RBQA - a Proactive Business Aligned Quality Assurance Framework

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Abstract— **It is a continuing challenge for the Quality Assurance (QA) function to prove its relevance to business in the current market scenario. It necessitates moving away from traditional compliance focus to value addition through proactive risk identification, highlighting and escalation in projects / programs. Risk Based Quality Assurance (RBQA) framework is proposed to help the program / project in proactive identification of risks and to come up with optimal mitigation strategies. Quality Assurance function will play a major role in implementing this framework which ultimately preserves the relevance of this function from business perspective.**

Keywords-Risk Based Quality Assurance; Quality Assurance

I. INTRODUCTION

It is a continuing challenge for the Quality Assurance (QA) function to prove its relevance for business in the current market scenario. It necessitates moving away from traditional compliance focus to value addition through proactive risk identification, highlighting and escalation in projects / programs.

Currently compliance is considered as basic hygiene factor for a world class organization. ISO and CMMI are primarily official certification/assessment for this basic hygiene which each business unit is mandated to ensure.

However, this basic hygiene ensured by complying with ISO, CMMI etc. may not automatically imply business excellence. Hence QA function needs to shift its focus from ensuring standard and norms based compliance to achieving business excellence which is essential for survival.

To keep Quality Assurance as an indispensible business function, the focus needs to shift from reviews and audits to identification of the risks associated with client's expectation management, delivery management, product quality and process adherence by different proactive and innovative audit and review mechanisms. Based on the impact of risk associated with failing client's expectations, delivery, product and process adherence, varied levels of rigor can be injected into these audits.

Risk **B**ased **Q**uality **A**ssurance (**RBQA)** framework is proposed to help the program / project in proactive identification of risks and to come up with optimal

mitigation strategy. Quality Assurance function would play a major role in implementing this framework which ultimately preserves the relevance of this function from business perspective.

II. APPROACH

RBQA helps in identifying the different types of risks based on the associated business impact in a program / project at various levels and increases awareness amongst senior delivery leaders, thus improving the process of risk identification and mitigation. Various audits / reviews are planned and conducted by QA along with virtual team comprising of senior members from cross project / delivery team to achieve this objective of proactive risk identification.
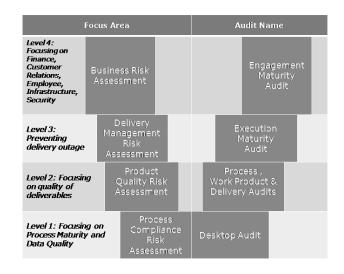

Figure 1. 'V' Model of Auditing

To implement RBQA effectively, four different levels of audits are planned - lower level audits ensure basic risks are identified and mitigation plans are in place so that the higher level audits can focus on more vital aspects and identify more business-critical risks.

All critical projects need to undergo four levels of audits/reviews for optimal Risk management associated

with Process Maturity (Level 1 Audit / reviews), Product Quality (Level 2 Audit / reviews), Delivery Management (Level 3 Audit / reviews) and Business Risk Assessment (Level 4 Audit / reviews). This model is termed as "V" model of auditing - diagrammatically depicted above.

A. Level 1 – Desktop Audit

The objective of Level 1 Audit is to identify and assess risk associated with process non-compliance with standard models like ISO, CMMI or OSSP (Organization Standards Software Process). Remote audits can also be done to check compliance based on different process areas of standard models (e.g. compliance for different Specific Practices and Generic Practices of CMMI [1] or different section of ISO).

Remote audits to check data in tools are also carried out to check data availability and integrity (e.g., one such finding can be: No rework effort and corrective / preventive actions in the tool are available, although the defect count is greater than zero).

Members of the Quality Assurance team or members of a specified virtual pool conduct this remote audit. This audit is automated through scripts and findings/risks are logged into a Risk Management tool.

B. Level 2 – Process, Work Product and Delivery Audit

The objective of Level 2 Audit is to identify and assess risks associated with Product Quality. Following are the audits conducted at Level 2 to identify the different product quality risks.

- Process Audit - to check adherence to OSSP (Organization Standard Software Process as in [2])
- Work Product Audit - to check the quality of the work product being produced at stage completions e.g., design document review at the end of the design stage
- Delivery Audit - audit of the work-product to be delivered to the client

Examples of findings from the product quality audits that highlight risks are as follows:

- Risk associated with unit testing not done effectively
- Impact of inadequate code review

Members from the Quality Assurance department (Quality Reviewer (QR) or Review Analyst (RA)) associated with each project conduct audits at level 2. If required, technical auditors (from competency Centre / other projects) may accompany the QR or RA. All identified risks are logged into the Risk management tool and tracked for further mitigation action.

C. Level 3 – Execution Maturity Audit

The objective is to prevent delivery failure by focusing on the various delivery management aspects and thereby ensuring execution maturity.

Estimation, Requirement Traceability, Integrated Project management, scope and change management etc. are the primary focus areas of maturity audits at this level.

Project managers of other projects / programs are the primary auditors, and they are supported by senior management members from quality assurance function. All delivery management identified risks are logged, monitored and tracked with close scrutiny.

D. Level 4 – Engagement Maturity Audit

The objective is to identify and assess risks associated with financial performance, stakeholder's relationship, customer relationship, resourcing, infrastructure, business continuity, security etc.

This audit objectively evaluates the program / project from business perspective. The findings or risks presented as outcomes of this audit help the program / project identify non value added activities from business perspective. Best practices from other programs /projects are also shared for effective mitigation of challenges currently faced by the said programs /projects.

Delivery directors or senior managers of other program / project are the primary auditors who are supported by Quality Assurance leaders.

III. BENEFITS

The expected benefits of the different levels of audits are listed below:

A. Level 1- Desktop Audit

- This audit checks the integrity of data and helps the project team take informed decisions based on metrics collected to ensure improved data quality. Projects or programs can identify risks based on process / sub process area metrics and mitigate the same to meet business objectives.
- This also helps in ensuring compliance in terms of standard models and OSSP (Organization Standard Software Process)

B. Level 2 - Process, Work Product and Delivery Audit

- This audit helps in improving the quality of deliverables
- This also ensures proper use of Software Engineering practices

- Best practices with respect to Software Engineering are shared and usage of Software Engineering tools are encouraged
- This audit checks & ensures deliverables meet stated expectations of the customer
- This helps in early detection and mitigation of product quality risks

C. Level 3 – Execution Maturity Audit

- This audit ensures on-time and on-budget delivery
- Increased awareness and interest levels of Project Managers (both auditors and auditees) to identify delivery management risks
- Improved risk Identification & mitigation planning because of involvement of experienced senior management
- Improved best practice sharing across projects and programs

D. Level 4 – Engagement Maturity Audit

- This audit helps in focusing on how to bring in more business values
- Risks are identified proactively
- A program /project is viewed from business perspective rather than in isolation
- Evaluated findings in the form of business risks have the potential to outline detailed remediation plans for risk reduction over time and provide different stakeholders with the information they need to make better decisions around business strategy

IV. CHALLENGES

Following are identified challenges to implement RBQA framework.

- Higher level audits to be performed by senior management representatives, so commitment of senior management time and bandwidth is necessary

- Rescheduling & last minute cancellations is a constant risk because of change in priorities of senior management auditors
- Proper logging of identified findings in risk management tool
- Risk mitigation at all levels requires strong coordination and synchronization across all stakeholders to meet the business objective

V. CONCLUSIONS

RBQA can help in optimally deploying the effort for Quality assurance activities. The "V model" can be very effective tool for RBQA and can help in unearthing risks associated with the project/program from all perspectives.

This model helps in ensuring process compliance at level 1 thereby ensuring basic health of the project/program. Product Quality and delivery management risks are proactively identified in level 2 and level 3 audits which help in enhancing execution maturity. Level 4 audits reinforce client expectations by identifying and mitigating business risks. Based on the impact of business risks, varied levels of rigor are also injected in lower level audits, thereby addressing pain points of project /program.

Proper mitigation of these risks identified in various audits at various levels can ensure success of the project/program and high customer satisfaction.

REFERENCES

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[2] Richard H. Thayer, Merlin Dorfman, "Software Engineering, Volume 2, The Supporting Processes, 3rd Edition", ©2005, Wiley-IEEE Computer Society Pres, August 2005, pp.280-281