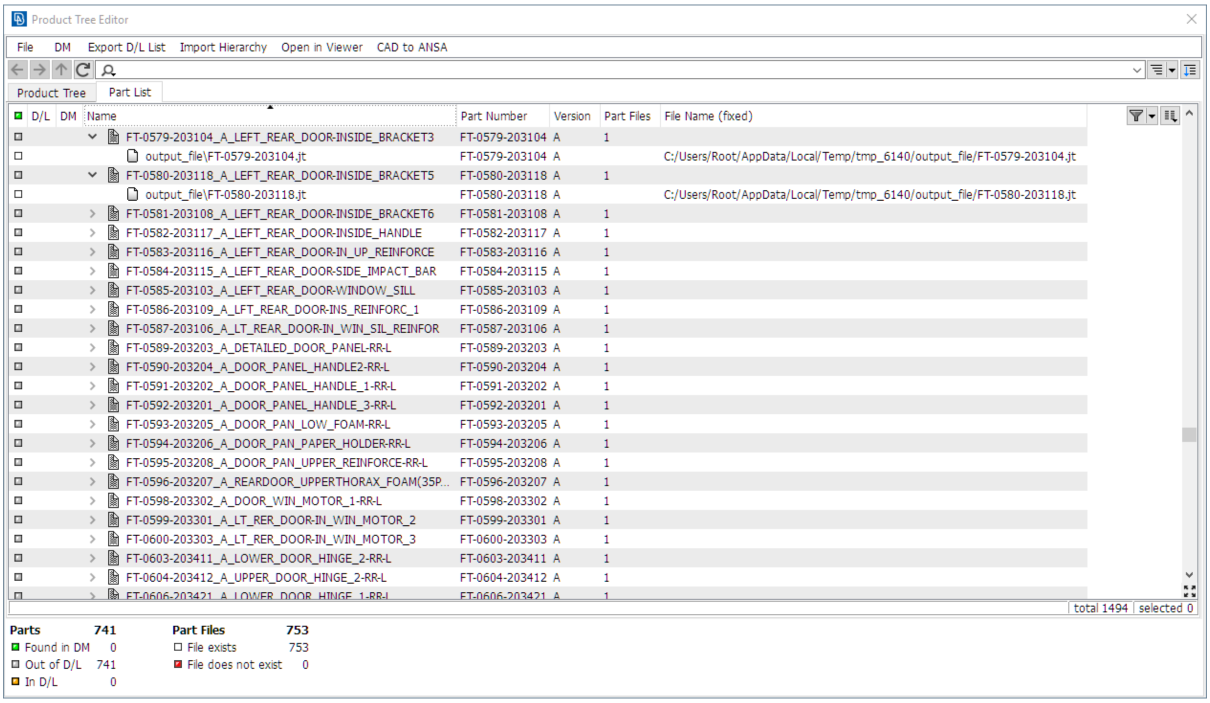
The Product Tree Editor will be popup next with the structure and Part Files available:



🟩 D/L	DM	Name	Part Number	Version	Part Files	Transformation Matrix
		FT-0001-FORD_1000000_A_FORD_TAURUS	FT-0001-FORD_1000000	A	0	1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.
		FT-0002-501000_A_ARMREST	FT-0002-501000	A	0	1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.
		FT-0019-BIW_100000_A_BIW	FT-0019-BIW_100000	A	0	1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.
		FT-0218-301000_A_BRAKE SYSTEM	FT-0218-301000	A	0	1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.
		FT-0232-302000_A_COOLING SYSTEM &_AIR_CONDITION	FT-0232-302000	A	0	1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.
		FT-0272-502000_A_DASHBOARD	FT-0272-502000	A	0	1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.
		FT-0338-303000_A_ELECTRICAL SYSTEMS	FT-0338-303000	A	0	1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.
		FT-0346-304000_A_ENGINE AND TRANSMISSION	FT-0346-304000	A	0	1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.
		FT-0393-305000_A_EXHAUST SYSTEMS	FT-0393-305000	A	0	1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.
		FT-0411-EXT_400000_A_EXTERIOR	FT-0411-EXT_400000	A	0	1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.
		FT-0454-201000_A_FRONT LEFT DOOR	FT-0454-201000	A	0	1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.
		FT-0497-202000_A_FRONT RIGHT DOOR	FT-0497-202000	A	0	1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.
		FT-0540-306000_A_FUEL SYSTEMS	FT-0540-306000	A	0	1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.
		FT-0545-503000_A_HVAC	FT-0545-503000	A	0	1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.
		FT-0557-504000_A_PEDALS	FT-0557-504000	A	0	1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.
		FT-0567-203000_A_REAR LEFT DOOR	FT-0567-203000	A	0	1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.
		FT-0609-204000_A_REAR RIGHT DOOR	FT-0609-204000	A	0	1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.
		FT-0651-505000_A_SEATS	FT-0651-505000	A	0	1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.
		FT-0696-506000_A_STEERING WHEEL	FT-0696-506000	A	0	1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.
		FT-0703-307000_A_SUSPENSION AND STEERING_SYSTEM	FT-0703-307000	A	0	1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.
		FT-0798-507000_A_TRIMS	FT-0798-507000	A	0	1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.
		FT-0814-308000_A_WHEELS	FT-0814-308000	A	0	1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.
		FT-0834-205000_A_WINDOWS	FT-0834-205000	A	0	1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.
		FT-0841-309000_A_WINDSHIELD WASHER	FT-0841-309000	A	0	1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.,0.,0.,0.,0.,1.

total 892 | selected 0

Parts	741	Part Files	753
🟩 Found in DM	0	□ File exists	753
□ Out of D/L	741	🟥 File does not exist	0
🟧 In D/L	0		



🟩 D/L	DM	Name	Part Number	Version	Part Files	File Name (fixed)
□		FT-0579-203104_A_LEFT_REAR_DOOR-INSIDE_BRACKET3	FT-0579-203104	A	1	
□		output_file\FT-0579-203104.jt	FT-0579-203104	A		C:/Users/Root/AppData/Local/Temp/tmp_6140/output_file/FT-0579-203104.jt
□		FT-0580-203118_A_LEFT_REAR_DOOR-INSIDE_BRACKET5	FT-0580-203118	A	1	
□		output_file\FT-0580-203118.jt	FT-0580-203118	A		C:/Users/Root/AppData/Local/Temp/tmp_6140/output_file/FT-0580-203118.jt
□		FT-0581-203108_A_LEFT_REAR_DOOR-INSIDE_BRACKET6	FT-0581-203108	A	1	
□		FT-0582-203117_A_LEFT_REAR_DOOR-INSIDE_HANDLE	FT-0582-203117	A	1	
□		FT-0583-203116_A_LEFT_REAR_DOOR-IN_UP_REINFORCE	FT-0583-203116	A	1	
□		FT-0584-203115_A_LEFT_REAR_DOOR-SIDE_IMPACT_BAR	FT-0584-203115	A	1	
□		FT-0585-203103_A_LEFT_REAR_DOOR-WINDOW_SILL	FT-0585-203103	A	1	
□		FT-0586-203109_A_LFT_REAR_DOOR-INS_REINFORC_1	FT-0586-203109	A	1	
□		FT-0587-203106_A_LT_REAR_DOOR-IN_WIN_SIL_REINFOR	FT-0587-203106	A	1	
□		FT-0589-203203_A_DETAILED_DOOR_PANEL-RR-L	FT-0589-203203	A	1	
□		FT-0590-203204_A_DOOR_PANEL_HANDLE2-RR-L	FT-0590-203204	A	1	
□		FT-0591-203202_A_DOOR_PANEL_HANDLE_1-RR-L	FT-0591-203202	A	1	
□		FT-0592-203201_A_DOOR_PANEL_HANDLE_3-RR-L	FT-0592-203201	A	1	
□		FT-0593-203205_A_DOOR_PAN_LOW_FOAM-RR-L	FT-0593-203205	A	1	
□		FT-0594-203206_A_DOOR_PAN_PAPER_HOLDER-RR-L	FT-0594-203206	A	1	
□		FT-0595-203208_A_DOOR_PAN_UPPER_REINFORCE-RR-L	FT-0595-203208	A	1	
□		FT-0596-203207_A_REARDOOR_UPPERTHORAX_FOAM(35P...	FT-0596-203207	A	1	
□		FT-0598-203302_A_DOOR_WIN_MOTOR_1-RR-L	FT-0598-203302	A	1	
□		FT-0599-203301_A_LT_RER_DOOR-IN_WIN_MOTOR_2	FT-0599-203301	A	1	
□		FT-0600-203303_A_LT_RER_DOOR-IN_WIN_MOTOR_3	FT-0600-203303	A	1	
□		FT-0603-203411_A_LOWER_DOOR_HINGE_2-RR-L	FT-0603-203411	A	1	
□		FT-0604-203412_A_UPPER_DOOR_HINGE_2-RR-L	FT-0604-203412	A	1	
□		FT-0606-203421_A_LOWER_DOOR_HINGE_1-RR-L	FT-0606-203421	A	1	

total 1494 | selected 0

Parts	741	Part Files	753
🟩 Found in DM	0	□ File exists	753
□ Out of D/L	741	🟥 File does not exist	0
🟧 In D/L	0		

The structure is now available to be imported into ANSA and Model Browser. All the ANSA functionality is now available, such as CAD to ANSA with which the user can translate all the parts and automatically store them in the DM.