

Requirements basiertes Testen mit JUnit

**Architektur für eine Verbindung von Requirements
Management und Test Management**

Oliver Böhm

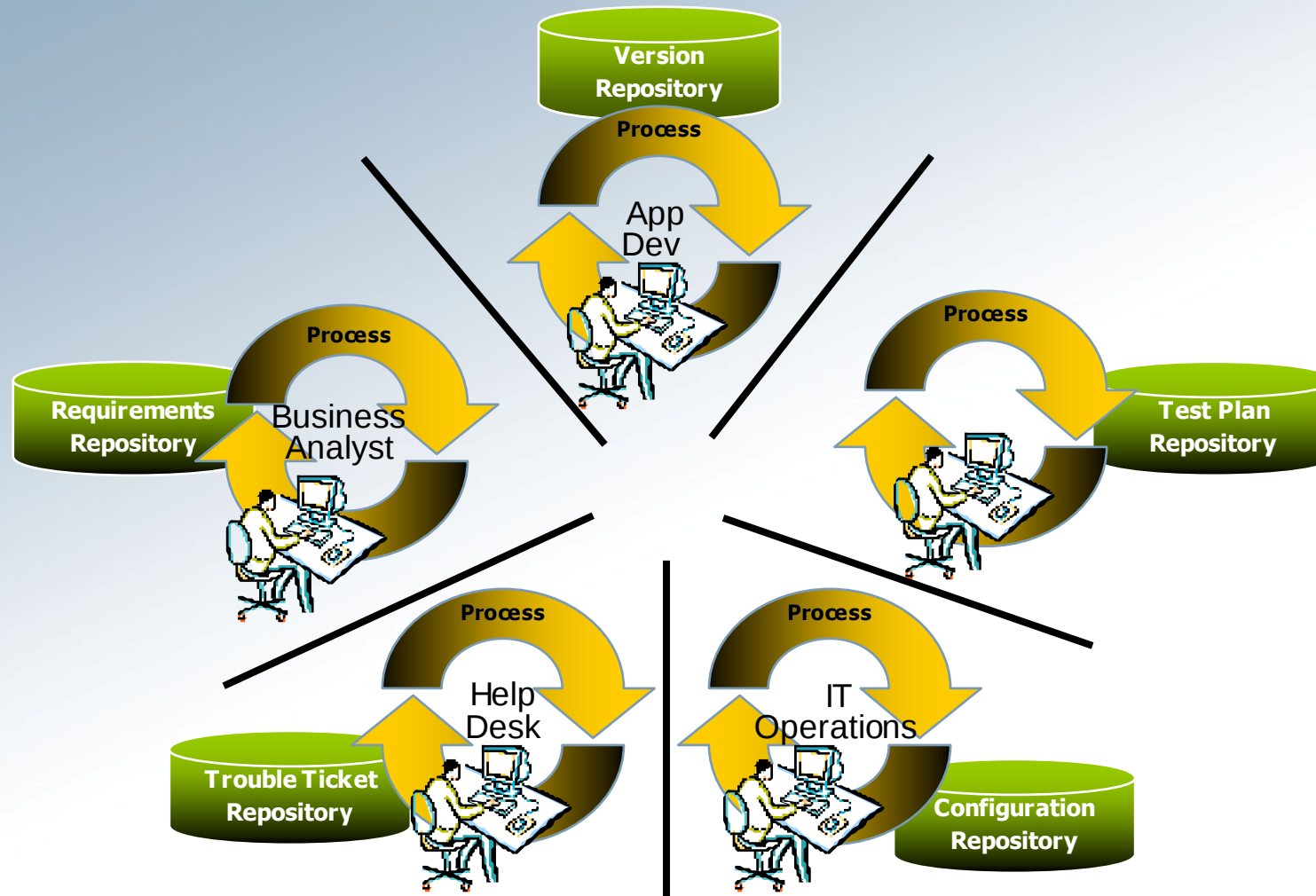
MKS GmbH

- Architektur und Umsetzung
 - MKS Integrity
 - MKS Requirements
 - MKS Test Management mit JUnit
- Verbindung zwischen Requirements und Test Management
- Reporting
- Live-Demo

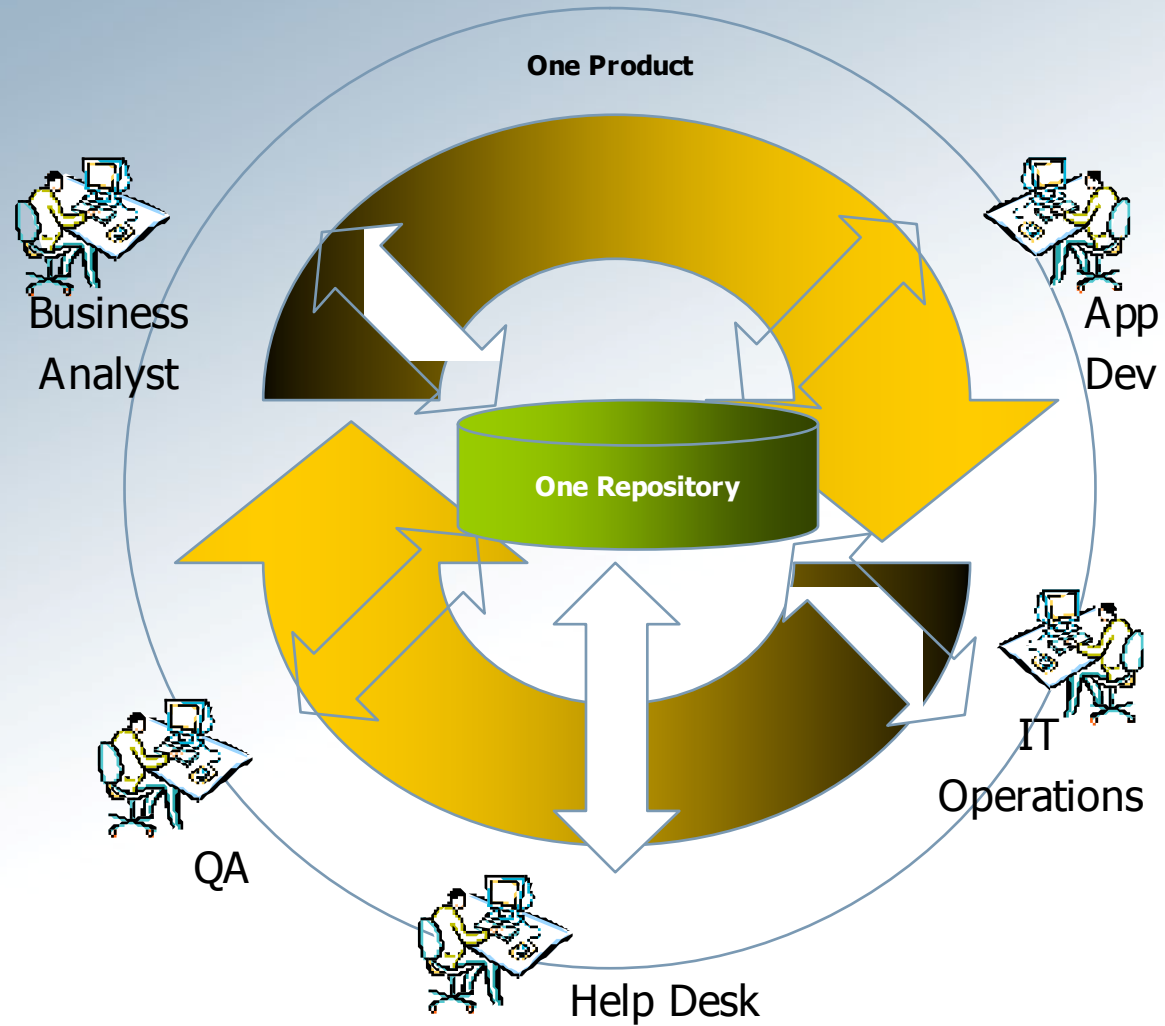
Architektur und Umsetzung

MKS Integrity

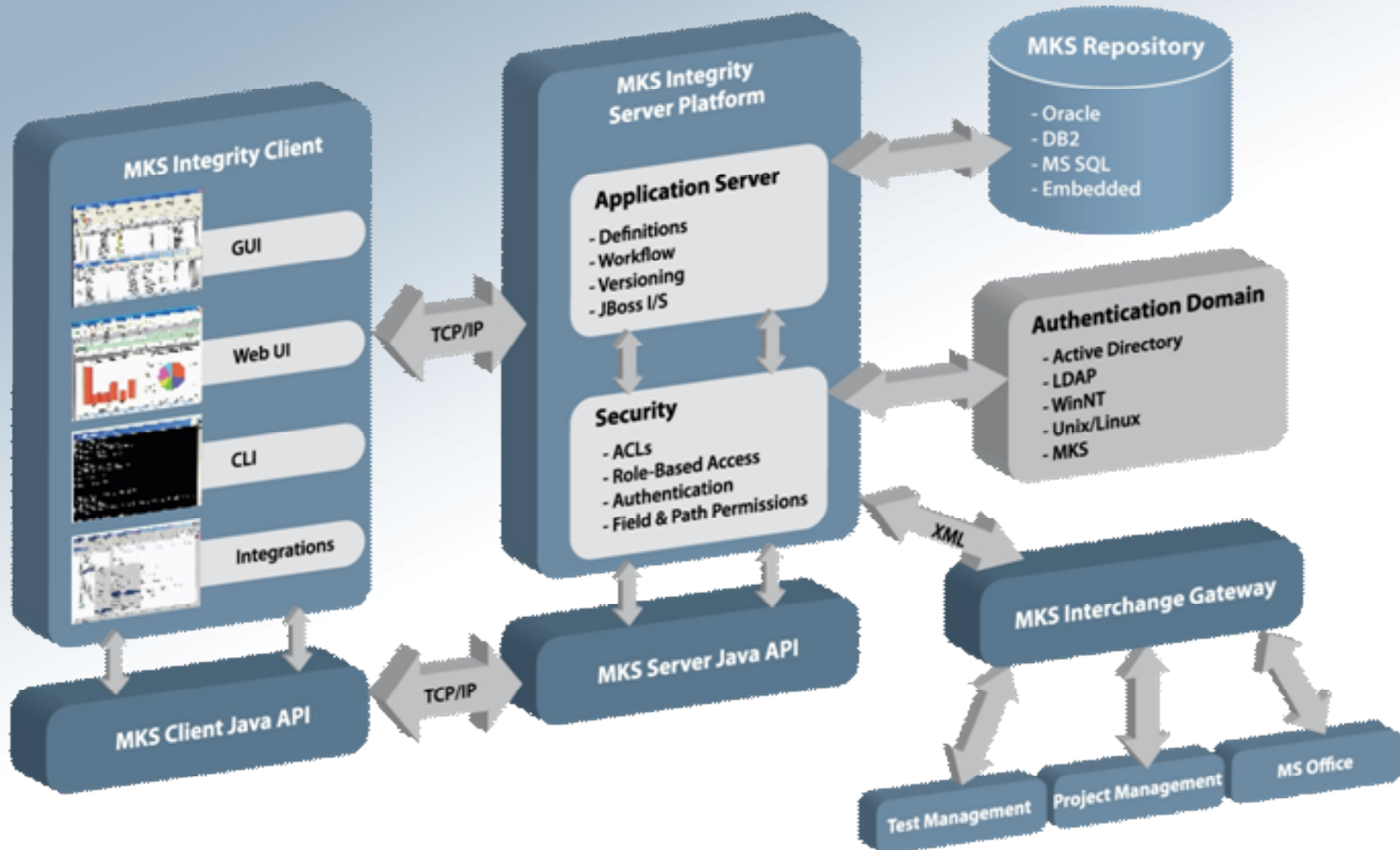
Herausforderung: Chaos durch voneinander losgelöste Tools



Der MKS Ansatz



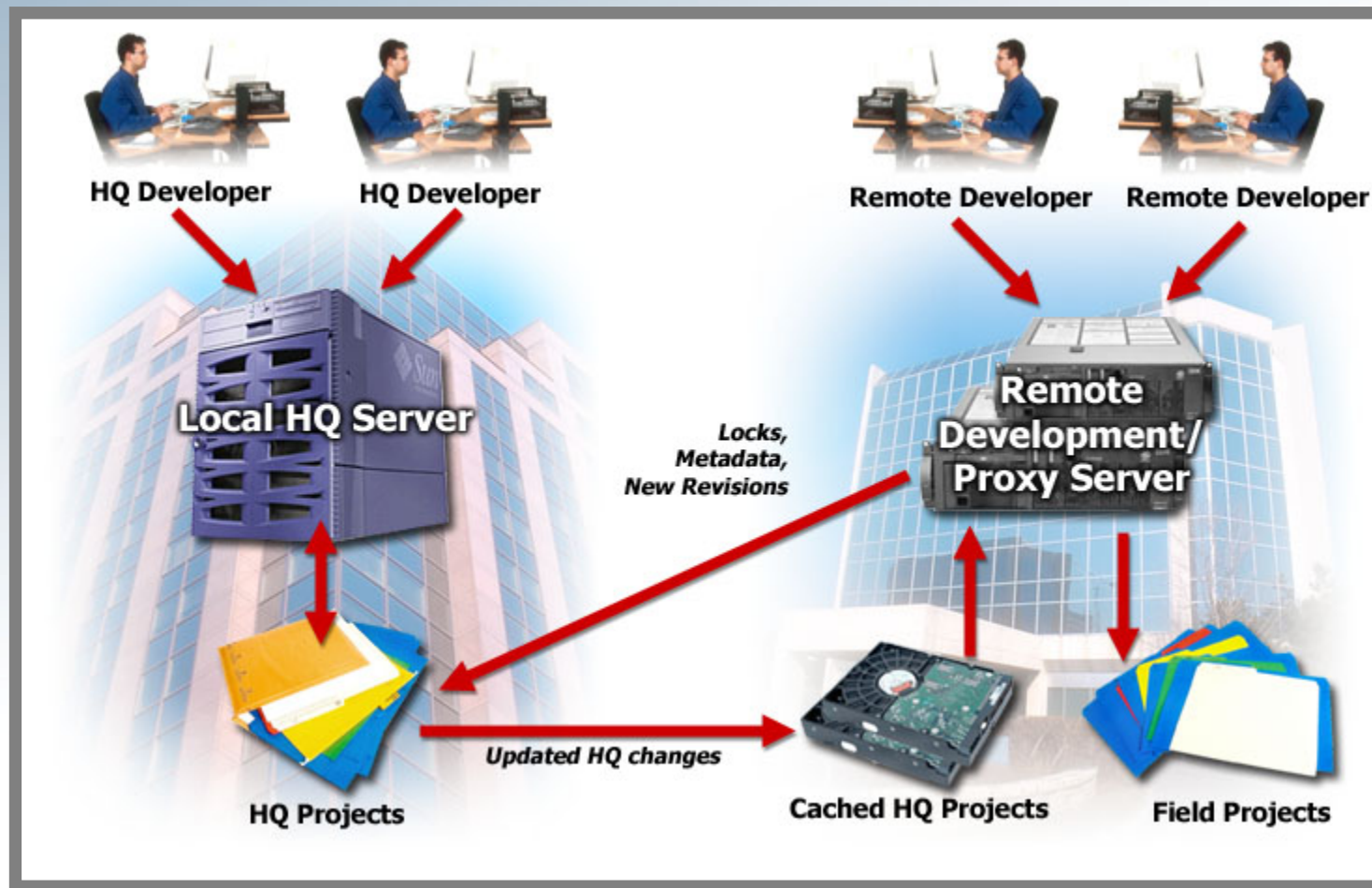
Die MKS Integrity Architektur



FSA (Federated Server Architecture)

HQ Team

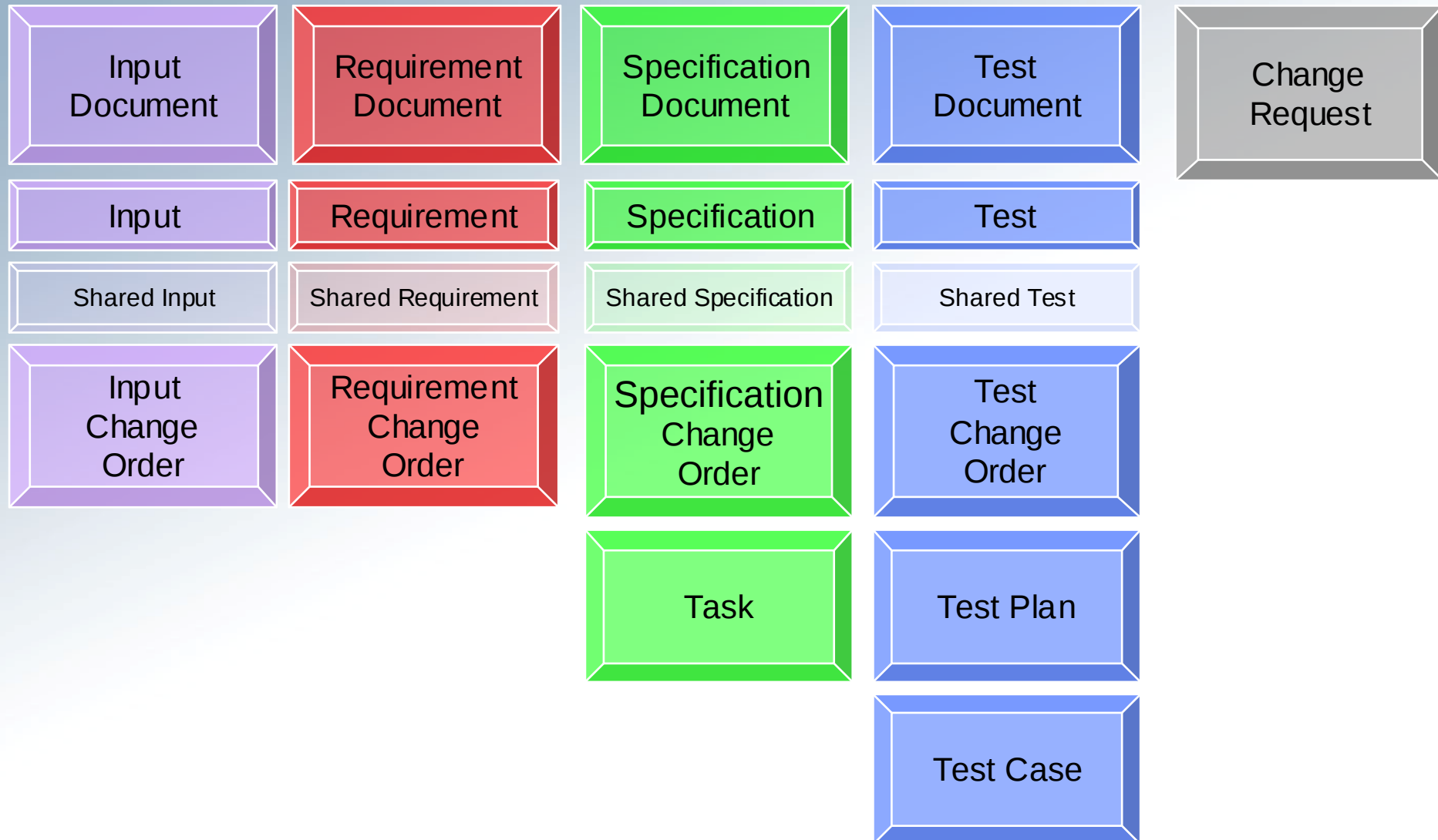
Remote Team



Architektur und Umsetzung

MKS Requirements

Domänenmodell



Domänenmodell: Umsetzung

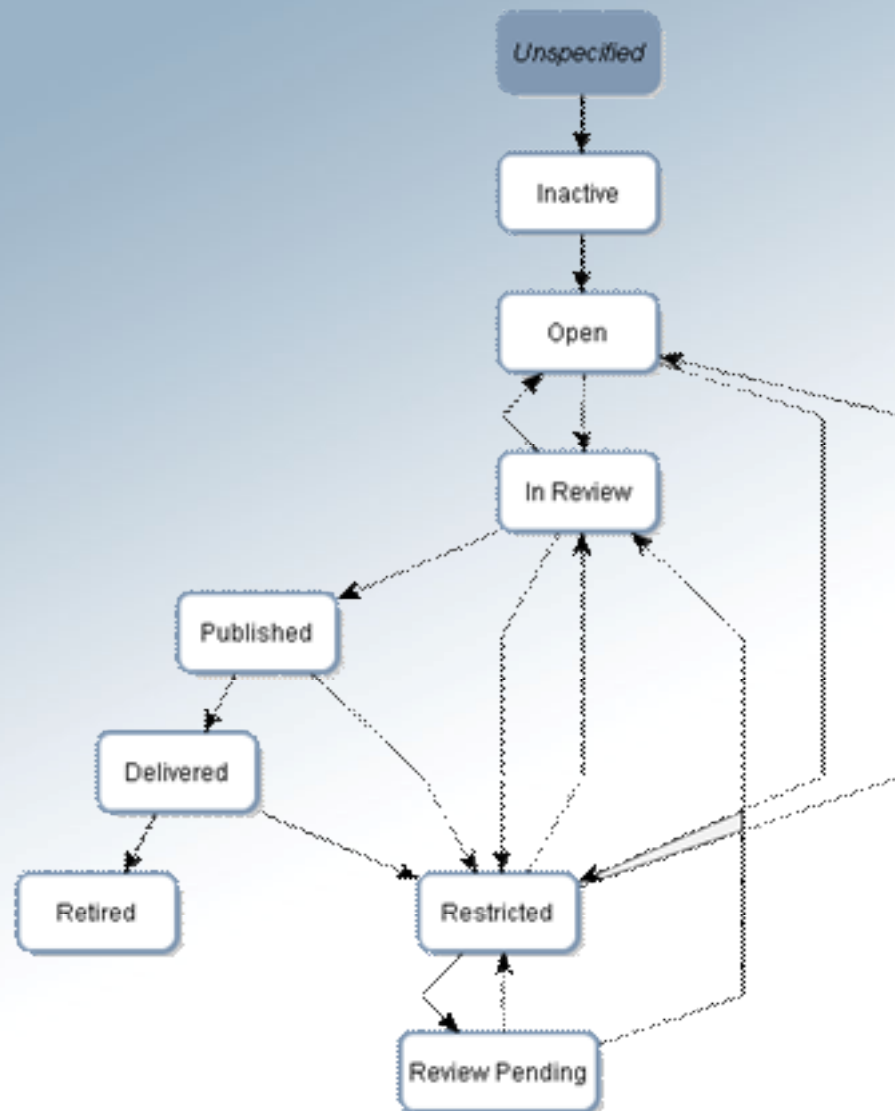
Type	Summary	State
Input Document	Marketing Requirements	Restricted
Input Document	Wish List	Open
Input Document	Marketing Requirements	Open
Requirement Document	System requirements specification document	Open
Requirement Document	Technical requirements specification document	Open
Requirement Document	System requirements specification document	Open
Requirement Document	Technical requirements specification document	Open
Specification Document	Component specification document	Open
Specification Document	Feature specification document	Open
Specification Document	Timing specification document	Open
Specification Document	Usage specification document	Open
Specification Document	Layout specification document	Open
Specification Document	Feature specification document	Open
Specification Document	Timing specification document	Open
Specification Document	Usage specification document	Open
Specification Document	Layout specification document	Open
Specification Document	Component specification document	Open
Test Document	System integration test document	Open
Test Document	Feature test document	Open
Test Document	Visual Implementation test document	Open
Test Document	System integration test document	Open
Test Document	Feature test document	Open
Test Document	Visual Implementation test document	Open

Input-Domäne

Requirement-Domäne

Specification-Domäne

Test-Domäne

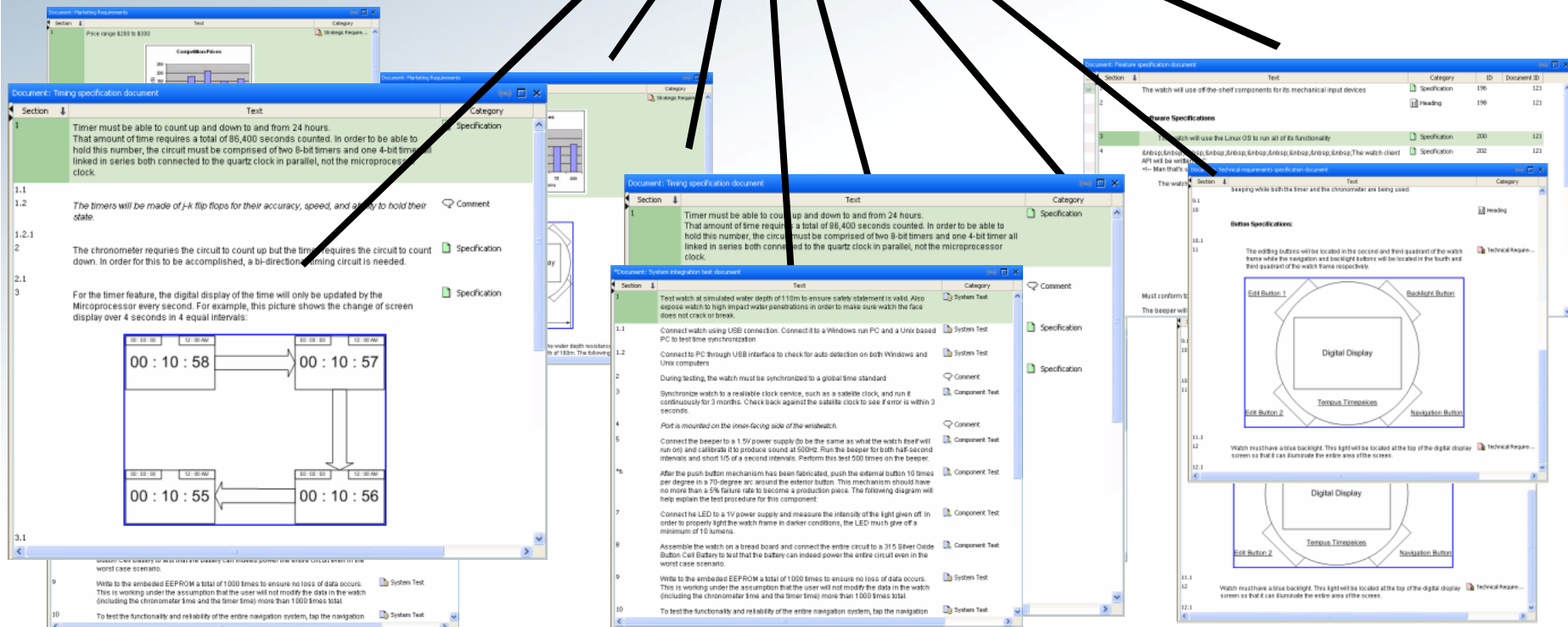


- Jedes Dokument in jeder Domäne durchläuft Workflow
- Editierbarkeit eines Dokuments abhängig vom Workflow-Status
- Änderungen im Dokument ab bestimmtem Status nur noch über Change Request / Change Order möglich
- Berechtigungskonzept

Arbeiten mit Projekten

Project

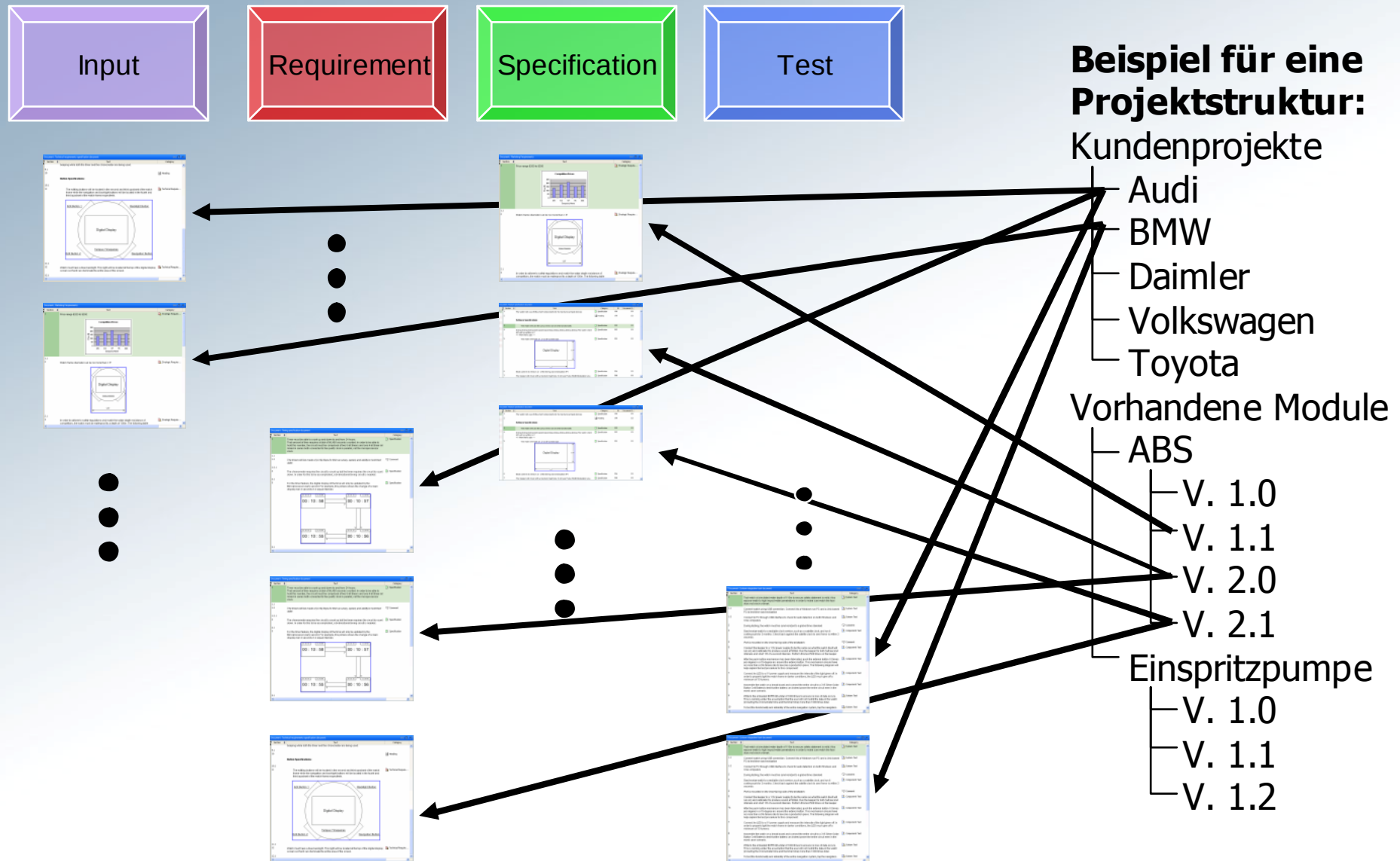
Jedem
Requirement-
dokument ist ein
Projekt zugeordnet





- Jedes Projekt durchläuft Workflow
- Projekt kann erst abgeschlossen werden, wenn alle zugehörigen Dokumente implementiert sind
- Berechtigungskonzept

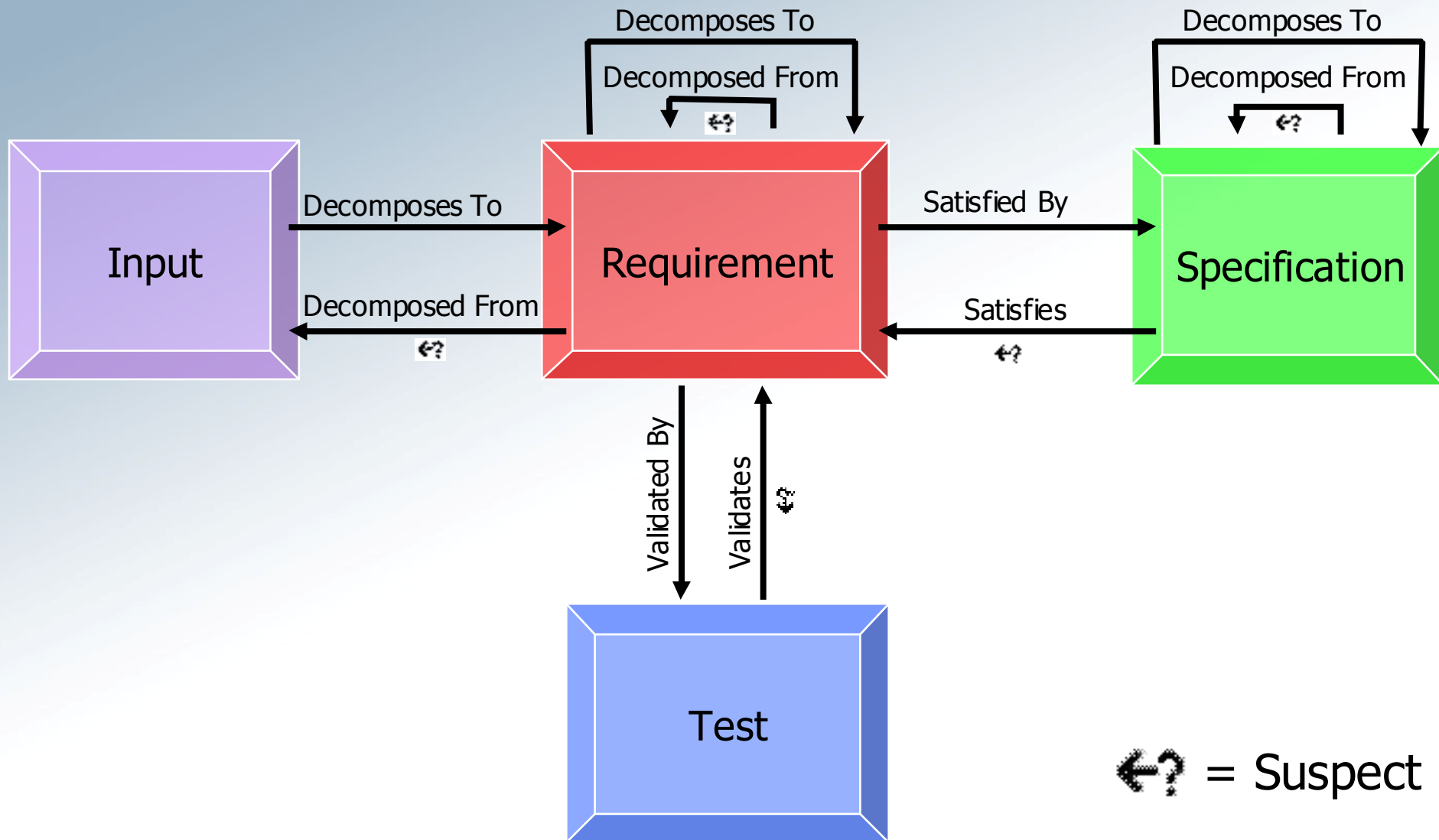
Domänenmodell mit Projekten (Matrixstruktur)



Java Forum
Santigade
1997-2007



Beziehungen zwischen Domänen



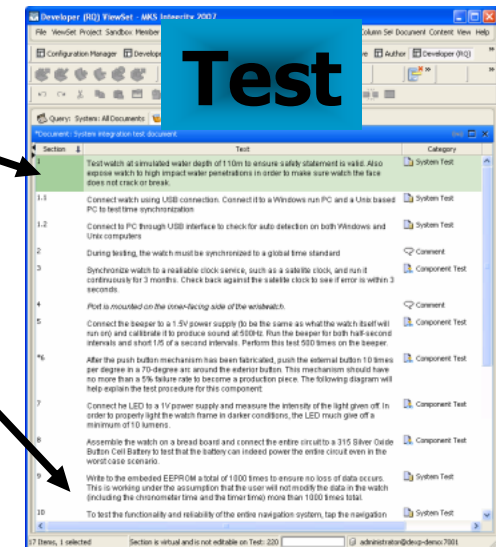
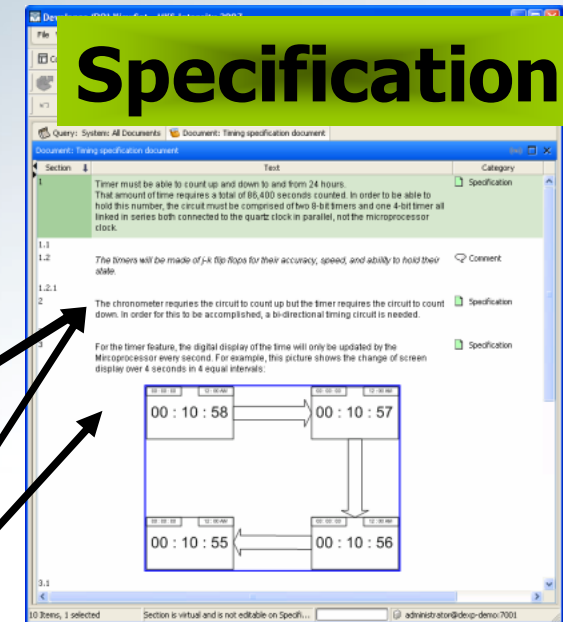
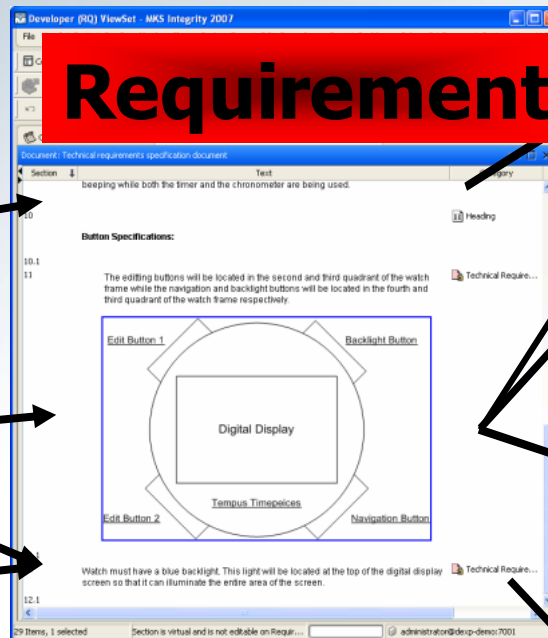
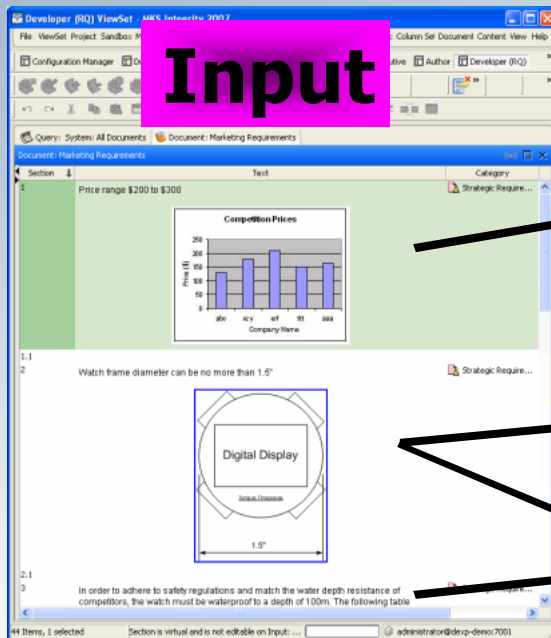
Beziehungen zwischen Domänen: Umsetzung

Specification

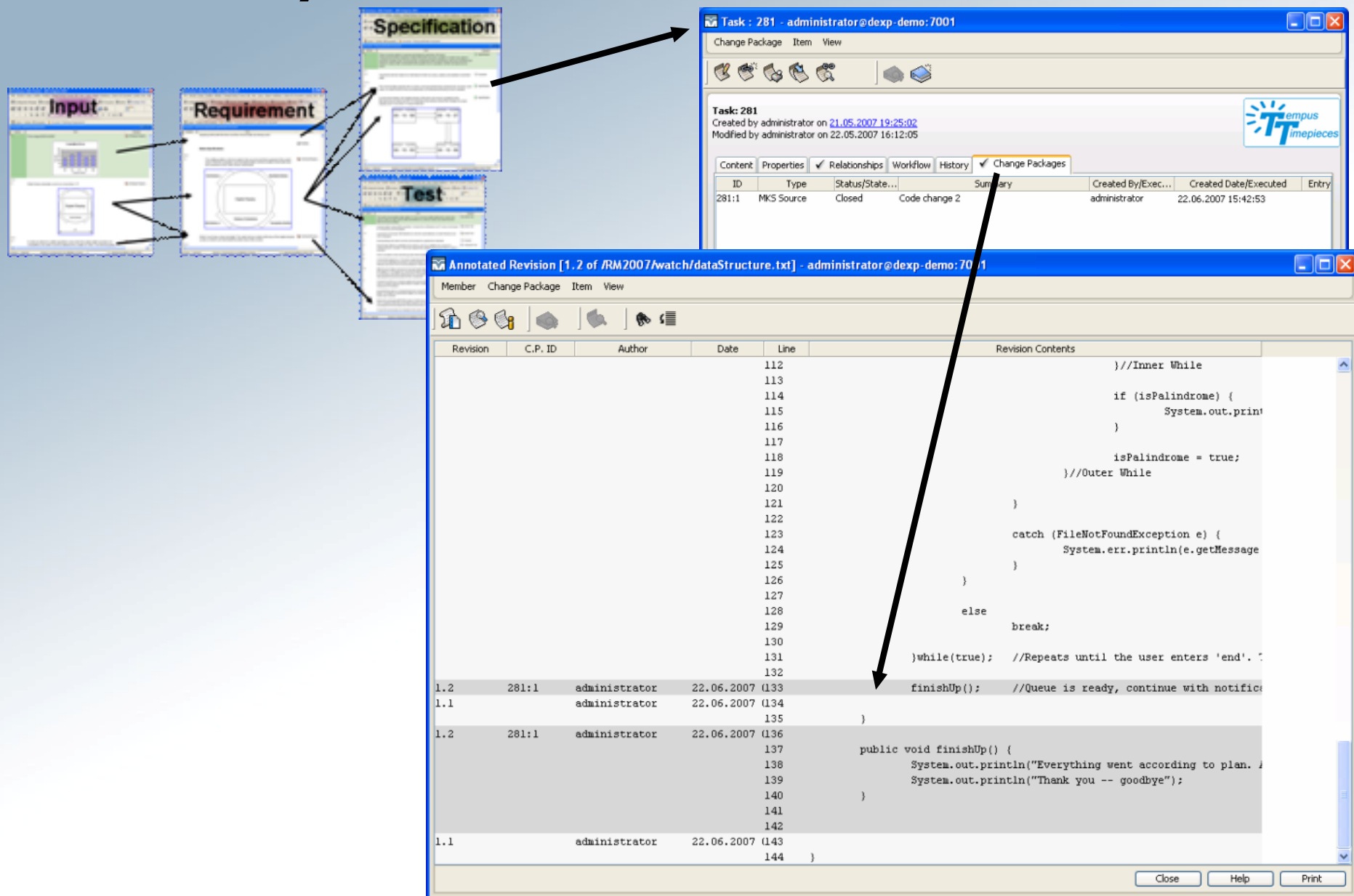
Input

Requirement

Test



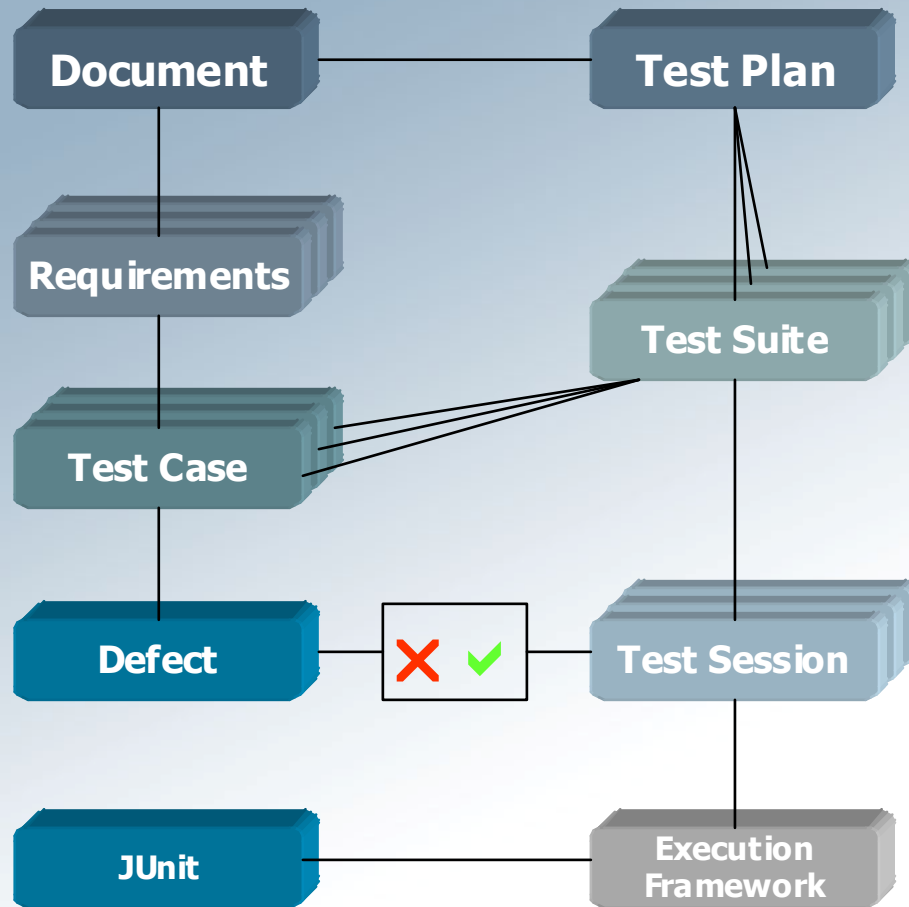
Traceability zum Source Code



Architektur und Umsetzung

MKS Test Management mit JUnit

Verbindung zum Test Management



Test Result User Interface

Um Testergebnisse der manuellen Tests einzugeben oder die Testergebnisse der automatischen Tests zu bewerten.

Defect

Defects werden durch das Test Result User Interface erzeugt und mit dem entsprechenden Test Case verbunden.

Requirements

Ein Dokument enthält mehrere Requirements

Automatisierte Test Session

Sobald eine automatisierte Test Session in den Status "In Progress" gesetzt wird, erzeugt das automatische Test Execution Framework eine Verbindung mit JUnit, übergibt alle benötigten Informationen, holt die Ergebnisse ab und schreibt sie zurück in die Test Session.

Test Plan

Ein Test Plan enthält Spezifikationen der einzelnen Test Cases, Pass/Fail Kriterien und Informationen zu den operative Abläufen der Test Cases.

Test Suite

Eine logische Gruppierung mehrerer Test Cases. Z.B. als Gruppe mehrerer funktionaler Requirements, eine Menge automatisierter Tests vom selben Typ, usw.

Test Suites werden durch einen Test Plan beschrieben.

Test Session

Eine Test Session wird pro Dokument erwartungsgemäß mehrere Male ausgeführt, besonders bei automatisierten Tests (Regressions Tests).

Eine Test Session umfasst alle Test Cases einer Test Suite, welche zusammen ablaufen.

Test Case

Die Testschritte, erwartete Testergebnisse und Pass/Fail Kriterien werden im Test Case dokumentiert.

Ein Test Case kann ein oder mehrere Requirements verifizieren.

Mehrere Test Cases können für ein Requirement erzeugt werden.

Traceability zum Test Management (1)

Trace ViewSet - MKS Integrity 2007

File ViewSet Format Edit Item Query Dashboard Document Content View Help

Configuration Manager Developer Integrity User IT Executive Developer (RQ) Trace

Item: [] Document ID: []

Query: System: All Documents Document: Visual Implementation test document

Document: Visual Implementation test document

Outline	Text	Category	Referenc...	ID	Docu...
1	Navigate to the Main Screen. The visual layout of the screen must conform to is specifications found in the Layout Specification Document.	System Test	Reuse	338	287
2	Navigate to the Timer Screen. The visual layout of the screen must conform to is specifications found in the Layout Specification Document.	System Test	Reuse	339	287
3	Navigate to the Chronometer Screen. The visual layout of the screen must conform to is specifications found in the Layout Specification Document.	System Test	Reuse	340	287
4	Navigate to the Alarm Screen. The visual layout of the screen must conform to is specifications found in the Layout Specification Document.	System Test	Reuse	341	287
5	Navigate to both Time Zone Screens. The visual layout of both screens should be identical. They must also conform to their specifications found in the Layout Specification Document.	System Test	Reuse	342	287

Item Relationships

Item Relationships

State

Active

Test Case for 338 - ALM_Submit

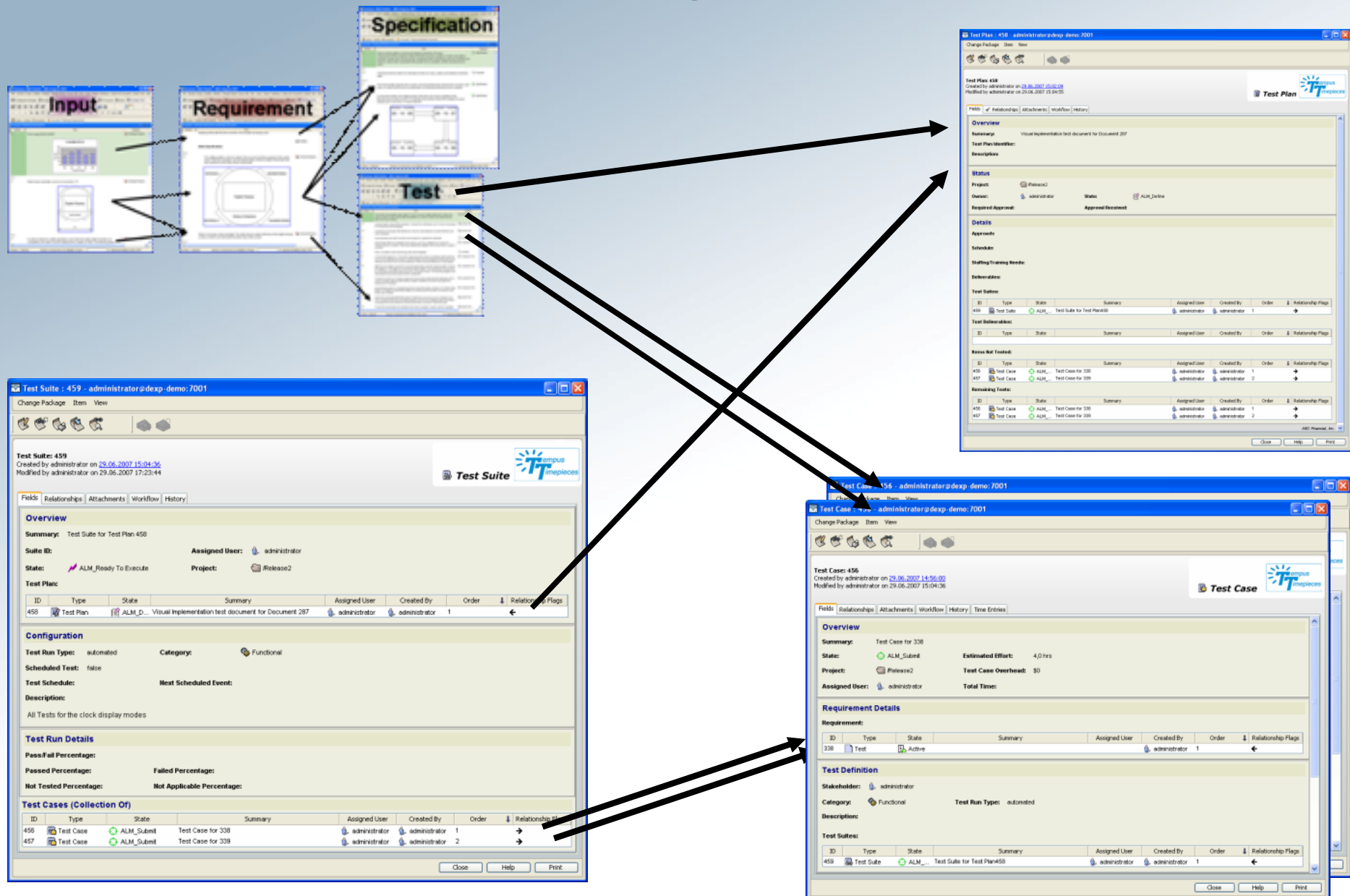
ALM_Submit

5 Items, 1 selected

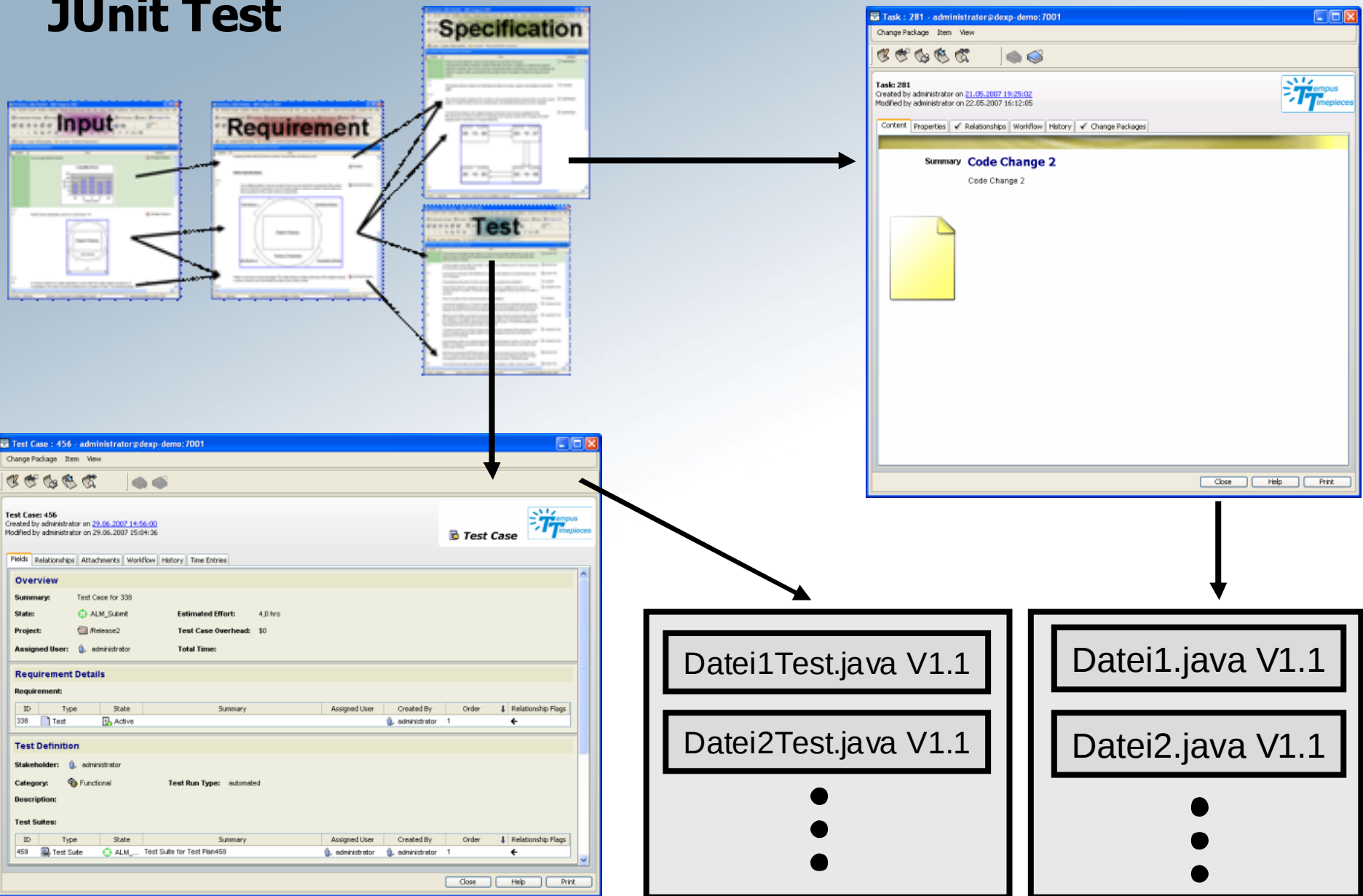
Section is virtual and is not editable on Test: 338

administrator@dexp-demo:7001

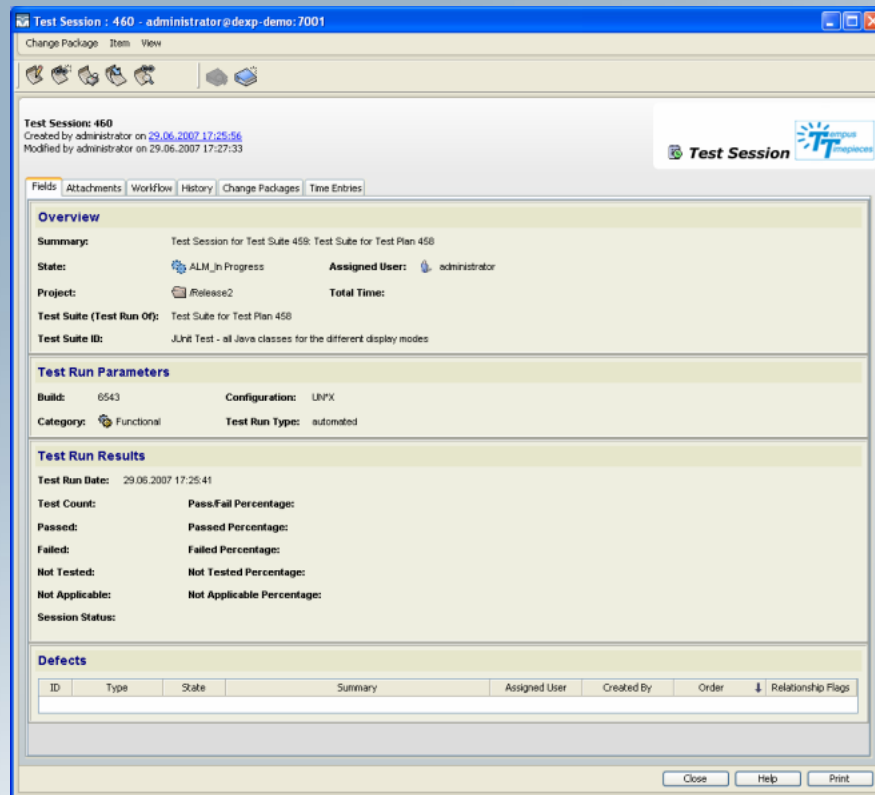
Traceability zum Test Management (2)



Traceability zwischen Source Code und JUnit Test



Traceability zu JUnit

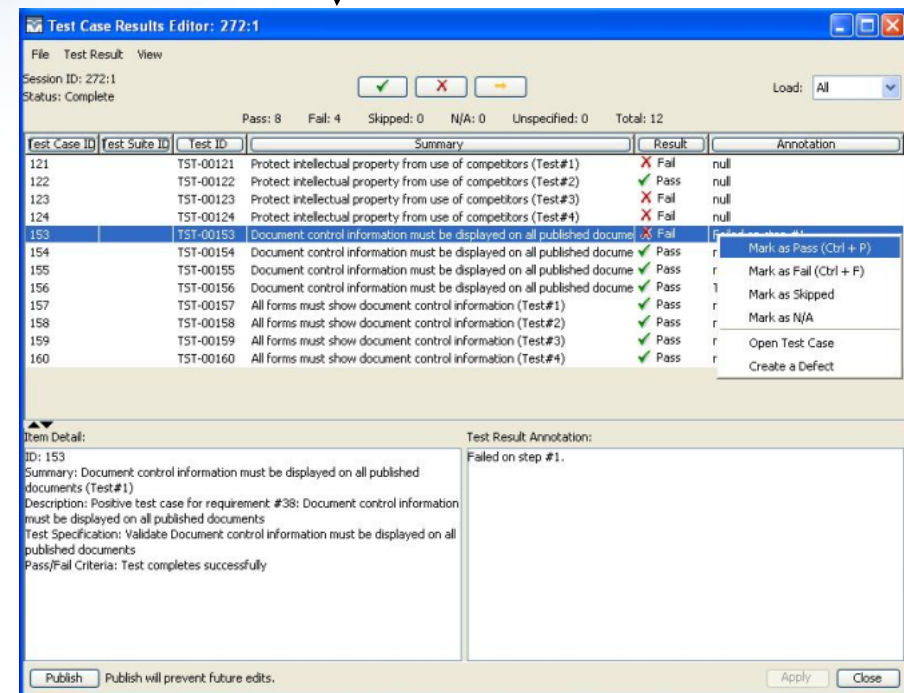


Status auf
„Execute“
setzen

JUnit

Ausführung
der Tests

Anzeige der
Ergebnisse in der
Test Result GUI



Reporting

MKS Test – Requirements Test Coverage

Quality Manager ViewSet - MKS Integrity 2006

File ViewSet Issue Query Chart Report Dashboard Column Set View Help

Test Executor Test Author Quality Manager

Issues [Query: Trace Exceptions] (∞) X

Query: Trace Exceptions 1 of 18 Search:

ID	Type	Summary	State	Test Health	Total Test Cases	Total Test Suites	Total Test Sessions	Total Test Pr...
2	Requirement	Make useful to commissioned sales team	Implemented	Red	4	2	7	1
3	Requirement	Support commissions	Implemented	Red	4	0	0	0
11	Requirement	Increase sale of add-on products	Implemented	Red	4	1	0	0
12	Requirement	Apply cost savings into sale of investment product	Implemented	Red	1	0	0	0
13	Requirement	No third party components (except those approved)	Implemented	Red	4	0	0	0
18	Requirement	Protect intellectual property from use of competitors	Implemented	Red	4	0	0	0
26	Requirement	All materials seen by customers must follow corporate imag...	Implemented	Red	4	2	7	0
27	Requirement	Toolkit graphic design must follow corporate standard	Implemented	Red	4	0	0	0
31	Requirement	Corporate logo must appear at the top left of the page	Implemented	Red	4	2	7	0
32	Requirement	Company name must appear below the corporate logo	Implemented	Red	4	0	0	0
33	Requirement	Rollout finds no critical bugs within first 6 months	Implemented	Red	4	0	0	0
38	Requirement	Document control information must be displayed on all publ...	Implemented	Red	4	2	5	3
39	Requirement	All forms must show document control information	Implemented	Red	4	0	0	0
42	Requirement	Stock tools need to support common browsers and platforms	Implemented	Red	4	0	0	0
43	Requirement	Stock Tools needs to be available on Web site for customers	Implemented	Red	4	2	7	0

Requirement: 2
Created by integration on 4-Aug-2006 10:10:01 AM
Modified by test_author on 6-Oct-2006 11:27:25 AM

Separate the savings and future value sections

Requirement ABC Financial Inc.

Fields History Workflow Relationships Attachments

Overview

Summary: Make useful to commissioned sales team

Level: Top **Category:** User

Priority: High **Risk:** Low

External ID: STOCK1

Status

Project: /ABC Tools/Stock (DOORS) **Assigned User:** manager

18 Issues, 1 selected dmartin@hqdmartin:7001

MKS Test – Planung der Testausführung

Test Executor ViewSet - MKS Integrity 2006

File ViewSet Change Package Issue Query Chart Report Dashboard Column Set Custom View Help

Test Executor Test Author Quality Manager

Issue:

Issues [Query: All Test Suites] (2 of 11)

ID	Summary	State	Test Run Type	Category	Test Schedule	Next Scheduled Event
212	Must support leading web browsers	Ready To Execute	Manual	Integration	Daily	6-Oct-2006 12:14:38 PM
102	Large Test Suite	Ready To Execute	Automated	Integration	Daily	12-Oct-2006 12:58:16 PM
104	Medium Test Suite	Ready To Execute	Automated	Load	Weekly	13-Oct-2006 10:00:00 PM
103	Small Test Suite	Ready To Execute	Automated	Integration	Daily	16-Oct-2006 11:07:00 AM
254	Secondary Test Plan for Service System Initial Implementation	Ready To Execute	Automated	Load	Weekly	19-Oct-2006 10:59:27 AM
260	Test Suite For Project Savings 2005	Ready To Execute	Manual	Performance	Weekly	26-Oct-2006 7:51:58 PM
227	Test Suite for Requirement 39	Ready To Execute	Automated	Performance	Weekly	27-Oct-2006 7:48:58 PM
235	Test Suite for Amortization calculator should display list of currently o...	Ready To Execute	Automated	Performance	Weekly	30-Oct-2006 7:49:24 PM
215	Test for Tool Tips Example	Ready To Execute	Manual	Integration		31-Oct-2006 12:36:22 PM
246	Test Suite for Forms 2005	Ready To Execute	Automated	Performance	Monthly	13-Nov-2006 12:36:04 AM
250	Base Test Suite for Service System Initial Implementation	Ready To Execute	Manual	Performance	Weekly	20-Nov-2006 7:51:20 PM

Relationships - Test Suite: 102 [Fields 1 Forward, 0 Backward]

Expand Level: 5

Issue Relationships	Summary	State	Assigned User	Test Run Date	Test Count	Pass/Fail Percentage (Test ...)
102 Test Suite	Large Test Suite	Ready To Execute	test_executor			
193 Test Session	Test Session for Test Suite 102: Large Test Suite	Complete	test_executor	6-Oct-2006 11:39:44 AM	88	87%
194 Test Session	Test Session for Test Suite 102: Large Test Suite	Complete	test_executor	6-Oct-2006 11:45:02 AM	88	72%
195 Test Session	Test Session for Test Suite 102: Large Test Suite	In Progress	test_executor		88	
217 Test Session	Test Session for Test Suite 102: Large Test Suite	Complete	dsouza	6-Oct-2006 4:14:30 PM	88	0%
269 Test Session	Test Session for Test Suite 102: Large Test Suite	Submit	Dave Martin (...)		88	

11 Issues, 1 selected

dmartin@hqdmartin:7001

MKS Test – Testresultate erfassen

Test Case Results Editor: 272:1

File Test Result View

Session ID: 272:1
Status: Complete

Pass: 8 Fail: 4 Skipped: 0 N/A: 0 Unspecified: 0 Total: 12

Test Case ID	Test Suite ID	Test ID	Summary	Result	Annotation
121		TST-00121	Protect intellectual property from use of competitors (Test#1)	✗ Fail	null
122		TST-00122	Protect intellectual property from use of competitors (Test#2)	✓ Pass	null
123		TST-00123	Protect intellectual property from use of competitors (Test#3)	✗ Fail	null
124		TST-00124	Protect intellectual property from use of competitors (Test#4)	✗ Fail	null
153		TST-00153	Document control information must be displayed on all published docume	✗ Fail	Failed on step #1.
154		TST-00154	Document control information must be displayed on all published docume	✓ Pass	
155		TST-00155	Document control information must be displayed on all published docume	✓ Pass	
156		TST-00156	Document control information must be displayed on all published docume	✓ Pass	
157		TST-00157	All forms must show document control information (Test#1)	✓ Pass	
158		TST-00158	All forms must show document control information (Test#2)	✓ Pass	
159		TST-00159	All forms must show document control information (Test#3)	✓ Pass	
160		TST-00160	All forms must show document control information (Test#4)	✓ Pass	

Item Detail:

ID: 153
Summary: Document control information must be displayed on all published documents (Test#1)
Description: Positive test case for requirement #38: Document control information must be displayed on all published documents
Test Specification: Validate Document control information must be displayed on all published documents
Pass/Fail Criteria: Test completes successfully

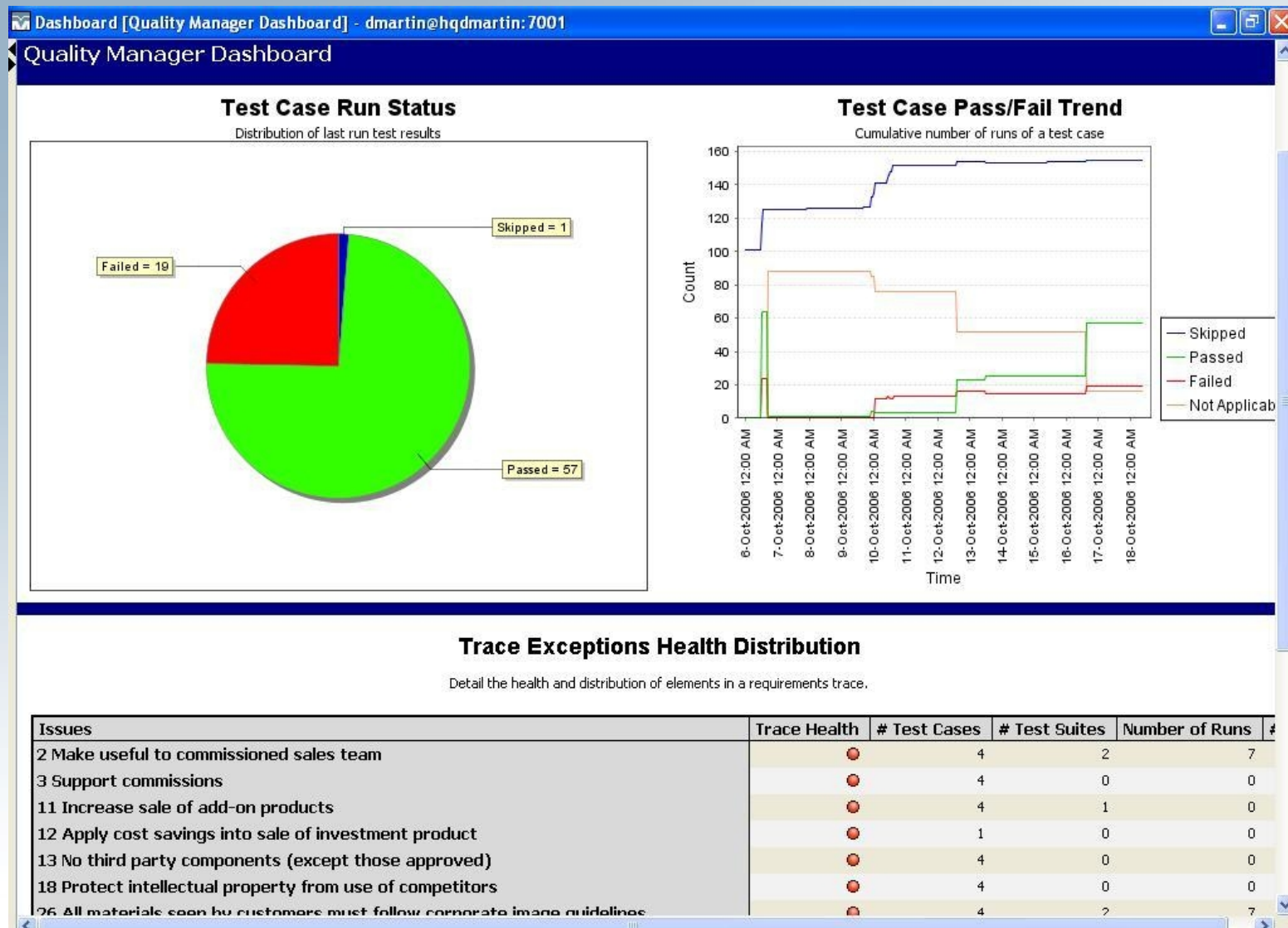
Test Result Annotation:

Failed on step #1.

Mark as Pass (Ctrl + P)
Mark as Fail (Ctrl + F)
Mark as Skipped
Mark as N/A
Open Test Case
Create a Defect

Publish Publish will prevent future edits. Apply Close

MKS Test – Review der Testergebnisse



Live- Demo



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Besuchen Sie uns:

Stand 26

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