Role of Test Manager at Crossroads?

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PNSQC - October 2015
The World of IT Today

Digital Revolution

- By 2020, connected devices will touch 50 billion
- By 2017, 35% of enterprise applications will be hosted on cloud
- 64% of the testing in new development projects relates to big data, mobile and cloud

Specialization & Consolidation

Market consolidation will displace up to 20% of the Top-100 IT service providers

Most organizations prefer external service providers for QA in a co-managed model, over purely in-house or fully-outsourced models

Continuous Delivery

- Amazon deploys code every 12th second, and Facebook, every half-day
- By 2016, DevOps will move from being “niche” to “mainstream”
- By 2016, 25% of the Top-2000 global firms will adopt DevOps

Source: The World of IT Today

World Quality Report 2014
The CIO Questions

Is QA adding value
Is cost of quality too high
Is QA too archaic for the complex technologies
Is QA too functional-focused vs UX-focused
Is QA too slow for the go-to-market demands

OPTIMIZE

TRANSFORM

How to optimize and transform QA on-the-fly, without impact to projects

Reduce QA Costs to sub-20% levels
Attain Test Effectiveness of 95%+
Increase Speed to Market by 20% or more
Leading-edge technology adoption

LEAN & TRANSFORMATIONAL

“Repositioning QA to be a diffused, value-enhancing & future-ready component of IT and Business, without impacting speed-to-market and cost priorities”
How Has Testing Evolved ….

VALUE OF TESTING

- **Adjunct To Development**
  - Afterthought
  - Left to the less skilled, lower paid
  - Few tools and little automation
  - No management visibility/involvement

- **Important Phase In SDLC**
  - Key to good quality software
  - Planned and monitored as a phase
  - Explosion of tools, but no tool strategy
  - Management involvement rudimentary

- **Strategic To IT Organization**
  - Own budget, clear leadership and ownership
  - High visibility to executive management
  - Integrated test activities, tool selection

- **Diffused Engineering Phase Driving Business Assurance**
  - Focus on customer experience
  - Automation of all wait-times
  - End-to-end integrated tool sets and delivery platforms enabling continuous delivery

How Has Test Manager Evolved

Traditional Model:
- Manage testing schedules, resources, costs, risks.
- Integration left to project/program manager.
- Technology management & governance secondary.

Agile Model:
- Test management diffused into project
- Self organizing, role blurring, skill diversification in teams
- Educate and coach testers on Agile culture

Next Generation Model ??
Test Manager @ Crossroads

- SDLC Governance
- Production Support
- QMO
- Release Management
- Balanced Scorecard
- M&A Synergies
- Earned Value Management
- Transformation
- Partner alliances
- Tools
- Innovation
- Technology
- Infrastructure
Technology Evangelization

**WHY**

- Document- & process-based improvements are inadequate for the technological complexities
- Speed to market priorities call for technology adoption in projects on the fly
- Value progression from analysis to synthesis

**WHAT**

- Being an expert and a trusted advisor on a technology area
- Socialize and gather critical mass of support within an organization for use of the technology
- Connect with industry and discover innovative to uses of the technology to solve problems
Technology Evangelization Framework

End-to-end food chain of technology adoption from conceptualization to implementation

- Problem Identification
- Pattern Analysis
- Solution Evaluation
- Proof of Concept

- Value Analysis
- Implementation
- Socialization of Change
- Roadmap for Adoption
The QA Landscape ...

- 95 SAP & Non-SAP applications across 8 LOB's
- 500 ESB-based interfaces
- 200 web services
- 10 middleware protocols
- 8 integrated test landscapes
- 25 application dev vendors
- 12 releases per year
- 280 testers at onsite & offshore

... & The Challenges

- **Environment Conflicts**
  - Out of 95 key applications, ~30 shared across multiple landscapes

- **Environment Delays**
  - 2-6 weeks of wait for environments

- **Environment Stability**
  - 16% environment related defects

- **Environment Maintenance**
  - 8 integrated test landscapes, higher maintenance

- **Late Defect Detection**
  - 80% of defects detected in SIT or later

- **Ineffective Static Stubs**
  - Static stubs with low scalability and customizability

- **PT Schedule Overruns**
  - Constraints for early and tier specific performance testing
<table>
<thead>
<tr>
<th>QA ENV GAPS</th>
<th>Key Tasks</th>
<th>Scope</th>
<th>Benefits</th>
<th>Success Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Landscape gap analysis</td>
<td>7 environments – Q1</td>
<td>$ 800K YTD projected</td>
<td>Env/Infra team support</td>
</tr>
<tr>
<td></td>
<td>Rigorous feasibility analysis</td>
<td>13 environments – YTD</td>
<td>$ 750K YTD projected</td>
<td></td>
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<tr>
<td>EFFICIENT SIT</td>
<td>Inventory ESB &amp; WS interfaces</td>
<td>41 services – Q1</td>
<td></td>
<td>Release approach</td>
</tr>
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<td></td>
<td>Prioritize scope by release</td>
<td>78 services – YTD</td>
<td></td>
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</tr>
<tr>
<td>EARLY INTEGRATED SYSTEM TEST</td>
<td>Socialize SV to Dev teams</td>
<td>3 projects – YTD</td>
<td></td>
<td>Leadership support</td>
</tr>
<tr>
<td></td>
<td>Prioritize scope by release</td>
<td>10% - projected in Q3, Q4</td>
<td></td>
<td>Change management</td>
</tr>
<tr>
<td>TIER BENCHMARKING</td>
<td>Analyze blueprint and isolate tiers</td>
<td>Web application areas like eCom, Loyalty</td>
<td></td>
<td>Dev team support</td>
</tr>
<tr>
<td></td>
<td>Virtualize WS &amp; interfaces</td>
<td></td>
<td></td>
<td>Change management</td>
</tr>
<tr>
<td>AUTOMATION INTEGRATION</td>
<td>Identify support applications in e2e flows</td>
<td>20% of the 700 automated e2e flows</td>
<td></td>
<td>Socialization of benefits</td>
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<td></td>
<td>Integrate virtual services, customize framework</td>
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<td></td>
<td>with functional test teams</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Skilled resource pool</td>
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</table>
Case Study on SV: Solution Evaluation (ROI Analysis)

Breakeven Analysis

Break even is expected on Aug 2015

- Total Cost
- Cog QA Savings
- Total Savings
Case Study on SV: Innovative Usages & Roadmap

Inception 2014 Q4

Quick Wins 2015 Q1, Q2
- 3% SIT efficiencies
- $400K infra cost saving

Mid-Term 2015 Q3, Q4
- 3% SIT efficiencies
- $400K infra cost avoidance
- 10% PT schedule saving
- 25% FUT DRE increase

Long-Term 2016 +
- 6% SIT efficiencies
- 50% FUT DRE increase
- Enable EPT, TDM, Dev-Ops

Dev-Ops
- Testing of components/web-services
- Integrate with CI tool

Dev Unit Test
- Environment gap redressal
- Enabler for landscape rationalization

Environment
- Early SIT through virtualization of impacted interfaces/components

Automation
- SV integrated with automation scripts
- Tier-level benchmarking
- Simulation of interfaces
- Early Performance Testing

TDM
- Generate test data
- Trace paths and table relationships to build TDM scripts

FUT
- Early integrated FUT
- Integrated Dev environment for FUT
- Eliminate non-critical environment dependencies for E2E regression

SV Scope
- Early Component Integration Test

RT
- Early Component Integration Test

QA
- Environment gap redressal
- Enabler for landscape rationalization

SV integrated with automation scripts
- Trace paths and table relationships to build TDM scripts
- Generate test data
- Early integrated FUT
- Integrated Dev environment for FUT
- Eliminate non-critical environment dependencies for E2E regression

• Early SIT through virtualization of impacted interfaces/components

• Tier-level benchmarking

• Simulation of interfaces

• Early Performance Testing

• Generate test data

• Trace paths and table relationships to build TDM scripts

• Early integrated FUT

• Integrated Dev environment for FUT

• Eliminate non-critical environment dependencies for E2E regression
## Case Study on SV: Value Analysis

<table>
<thead>
<tr>
<th>Measure</th>
<th>Metric / KPI</th>
<th>Values</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>SV Utilization</td>
<td>SV Transaction Count</td>
<td>Cumulative: 2165</td>
<td>Not applicable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Last 30 days: 1225</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% Utilization of services</td>
<td>Period 3: 29% (8 VS out of total 28)</td>
<td>30% - for each period</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quarter 1: 51% (21 VS out of total 41)</td>
<td>70% - for each quarter</td>
</tr>
<tr>
<td></td>
<td>% Projects leveraging SV</td>
<td>Q1 (Jan – Mar): 10% (3 out of 27)</td>
<td>Q1: N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>April: 5% (1 out of 21)</td>
<td>Q2: 5%</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Q3: 10%</td>
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<tr>
<td></td>
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<td></td>
<td>Q4: 25%</td>
</tr>
<tr>
<td>Early Defect Detection</td>
<td>Early Defect Detection</td>
<td>Not applicable for Q1</td>
<td>Q1 &amp; Q2 2015 - Evolve the FUT DRE Baseline</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Q3 &amp; Q4 2015 - Start the measurement</td>
</tr>
<tr>
<td>SV Delivery Productivity</td>
<td>SV Delivery Productivity</td>
<td>Q1 2015: 41 services (82% of plan)</td>
<td>Q1: 50 Services</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Q2: 50 Services</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Q3: 50 Services</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Q4: 25 Services</td>
</tr>
<tr>
<td>Applications Provisioned</td>
<td>Applications Provisioned</td>
<td>13 Applications</td>
<td>Not applicable</td>
</tr>
</tbody>
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Why Multi-Function Integration?

- Maximum risk for a program is at the points of integration of multiple disciplines
- Integrating and influencing the multiple functions outside QA is vital to engineer quality across the lifecycle
Multi-Function Integration Scope

- Enterprise Architecture
- Enterprise Tools Group
- PMO & QMO
- Project Mgmt
- QA
- Application Dev
- Change Mgmt
- Operations
- Release Mgmt
- Business Integration
- Infra Design & Capacity
- Infrastructure Support

Cognizant
In this role the test manager has to manage the value realization from QA's operational and strategic initiatives.

The role focuses on the balance between quality, speed and cost, assuring maximum value and alignment with the organization's objectives.
Value Management – Balanced Scorecard

Balance Scorecard Technique of Value Alignment

- Organization’s Strategic Intent
- IT Objectives
- QA Objectives
- Metrics & Measures
- Strategic Initiatives
- Continuous Improvements
- Operations

Value management can be performed through the use of the balanced scorecard technique, whereby the organization’s strategic objectives are translated into tactical and operational objectives.

- Align key performance measures with strategy at all levels of an organization.
- Provides strategic feedback and learning
- Facilitates communication and understanding of business goals and strategies
Balanced Scorecard: Align QA and IT Objectives

**IT Objectives**

- A: ERP complete and fully adopted including decommissioning of legacy applications
- B: Best IT organization – 1.2% of revenue; quality delivery with updated infrastructure
- C: Resilient, stable technology – 40% reduction in major incidents
- D: Cost savings delivered through creative IT solutions – $250M
- E: $500M in top line growth delivered through innovative IT solutions

**QA Objectives**

- A: Enable increase in number of project and incident releases by 20%
- B: Reduce MI’s and other production incidents by 20%
- C: 50% Reqmt & Design defects to be contained before Test phase
- D: Manage overall QA cost within 25%
- E: Achieve best-in-class QA maturity level of 3.3
- F: Achieve customer satisfaction score of 85%
- G: Achieve transformational and managed innovation savings of 5M+
- H: Achieve 25% more cross-skilling and up-skilling of associates

**Balanced Scorecard: Align QA and IT Objectives**
## Balanced Scorecard: Break Down Objectives Into Initiatives

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Themes</th>
<th>Initiatives</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Governance of QA and SDLC phases</td>
<td>Scope control &amp; CR process</td>
<td>Shift Left: Reqmt &amp;Design Review</td>
<td>•Reduce scope changes and schedule / budget overruns&lt;br&gt;•Minimize overlaps or shortening of test phases&lt;br&gt;•Avoid misalignment of Project and QA status reporting&lt;br&gt;•Achieve EVM of 80%+</td>
</tr>
<tr>
<td></td>
<td>PM – QAPM Integration</td>
<td>EVM Tracking</td>
<td></td>
</tr>
<tr>
<td>Process Improvements &amp; Gap Redressal</td>
<td>Release Mgmt Strategy &amp; Tool</td>
<td>Change Mgmt Process</td>
<td>•Code deployments as per release calendar&lt;br&gt;•Reduce MI’s related to deployments, batch and change control&lt;br&gt;•Reduce wait time for environment code refreshes&lt;br&gt;•Minimize regression defect leakage into production&lt;br&gt;•More throughput due to quicker defect resolution</td>
</tr>
<tr>
<td></td>
<td>Code Freeze &amp; Core Regression</td>
<td>Autosys &amp; Batch Testing</td>
<td></td>
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<tr>
<td></td>
<td>Defect Age Improvement</td>
<td></td>
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</tr>
<tr>
<td>Automation, Tools &amp; Innovation</td>
<td>Increase Regression Automation</td>
<td>Automated Env Dashboard</td>
<td>•Better regression coverage thru increased automation&lt;br&gt;•Reduce environment defects thru proactive monitoring of connectivity using automated dashboard&lt;br&gt;•Lower automation development cost thru accelerators&lt;br&gt;•Reduce tool license costs thru use of open source or alternatives</td>
</tr>
<tr>
<td></td>
<td>Tools &amp; Accelerators</td>
<td>Tool License Cost Rationalization</td>
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<tr>
<td></td>
<td>Expand ADPART usage</td>
<td>Innovation</td>
<td></td>
</tr>
<tr>
<td>Strategic Initiatives</td>
<td>Environment Virtualization</td>
<td>Shift Left: EPT &amp; Perf Engineering</td>
<td>•Reduce QA environment &amp; infrastructure costs thru SV&lt;br&gt;•Increase quality and decrease performance failures by building performance into design&lt;br&gt;•Reduce MI’s related to infrastructure&lt;br&gt;•Lesser cost and quicker speed to market thru use of mobile lab</td>
</tr>
<tr>
<td></td>
<td>Infrastructure Testing</td>
<td>Mobile Test Lab</td>
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<td></td>
<td>Innovative Pricing Models</td>
<td>Agile Testing</td>
<td></td>
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<tr>
<td>People Excellence</td>
<td>G1: Enhanced R&amp;R Programs</td>
<td>G2: Increase Certified Associates</td>
<td>•Motivated &amp; multi-tower trained QA team&lt;br&gt;•Increased Utilization&lt;br&gt;•Quick induction for new joinees</td>
</tr>
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<td></td>
<td>G3: Increase Cross-Skilling</td>
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Balanced Scorecard: Schedule & Track Progress

Initiatives tracked and reported regularly at executive level
To Conclude …

- Test Manager’s role is undergoing some interesting but very essential changes
- Technological Innovation, Integration and Value Management are the emerging dimensions
- Any questions, comments or thoughts?
- You can also email: Sreeram.Gopalakrishnan@cognizant.com
Thank You