

# Software development

## Testing

# Software development - Testing

## Software systems

- ☐ Everyone aware of software systems
- ☐ In our homes, at work, while shopping
- ☐ Day-to-day business applications, e.g. Banking, cars, washing machines
- ☐ Software did not work as expected: an error on a bill, website did not load correctly
- ☐ Different levels of issues: spelling mistakes vs. system is down
- ☐ Mistakes during the design and build
- ☐ Called as defects or sometimes bugs or faults
- ☐ Software code ready -> executed -> failure
- ☐ Sometimes failures are not even noticed

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## Testing and quality

- ☐ Testing helps us to measure the quality
- ☐ Numbers of defects found, the test run, the system coverage
- ☐ Poor test may uncover few defects
- ☐ A well-designed test will uncover defects if they are present
  
- ☐ Project aim to deliver software to specification
- ☐ Project to deliver what the customer needs requires
- ☐ Delivered system must meet the specification
- ☐ Customer wants the project to be within budget and timescale
- ☐ Should arrive when they need it and not cost too much
- ☐ Need to understand customer expectations
- ☐ If customer need to spend more money than they want -> they won't be impressed
- ☐ Cheap to fix defects during development process

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## Testing process

- ☐ Design testcases based on requirements
- ☐ TestSet design -> collecting testcases per new application version
- ☐ Running testSet (manual or automatic)
- ☐ Tester to detect defects
- ☐ Test & defects reporting
- ☐ Testing & defects review
- ☐ Defects fixing -> assigning to developers
- ☐ Retest fixed defects

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## Fixing process

- ☐ Developer starts to work with assigned defect -> debugging
- ☐ Repair the code and check that the code now executes as expected
- ☐ Developer tries to fix&test in own environment(pc)
- ☐ Sometimes simulators or real devices need to be used
- ☐ The fix is often tested separately (tester) to confirm the fix

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## Test environment

- ☐ Continuous Integration(CI), Development, Acceptance and Production
- ☐ System testing requires controlled test environment
- ☐ Control of the software versions (e.g. SVN)
- ☐ Test environment should correspond to the final target or production environment
- ☐ Minimize the risk of environment specific failures not being found by testing


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## Quality Center - Req

The screenshot shows the HP Quality Center web application interface. The top navigation bar includes the HP logo, 'Quality Center', and links for '< Back', 'Forward >', 'Tools', and 'Help'. A left-hand sidebar contains a tree view with categories like Dashboard, Analysis View, Management, Releases, Libraries, Requirements (highlighted), Business Models, Testing, and Defects. The main content area is titled 'Requirements' and includes sub-tabs for 'Edit', 'View', 'Favorites', and 'Analysis'. Below these are icons for various actions and a 'No Filter Defined' status. A table lists requirements with columns for Name, ReqID, and Direct Cover Status. The table is expanded to show a hierarchy: Printing (ReqID 3, Not Covered), pdf (ReqID 4, Not Covered), New Requirement (ReqID 5, Not Covered), 0568 C4L Mobile (ReqID 8, ---), and IMT2 (ReqID 10, ---). The IMT2 folder is expanded to show three items: IMT2\_KLF-65 (ReqID 11, No Run), IMT2\_KLF-65\_1 (ReqID 12, No Run), and IMT2\_KLF-65\_2 (ReqID 13, No Run). At the bottom, there are tabs for 'Description', 'Comments', 'Rich Text', 'Attachments', and 'History', followed by a rich text editor toolbar and the text 'Authenticate to the application'.





Name	ReqID	Direct Cover Status
Printing	3	Not Covered
pdf	4	Not Covered
New Requirement	5	Not Covered
0568 C4L Mobile	8	---
IMT2	10	---
IMT2_KLF-65	11	No Run
IMT2_KLF-65_1	12	No Run
IMT2_KLF-65_2	13	No Run

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 Test Coverage


 Select  Status Filter: No Run    ☒ Full Coverage

Filter: Coverage Status["No Run"]

Coverage Type	Entity Name	Coverage Status	Coverage Mode
Test	 IMT2_KLF-65...	 No Run	All Configurations
Test	 IMT2_KLF-65...	 No Run	All Configurations

Test Configuration Status

Name	Description	Status
IMT2_KLF-65_1_...	Created automat...	 No Run

Quality Center  
- Test Coverage



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## Quality Center - Design steps

The screenshot shows the 'Test Details' window in Quality Center. The test ID is 685, the test name is 'IMT2\_KLF-65\_2\_010', and the type is 'MANUAL'. The left sidebar shows the 'Design Steps' section is active. The main area displays a table with three steps:

Step Name	Description	Expected Result
Step 1	Open application	Application opens and initial sync is done
Step 2	Fill in login/password fields	n/a
Step 3	Hit Login button	User is logged into application and dashboard is opened

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## Quality Center - Test Lab

The screenshot displays the Quality Center Test Lab interface. On the left is a navigation pane with sections: Dashboard, Analysis View, Dashboard View, Management, Releases, Libraries, Requirements, Business Models, Testing, Test Resources, Test Plan, Test Lab (selected), Test Runs, and Defects. The main area is titled 'Test Sets' and contains a tree view under 'Root' with folders like 'MANUAL TEST', 'KFM', 'PDA v 1.3.4.0', 'PDA v 2.1.0', 'PDA v 2.3.1', 'PDA v 2.3.4', 'KFM 2.3.4 HTC P6300', 'KFM 2.3.4 INTERMEC CN3', 'QUICK TEST', and 'PDA v 2.1.0'. The 'PDA v 2.3.4' folder is selected. Below the tree is a toolbar with icons for 'Select Tests', 'Run', 'Run Test Set', and others. The main table shows a list of test results with columns: Name, Test: Test Name, Type, Status, Iterations, and Plan. The table contains 14 rows of test results, all with a status of 'Passed'. Below the table is a 'Last Run Report' section with a table showing step details: Step Name, Status, Exec Date, Exec Time, and Steps Details. The steps include 'Start', 'Open Settings page', 'Go to Server', 'Check server setting', 'Go to Client', 'Check client settings', 'Go to Images', and 'Check images setting', all with a status of 'Passed'.

Name	Test: Test Name	Type	Status	Iterations	Plan
[1]SYN-001 - Syn...	SYN-001 - Sy...	MANUAL	Passed		
[1]SET-001 - Che...	SET-001 - Ch...	MANUAL	Passed		
[1]LOGON-004 - ...	LOGON-004 - ...	MANUAL	Passed		
[1]LOGON-003 - ...	LOGON-003 - ...	MANUAL	Passed		
[1]LOGON-002 - ...	LOGON-002 - ...	MANUAL	Passed		
[1]LOGON-001 - ...	LOGON-001 - ...	MANUAL	Passed		
[1]JOB-003 - Cle...	JOB-003 - Cle...	MANUAL	Passed		
[1]JOB-002 - Acc...	JOB-002 - Ac...	MANUAL	Passed		
[1]JOB-001 04 - ...	JOB-001 04 - ...	MANUAL	Passed		
[1]HIS-001 - Mes...	HIS-001 - Mes...	MANUAL	Passed		
[1]JOB-001 03 - ...	JOB-001 03 - ...	MANUAL	Passed		
[1]JOB-001 02 - ...	JOB-001 02 - ...	MANUAL	Passed		
[1]JOB-001 01 - ...	JOB-001 01 - ...	MANUAL	Passed		

Step Name	Status	Exec Date	Exec Time	Steps Details
Start	Passed	4.6.2007	11:20:57 AM	Description:
Open Settings page	Passed	4.6.2007	11:20:59 AM	
Go to Server	Passed	4.6.2007	11:21:02 AM	
Check server setting	Passed	4.6.2007	11:21:06 AM	
Go to Client	Passed	4.6.2007	11:21:09 AM	
Check client settings	Passed	4.6.2007	11:21:11 AM	
Go to Images	Passed	4.6.2007	11:21:14 AM	
Check images setting	Passed	4.6.2007	11:21:18 AM	

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## Quality Center - Defects

The screenshot displays the Quality Center Defects module. On the left is a navigation pane with categories: Dashboard, Management, Requirements, and Testing. The 'Defects' option under 'Testing' is selected. The main area features a toolbar with 'New Defect...' and various icons, followed by a filter 'Defect ID[2]'. A table lists defects, with the first row selected: Defect ID 2, Description 'Test Set: test Test: [1]JOB-002 - Accepti...', Summary 'Hourglass' displaying failed, Priority 3-High, Severity 2-Medium, and Assigned To conkohe. Below the table are tabs for Description, Attachments, Linked Entities, and History. The 'Description' tab is active, showing a summary '\* Summary: Hourglass' displaying failed'. The 'Description' field contains the text 'Wait 90 secondes' and 'Expected: 'hourglass' appears while PDA is synchronizing with the server.'. The 'Actual' field contains 'Hourglass' displaying failed'. A 'Comments' section is also visible on the right.

Dashboard

Analysis View

Dashboard View

Management

Releases

Libraries

Requirements

Requirements

Business Models

Testing

Test Resources

Test Plan

Test Lab

Test Runs

Defects

Defects Edit View Favorites Analysis

New Defect...

Filter: Defect ID[2]

Defect ID	Description	Summary	Priority	Severity	Assigned To
2	Test Set: test Test: [1]JOB-002 - Accepti...	'Hourglass' displaying failed	3-High	2-Medium	conkohe

Description Attachments Linked Entities History

\* Summary: 'Hourglass' displaying failed

Description:

Comments:

Step: Wait

Description:

Wait 90 secondes

Expected:

'hourglass' appears while PDA is synchronizing with the server.

Actual:

'Hourglass' displaying failed