



## HP Quality Center and Parasoft Concerto Integration



## Introduction

This document discusses the integration of HP Quality Center and Parasoft Concerto. Included in this section is:

- [General Information](#)
- [Key Integration Features](#)

### **General Information**

HP Quality Center delivers extended functionality for requirement specifications of a project, and testing those requirements after they are implemented in the product.

Parasoft Concerto is a software development management system that integrates and facilitates your software development lifecycle (SDLC) to ensure that quality software is produced consistently and efficiently. By orchestrating the development environment, Parasoft Concerto enables end-to-end process visibility and control.

When integrated together, Quality Center and Concerto help users achieve their goals throughout the entire SDLC—from requirements planning, through development, to testing.

### **Key Integration Features**

- Integration coverage: Quality Center requirement and defect modules.
- Synchronization of the following fields:
  - Requirements (imported from Quality Center to Concerto)  
***Note:** Custom requirement fields (created for Concerto usage) are synchronized from Concerto to Quality Center.*
  - Defects (imported from Quality Center to Concerto)
- Brief description of typical usage: After integration, managers, developers, and testers are able to work together more cohesively with greater efficiency and productivity during the entire SDLC—taking advantage of both products.

The following work scenario is possible, from the start of the SDLC:

- Project requirements are prepared and defined in HP Quality Center by the project manager together with the customer.
- Developers use Concerto during development, so prior to their work the requirements are imported from Quality Center to Concerto Project Center module. (Quality Center to Concerto communication)
- Developers plan their work. They split the imported requirements into development tasks and schedule their work.

- Requirements in Quality Center have additional custom fields defined which are updated automatically by Concerto (Concerto to Quality Center communication):
  - Development Progress: Displays the number of development tasks associated with a selected requirement (open tasks versus all tasks).
  - Development Days Remaining: Displays the number of development days still required to implement a selected requirement.
  - Concerto Link: For selected requirement, opens a page in Concerto Project Center that contains additional development information about the requirement, such as the source code associated with its implementation.
- QA team monitors the Development Progress/Development Days Remaining fields of the requirements. When implemented, they can start testing the procedure of specific requirements in Quality Center.
- Using Concerto Report Center reports, project managers can monitor the trend of reported defects, which are also imported from Quality Center. These reports answer question such as: Are the number of open defects growing? How fast they are being resolved?

## System Requirements

This section includes the following topics:

- [HP Quality Center Installation Requirements](#)
- [Parasoft Concerto Installation Requirements](#)
- [Integration Requirements and System Features](#)
- [Quality Center Configuration Files](#)
- [Data Synchronization Technology](#)
- [Performance](#)

### ***HP Quality Center Installation Requirements***

- Typical Quality Center 9 or Quality Center 10 installation is required.
- Minimum installation to include the following:
  - Requirements module
  - Defects module

- MSSQL database
- OTA support
- Windows administration privileges

See the Quality Center installation manual for details about the installation.

### ***Parasoft Concerto Installation Requirements***

- Typical Parasoft Concerto installation
- Minimum installation to include the following:
  - Project Center module
  - Report Center module
  - Oracle or MySQL database
- Windows administration privileges

See the Parasoft Concerto Quick Installation Manual for details.

### ***Integration Requirements and System Features***

#### **Support Matrix**

	<b>Concerto Environment</b>	
	Windows XP / Oracle	Windows XP /MySQL
Quality Center 9	<i>supported</i>	<i>supported</i>
Quality Center 10	<i>supported</i>	<i>supported</i>

The integration has been tested on Windows XP (English version).

#### **Third Party Software**

No additional third party software is required for the integration (except for databases required by Quality Center and Concerto on their own, as described in ["HP Quality Center Installation Requirements"](#) and ["Parasoft Concerto Installation Requirements"](#).

#### **Minimum System Requirements**

- 2 GB of RAM for memory

- 2 GHz for CPU

## **Quality Center Configuration Files**

No Quality Center configuration files are altered by the integration. There's no need to backup.

## **Data Synchronization Technology**

1. Import requirements/defects from Quality Center to Concerto via SQL-select statements from Quality Center MS SQL database.

**Note:** Only read-select statements are executed. No data modification statements are performed.

2. Update custom requirement fields in Quality Center OTA.

## **Performance**

The Quality Center/Concerto data synchronization is performed by importing the example QualityCenter\_Demo project from Quality Center 10 (which contains 146 requirements and 41 defects). The process takes five seconds.

The requirements/defects can be imported from multiple Quality Center projects. It is recommended that the import total of requirements and defects not to exceed 50,000.

## **Integration Installation**

Install HP Quality Center and Parasoft Concerto as briefly described in "[System Requirements](#)".

The integration instructions differ slightly depending on whether you are integrating Concerto with Quality Center 9 or Quality Center 10.

The following integration instructions are common for both Quality Center versions. Some steps refer to Quality Center 9 or 10 only. The main steps include:

- [Add Quality Center Custom Requirement Fields to be Used By Concerto](#)
- [Configure Concerto to Integrate with Your Quality Center Installation](#)

## **Add Quality Center Custom Requirement Fields to be Used By Concerto**

1. Go to your Quality Center system at [http://your\\_gc\\_host:port/qcbin/start\\_a.htm](http://your_gc_host:port/qcbin/start_a.htm).
2. Authenticate and log in as a user with administration privileges:

Login Name:

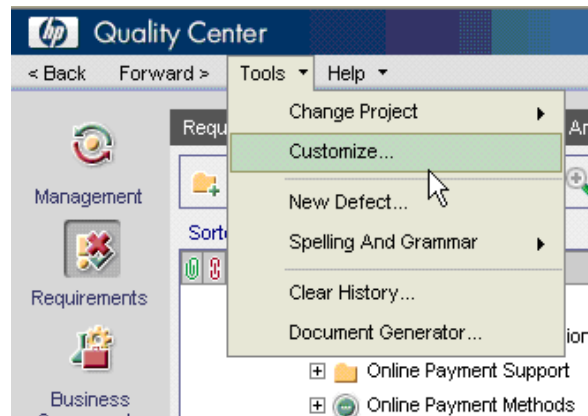
Password:

Automatically log in to my last domain and project on this machine

Domain:

Project:

- From the menu, choose Tools > Customize.



- Choose Project Entities from left panel, Requirement > User Fields node from Project Entities tree and add new custom fields by pressing [New Field] button and filling the appropriate properties.

The screenshot shows the 'Project Entities' configuration page. On the left, there is a navigation tree with 'User Fields' expanded under 'Requirement'. The main area shows a list of project entities, with 'Development Days Remaining' selected under 'User Fields'. On the right, the 'Field Settings' section is visible, showing the following configuration for the selected field:

- Field Name: RQ\_USER\_05
- Field Label:
- Field Type:
- Field Length:
- History
- Masked
- Searchable

- Define the following new custom fields:

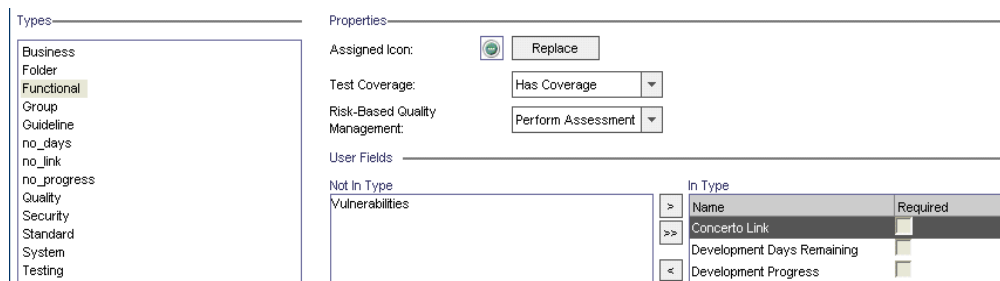
Quality Center Field Label	Field Type	Field Length
----------------------------	------------	--------------

Development Days Remaining	String	100
Concerto Link	String	255
Development Progress	String	100

**Tip!** Jot down the Field Name values for each of the custom fields. These values may differ based on the Quality Center instance. For example, Development Days Remaining in the above image RQ\_USER\_05, but it might be different depending on the Quality Center instance.

6. For Quality Center 10 only! Choose the requirement types with which you would like to associate the above custom fields.
  - a. Select the Requirement Types option from the left panel.
  - b. Select each of the appropriate requirement types in the Types middle panel.
  - c. Move the three custom fields from the Not In Type panel to the In Type panel by clicking the greater than symbol (>) button.

The following image shows custom field definitions for the Functional requirement type. If you plan to use Concerto for any additional requirement types, repeat the steps above.



## Configure Concerto to Integrate with Your Quality Center Installation

1. With administration privileges, go to your Concerto installation host and directory, for example, C:\Program Files (x86)\Parasoft\Concerto. Let's call it CONCERTO\_HOME.

CONCERTO\_HOME\grs\config\bts\examples\ExampleTestDirectorOTATestConfig.xml is an example configuration file for integration with Quality Center.

2. Make a copy of the XML file and give it a meaningful name, such as *MyProjectQualityCenterIntegrationConfig.xml*, and edit it in your favorite editor.
3. Customize the following xml entries for your installation:

- Quality Center version:  

```
<bts type="TestDirectorOTA" version="9">
```

**Note:** For Quality Center 10, set version to 10.
- Quality Center MSSQL connection parameters:  

```
<db-connection>
  <db-type>MSSQL</db-type>
  <user>sa</user>
  <password encrypted="false">sa</password>
  <url>jdbc:sqlserver://localhost;</url>
```
- Quality Center MSSQL database parameters details:  

```
<database qc-domain="DEFAULT" qc-
project="default_test" concerto-
project="MyProject60">default_test_db
  <user-fields-mapping>
    <progress>RQ_USER_24</progress>

<days_remaning>RQ_USER_25</days_remaning>
    <link>RQ_USER_26</link>
  </user-fields-mapping>
</database>
```

where:

- qc-domain="DEFAULT" is Quality Center domain name
- qc-project="default\_test" is Quality Center project name
- concerto-project="MyProject60" is the name of the project in Concerto into which the requirements should be imported. If such project does not exist, it will be created automatically when data synchronization runs for the first time.
- <database .....>default\_test\_db</database> is the name of the database in MS SQL containing the data from your Quality Center project  

```
<user-fields-mapping>
  <progress>RQ_USER_24</progress>

<days_remaning>RQ_USER_25</days_remaning>
  <link>RQ_USER_26</link>
```
- </user-fields-mapping> is the user name fields in your Quality Center database.

Enter the database field names that you jotted down in "[Add Quality Center Custom Requirement Fields to be Used By Concerto](#)".

**Notes:**

- You can define several `<database>` nodes to scan several projects from Quality Center. The example, `ExampleTestDirectorOTATestConfig.xml`, contains two `<database>` nodes. Remove one of them if you intend to scan only one project.

- Connection parameters for Quality Center OTA:

```
<ota-connection>
  <user>sa</user>
  <password>sa</password>
  <url>http://localhost:8080/qcbin</url>
</ota-connection>
```

- In most database field mapping cases, the settings will stay commented out (as in the example configuration file), unless you have customized table fields in your MS SQL database. In such instances, uncomment the following nodes and provide the actual db field names for the entities:

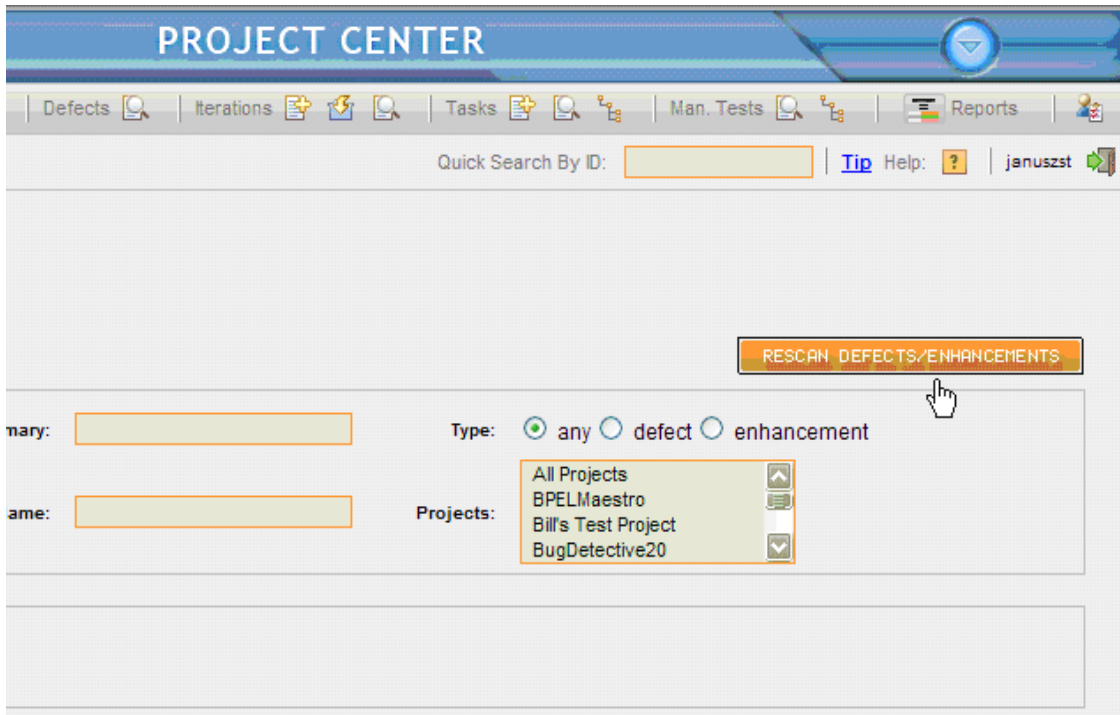
- o `<!--defects><fields-mapping>`
- o `<!--requirements><fields-mapping>`

4. When all of the properties in your `MyProjectQualityCenterIntegrationConfig.xml` are properly set, copy it to `CONCERTO_HOME\grs\config\bts` folder.
5. Periodically (every 15 minutes), Concerto scans this folder and for each configuration file found, it runs the synchronization procedure.

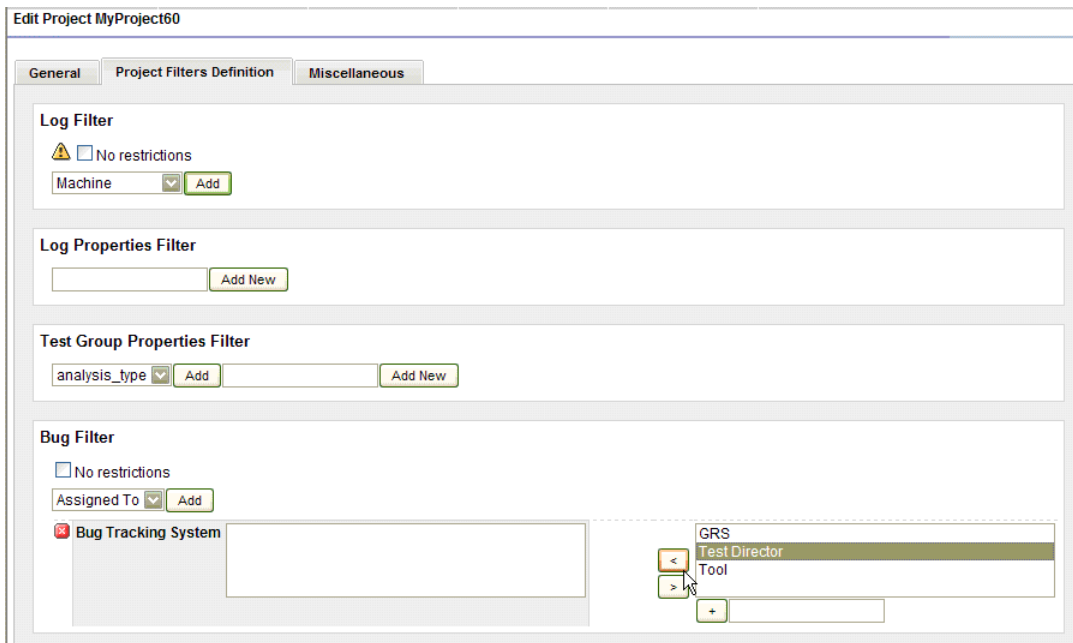
## Running Synchronization On-demand

You can also run the synchronization on-demand. To do so, follow these steps:

1. Go to the Concerto website.
2. Switch to the Project Center module.
3. Go to the Search Defects/Enhancements page and click Rescan Defects/Enhancements:



- A progress dialog is displayed marking the status of the import procedure.
4. Go to the Concerto Administration pages.
  5. Search and edit newly created MyProject60 project:
    - a) Go to the Project Filters Definition tab.
    - b) Select Test Director from the right-hand list.
    - c) Click the Less Than (<) button to move it to the left-hand list.
    - d) Click **Save**, then **Recalculate**.



## Using Integrated Quality Center and Concerto

This section describes a typical use case showing how the integration of HP Quality Center and Parasoft Concerto enhances team work, productivity, and efficiency between project managers, developers, and testers.

Topics include:

- [Integration with Quality Center Requirements](#)
- [Integration System with Quality Center Defects](#)

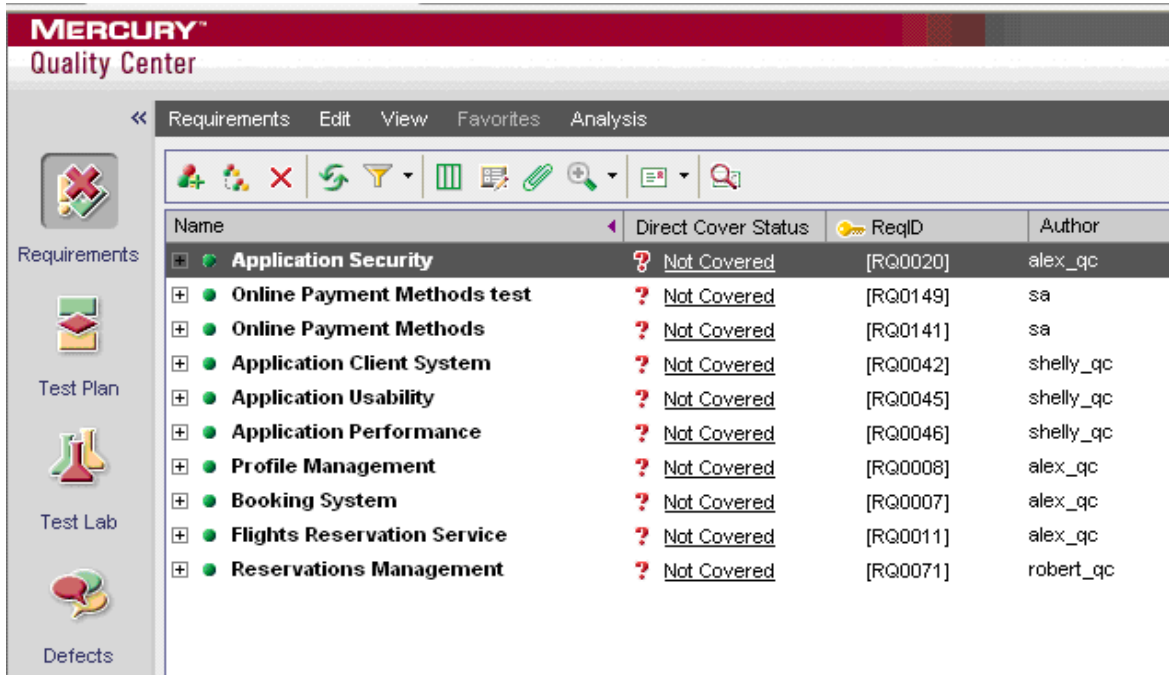
Generally, it works as follows:

- Project requirements are defined at the beginning of the project in Quality Center.
- Developers work on the implementation using Concerto (having the requirements imported from Quality Center).
- Simultaneously, the QA team prepares requirement tests and monitors the development progress of each requirement by viewing custom fields that are automatically updated by Concerto.

### ***Integration with Quality Center Requirements***

To explain integration with Quality Center requirements, let's use the QualityCenter\_Demo project as our example:

1. Go to the Quality Center web page, authenticate, log in and go to the Requirements module.



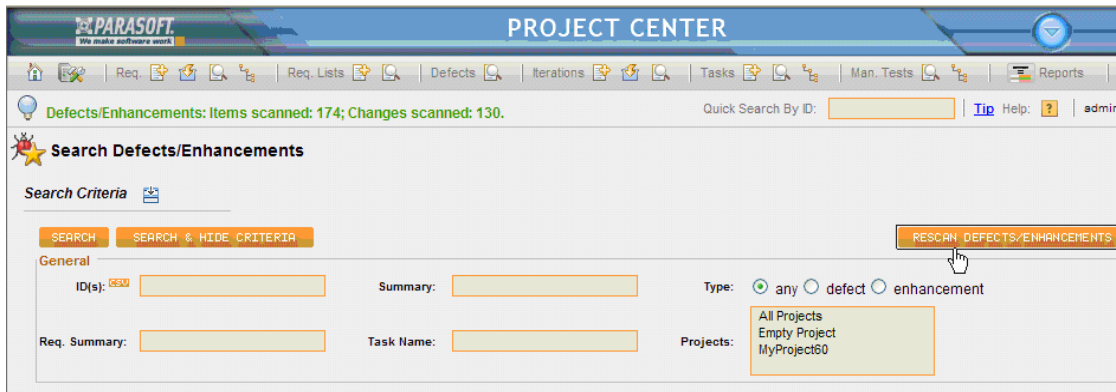
Name	Direct Cover Status	ReqID	Author
Application Security	? Not Covered	[RQ0020]	alex_qc
Online Payment Methods test	? Not Covered	[RQ0149]	sa
Online Payment Methods	? Not Covered	[RQ0141]	sa
Application Client System	? Not Covered	[RQ0042]	shelly_qc
Application Usability	? Not Covered	[RQ0045]	shelly_qc
Application Performance	? Not Covered	[RQ0046]	shelly_qc
Profile Management	? Not Covered	[RQ0008]	alex_qc
Booking System	? Not Covered	[RQ0007]	alex_qc
Flights Reservation Service	? Not Covered	[RQ0011]	alex_qc
Reservations Management	? Not Covered	[RQ0071]	robert_qc

2. After Concerto is configured (as described in "[Integration Installation](#)") Quality Center requirements and defects are imported. They are synchronized every 15 minutes.

You can also import on-demand. To do so:

- a) Log in to Concerto.
- b) Go to the Project Center module.
- c) Go to the Search Defects/Requirements page.
- d) Click **Defects/Enhancements**.

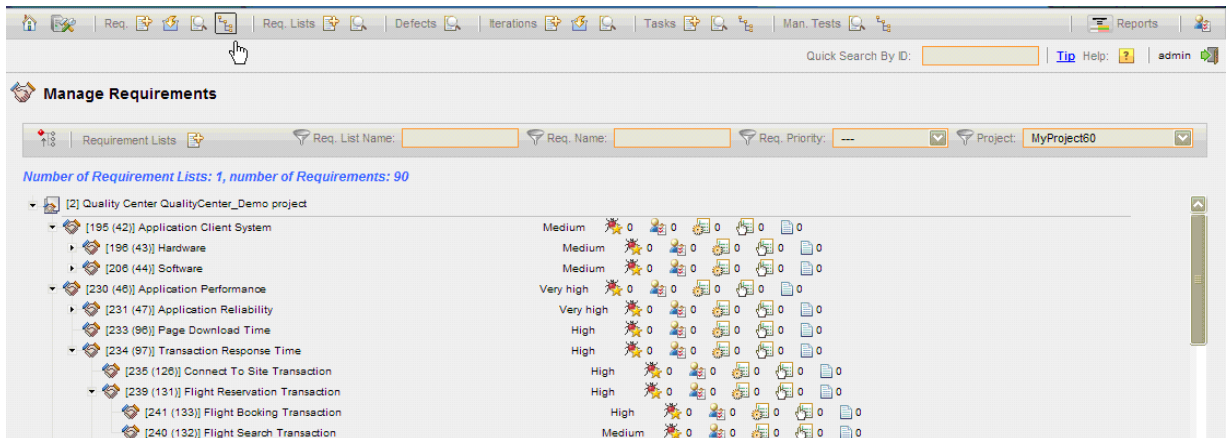
The progress dialog appears and after the synchronization the green status message is displayed.



The progress dialog appears and after the synchronization the green status message is displayed.

3. Go to the Manage Requirements page by clicking the tree button on the toolbar, and then select MyProject60 from the combo box.

All the requirements from QualityCenter\_demo have been imported, including tree structure, summary, description, priority, and ID.



4. Developers plan their work by splitting the imported requirements into development tasks, and then schedule them.

Using the “Credit card number” requirement in Concerto as an example, let’s say we add two development tasks to it. We’ll name the first task “Implement validation of credit card number” and assign it to John (a developer)—planning it for three work days.

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Edit Requirement: [136] Credit Card Number

General Tasks Defects/Enhancements Code 0 0 0 0 Automatic tests 0 0 0 Scenarios/Manual Tests

Tasks List

ADD NEW TASK

**Add Task**

**General**

Project: MyProject60 Iteration ID: 1 Search View

Priority: High

Owner(s): john Observer(s):

Name: Implement validation of credit card number

Description: Check if we can use some existing libraries.

Links allowed in format: http|ftp|https://company.com, www.company.com, @task NNN, @req NNN (e.g. @task 111, @REQ 222)

**Work time**

Planned Start Date: 2009-09-15 Planned Working Time: 3 d 0 h 0 m

- Let's name the second task "Implement nice web GUI widget for card numbers", assigned it David—planning it for eight work days.

Edit Requirement: [136] Credit Card Number

General Tasks Defects/Enhancements Code 0 0 0 0 Automatic tests 0 0 0 Scenarios/Manual Tests 0 0 0 0

Tasks List

ADD NEW TASK ADD EXISTING TASK(S) DELETE TASK(S)

ID	Name	Status	Testing Required	Test(s) Status	(RE) Test Required	Priority	Req	Defect	Iter.	Owner(s)	Planned Start Date	Planned Working Time	Actual Working Time	Estimated Remaining Working Time	Deviation from Plan
1	Implement validation of credit card number	open	✓	Not Tested		High	136		1	john	Sep 14, 2009	3d		3d	(0%)
2	Implement nice web GUI widget for card numbers	open	✓	Not Tested		High	136		1	david	Sep 16, 2009	8d		8d	(0%)

- Upon each task creation or modification, Concerto communicates with Quality Center and updates the requirement's additional defined custom fields:
  - Development Progress: Shows the number of development tasks associated with this requirement (open versus all tasks).
  - Development Days Remaining: Shows the number of development days that are still required to implement the requirement.
  - Concerto Link:—Opens the Requirement page in Concerto Project Center, which contains additional development information about the selected requirement, such as the source code associated with its implementation.

The following image from Quality Center Requirements shows the updated custom fields:

Name	ReqID	Author	Development Progress	Development Days...	Concerto Link
Application Security	[RQ0020]	alex_qc	2 / 2		http://10.9.1.72:80/grs/jsf/planning/req/edit...
Online Payment Methods test	[RQ0149]	sa	0 / 6	15d	
Online Payment Methods	[RQ0141]	sa	0 / 2	11d	
Application Client System	[RQ0042]	shelly_qc	2 / 4	7d	
Application Usability	[RQ0045]	shelly_qc			
Application Performance	[RQ0046]	shelly_qc			
Profile Management	[RQ0008]	alex_qc			
Booking System	[RQ0007]	alex_qc			
Secure Purchase	[RQ0019]	alex_qc			
Payment Methods	[RQ0030]	robert_qc			
Credit Card	[RQ0041]	alex_qc			
Credit Card Type	[RQ0049]	robert_qc			
Credit Card Number	[RQ0050]	robert_qc	0 / 2	11d	http://10.9.1.115:80/grs/jsf/planning/req/edit...

**Note:** The “Credit card number” requirement shows Development Progress 0/2, which means that 0 tasks were completed per total of 2. Development Days Remaining is 11d, which means that there are 11 total days remaining for all tasks associated with the displayed requirement in Concerto.

- The QA team monitors the Development Progress/Development Days Remaining fields of the displayed requirement, and when implemented, they can start the testing procedure of this specific requirement in Quality Center.

Extending this “Credit card number” requirement example, let's say that John has already finished his task and David still has four days of work remaining. They work with Concerto:

**Edit Requirement: [136] Credit Card Number**

Automatic tests: 0 (X) 0 (✓) 0 (!) Scenarios/Manual Tests: 0 (X) 0 (✓) 0 (!)

Tasks List

ADD NEW TASK    ADD EXISTING TASK(S)    DELETE TASK(S)

ID	Name	Status	Testing Required	Test(s) Status	(RE) Test Required	Priority	Req	Defect	Iter.	Owner(s)	Planned Start Date	Planned Working Time	Actual Working Time	Estimated Remaining Working Time	Deviation from Plan
1	Implement validation of credit card number	success	✓	Not Tested		High	136		1	john	Sep 14, 2009	3d			-3d (-100%)
2	Implement nice web GUI widget for card numbers	in progress	✓	Not Tested		High	136		1	david	Sep 16, 2009	4d		4d	(0%)

- After any change made by developers to the tasks in Concerto, the Quality Center custom requirements fields are updated accordingly:

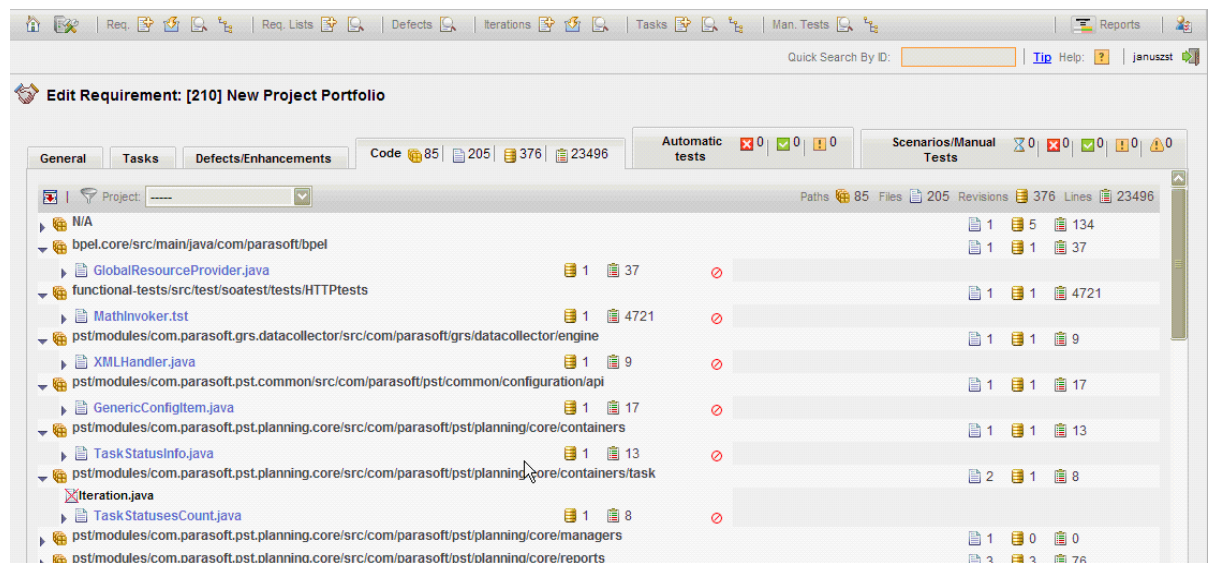
Name	ReqID	Author	Development Progress	Development Days...	Concerto Link
Application Security	[RQ0020]	alex_qc	2 / 2		http://10.9.1.72:80/grs/jsf/planning/req/edit...
Online Payment Methods test	[RQ0149]	sa	0 / 6	15d	
Online Payment Methods	[RQ0141]	sa	0 / 2	11d	
Application Client System	[RQ0042]	shelly_qc	2 / 4	7d	
Application Usability	[RQ0045]	shelly_qc			
Application Performance	[RQ0046]	shelly_qc			
Profile Management	[RQ0008]	alex_qc			
Booking System	[RQ0007]	alex_qc			
Secure Purchase	[RQ0019]	alex_qc			
Payment Methods	[RQ0030]	robert_qc			
Credit Card	[RQ0041]	alex_qc			
Credit Card Type	[RQ0049]	robert_qc			
Credit Card Number	[RQ0050]	robert_qc	1 / 2	4d	http://10.9.1.115:80/grs/jsf/planning/req/edit...

**Note:** The “Credit card number” requirement shows Development Progress ½, which means that one task is complete per total of two, and Development Days Remaining is 4d (four days).

9. Links are listed in Concerto that enable access to additional development data about each requirement in Concerto. For example, for each requirement, Concerto monitors the following:

- Development source code
- All of the development tasks
- When, how long, and by whom the development has been done
- Results from automated and manual tests for each requirement.

Shown in the following image is development source code associated with one of requirements in Concerto:



## Integration with Quality Center Defects

Integration with Quality Center defects is implemented similarly to requirements (described in ["Integration with Quality Center Requirements"](#)).


Also similar to requirements, defects are scanned from Quality Center every 15 minutes (or on-demand using via **Rescan Defects/Enhancements**).

You can view all of the imported defects in Concerto Project Center:

1. Go to the Search Defects/Enhancements page.

- Adjust your search criteria by selecting MyProject60 project, and then click **Search**.

**Search Defects/Enhancements**

Search Criteria 

SEARCH    SEARCH & HIDE CRITERIA    RESCAN DEFECTS/ENHANCEMENTS

**General**

ID(s):     Summary:     Type:  any  defect  enhancement

Req. Summary:     Task Name:     Projects: 

- All Projects
- Empty Project
- MyProject60**

**Advanced**

Bug Tracking System:

**Search Results**

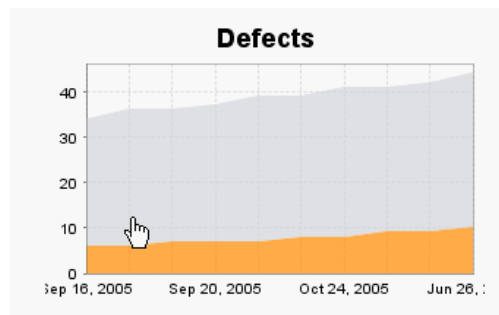
44 item(s) have been found.

SCHEDULE AS TASKS

<input type="checkbox"/>	ID	Bug Tracking System	Type	Summary	Assigned to	Status	Conn. Req.	Conn. Tasks
<input type="checkbox"/>	1	Test Director	def.	sresre		Closed		
<input type="checkbox"/>	10	Test Director	def.	User profile is registered when Contact and Mailing information contain only spaces		Open		
<input type="checkbox"/>	11	Test Director	def.	User Profile registered with illegal email field value		Open		
<input type="checkbox"/>	12	Test Director	def.	User profile is registered when special characters used in Email field		Open		
<input type="checkbox"/>	13	Test Director	def.	Changes to Email field during editing profile are not saved		Open		
<input type="checkbox"/>	14	Test Director	def.	All flight are shown when time preference is set to NOON		Closed		

A graph shows the status trends of the defects in your project. Go to the Concerto Report Center module, and then choose the Tester Dashboard report for MyProject60 project.

The following image shows the trends in our project defects. The orange color represents closed defects, while grey represents open issues:



## Uninstalling Concerto and Quality Center Integration

This section contains the following topics:

- [Uninstalling the Integration Itself](#)

- [Uninstalling Concerto](#)

### ***Uninstalling the Integration Itself***

1. Go to the `CONCERTO_HOME\grs\config\bts` folder on your Concerto installation host.
2. Remove any integration configuration files added to this folder.  
Concerto will stop periodic data synchronization.
3. Remove any custom requirement fields that you added from your Quality Center.  
See "[Add Quality Center Custom Requirement Fields to be Used By Concerto](#)" for details.

### ***Uninstalling Concerto***

See the "*Parasoft Concerto Administration Manual*", which is located in the Concerto host: `CONCERTO_HOME/doc/concerto_admin.pdf` file.

Follow the uninstall instructions in the "*Managing Report Center Installation in Windows*" section.



To learn more about Parasoft Concerto, contact Parasoft as described below.

#### *USA*

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Monrovia, CA 91016  
Toll Free: (888) 305-0041  
Tel: (626) 305-0041  
Email: [info@parasoft.com](mailto:info@parasoft.com)  
URL: [www.parasoft.com](http://www.parasoft.com)

#### *Europe*

France: Tel: +33 (1) 64 89 26 00  
UK: Tel: +44 (0)1923 858005  
Germany: Tel: +49 89 4613323-0  
Email: [info-europe@parasoft.com](mailto:info-europe@parasoft.com)

#### *Asia*

Tel: +886 2 6636-8090  
Email: [info-psa@parasoft.com](mailto:info-psa@parasoft.com)

#### *Other Locations*

See <http://www.parasoft.com/jsp/pr/contacts.jsp?itemId=268>

## **About Parasoft**

For 20 years, Parasoft has investigated how and why software errors are introduced into applications. Our solutions leverage this research to deliver quality as a continuous process throughout the SDLC. This promotes strong code foundations, solid functional components, and robust business processes. Whether you are delivering Service-Oriented Architectures (SOA), evolving legacy systems, or improving quality processes—draw on our expertise and award-winning products to increase productivity and the quality of your business applications.

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