



Testing with Visual Studio 2010



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Agenda

- Visual Studio 2010
- Intro to Software Testing
- New Testing features in VS2010
- Test Projects
- Test Case Management
- Microsoft Test And Lab Manager (MT&L)
- Running Manual Tests
- Automating UI Tests
- Load Testing
- Test Reporting
- Lab Management



Licensing changes for VS2010

- Microsoft Visual Studio 2010 Ultimate (msdn)
- Microsoft Visual Studio 2010 Premium (msdn)
- Microsoft Visual Studio 2010 Professional (msdn)
- Microsoft Visual Studio 2010 Professional

Edition	IntelliTrace™	UML Modeling	Architecture Explorer	Logical Class Designer	Load Testing	Test Manager 2010
Visual Studio 2010 Ultimate	Yes	Yes	Yes	Yes	Yes	Test Case Management, Manual Testing, Fast Forward for Manual Testing, Layer Diagram, Web Testing
Visual Studio 2010 Premium	Yes	Yes	Yes	Yes	Yes	UI Test Automation, Performance Profiling, Code Coverage, Code Metrics, Database Change Mgmt, Database Deployment, Database Unit Testing, Test Data Generation
Visual Studio 2010 Professional	Yes	Yes	Yes	Yes	Yes	Silverlight Tools, Multi-core Development, SharePoint Development, Cloud Development, Web Development, Windows Development, Generate from Usage, Office Development, New WPF Editor, Customizable IDE

Pricing VS2010

Product	Buy	Upgrade	With 1-yr MSDN Subscription	
			Buy	Renew
Visual Studio 2010 Ultimate	-	-	\$11,899	\$3,799
Visual Studio 2010 Premium	-	-	\$5,469	\$2,299
Visual Studio 2010 Professional	\$799	\$549	\$1,199	>\$799
Visual Studio Test Professional 2010	-	-	\$2,169	\$899
Visual Studio Team Foundation Server 2010	\$499	\$399	-	-
Visual Studio Team Foundation Server 2010 CAL	\$499	-	-	-
Visual Studio Load Test Virtual User Pack 2010 (1000 Virtual Users)	\$4,499	-	-	-

Blog: Steve Lange - http://blogs.msdn.com/steve_lange/archive/2010/01/26/its-official-vs-2010-branding-pricing.aspx

TFS2010 - Team Project Collections

- = Organization Unit
- = Group of Team Projects in TFS
- = Single database (Admin++ / Scalability++)

TFS2010 - Team Build Architecture

Build Controllers
VS
Build Agents

Customer Feedback on Testing

- "my testers are spending too long testing the same thing"
- "we have a changed requirement, what do I need to test?"
- "developers and testers work in silos and don't communicate/speak the same language"
- "the developers say the defects are useless"
- "tooling is expensive (time, licenses, people)"
- "when is my software ready to ship?"

What are the needs for Testing?

minimize the time it takes to determine the root cause of a bug	minimize the time it takes to document the conditions when a bug occurred
minimize the likelihood that test plans/test cases will not demonstrate compliance with user requirements	minimize the time it takes to replicate a bug uncovered by user actions
identify the biggest areas of the product, and ensure that adequate testing has been done on these areas	minimize the likelihood that tests will not find bugs prior to integration testing
enable users to easily run acceptance tests and track their results	minimize the time it takes to reproduce conditions to test a bug fix
minimize the time it takes to verify that all required tests have been run	minimize the time it takes to isolate differences between the test and production environment
minimize the likelihood of not completing the most important parts of the test plan	minimize the likelihood of not meeting the quality goals for the project
minimize the number of tests that must be run to test a bug fix	minimize the time it takes to understand the applications functionality
minimize the time it takes to verify the status of a reported bug fix	minimize the time it takes to document the conditions when a bug occurred

Tester Segmentation

generalist ← → specialist

expert coding skills

majority of test tools target here

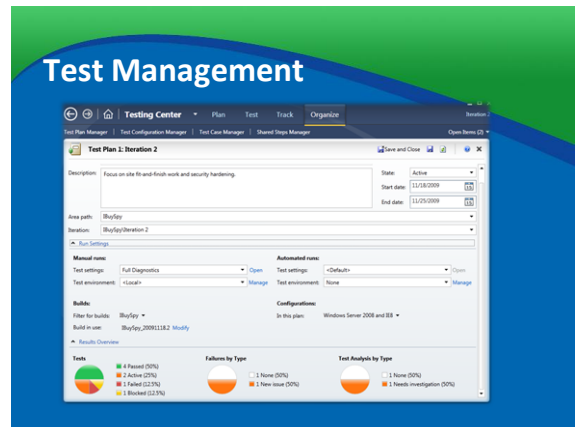
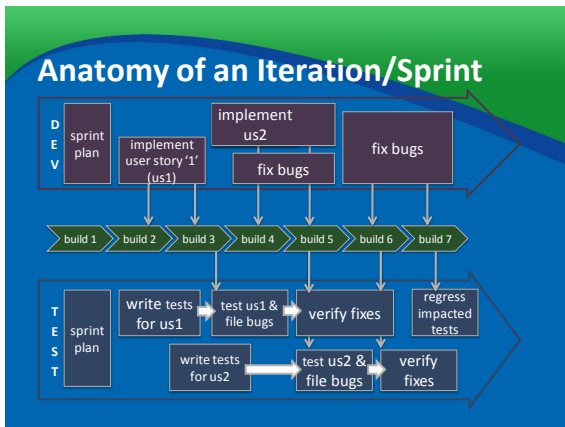
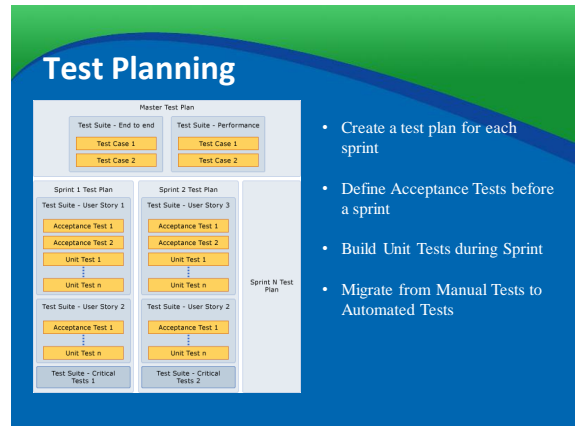
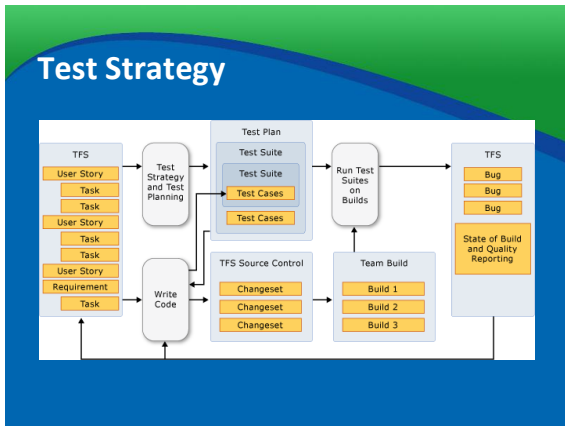
black box testing

white box testing

api testing

Test Approach

- Catching defects as early as possible is the least expensive way to ensure software quality
- Test early and often
- Testing is an iterative process throughout your project
 - Sprint Level Testing => set of acceptance tests to cover user stories
 - Project Level Testing => end-to-end testing



Manual Tests

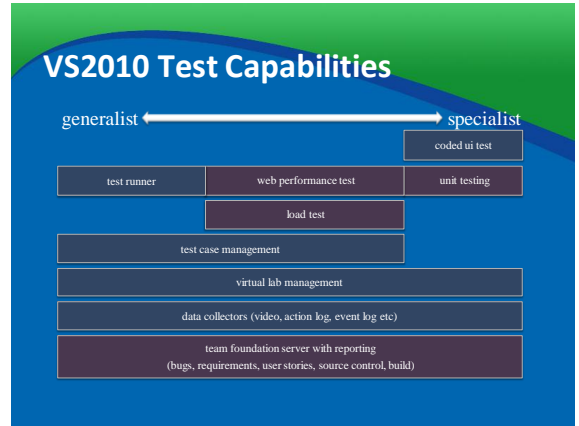
- Find bugs through exploration
- Easy to define and easy to start defining early in the process
- Early communication in project/sprint
- Difficult to define success criteria
- Physical execution
- Prone to human error in finding bugs

Automated Tests

- Improves stability of application
- Good for regression testing
- "automated" execution
- Reuse of code
- Special conditions to run
- Changing code requires changing tests
- False sense of security

Testing Features in VS2010

Feature	Professional	Premium	Ultimate
Unit Testing	✓	✓	✓
Code Coverage	✓	✓	✓
Test Impact Analysis	✓	✓	✓
Coded UI Test	✓	✓	✓
Web Performance Testing	✓	✓	✓
Load Testing	✓	✓	✓



New Testing Features in VS2010

- Basic Unit Test + Test Categories
- Data/Diagnostic Collectors during Testing
- Test Plans, Test Suites, Test Configurations, Test Cases
- Executing Test Steps during Manual Testing
- Record manual tests for playback
- Automated UI Testing / Coded UI Testing
- Microsoft Test And Lab Manager (MT&L)
- Test Impact Analysis
- Visual Studio Lab Management

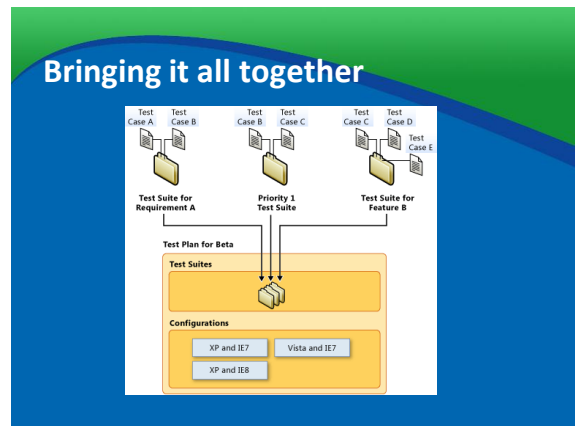
VS2010 Test Projects

- Some new test types
 - Basic Unit Test
 - Coded UI Test
- Tests can be tagged with categories
- Data and Diagnostics Collectors for test runs

Name	Configure	Enabled
MSF&T Client Proxy for load trace and test impact	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
ASP.NET Profiler	<input type="checkbox"/>	<input type="checkbox"/>
Code Coverage	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Event Log	<input type="checkbox"/>	<input type="checkbox"/>
LoadTrace	<input type="checkbox"/>	<input type="checkbox"/>
Network Evaluation	<input type="checkbox"/>	<input type="checkbox"/>
System Information	<input type="checkbox"/>	<input type="checkbox"/>
Test Impact	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Video Recorder	<input type="checkbox"/>	<input type="checkbox"/>

Test Case Management

- New Test Case work item type in MSF Agile v5
- User Stories make use of Test Cases to verify that work is done/accepted
- Test Cases are composed of (shared) test steps



Microsoft Test Manager (MTM)

- Standalone WPF application used for managing testing and executing certain kinds of tests
- Features of MTM
 - Create and manage Test Plans
 - Create and manage Test Configurations
 - Create and manage Test Suites
 - Create and manage Test Cases
 - Run manual tests
 - Replay manual tests
 - Create bugs and assign bugs to dev team
 - View Reports to Help You Track Your Testing Progress
 - Finding “Recommended” Tests

Running Manual Tests

- Manual Test Cases that you create using either Visual Studio or MTM can be run
- A Test result is recorded every time that you run a specific test. Testers have the possibility to attach documents/screenshots/notes to the test
- Depending on the test configuration, one or more data collectors can be enabled

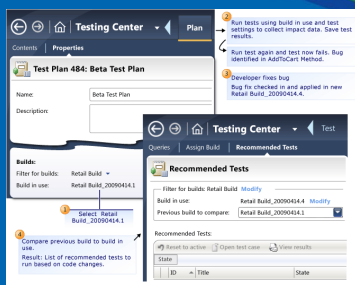
Automating UI Tests

- Use VS2010 to create automated tests of the user interface of your application = coded UI Tests
- Generate code in C#/VB.NET
- 3 options to create coded UI Tests
 - Use a Test Case’s recorded action
 - Use the embedded recorder in VS2010 to record UI Test
 - Use the UI Control Locator

Test Impact Analysis

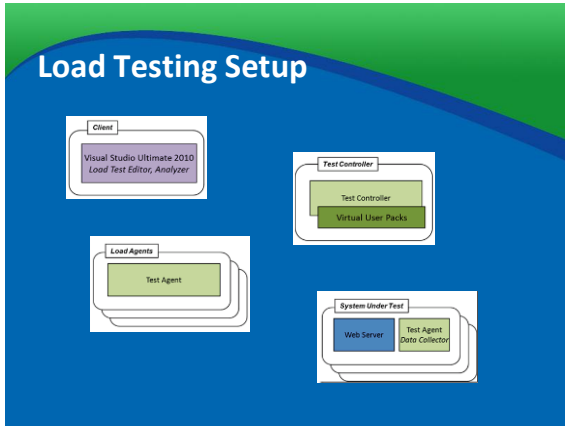
- Identify test methods in a test project that have been affected by code changes in your managed code solution
- Run Tests from Test Impact View window
- Also available as check-in policy
- “Recommended Tests” with Team Build ...

Test Impact Analysis + Team Build

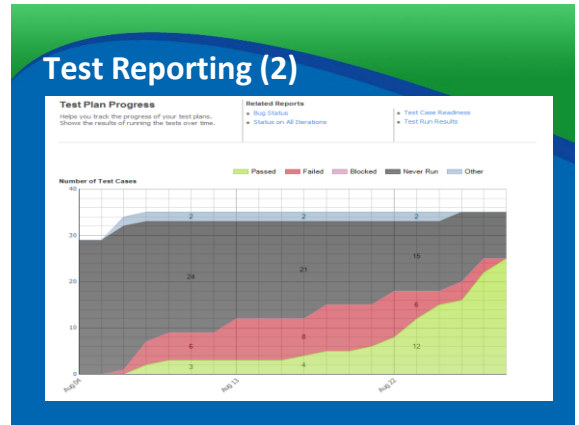
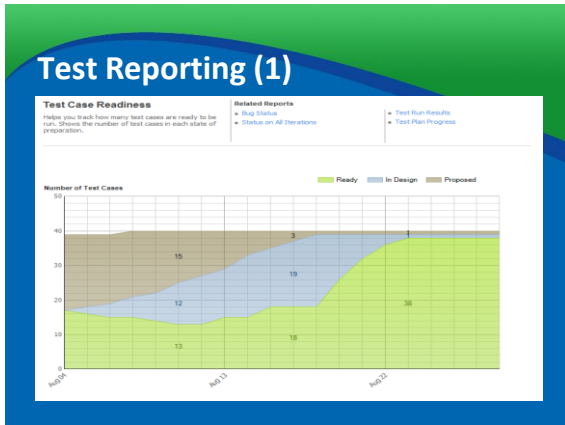


demo

Visual Studio 2010



- ### Load Testing in VS2010
- VS2010 Ultimate offers 250 virtual users (one core on client CPU)
 - Users can only be used for local runs!
 - Test Controller + Test Agent(s) are "free"
 - Buy Virtual User Pack(s) for more [1000 users / VUP]
 - Setup Test Controller and Test Agent(s)
 - Moving from VS Team Test Load Agent 2008?
 - 5 Virtual User Packs
 - New Test Load Database

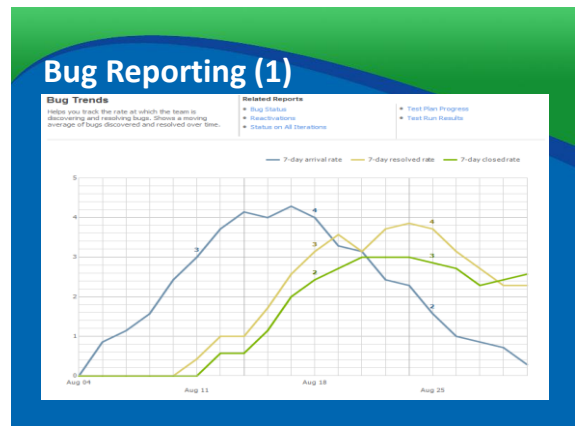


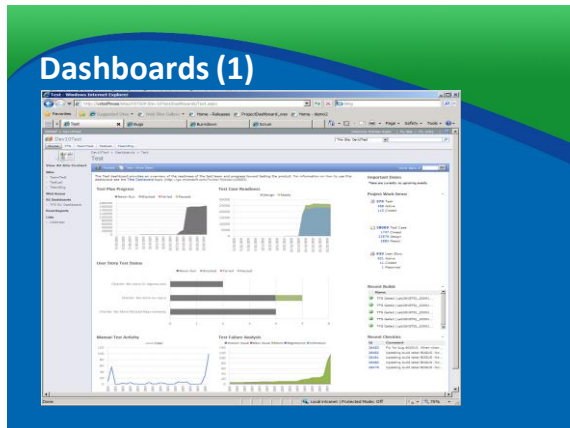
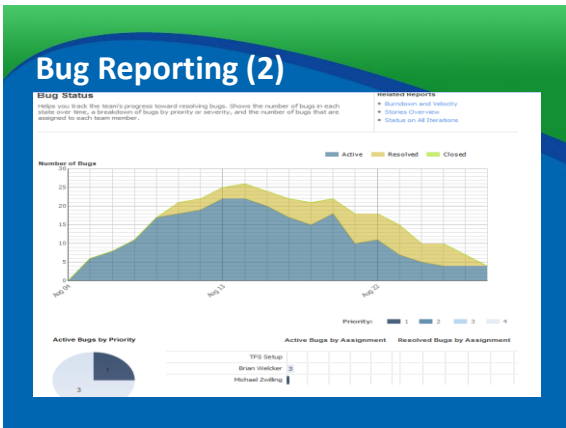
Test Reporting (3)

Test Run Results

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

Test Plan	Test Run	State	# of Test Cases Passed/Failed/Blocked/Never Run/Other as of 11/23/2008 8:38:18 PM
Test Plan for Iteration 1	US_105 can get business reviews...	In Progress	4
	US_112 can access func. in profile	In Progress	3
	US_113 Customer enters personal reviews	In Progress	1
	US_124 Address/zip address customer submitted review	In Progress	3
	US_125 Customer rates review	In Progress	3
	US_134 Customer comments on reviews	In Progress	4
	US_147 Customer searches for reviews	In Progress	5
Test Plan for Iteration 2	US_155 Customer finds restaurant from review	In Progress	3
	US_160 Customer finds reviews for restaurant	In Progress	2
	End To End Test	In Progress	1

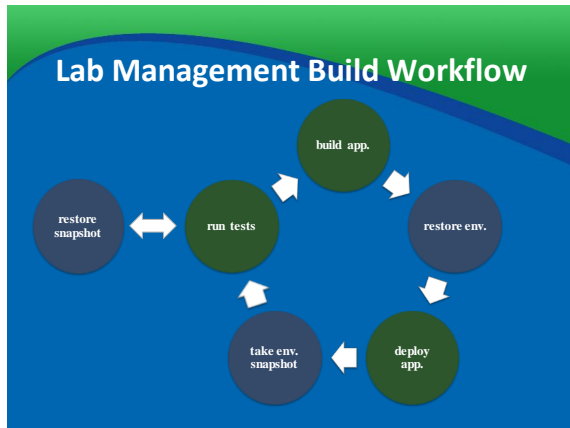


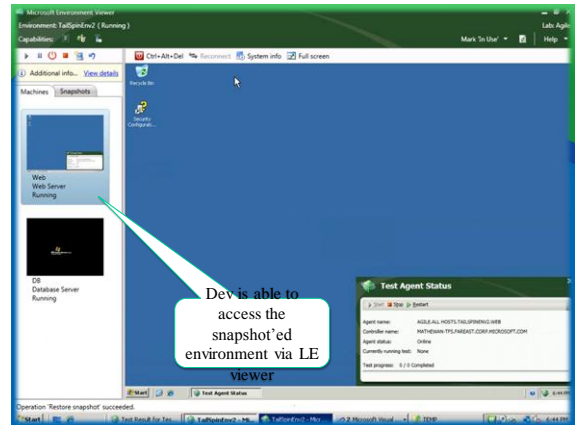
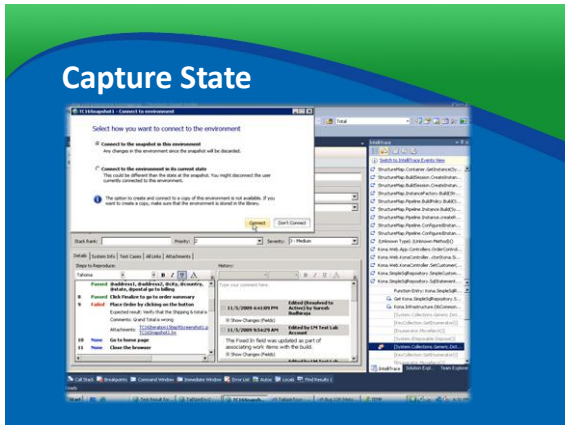
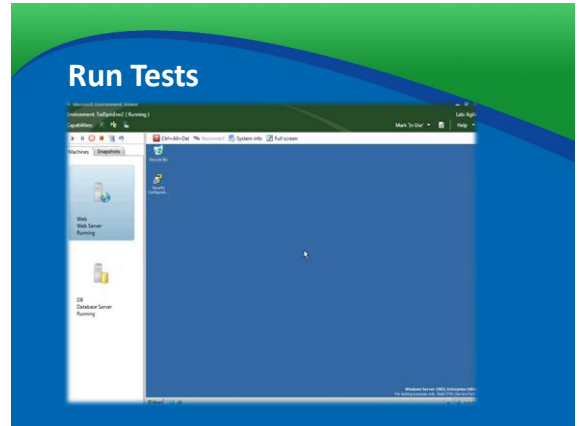
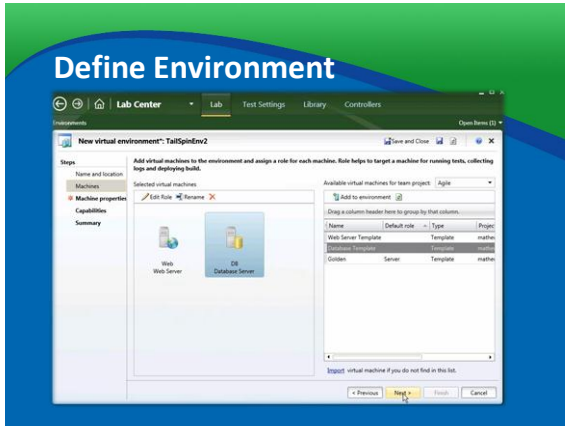


Visual Studio Lab Management

- Simplifies environment setup
- Simplifies testing multiple configurations
- Enables reverting to baseline configuration
- Provides checkpoints to aid defect resolution
- Improves test hardware utilization

The interface includes buttons for "Virtual Env. Setup/Teardown", "Environment from Template", and "Checkpoint Environment", allowing users to manage and restore their testing environments efficiently.





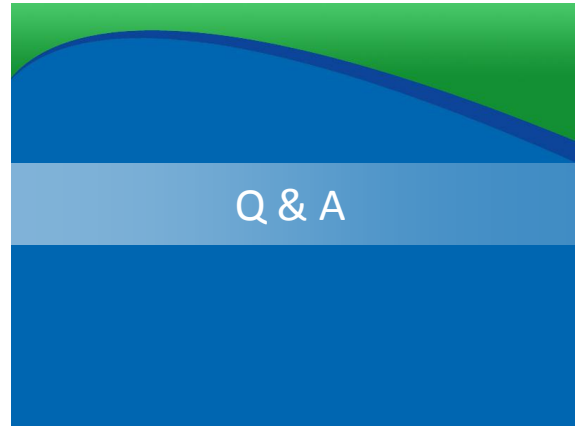
Lab Management Takeaways

1. Easy to create new environment from libraries
2. Integrated experience to build and deploy
3. Use of checkpoints / snapshots
 - No more no repro
 - Snapshot to debug

Summary

- Testing is BIG in VS2010
- Building Quality upstream!
- Microsoft Test and Lab Manager (MTLM)
- Promising release of Lab Management

=> Release date = April 12, 2010



Resources

- Download VS2010 / TFS2010 RC
<http://www.microsoft.com/visualstudio/en-us/products/2010/default.aspx>
- Visual Studio 2010 Overview
<http://www.microsoft.com/visualstudio/en-us/products/2010/default.aspx>
- MSDN Library Visual Studio 2010
<http://msdn.microsoft.com/en-us/library/d4831853.VS.100.aspx>

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