

Competence is knowing
how it all fits together.



Comprehensive test management as major success factor for IT projects

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09/21/2009
Ortrud Deutscher

Slide 1

Endress+Hauser 
InfoServe



Endress+Hauser at a Glance

- International solution supplier with a wide range of process measurement instrumentation for production and logistics in the process industries
- Consultancy and service for our customers in 97 countries
- One of the largest privately owned companies in the automation industry
- Headquarters in Reinach (Switzerland)
- CEO: Klaus Endress
- Key figures 2008
 - Net sales 1,211 Mill. Euro
 - Net income 104.3 Mill. Euro
 - Equity capital ratio 61.3 %
 - Employees 8,434





Comprehensive test management

Endress+Hauser 

Our Offering: Leading Edge Field Instrumentation



Level



Pressure



Flow



Temperature



Liquid
Analysis



Registration



Systems
Components



Services



Solutions



09/21/2009
Ortrud Deutscher

Slide 3



Endress+Hauser InfoServe

■ E+H InfoServe

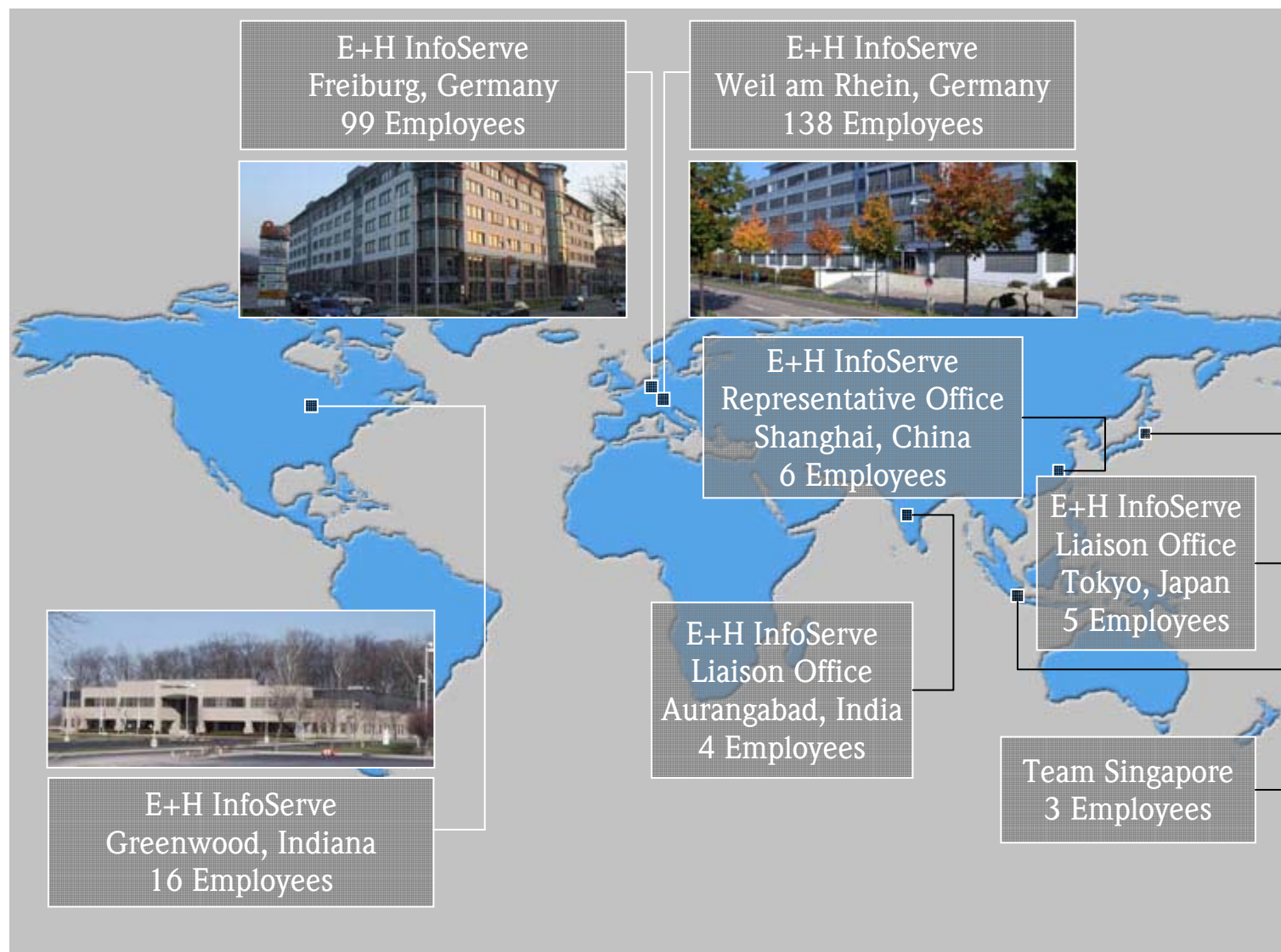
- IT Service provider for the E+H Group
- Founded 1997
- 270 employees in Germany, USA and Asia

■ SAP History

- 1985: Started with R/2 at Production Center Maulburg
- 1996: Started with R/3 for Sales Center
- 2001: Certification SAP Customer Competence Center
- 2003: Certification SAP Hosting Partner

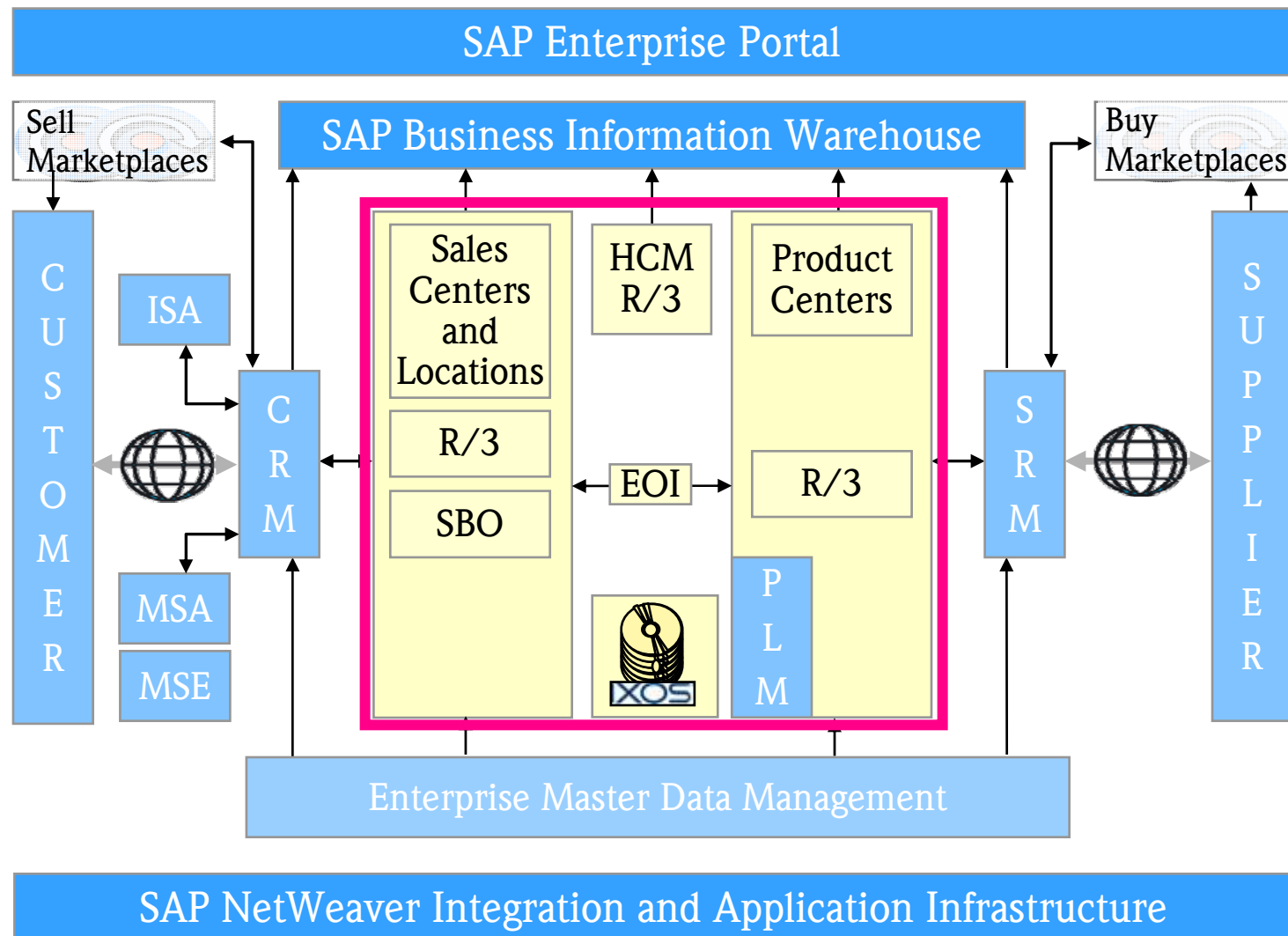


E+H InfoServe - Worldwide Locations



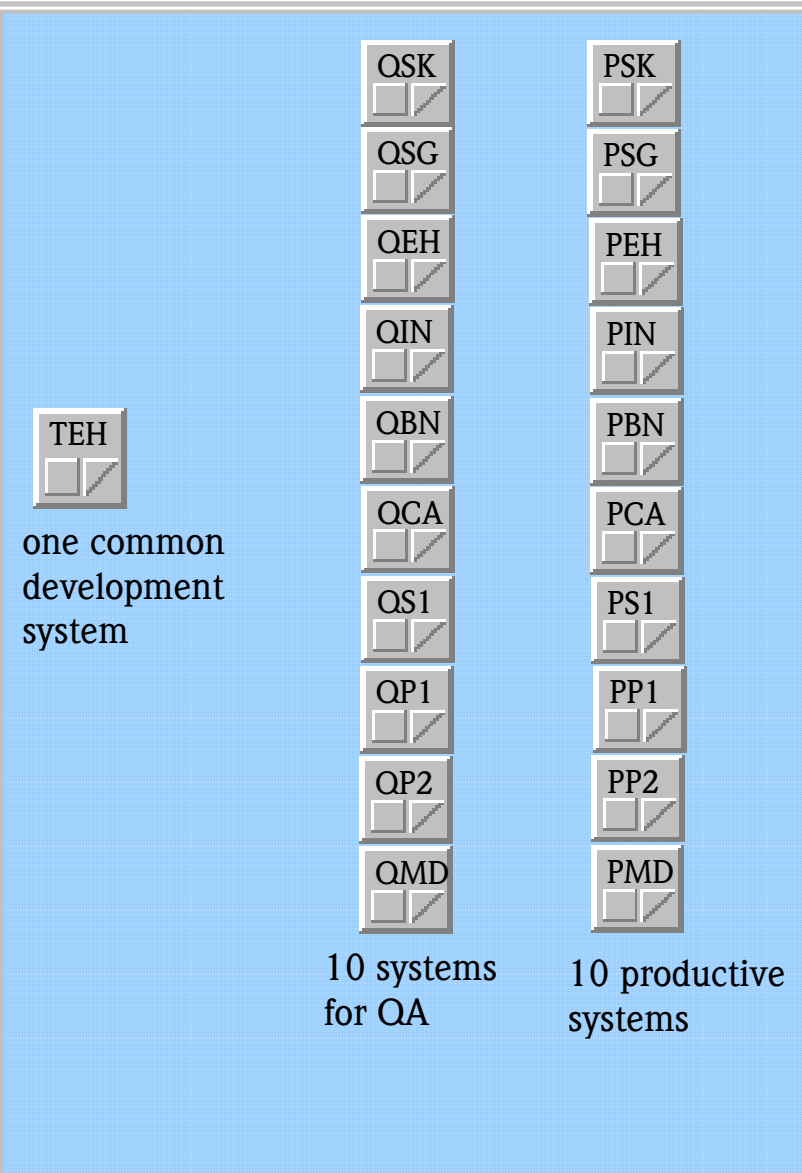


E+H System Landscape





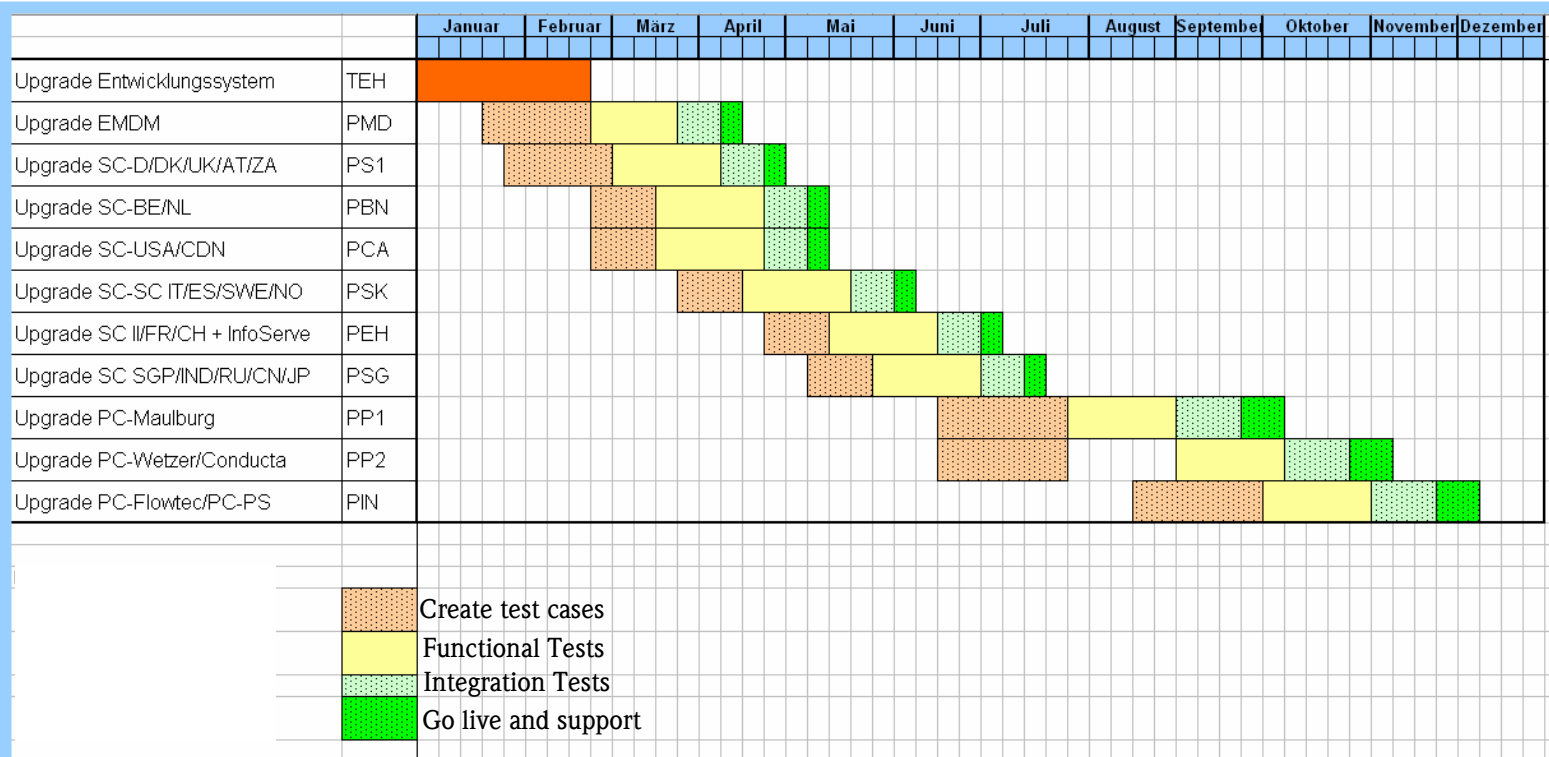
SAP R/3 4.6c System Landscape



10 ERP Systems
approx. 35 Companies
with 5000 Users



Upgrade Project Schedule 2008





Initial Situation – Test Management

- Approximately 2,500 test case descriptions in SAP CATT or EXCEL files available
- Many redundant test cases and descriptions
- No automated tests
- Mainly functional tests, less process tests
- Incomplete documentation of test content and test results
- No integrated defect management



New test tool – Requirements

■ One tool

- For definition, maintenance and organization of all test cases
- Monitoring and reporting features
- User friendly
- Used by all E+H Companies
- Capability to automate the defined tests



Comprehensive test management

Endress+Hauser 

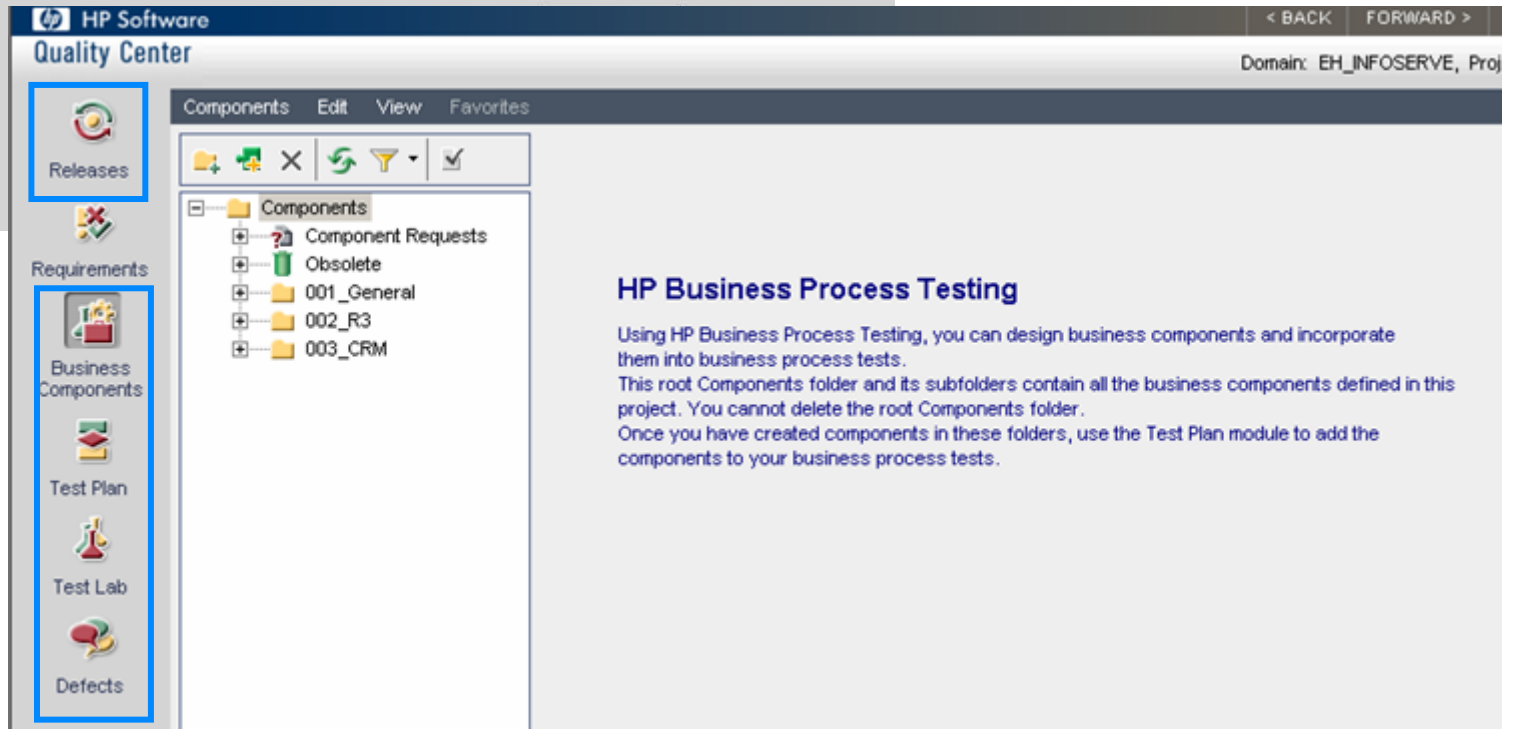
SAP Quality Center by HP

Quality Center

Login Name:

Password:

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



HP Software
Quality Center

Domain: EH_INFOSERVE, Proj

Components Edit View Favorites

Releases

Requirements

Business Components

Test Plan

Test Lab

Defects

Components

- Component Requests
- Obsolete
- 001_General
- 002_R3
- 003_CRM

HP Business Process Testing

Using HP Business Process Testing, you can design business components and incorporate them into business process tests.

This root Components folder and its subfolders contain all the business components defined in this project. You cannot delete the root Components folder.

Once you have created components in these folders, use the Test Plan module to add the components to your business process tests.

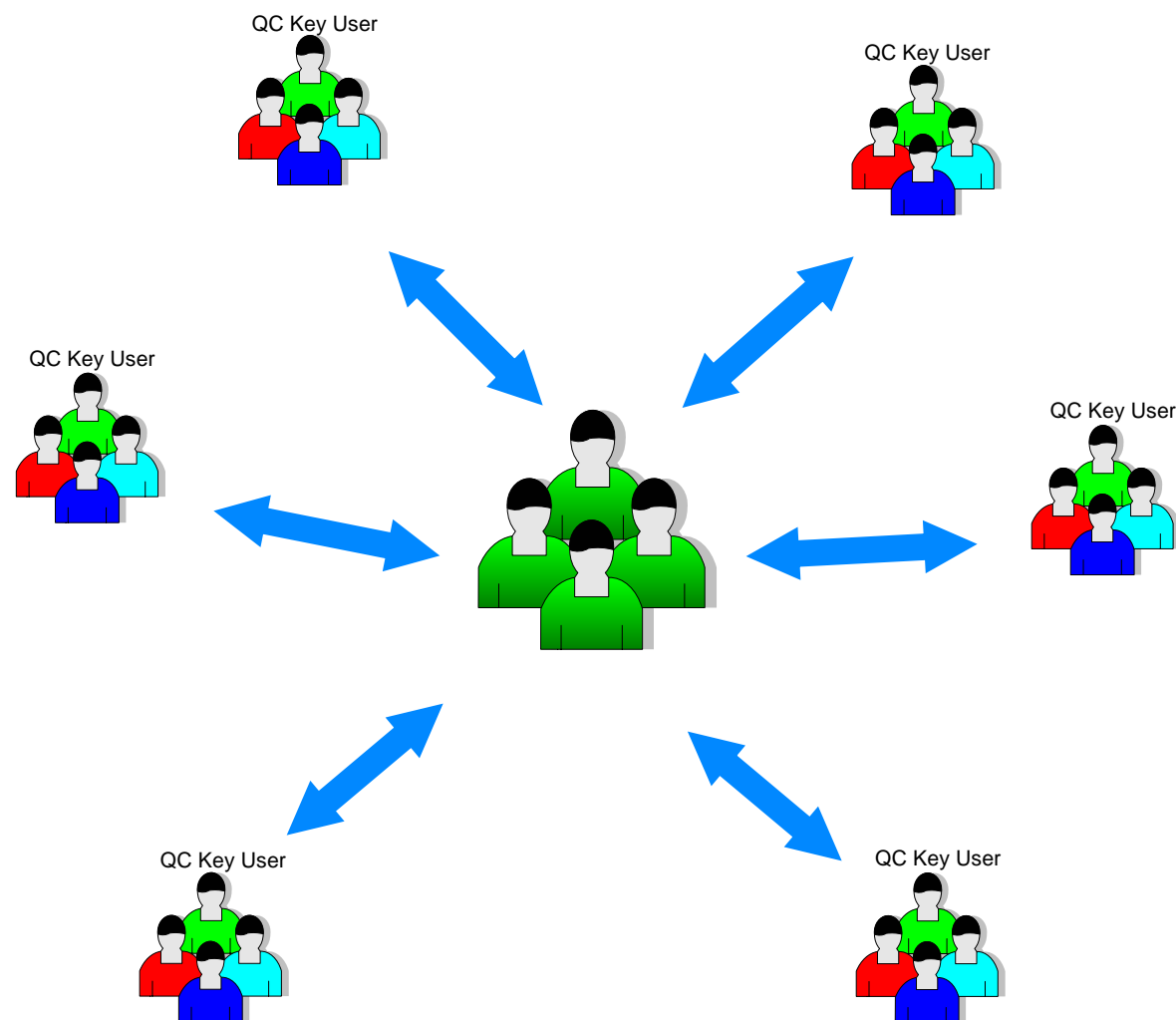


Project “Test” – Goals

- 100% test coverage
 - for all relevant processes and functions
 - for all interfaces
 - create comparable tests by doing same things the same way
- Central administration and coordination of test activities
- Guarantee same functionality before and after the upgrade
- Create a test platform for further development and maintenance

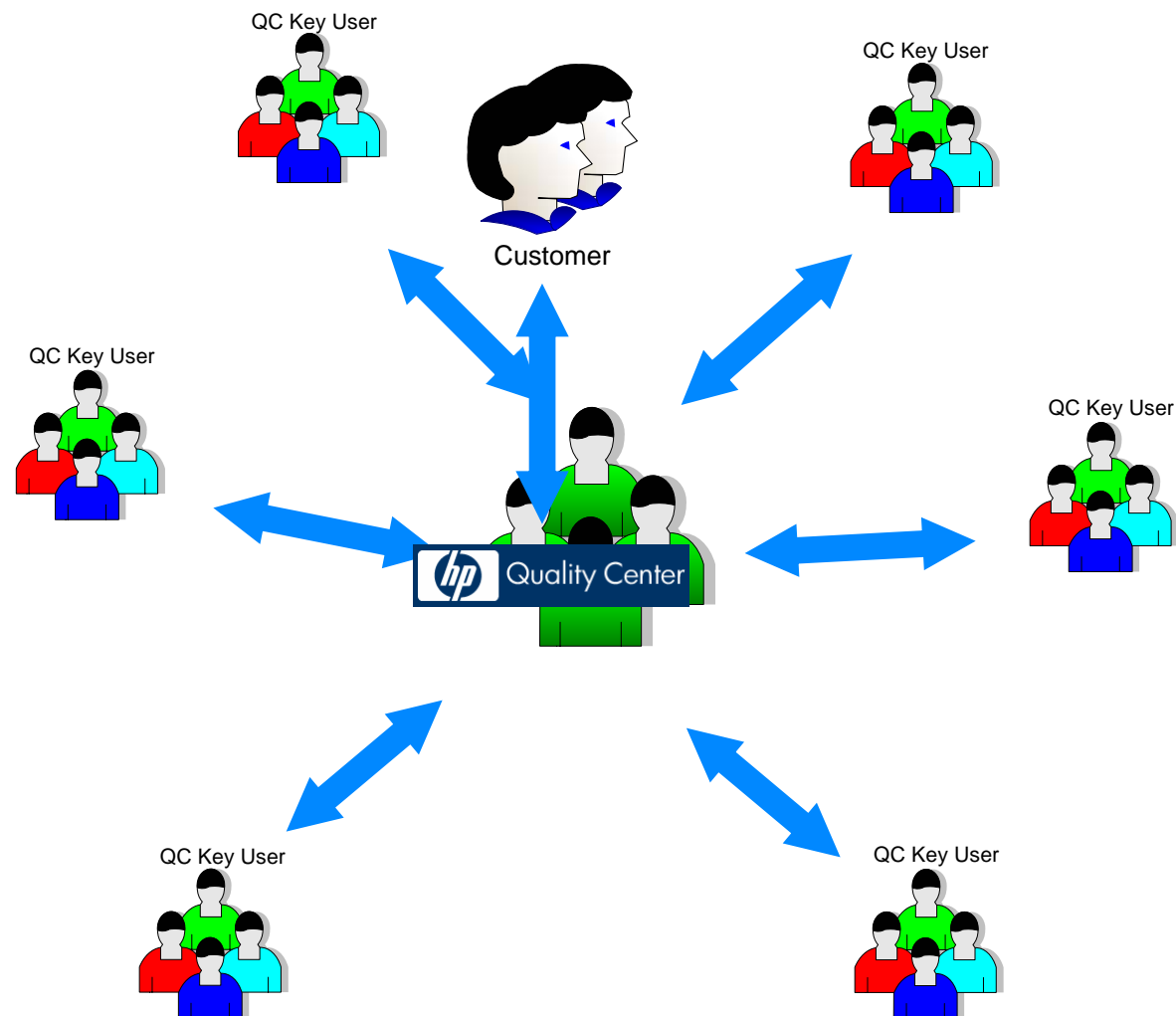


Organization





Organization





Approach

■ Business Process Testing

- Create the required business components (start with harmonized functions)
- Incorporate the components to business process tests
- Start with manual components as basis for later automation



Business Components

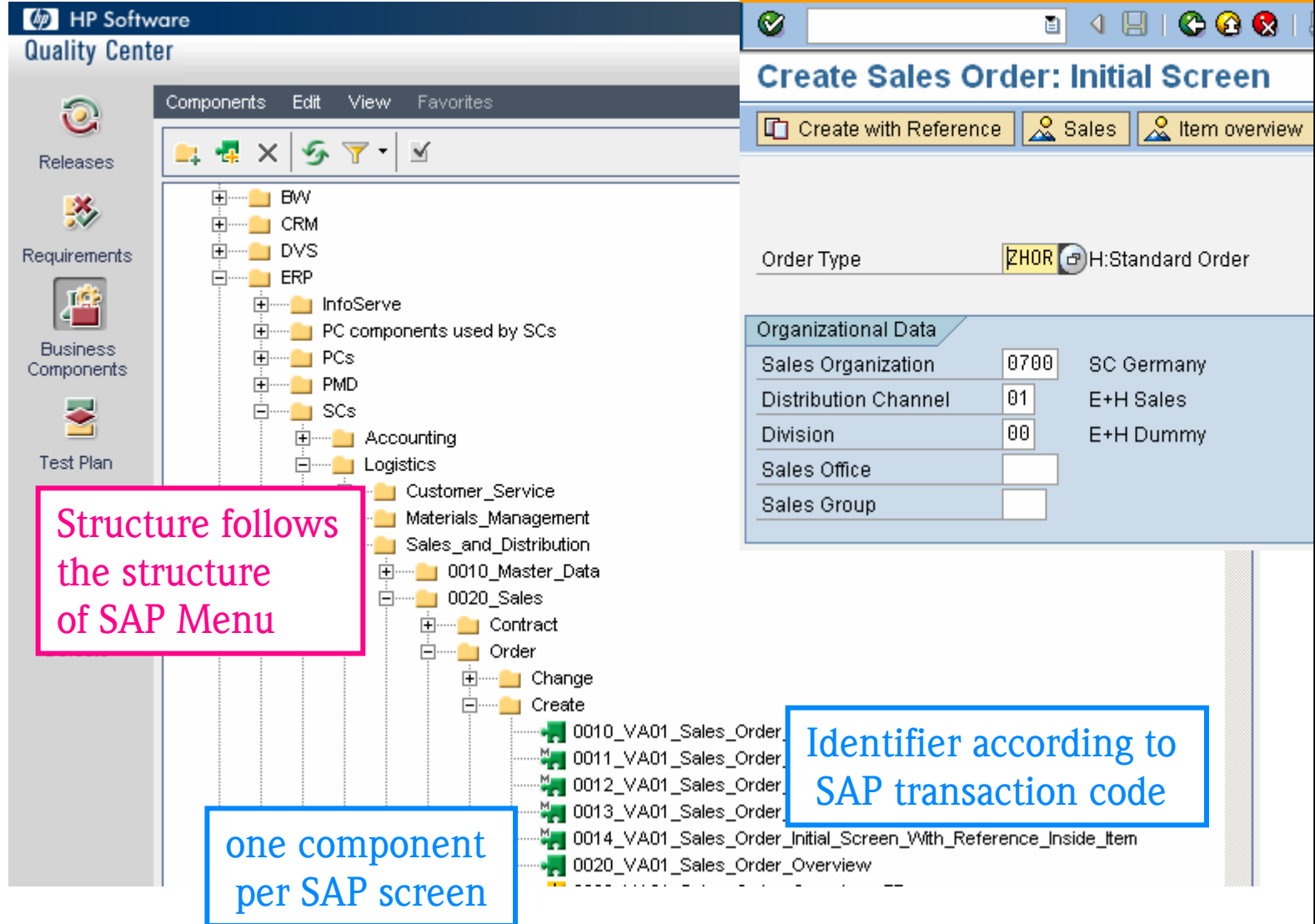
- Business Components are re-useable units – that define specific tasks within a process
- You have to consider
 - How the business components should be organized in the HP Quality Center
 - Who is responsible for the creation and maintenance of business components
 - Naming conventions
 - Granularity/structure of components



Functional tests / process tests

- Within the test script, the Business Components are combined with integrated processes
- You have to consider
 - Who is responsible for the creation and maintenance of test cases
 - How test cases should be organized in the HP QC
 - How are interface/system changeovers organized
 - Naming conventions

Organization of Business Components in HP QC



The screenshot displays the HP Software Quality Center interface. On the left, a sidebar contains navigation icons for Releases, Requirements, Business Components, and Test Plan. The main area shows a tree structure of Business Components. A pink callout box points to this tree, stating: "Structure follows the structure of SAP Menu".

On the right, the "Create Sales Order: Initial Screen" form is visible. It includes a menu bar with "Sales document", "Edit", "Goto", "Environment", and "System". Below the menu bar are buttons for "Create with Reference", "Sales", and "Item overview". The "Order Type" field is set to "ZH0R" with a dropdown arrow and the text "H:Standard Order".

Below the order type, there is a section titled "Organizational Data" with the following fields:

Organizational Data		
Sales Organization	0700	SC Germany
Distribution Channel	01	E+H Sales
Division	00	E+H Dummy
Sales Office		
Sales Group		

At the bottom of the Business Components tree, a blue callout box points to a specific component, stating: "one component per SAP screen". Another blue callout box points to the list of components at the bottom of the tree, stating: "Identifier according to SAP transaction code".

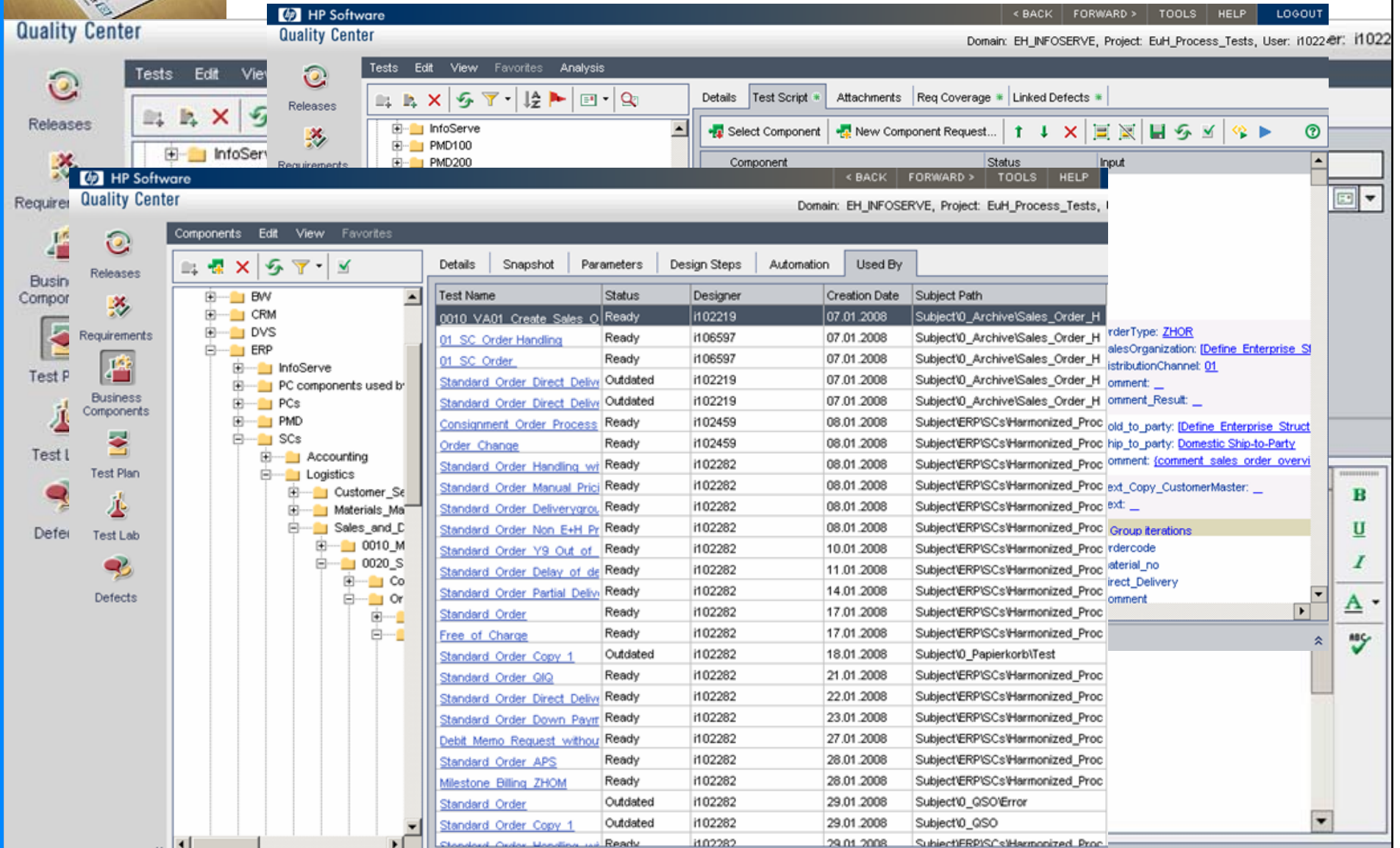
The list of components at the bottom of the tree includes:

- 0010_VA01_Sales_Order
- 0011_VA01_Sales_Order
- 0012_VA01_Sales_Order
- 0013_VA01_Sales_Order
- 0014_VA01_Sales_Order_Initial_Screen_With_Reference_Inside_Item
- 0020_VA01_Sales_Order_Overview

Example

The screenshot displays the SAP Business Manager interface. On the left, a sidebar lists various project components: Releases, Requirements, Business Components, Test Plan, Test Lab, and Defects. The main workspace shows a hierarchical tree view of the project structure. The tree includes folders for 'PMD100', 'PMD200', 'UniCode_Temporaer', 'SCs', 'Harmonized_Processes', 'Harmonized_Functions', 'Harmonized_Reports', 'Specific_Processes', 'Specific_Functions', 'Specific_Reports', and 'Interfaces'. The 'Specific_Processes' folder is highlighted with a red border. The right pane shows a calendar view for the year 2010, with months from August to December visible.

Organization of test cases in HP QC



HP Software Quality Center

Domain: EH_INFOSERVE, Project: EuH_Process_Tests, User: i10224r: i10224r

Tests Edit View Favorites Analysis

Releases

InfoServe

Requirements

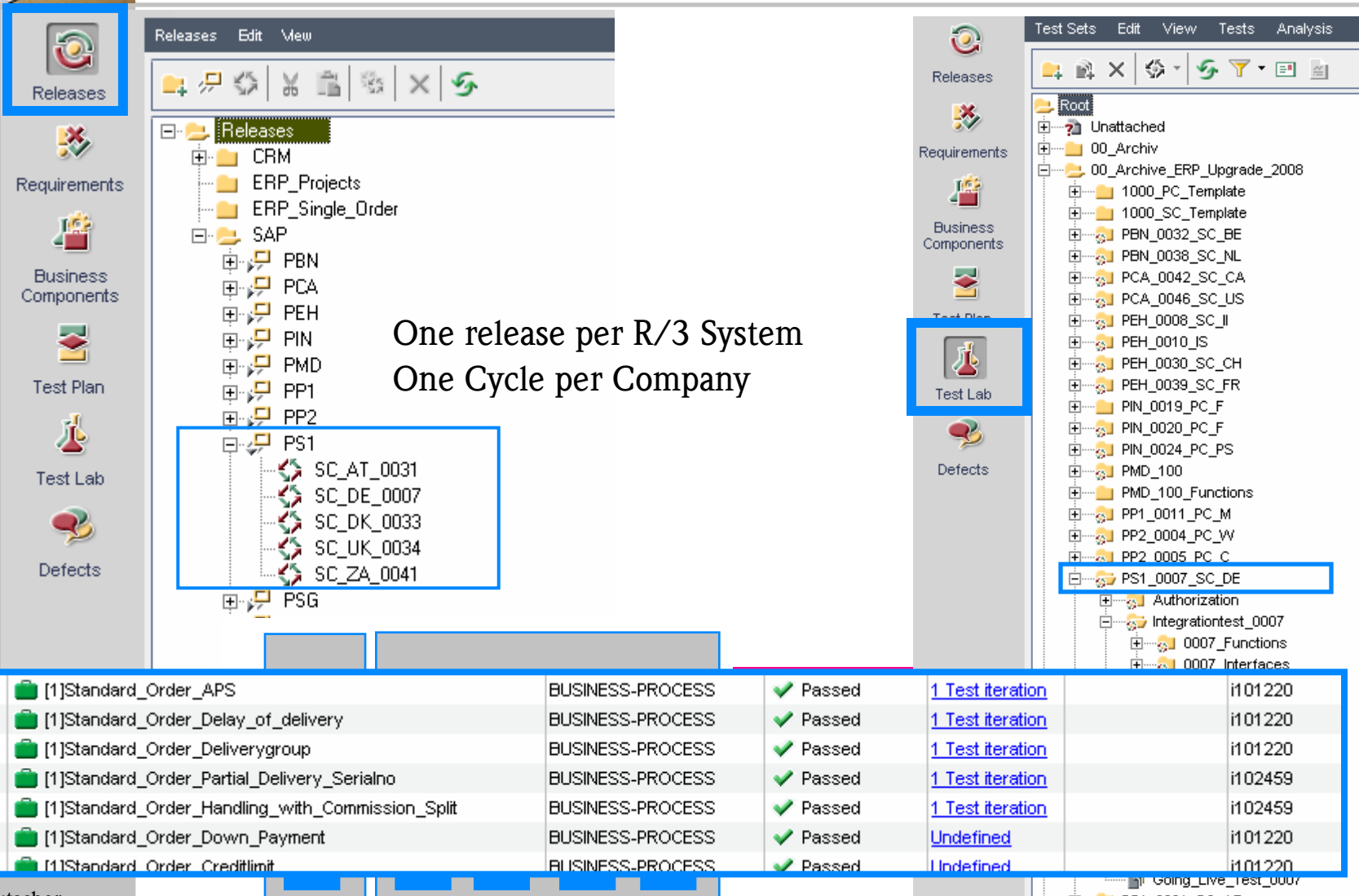
Components Edit View Favorites

Details Snapshot Parameters Design Steps Automation Used By

Test Name	Status	Designer	Creation Date	Subject Path
0010_VA01_Create_Sales_O	Ready	i102219	07.01.2008	Subject\0_Archive\Sales_Order_H
01_SC_Order_Handling	Ready	i106597	07.01.2008	Subject\0_Archive\Sales_Order_H
01_SC_Order	Ready	i106597	07.01.2008	Subject\0_Archive\Sales_Order_H
Standard Order Direct Deliv	Outdated	i102219	07.01.2008	Subject\0_Archive\Sales_Order_H
Standard Order Direct Deliv	Outdated	i102219	07.01.2008	Subject\0_Archive\Sales_Order_H
Consignment Order Process	Ready	i102459	08.01.2008	Subject\ERP\SCs\Harmonized_Proc
Order_Change	Ready	i102459	08.01.2008	Subject\ERP\SCs\Harmonized_Proc
Standard Order Handling wi	Ready	i102282	08.01.2008	Subject\ERP\SCs\Harmonized_Proc
Standard Order Manual Prici	Ready	i102282	08.01.2008	Subject\ERP\SCs\Harmonized_Proc
Standard Order Deliverygrou	Ready	i102282	08.01.2008	Subject\ERP\SCs\Harmonized_Proc
Standard Order Non E+H Pr	Ready	i102282	08.01.2008	Subject\ERP\SCs\Harmonized_Proc
Standard Order Y9 Out of	Ready	i102282	10.01.2008	Subject\ERP\SCs\Harmonized_Proc
Standard Order Delay of de	Ready	i102282	11.01.2008	Subject\ERP\SCs\Harmonized_Proc
Standard Order Partial Deliv	Ready	i102282	14.01.2008	Subject\ERP\SCs\Harmonized_Proc
Standard Order	Ready	i102282	17.01.2008	Subject\ERP\SCs\Harmonized_Proc
Free of Charge	Ready	i102282	17.01.2008	Subject\ERP\SCs\Harmonized_Proc
Standard Order Copy 1	Outdated	i102282	18.01.2008	Subject\0_Papierkorb\ITest
Standard Order GIQ	Ready	i102282	21.01.2008	Subject\ERP\SCs\Harmonized_Proc
Standard Order Direct Deliv	Ready	i102282	22.01.2008	Subject\ERP\SCs\Harmonized_Proc
Standard Order Down Paym	Ready	i102282	23.01.2008	Subject\ERP\SCs\Harmonized_Proc
Debit Memo Request withou	Ready	i102282	27.01.2008	Subject\ERP\SCs\Harmonized_Proc
Standard Order APS	Ready	i102282	28.01.2008	Subject\ERP\SCs\Harmonized_Proc
Milestone Billing ZHOM	Ready	i102282	28.01.2008	Subject\ERP\SCs\Harmonized_Proc
Standard Order	Outdated	i102282	29.01.2008	Subject\0_QSO>Error
Standard Order Copy 1	Outdated	i102282	29.01.2008	Subject\0_QSO
Standard Order Handling wi	Ready	i102282	29.01.2008	Subject\ERP\SCs\Harmonized_Proc

OrderType: ZHOR
 SalesOrganization: Define Enterprise S
 DistributionChannel: 01
 Comment: __
 Comment_Result: __
 old_to_party: Define Enterprise Struct
 Ship-to-party: Domestic Ship-to-Party
 Comment: comment sales order overvi
 ext_Copy_CustomerMaster: __
 ext: __
 Group iterations
 ordercode
 aterial_no
 irect_Delivery
 oment

Organization of test performance



Releases

Requirements

Business Components

Test Plan

Test Lab

Defects

Releases

Test Sets

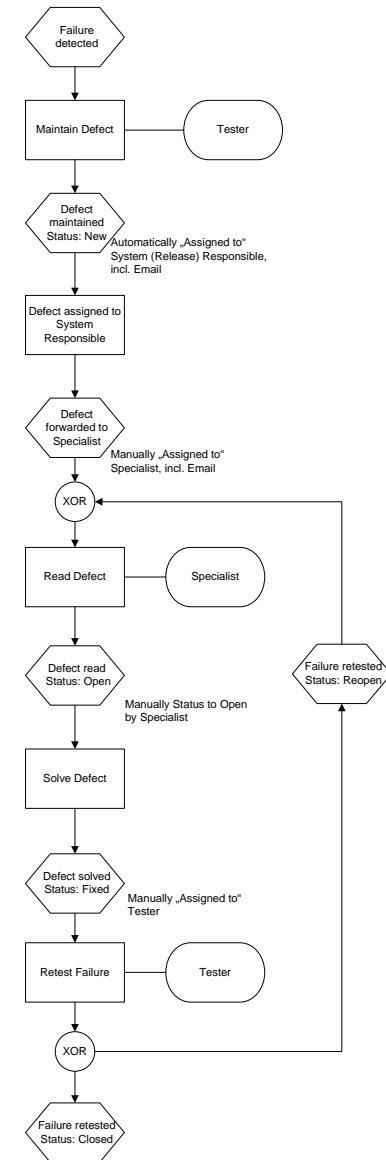
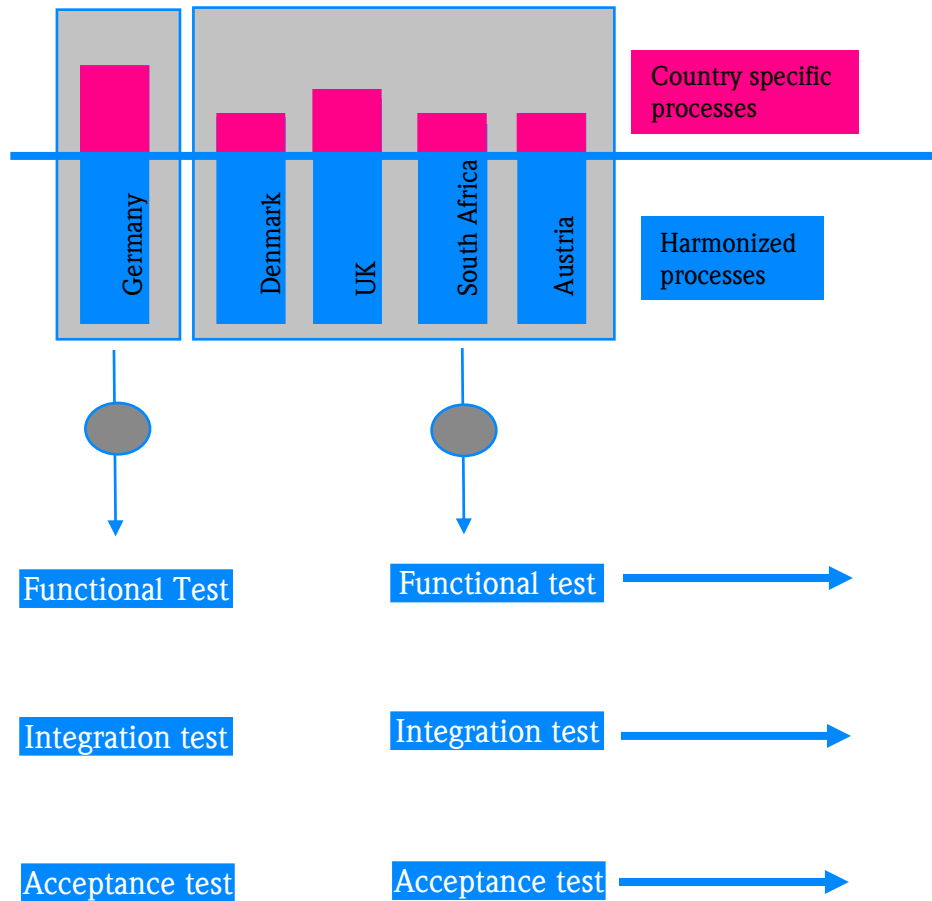
Test Lab

Defects

One release per R/3 System
One Cycle per Company

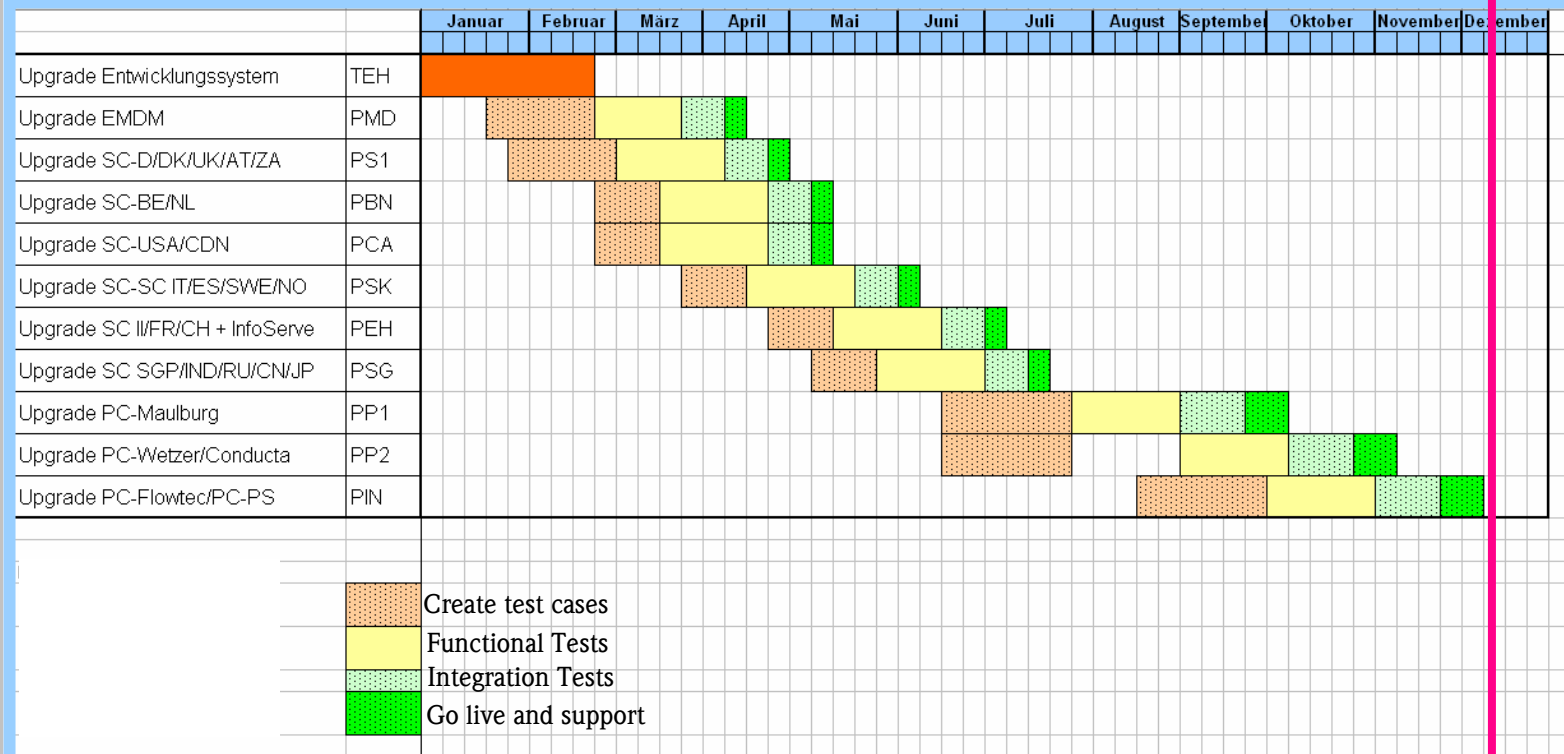
[1]Standard_Order_APS	BUSINESS-PROCESS	✓ Passed	1 Test iteration	i101220
[1]Standard_Order_Delay_of_delivery	BUSINESS-PROCESS	✓ Passed	1 Test iteration	i101220
[1]Standard_Order_Deliverygroup	BUSINESS-PROCESS	✓ Passed	1 Test iteration	i101220
[1]Standard_Order_Partial_Delivery_Serialno	BUSINESS-PROCESS	✓ Passed	1 Test iteration	i102459
[1]Standard_Order_Handling_with_Commission_Split	BUSINESS-PROCESS	✓ Passed	1 Test iteration	i102459
[1]Standard_Order_Down_Payment	BUSINESS-PROCESS	✓ Passed	Undefined	i101220
[1]Standard_Order_Creditlimit	BUSINESS-PROCESS	✓ Passed	Undefined	i101220

Test performance – defect management





Project status December 2008



All upgrades were done in time and budget





Project audit report by Price Waterhouse Coopers

Zusammenfassendes Prüfungsergebnis

Insgesamt hat unsere Prüfung keine Beanstandungen ergeben, die die Ordnungsmäßigkeit der Buchführung grundsätzlich in Frage stellen.

Die untersuchten Verfahren erfüllen im Rahmen des organisatorischen Umfeldes des Systemeinsatzes die gesetzlichen Vorschriften und fachlichen Verlautbarungen.

Der Releasewechsel war insgesamt gut organisiert und angemessen dokumentiert und überwacht. Insgesondere der Einsatz des HP QualityCenter's unterstützt einen kontrollierten und dokumentierten Systemupgrade.



Training and test effort per company

- Basic training '1 day workshop' learning to work with HP Quality Center for the InfoServe Key users
- 5 days workshops for persons who create business components and test cases
- Training for tester was done by the InfoServe Key users

	No Persons Involved			
	Duration		Effort per Week	
	Total Effort			
Check if test cases are complete	8	6	1	48
Support InfoServe Tests	8	5	0,5	20
Support Integration Test	8	2	3	48
Acceptance Test	8	2		16
Total Test Effort				132



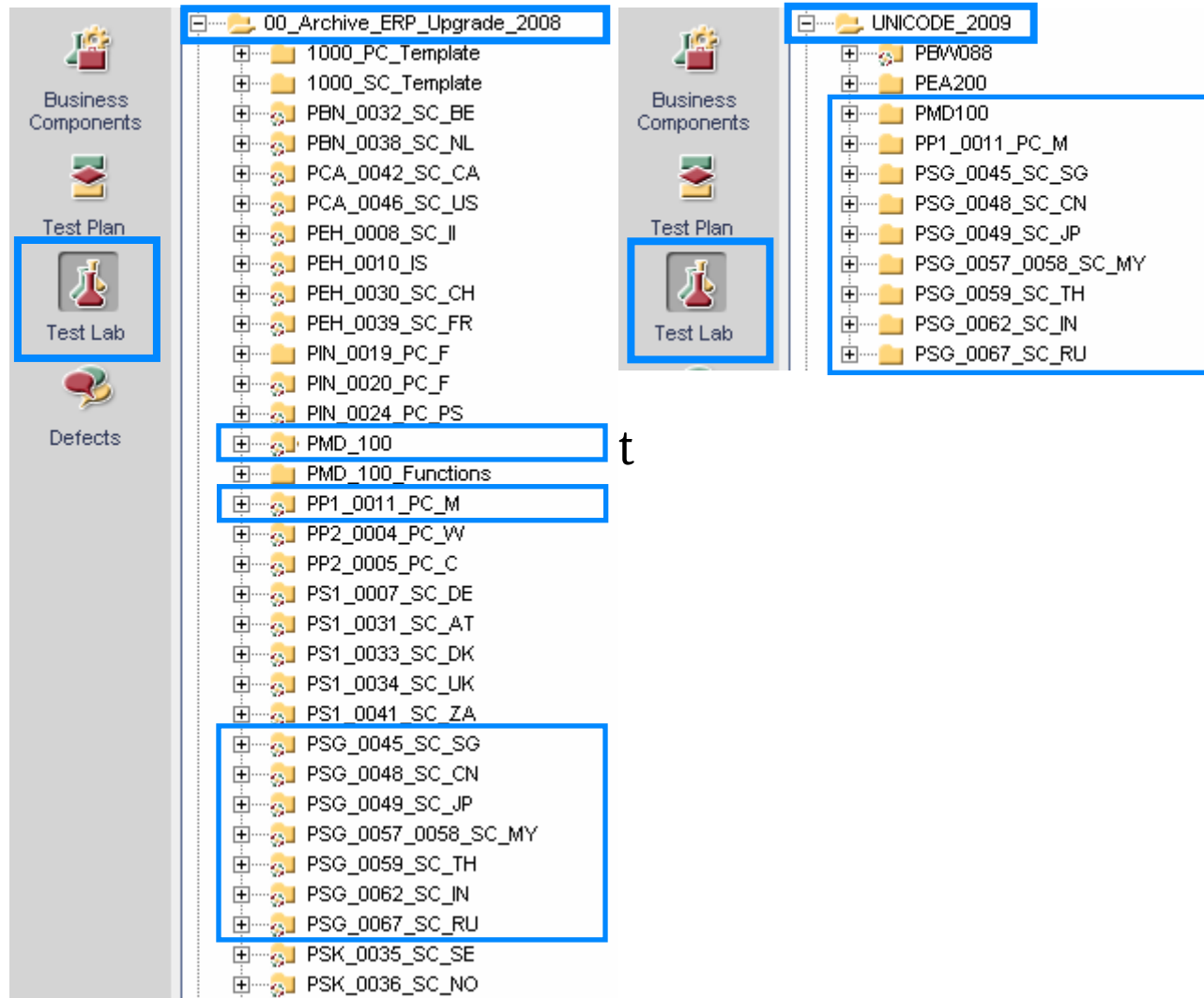
Lessons learned

- Working with HP Quality Center -> easy to learn
- Initial effort to create the business components -> high
 - Maintenance effort of business components
 - Business components rework
- Components and test cases have to be created by module/process specialists
- Conducting tests and using defects management is easy after a short training, efficient defects management
- Comprehensive online monitoring of current test performance status



Ongoing

Unicode and EHP4 Upgrade (Oct 2009 – May 2010)



Business Components

Test Plan

Test Lab

Defects

00_Archive_ERP_Upgrade_2008

- 1000_PC_Template
- 1000_SC_Template
- PBN_0032_SC_BE
- PBN_0038_SC_NL
- PCA_0042_SC_CA
- PCA_0046_SC_US
- PEH_0008_SC_IL
- PEH_0010_JS
- PEH_0030_SC_CH
- PEH_0039_SC_FR
- PIN_0019_PC_F
- PIN_0020_PC_F
- PIN_0024_PC_PS
- PMD_100
- PMD_100_Functions
- PP1_0011_PC_M
- PP2_0004_PC_VW
- PP2_0005_PC_C
- PS1_0007_SC_DE
- PS1_0031_SC_AT
- PS1_0033_SC_DK
- PS1_0034_SC_UK
- PS1_0041_SC_ZA
- PSG_0045_SC_SG
- PSG_0048_SC_CN
- PSG_0049_SC_JP
- PSG_0057_0058_SC_MY
- PSG_0059_SC_TH
- PSG_0062_SC_IN
- PSG_0067_SC_RU
- PSK_0035_SC_SE
- PSK_0036_SC_NO

UNICODE_2009

- PBMV088
- PEA200
- PMD100
- PP1_0011_PC_M
- PSG_0045_SC_SG
- PSG_0048_SC_CN
- PSG_0049_SC_JP
- PSG_0057_0058_SC_MY
- PSG_0059_SC_TH
- PSG_0062_SC_IN
- PSG_0067_SC_RU



Next steps

- Organization of maintenance from components and test cases / keep them up-to-date
 - Change management integration – done
- Automate test cases for creation of data for
 - Test performance / Trainings / User management with Reusable Actions
 - Processes and functional testing with Business Components (BPT)
- Use HP Quality Center for Non-SAP applications



Motivation for test automation

- Increase in efficiency
 - Cost reduction: effort of manual testing vs. automatic testing
 - Risk reduction: Storage of 'brain ware' in scripts
 - Quality improvement: Regression tests
 - Less effort to test repetitive functions



Test automation

- Questions to find the ‘right’ processes for the automation
 - Critical processes
 - Only harmonized processes / functions
 - Stable processes (fewer changes)
 - Frequently used processes



Suggestions for improvement

- Archiving Functionality
- Compatibility QC-Client and QC-Server Migration QC 9.2 to QC 10
- Cross-project reporting (in QC 10 Enterprise Edition)
- Fix the bug: size of the Manual Runner Window



Contact

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**Thank you very much
for your attention**