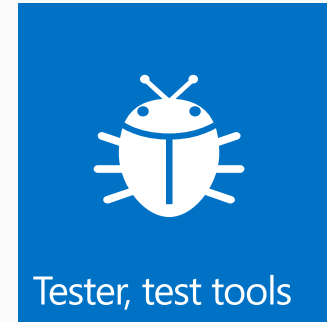


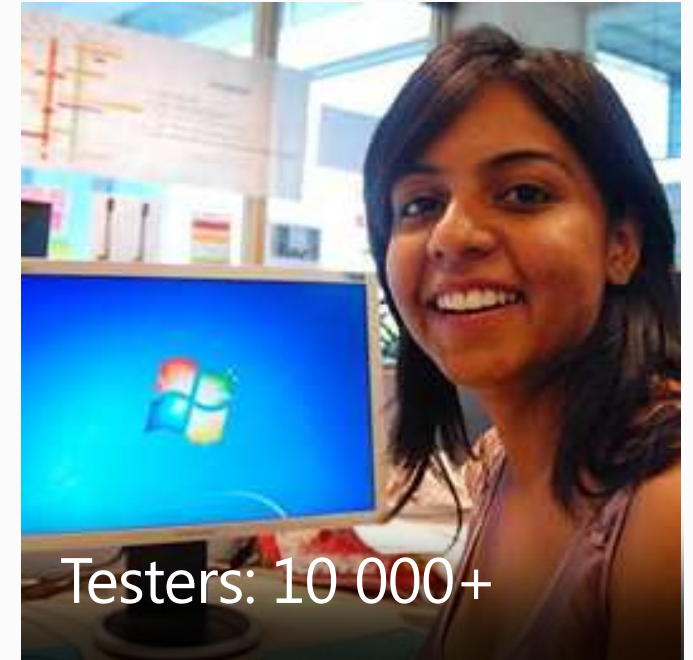
# Software test @ Microsoft

Hans Wallentin

# Who am I?



# Microsoft in numbers



The Who...

# Summer of '79...



# Hiring testers

- ▶ Ad in *Seattle Times*, 1985
- ▶ “You will design, execute and document tests of application software”
- ▶ Requirements: background in math, computers, programming



# The tester at Microsoft

- ▶ Title: SDET (**S**oftware **D**evelopment **E**ngineer in **T**est)
- ▶ Approx 10 000 SDET
  - ▶ Industry Hire: ~50%
  - ▶ Computer Science Graduates: ~50%
- ▶ We look for:
  - ▶ Problem Decomposition Skills
  - ▶ Drive for Results
  - ▶ Passion for Quality
  - ▶ Programming Skills

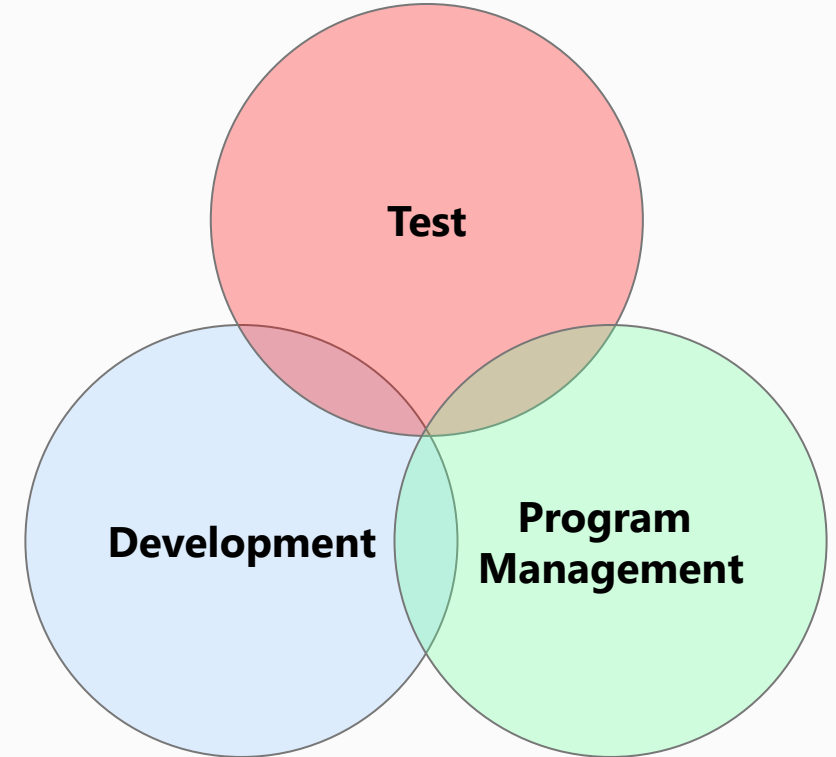
# SDETs at Microsoft

- ▶ Testing is an **equal** role to development
- ▶ Career path defined from entry level to Vice-President
- ▶ Career Paths equal for Managers and non-Managers



# Team Makeup: Feature Team Triad

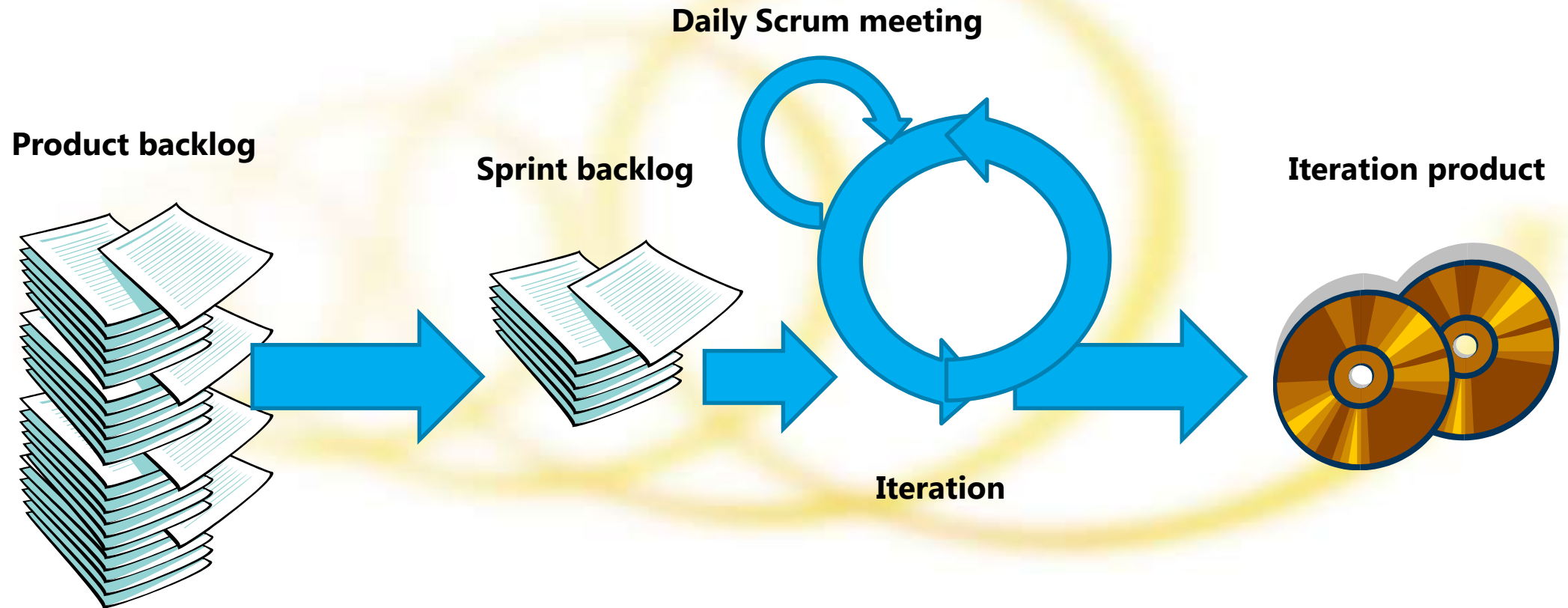
- ▶ Program Managers (PMs) research customer needs, competitors and develop requirements
- ▶ Developers (SDEs) write product code
- ▶ Test Engineers (SDETs) ensures the product meets the functional and non-functional requirements



# The How...

# How do we develop?

## Iterative development methods



# Methodologies

- ▶ Agile since start of 2000's

- ▶ SCRUM

- ▶ Lean

- ▶ TDD / ATDD

  - Test-Driven Development / Acceptance Test-Driven Dev.*

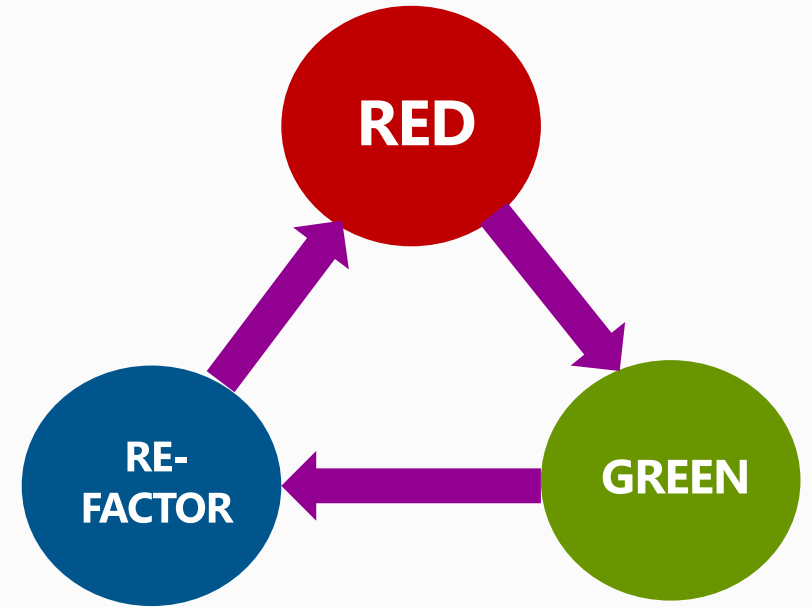
# TDD

## (Test Driven Development)

Development practice

- Add a test that fails
- Make the code pass the test
- Refactor code eliminating redundancy

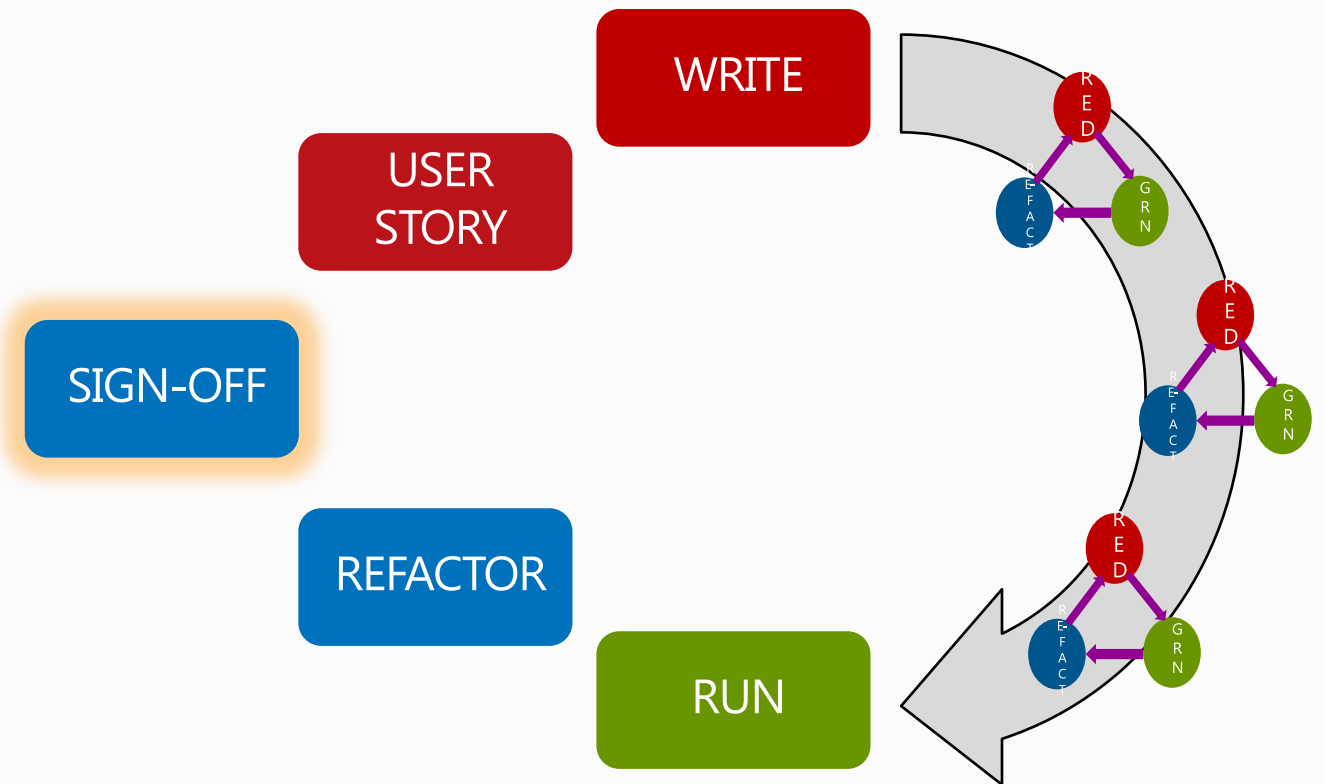
Problem



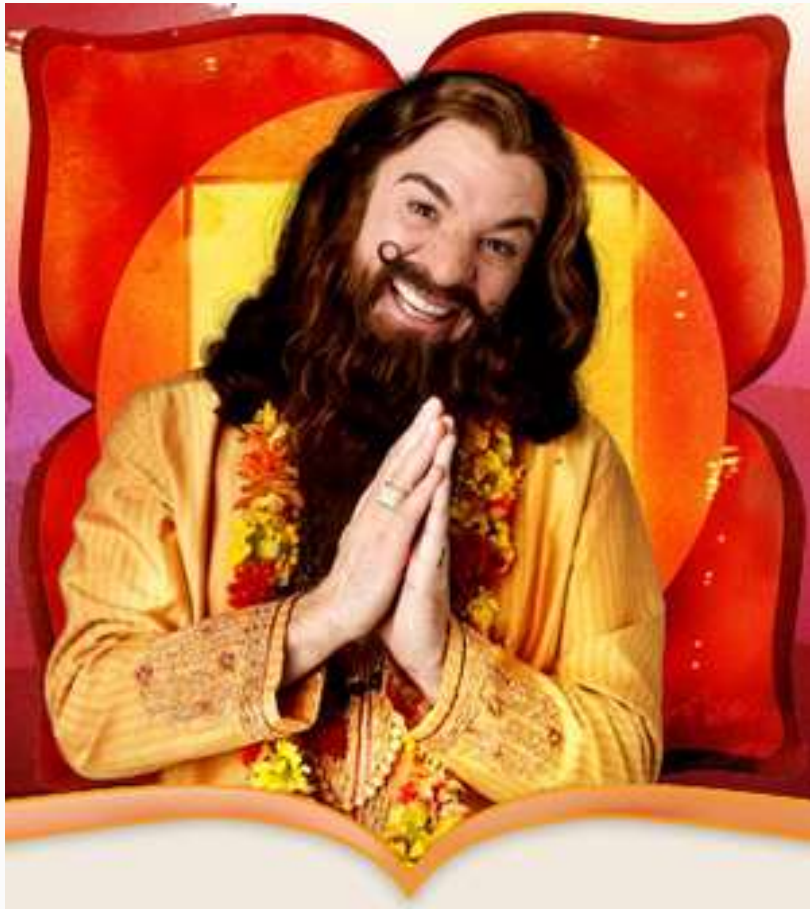
# ATDD

(Accoptance Test Driven Development)

- ▶ Select User story
- ▶ Write Acceptance Test
- ▶ Implement User Story
- ▶ Run Acceptance Test
- ▶ (Refactor)
- ▶ Get Sign-Off

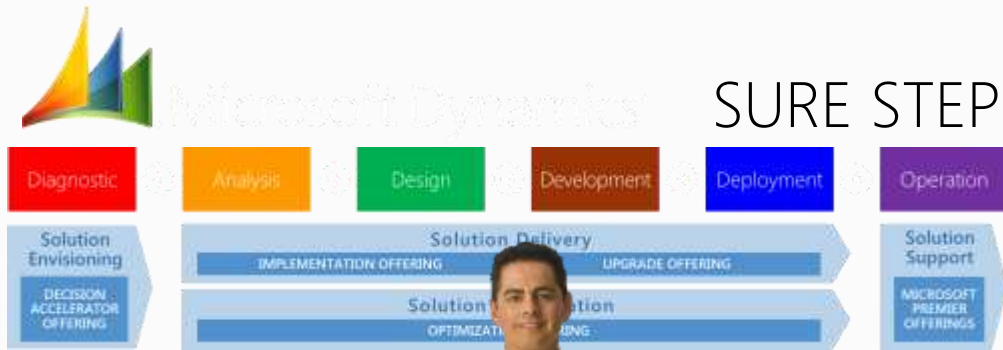


# Engineering Excellence



- ▶ Product agnostic senior engineers
- ▶ Technical Training
- ▶ Best Practices
- ▶ Common Tools
- ▶ Lightweight consulting
- ▶ Facilitation
- ▶ Communication

# What is Sure Step?



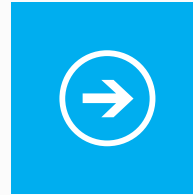
Full life cycle methodology for Microsoft Dynamics deployment projects



Used by Microsoft and partner solution providers in consulting engagements around the world



Contains guidance, tools, templates, and best practices



Includes life cycle phase-specific offerings

- Decision Accelerators
- Implementation & Upgrade
- Optimization



Supplemental functional & role-based guidance

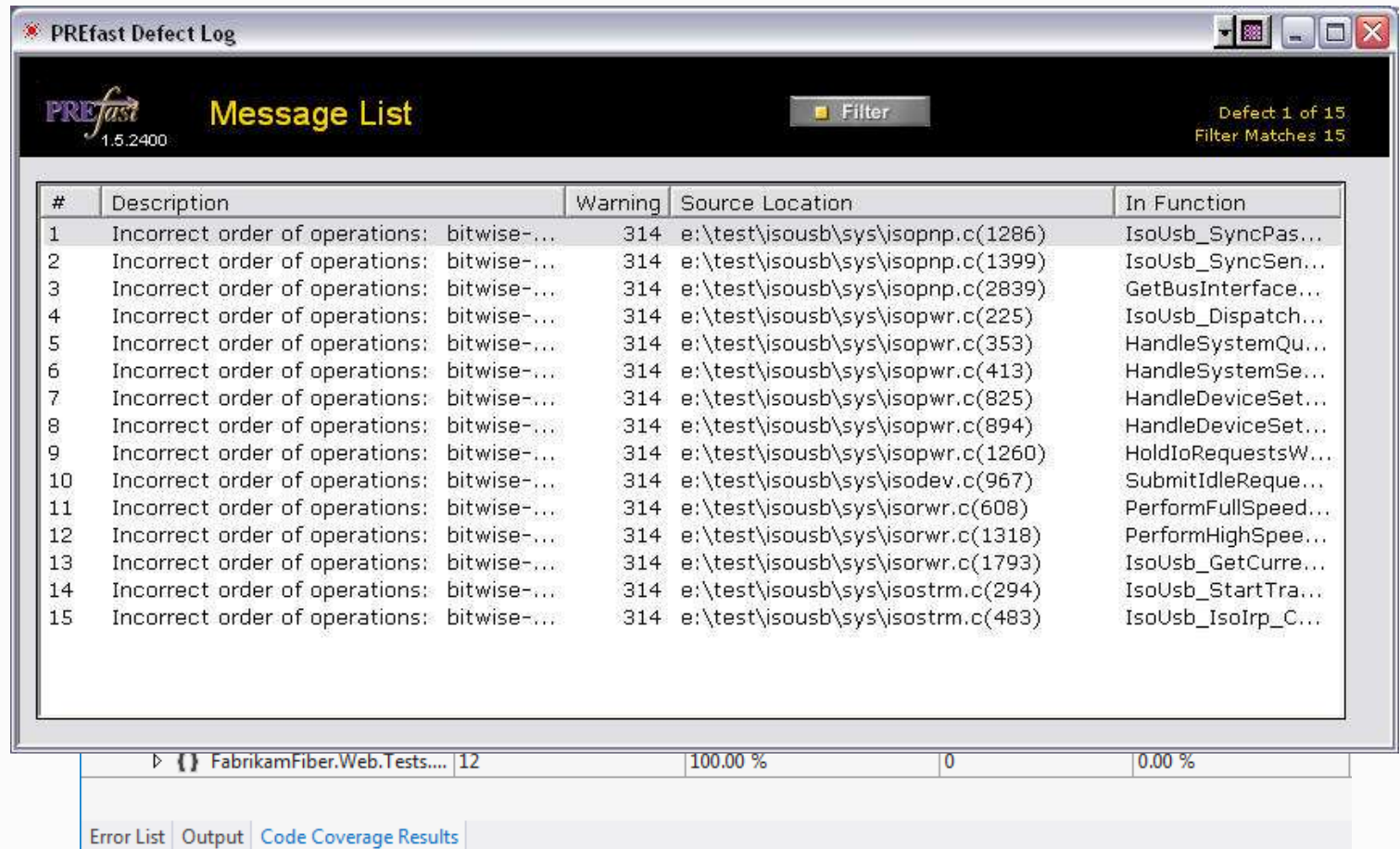
- Project & organizational change management
- Overview of engagement roles



...and The What.

# White box testing tools

- ▶ Unit test
  - ▶ Unit test framework
  - ▶ Fakes, stubs
  - ▶ Check-in test runner
- ▶ Structural analysis
  - ▶ Code Coverage
  - ▶ Code Complexity
- ▶ Static analysis
  - ▶ PreFast & FxCop



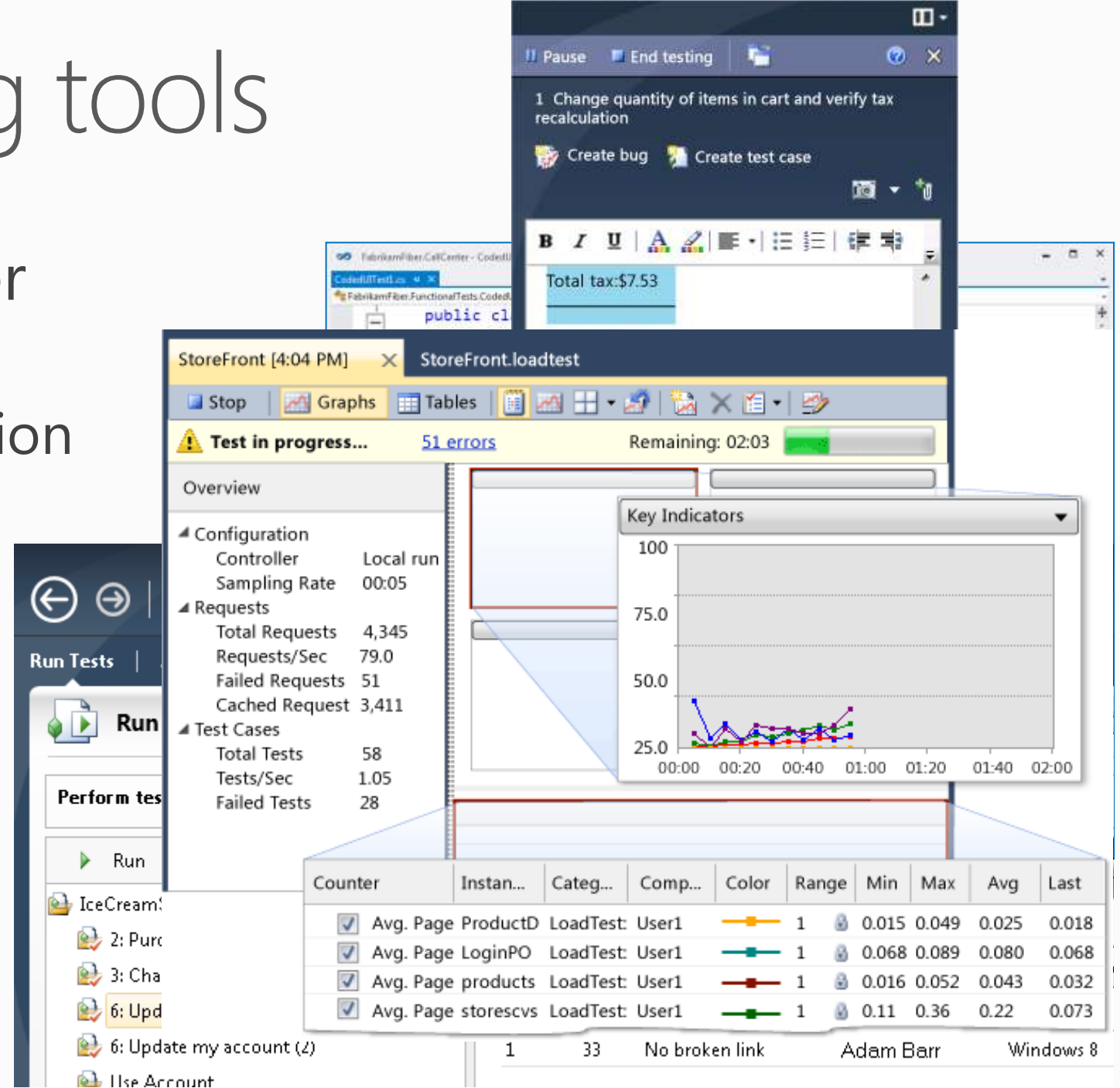
The screenshot shows the PREfast Defect Log window. The title bar reads "PREfast Defect Log". The window contains a "Message List" table with 15 entries. Each entry is a warning (level 314) about "Incorrect order of operations: bitwise-...". The source locations are various files in the test directory, and the functions are related to USB operations.

#	Description	Warning	Source Location	In Function
1	Incorrect order of operations: bitwise-...	314	e:\test\isousb\sys\isopnp.c(1286)	IsoUsb_SyncPas...
2	Incorrect order of operations: bitwise-...	314	e:\test\isousb\sys\isopnp.c(1399)	IsoUsb_SyncSen...
3	Incorrect order of operations: bitwise-...	314	e:\test\isousb\sys\isopnp.c(2839)	GetBusInterfac...
4	Incorrect order of operations: bitwise-...	314	e:\test\isousb\sys\isopwr.c(225)	IsoUsb_Dispatch...
5	Incorrect order of operations: bitwise-...	314	e:\test\isousb\sys\isopwr.c(353)	HandleSystemQu...
6	Incorrect order of operations: bitwise-...	314	e:\test\isousb\sys\isopwr.c(413)	HandleSystemSe...
7	Incorrect order of operations: bitwise-...	314	e:\test\isousb\sys\isopwr.c(825)	HandleDeviceSet...
8	Incorrect order of operations: bitwise-...	314	e:\test\isousb\sys\isopwr.c(894)	HandleDeviceSet...
9	Incorrect order of operations: bitwise-...	314	e:\test\isousb\sys\isopwr.c(1260)	HoldIoRequestsW...
10	Incorrect order of operations: bitwise-...	314	e:\test\isousb\sys\isodev.c(967)	SubmitIdleReque...
11	Incorrect order of operations: bitwise-...	314	e:\test\isousb\sys\isorwr.c(608)	PerformFullSpeed...
12	Incorrect order of operations: bitwise-...	314	e:\test\isousb\sys\isorwr.c(1318)	PerformHighSpee...
13	Incorrect order of operations: bitwise-...	314	e:\test\isousb\sys\isorwr.c(1793)	IsoUsb_GetCurre...
14	Incorrect order of operations: bitwise-...	314	e:\test\isousb\sys\isostrm.c(294)	IsoUsb_StartTra...
15	Incorrect order of operations: bitwise-...	314	e:\test\isousb\sys\isostrm.c(483)	IsoUsb_IsoIrp_C...

At the bottom of the window, there is a status bar showing "FabrikamFiber.Web.Tests.... 12" with "100.00 %" and "0" in the middle, and "0.00 %" on the right. Below the status bar are tabs for "Error List", "Output", and "Code Coverage Results".

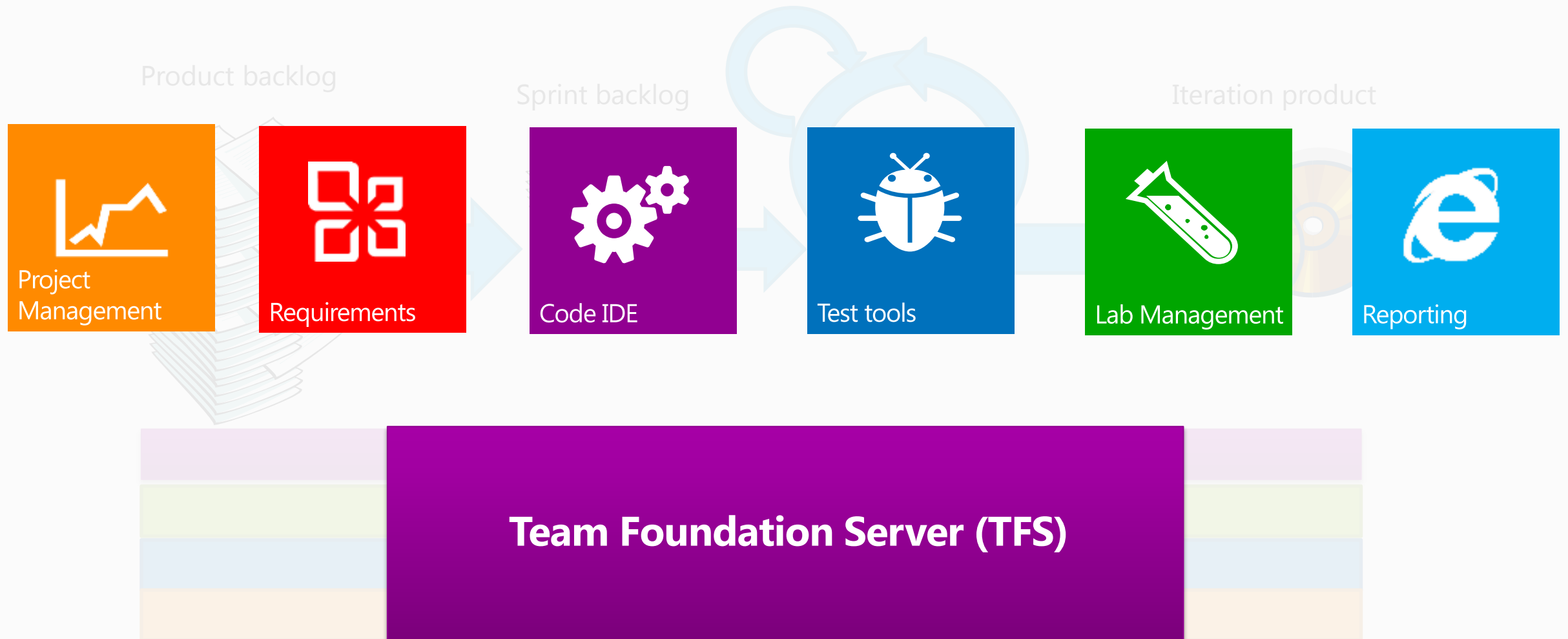
# Black box testing tools

- ▶ Microsoft Test Manager
  - ▶ Test case management
  - ▶ Manual test case execution
  - ▶ Exploratory testing
- ▶ GUI Test automation
  - ▶ Coded UI Test
- ▶ Performance testing
  - ▶ Multi-tiered systems



# Microsoft Visual Studio ALM

Common data – specialized tools



# Suggested reading

## "Testing for continuous..."

- ▶ Free book from Microsoft
- ▶ <http://msdn.microsoft.com/en-us/library/jj159345.aspx>

## "How we test software @ MS"

- ▶ <http://www.hwtsam.com>

## The test blogg

- ▶ Testing from Microsoft perspective
- ▶ <http://aka.ms/testblog>



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