Testing Trends and Innovations

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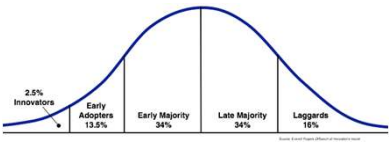
What Is An Innovation?

- in·no·va·tion (ĭn'ə-vā'shən)
  1. Something new or different
  2. Something newly introduced or adopted
  3. A creation (a new device or process) resulting from study and experimentation

Are All Innovations?

- For some of you – Yes
- For others -- No



Trends and Innovations

- Process
- From Agile
- Education
- Technology and Tools
- Process Improvement

Trends and Innovations

- Process
  - Context-driven School
  - Checking vs. Testing
  - Crowdsourced Testing
  - The Weekend Testers
  - Exploratory Testing

Context-Driven School

- Testing groups exist to provide testing-related services. They do not run the development project; they serve
- It is entirely proper for different test groups to have different missions. A core practice in the service of one mission might be irrelevant or counter-productive in the service of another
- There are NO BEST PRACTICES – there are, however, good practices in specific contexts

Trends and Innovations

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Checking vs. Testing

- **Checking** is something that we do with the motivation of *confirming existing beliefs*
- **Checking** is a process of *confirmation, verification, and validation*. When we already believe something to be true, we verify our belief by checking
- **Checking** is a highly automatable process

Michael Bolton

http://www.developsense.com/blog/2009/08/testing-vs-checking/

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Checking vs. Testing

- **Testing** is something that we do with the motivation of *finding new information*
- **Testing** is a process of *exploration, discovery, investigation, and learning*. When we configure, operate, and observe a product with the intention of evaluating it, or with the intention of recognizing a problem that we hadn't anticipated, we're testing
- **Testing** is not automatable. It's using our brain in real time, and it's really fun

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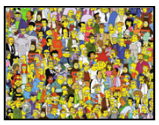
Crowdsourced Testing

- If virtualization makes sense for hardware, why not for test teams?
- Crowd testing is using a virtual test team rather than, or in addition to, an organization's dedicated team
- Your organization defines a set of test requirements (types of testing, scenarios, environments, platforms, etc.)



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Crowdsourced Testing

- A crowd test vendor (utest.com, mob4hire.com, …) identifies a pool of qualified testers, creates a test project, assigns the work to testers, monitors the progress, and reports defects
- The crowd test vendor compensates testers and evaluates their performance
- Testers receive "Pay Per Bug" and also "Pay Per Valuable Feedback"

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The Weekend Testers

- The Weekend Testers began with a group of people in India who wanted to learn to test better
- A typical weekend session consists of registration, facilitation, a testing session, and a follow-up discussion

- It's all done through a Gmail chat group. The facilitator provides product download details, test mission, and one hour time limit

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The Weekend Testers

- At the end of the time limit, testers participate in a group discussion for the next hour
- They share experiences, challenges, defects found, traps they got caught in, and other ideas
- Testers not only hone their skills, but share and learn new test ideas, strategies, and tools
- Want to join, or form your own group?

www.weekendtesting.com

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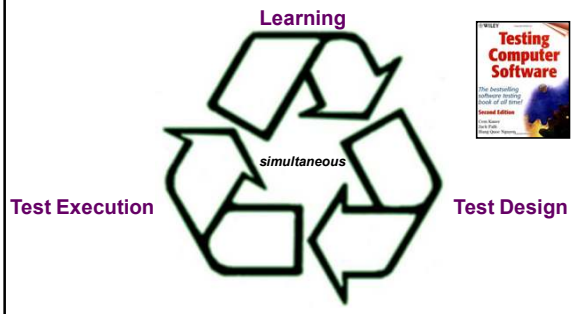
Exploratory Testing



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Exploratory Testing

"The classical approach to test design is like playing '20 Questions' by writing out all the questions in advance."

- James Bach

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Exploratory Testing

"Exploratory Testing, as I practice it, usually proceeds according to a conscious plan. But not a rigorous plan … it is not scripted in detail."

"To the extent that the next test we do is influenced by the result of the last test we did, we are doing exploratory testing. We become more exploratory when we can't tell what tests should be run in advance of the test cycle."

- James Bach

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Exploratory Testing

- Exploratory testing can be concurrent with product development and test execution
- Based on implicit as well as explicit (if they exist) specifications as well as the "as built" product
- Starts with a *conjecture* as to correct behavior, followed by *exploration* for evidence that it works/does not work

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Trends and Innovations

From Agile

- Test-first Development
- Acceptance Test-driven Development (ATDD)

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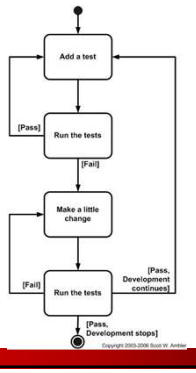
Test-First Development



Developers "refuse to add even a single line of code until a test exists for it."

- Scott Ambler

Then,
TDD = TFD + Refactoring

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Test-First Development

- Goals
  - Accurate specifications
  - Useful specifications
  - Focus the mind
  - Write clean code
  - Prevent the creation of an "inventory" of things that don't work

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Trends and Innovations

From Agile

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- Acceptance Test-driven Development (ATDD)

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ATDD

- Acceptance Test Driven Development (ATDD) is the equivalent of TDD but at the functional level rather than the unit level
- Acceptance tests are often written by users (with the guidance of professional testers) using frameworks such as FitNesse

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ATDD

- Like TDD tests, ATDD tests are created and implement before code is written
- Like TDD tests, ATDD tests can take the place of pages of written requirements

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Trends and Innovations

Education
- Really Good Books
- (Big) Testing Conferences
- (Small) Testing Workshops
- Freedom of the Press

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Really Good Books

- *A Practitioner's Guide to Software Test Design – Copeland*
- *Secrets of a Buccaneer Scholar – Bach*
- *Systematic Software Testing* – Craig and Jaskiel
- *Lessons Learned in Software Testing* – Kaner, Bach, and Pettichord


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Really Good Books

- *Testing Computer Software* – Kaner
- *How to Break Software* – Whittaker
- *The Art of Software Testing* – Myers
- *The Craft of Software Testing* – Marick
- *Managing the Testing Process* – Black

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(Big) Testing Conferences

- STAR*EAST* and STAR*WEST*
- EUROSTAR
- STANZ
- STC – QAI in India
- JaSST

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(Big) Testing Conferences

- *Generalized* focus and *Lecture* style
  - Attendance solicited throughout the community
  - Unlimited participants
  - Focus on a large set of topics
  - Participation is not generally required
  - Presentations are collected, published, and available to all participants

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Trends and Innovations

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- (Small) Testing Workshops
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(Small) Testing Workshops

- *Specialized* focus and *Participatory* style
  - Attendance by application and/or invitation
  - Limited to 15-20 participants
  - Focus on a small set of topics
  - Participation is required; challenging presenters is encouraged
  - Learnings are collected, published, and available to all participants

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(Small) Testing Workshops

- Examples are:
  - Austin Workshop on Test Automation
  - London Exploratory Workshop in Testing
  - Los Altos Workshop on Software Testing
  - Workshop on Heuristic and Exploratory Techniques
  - Workshop on Open Certification of software Testers
  - Workshop On Performance and Reliability
  - Workshop on Teaching Software Testing

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Freedom of the Press

- "Freedom of the press is limited to those who own one."

— A.J. Liebling
(American Journalist)

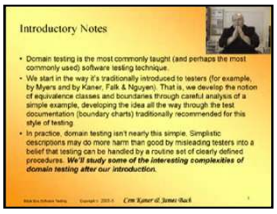
- Today's "press"
(and lots of people own these)

Freedom of the Press

- Blogs
  - James Bach www.satisfice.com/blog
  - Michael Hunter blogs.msdn.com/michael
  - Jonathan Kohl www.kohl.ca/blog
  - Antony Marcano www.testingreflections.com
  - Brian Marick www.exampler.com/blog
  - Elisabeth Hendrickson www.testobsessed.com/category/ruminations
  - many others …

Freedom of the Press

- Open Source Training
  - Black Box Software Testing (Kaner & Bach)



  - http://www.testingeducation.org/BBST/

Trends and Innovations

Technology and Tools
- Open-source tools
- Virtualization
- Testing in the Cloud

Open Source Tools

Development
Eclipse

Unit Testing
xUnit
Cobertura
NCover

System Testing
FIT
FitNesse
Watir
Selenium

Performance Testing
OpenSTA
JMeter

Trends and Innovations

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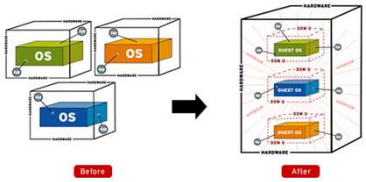
Virtualization

- Definition



- Vendors include Microsoft, Surgient, VMLogix, and VMWare

Virtualization

- Benefits
  - Rapid provisioning (30%-50% of testing is environmental setup time)
  - System state capture (capture/replay in its finest form)
  - Reduced costs (purchase, maintenance, space, power)

Trends and Innovations

Technology and Tools
- Open-source tools
- Virtualization
- Testing in the Cloud

Testing in the Cloud

- Rent as many servers as you like for as long as you like
  - Need a thousand servers for performance load generation?
  - Need multiple servers, each with a different configuration to simultaneously test your product?

Testing in the Cloud

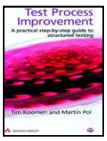
- Usage rates (US$):
  - $0.10/hour – small machine
  - $1.00/hour – extra large machine
  - $3.10 /can at the hotel

Trends and Innovations

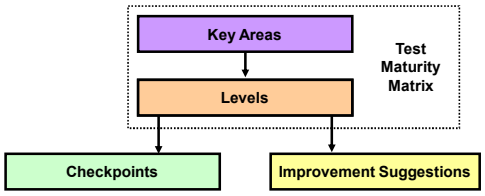
Improvement
- TPI
- TMMI

TPI

- Created by Tim Koomen and Martin Pol based on their experience at the Dutch software company IQUIP.
- The TPI model was defined in 1997 and a book was published in Dutch that same year.
- The English translation was published in 1998.



TPI



TPI

- Twenty key areas cover the testing process:
  - Test strategy
  - Life-cycle model
  - Moment of involvement
  - Estimating and planning
  - Test specification techniques
  - Static test techniques
  - Metrics
  - Test tools
  - Test environment
  - Office environment
  - Commitment and motivation
  - Test functions and training
  - Scope of methodology
  - Communication
  - Reporting
  - Defect management
  - Testware management
  - Test process management
  - Evaluation
  - Low-level testing

TPI

KEY AREA	0	1	2	3	4	5	6	7	8	9	10	11	12	13
		Controlled					*Efficient*					*Optimizing*		
Test strategy		A					B				C		D	
Life-cycle model		A			B									
Moment of involvement			A				B				C		D	
Estimating and planning				A							B			
Test specification techniques		A		B										
Static test techniques					A		B							
Metrics						A			B			C		D
Test tools					A			B			C			
Test environment				A				B						C
Office environment				A										
Commitment and motivation		A				B						C		
Test functions and training				A			B				C			
Scope of methodology					A						B			C
Communication			A		B							C		
Reporting		A			B		C					D		
Defect management		A				B		C						
Testware management			A			B				C				D
Test process management		A		B								C		
Evaluation							A			B				
Low-level testing					A		B		C					

Trends and Innovations

Improvement
- TPI
- TMMI

TMMi

- The Test Maturity Model Integration has been developed to complement the existing CMMI framework
- It provides a structured presentation of maturity levels, allowing for standard TMM*i* assessments and certification, enabling a consistent deployment of the standards and the collection of industry metrics

TMMi

- TMM*i* has a rapidly growing uptake across Europe, Asia and the USA and owes its popularity to being the only independent test process measurement method

TMMi® FOUNDATION

www.tmmifoundation.org

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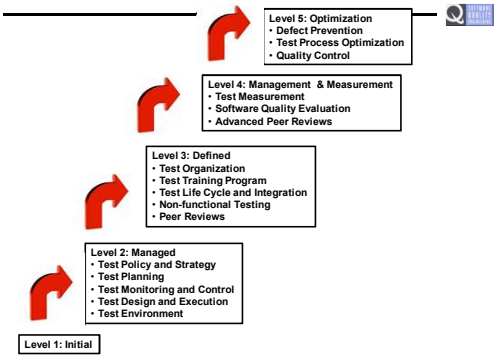
TMMI



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Future Innovations?

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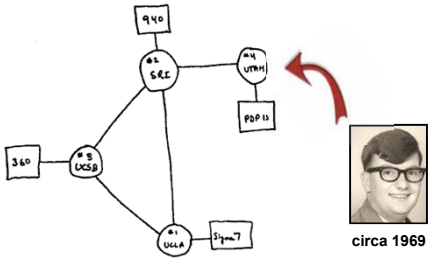
Future Innovations?

- My personal event horizon is very short



circa 1969

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Future Innovations?

"The best way to predict the future is to invent it."

– Alan Kay

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Thank You

- Thanks for joining with me today. I greatly appreciate the invitation to speak at JaSST
- If I can be of assistance, or if you'd just like to chat, please contact me at

lee@sqe.com

- And remember, … keep on innovating

My thanks to:
James Bach, Jon Bach, Rex Black, Bob Galen, Andy Glover, Dorothy Graham, Cem Kaner, Harry Robinson, Rob Sabourin, and James Whittaker

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