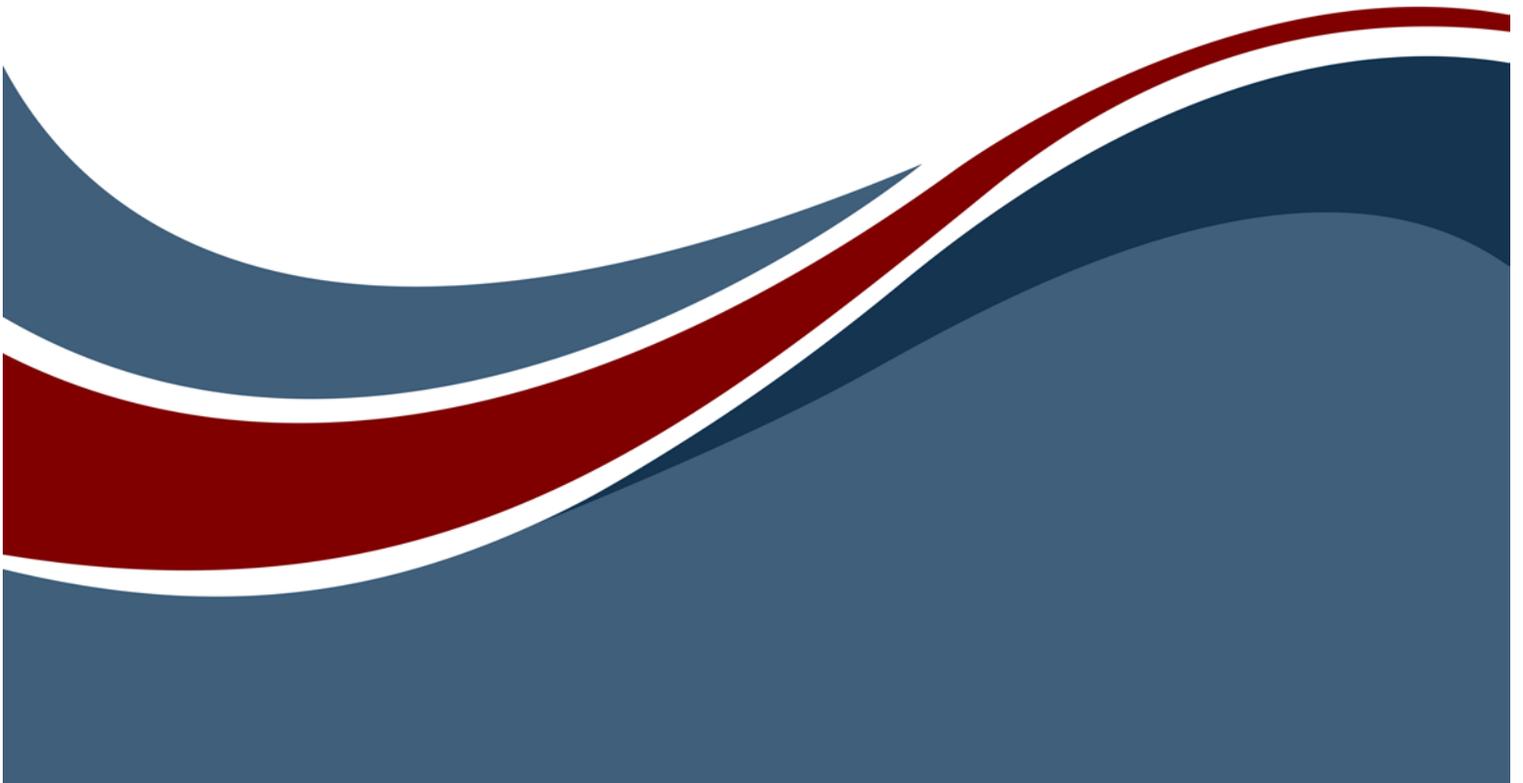




DOORS® Connector Guide



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Zuken Vitech Inc.

2270 Kraft Drive, Suite 1600
Blacksburg, Virginia 24060
540.951.3322 FAX: 540.951.8222
Customer Support: support@vitechcorp.com
www.vitechcorp.com

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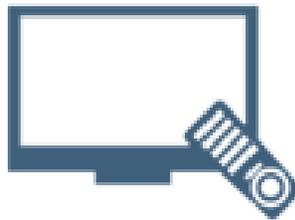
CUSTOMER RESOURCE OPTIONS

Supporting users throughout their entire journey of learning model-based systems engineering (MBSE) is central to Vitech's mission. For users looking for additional resources outside of this document, please refer to the links below. Alternatively, all links may be found at www.vitechcorp.com/resources.



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GENESYS DOORS CONNECTOR GUIDE

The DOORS Connector is a tool for exchanging requirements between GENESYS™ and IBM® DOORS® (versions 9.4 through 9.7) through the OSLC interface. For GENESYS and DOORS to exchange data a one-time setup and configuration for the DOORS database has to be done. Then each DOORS module that is being used must also be configured. Data can then be exchanged as needed between projects in GENESYS that contain the DOORS schema extension and DOORS modules with the extended GENESYS properties.

DOORS WEB ACCESS & INTEROP SERVER SETUP AND CONFIGURATION

The GENESYS Connector communicates with DOORS using DOORS Web Access feature. DOORS Web Access requires that the Redirector Service and Interop Server components be configured to support the communication. The Interop Server is particularly important to providing communication between GENESYS and DOORS. The DOORS and IT administrators supporting your work group accomplish the setup and configuration of DOORS Web services.

The standard DOORS Web Access installation and configuration should be performed, including the modification of the core configuration file, **festival.xml**. This will allow the DOORS Web Access Server to communicate with the broker, the license server, and the DOORS database server.

For example, in a basic DOORS 9.5 installation, the following lines need to be added to the festival.xml file in the <f:properties> section (<ServerName> is the name of your DOORS server):

Before	<pre><f:properties> <f:property name="licence.server.location" value="27000@localhost" /> <f:property name="ForceHttpsForAuthenticationForOAuth" value="false" /> </f:properties></pre>
After	<pre><f:properties> <f:property name="licence.server.location" value="27000@localhost" /> <f:property name="published.url.prefix" value="http://<ServerName>:8080/doors/redirector/" /> <f:property name="ForceHttpsForAuthenticationForOAuth" value="false" /> <f:property name="oauth.domain" value="http://<ServerName>:8080/dwa/" /> </properties></pre>

Other changes may be needed as well.

The DOORS redirector service must be configured, including modification of the redirector configuration file, **doorsRedirector.properties**. This will allow DOORS Web Access users to be able to use DOORS URLs in the same way as Rational DOORS users. Users can then specify whether to open DOORS URLs in a standard client or in the web client. The doorsRedirector.properties file will include changes similar to those listed in the table below:

Before	<pre><properties> <comment>Configuration for DOORS Redirector.</comment> <entry key="doors.url.prefix">doors://<ServerName>:36677/</entry> </properties></pre>
After	<pre><properties> <comment>Configuration for DOORS Redirector.</comment> <entry key="dwa.url.prefix">http://<ServerName>:8080/dwa</entry> <entry key="doors.enable">true</entry> <entry key="doors.url.prefix">doors://<ServerName>:36677/</entry> <entry key="dwa.enable">true</entry> </properties></pre>

Two steps are required to ensure that the DOORS Web Access services are running correctly. The first step ensures that the DOORS client is able to access the DOORS Server. The second step verifies that the DOORS Web Access Server is accessible via HTTP. The DOORS Object Number is an important attribute in the data exchange between DOORS and GENESYS. This attribute is not exposed using the

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OSLC framework, so we need to run a service extension to make sure that it is available. The steps below will help you confirm that this service has started:

1. Copy the file **getNumber.inc** from the GENESYS program folder (default location is C:\Program Files (x86)\Vitech\GENESYS 2020 R2 Collaborative Edition\Extensions) into the DOORS program folder (default location is C:\Program Files (x86)\IBM\Rational\DOORS\9.x\lib\dx\addins\services). For DOORS 9.7 and later, the DOORS program folder is at C:\Program Files\IBM\Rational\DOORS\9.x\lib\dx\addins\services. The file **getNumber.inc** contains the code:

```
void getNumber(string par)
{
    Buffer b = create()
    Buffer idBuff = create()
    Buffer modNameBuff = create()

    b = par
    int i = contains(b, ',')
    idBuff = b[0:i]
    int id = intOf(realOfStringOf(idBuff))
    modNameBuff = b[i+1:]
    Module m = read(tempStringOf(modNameBuff), true)
    Object o = object(id, m)

    delete(b)
    delete(idBuff)
    delete(modNameBuff)

    setDxlServiceResult number(o)
}
```

2. Open the DOORS client, go to the **Tools** menu and select the **Edit DXL...** command to open the DXL Input dialog box.
3. Copy the contents of the **GetNumber Installer.txt** file found in C:\Program Files (x86)\Vitech\GENESYS 2020 R2 Collaborative Edition\Extensions. Paste the code into the DXL Input dialog box:

```
OSLCDXLService os = null
string err = null
string dxlCode = "#include <addins/services/getNumber.inc>\n"
err = addOrUpdateOSLCDXLService("getNumber", "Get Object Number
    Service", dxlCode, "getNumber")
if (!null err)
{
    print err
}
else
{
    print "Installed Service\n"
}
```

4. Click **Run**

If the DXL Output pane contains "Installed Service" then the DOORS client access is okay.

Secondly, verify the DOORS Web Access Server is running by using a web browser to navigate to this URL: <http://<ServerName>:8080/dwa>

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The server name, <ServerName>, and the port number, 8080 by default, should be given to the user as these will be used later in order to access the DOORS database from GENESYS.

Establish OSLC Credentials in DOORS

In the DOORS client, a set of OSLC credentials need to be created in DOORS, which will be used to access the DOORS database. To do this, select the **File** menu, open the **OSLC** item and select “Local Keys...” Click the “Add” button and enter a set of OSLC credentials. The OSLC credentials that need to be entered are:

- Consumer name;
- Consumer key;
- OAuth secret.

The “Consumer name” is the DOORS Username. The OSLC credentials are used in GENESYS to access the DOORS database from GENESYS.

PROJECT SETUP – SCHEMA EXTENSIONS

Once all the DOORS services have started for the GENESYS-DOORS Connector, configure the DOORS modules that will use the connector. To enable synchronization of the requirements objects in a DOORS module with the corresponding entities in a GENESYS project, a set of attributes need to be added to the DOORS module which correspond to the DOORS schema extensions in GENESYS. GENESYS scans all DOORS modules for these attributes, only modules with the following required attributes will be presented to GENESYS users for import and export.

Required DOORS Schema Extension

For a DOORS module to be accessible from GENESYS, add **all** of the following attributes to the DOORS module. The table below lists the attributes to add to or modify in the DOORS Module.

Note: See Appendix A, for instructions for versions after 9.5.

Table 1: Schema Extensions

Attribute Name	Type	Attribute Scope	Uniform Resource Identifier (URI)
GENESYS ID	String	Object	http://genesys.net/ns/rm/doors/attribute#genesysId
GENESYS Name	String	Object	http://genesys.net/ns/rm/doors/attribute#genesysName
GENESYS Class	String	Object	http://genesys.net/ns/rm/doors/attribute#genesysClass
Allocated Component	String	Object	http://genesys.net/ns/rm/doors/attribute#allocatedComponent
Basis of	String	Object	http://genesys.net/ns/rm/doors/attribute#basisOf
Specifies	String	Object	http://genesys.net/ns/rm/doors/attribute#specifies
Object Heading			http://jazz.net/ns/rm/doors/attribute#objectHeading
Object Text			http://jazz.net/ns/rm#primaryText

The attribute name column is descriptive text represented in the DOORS user interface. The URI column is critical and provides the binding of the attributes between the two products. The steps used to add the Attributes to DOORS are:

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1. Open the DOORS project to which you wish to connect.
2. Open the module to be connected.
3. Select the “Edit” menu, and select the “Attributes...” item to open the Attributes Dialog box. Select the New button and add the attributes listed to the module.

Once the DOORS module is configured as described above, close the DOORS module, as we will no longer need to access the DOORS module directly. All the data transfer / exchange will be initiated and controlled from GENESYS.

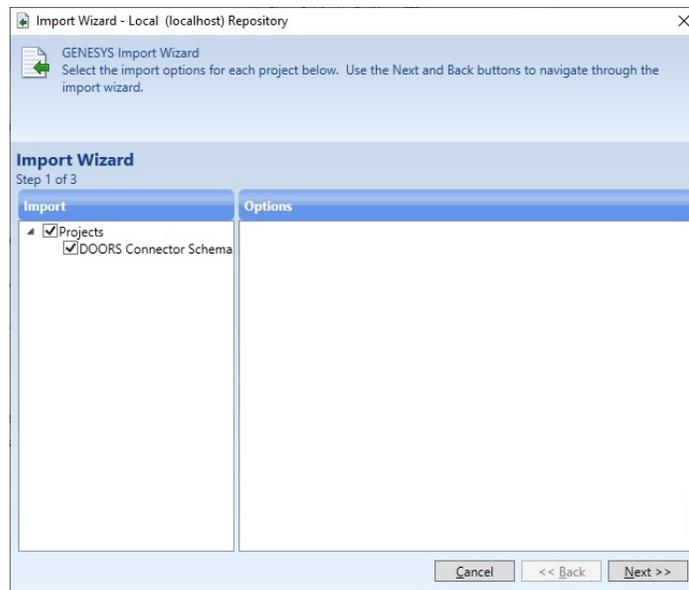
User mapped DOORS Schema Extensions:

GENESYS Allows users to add custom attribute mappings for each import and/or export. Any attribute in a DOORS module, to which the user has both read and write permissions, may be mapped. Custom DOORS attributes may be added in the same way that the required DOORS attributes are added. This will make them available for mapping on the wizard’s mapping page. The following types are allowed for custom import/export attributes: *string, float, integer, boolean, date.*

Required GENESYS Schema Extensions:

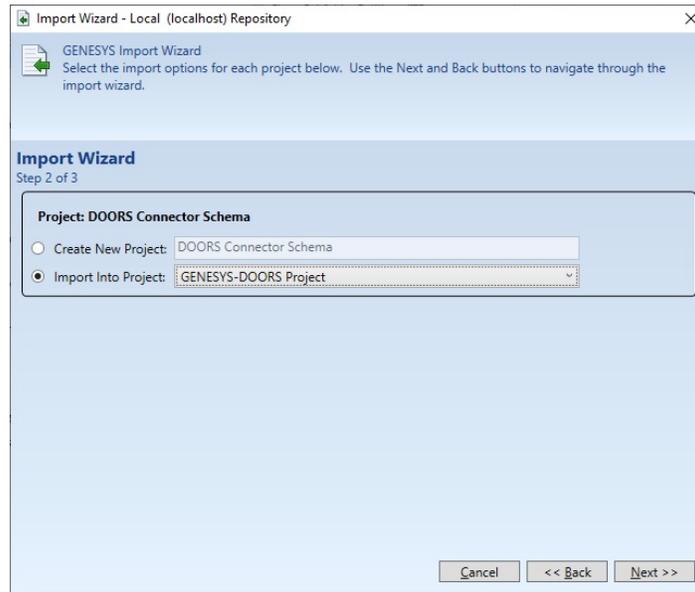
In order for GENESYS to be able to use the information stored in the attributes added to the DOORS module, apply the *DOORS Connector Schema* extension to the GENESYS project. Before making changes to the GENESYS project, make a backup using the export command on the GENESYS application menu. Once the project backup has been created, import the schema extension by executing the following steps:

1. Open the GENESYS project.
2. Select **Import** from the GENESYS application menu.
3. Navigate to the file **DOORS Connector Schema.gnsx** located in the folder **GENESYS 2020 R2 Collaborative Edition\Extensions**. Select “Next.”
4. The wizard will show you the “DOORS Connector Schema” project. Click “Next.”

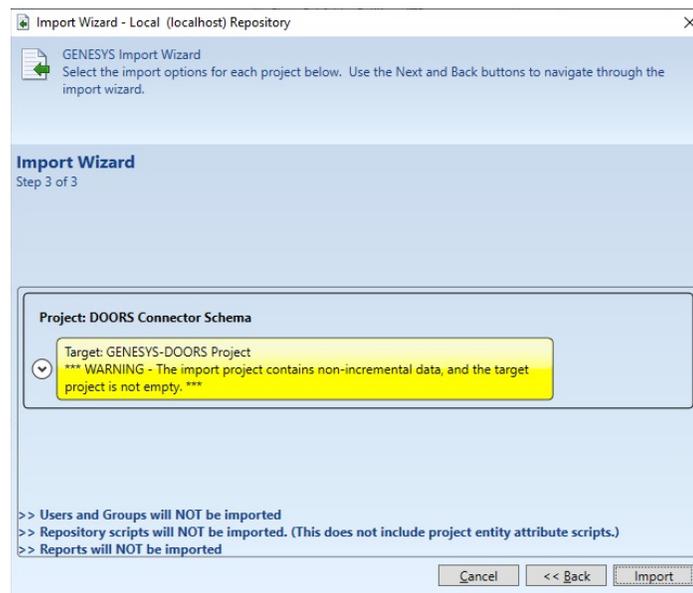


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5. Select the option “Import into Project” and choose your project from the drop-down list. Select “Next.”



6. The wizard will warn that you are importing data into a project that contains data. This is correct. Select “Import” to start the import of the schema modification.



7. After the Import has completed you will now see the DOORS-related attributes created for the Component, Function, Interface, Link, Requirement classes in the GENESYS project.

These steps extend the GENESYS project schema so that it can now accept requirements from DOORS.

User mapped GENESYS Schema Extensions:

The import project is a convenient way to add the required attributes to your GENESYS project for setting up the DOORS import and export. If you would like to bring additional attributes into your GENESYS project from DOORS in addition to the attributes in the extended schema, you may extend the GENESYS schema

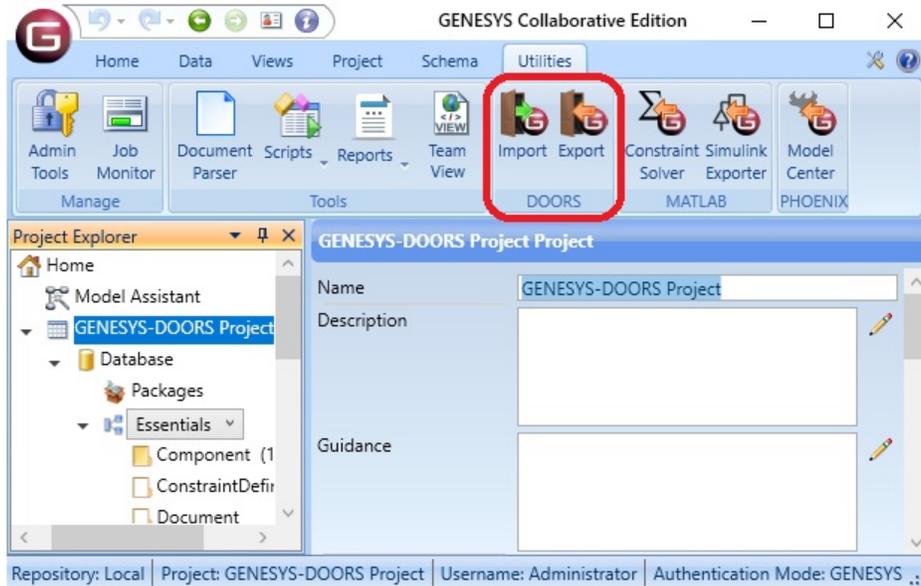
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of the **REQUIREMENT, COMPONENT, FUNCTION, LINK, or ITEM** class and add the additional attributes. The following types are allowed for custom import/export attributes: string, float, integer, boolean, date.

The DOORS modules and GENESYS projects are now ready for the data exchange. The data exchange is controlled from GENESYS. At this point you should log out of DOORS.

IMPORTING REQUIREMENTS INTO GENESYS

This section describes how to import DOORS requirements into a GENESYS Project. To start this process, select the Utilities tab in GENESYS and in the ribbon choose the Import icon in the DOORS section of the ribbon bar.



This will start the DOORS Import Wizard.

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1. Use your DOORS login credentials (username and password) in the first part of the import wizard dialog box. Enter the DOORS server name for the host, the DOORS port number (8080 by default), the OSLC Consumer Key, and the OAuth Secret to complete the remaining items in the dialog box.

DOORS Import Wizard

GENESYS DOORS Import Wizard
Select the options below. Use the Next and Back buttons to navigate through the wizard.

DOORS Import Wizard

Step 1 of 6

DOORS Login

Username:

Password:

DOORS Connection Settings (:)

Host:

Port:

Consumer Key:

OAuth Secret:

Cancel << Back Next >>

2. Once you are logged in, the wizard displays all the modules on your server with the schema extension configured for GENESYS. If you do not see your module listed, make sure the GENESYS schema extensions have been applied to the module. Select the DOORS module you want to import into GENESYS and select "Next."

DOORS Import Wizard

GENESYS DOORS Import Wizard
Select the options below. Use the Next and Back buttons to navigate through the wizard.

DOORS Import Wizard

Step 2 of 6

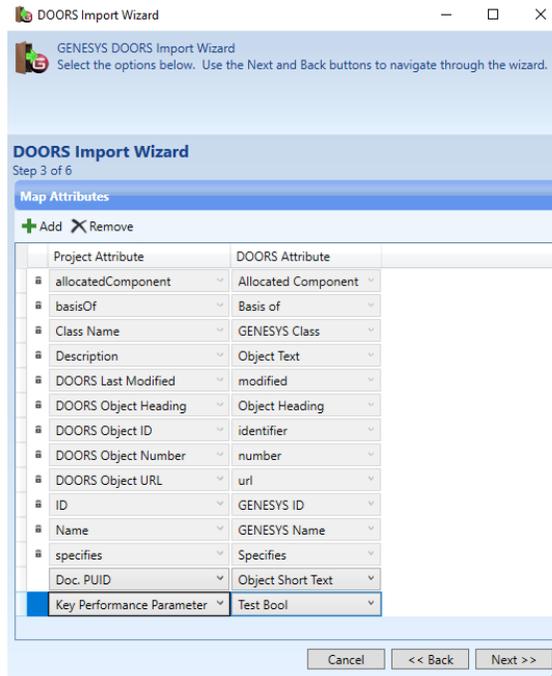
Select DOORS Module

- GenesysModule
- GenesysModule_forImport
- GenesysModule_NoSpecial
- Mapping Testing

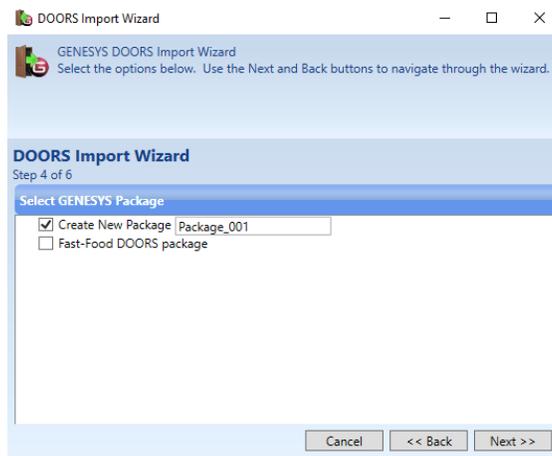
Cancel << Back Next >>

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- The wizard will now display the attributes that have been mapped between your project in GENESYS and the selected module in DOORS. The required attributes are mapped for you and show up with a lock icon to indicate that they are mandatory and not editable. If there are additional attributes you would like to map, click “Add” to add a new mapping. Select “Remove” to delete a mapping you no longer want. These mappings are stored with your project in GENESYS. Select “Next” when done with the mappings.

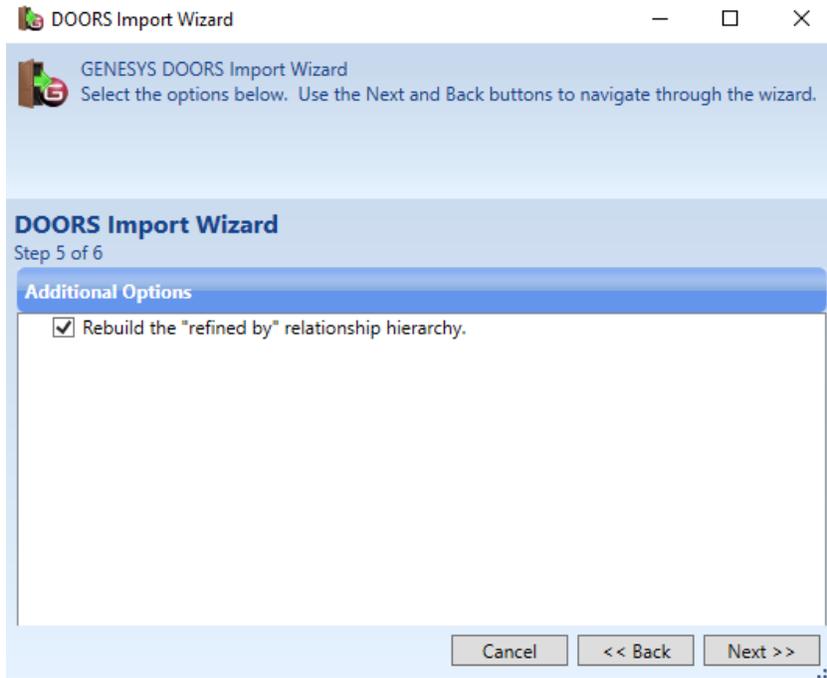


- The wizard will now prompt you to choose a package within the GENESYS project. You can create a new package if desired. Select “Next.”

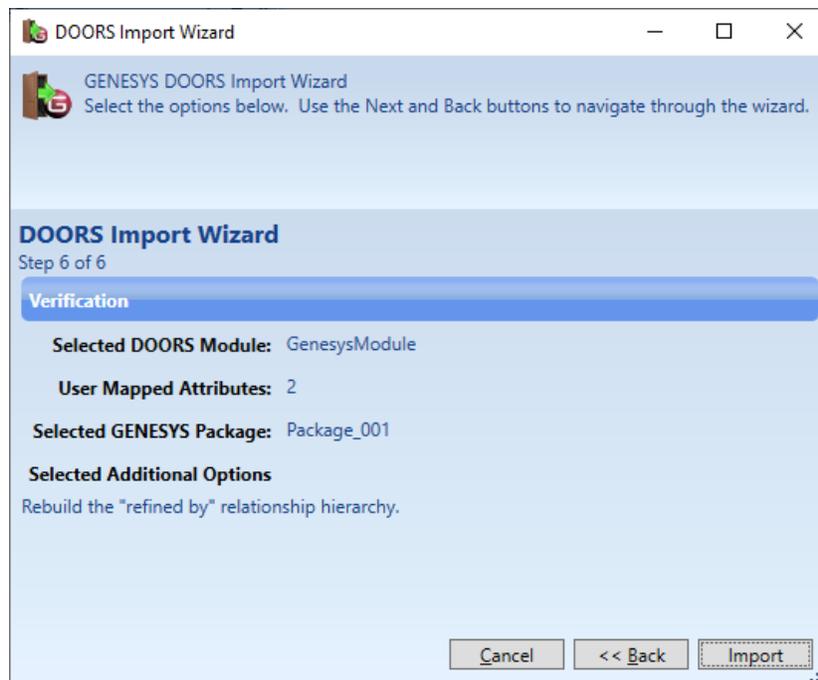


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- Next is an option to add relationships between the requirements using the “refined by” hierarchy. If selected, this will create the parent/child relationships based upon the object number hierarchy in the DOORS module (the numbering of each object). Select “Next.”

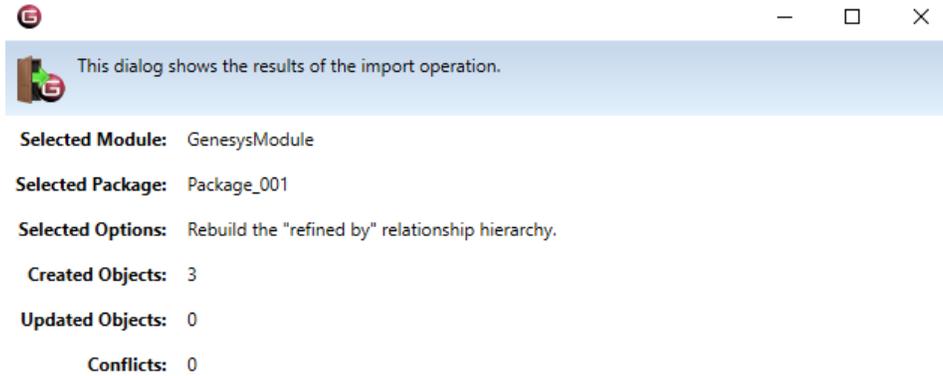


- Finally, verify your selections and select “Import.”



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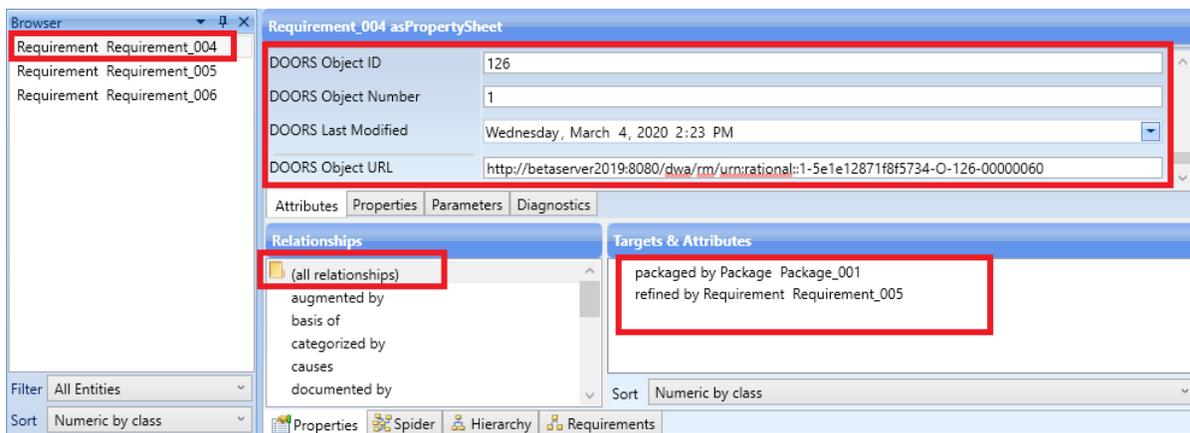
A results dialog will display the results of the import with details of any conflicts encountered.



When requirements are imported into GENESYS the first time, GENESYS generates a unique GENESYS name for each requirement by assigning a default name in the format of Requirement_###. Note that each cell of a table in DOORS is considered a separate requirement.

The data is synchronized in GENESYS to allow for seamless syncing of information exchanged during multiple imports / exports of information between the two toolsets. Additionally, in the event that the same data is present in two or more DOORS modules, the most recently accessed DOORS information will be stored in GENESYS.

You can see a snapshot of the requirements that were imported from DOORS in GENESYS below. The *refines / refined by* relationship is created based on the Object hierarchy organization in DOORS, if that option was selected during import of the data.



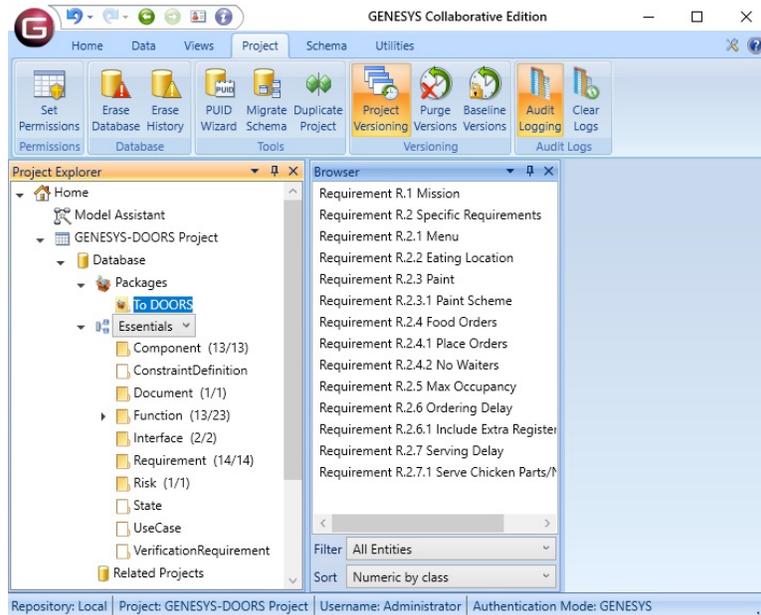
EXPORTING REQUIREMENTS FROM GENESYS

The entities within GENESYS to be transferred to DOORS need to be placed in a Package in the GENESYS project. To accomplish this:

1. In the Project Explorer, create a new package under the Packages entry in the tree view.
2. With the package selected, in the Browser, select Edit Entities.

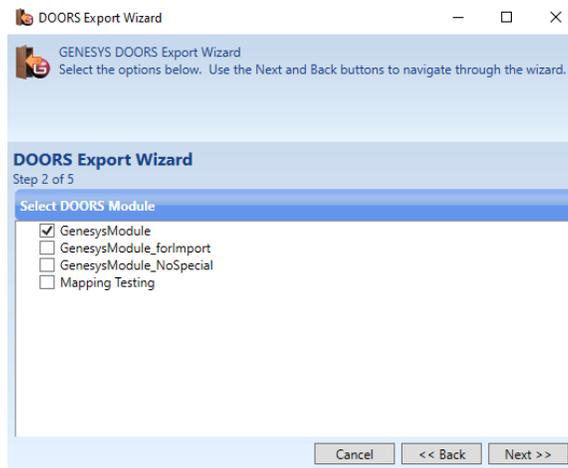
DOORS® Connector Guide

3. In the upper left pane, navigate to the folder that contains the entities you want to transfer to DOORS; select the entities in the Possible Targets pane; click the “Add” button to add them to the Targets pane.
4. When all of the entities have been added, click on the Close button to dismiss the dialog box. A screenshot of Requirements packaged in GENESYS for export into DOORS is provided below.



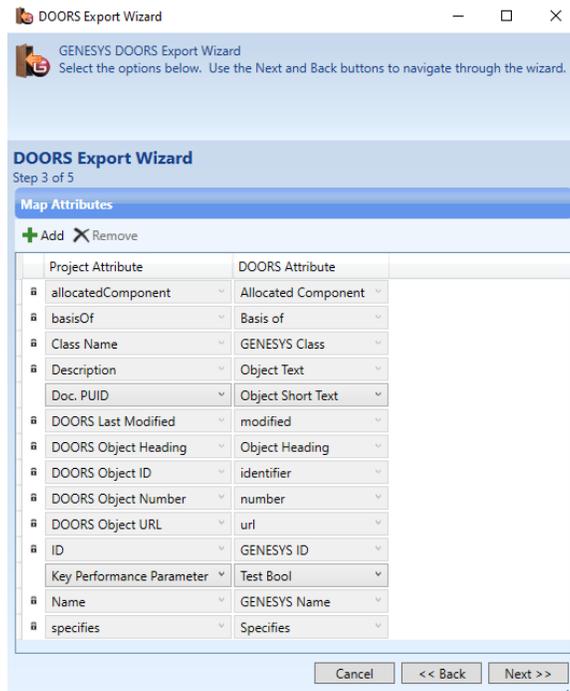
Once the entities have been packaged, we can initiate the export:

1. Open the Utilities tab in GENESYS ribbon and select “Export” command in the DOORS section.
2. Use your DOORS and OSLC credentials (as described in the Import instructions) to validate your access to the DOORS database.
3. Once the connection and access has been verified, you now see the DOORS Export Wizard with a list of the valid DOORS modules available. Choose the module to export into and select “Next.” If you do not see the module to be exported to, check in DOORS that the schema extensions have been applied to the module (as detailed earlier in this document) and begin the export again.

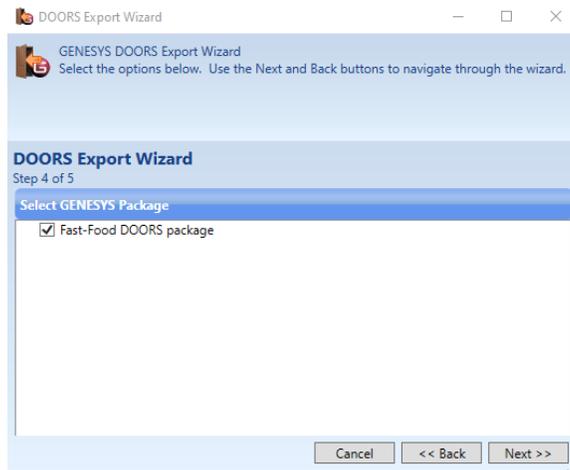


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4. Edit the mappings of attributes between GENESYS and DOORS. Then click “Next.”

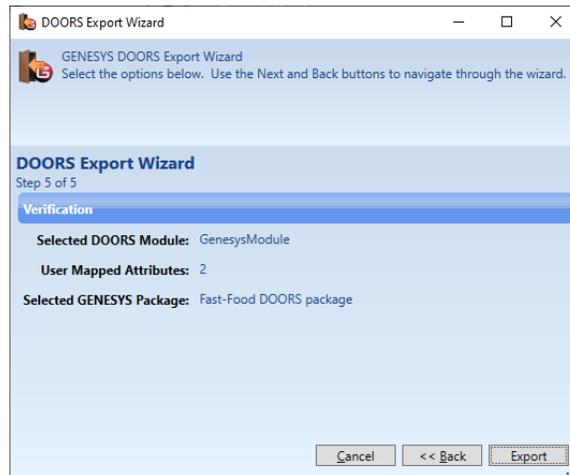


5. Select the Package of interest created in the section above. Then click “Next.”

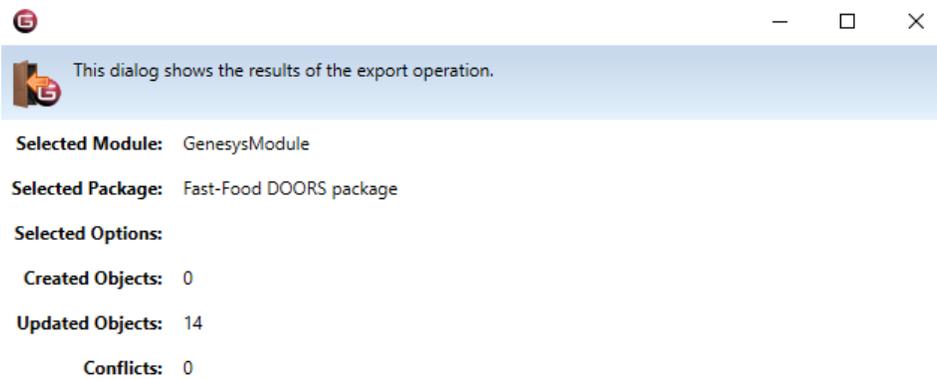


DOORS® Connector Guide

6. Verify your selections and click “Export.”



7. Once the export is completed, the wizard will show you a results dialog which will give you a summary of the changes made and a list of any conflicts.



DOORS® Connector Guide

The DOORS module will now have the entities from GENESYS. The screen capture below shows a section of the GENESYS attributes that were exported into DOORS.

The screenshot shows a software interface with a table of GENESYS attributes and a detailed view of Object 51. The table lists various attributes with their IDs, GENESYS names, species, basis of, and new format. The detailed view for Object 51 shows a list of attributes with their descriptions and values.

ID	GENESYS Name	Species	Basis of	New Format
53	Serve Chicken Parts/Nuggets		Assemble Order,Accept Order	1 Specific Requirements The restaurant shall serve chicken parts/nuggets.
52	Serving Delay			2 Specific Requirements From placing the order to being served shall not exceed 4 minutes.
51	Include Extra Registers		Place Order,Accept Order	3 Specific Requirements Include extra registers (to open extra lines) to handle rush hour.
50	Ordering Delay			4 Specific Requirements
49	Max Occupancy	Building		
48	No Waiters			
47	Place Orders			
46	Food Orders			
45	Paint Scheme	Building		
44	Paint			
43	Eating Location			

Object 51 (Saved) - DOORS			
General Access History Attributes Links Discussions			
Attribute	Description	Value	
Absolute Number	System Attribute	51	
Allocated Component			
Basis of		Place Order,Accept Order	
Created By	System Attribute	avikram	
Created On	System Attribute	Friday, July 18, 2014	
Created Thru	System Attribute	Manual Input	
GENESYS ID		4c3945f9-0a4f-eaf5-3f42-58444...	
GENESYS Name		Include Extra Registers	
Last Modified By	System Attribute	avikram	
Last Modified On	System Attribute	Friday, July 18, 2014	
Object Heading	System Attribute	Specific Requirements	
Object Number	System Attribute	3	
Object Short Text	System Attribute		
Object Text	System Attribute	Include extra registers (to open e...	
Specifies			

APPENDIX A: MAPPING GENESYS ATTRIBUTES AFTER VERSION 9.5.

DOORS version 9.6:

Depending on which minor version you have installed, DOORS version 9.6 uses one of several methods to setup OSLC server links. If you have 9.6 installed, you will need to use either the 9.5 or 9.7 setup methods. Version 9.6.1 of DOORS is broken, and the URI **cannot** be mapped; if you have this version you will not be able to use the GENESYS – DOORS connector.

DOORS version 9.7:

With the DOORS module open, select **Edit | Attributes ...** command from the module menu. For each highlighted entry in *Table 1 Schema Extensions*, add a new entry to the table by pressing the “New...” button and filling out the resultant Attribute dialog. Note that you will not be able to add the URI value at this time. Save and close the module.

In the main DOORS client, select **File | Mappings ...** command, make sure the “Attributes” tab is selected. For each highlighted entry in *Table 1 Schema Extensions*, press the “Add...” button. From the dialog that appears, navigate to the module you have added the attribute to and select it, and then press the “OK” button. The attribute will appear on the list on the “Attributes” tab page. To add the attribute’s URI, select the attribute and press the “Edit” button.

Once all of the required attributes are added on the “Attributes” page, select the “Reportable Shape” tab. A tree view of all the added attributes will be presented. Select all of the recently added attributes in the tree view. Press the “Apply” button.

On the same dialog, select the “General” tab. Find the “Publish” button and press it. Anytime you make a change to the attributes, you must press this button before the changes are made externally.



2270 Kraft Drive, Suite 1600
Blacksburg, Virginia 24060
540.951.3322 FAX: 540.951.8222
Customer Support: support@vitechcorp.com
www.vitechcorp.com