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**Enterprise Test Assessments – The
Who, What, When, Why and How**
Training Document
QAI Allstate 2012

Instructor Introduction



Presented By

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Senior Manager
Global Testing Practice

Individual Introductions

Name

Company

Name

Business

Type of systems

Other . . .

Experience/background

Testing

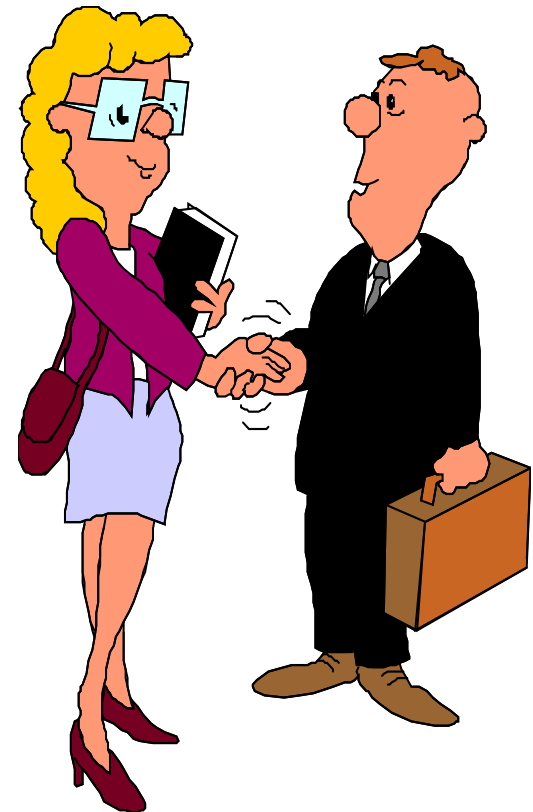
Internet/Web

Development

Management

Support

Other . . .



Enterprise Test Assessments – Agenda

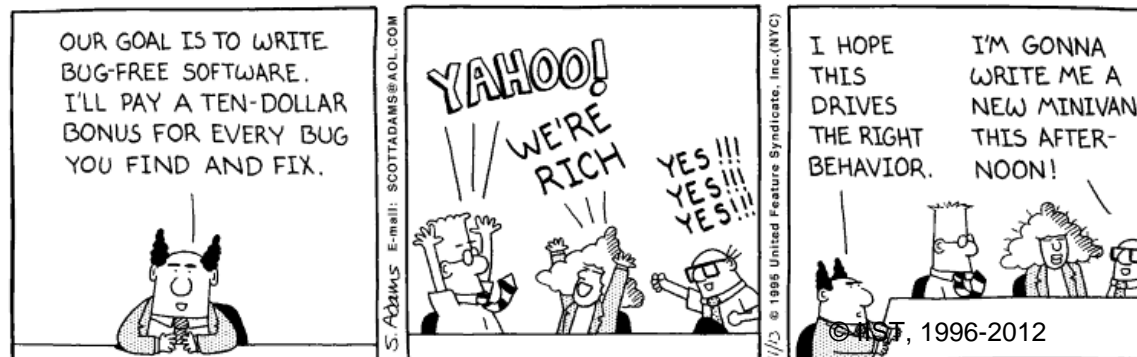
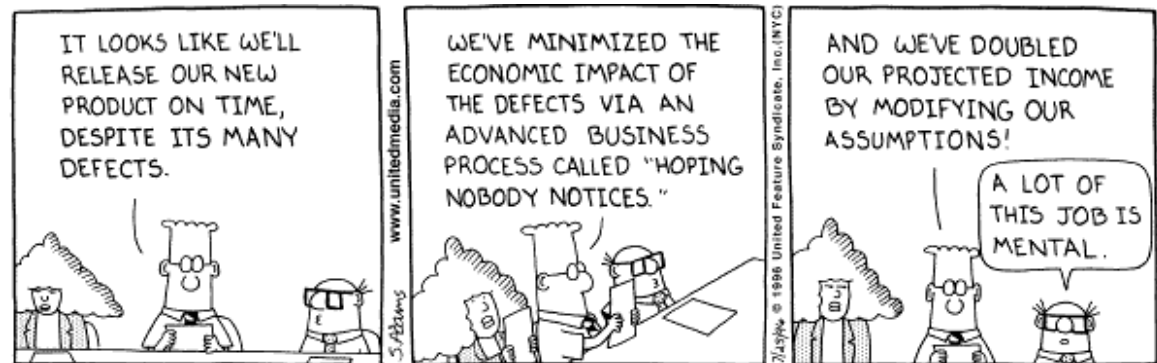
- Understand the Why, the What, the When and the How of the Assessment Process
- Understand the key value levers of process improvement
- Understand the Assessment Process & Key Deliverables
- Review Sample Test Assessments
- Understanding & Tracking Risk

Enterprise Test Assessments – The WHY



Increase Speed to Market

Improve Quality



Reduce Costs

Enterprise Test Assessments – The WHY

By having extensive experience, this methodology can provide outside perspective on optimizing testing center capabilities to enable effective support of business.

Common Testing Challenges

- Inefficient test plans
- Late identification of errors and/or errors not detected
- Inconsistent use of test methods and tools
- Insufficient test environments
- High operating cost
- Lack of reuse; Insufficient automation
- Testing activities conducted by non-testers (i.e. developers or business analysts)
- Overall lack of quality in application development processes
- High management overhead due to defragmentation of the organization
- Poorly written Requirements

*The approach presented herein leverages an **Enterprise Test Assessment** methodology to identify and tackle client challenges in order to develop ways to release value of its testing center to best meet future business needs.*

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Enterprise Test Assessments – The WHAT

Enterprise Test Assessment and Strategy Adherence Benefits

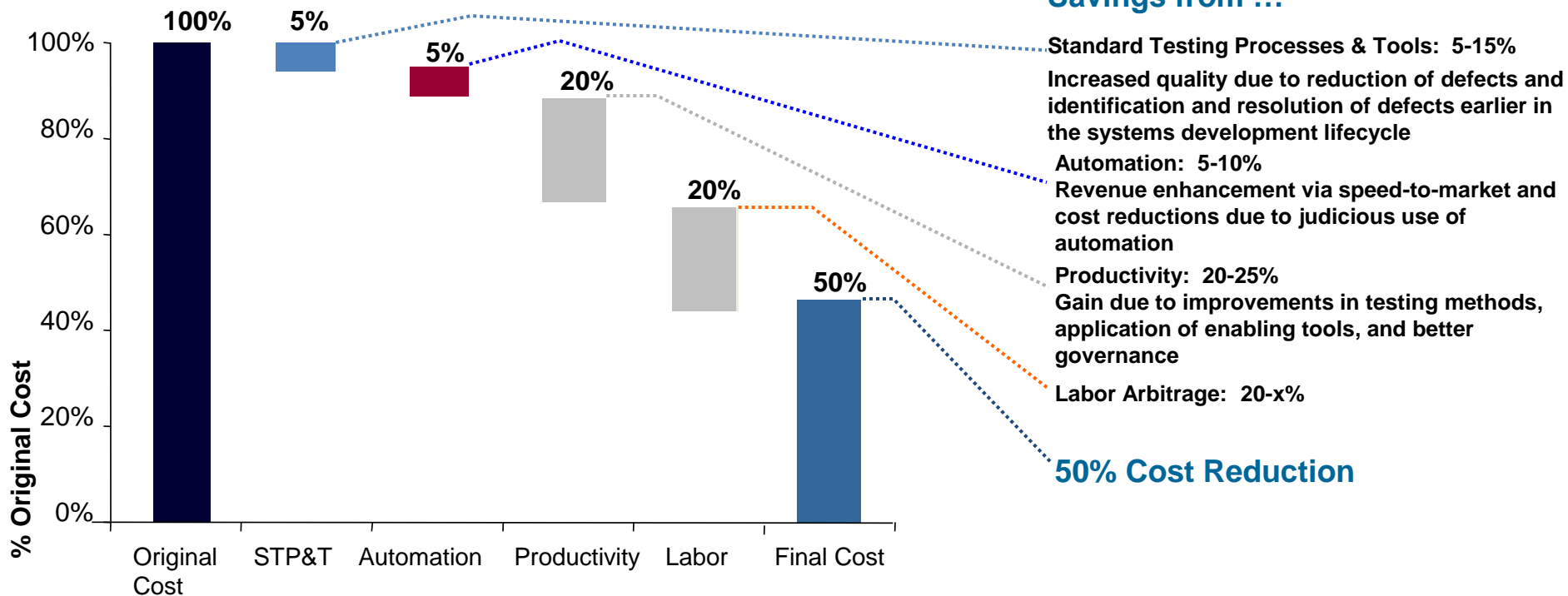
Testing Centers of Excellence have delivered IT and business savings of ~50%, combined with increased quality, improved speed to market, and decreased risk

Topic

Explanation

Quantitative Financial Benefits

Savings from ...

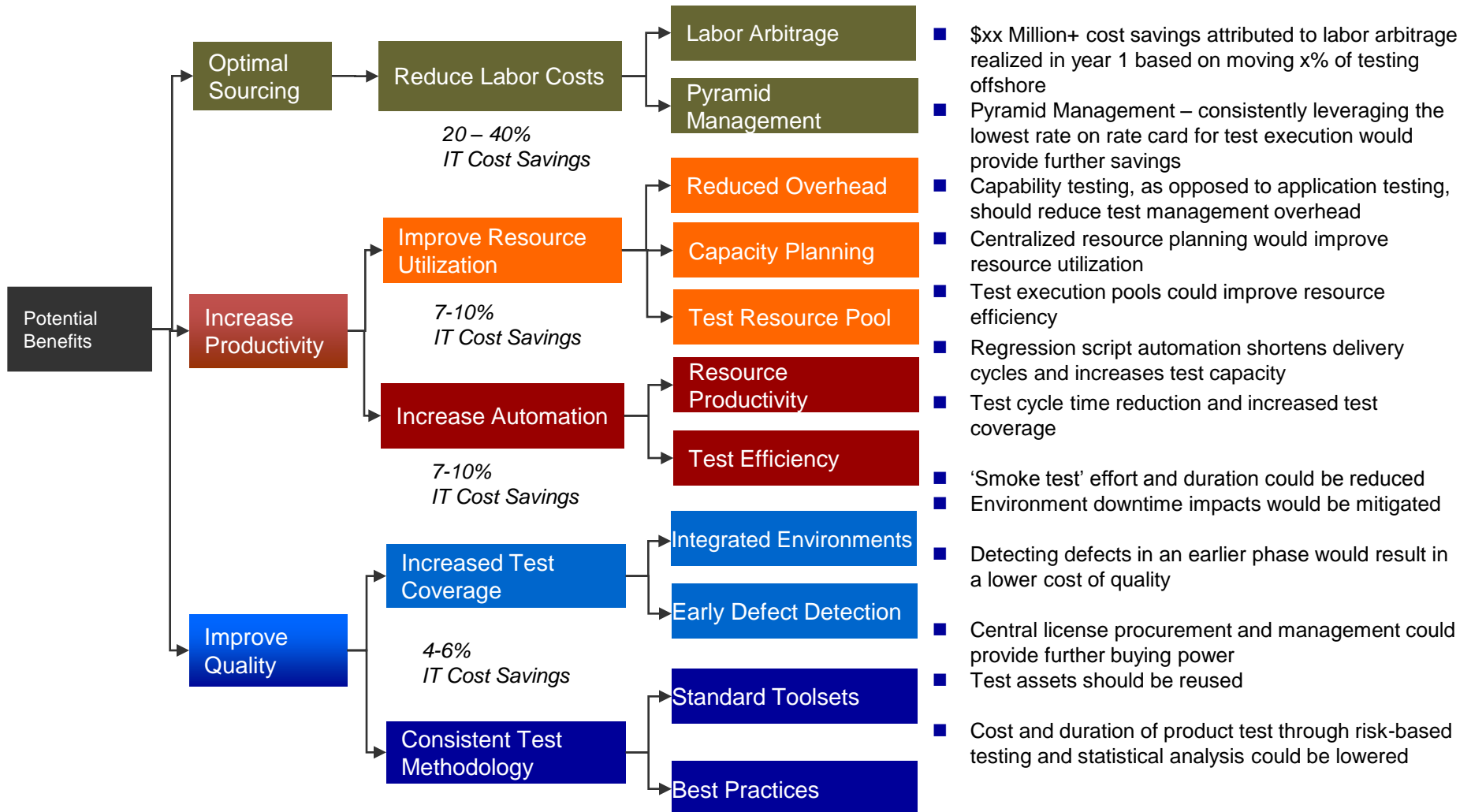


Qualitative Benefits

- Improvements to quality, consistency, CMMI compliance, transparency, and effectiveness – on time, on budget delivery to business, increased client satisfaction
- Decreased implementation risk - leveraging proven best practices and assets and skilled resources
- Speed to capability - leveraging “out of the box” solution components and proven methodologies, implementation expertise

Enterprise Test Assessments – The WHAT

Test Optimization Value Levers



Enterprise Test Assessments – The WHAT

Sample Value Lever Savings

The benefits case shows the estimated cost savings against the different value levers

Value Lever	Total Cost Savings			Cost Savings %	Description
Improve Quality	\$5,250,000	Increased Test Coverage	Integrated Environments	9%	a) Reduce smoke test effort and duration through controlled test env's, standard test data & software config. approach
			Early Defect Detection		b) Reduce environment down time through better env. mgmt.
		Consistent Test Methodology	Standard Toolsets	5%	Reduce cost impact of defects through earlier detection
			Best Practices		a) Reduce costs through central license procurement and management b) Reduce cost through reusability of test assets Reduce cost and duration of product test through risk-based testing and statistical analysis
Increase Productivity	\$6,264,000	Improve Resource Utilization	Reduced Overhead	4%	Reduce test management overhead through organizing test resources by test capabilities (i.e. automation, functional testing, performance testing, etc) vs. applications.
			Capacity Planning		Improve resource utilization through centralized resource planning and minimizing resource downtime through the peaks and valleys of the project lifecycle
			Test Resource Pool		Increase usage of test resource pools to improve resource efficiency
		Increase Automation	Resource Productivity	8%	Automate script execution to shorten delivery cycles and increase test capacity
			Test Efficiency		a) Reduce cycle time through increased test automation and improved capacity planning b) Increase test coverage through increased test automation, requirement coverage, and regression testing
Effective Sourcing	\$21,720,000	Reduced Labor Costs	Labor Arbitrage	29%	Decrease labor cost by moving to a 85% offshore/15% onshore mix
			Pyramid Management		Decrease labor costs by consistently shifting resources to lower cost through pyramid mgmt

Enterprise Test Assessments – The WHAT

Enterprise Testing Strategy and Assessment Services ...

- Assess the company's end to end Testing and Quality Assessment Processes
 - Identify challenges in the company's ability to develop/enhance the testing capabilities
- Develop recommendations to transform into a Testing Centre of Excellence
 - Identify opportunities for people/process/technology to change/evolve
- Develop a Roadmap to deliver on recommendations
 - Identify a values based delivery

... Assessment Scope focus

- Test Organization
- Test Strategy
- Test Automation
- Test Environment Management
- Test Data Management
- Performance Testing
- Requirements
- Estimation
- Project Management
- Defect Prevention
- Test Tools/Metrics/Reporting
- Other Client Specific Capabilities ...



Enterprise Test Assessments – The HOW

Input Requirements

The following inputs are typically needed when conducting an assessment:

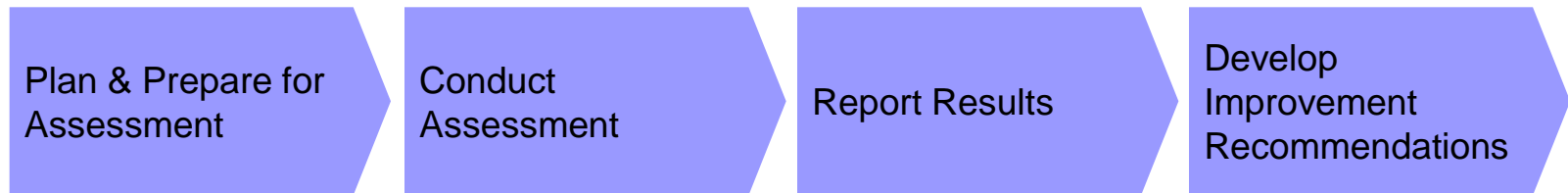
- For each application, the following artifacts are requested:
 - Organizational Structure
 - Test Plan/Strategy
 - Test Processes (test management, defect management, environment management, test data management, issue management)
 - Test Artifacts (test cases, requirements traceability matrix, test results, test status reports, defect data including production defects)
 - Defect Data for past six months (root cause, defects by component/module)
- For each application reviewed, the following key contacts will be interviewed:
 - QA Test Manager/Lead (1 – 3 hours for interview and follow up as needed)
 - Development Manager (1 – 2 hours for interview and follow up as needed)
 - Project/Release Manager (1 – 2 hours for interview and follow up as needed)
 - Automation Lead (if applicable)
 - Performance Test Lead (if applicable)
 - Configuration/Build Manager (if applicable)

Enterprise Test Assessments – Agenda

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Enterprise Test Assessments – The HOW

The Test Assessment Process has 4 Major Phases



Plan & prepare for assessment

- Develop assessment plan, Select & prepare team, Obtain & review evidence.

Conduct assessment

- Examine evidence, Verify & validate evidence (incl. interviews), Document findings, Generate results.

Report results

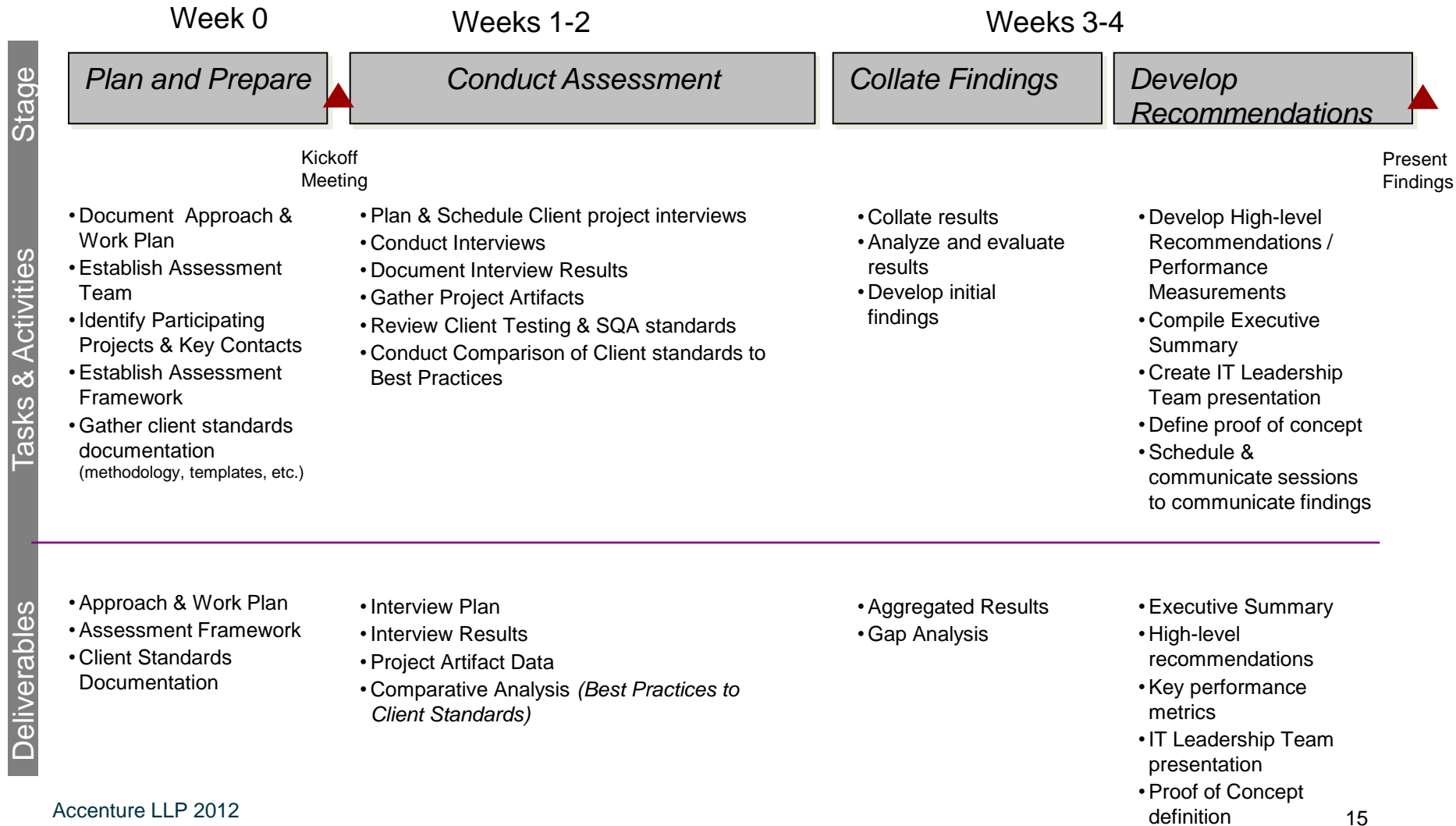
- Deliver assessment results, Package & archive assets.

Recommend improvements

- Identify & prioritize improvement suggestions, Develop improvement plan.

Enterprise Test Assessments – The HOW

Sample Test Assessment Timeline



Enterprise Test Assessments – The HOW Test Assessment Approach (Qualitative & Quantitative)

Testing Artefacts

The screenshot shows a Microsoft Word document titled "The Impact of COVID-19". The document is divided into two main sections: "Table of Contents" and "References".

Table of Contents:

- Introduction (1)
- Background (2)
- Methods (3)
- Results (4)
- Conclusion (5)

References:

1. World Health Organization. (2020). Novel coronavirus (2019-nCoV) situation report - 5. <https://www.who.int/docs/default-source/coronavirus/situation-reports/20200122-sitrep-2019-ncov-5.pdf>
2. Centers for Disease Control and Prevention. (2020). Novel Coronavirus (2019-nCoV) Case Counts by State. <https://www.cdc.gov/media/releases/2020/s0122-nCoV-case-counts.html>
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6. World Health Organization. (2020). Novel coronavirus (2019-nCoV) situation report - 31. <https://www.who.int/docs/default-source/coronavirus/situation-reports/20200311-sitrep-2019-ncov-31.pdf>
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17. World Health Organization. (2020). Novel coronavirus (2019-nCoV) situation report - 43. <https://www.who.int/docs/default-source/coronavirus/situation-reports/20200323-sitrep-2019-ncov-43.pdf>
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22. World Health Organization. (2020). Novel coronavirus (2019-nCoV) situation report - 48. <https://www.who.int/docs/default-source/coronavirus/situation-reports/20200328-sitrep-2019-ncov-48.pdf>
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24. World Health Organization. (2020). Novel coronavirus (2019-nCoV) situation report - 50. <https://www.who.int/docs/default-source/coronavirus/situation-reports/20200330-sitrep-2019-ncov-50.pdf>
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29. World Health Organization. (2020). Novel coronavirus (2019-nCoV) situation report - 55. <https://www.who.int/docs/default-source/coronavirus/situation-reports/20200404-sitrep-2019-ncov-55.pdf>
30. World Health Organization. (2020). Novel coronavirus (2019-nCoV) situation report - 56. <https://www.who.int/docs/default-source/coronavirus/situation-reports/20200405-sitrep-2019-ncov-56.pdf>
31. World Health Organization. (2020). Novel coronavirus (2019-nCoV) situation report - 57. <https://www.who.int/docs/default-source/coronavirus/situation-reports/20200406-sitrep-2019-ncov-57.pdf>
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Defect Data

[illegible]

Capability Assessment

TestArea	1	2	3	4	5
	Red	Orange	Yellow	Green	Blue
Test Organization		✓			
Test Case Management	✓				
Test Strategy		✓			
Automation	✓				
Tools/Metrics/Reporting		✓			
Performance Testing			✓		
Test Environment Management	✓				
Estimation		✓			
Release Planning			✓		
Maintenance/Regression Testing	✓				

Review Methodology

- Test artefacts will be used to assess the current testing methodology. Each artefact will be reviewed for completeness and thoroughness of content that a mature organization should contain.

Analyze Efficiency

- Defect data will be used to assess the quality of the testing organization. Additionally, this data will be used to quantify the overall Cost of Poor Quality (how much rework is costing your organization).

Assess Maturity

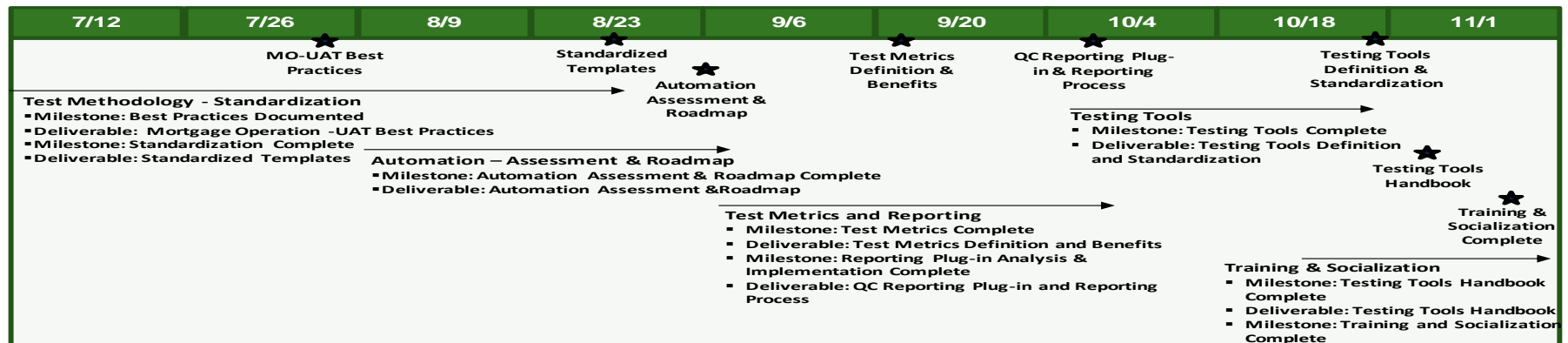
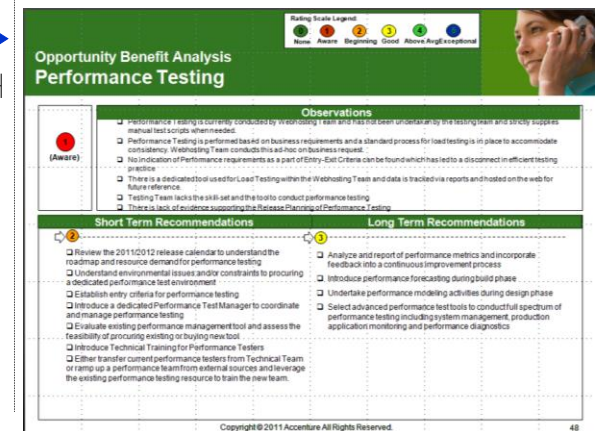
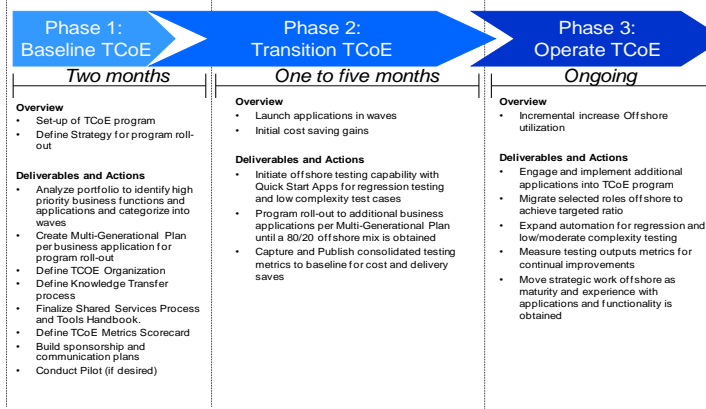
- The maturity of testing capabilities will be assessed via a series of interviews & artefact analysis resulting in a Test Assessment Scorecard that will rate each area of focus on a scale of 1 – 5 according to the Testing Maturity Model.

Enterprise Test Assessments – The HOW

Deliverable Samples

The following are examples of a Test Assessment Scorecard, TCoE Roadmap, Opportunity Benefit Analysis & Implementation Schedule.

Test Area	1	2	3	4	5
Test Organization	L M H	L M H	L M H	L M H	L M H
Test Data Management		✓			
Test Strategy		✓			
Automation	✓				
Tools/Metrics/Reporting		✓			
Performance Testing			✓		
Test Environment Management	✓				
Estimation		✓			
Release Planning			✓		
Maintenance / Regression Testing		✓			

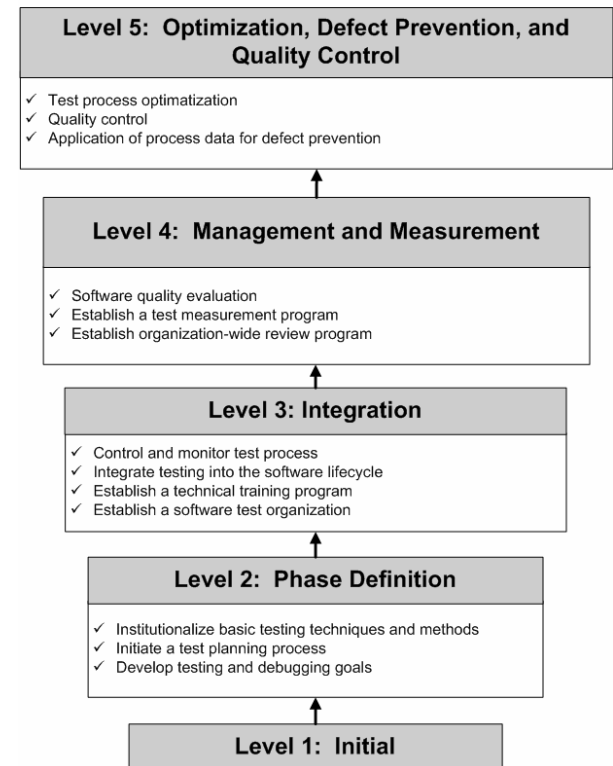


Enterprise Test Assessments - The HOW

Tool – Test Assessment Framework – Background and History

The Testing Maturity Model (TMM):

- Was developed in 1996 at the Illinois Institute of Technology
- Aims to address testing gaps in CMMI, ISO 9001, Bootstrap, and SPICE (ISO 15504)
- Takes a 5-staged approach (like CMMI) to testing maturity for organizations
- TMM Maturity **Sub-Goals** make up Maturity **Goals**, which make up the 5 TMM Test Maturity **Levels**



Enterprise Test Assessments – The HOW

TMM Key Maturity Differentiators

Linking CMMI Process Maturity with Testing Maturity

‘Initial’ 1

vs.

‘Defined’ 2

- ✓ At level 1, organizations struggle between testing and development/debugging, whereas at level 2, they recognize and define testing as a **distinct** discipline

‘Defined’

vs.

‘Integrated’ 3

- ✓ At level 2, organizations start testing with an unpredictable starting situation, whereas at level 3, they aim to test & plan testing **early** in the SDLC

‘Integrated’

vs.

‘Managed/Measured’ 4

- ✓ At level 3, organizations still focus on testing often & everywhere, whereas at level 4, they aim to **test less** by **management/control & quality review**

‘Managed/Measured’

vs.

‘Optimized’ 5

- ✓ At level 4, organizations aim to reduce test effort by management & control, whereas at level 5, they aim to reduce effort by automation, statistical testing, but mostly by defect **prevention** through overall SDLC **process improvement**
-

Enterprise Test Assessments – The HOW

Bridging the Gaps

- The 5 TMM maturity levels can be used to assess individual areas
- This approach enables:
 - Assessment of the entire organization
 - Assessment of the entire testing scope
 - Comprehensive, and targeted value creation

ILLUSTRATIVE

Test Area	1 Initial			2 Defined			3 Integrated			4 Measured Average			5 Optimized		
	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H
Test Organization							✓								
Test Data Management							✓								
Test Strategy							✓								
Automation				✓											
Deployment Verification Testing	✓														
Tools/Metrics/Reporting								✓							
Defect Prevention				✓											
Performance Testing	✓														
Test Environment Management					✓										
Estimation							✓								
Requirements					✓										
Regression Testing					✓										

Enterprise Test Assessments – The HOW

Test Assessment Rating Scale

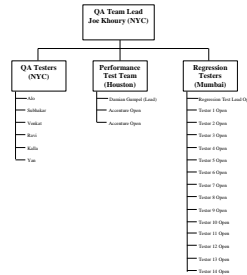
Based on review of the delivered artefacts and interview discussions, each test area was assigned a score that fell into one of the below ratings. The following definitions were considered for assigning ratings. The rating scale is based on the TMM developed at the Illinois Institute of Technology in 1996.

Rating	0 None	1 Aware	2 Beginning	3 Good	4 Above Average	5 Exceptional
Definition	Not performed	Not clearly demonstrated	Clearly demonstrated, but not integrated	Sufficiently demonstrated, integrated, but not managed/measured	Consistently demonstrated, integrated, managed, but not continuously improved	Fully demonstrated, integrated, managed, and continuously improved
Output	Risk & Waste			Productivity & Quality		
Scale		L M H	L M H	L M H	L M H	L M H
Current Industry Benchmark		Cross Industry (Current)		Cross Industry (Target)	Best Practises (General)	

So What does a Level 3 Organization Look Like?

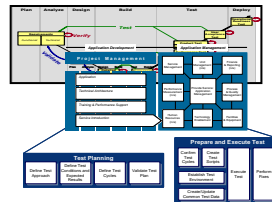
1 Testing Organization/ Strategy (Vision)

- Organizational testing framework
- Consistency of test stages per V-model
- Involvement of cross functional test teams with dedicated resources
- Involvement of testing resources across all stages of the SDLC



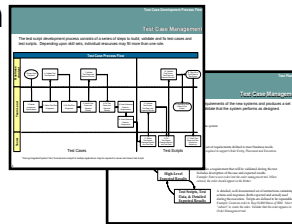
2 Testing Methodology

- Traceability
- Stakeholder Involvement
- Standardized QA/Planning/Tracking processes and tools
- Risk-Based Testing
- Exit/Entry Criteria



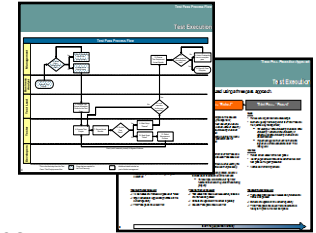
3 Test Planning and Preparation

- Documentation Consistency
- Key deliverable management, sharing, and approval
- Estimating and review process
- Training scope and process



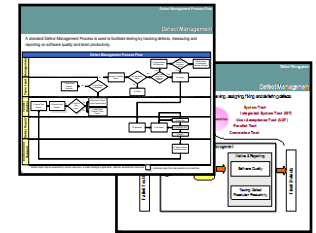
4 Test Execution

- Dedicated/Standardized Environment and test data
- Move user involvement forward in the development process
- Consistent level of prioritizing test cases



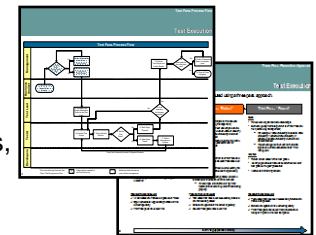
5 Test/Defect Management

- Capture, report, and track key metrics such as quality, rework, productivity, schedule, phase containment and effort
- Common test mgt/defect /process mgmt tools



6 Test Automation

- Increase speed, quality of testing, reduce test efforts, and optimize costs thru the use of automation tools, methodology, and strategy
- Automation test strategy
- Involvement of dedicated/skilled resources



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Enterprise Test Assessments

Sample Test Assessment Scorecard

Test Assessment Outcomes

- ❑ Client x currently has a Test Maturity at Level 1-2 in most areas, which is considered at the beginning stage.
- ❑ Test recommendations arising out of the Test Assessment aim to take Testing Services to a level 3 in most areas.

High Priority Implementation Tasks

- ❑ Test Environment / Data Management continues to cause major delays in testing and limits reuse
- ❑ Release Planning needs to be planned across the enterprise to ensure adequate support of the roadmap
- ❑ Test Organization Operational Model & Onshore/Offshore Mix needs to be addressed to ensure functional expertise and appropriate onshore leadership
- ❑ Knowledge Transfer gaps within existing projects has made it difficult to cross train resources
- ❑ Regression Gap Analysis to ensure proper test coverage is achieved

Lower Priority Implementation Tasks

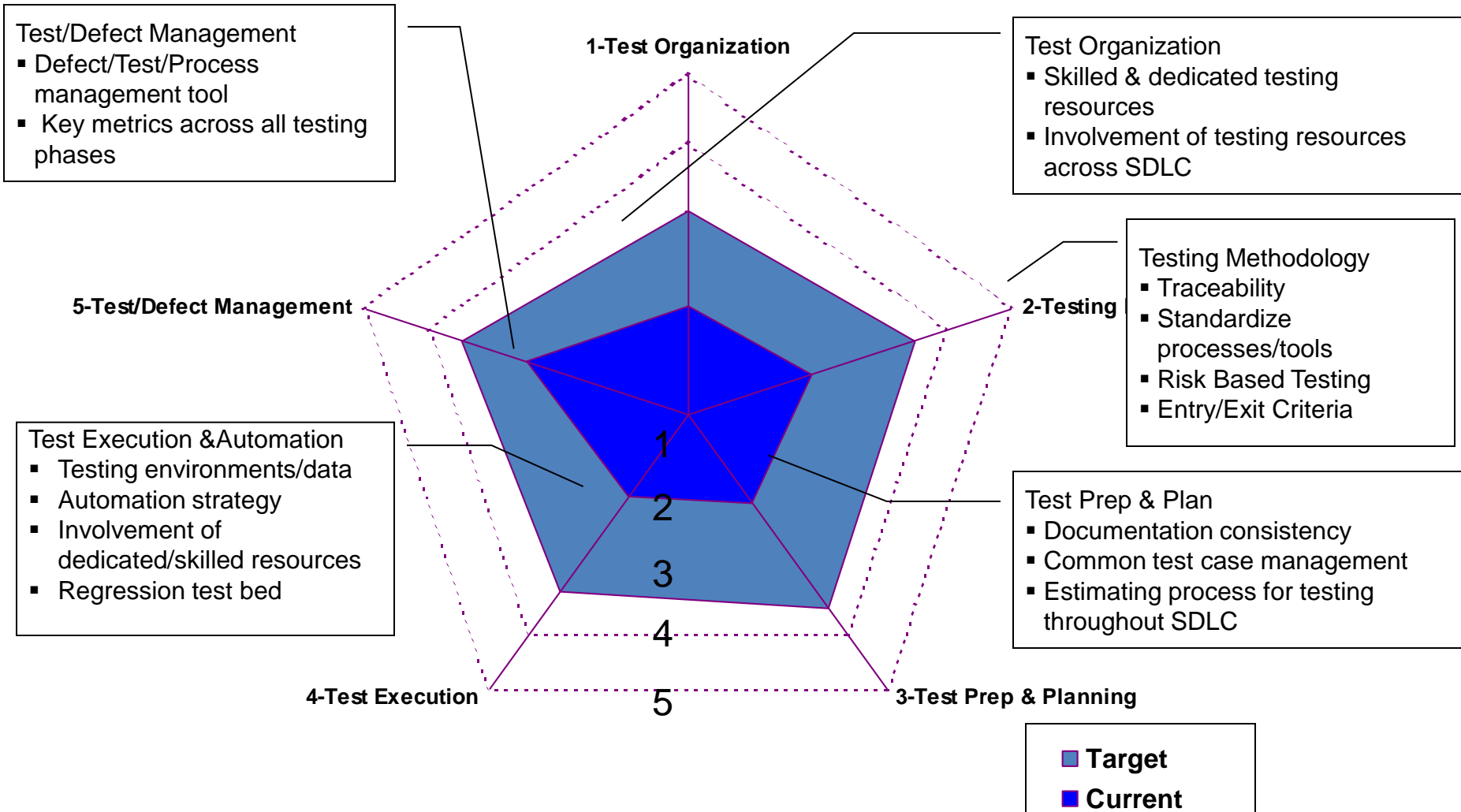
- ❑ Automation has been under utilized
- ❑ Tools/Metrics & Reporting for end to end traceability of test artifacts and key metrics to drive improvement

Test Area	1 Initial			2 Defined			3 Integrated			4 Measured			5 Optimized		
	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H
	Average														
Test Organization				✓											
Test Data Management			✓												
Test Strategy			✓												
Automation	✓														
Tools/Metrics/Reporting				✓											
Performance Testing						✓									
Test Environment Management		✓													
Estimation					✓										
Release Planning						✓									
Maintenance / Regression Testing					✓										

Enterprise Test Assessments

Sample Test Assessment Radar Chart outlining gaps

IT Testing Capability Themes



Client X Testing Assessment

Key Recommendations Summary

The following recommendations provided are based on industry standards and best practices. The following are also identified as either “In Control” or “Out of Direct Control” to provide Starwood a view of what is in their control and what is outside of the testing team’s control of implementing the change.

“Direct Control”

- ❑ Re-align current organizational structure to improve onshore leadership presence & communication among project teams and testing efficiency. This includes increasing headcount as needed to support 4 key Functional Lead (Test Architect) positions onshore and re-aligning of offshore personal in order to enable deeper functional expertise. Onshore/offshore mix will increase from 10% to 20%.
- ❑ Designate a Test Environment/Data Manager to work directly with testing teams for environment coordination & test data preparation. Would also serve as a key contact between testing teams and Middleware to facilitate issue isolation & resolution.
- ❑ Re-train resources where there are gaps in key functional knowledge through team re-structuring, increased communication with onshore SMEs (development, testing and BRMs). This would include extended training sessions virtually and face to face.
- ❑ Improve standardization of testing deliverables across the organization to include test plans, test cases, reports and level of effort processes
- ❑ Analyze & establish a standardized regression test bed for all applications and implement automation for defined suite of tests.
- ❑ Implement & standardize enterprise wide test effectiveness metrics around test planning/execution in order to understand test case execution trends, root cause analysis trends and test environment downtime.
- ❑ Establish standardized usage of testing tools for requirements and defects that will enable end to end traceability of functionality as well as facilitating easier project/enterprise level reporting.

“Out of Direct Control”

- ❑ Establish an enterprise wide Release Management process in order to optimize usage of testing resources and minimize current resource contingency supporting maintenance, ad hoc production support and new application testing.
- ❑ Establish a true QA test environment that is used for QA testing only while instituting a rigorous change control process allowing QA to control the deployment of application code to this environment.
- ❑ Standardization of requirements across all projects. Currently there are inconsistent levels of detail (mostly insufficient) captured in requirements as well as multiple sources of how requirements are managed i.e. Requisite Pro, Excel, Word, Emails, Use Cases.

Key Findings / Recommendations

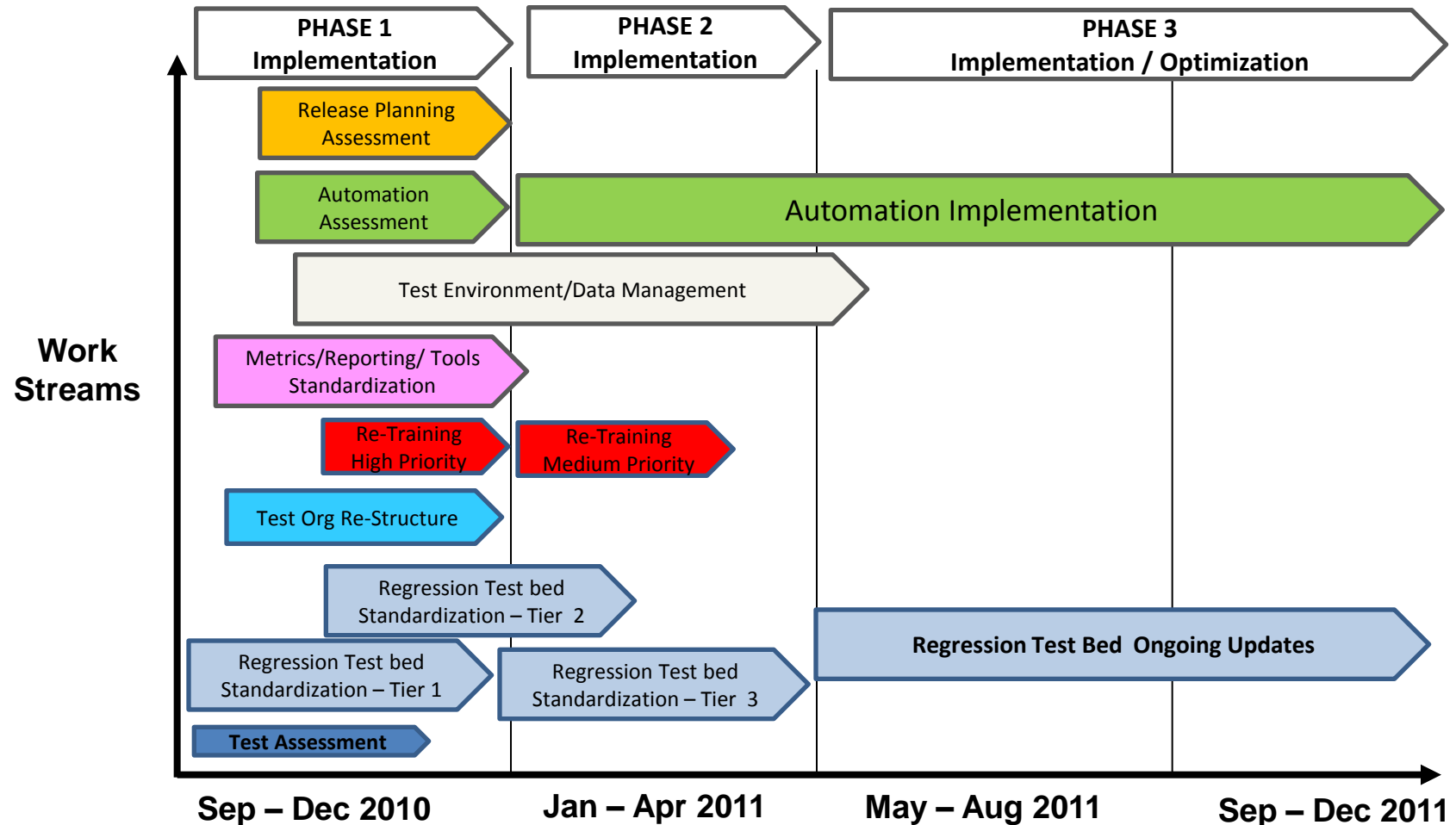
Key Findings / Issues	Recommendation	Owner (s)
Current organization is not aligned properly for an offshore driven testing model.	Re-align current organizational structure to improve onshore leadership presence & communication among project teams and testing efficiency. This includes increasing headcount as needed to support 4 key Functional Lead (Test Architect) positions onshore and re-aligning of offshore personal in order to enable deeper functional expertise. Onshore/offshore mix will increase from 10% to 20%.	Accenture (Test Team)
Knowledge gaps within certain applications has caused lack of confidence in testing.	Re-train resources where there are gaps in key functional knowledge through team re-structuring, increased communication with onshore SMEs (development, testing and BRMs). This would include extended training sessions virtually and face to face.	Accenture (Test Team)
Lack of standardized daily, weekly test reports has caused communication issues	Implement & standardize effectiveness metrics, such as expanded solution quality and test effort measures, such as test case development trend, test case execution trend, test case pass trend and root cause trends.	Accenture (Test Team)
Lack of standardized test deliverables has caused inconsistent quality of testing		
The adopted regression test suite needs to be analyzed & standardized prior to automation	Analyze & establish a standardized regression test bed for all applications and implement automation for defined suite of tests.	Accenture (Test Team)

Key Findings / Recommendations Continued

Key Findings / Issues	Recommendation	Owner (s)
Lack of enterprise wide release planning has made it impossible for the test team to meet current demand of multiple projects that are in flight that all demand test resources.	Establish an enterprise wide Release Management process in order to optimize usage of testing resources and minimize current resource contingency supporting maintenance, ad hoc production support and new application testing. Create a 90 day plan for application support which will allow testing team to adjust appropriately to demand.	Accenture / Client X
Lack of a dedicated, managed & controlled test environment.	Establish a true QA test environment that is used for QA testing only while instituting a rigorous change control process allowing QA to control the deployment of application code to this environment.	Accenture (primary) / Client X
Non standardization requirements & defect tool managed has caused productivity issues and lack of traceability to testing deliverables	Standardization of requirements across all projects. Currently there are inconsistent levels of detail (mostly insufficient) captured in requirements as well as multiple sources of how requirements are managed i.e. Requisite Pro, Excel, Word, Emails, Use Cases.	Client X (primary) / Accenture
Lack of standardized testing metrics that are reported, measured and reviewed have diminished opportunities for process improvement & effective status reporting	Implement & standardize effectiveness metrics, such as expanded solution quality and test effort measures, such as test case development trend, test case execution trend, test case pass trend and root cause trends.	Accenture (Test Team)

Implementation Timeline

Accenture recommends a three phased approach to accomplish the Client X objectives by delivering near term tactical plan activities while simultaneously engaged in current test processes in alignment with the overall Implementation Strategy.



Client X Testing Assessment Application Risk Chart (Heat Map)

The following table identifies the level of risk (critical, medium, low) associated with the following Starwood applications and/or engines.

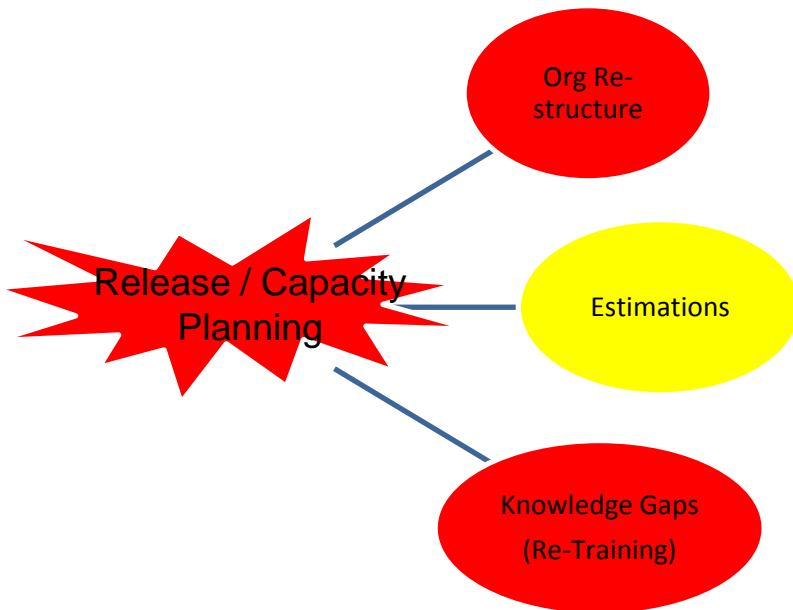
Application / Engine	Release Schedule	Knowledge Gap	Resource Availability	Environment Stability	Notes
Availability	Critical	Medium (offshore gap)	Critical	Critical	Offshore GAP with SOAP testing, legacy requirement GAP - NDSQA environment unstable, other engine environmental issues effect availability testing
Booking	Low	Medium (offshore gap)		Low	
Shopping	Low	Low	Critical	Low	
Adna	Low	Low	Low	Low	
Property Content	Low	Low	Critical	Low	
Rates	Medium	Medium (offshore gap)	Critical	Low	Rate plan issues in NDSSTG due to data
Rates to and from PMS (IPS/PSI)	Low	Medium (off shore gap)		Low	Middleware issues - listeners, wmql etc
Valhalla Portal	Low	Low	Critical	Low	
EDG	Critical	Critical (offshore gap)	Critical	Low	EDG set up issues, or other engine set up
EzYield	?	Critical (on & off shore gap)			
PSI/IPS	Medium	Low (on & off shore gap)		Critical	Down time due to listeners, wmql, incorrect builds, other engine testing effecting IPS/PSI properties
MTG	Low	Medium (on & off shore gap)		Low	
TLPE	Low	Critical (on & off shore gap)	Critical	Critical	KT incomplete, Each time testing flow has been down to TLPe test box, data issues if hotel is not set up correctly
TLGO	Unknown	Critical (on & off shore gap)	Critical	Critical	No KT done, Each time testing flow has been down to TLPe test box, data issues if hotel is not set up correctly
PACT	Unknown	Critical (on & off shore gap)	Critical	Critical	No KT done, Each time testing flow has been down to TLPe test box, data issues if hotel is not set up correctly
Inventory	Low	Critical, Medium (on & off shore gap)	Critical	Low	Bob Reily did the last big testing for us due to Gap
Starguest	Low	Critical	Low		Business currently does majority of testing

Client X Testing Assessment

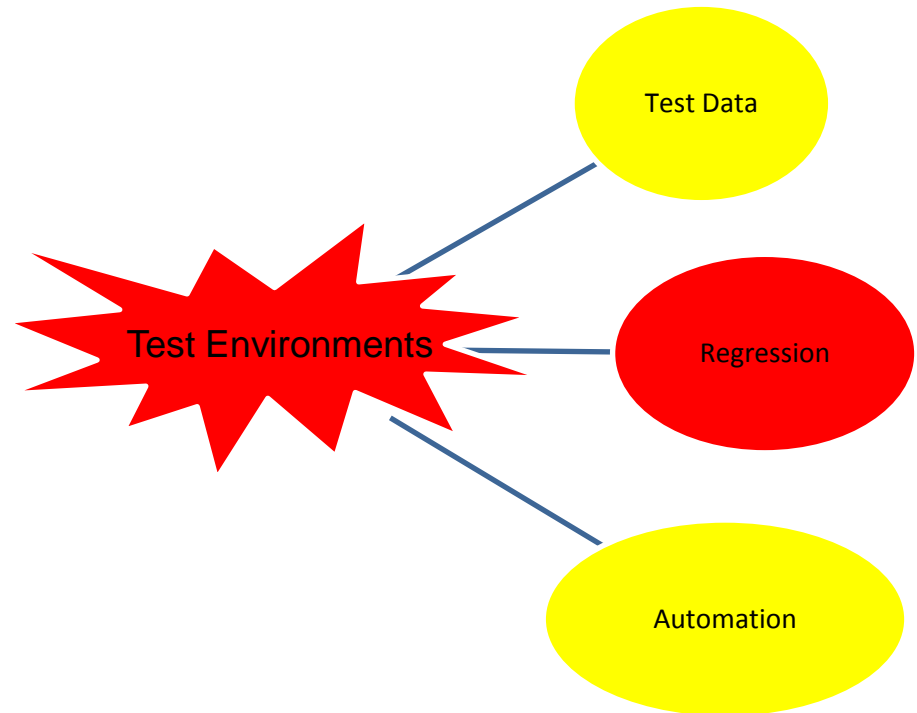
Key Issues Heat Map

The following heat maps identify the major categories for these issues and their effect on other activities.

Optimization



Repeatability & Standardization of Quality



Enterprise Test Assessments – Test Organization

Key Considerations

- Does the organization have dedicated testing resources?
- Do developers and/or the business function as testers in addition to their regular duties?
- How much time do these resources test versus their regular duties? (Use for calculating testing spend/Value tree)
- What is your tester to developer ratio? Is this enough?
- Are testers working on multiple projects?
- Are the testing resources professional testers who have been trained in understanding fundamental testing principles?
- What are the levels of testers within the team i.e. Test Leads, Senior Testers, Junior Testers?
- Do you have the right pyramid in place?
- Are you leveraging any offshore testing? To what extent?

Opportunity Benefit Analysis

Test Organization

Observations

3

(Good)

- ☐ Testing TCoE is functioning at a level higher than typical TCoEs of this size based on:
 - ☐ Structure of LOB's
 - ☐ Ability to deliver full array of projects (maintenance or new) regardless of location
 - ☐ Skill set of SMEs in relation to developers & BAs
- ☐ Testing resources within Canada are organized as shared services while aligned appropriately by SME for each line of business. Asia will need to be evaluated during workshops.
- ☐ Team is comprised of 183 resources including FTEs, Captiva, Accenture and Contractors with almost a 50/50 onshore/offshore split of resources.
- ☐ Governance roles are defined within the LOBs but resources are also responsible for delivery. The governance responsibilities within these teams are often times neglected due to delivery demands.
- ☐ Work life balance is challenged with onshore coordination of offshore testing.
- ☐ Testing shared services functions are aligned within delivery team.
- ☐ Canadian team is comprised of testers who know the business the very well however a small percentage have attained testing certifications.
- ☐ There is a gap in training model for onshore and offshore resources specifically around Business Knowledge of offshore resources.

Short Term Recommendations

- ➡ 4
- ☐ Review Asia Model and ensure proper team alignment from a governance perspective
 - ☐ Discuss sourcing model & RACI for inclusion of Asia into TCoE by conducting a deep dive of the Asia Model
 - ☐ Re-structure organization into LOB structure for delivery, testing shared services for automation, test environment/data management & performance testing.
 - ☐ Discuss ways to improve onshore coordination of offshore testing
 - ☐ Implement offshore/onshore rotational system to facilitate deeper business knowledge training among leads
 - ☐ Develop certification program to ensure proper level of training for Canada resources with quarterly targets in place.
 - ☐ Set targets for 2011 & 2012 test certification goals

Long Term Recommendations

- ➡ 5
- ☐ Implement a periodic "Testing Summit" for all Test Managers /Leads to communicate/discuss organizational goals, challenges etc
 - ☐ Monitor quarterly testing certification goals.

Enterprise Test Assessments – Test Strategy

Key Considerations

- Is testing involved early in the Software Development Life Cycle?
- Is there a comprehensive Test Strategy in place?
- Does the Test Strategy include fundamental information necessary to facilitate effective testing such as:
 - Scope of Testing
 - Definition of test phases/types of testing
 - Entry/Exit Criteria
 - Roles/Responsibilities
 - Environments
 - Tools
 - Test Process
 - Defect Management Process
 - Risk Mitigation
- Is it consistently used across the organization or is the quality of testing tied to the individual skills of the testers?
- Are test cases written in a structured, consistent manner or do they have varying levels of detail?

Opportunity Benefit Analysis

Test Strategy

Observations

3

(Good)

- ☐ Team has standardized test strategies & test plans but lacks test cycle definition within plan.
- ☐ Entry/Exit criteria is weakly defined, not standardized and not fully adhered to. Testers are dependent on developers for determining test strategy and planning.
- ☐ Lessons learned are conducted on a project by project basis but no evidence that enterprise level analysis is being done
- ☐ Inconsistent level of detail within test cases resulting loss of productivity when lesser skilled resources execute test cases
- ☐ Risk based testing is done periodically during early SDLC phases but needs more standardization utilizing Quality Center.
- ☐ Lack of defined regression suite across all applications results in inconsistent durations of tests and potential quality gaps.

Short Term Recommendations

4

- ☐ Define policies and guidelines around the testing practice in conjunction with the CMMI initiatives e.g. Standardize level of detail within test cases.
- ☐ Implement definition of test cycles with test plans.
- ☐ Redefine entry/exit criteria for QA Acceptance
- ☐ Create acceptance tests (Smoke Testing) for QA Entry and return to development if acceptance criteria fails.
- ☐ Standardize risk based testing within the organization and Implement it as part of the Analyze & Design phases focusing on:
 - ☐ Testability of requirements, level of control, complexity, impact to business and probability of failure.
 - ☐ Leverage Quality Center for Risk Based Testing.
- ☐ Assess regression models and create a standardized regression suite for all applications.
- ☐ Conduct a periodic workshop to re-train all levels of TCoE in terminology, definition, test phases, scripts, entry/exit criteria etc. Address concerns from testing practice, processes, tools and organization perspective and incorporate feedback.
- ☐ Test Strategy documentation should incorporate potential risks from Lessons Learned and Delays and Defects Documentation from previous projects and a mitigation strategy.

Long Term Recommendations

5

- ☐ Build a value case to identify benefits of code coverage tool by projecting the collected metrics for defects.
- ☐ Utilize a code coverage tool for improved quality of testing.
- ☐ Implement a continuous improvement plan which addresses the metrics that are collected for all projects
- ☐ Standardize a minimum level of training on back end systems

Enterprise Test Assessments – Tools/Metrics/Reporting

Key Considerations

- What tools are used for requirements, test cases and defect tracking?
- Is there a documented process for using the tools?
- Is there sufficient training for using the tools?
- Are the tools being used consistently across the organization?
- What key test metrics are collected?
- How is status reported for projects?
- What information is included?
- Is there a standardized template used for reporting?
- Are their enterprise level metrics reported and reviewed by senior management?
- Are metrics reported across projects for trends and process improvement?

Opportunity Benefit Analysis

Tools/Metrics/Reporting

Observations

3

(Good)

- ☐ Status reporting is standardized across all teams and is reported to teams via a Metrics Dashboard. The dashboard offers a consolidated view of projects that can be looked at holistically as well as individually by clicking on links.
- ☐ Lacks more in-depth test execution status i.e. pass%, fail%, blocked% i.e. progress statistics to indicate if testing is ahead, behind or on schedule
- ☐ Root cause analysis for defects appears to be incorrect i.e. 90%+ defects are traced back to coding
- ☐ Metrics are currently tracking defects by SDLC which indicate a lack of defect prevention resulting in relying upon the testing team to find all of the defects
- ☐ Lack of enterprise level metrics for productivity, quality and efficiency are being reported.
- ☐ Team has implemented quality center for all test/defect management. With V11, requirements will now be tracked in tool. Team may require re-education around usage of root cause field and validation from testing that this is correct before defect is closed.
- ☐ Defect Leakage or post deployment defects are not being tracked to fully understand the quality of testing

Short Term Recommendations

4

- ☐ Update status reporting to include more in-depth test execution statistics
- ☐ Perform a deeper evaluation of root cause across all projects with stakeholders
- ☐ Review Test Metrics Framework & define enterprise level metrics for quality, productivity & efficiency such as:
 - ☐ Defects by Test Phase
 - ☐ DRE (Defect Removal Effectiveness) (Functional >> Integration >> BAT >> Production)
 - ☐ Defect Detection Methods
 - ☐ Post deployment defects
- ☐ Re-educate organization around metrics, process improvement and the need for consistent & reliable data

Long Term Recommendations

5

- ☐ Implement a Review Process for Testing Metrics and drive Improvement initiatives

Enterprise Test Assessments – Test Automation

Key Considerations

- What tools are used for automation?
- Do you have skilled, dedicated resources for automation?
- Is there an Automation Strategy for the organization?
- Is the percentage of automated scripts reported?
- Does the organization have automation goals?
- Is there an Automation Framework in place?

Opportunity Benefit Analysis

Test Automation

2

(Beginning)

Observations

- ☐ Automation is currently in an infant phase and focused on business-value driven approach however automation has not been proactively supported by business stakeholders and sponsors leading to a stunted growth. It has been estimated, automation penetration rate is 5% of the business applications.
- ☐ It is application focused and not used consistently in practice across all TCoE projects. No Clear targets for automation growth at an enterprise level.
- ☐ Dedicated team of Automation specialists command balanced skill-set and experience. Periodic Knowledge sharing sessions are scheduled to improve manual tester skill-set.
- ☐ Metrics are defined and consistently implemented on a project level and evaluated for cost-benefit analysis over time however non-exhaustive list excludes quality and productivity at enterprise-level e.g. Err rate comparison, planned vs actual hrs etc.

Short Term Recommendations

3

- ☐ Get Business stakeholder and sponsors buy-in via seminar/workshop knowledge sessions introducing the benefits of automation in reducing costs over time.
- ☐ Automation Specialists need to be involved early on in the test phase in order to facilitate standard approach to manual and automated test scripts.
- ☐ Automation assessment needs to be conducted up-front by prioritizing business applications, understanding manual testing footprint (man-hours, cost etc.) and assessing team size based on assessment results.
- ☐ Define and implement project as well as TCoE level metrics.
- ☐ Implement a knowledge-sharing forum to continuously update and store past work utilizing the standards for education purposes.

Long Term Recommendations

4

- ☐ Implement a Review Process for Performance Metrics and drive Improvement initiatives for Test Automation

Enterprise Test Assessments – Test Env Management

Key Considerations

- Is testing conducted in a dedicated test environment?
- How are code deployments managed to the test environment?
- Is there a code deployment process?
- What tools are used for managing access to the test environment?
- Is there a code deployment team or is code deployed by developers?
- Is the test environment under change control?

Opportunity Benefit Analysis

Test Environment Management

Rating Scale Legend:

0

None

1

Aware

2

Beginning

3

Good

4

Above Avg

5

Exceptional

Observations

2
(Beginning)

- ☐ Client X has multiple LOBs each having a unique environment setup including Shared Environments within GB/GRS and no Dedicated Environment within Individual. New environments are created for each project within the latter LOB which has caused Re-work and loss of resource productivity. Within GB/GRS the controls are shared which has led to issues of environment coordination.
- ☐ Environment availability and its impacts are tracked at project level. But this is not practiced consistently across the LOBs. The Defects and Delays documentation is not analyzed and leveraged for lessons learned and process improvements.
- ☐ Environments are not governed consistently across the LOBs. There is no dedicated Test Environment Coordinator role to police and govern the environment availability and readiness, release updates, tracking performance measure etc.
- ☐ Test Environments are documented consistently within the Test Plans. However, the level of detail is inconsistent.
- ☐ Environment related defects are not tracked in Quality Center.
- ☐ There is a lack of a standardized methodology and process defined for Test Environment Management

Short Term Recommendations

Long Term Recommendations

3

- ☐ Define a Test Environment Management Methodology across TCoE.
- ☐ Environments used in TCoE need to be evaluated to ensure the standardized approach and the methodology is practiced.
- ☐ Standardize the creation of environments in order to reduce rework and promote re-use
- ☐ Tracking environment availability consistently across all LOBs
- ☐ Introduce quantifiable metrics for measuring productivity, quality, compliance and cost.
- ☐ Introduce a dedicated Testing Environment Coordinator within TCoE for governance and coordination of environment availability, readiness, tracking performance measures etc.
- ☐ Track environment related defects within the Defect management Tool.
- ☐ Introduce training session for resources based on defined methodology.

4

- ☐ Analyze and report on environment availability metrics and feed recommendations back into process improvements for future releases
- ☐ Leverage Defects and Delays documentation and incorporate feedback into Test Strategy for identifying potential risks and mitigation.

Enterprise Test Assessments – Requirements

Key Considerations

- Are requirements managed with a tool?
- Is there a requirements management process that the organization follows consistently?
- Is testing involved in the requirements validation process?
- Are requirements signed off or approved?

Opportunity Benefit Analysis Requirements

Observations

3

(Good)

- ☐ TCoE is a member of Requirement Review Process however it is not a signee in the Business Requirement Document Signoff.
- ☐ The requirement assessment process has not been standardized across TCoE which can lead to misinterpretation of requirements, rework and loss of productivity. Lack of evidence supporting an Entry/Exit criteria for testing suspension due to quality of requirements.
- ☐ Presently, there is lack of a Business Requirements Management Tool to facilitate effective requirements gathering, tracking etc.
- ☐ Change Management Process for Business Requirements, Testing Requirements, Scope Changes etc. has been formalized. But, it has not been implemented consistently across TCoE projects.

Short Term Recommendations

4

- ☐ Enable and engage Testing team with the business from early requirements gathering phase
- ☐ Risk Based Testing needs to commence from the requirements gathering phase.
- ☐ Introduce a standard assessment method for business requirements for testability to ensure quality.
- ☐ Introduce a Business Requirements entry criteria and a formal hand-off of BRD to ensure testing quality.
- ☐ Utilize a dedicated Business Requirements Management Tool to facilitate effective requirements gathering, assessment and tracking
- ☐ Standardize the use of Change Management Process to track changes to BRD, Business Reqs, Testing Reqs etc. via issue, risk, defects, business changes, stakeholder inputs etc.

Long Term Recommendations

5

- ☐ Analyze and report on requirements quality metrics and feed recommendations back into process improvements for future releases
- ☐ Define, Analyze and Report on Metrics on Business Requirements Management Tool and feed recommendations back into process improvements for future releases

Enterprise Test Assessments – Test Data Management

Key Considerations

- How is test data defined and created?
- Is test data defined/created during test preparation or test execution?
- Is there a test data management team?
- Is there a consistent test data management process?
- Are test data defects tracked during execution?
- Is test data scrubbed to remove confidential client data?
- What tools are used for data scrubbing?

Opportunity Benefit Analysis

Test Data Management

Observations

3

(Good)

- ☐ Test Data Privacy and Test Data Masking has been standardized across TCoE and has been implemented consistently in practice but it is currently in infancy stage.
- ☐ Skilled- Resources are using dedicated Data Masking tools and the process is standardized
- ☐ Test Data Creation and Management has not been standardized. There is lack of evidence supporting the methodology and practice.
- ☐ Test Data Issues during testing are not currently tracked in Quality Center.
- ☐ TCoE does not have a dedicated Test Data Management tool excluding Data Masking.
- ☐ Data Management Quality Review Process has not been implemented for a continuous optimization of Data Management Practice
- ☐ Test data management governance is practiced locally across projects. New Governance methodology has been defined and documented TCoE-wide but has not been implemented as it is in infancy stage. Governance roles are in the process of being defined.

Short Term Recommendations

4

- ☐ Implement Data Defect Root Cause Quality Review to refine the categorization and track Data Defect Root Causes
- ☐ Implement Test Data Management Methodology to standardize the data management process across TCoE
- ☐ Introduce a dedicated Test Data Governance Manager to ensure governance, regulation, tracking data accuracy, quality etc.
- ☐ Implement metrics for Data Management and track quality, accuracy, regulation etc.
- ☐ Data Management Tools used in TCoE need to be evaluated to ensure the standardized approach and the methodology is practiced across the enterprise.

Long Term Recommendations

5

- ☐ Analyze and report on the defined metrics for data management process and incorporate feedback into continuous improvement
- ☐ Implement a Knowledge Sharing Forum to share and introduce data management techniques, tools etc. for reference and training

Enterprise Test Assessments – Performance Testing

Key Considerations

- How is performance testing conducted?
- Is there a standard performance test strategy that is used consistently across the organization?
- Are there dedicated performance test engineers?
- Are they trained in performance testing?
- Are there performance testing requirements?
- Are performance defects tracked during execution?
- Is there specific performance criteria or is performance base lined?

Opportunity Benefit Analysis

Performance Testing

Observations

1
(Aware)

- ☐ Performance Testing is currently conducted by Webhosting Team and has not been undertaken by the testing team and strictly supplies manual test scripts when needed.
- ☐ Performance Testing is performed based on business requirements and a standard process for load testing is in place to accommodate consistency. Webhosting Team conducts this ad-hoc on business request.
- ☐ No indication of Performance requirements as a part of Entry-Exit Criteria can be found which has led to a disconnect in efficient testing practice
- ☐ There is a dedicated tool used for Load Testing within the Webhosting Team and data is tracked via reports and hosted on the web for future reference.
- ☐ Testing Team lacks the skill-set and the tool to conduct performance testing
- ☐ There is lack of evidence supporting the Release Planning of Performance Testing

Short Term Recommendations

⇒ 2

- ☐ Review the 2011/2012 release calendar to understand the roadmap and resource demand for performance testing
- ☐ Understand environmental issues and/or constraints to procuring a dedicated performance test environment
- ☐ Establish entry criteria for performance testing
- ☐ Introduce a dedicated Performance Test Manager to coordinate and manage performance testing
- ☐ Evaluate existing performance management tool and assess the feasibility of procuring existing or buying new tool
- ☐ Introduce Technical Training for Performance Testers
- ☐ Either transfer current performance testers from Technical Team or ramp up a performance team from external sources and leverage the existing performance testing resource to train the new team.

Long Term Recommendations

⇒ 3

- ☐ Analyze and report of performance metrics and incorporate feedback into a continuous improvement process
- ☐ Introduce performance forecasting during build phase
- ☐ Undertake performance modeling activities during design phase
- ☐ Select advanced performance test tools to conduct full spectrum of performance testing including system management, production application monitoring and performance diagnostics

Enterprise Test Assessments – Test Execution

Key Considerations

- Is risk based testing used?
- Do you have a standard regression suite?
- How is adequate test coverage achieved?
- Is the regression suite automated? What percentage?
- Is regression testing conducted by a separate team?
- Are any tools that leverage orthogonal array calculations used?

Opportunity Benefit Analysis

Test Execution

Rating Scale Legend:



Observations

2

(Beginning)

1. A formalised and consistent risk based testing process is not exercised across all the test teams within L1
2. Test dependant documents (e.g. IFW Service Definitions) are not presented upfront to the test teams hence not allowing static testing or effective planning
3. First round of test case execution is often lost to environmental and code instability issues. This ultimately reduces the effective testing timeframe.
4. Test coverage is currently measured against requirements only.
5. Environment availability and booking conflicts with other CBA test teams hinder the test execution effort.
6. Lack of application experience and SME support has hindered the test execution effort.
7. Offshore resources are restricted by batch scheduling during their test execution.
8. Offshore resources also have limited application knowledge and will have limited (after hours) support during their test execution.
9. Test execution is also hindered by defect resolution (using one team to develop new functionality and defect fix).
10. Automation is currently only being partially utilised within the IFW Services test team.

Short Term Recommendation

3

1. Standardise and formalise a risk based testing process across all CBM test teams.
2. All test dependant documents and specifications need to be signed off prior to starting test design in order to achieve effective test planning and static testing.
3. Stringent entry/exit criteria must be adhered to in order to ensure successful test execution from the start of testing. Deviations need to be communicated and discussed at the PGD level by the Project Manager. Furthermore, teams need to plan for code and environmental instabilities within the first week of test execution, and allocate time for shakedown testing to be performed.
4. Conduct a POC using code coverage tools such as McCabe to expand test coverage from requirements only.
5. Environmental requirements and bookings need to be identified and communicated early to the environments team.
6. Identify and schedule SME support for the duration of testing. Cross pollinate the test team with a mixture of different skills & knowledge to leverage from each other.
7. Manage the offshore test team by closely engaging them and setting a test schedule that accounts for batch cycles.

Long Term Recommendation

4

- Provision dedicated test environments for the CBM test teams such that there are no availability conflicts with other teams (cc: Environmental Management assessment).
- Implement a cross training process across the test teams within CBM such that teams can leverage of each others skills and application knowledge.
- Implement an orthogonal array testing approach for the appropriate test phases to promote effective test execution (cc: Test Methodology assessment).
- Adopt a defect prevention approach to test execution (cc: Defect Management & Prevention assessment).
- Adopt an automated test execution approach where possible across all test phases.
- Implement a code coverage tool such as McCabe.

Enterprise Test Assessments – Defect Management & Prevention


Key Considerations



- Is testing actively involved throughout the SDLC?
- Are defects actively sought after during pre test execution activities?
- Is defect root cause tracked during test execution?
- Is there a root cause analysis process that is followed for all defects reported during test execution and production?
- What root cause metrics are tracked?

Opportunity Benefit Analysis

Defect Management & Prevention

Rating Scale Legend:					
0	1	2	3	4	5
Non	Aware	Beginning	Good	Above Avg	Exceptiona
e					l

Observations	
<div>  (Beginning) </div>	<ol style="list-style-type: none"> Defect Management: <ol style="list-style-type: none"> Two different defect management processes are being used within L1 due to differing defect management tools and build processes. Using both tools to log defects promotes inconsistencies in the management and reporting of defects at a programme testing level. PPMC does not dynamically link defects to test cases in QC, thus lacking the ability to generate defect reports on test cases or requirements. DRG's are conducted at a test team level, there are no consolidated DRG sessions held at the programme level. Defect Prevention: <ol style="list-style-type: none"> Lack of static testing (i.e. review of deliverables, testability and peer reviews) due to late delivery of specifications Late engagement of test teams reduces the overall test time lines Specifications are not in a signed-off state for the start of test planning, test design or at times test execution hence causing rework

Short Term Recommendation	Long Term Recommendation
<div>  </div> <ol style="list-style-type: none"> Defect Management: <ol style="list-style-type: none"> Utilise the QC/PPMC integration initiative within CBM, Identify a single defect management process for defect management within CBM, Generate defect reports from QC only (post the integration), Formalise the DRG sessions to be at both the test team level and at the programme testing level, Implement a standardised defect template to be used by all CBM test teams. Defect Prevention: <ol style="list-style-type: none"> Specifications to be available prior to the test design phase to allow for static testing, Early identification and engagement of the test teams to the CBM programme Specifications are to be signed-off prior to the test design phase Set a programme (CBM) standard for defect management and prevention via processes such as root cause analysis, phase containment and peer reviews. 	<div>  </div> <ul style="list-style-type: none"> ❑ Defect Management: <ul style="list-style-type: none"> ❑ Set a programme (CBM) standard for defect management and prevention via processes such as root cause analysis, phase containment and peer reviews. ❑ Defect Prevention: <ul style="list-style-type: none"> ❑ Analysing defects that were encountered in the past and set specific action plans to prevent the re-occurrence of those types of defects ❑ Set an organisational initiative and process for defect prevention ❑ Establish a close working relationship between the test and development teams ❑ Establish early engagement of the test team, i.e. testing input from the requirements phase ❑ All testable specifications are requirements are to be in a signed-off state prior to test planning.

Enterprise Test Assessments – Agenda

- Understand the Why, the What, the When and the How of the Assessment Process
- Understand the key value levers of process improvement
- Understand the Assessment Process & Key Deliverables
- Review Sample Test Assessments
- Understanding Risks

Enterprise Test Assessments

Understanding the Risks

Risk	Consequence	Likelihood	Impact	Mitigation
Management buy-in for improvements diminish	Improvement program fails	High	High	Determine improvements can be made a project level without major funding. Explain the problems that will not be addressed due to reduced funding.
Management changes priorities before we complete any milestone	Improvement program loses momentum	High	Med	Determine which improvements that can be made regardless of priority.
New requirements management tool has long learning curve	Business Analysts & Developers give up in frustration	Med	Med	Establish a cutoff date when we will give up on the tool and use manual methods. The tool is delayed until the next release.
Creation of specialized training material for new joiners takes too long	Improvement implementation is delayed.	Med	Low	Split the training material into three categories: Essential, Should Be Done and Wish List. Complete the essential materials first.

Enterprise Test Assessments

THANK YOU!!!!

QUESTIONS?

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