GENESYS"3.0

Connector Guide

Excel



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PREFACE

This Excel Connector Guide (ECG) provides information on how to install and use an Excel extension developed to connect the GENESYS[™] database to Microsoft[®] Excel[®]. The connector is a .NET application that extends the Excel spreadsheet provided in Microsoft Office 2010 and 2013. Figure 1 displays the extended blank excel worksheet.

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FILE HO	ME I	NSERT P	AGE LAYOU	T FORM	IULAS D	DATA RI	EVIEW V	IEW	GENESYS					
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Rep	ository / Pr	oject					Query					Dashbo	ard	
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1														
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	Sheet	1 +								:	4			
READY													Ħ	

Figure 1 - Sample Excel Connector

This guide describes the process to import and add the extension in Excel, how to interface directly with the GENESYS repository and individual projects in the repository, how to use the features in the Excel extension to import and export data out of the GENESYS data repository, and, how to use the dashboard features coded into the Excel extension.

This guide is intended to augment the Model-Based Systems Engineering (MBSE) with GENESYS training course and the reference material provided with GENESYS. The ultimate goal of this guide is to expose the user to the Excel extension and thereby extend the use and application of GENESYS for both system design and development and project management associated with the system development project.

The following additional resources are available for use with this guide:

- For descriptions of GENESYS including database classes and folders, different views, diagram notation, and the mechanics of entering data into GENESYS, the reader is referred to the GENESYS Help/Documentation folder.
- For the definition of schema terms, the reader is referred to the GENESYS schema, which contains descriptions for each schema entity.
- For application of GENESYS to system and architecture design, the reader is referred to the GENESYS System Definition Guide (SDG) and Architecture Definition Guide (ADG) supplied with the GENESYS software installation.



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GENESYS EXCEL CONNECTOR INSTALLATION AND MANAGEMENT

1.1 Installing the Excel Connector

The GENESYS Excel connector is installed via a standard, familiar Windows setup program. Please note that separate installers are available for either 64-bit or 32-bit Windows and Excel operating environments. The connector runs in Microsoft Excel 2010 and higher versions.

Double-click the installer .exe file to begin the installation. Click "Next."



Figure 2 - Excel connector installation, Step 1

Review and accept the licensing agreement terms, and click "Next."

😼 GENESYS 3.0 Excel Connector - InstallShield Wizard 📃							
License Agreement Please read the following license agreement carefully.							
IMPORTANT READ CAREFULLY: This Vitech End-User License Agreement ("EULA") is a legal agreement between you (either an individual or a single entity) and Vitech Corporation for the Vitech software product identified below, which includes computer software and may include associated media, printed materials, and "online" or electronic documentation (collectively, the "PRODUCT"). By installing, copying, or otherwise using the PRODUCT, you agree to be bound by the terms of this EULA. If you do not agree to the terms of this EULA, do not install or use the BROPUET.							
Vitech GENESYS™ 3.0 License							
Copyright laws and international copyright treaties, as well as other intellectual property laws 📼							
I accept the terms in the license agreement Print □ I do not accept the terms in the license agreement Print							
InstallShield < Back Cancel							

Figure 3 - Excel connector installer, Step 2



Click "Install" to begin the installation.

😸 GENESYS 3.0 Excel Connector - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< <u>B</u> ack [] Install Cancel

Figure 4 - Excel connector installer, Step 3

The setup program will run and install the Excel connector. When the process completes, simply click "Finish" to complete the installation. The connector will now be available for use in any Excel worksheet.



Figure 5 - Excel connector installer, Step 4



1.2 Managing the Excel Connector

Add-ins to Excel are sometimes disabled by customers. Note that in order for our connector to work, you may be required to adjust your settings.

Once installed, the GENESYS Excel connector can be managed via standard Microsoft Office add-in tools. Note that the steps below apply to Microsoft Excel 2013 installations, and may vary slightly in different versions of Excel.

GENESYS Excel functionality can be accessed via the "GENESYS" tab in an open workbook, as shown below. To manage the connector, first click the "FILE" tab.



Figure 6 - Excel GENESYS and FILE tabs

Once in the "FILE" tab, click the "Options" item from the menu on the left.



Figure 7 - Excel FILE tab, Options menu item



Excel Options	? ×
General General options for working with Excel.	
Proofing User Interface options	
Save Save Show Mini Toolbar on selection ③	
Language V Show Quick Analysis options on selection	
Advanced I Enable Live Preview 0	
Customize Ribbon	
Ouick Access Toolbar When creating new workbooks	
Add-Ins Use this as the default fogt: Body Font Trust Center Font size: 11 • Default yiew for new sheets: Normal View • Include this many sheets: 1 • Personalize your copy of Microsoft Office Use these values regardless of sign in to Office. Office Background: No Background • Office Iheme: White •	
Start up options	
Choose the extensions you want Excel to open by default:	
OK	Cancel

In the Options dialog that opens, select the "Add-ins" option from the menu on the left.

Figure 8 - Excel Options dialog, Add-ins menu item

In the Add-ins dialog that opens, select "COM Add-ins" from the "Manage:" combo box at the bottom, then click the "Go..." button.

Excel Options			? ×
General Formulas	View and manage Microsoft Office Add-ins.		
Proofing	Add-ins		
Save	Name 🔿	Location	Type
Languago	Active Application Add-ins	Location	Type
Language	GENESVS 3.0 Excel Connector	file///_ycelystolystolocal	COM Add-in
Advanced	Team Foundation Add-in	"C:\ TESOfficeAdd-in dll"	COM Add-in
Customize Ribbon	Visual Studio Tools for Office Design-Time Adaptor for Excel	C:\VSTOExcelAdaptor.dll	COM Add-in
Ouick Access Toolbar	Inactive Application Add-ins		
Add-Ins	Analysis ToolPak Analysis ToolPak - VBA	C:\nalysis\ANALYS32.XLL C:\ysis\ATPVBAFN.XLAM	Excel Add-in ≣ Excel Add-in
Trust Center	Date (XML)	C:\\Smart Tag\MOFL.DLL	Action
	Euro Currency Tools	C:\ary\EUROTOOL.XLAM	Excel Add-in
	Financial Symbol (XML)	C:\\Smart Tag\MOFL.DLL	Action
	Inquire	C:\5\DCF\NativeShim.dll	COM Add-in
	Microsoft Actions Pane 3		XML Expansion Pack
	Microsoft Office PowerPivot for Excel 2013	C:\otExcelClientAddin.dll	COM Add-in
	Power View	C:\eportingExcelClient.dll	COM Add-in
	Send to Bluetooth	C:\re\btsendto_office.dll	COIVI Add-In
	Solver Add-In	C:\OLVER\SOLVER.XLAM	Excel Add-in
	Add-in: GENESYS 3.0 Excel Connector Publisher: <none></none>		
	Location: file:///C:\Program Files (x86)\Vitech\GENES	VS 3 Excel Connector\	
	Description: GENESYS 3.0 Excel Connector		
	Manage: COM Add-ins		
		(OK Cancel

Figure 9 - Excel Add-ins dialog, Manage COM Add-ins option



In the COM Add-ins dialog that opens, select the GENESYS Excel Connector item. Any of three actions can be performed:

- 1) The GENESYS connector can be unchecked. Clicking "OK" will then disable the connector from running in workbooks.
- 2) If the GENESYS connector is unchecked, it can be checked. Clicking "OK" will then enable the connector to run in workbooks.
- 3) The GENESYS connector can be selected, and the "Remove" button can be clicked. The connector will be uninstalled.



Figure 10 - COM Add-ins dialog, managing the GENESYSYS connector

CONNECTING EXCEL WITH GENESYS

1.3 Connecting to GENESYS from Excel

With Excel opened on your desktop, navigate to a blank workbook, or open a blank workbook. Select the GENESYS tab on the ribbon bar. You can then 'connect' Excel by logging in to GENESYS using the icon on the left-hand side of the ribbon bar.



Figure 11 - GENESYS Login using ribbon bar button



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FILE HOME INSERT PAG	E LAYOUT FORMULAS DATA REVIEW VIEW GENESYS	Ron Kratzke 🔻
Repository: (not logged Project Repository / Project A1 • : × •	n) Class Sort Folder GENESYS Login	Publish Publish All Dashboard
A B C 1	Username Administrator Password Repository Local (localhost) Authentication Method: GENESYS OK Cancel	K L M
8 9 10 ▲ ▶ Sheet1 ↔ READY		✓ → ↓ 100%

Clicking on the GENESYS Login button will launch and bring up the GENESYS login screen.

Figure 12 - Excel Spreadsheet with GENESYS Login

Log in to GENESYS using the appropriate Username and Password. This connects Excel with the Repository. Once logged into GENESYS, the controls on the GENESYS ribbon bar will be "active" and no longer be grayed out.

1.4 The GENESYS Ribbon Bar in Excel

There are several sections on the GENESYS ribbon bar in Excel which are used to control access to the GENESYS database.

FILE HOME INSERT PAGE	AYOUT FORMULAS DATA	REVIEW VIEW GENESYS	S	
Login Logout Repository: Local Project SAMPLE: Ge •	Class Category Folder (root folder) Include child folders	Sort Alphabetic To sheet current) To show all options Current	Publish Changes All	Dashboard Requiremen To sheet (current) Load
Repository / Project		Query		Dashboard

Figure 13 - GENESYS Ribbon Bar in Excel

The Repository / Project section controls access to a particular system design project in the GENESYS repository. Within this section the "Project" selection provides a drop-down menu where the user can select the particular project with the selected repository. This is the project from which all other Queries will be associated in Excel.

The Query section of the ribbon bar allows the user to select specific information for export out of the system design repository in GENESYS. Each control in this section is described below:

- Class: The Class control allows the user to select any Class in the repository from the drop-down menu.
- Folder: If there are individual folders in the repository, the user can select the individual folder on which to do the query.



- Include child folders: When this box is checked, all subfolders of the Class / Folder will be queried.
- Sort: The Sort control allows the user to sort the imported information according to the sort method selected in the drop-down menu.
- To Sheet: This allows the query to be extracted into the current worksheet or to a new worksheet in Excel.
- Load Query: This button allows the query to selected in the ribbon bar to execute and load the data into Excel.
- Publish Changes: When changes are completed to the worksheet, selecting this button publishes the changes made on the Excel worksheet into the project data repository and over writing whatever data is currently in the associated attribute fields in the data repository (in effect pushing or publishing the changes (only) into the data repository). NOTE: only changed cells from the spreadsheet are pushed into the system data repository.
- Publish All: The command pushes or publishes ALL of the data in the worksheet into the GENESYS data repository. All of the information will be imported into the project data repository by overwriting the existing information with the information directly from the Excel spreadsheet.

The Dashboard section of the ribbon bar allows the user to select a particular Dashboard from the dropdown menu and display the information in Excel workbook. Detailed description of the Dashboard functionality is provided in Section 1.7 below.

IMPORTING DATA FROM GENESYS INTO EXCEL

1.5 Querying the GENESYS project from Excel

The user can make a simple query of the selected project using the options provided in the ribbon bar. The user can expand and tailor the query of the project by clicking on "Show all options" to open a full feature GENESYS Query on the right hand side of the worksheet window.



Figure 14 - Expanding the GENESYS Query Menu



The options provided in the GENESYS Query menu are similar to a common windows menu and are described briefly below. The ellipsis box on the right-hand side of the Folder, Attributes, Relations, and Target Classes are used to open a drop-down menu for selection of the appropriate items based on the project schema and class selected. The various options in the overall menu box provide for the following:

- Class and Folders selection allow the user to select the Class from the project and the specific folder on which to conduct the query. The check box allows the option of querying sub-folders.
- Attributes allows for selection of the attributes to include in the query; any attributes selected will populate a specific column in the worksheet.
- Relations and Target Classes allow for selection of particular relationships and specifying the target for the relation.
- Filter drop-down menu allows filtering the export based on particular attributes.
- Sort drop-down menu allows sorting the export based on the sort type selected. Both the Filter and Sort menus use the options from the project selected in the ribbon bar.
- The "To sheet" option allows the export query to populate the current worksheet or a new worksheet in the excel workbook.

Once all the selections have been made, the user will populate the workbook using the LOAD button. An example of a completed query is shown below.

F37		• × × fr							
10	A	8	¢	 D	1	E	_	F	
2	1.00	Name IMS Functional Context	 based on Requirement 	decomposed by Function Coperate Im age Management System Perform Collector Functions Perform Customer Functions Perform External Services		exits by Exit	*		
3 =		Make Information Request							
4 11		Notify User Of Estimated Schedule	Provide Feedback						
5		Operate Image Management System		Accept And Format Collector Products Accept And Format Request Check Product Inventory Determine Collector Mix Evaluate Products vs. Request Get Product From Inventory Notify User Of Estimated Schedule Prioritize Request Process Request Provide Product To User Put Product In Inventory Report Deficiencies And Recommendations Task Collectors Validate User	Au Un	thorized user	8855		
		Perform Collector Functions		Collect Data Process and Provide Collector Data					
1)	913	Perform Customer Functions		Accept Products Collect Data Make Information Request Process and Provide Collector Data Receive Estimated Schedule					
4	. +	Sheet1 (+)		[4]					
HEADY							8	<u> </u>	-+ 100

Figure 15 - Example of a completed query

Once the project information is exported out to the Excel worksheet, the display of the information can be changed using the normal features of Excel. The user can format individual cells and columns much you would with any Excel spreadsheet. The file can also be saved as you would with any Excel file (you do not have to use the .csv format).

Note that Column A of the spreadsheet contains the GENESYS Unique ID number. This information should be carried in all worksheets as the index moving any changed information back in to the project repository.



1.6 Manipulating project data in Excel

With the project data in an Excel worksheet, the user can edit the information in any of the cells. Commonly the project team will extract Requirement information providing the Requirement Name, Description, Type, and Origin. An example of this export is provided below.

		5 · @ ·	D =	GLRequirements.xlsx - Excel			? 🗷 – 🗆 🗙
FIL	E	HOME I	NSERT PAGE LAYOUT FORMULAS DATA	REVIEW VIEW GENESYS			Ron Kratzke 👻
Logi	Log	Project	ny: Local Class Category ▼ SAMPLE: Ge ▼ Folder (root folder) ▼ oject	Sort Alphabetic To sheet (current) Code Query	Load		~
or.			No. of the Demoistration				
		* :	> Jx Specific Requirements				•
	Α	В	с	D	E	F A	
3 d		R.1.1	Continuous Support	The Geospatial Library shall provide continuous real-time support to the customers and the collection systems. The system shall be unavailable no more than a total of ten minutes	Originating	Constraint	GENESYS Query * X
4 2		R.1.1.1	Availability	per month.	Originating	Constraint	Requirement
				The system shall accept information requests from certified customers. The system shall retain an inventory of previously collected images/products and provide them to users, if appropriate. The system shall control multiple image collectors and multiple types of image collectors. The system shall be staffed at a maximum of 30 personnel on any shift. The system shall provide feedback on the customer's request within twenty four hours. The system shall provide a means of prioritizing the customer's requests.		Gammite	Folders All Clear (root bider)
2		K.2	Specific Requirements	17. The system shall accent information requests from certified	Originating	Composite	
6 0		R.2.1	Accept Requests from Certified Customers	customers.	Originating	Composite	Include class name in output
7 1		R.2.1.1	Accept Requests AND OTHER STUFF	The system shall accept information requests within [[AcceptTiming 15 Sec]]. The system shall accept requests via any of the following media: 1) Hardcopy Forms; 2) Verbal; 3) Phone-verbal; 4) Phone-electronic file;	Originating	nil	Include folder name in output V Auto-format the worksheet Filter All Entities
8 5		R.2.1.1.1	Accept Media of Requests	5) Web-based electronic file.	Design Decision	Composite	Sout Numeria
9 1		R.2.1.1.1.1	Media of Requests: Hardcopy Forms	The system shall accept requests via hardcopy forms.	Design Decision	Functional	Sort Numeric •
10 2		R.2.1.1.1.2	Media of Requests: Verbal	The system shall accept verbal requests.	Design Decision	Functional	To sheet (current)
11 b	33a7 0456	R.2.1.1.1.3	Media of Requests: Verbal Telephonic Media of Requests: Telephonic Electronic Eile	The system shall accept requests via telephone. [[AcceptTiming 45 sec]] The system shall accent requests via telephonic electronic file	Design Decision	Functional	Dad
READ) Y	Sheet	<u>a</u> (+)	: •	_	•	

Figure 16 - Requirement Export from a Sample Project

Changes can now be made to items in the spreadsheet. As changes are made to individual cells, the cell is highlighted in yellow to indicate that the text has been edited. The Excel file can be saved with a different file name.

×		5. 3.	D =	GLRequirementsRev1.xlsx - Excel			? 🗉 – 🗆 🗙
F	ILE	HOME I	NSERT PAGE LAYOUT FORMULAS DATA	REVIEW VIEW GENESYS			Ron Kratzke 👻
6	gin Lo	gout Repositor	ny: Local Class Category * SAMPLE: Ge * Folder froot folder) *	Sort Alphabetic To sheet (current) Course of	Load		
C	5	*	× ✓ fx Specific Requirements				¥
1	A	В	C	D	E	F 🔺	
3	d115	R.1.1	Continuous Support	The Geospatial Library shall provide continuous real-time support to the customers and the collection systems.	Originating	Constraint	GENESYS Query * ×
4		R.1.1.1	Availability	per month.	Originating	Constraint	Requirement
5	87530	R.2	Specific Requirements	1. The system shall accept information requests from certified customers. 2. The system shall retain an inventory of previously collected image/products and provide them to users, if appropriate. 3. The system shall control multiple image collectors and multiple types of image collectors. 4. The system shall provide feedback on the customer's request within twenty four hours. 6. The system shall provide a means of prioritizing the customer's requests. 7. The system shall monitor and assess its own performance. The system shall accept information requests for certified customers 7. The system shall accept information requests for certified customers	Originating	Composite –	Folders All Clear [oot holder) [iiii] Include mild folders of stelection(s) Attributes All Clear Description, Origin, Type [iiii] Relations All Clear [roone selected) [iiii] Target Classes All Clear [ione selected] [iiii]
6	d5f70	R.2.1	Accept Requests from Certified Customers	as well as other users.	Originating	Composite	Include class name in output
7	1304k	R.2.1.1	Accept Requests	The system shall accept information requests within [[AcceptTiming 15 Sec]]. The system shall accept requests via any of the following media: 1) Hardcopy Forms; 2) Verbal; 3) Phone-verbal; 4) Phone-electronic file;	Originating	Performance	Include folder name in output Auto-format the worksheet Filter All Entities
8	525c8	R.2.1.1.1	Accept Media of Requests	5) Web-based electronic file; 6) Social Media.	Design Decision	Composite	
9	1ae80	R.2.1.1.1.1	Media of Requests: Hardcopy Forms	The system shall accept requests via hardcopy forms.	Design Decision	Functional	Soft Indificit
10 11 12	28e80	R.2.1.1.1.2 R.2.1.1.1.3 R.2.1.1.1.4	Media of Requests: Verbal Media of Requests: Verbal Telephonic Media of Requests: Telephonic Electronic File	The system shall accept verbal requests. The system shall accept requests via telephone. [[AcceptTiming 45 sec]] The system shall accent requests via telephonic electronic file	Design Decision	Functional Functional	To sheet (current)
	<	Sheet	<u>a</u> ⊕	: •		Þ	Load

Figure 17 - Excel spreadsheet with edited cells



The worksheet is ready to be published back into the project using the "Publish Changes" or "Publish All" command in the ribbon bar. "Publish Changes" updates just the attributes that have changed, "Publish All" pushes all of the data in the workbook in to GENESYS and overwrites all of the information in the project repository.

GAINING INSIGHT INTO THE PROJECT THROUGH DASHBOARDS

The GENESYS ribbon bar has a section entitled "Dashboard." This section provides a set of dashboards which have been coded into the ribbon bar. The dashboards are intended as a means for the project leadership to get a high level understanding and status of the project repository maturity on a periodic basis. There are currently three dashboards programmed in to the Excel Connector: Requirement Management; Program Management; and Test/Evaluation Planning.

1.7 Accessing Dashboard information

To access a dashboard the user selects the type of dashboard from the drop-down menu, then selects where the dashboard should be displayed (current sheet or new sheet); then select "Load." The figure below provides an example of the Requirements dashboard.



Figure 18 - Requirements Dashboard

Each dashboard has several different graphic representations of information extracted directly from the selected project repository. The entire depth and breadth of the data and graphics is not described in this guide - the user is encouraged to explore the dashboards provided.



1.8 Modifying Graphic Displays on the Dashboard

Gathering the data to display on the dashboard is one part of the dashboard solution, displaying the data in unique ways is another part of the dashboard solution. While the data extracted from the project repository is hard-coded into the dashboard, we have provided an initial set of graphical displays which can be altered in Excel to provide enriched presentation.



Figure 19 - Select a chart to edit

The user can select a chart, right-click and use the Excel drop-down menu together with the control buttons to modify the information display. Using these options, the first row of the Requirement Overview pie chart has been modified to the options shown below.



Figure 20 - Modified Dashboard chart views

We have not provided an exhaustive set of dashboards in the Excel connector. We encourage users to provide feedback to us with ideas for additional dashboard concepts. Please email us at support@vitechcorp.com or post your suggestion on our community site, http://community.vitechcorp.com. Updates to the Excel Connector functionality and dashboards will be developed and published in service packs for GENESYS.





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