Structured Approach to Testing
- Android in an Agile Environment
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Meeting Testing Goals

- Ensuring Zero Defects in Production
- Developing High Performance Apps
- Maximizing User Satisfaction

- Functional Testing
  - Test Coverage
  - Performing Regression
- Non-Functional Testing
  - Usability
  - Compatibility
  - Performance

Top Challenges & Goals

- Managing many different device targets
- Lack of consistent standards
- Resource constraints of mobile devices
- Managing for different operating environment versions
- Managing special API versions
- Finding and integrating appropriate development tools
- Insufficient development methodologies
- Developing security for Web services clients
- Other
- None/ don’t know

n = 822
Source: IDC’s Software Developer’s Collaborative Study
Traditional vs Agile Testing Lifecycle

- Assuming nearly 40% efforts goes into Testing in a mobile lifecycle
- A traditional 4 week cycle would have at least 8 days of testing required
- An agile development cycle of 2 weeks would have only 4 days dedicated to testing
- Nearly 20% of TAT reduction – Standard Process Implementation, 40% - Automation using Industry Tools & 20% to Usage of Accelerators
Elements of a Structured Testing Approach

**Process Elements include**
- Best Practices & Reusable Assets
- W3C Industry Standards
- Continuous Iterative Improvements
- Defined Controls
- Post Implementation Checks

**Tools include**
- Test Case Designers
- Regression Automation
- Emulators
- Simulators
- Research Lab

**Accelerators include**
- Test Accelerators
- Platform Accelerators
- Design Accelerators

**3i Infotech’s Mobile Testing Elements**
Examples of Best Practices

**Maximum Coverage**
- Test Requirements → Business Scenario → Test Cases → Test Steps
- Negative
- Alternate
- Positive

**Maximum Traceability**
- Test Requirements → Business Scenario / Test scenario → Test Cases → Defects

**Maximum Reuse**
- Test Requirements
- Design Test Cases → Review Test Cases → Test Management Repository
- Extract Existing Test Cases
- Redefine Test Conditions

- Redesign Test Cases
Android Testing Methodology [ATM]

Process Elements

- Analyze
- Plan & Design
- Execute
- Report

Tester connects to smartphones in remote locations to test and troubleshoot mobile apps.

Carrier/Operator

Mobile Content, Services & Applications

Your Apps Here

Internet
Models for automated test generation

Process Elements

Business Needs

MBT Test Production

Test Repository

MBT Automated Traceability

Collaboration

Business Analyst

Automated test execution

Manual Test execution
Automated Test Design – Automatic generation of tests from models

- Functional specifications
- Standards
- Communication with designers
- Reduced risk of missed tests, incorrect tests, redundant tests

Tester creates model

- Productivity improvement
- Increased coverage

Model

Automatic test generation

Test Execution

Executable tests

Automated Test Design Benefits

- Significant increases in productivity
- Improved quality tests
- Cost-effective test suite maintenance
- Guaranteed requirements coverage
- Independence from test execution environments
- Early detection of specification defects
- Flexible in regards to design processes

Illustrative
The test generation engine computes from the models all the test cases necessary to reach the defined coverage.

**Test Design Automation**

**Reporting - Traceability**

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**Cumulative effort per release**

- **Traditional**
  - +50% productivity increase
  - -70% test productivty increase
  - +50% maintenance cost reduction

**Benefits**

1. Project
2. Maintenance
3. 4
4. 5
5. 6
6. 7

Source: Business Case Tool™ Smartesting
Benefits

Easy and efficient script creation

- Reduced manual testing efforts on all platforms
- **Full flow control**
  - Including conditions, loops, flow commands, expressions and data-structures
- **Detailed reports**
  - Reporting results, screen captures in digital format, continuous video recording of the entire script and graphs showing statistics about the execution

Enhanced collaboration

- Save time and money on problem reproduction by using real-time online handset sharing with multiple participants

Open API

- Integration into 3rd party tools such as test management, monitoring and defect tracking

Tools for Execution
Test Platform as a Service [TaaS] – Test Services on Hire

CLIENT ORGANISATION

Testing Team

CLOUD

CLIENT INTERFACE

Account Mgmt
Pay by Use

Project Manager

TOOLS (SaaS)

COE

SME’s
Domain

Process
Assets

Infrastructure

Hardware
Software
Test Data

<table>
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<tr>
<th>Access to Tools</th>
<th>Access to SME’s on various testing techniques</th>
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Option 2

Access to Tools

Access to SME’s on various testing techniques

Access to Domain Assets

Proven Process/Methodology/Best practices
The Enablers

Domain & Automation Lab

Mobile Testing Lab

Performance & Compliance

Bangalore

Hyderabad

Chennai

Virtual Labs

Physical Labs

Core Infrastructure

- 2 IBM X3650, Xeon Quad Core 1.60 GHz
- 16 GB RAM, 300 GB HDD*2
- 2 IBM X3650, Xeon Quad Core 1.60 GHz
- 8 GB RAM, 500 GB HDD*2

Extendable Infrastructure

- Cloud Infrastructure

Tools (Software)

Testing Tools

- HP
- DeviceAnywhere
- Keynote
- Smarttesting

Knowledge Management

- MS SharePoint
- NetDimensions

Communication

- Citrix
- VPN
THANK YOU