The Evolution of the Release Management and its Benefits Aligning to Business Requirements

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ABSTRACT
In a global digital economy, companies increasingly depend on IT for timely information sharing, effective and efficient operational control, speed to market, express innovation and customer satisfaction. On the other hand, recent global financial crisis and economic recessions encourage trends for increased managerial scrutiny to reduce the IT spending and to increase business value of IT. Apart from that, organizations face a unique combination of technology and process challenges due to their complex IT environments - these environments serve multiple business functions, consist of large application portfolios and have significant custom based development need and steep quality requirements. Considering the different dimensional requirements, the need for release management is crucial and has definite positive impact on delivery schedules, cost and quality as well as a potentially lead to legal and regulatory issues. This article describes the benefits realized through the release management and which improved the quality of its IT release delivery and also the scope for further improvements in Enterprise release management area.

General Terms
IT process, Business Alignment with IT.

Keywords
Release management, IT Governance, Deployment, Quality, People, Process and Technology.

1. INTRODUCTION
One of the most important and frequently cited problems in IT in organizations is deploying IT projects and improving their success. Different methodologies of project management have always tried to increase the success of the projects; however, there are a significant number of lessons learnt to avoid future deployment failures. It is also found that an increased focus on the connection to overall life-cycle management for end-to-end approaches is most essential especially between requirement, development and deployment [1] [2] [3]. With demand management at the front end, development in the middle and release management as the final transition to operations, it becomes key - to understand what is tested and ready to hand off, in order to be able to create a release train. In this way, functionality that needs to be postponed until the next release can be prioritized and managed proactively. The key drivers for release management are the increased operational expense, complexity, resource constraints and inefficiencies of deployment process. In this paper we have discussed about Business and IT alignment in simple terms and addressed the steps taken to improve the release management process and effectiveness of project/program in an organization.

2. BUSINESS AND IT ALIGNMENT
Regardless of success or failure, one of the most important challenges of doing an IT project is defining the project based on priorities of the organization goals and purposes. The most important problem is lack of attention to the output Governance versus the performance of completion of a project. The simple diagrammatical approach, Figure 1 explains about the relationship between the Business requirements and IT delivery [4] [5].

The efficiency of IT projects depends on attention to key aspects of IT Governance. By efficiency, mean the capability to derive the desired outcomes from the project while making sure that the project is in line with organization's priority regarding business strategies. A well-defined Governance model is essential for project management to fulfill its role in governing project delivery through release management approach [6]. Governance ensures clarity of purpose and sets forth responsibilities. By exercising strict governance over the strategic direction and tactical control of technology projects, the business value of technology is maximized. Release Management principles and capabilities ensure that technology executives maintain the same degree of control, accountability and fiscal responsibility of the production deliverables [7] [8]. The key steps in business IT alignment involves

2.1 Developing Strategic and Tactical Governance:
It prepares an organization to address what decisions are required, who is responsible for making them and what process is used to make those decisions. This relates to the full range of project and release management governance including investment decisions, standards, principles and target business and technology architectures.

2.2 Government and Regulatory Requirements
It starts with the compliance and risk management capability, which should be supported by the board and disseminated to everyone involved in enabling project management methodologies through the use of business technology.

2.3 Project management Knowledge
It is imperative that the board have an understanding of the overall project management and deployment management of releases [6]. Business executives are well training to understand the project management life cycle and the vital role of release management in the delivery of the product with high quality and on time.

2.4 Organizational IT Architecture

The enterprise architecture of an organization is composed of the technical and application architecture, which jointly enable the processing, sharing and management of data resources across divisional and organizational boundaries. IT architecture is the key enabler for any software delivery which has a definite business impact.

IT Governance has a direct impact on how IT is managed within the organization. The IT Governance Institute has offered the definition "IT Governance is the responsibility of executives, board of directors and consists of the leadership, organizational structures, and processes that ensure that the enterprise's IT sustains and extends the organization's strategies and objectives". Successful IT governance is achieved through effective communication among all parties based on constructive relationships, through a common language committing to IT policies and process

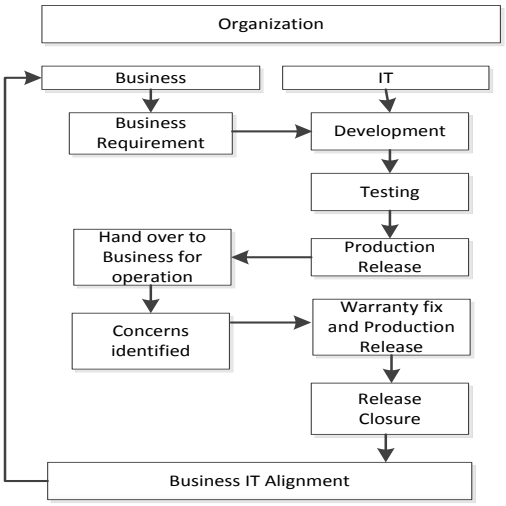

Figure 1.Business and IT delivery alignment

High level diagrammatic approach has been shown in Figure 1. - Business and IT delivery Alignment. The intension of this approach is to make things crystal clear i.e. inception of the requirement from the business till the delivery of the product satisfying the business need. Both Business and IT are part of the organization and in real world; IT is the service provider for the business client. IT encompasses different technical groups as Business Analyst, Architects, Development, Quality analyst, Release Management and Project management.

The requirement's from the business are received and analyzed by the Business analyst in conjunction with the technical Architects. The criticality of the need is added to the IT Road map through the program delivery team and the essence of the technical requirements were placed with Development team and later with the Quality analyst for testing. After couple of deployments - unit, system and integration testing's were performed. Business team is also involved to do the User Acceptance testing and do sign-off, which is the symbolic of acceptance of the product. Release team manages the overall release life cycle adhering the organizational release process and policy. The identified major or minor release hit the production environment on time with the agreed quality metrics and handed over the delivered product to the business. Business does a quick validation and may or may not raise concerns. If concerns are raised; they were handled by the IT release management through a warranty support mechanism as depicted in the Figure 1. The successful release closure from the IT side is a symbolic hand shake representation for the Business and IT alignment.

3. IT RELEASE CHALLENGES

Many factors contribute to the challenges for Release management during different phases of release life cycle [9].

3.1 Complexity

Release vary in size and complex, but often encompass multiple interrelated systems with varying degrees of integration. These complex environments make it challenging to understand, monitor and bundle discrete release components in a manageable approach.

3.2 Planning

Sometimes, Organizations with well-defined release management plans can become irrelevant if one or two release components are delayed. The release management plan needs to be adjusted to reflect any delay or failures; else it will have significant negative effects on the organization's operation.

3.3 Prioritization

Occasionally, crucial release component information is hard to obtain on time, and makes difficult to access the true importance of the missing components - it may lead to imperfect milestone planning and go/no go decisions. In essence, Release management function must clearly understand the business and IT prioritization of release components, as well as their true current status, to make effective decisions.

3.4 Decision-ownership

Organizations may become ineffective if the release management doesn't have visibility and full authority on the overall release process. Organizations without the power to manage key release activities may fail to deliver what is expected and required by business stakeholders.

4. THE EFFECTIVE GROWTH PRACTICES OF RELEASE MANAGEMENT

The intention of the release management in any organization is for delivering on-time, quality releases for business and IT initiatives. Release Management include the strong, empowered release managers who act as a co-ordinator for the end to end delivery (build to production) and make the project / program a success [10] [11]. "The purpose of the release and deployment management process is to plan, schedule, build, test and deploy to deliver new functionality required by the business while protecting the integrity of existing services."

4.1 Effective Practices

After thorough investigation and with help of the lessons' learnt registry, the effective practices are summarized below

4.1.1 Single source of Truth

Development teams are positioned around the world, working in different time zone leads to create a single source of truth that will update in real time – doing so will orchestrate all parties responsible for release and provide visibility and traceability into who did what and when.

4.1.2 Application dependencies

Complex deployments contain components that are dependent on each other and always promoted the components that were tested together and proved compatible. As the application moves through various test environments, it ensures that the exact versions are being deployed and test passed in every environment.

4.1.3 Documentation

Keeping all the configuration artifacts in a common repository gives confidence and the checklist driven deployment confirms the deployment of artifacts in lower tier to higher environment in a timely fashion.

4.1.4 Approvals

Approvals ensure quality. It is important to define quality attributes across the release lifecycle. Quality attributes are defined and hence an application with multiple bugs and incompatibilities are not passed to higher environment. By ensuring approvals are visible (Quality gate), stakeholders are aware that, meeting the quality requirements are mandatory to proceed into the next higher environment of a lifecycle. A quality gate is a mechanism that ensures item cannot be deployed into an environment without the required approvals.

4.1.5 Consistency

Thumb rule is to deploy the applications consistently across environments. It is clearly understood that any process difference from build, test and production increases the chance of error. The pre-production environment is used to perform the practice deployment and for back out testing before any production release. During orchestrating an application release, designed a single process that is used in every environment; it provides the teams with a structured path to production with perfect visibility and authority.

4.1.6 Planning

A meeting chaired by Release manager will narrate the overall release planning which includes the time lines for deployments starting from the test environment to production environment. All the artifact requirements are discussed and updated in the common repository.

4.1.7 People

Release Managers are authorized to enforce their policies and procedures. Release Managers are empowered to escalate the release challenges to IT Leadership team on a need basis. Leadership team will align with business stakeholders with the Release Manager's recommendations. Business stakeholders are made aware of all the release components of any major releases. Business stakeholders were involved in key release decision making process as per the IT governance norms of aligning business with IT.

4.1.8 Process

Release management connects all the release components and treat the activities surrounding the implementation of each component as a series of interrelated projects. Standard project management practices were adopted by the release manger by providing a detailed work plan with milestones and dependencies, maintenance of release risk and issue log, plan to alter the release plan according to the business and IT needs. The continuous improvement is done based on the lessons learnt from every release. A Transparent release dash board has been established which provides the overall status, risk, issues and dependencies of any planned release. Contingency planning on every release is mandatory and hence a back out experiment was performed in the pre-production environment before the production release to ensure the contingency plan is acceptable.

4.1.9 Policy

Release policies are high-level statements of how releases are to be managed, organized and performed in environment. Policies include management goals, objectives, beliefs, and responsibilities. Organizations obey the approved policies and these polices are important to release planning process. These polices also explains about the limitations and restrictions for release management.

5. RELEASE AND DEPLOYMENT PLANNING

Planning the release involves lot of micro components and executing the plan till closure leads to a successful delivery of the release. Release managers are accountable for the deployment and the post implementation issues. The below set of the activities explain the importance and outcome of every individual blocks of a release process.

5.1 Basic planning

The approach is to ensure, that an acceptable set of guidelines are in place for the release into production and later operation. This includes

- Scope of the release
- Risk assessment
- CAB approval
- Release leadership team
- Delivery and Deployment strategy
- Resources for the release deployment

5.2 Build and test planning

Build and test planning establishes the approach to building, testing and maintaining the controlled environment prior to the production. The activities include

- Develop Build plan
- Develop the environmental configuration requirements
- Schedule the build and test activities
- Assign resources, roles and responsibilities to perform the activities
- Software licence management, if required

5.3 Planning pilot projects

Occasionally, pilots were introduced to test the new service with a small part of the organization before rolling it out to the whole business organization. The Pilot was used to collect feedback on the effectiveness of the deployment plan. This includes surveying view and satisfaction impression from

- End users
- Customers
- Service desk and support staff
- Infrastructure team
- Analysing the statistics from service desk calls.

5.4 Release progress statistics

Key aspects managed during the activities to build and test a service are

- Usage of the build and test environments
- Maintaining the evidence of testing like test results and test reports
- Checking the security requirements are met
- Verification activities like prerequisites are met before a build or test begins

5.5 Release packaging

Build management procedures, methodologies, tools and checklists should be part of the release package and it is always is accessible from the common repository in a controlled way. The Key activities to build a release package are

- Assemble and integrate the release components in a controlled manner
- Create the build and release documentation
- Monitor and check the quality of the release, how to recognise and react to problems
- Install and verify the release package
- Procedures to back out release
- Send a notification to relevant parties about the availability of the release package

On confirmation about the testing of the release packages is successful, the release and the contents of the release package are placed under the control of configuration management.

5.6 Request for Change

Request for change (RFC) is a change request that captures the details of a change that is needed to be made for existing releases based on customer demands. The reason for creation of a new release (Major or Minor) is implementing a series or parallel execution of changes and getting approved by the Change advisory board. This is a very sensitive part of the release planning.

5.7 Review and close a deployment

On reviewing a deployment the following key activities are included and verified.

- Captured user experience through feedback
- Review the quality criteria that were not met
- Check that any actions, necessary fixes and changes are complete
- Review performance targets and achievements
- Make sure no capability, resource, capacity or performance issues at the end of the deployment
- Incidents and problems caused by deployment
- Deployment is completed after the Quality validation and handed over to the operations team.
- A post implementation review of the deployment is after every release to act on the concerns.

6. COMPARITIVE STUDY ON THE RESULTS

As explained in the paper, the major challenges for the release management like multiple interrelated systems with varying degrees of integration, complexity, planning failures, IT project prioritization and accountability were addressed by implementing the effective practices such as clean documentation, adhere to proper approval mechanisms, maintaining consistency between test environment and production environment, the acceptance of the release policy and process following the organizational norms, last but not the least the effective and efficient release management planning lead to the success of the release management in the organization which lead to establish the need for the release management.

The detailed approach on Release planning exercise and pilot execution has had more influence and accepted by the IT senior management. The release management was aligned with the global ITIL standards; hence all the major and minor releases follow the change management process. In essence all the release management documents and configuration items are bundled and said as Release Package. At the end of the release deployment, it was reviewed through user experience feedback, quality criteria examinations, review performance targets and achievements, triggered incidents and problems later to the release, a post implementation review; finally all were document till the release closure.

7. CONCLUSION

Release Management is vital, highly visible component of any growing IT organizations and the clear benefits are speed, time to market, stable and predictable releases, increased visibility and fewer outages. Release management acts as a bridge in the final delivery of the product to business from IT as part of Business-IT alignment. Implementing the release process, sustaining to the best practices and managing the large releases through a transparent dashboard approach leads to dramatically improved release outcomes. In general, it is proved that the release management presence in an organization delivers on time, quality releases for business and IT initiatives. Following to the present research the way the more values are to be realized and the immediate focus will be towards automating the release deployments and to visualize the growth benefits. Apart from that the research is not limited to re-modelling the test environments for better utilization, involving the business stakeholders in various phase gates of major release and a questionnaire based research with different industry vertical leaders and subject matter experts on alignment language between IT and Business.

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