

# **Leading and Managing QA Testing Teams - A Panoramic View**

**Presented to VanQ**

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# Abstract

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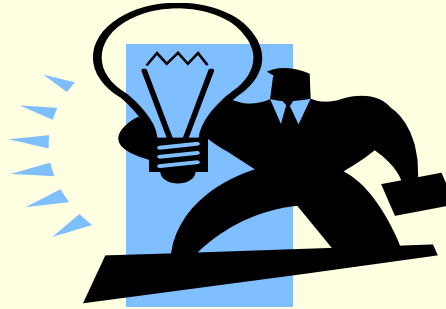
- As a QA testing engineer demonstrates his/her technical excellence, gains recognition from supervisors and progresses through the ranks of QA testing management, he/she will face **new challenges that need to be addressed in the new roles.**
- How does one handle the **competing demands** from different department? How can one **maximize test coverage** to meet a well-compressed schedule? One may also wonder how best to **allocate lab equipment / human resources**, to **hire** new members, or to manage multiple **concurrent test projects**. What is the optimal way to **organize and motivate** an often-understaffed team to cope with the ever-changing feature modifications that need to be tested? These are some of the questions that frequently plague the newly promoted test manager.
- This seminar aims at **providing insights**, through the presenter's training and experience earned from working in the trenches, to help the new manager gain some proven **tools** (and hopefully more confidence) in his/her **transition to an enriching journey of QA testing leadership in a dynamic high-tech environment.**

# About the Presenter

- **Jackson Lee** has been involved in high-tech industries for almost two decades. He has broad experience with startups and large companies (Alcatel, Hewlett-Packard, MPR Teltech). He has played different roles in the entire product development and operations lifecycle (**software designer, technical support specialist, project manager, process improvement specialist, QA testing engineer, manager, director**).
- Jackson's diverse career also included **12+ years' experience leading global QA testing teams** to successfully verify integration of networks and applications. He was Director of Testing and Quality Control at SmartTire Systems and held numerous QA Testing Manager positions in various organizations. Jackson has strong expertise in QA testing, project management and process implementation. He is a certified ISO9001:2000 / TS16949 Quality Auditor.
- As an enthusiastic quality practitioner, Jackson is **passionate** about developing test team members and ensuring timely releases of high-quality products to customers. He holds **Bachelors and Masters degrees in Electrical Engineering**, an **MBA** from UBC, and is currently preparing to obtain his PMP designation. Jackson speaks 5 languages and is an avid badminton player.

# Agenda

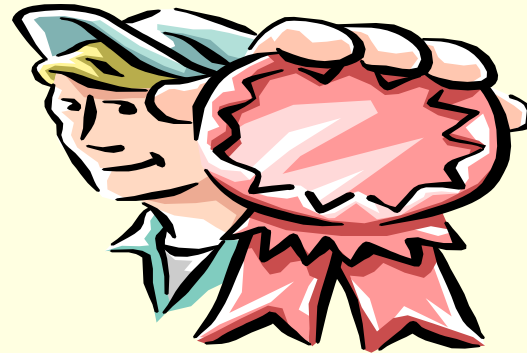
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1. Carry out the Mandate of a QA Testing Manager
2. Establish Cooperative Working Relationships with Colleagues
3. Develop Efficient and Effective Processes
4. Plan and Conduct Product Testing
5. Conclusion

# 1. Carry out the Mandate of a QA Testing Manager

- Lead and manage teams to deliver high-quality products via:
  - providing and implementing **quality** initiatives
  - planning and managing **testing** activities



## Definition of **Quality**:

- *Philip Crosby (1979)* - conformance to requirements: meeting customer expectations, both **stated** and **unstated**.
- *Joseph Juran (1974)* - **fitness for use**
- *PMI Project Management Body of Knowledge (2008)* - the degree to which a set of inherent characteristics fulfill requirements

# ...Mandate

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- ❖ **As guardian of the quality gate of the company, your every decision should be made, and your every action should be taken, with the mindset of ensuring that the product meets the needs of the intended user**



## 2. Establish Cooperative Relationships with Colleagues

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### ■ Interaction with Team Members

- Set up structure and then **manage by exception**
- Establish **protocol of communications and interactions within team** – **sincere**, **assertive**, **integrity**, **dignity**
- Share departmental vision
- Foster **cooperative** environment: Be fair, open – lead to mutual trust and respect
- Team organization - **Functional Specialty** (Product, QA domains e.g. management of lab, defects, CM)
- Set clear **priorities** on projects / tasks
- **Task, Ownership, Deliverable, Deadlines**
- Delegate: Responsibility – Authority – Accountability

# ...Relationships with Colleagues

## ■ Interaction with Team Members (cont'd)

- Create a **proactive, learning** culture
  - Encourage exchange of lessons learned
  - Arrange technical and leadership training
  - Mentor staff on proper mindset and attitude (QA Testing Staff = **Technical Expert + Politician**)
- Relationship building – build rapport with team
- A note on hiring: **Hire enthusiastic people who love their work**





# ...Relationships with Colleagues

## ■ Interaction with Management

- **Provide honest opinion** on feasibility, estimates and progress
- **Report problems early** (but make recommendations) to allow management time for remedial actions as necessary

## ■ Interaction with other Department Members

- Win/Win mindset



- ❖ **Set up appropriate QA team structure, clarify communication protocols and be sincere, but assertive, when interacting with colleagues**

# 3. Develop Efficient and Effective Processes

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- **Establish Quality Framework in the company**
  - Goals of QA programs – **end-to-end integrity**; minimize post-installation costs
  - Focus more on **defect prevention**, than detection
  
- **Implementation of Quality Process Initiatives (through collaboration with Management)**
  - **Get certified to related industry standard(s)**  
e.g. Automotive: ISO9001:2000/TS16949, Telecom: TL9000
  - **Product Development Lifecycle Methodology**  
e.g. Waterfall Model, Agile Development
  - **Best practices**  
e.g. design checklists, code logic reviews, inspections

# ... Efficient & Effective Processes

- **Introduction and Implementation: Plan, Execute, Monitor**  
**Process programs**
  - Step 1: Obtain **Management buy-in**
  - Step 2: Define goals
  - Step 3: Set SMART objectives  
S.M.A.R.T. = Specific. Measurable. Attainable. Relevant. Time-bound.
  - Step 4: Find early supporters
  - Step 5: Do pilot project and capture lessons
  - Step 6: Expand operation and monitor progress
  - Step 7: Audit and Refine
  
- ❖ **Work with cross-functional departments to define and implement quality initiatives in incremental steps, with continuous improvement in mind**

# 4. Plan and Conduct Product Testing

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## ■ Test Planning

- Clarify test objectives
- **Involve testing early** – e.g. testers given access to requirements/design document or invited to key design meetings
- Develop **test strategies** (e.g. change-based, risk-based, frequently-used scenarios)
- Prepare **test cases** according to test categories (Regression-functional & performance, bug fixes, new features, enhancements)
- Base testing efforts on a prioritized feature schedule
- Seek appropriate balance of White- / Black- / Gray-box testing
- Coordinate **Integration, System, Beta, Acceptance testing**

# ... Product Testing

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- **Management of Multiple Concurrent Test Projects**
  - **Clarify project priorities** by referencing management-approved company project list, and allocating test resources and time accordingly
  - **Assign test lead to each test project** and set up effective test status reporting structure
  
- **Selection of Test Cases to Maximize Coverage**
  - Use **Requirement Traceability Matrix** - RTM (applied with appropriate granularity depending on the case) to match test cases to requirements
  - Use **Test Tracking Spreadsheet** (to facilitate selection of only the relevant test areas)

# Requirement Traceability Matrix (RTM)

REQUIREMENT TRACEABILITY MATRIX (RTM)									SOFTWARE Release x; Revision y
Customer Requirement / User Story ID	Title	Priority	Technical Requirement / Specification	QA Release Notes Section	Test Case ID in Test Grid	Testable (Y/N)	Overall Result	Acceptable for Current Release ?	Remarks
						Y	PASS		
						Y	FAIL	Yes	Failed in-house test <b>Bug Log:</b> Bug # 314 <b>Bug Type:</b> Functional Issue <b>Bug Category:</b> <u>Cosmetic</u> <b>Action Recommendation:</b> <u>To fix in next release</u>
						Y	FAIL	No	Passed in-house tests, but failed in beta field test. <b>SHOWSTOPPER!</b> <b>Bug Log:</b> Bug # 436 <b>Bug Type:</b> Performance Issue <b>Bug Category:</b> <u>Critical</u> <b>Action Recommendation:</b> <u>Engineering to fix before release</u>
						Y	PASS		
						Y	FAIL	No	Re-run of acceptance tests (using typical customer configuration) shows consistent failure. <b>Bug Log:</b> Bug # 258 <b>Bug Type:</b> Functional Issue <b>Bug Category:</b> <u>Major</u> <b>Action Recommendation:</b> <u>Engineering to fix before release</u>

# Test Tracking Spreadsheet

Test Case ID	Active Test? (Yes /Obs)	Test Selected (Yes / No)	Priority	Est. Test Duration	Reqm	Test Category	Test Area	Test Title	Build	Tester	Date Tested	Results	Remarks
SW_S1_SAN_0001.0	Yes	Yes	1	1 hours		Sanity	Hotswap		5.0.0.42	Kelly	11/12/08	Pass *	
SW_S1_SAN_0002.0	Yes	Yes	3	2 hours		Sanity	Display		5.0.0.42	Kelly	11/15/08	Fail	
SW_S1_SAN_0003.1	Yes	Yes	2			Sanity	Transmission		5.0.0.42	Kelly	11/12/08	Pass	
SW_S1_SAN_0004.0	Obs	No											
SW_S1_SAN_0005.1	Yes	No											
SW_S1_FCN_0001.0	Yes	Yes	1	2 hours		Functional	Logging		5.0.0.43	Kelly	11/05/08	Pass	
SW_S1_FCN_0002.0	Yes	Yes	2	4 hours		Functional	Configuration		5.0.0.45			Not Tested	
SW_S1_FCN_0003.0	Yes	No				Functional	Transmission						
SW_S1_FCN_0004.0	Yes	Yes	1	3 hours		Functional	Reception						
SW_S1_SYS_0001.0	Yes	Yes	3	2 hours		System	Load Balance		5.0.0.42	Jim	11/05/08	Pass	
SW_S1_SYS_0004.0	Yes	Yes	2	3 hours		System	Fault Tolerance		5.0.0.42	Jim	11/05/08	Pass	
SW_S1_SYS_0004.0	Yes	No				System	Transmission						

# ... Product Testing

## ■ Test Lab Management

- Simulation of actual usage environment
- Use of **sub**-real life user environment equipment
- Establish **Sacred area** vs **Jungle area**
- Establish **lab facility usage protocol**, e.g. restore configuration after usage, not interrupt other people's machine tagged with '*Testing-in-Progress*' label



- Establish appropriate test automation environment



# ... Product Testing

## ■ Test Execution, Monitoring, Results-Reporting

- Accurate logging of test defects (through usage of a **defect tracking tool** e.g. TestTrack Pro) which a **Change Control Board (CCB)** will **triage** on a regular basis – with focus on **critical / high severity** issues
- Test documentation – test reports, lessons learned, **release record** with metrics, such as:
  - Amount of testable requirements actually tested
  - Efficiency of problem detection **#Found / (#Field + #Found)**
  - Punctuality of product release
- ❖ **Develop appropriate testing strategies, select relevant test cases, prepare reports (after test execution) and release record (with metrics after product release)**

# 5. Conclusion



## Carry out the Mandate of a QA Testing Manager

- As guardian of the quality gate, your **every decision** should be made, and **every action** should be taken, with the mindset of ensuring that the product **meets the needs of the intended user**

## Establish Cooperative Working Relationships with Colleagues

- Set up appropriate QA team structure, clarify communication protocols and be **sincere**, but **assertive**, when interacting with colleagues

## Develop Efficient and Effective Processes

- Work with cross-functional departments to define and implement quality initiatives in incremental steps, with **continuous improvement** in mind

## Plan and Conduct Product Testing

- Develop appropriate **testing strategies**, select relevant test cases, prepare reports (after test execution) and **release record** (with metrics after product release)

*The journey of a thousand miles starts with  
a single step...*

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I hope you enjoy the journey of QA Testing Management  
as much as I do!

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