

12.–15.09.2010  
in Nürnberg



# Herbstcampus

Wissenstransfer  
par excellence

## N14

# Dauerchecker

Anforderungsbasiertes Testen mit der Microsoft Visual Studio Plattform

## Matthias Zieger

# Fachseite, Entwicklung und Qualitätssicherung:

Drei Welten, die sich nicht verstehen ?  
Neue Möglichkeiten mit VS 2010

Matthias Zieger

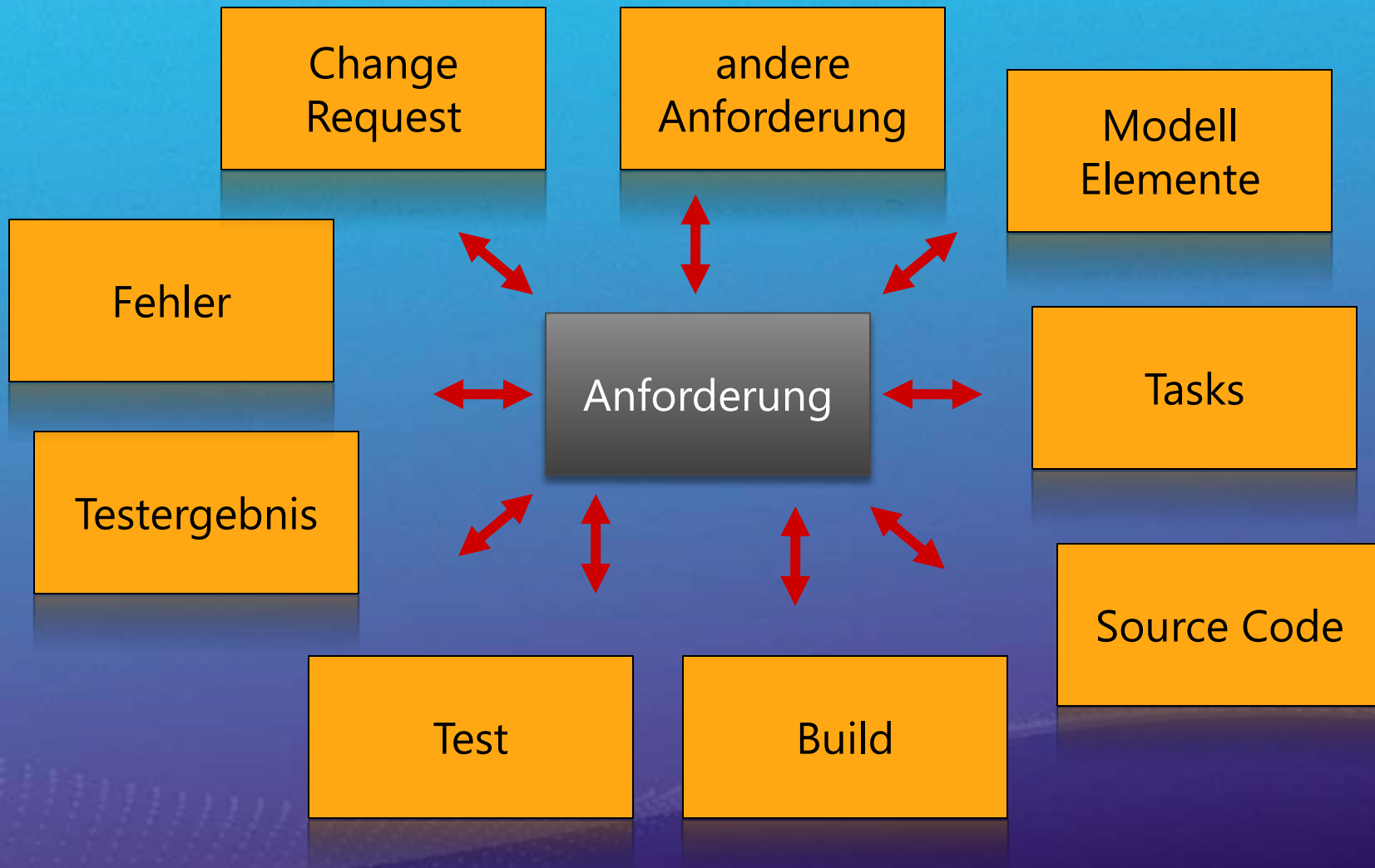
Berater Qualitätssicherung

Microsoft GmbH

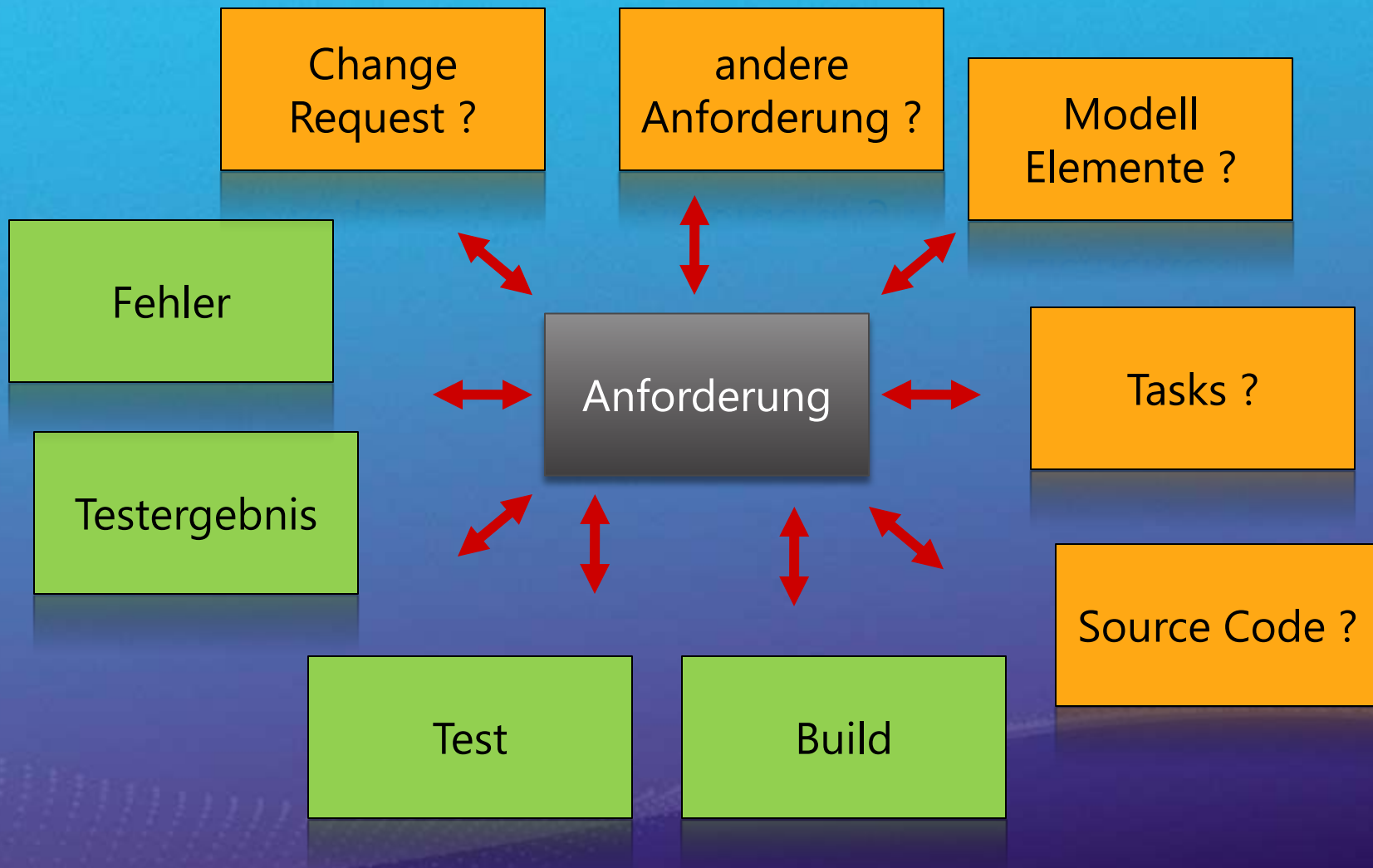
# Worin manifestiert sich Qualität ?

- Artefakte aus der Fachabteilung, der Entwicklung und der Qualitätssicherung
  - Anforderungen und Projektplan
  - Architektur und Modelle
  - Code
  - Testfälle und Testdaten
- Das alles ergibt (mehr oder weniger)
  - Funktionalität
  - Performance
  - Wartbarkeit

# Retrospektive: Traceability



# Requirements Based Testing



# Vorgehensweise beim Testen

- Kommunikation zwischen Fachseite, Test und Entwicklung verbessern
- Auswahl der Richtigen Tests
- Aufbau eines Virtualisierten Testcenters
- Reporting und Auswertung von Tests

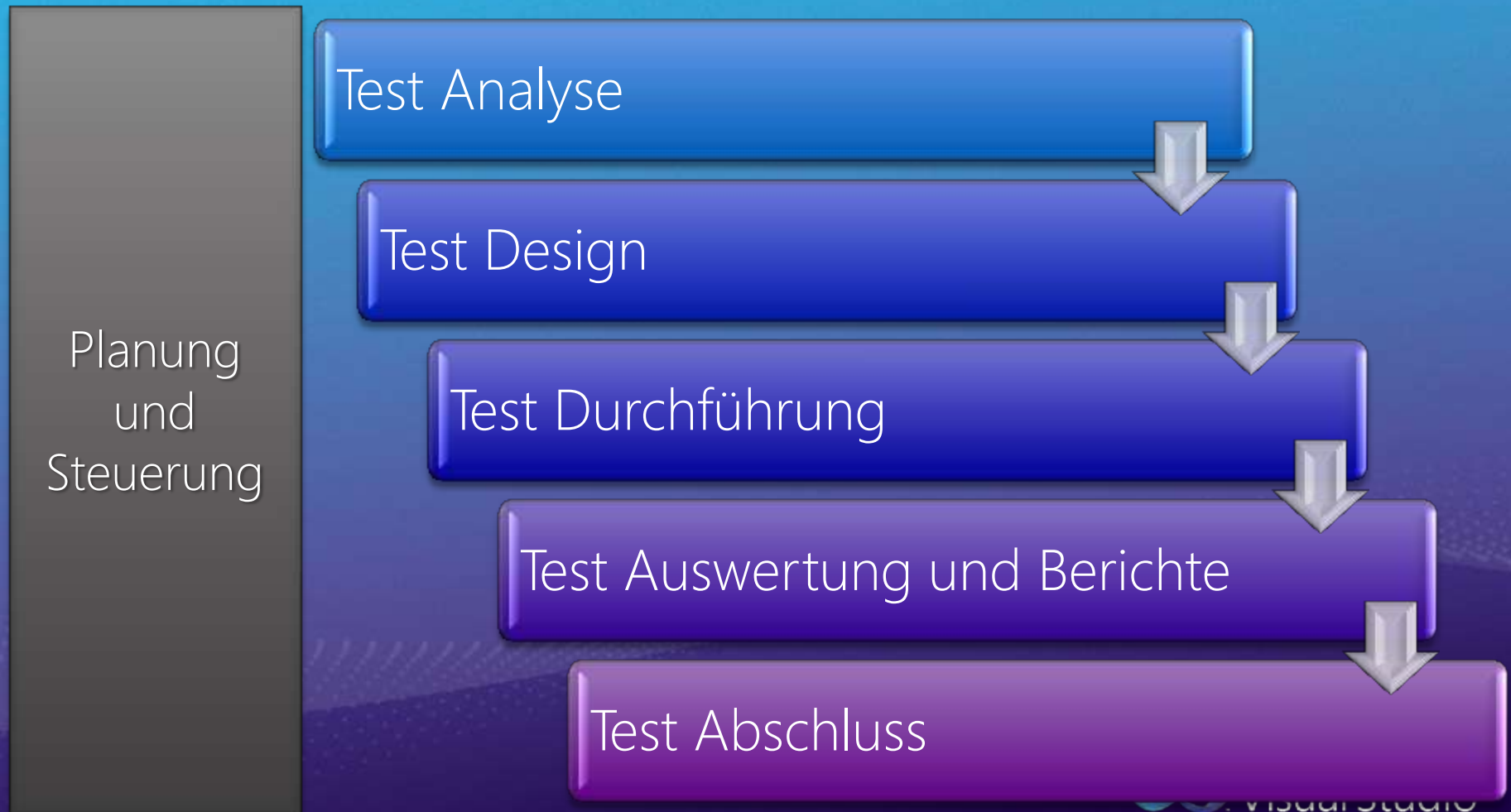


# Was wird benötigt ?

- Der Klassiker: People, Process, Technology
  - Ausgebildete Tester, Testmanager, Testanalysten
    - z.B. nach ISTQB\* Standard
  - Ein Testprozess
    - Agil, Iterativ, Wasserfall, TMAP, immer Kundenspezifisch
  - Testwerkzeuge zum effizienten Testen
    - Testmanagement
    - Testausführung
    - Testanalyse
- Hilfsmittel, damit sich Tester und Entwickler besser verstehen

# Ein Fundamentaler Testprozess

– Nach ISTQB-Standard:



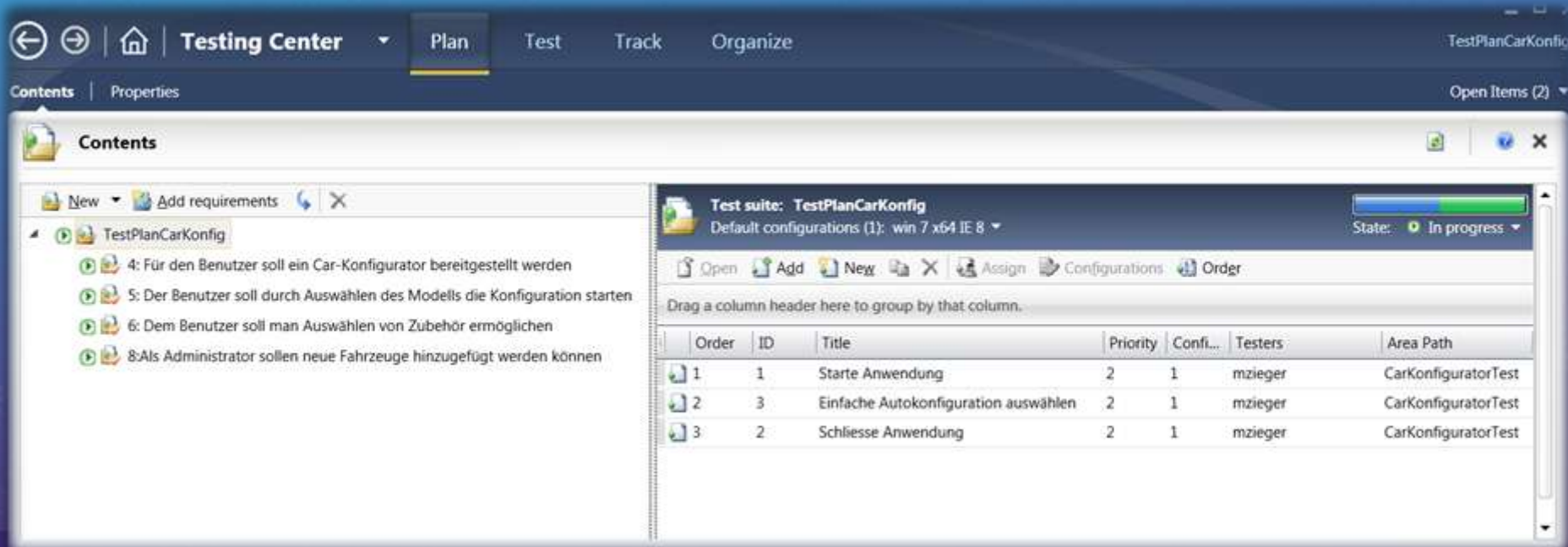


# Anforderungen an Testwerkzeug

- Ermöglicht anforderungsbasiertes Testen
- Steuerung für manuelle und automatisierte fachliche Tests
- Verwaltung der Testumgebung
- Kommunikation und Integration mit der Entwicklung
  - Nachvollziehbarkeit → Was wurde getestet ?
  - Reproduzierbarkeit → Fehler nachstellen
  - Fehlerbehebung → Ursachenforschung
- Hauptthema: Bug Ping Pong vermeiden

# Testplanung

- Was soll getestet werden ?
  - Testplan basierend auf verlinkten Anforderungen
    - Bidirektionale Traceability
    - Testabdeckung ist direkt sichtbar



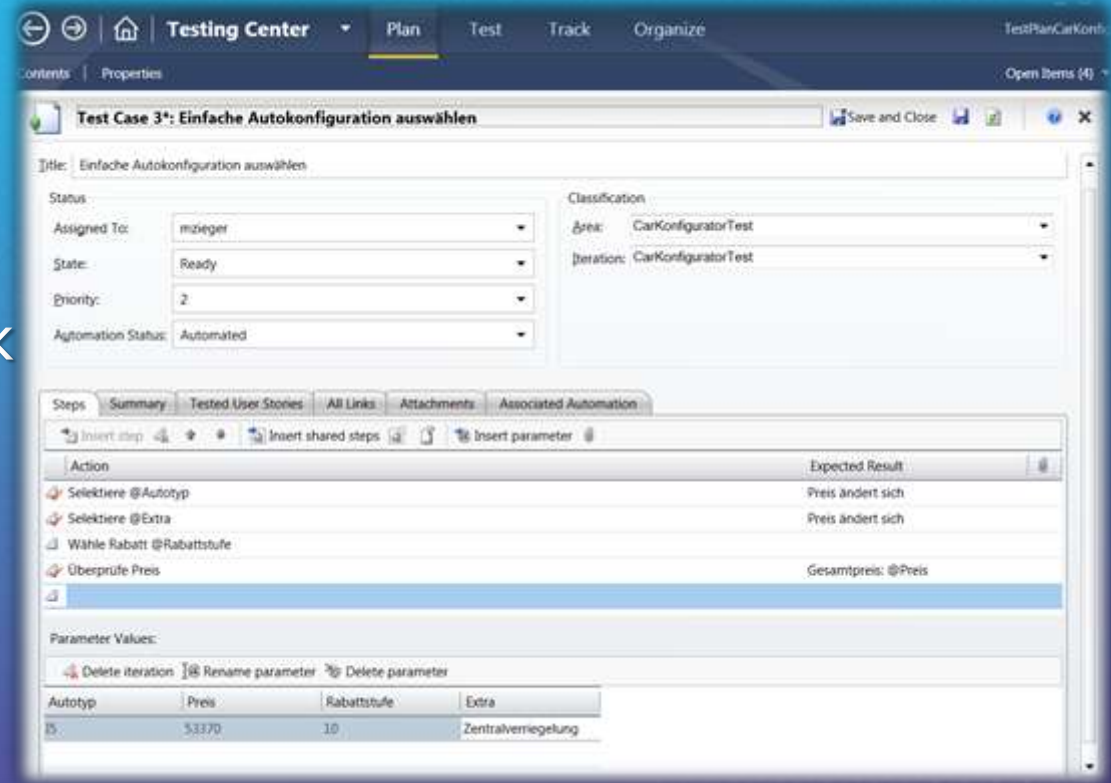
The screenshot shows the Microsoft Visual Studio Testing Center interface. The main window is titled 'Test suite: TestPlanCarKonfig' and displays a table of test cases. The table has columns for Order, ID, Title, Priority, Confi..., Testers, and Area Path. The test cases are:

Order	ID	Title	Priority	Confi...	Testers	Area Path
1	1	Starte Anwendung	2	1	mzieger	CarKonfiguratorTest
2	3	Einfache Autokonfiguration auswählen	2	1	mzieger	CarKonfiguratorTest
3	2	Schliesse Anwendung	2	1	mzieger	CarKonfiguratorTest

The left pane shows the 'Contents' view with a tree structure under 'TestPlanCarKonfig' containing four test cases with IDs 4, 5, 6, and 8. The top navigation bar includes 'Testing Center', 'Plan', 'Test', 'Track', and 'Organize'. The status bar at the bottom right indicates 'State: In progress'.

# Testdesign

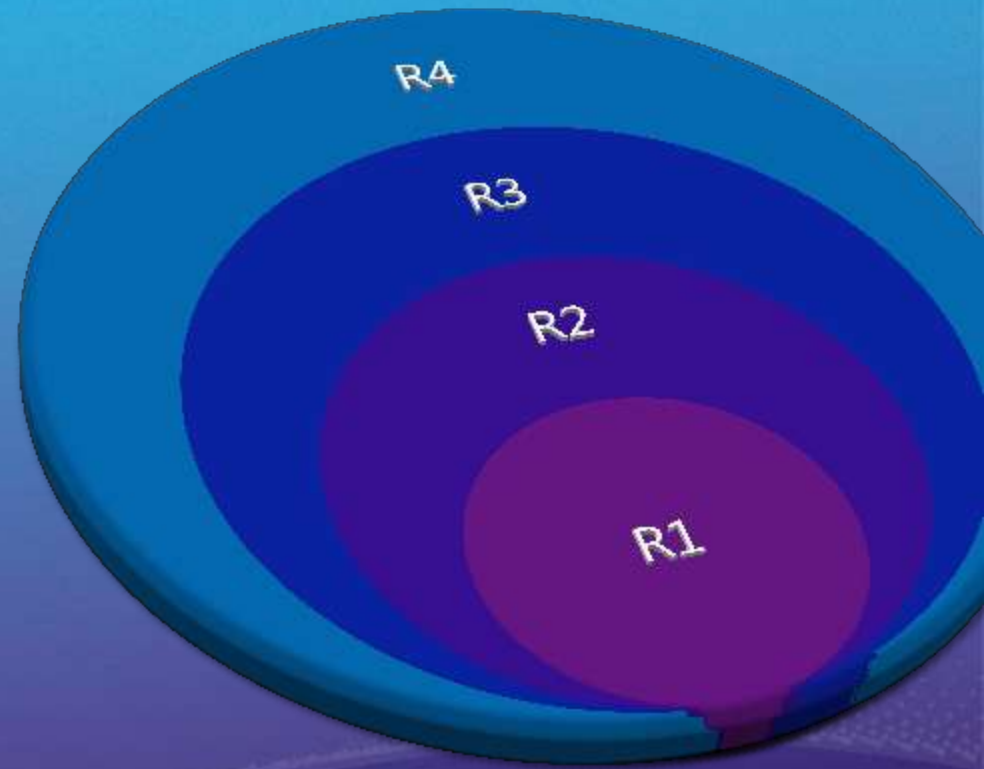
- Testsuiten
- Logische Testfälle
  - Testschritte
  - Testschrittbibliothek
- Testdaten
  - Testausprägungen
  - Äquivalenzklassen
- regelbasierte Test-Suiten



# Test- und Regressionsplanung

## Regression Tests

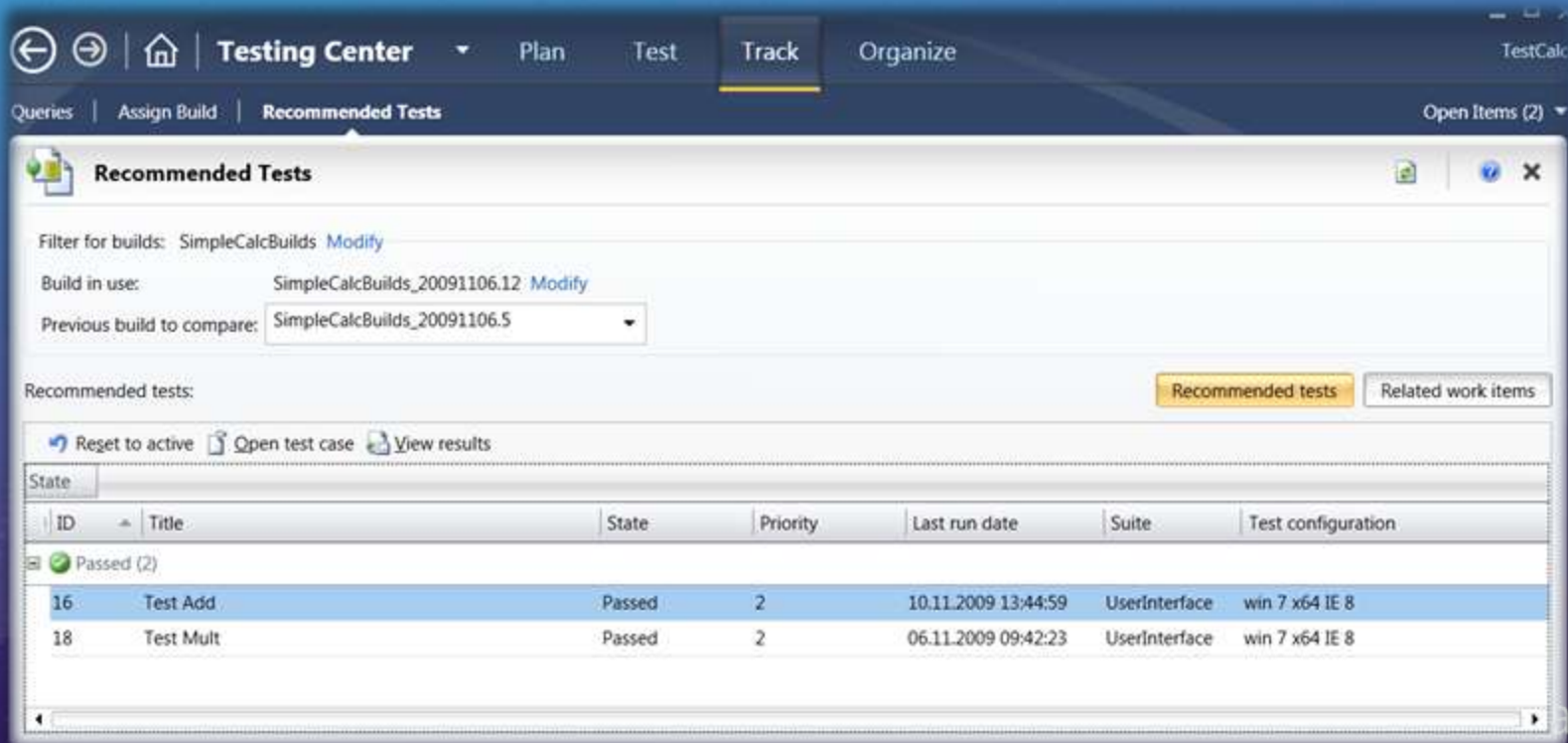
- R1 – Critical Regression Tests
- R2 – Software Update Tests
- R3 – Software Release Tests
- R4 – Full Tests





# Testplanung: Regression

- Was soll erneut getestet werden ?
  - Test-Impact Analyse für Regressionstests
  - Basierend auf Quellcodeänderungen zwischen zwei Versionen bzw. Releases der Anwendung

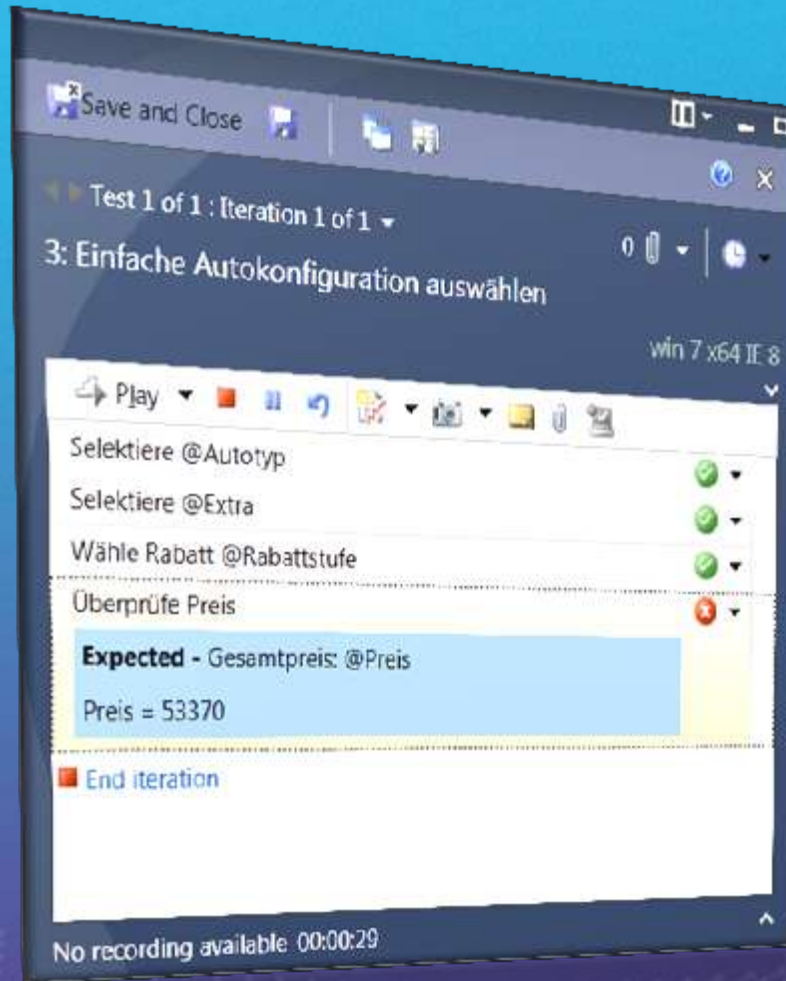


The screenshot shows the 'Recommended Tests' window in Microsoft Test Studio. The window title is 'Recommended Tests' and it is part of the 'Testing Center' application. The 'Track' tab is selected in the top navigation bar. The window displays a filter for builds: 'SimpleCalcBuilds' and a 'Build in use' dropdown set to 'SimpleCalcBuilds\_20091106.12'. The 'Previous build to compare' is set to 'SimpleCalcBuilds\_20091106.5'. Below the filter, there are buttons for 'Recommended tests' and 'Related work items'. A table of recommended tests is shown, with two tests listed as 'Passed'.

ID	Title	State	Priority	Last run date	Suite	Test configuration
16	Test Add	Passed	2	10.11.2009 13:44:59	UserInterface	win 7 x64 IE 8
18	Test Mult	Passed	2	06.11.2009 09:42:23	UserInterface	win 7 x64 IE 8



# Testdurchführung



- Einfaches Werkzeug
- Testsuiten oder Testfälle
- Inkl. Test-Daten-Parameter
- Manuell oder automatisiert



# Fehlerverfolgung

- Direkt während der Testausführung lassen sich Fehler anlegen und auswerten
- Vorteil: Kein Medienbruch

The screenshot displays the Visual Studio Testing Center interface. The top navigation bar includes 'Testing Center', 'Plan', 'Test', 'Track', and 'Organize'. The 'Test' tab is active. Below the navigation bar, there are options for 'Run Tests', 'Verify Bugs', and 'Analyze Test Runs'. The main window title is 'Test Run 18: Automated testing'. The interface shows a summary of test results, including a 'Results Overview (3 Tests)' section. This section contains three pie charts: 'Tests' (3 Failed, 100%), 'Failed Tests by Type' (1 Regression, 1 New issue, 1 Known issue, each 33.3%), and 'Test Analysis by Type' (1 Needs investigation, 1 Test issue, 1 Product issue, each 33.3%). Below the charts is a table of test results with columns for ID, State, Title, Configuration, Error message, Failure type, and Resolution. The table shows three failed tests, each with a corresponding failure type and resolution.

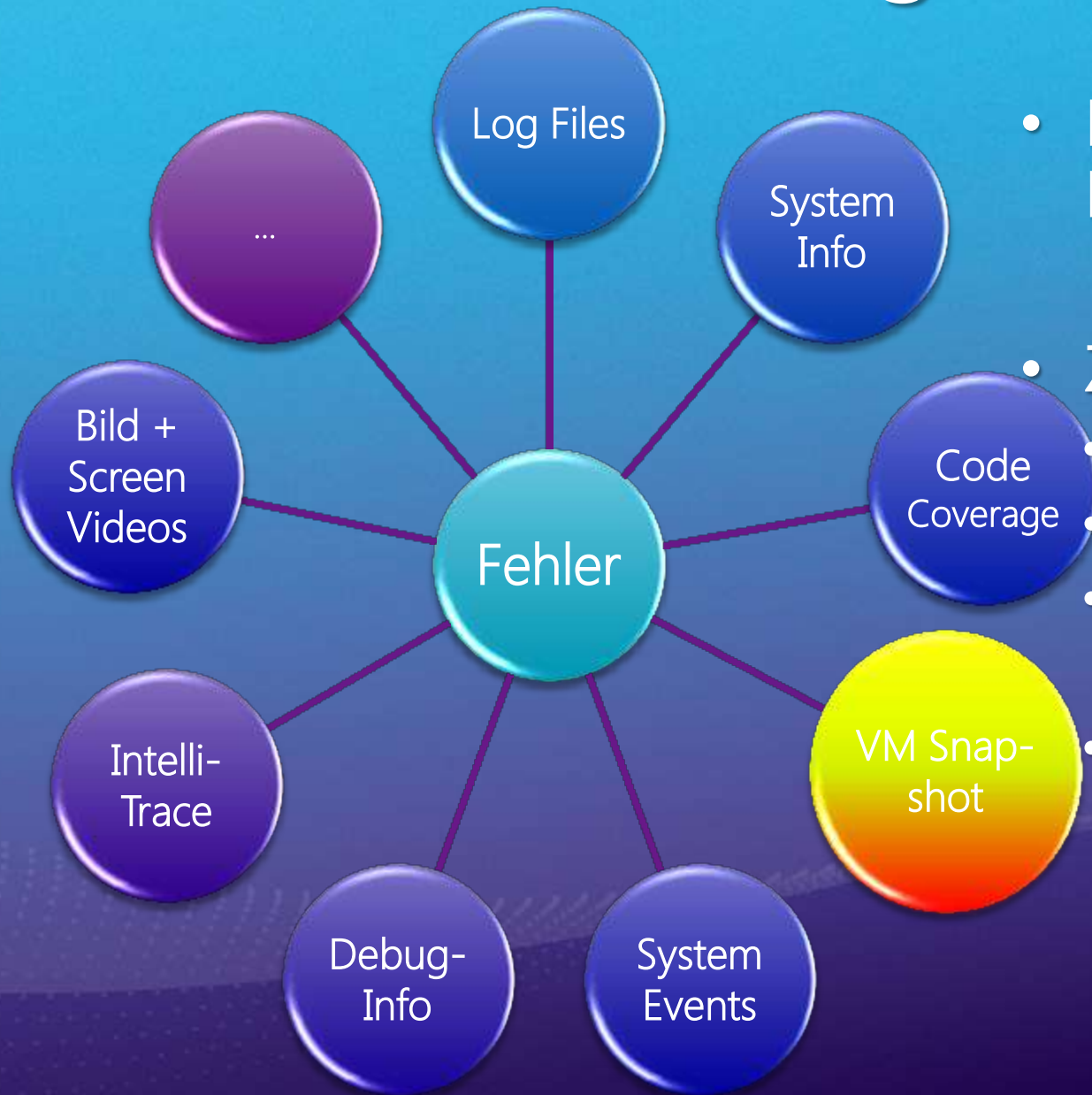
ID	State	Title	Configuration	Error message	Failure type	Resolution
1	Completed	Starte Anwendung	win 7 x64 IE 8	Test method CarKonfiguratorTestScripts.CodedUITest1.StartCarK...	New issue	Needs investigation
3	Completed	Einfache Autokonfiguration ausw...	Vista and IE 7	Test method CarKonfiguratorTestScripts.CodedUITest1.VerifyCar...	Regression	Test issue
2	Completed	Schliesse Anwendung	Vista and IE 7	Test method CarKonfiguratorTestScripts.CodedUITest1.Schliesse...	Known issue	Product issue

# Moment mal ...



- Ziel: Bug-Ping Pong vermeiden
- Wie ?
  - Automatisch
  - Transparent
  - Zuverlässig
- Was will der Entwickler ?
  - Fehler brauchen Zusatzinformationen
  - Am besten soll die ganze Testumgebung am Fehler hängen ☺

# Rich Information Bugs



- Bug-Ping Pong vermeiden
- Zusatzinformationen
  - Automatisch
  - Transparent
  - Zuverlässig
- Am besten soll die ganze Testumgebung am Fehler hängen 😊



# Testumgebungen virtualisieren

- Mehrere Konfigurationen gleichzeitig testbar
- Einfaches Vorbereiten und Aufräumen von Testumgebungen
- **Eingefrorene Test-Umgebungen können direkt mit Fehlerverfolgung verlinkt werden**



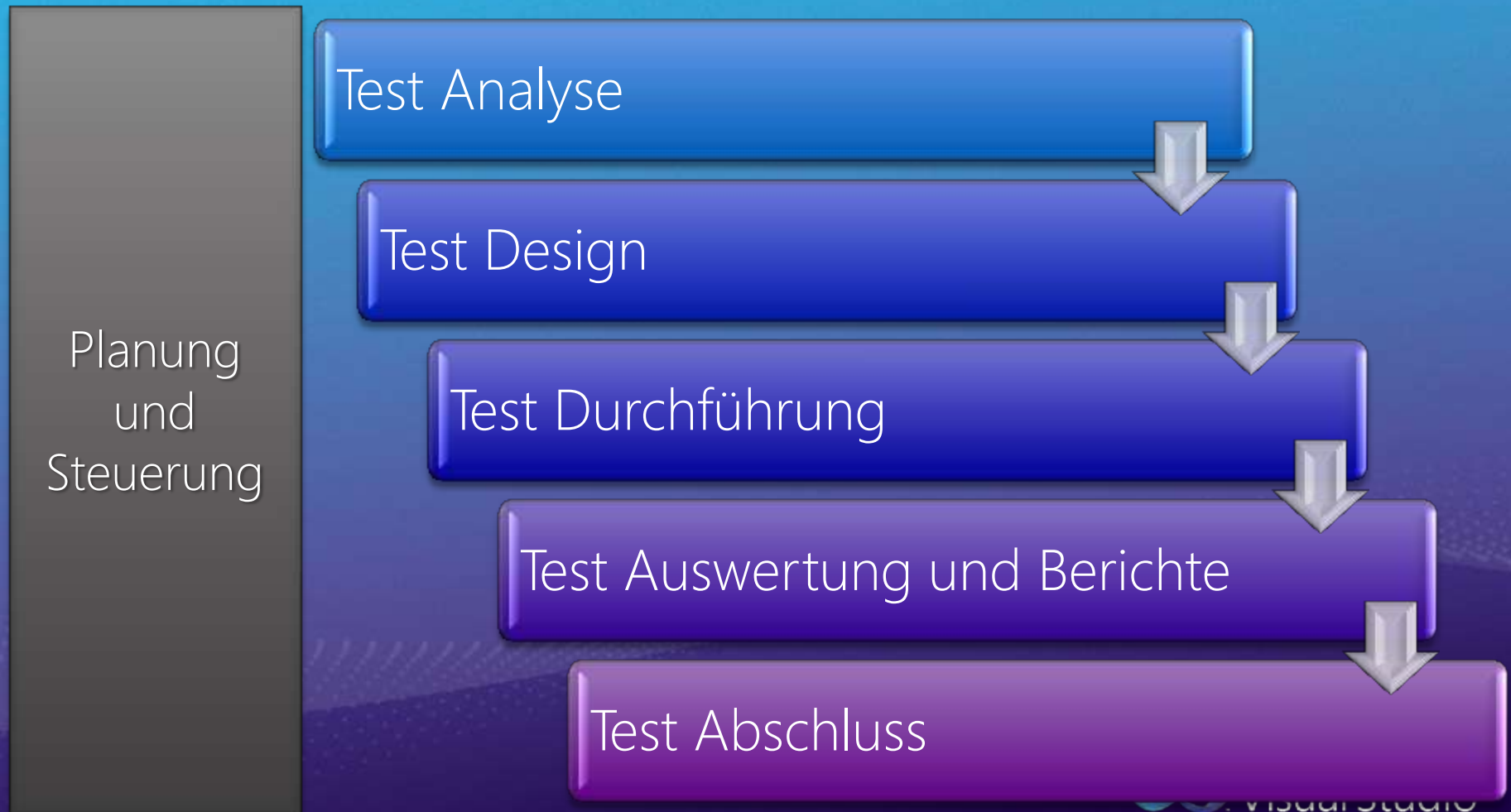


# Vorteile

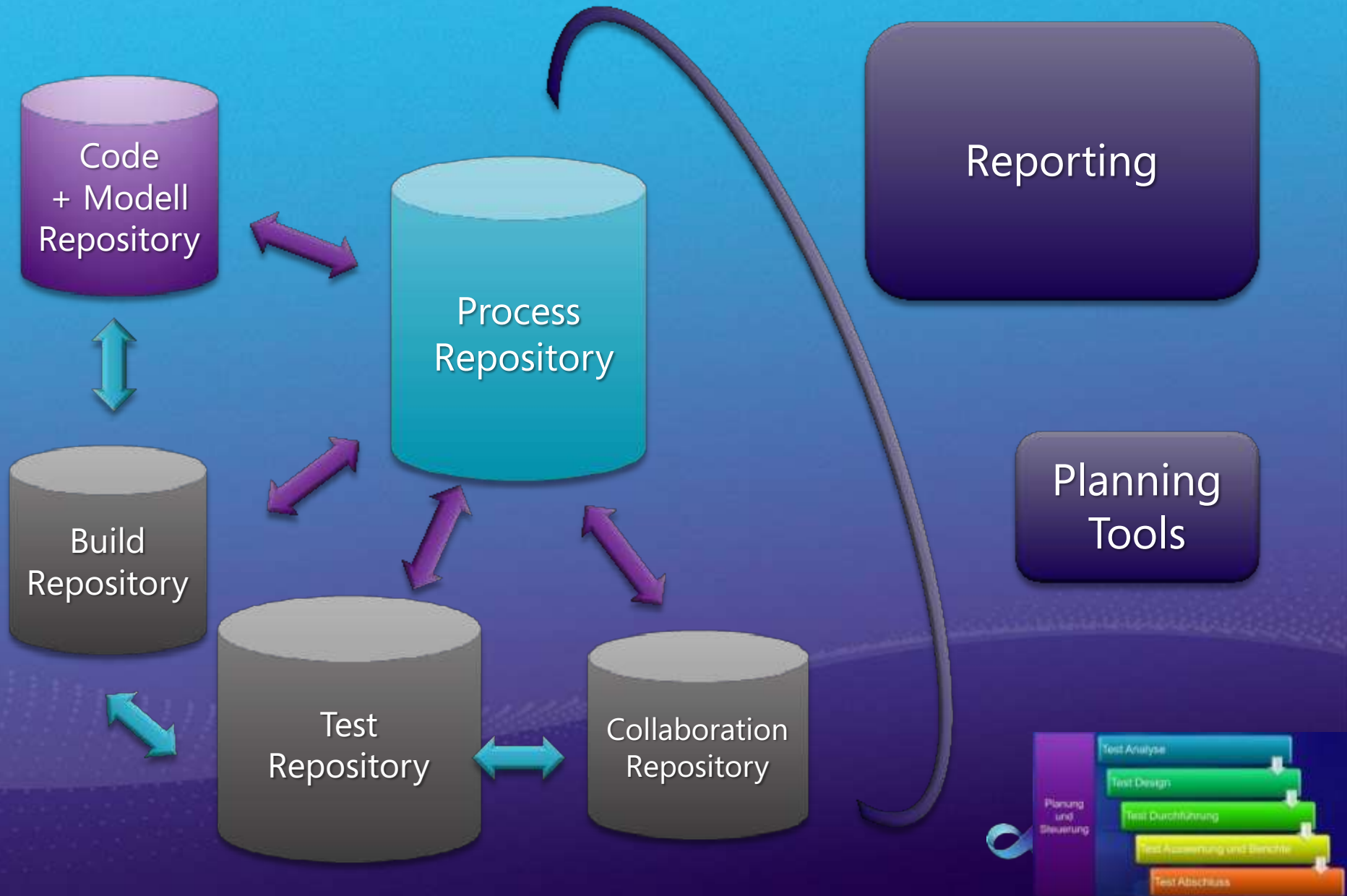
- Extrem einfache Fehlerreproduktion
- Weniger HW/SW Kosten
- Nie mehr den Status „Nicht reproduzierbar“

# Fundamentaler Testprozess

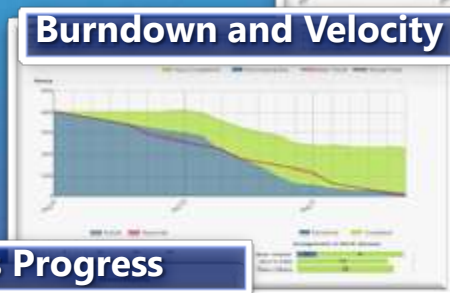
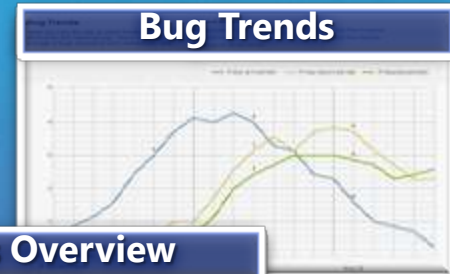
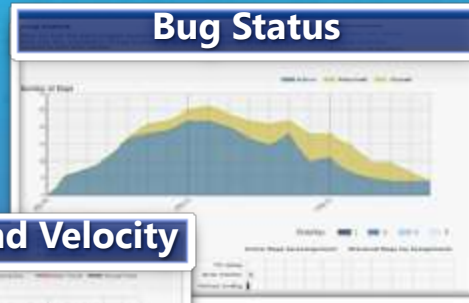
– Nach ISTQB-Standard:



# Testauswertung und Berichte



# Testauswertung und Berichte



### Stories Overview

Item	Story	Test Case	Test Run	Pass	Fail
1	Customer can add new functionality to the cart	100%	100%	100%	0%
2	Customer can view cart items	100%	100%	100%	0%
3	Customer can update cart items	100%	100%	100%	0%
4	Customer can remove items from cart	100%	100%	100%	0%
5	Customer can checkout	100%	100%	100%	0%

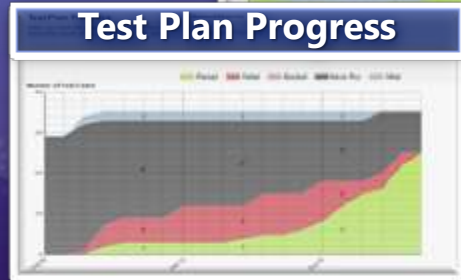
### Stories Progress

Item	Story	Test Case	Test Run	Pass	Fail
1	Customer can add new functionality to the cart	100%	100%	100%	0%
2	Customer can view cart items	100%	100%	100%	0%
3	Customer can update cart items	100%	100%	100%	0%
4	Customer can remove items from cart	100%	100%	100%	0%
5	Customer can checkout	100%	100%	100%	0%



### Test Run Results

Test Case	Pass	Fail	Not Executed
1	100%	0%	0%
2	100%	0%	0%
3	100%	0%	0%
4	100%	0%	0%
5	100%	0%	0%



# Testauswertung

## Stories Overview



■ Completed  
■ Remaining

■ Passed  
■ Failed  
■ Not Run

■ Active  
■ Resolved

Title	% Hours Completed	Hours Remaining	Tests	% Test Results	# Bugs
⊕ Requirement Title 1	100%	0	5	100%	
⊕ Requirement Title 2	100%	0	5	100%	
⊕ Requirement Title 3	80%	20	5	82% 18%	6 2
⊕ Requirement Title 4	80%	50	6	50% 50%	4 3
⊕ Requirement Title 5	75%	85	6	50% 50%	6 6
⊕ Requirement Title 6	25%	220	6	50% 25% 10%	28 7
⊕ Requirement Title 7	25%	372	6	50% 25% 10%	25 3
⊕ Requirement Title 8		340			
⊕ Requirement Title 9		420			
⊕ Requirement Title 10		500			
⊕ Requirement Title 11		400			
⊕ Requirement Title 12		500			



# Wieviele offene Bugs haben wir

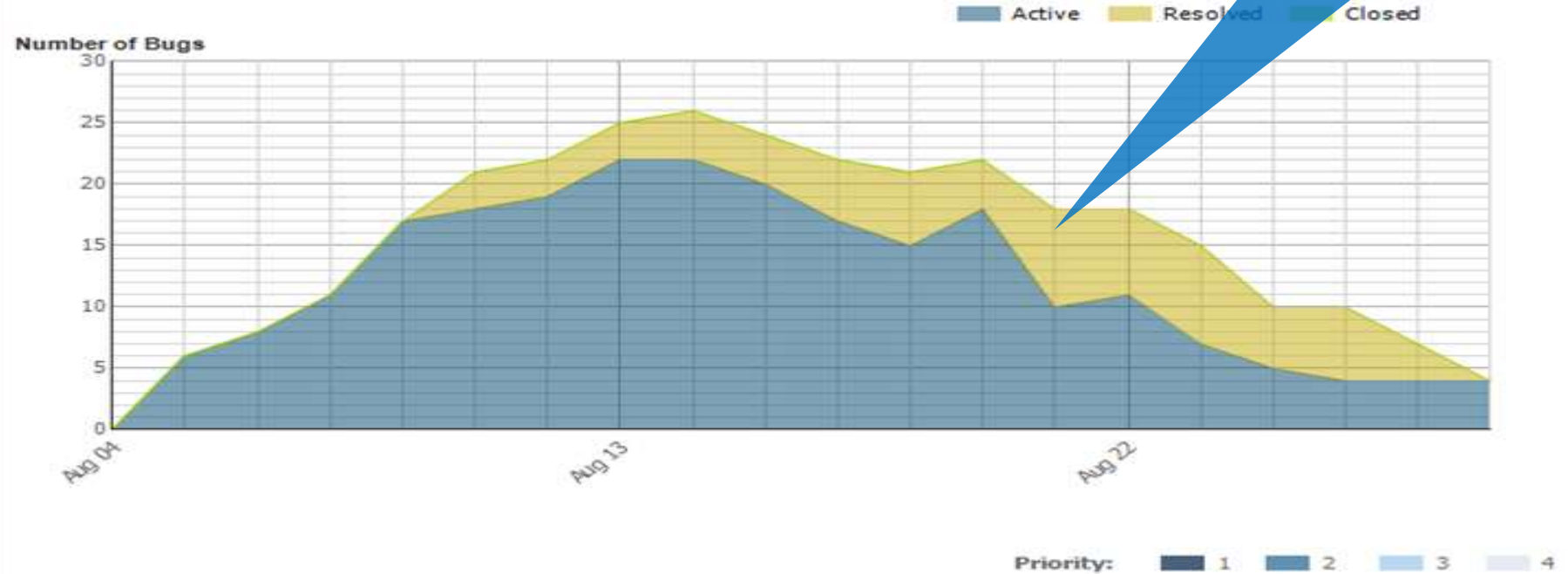
## Bug Status

Helps you track the team's progress toward resolving bugs. Shows the number of bugs in each state over time, a breakdown of bugs by priority or severity, and the number of bugs that are assigned to each team member.

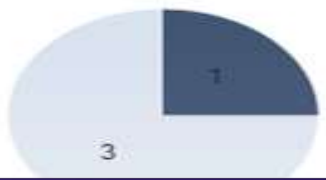
### Related Reports

- Bug Status and History
- Status
- Status

Shows bug state, priority, severity, and who they are assigned to



### Active Bugs by Priority



### Active Bugs by Assignment

### Resolved Bugs by Assignment

Team Member	Active Bugs	Resolved Bugs	Closed Bugs	Total Bugs
TFS Setup	0	0	0	0
Brian Welcker	3	0	0	3
Michael Zwilling	1	0	0	1

# Wie lange sind Bugs offen ?

## Bug Trends

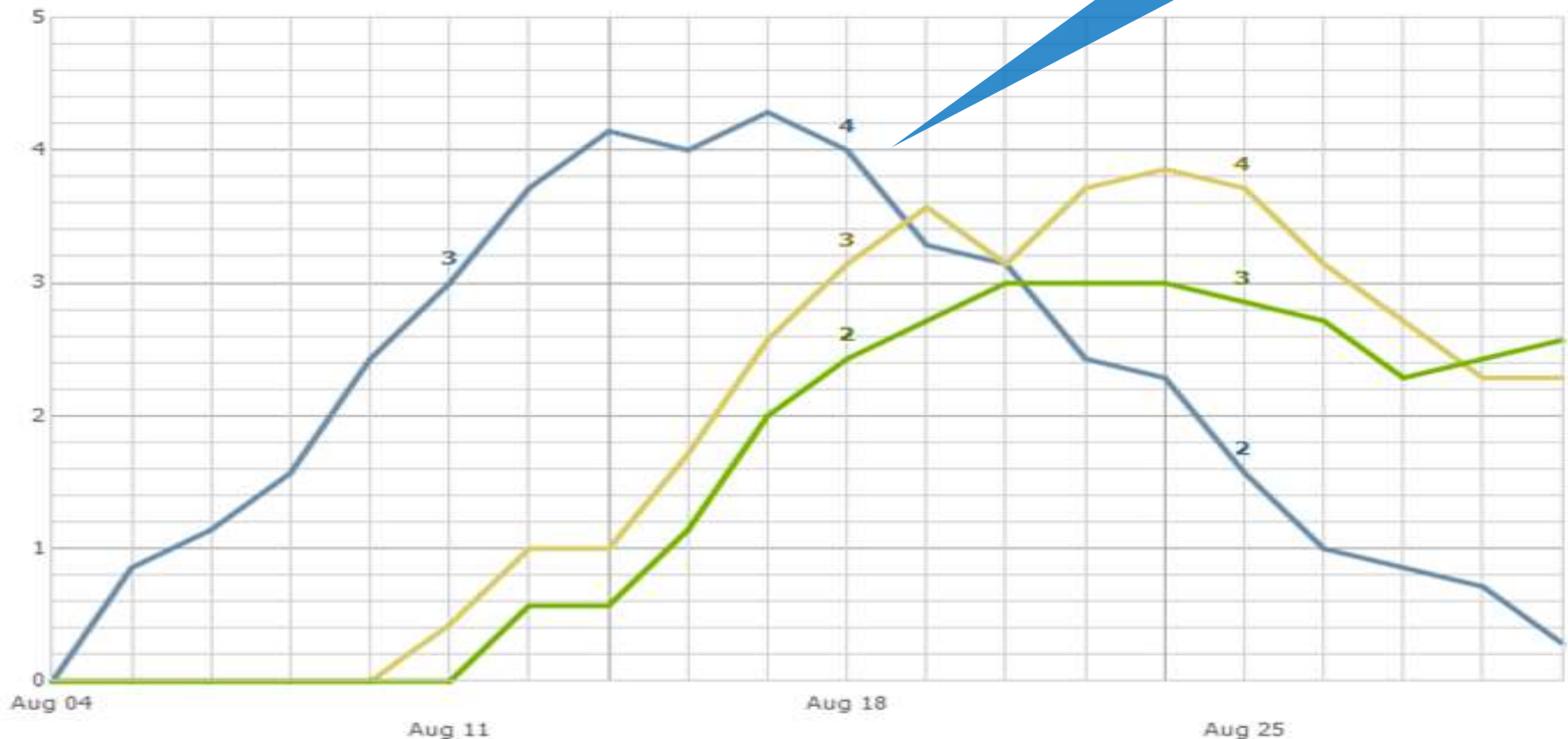
Helps you track the rate at which the team is discovering and resolving bugs. Shows a moving average of bugs discovered and resolved over time.

## Related Reports

- Bug Status
- Reactivations
- Status on All Iterations

• Test Shows the rate of discovering and resolving bugs  
• Test Run Results

— 7-day arrival rate — 7-day resolved rate — 7-day closed rate



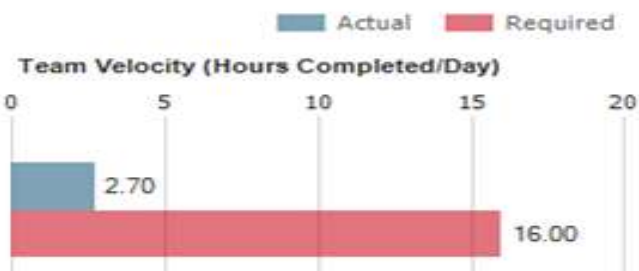
# Wieviel Arbeit liegt vor uns ?

## Burndown and Velocity

Helps you track the team's progress toward completing the work for an iteration. Shows how many hours of work the team has completed, how many hours remain, the rate of progress, and the work assigned to each team member.

## Related Reports

- Status on All Iterations
  - Stories Completed
  - Stories Progress
  - Total Work
  - Actual Work
- Hours of work completed, remaining, and the rate of progress



# Testergebnisse je Anforderungen

## Stories Overview

Helps you track how far each user story has been implemented. Shows each story's actual number of hours of work remaining and completed, its acceptance test results, and the number of bugs that are linked to each story.

## Related Reports

- Bug Status
- Status on All Iterations
- Stories Progress
- Test Case Readiness
- Test Plan Progress

Shows how far each user story has been implemented

Title	Work Progress		Test Status		
	% Hours Completed	Hours Remaining	Tests	Test Results	Bugs
Customer can see new functionality in their profile as they are introduced	100 %	0	3	33 % Passed, 67 % Failed	
Customer enters personal reviews	100 %	0	5	56 % Passed, 44 % Failed	
Admin/editor publishes customer submitted review	100 %	0	3	33 % Passed, 67 % Failed	
Customer rates review	100 %	0	3	40 % Passed, 40 % Failed, 20 % Not Run	
<b>Customer comments on review</b>	13 % Completed, 87 % Remaining	112	5	100 % Not Run	
Customer searches for reviews	100 %	0	3	33 % Passed, 67 % Failed	
Customer finds restaurant from review	100 %	0	2	33 % Passed, 67 % Failed	
Customer finds reviews for restaurant	100 %	0	2	50 % Passed, 50 % Failed	3 Active

# Wie ist der Zustand der Testfälle ?

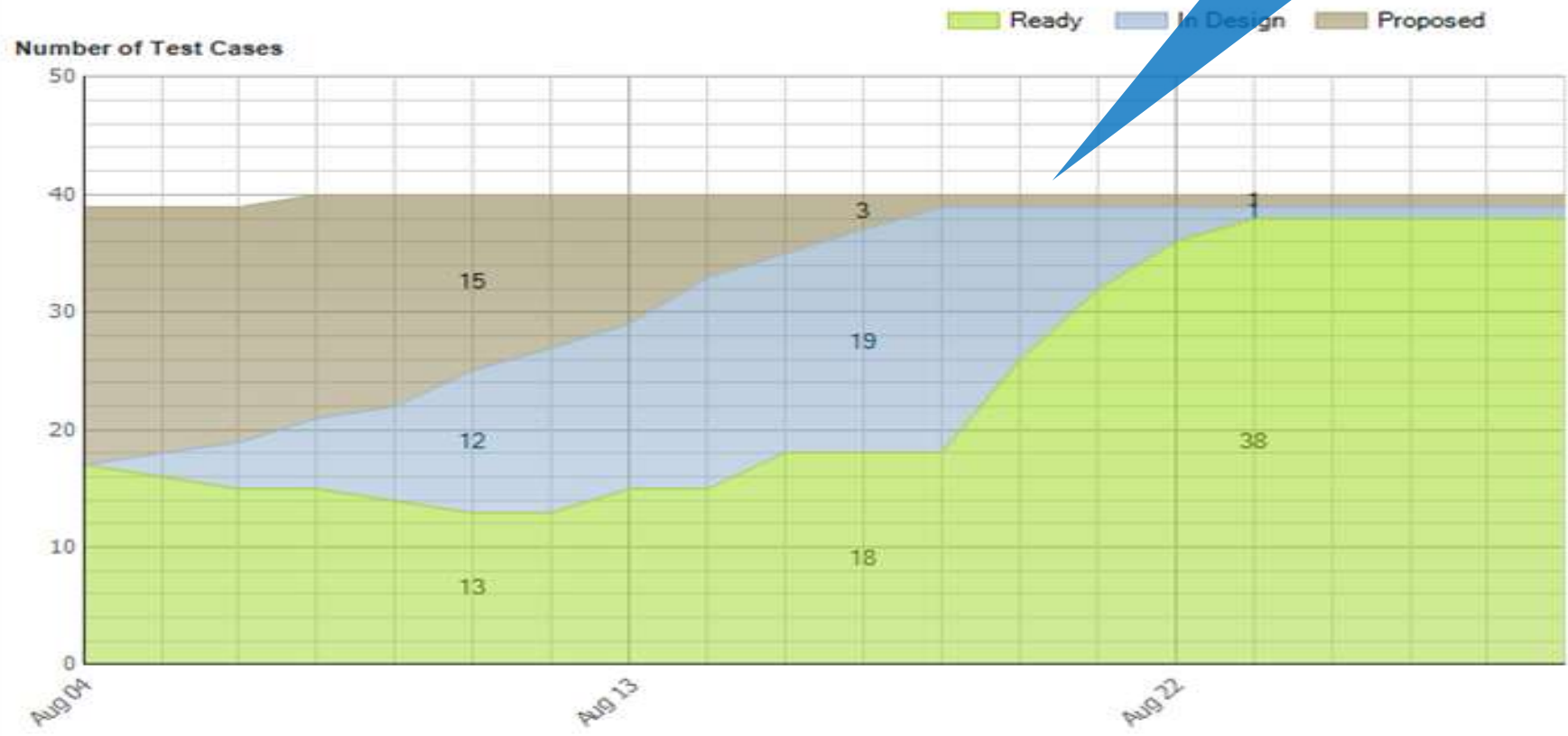
## Test Case Readiness

Helps you track how many test cases are ready to be run. Shows the number of test cases in each state of preparation.

### Related Reports

- Bug Status
- Status on All Iterations

• Test Run Results  
• Shows what state the test cases are in





# Welche Tests sind wie verlaufen ?

## Test Plan Progress

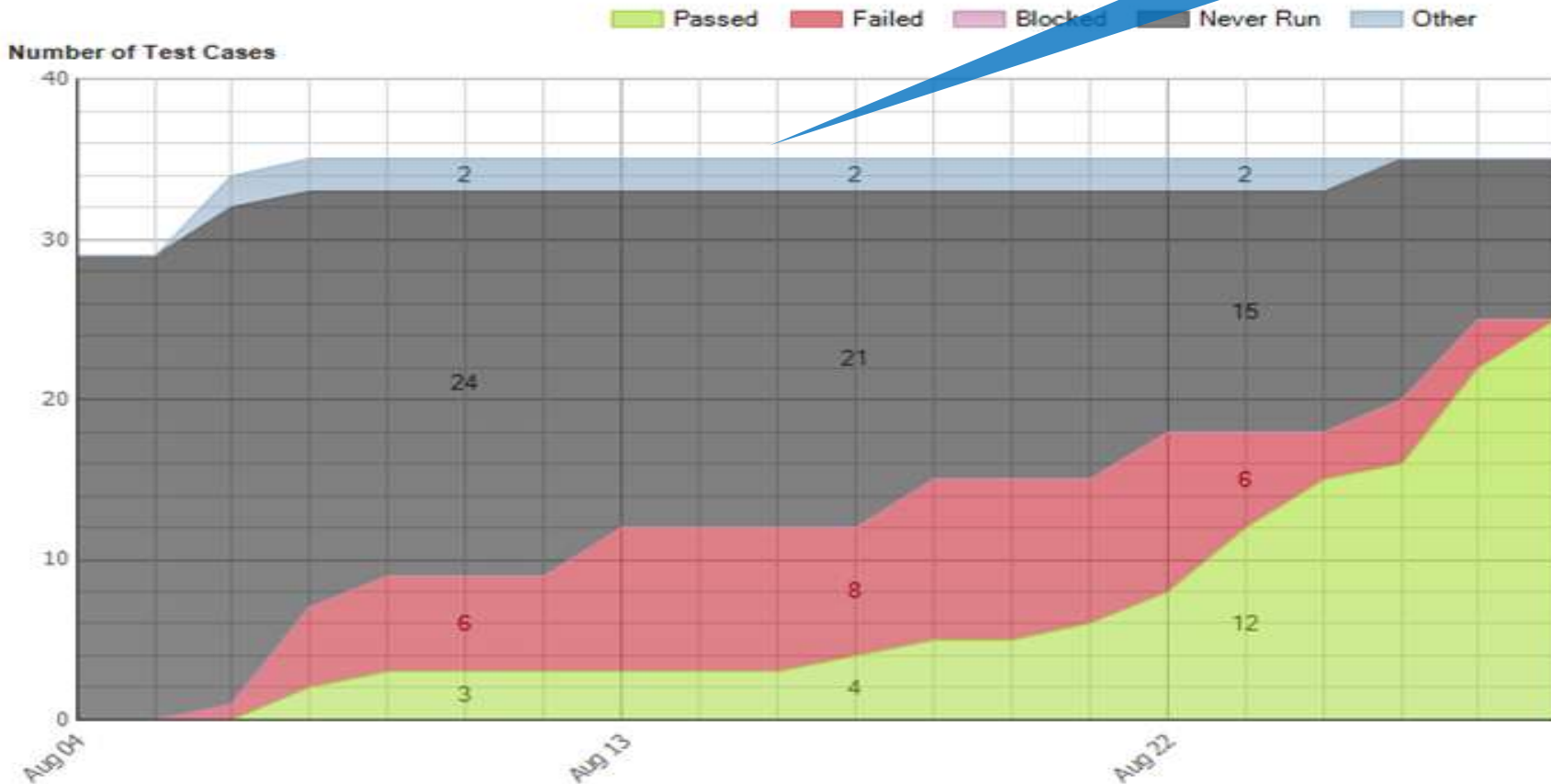
Helps you track the progress of your test plans.  
Shows the results of running the tests over time.

## Related Reports

- [Bug Status](#)
- [Status on All Iterations](#)

- [Test Case Readiness](#)

Shows the progress of  
your test plan



# Wie ist die Testqualität ?

## Test Run Results

Helps you track the progress of test runs. Shows counts of results within each test run.

## Related Reports

- [Bug Status](#)
- [Status on All Iterations](#)
- [Test Case Readiness](#)
- [Test Plan Progress](#)

Shows the progress of your test runs

Passed Failed Blocked Never Run Other

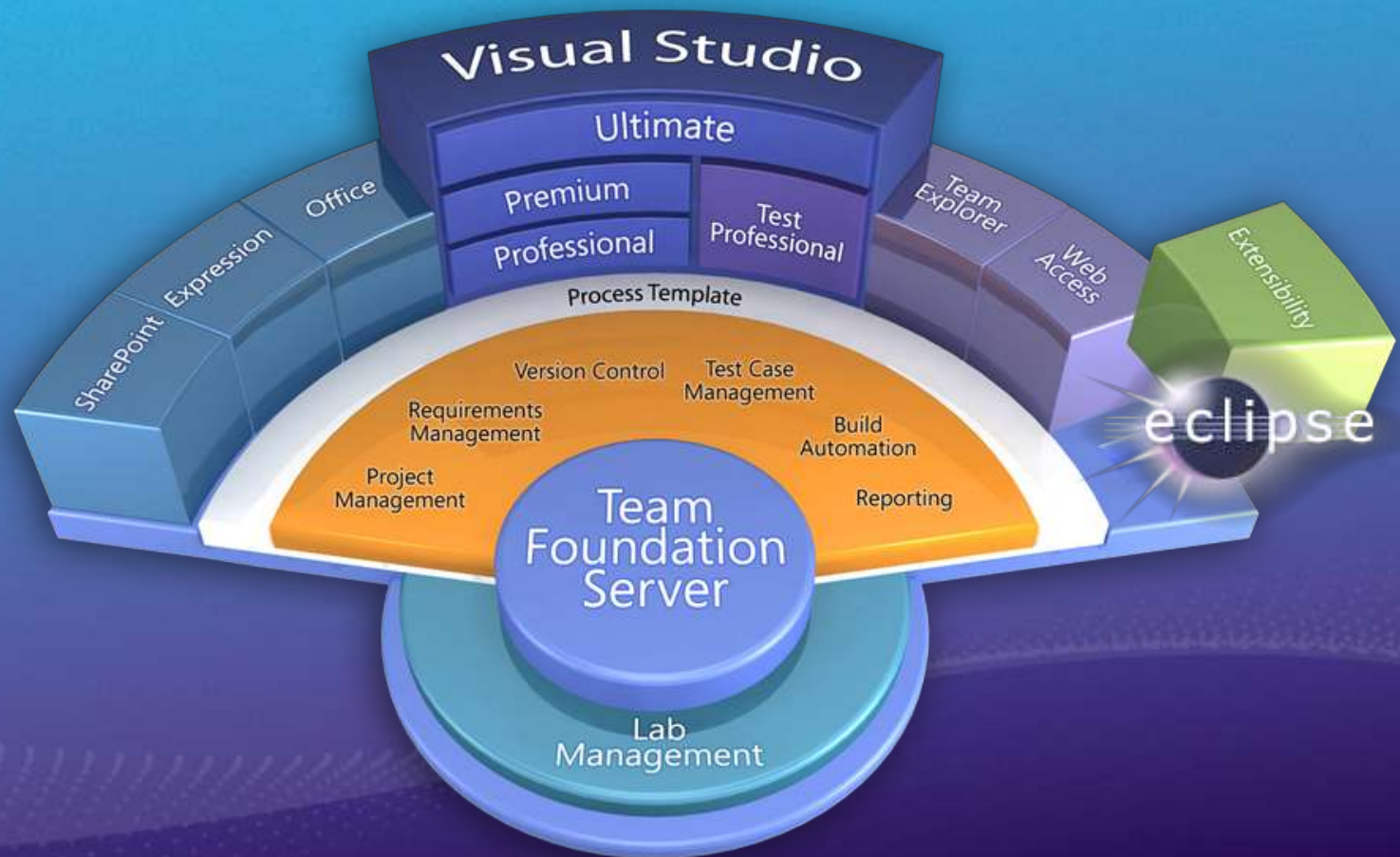
Test Plan	Test Run	State	# of Test Cases Passed/Failed/Blocked/Never Run/Other as 11/23/2008 8:58:16 PM.
Test Plan for Iteration 1	US_105 can get lucerne reviews...	In Progress	4
	US_112 can see new func. in profile	In Progress	3
	US_115 Customer enters personal reviews	In Progress	5
	US_124 Admin/editor publishes customer submitted review	In Progress	3
	US_131 Customer rates review	In Progress	3
	US_134 Customer comments on review	In Progress	6
	US_147 Customer searches for reviews	In Progress	3 5
	US_155 Customer finds restaurant from review	In Progress	2
	US_161 Customer finds reviews for restaurant	In Progress	2
Test Plan For Iteration 2	End To End Test	In Progress	1
	US_134 Customer comments on review	In Progress	5

# Kommunikation im Team





# Application Lifecycle Management



# Typisches Kundenszenario

Business Analyst, Project Lead (Sketch Flow, Web, Excel)



Java Dev on OS X (Eclipse integration)



.net Dev  
(Visual Studio)



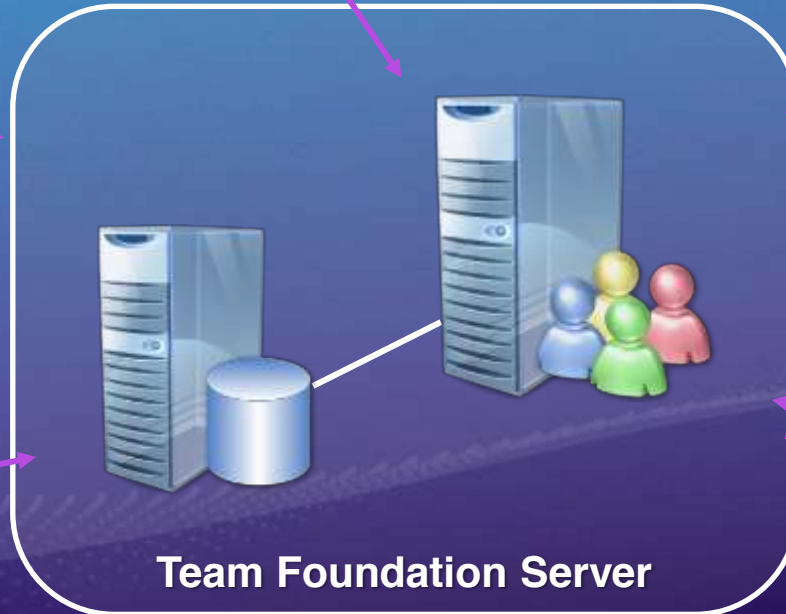
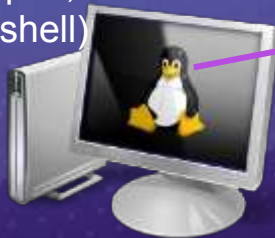
Tech writer on  
Mac OS X  
(Web, Eclipse  
Integration)



Tester (Test Professional 2010)



C++ developer  
on Linux  
(Eclipse, cmd  
shell)



Build Server (MSBuild,  
Ant, Maven)





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- Kontakt:
  - [mzieger@microsoft.com](mailto:mzieger@microsoft.com)
- Informationen:
  - [www.microsoft.de/visualstudio](http://www.microsoft.de/visualstudio)

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- Download der Beta 2 von Visual Studio 2010



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