Project Management and Maintenance on Information Systems Administration
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Abstract. Information Systems administration on an organization requires handling requests for projects and maintenance operations, in a way it brings value to all concerned parties. For meeting this expectations, Information Systems management needs to implement processes for dealing with incoming requests, aligning it with business expectations and criteria (risk, priority, team capabilities). Frameworks like COBIT, ITIL or PMBOK provide guidance on achieving success in management operations on an IT organization, being an important asset to design and implement processes for project and maintenance requests. In this document we present the state of the art on management processes for IT organizations, as the basis for an initial proposal of a process to handle requests for projects and maintenance operations on information systems administration.

Keywords:
Project Management, Maintenance, Software lifecycle Processes, COBIT, ITIL, PMBOK

1 Introduction

Currently, organizations moved from the limited perspective of profitability to a more wider view of the business, trying to maximize the business performance by increasing client satisfaction, products quality and management efficiency in comparison with the concurrency.

Management on information systems is all about leadership, organizational structures and processes that ensure information systems support and alignment with organization's objectives. Information systems provide and competitive edge to concurrents, but an organization can only achieve management efficiency with well defined and matured processes.

One important aspect for an organization take advantage of its concurrency is the way how it deals with receipt and categorization of project and maintenance requests. There is a inherent necessity to classify a new request in terms of opportunities and value to the business as well as the risk associated with it, making it an important asset for the organization.

For achieving this goal, the organization needs to review its management processes, which can be at any level of maturity. In any case, there is need to establish a standardized process for managing incoming requests, in order to improve efficiency and define clear work procedures in the organization.

For establishing standards on this subjects, business professionals came across with several frameworks and practical guides, making an attempt to provide and standardize many practices around management on information systems.

Considering the state of the art, COBIT assumes a major position on good practices for information systems management. It provides a complete framework for implementing management and governance processes, taking in account a set of enablers and goals, from IT-related to business.

For a more technical approach, oriented to IT services, we have ITIL V3, consisting in a good practices manual for managing IT services, during its life cycle. ITIL is divided in four volumes, comprising all the life cycle of IT services: service Strategy, service design, service operation and service continual improvement,

PMBOK is the project management guide widely accepted by professionals from all areas of knowledge. It explores the processes that make part of the project life cycle, presenting them in a general way to all areas, making it universally applicable.

Assuming the project management and maintenance management as the main focus areas for this thesis, we need to take in account the project portfolio aspects of the organization. It corresponds to a centralized management of processes, methods and technologies, used by project managers and project management offices to analyze and manage a set of projects.

We can have two distinct approaches for this thesis. One approach is dealing with the problem considering the process necessary for receiving and managing an project or a maintenance operation, considering we have already defined all aspects related to project portfolio. The other approach is to consider also the alignment of this process with the business and technological goals of the organization for creating value. We will need to analyze the state of the art in addition with the expectations of the client to decide which approach will we assume. This will be presented in section XXX.

This thesis project is divided into the problem definition in section XXX, where we define the problem scope in more detail, in the state of the art in project and maintenance management in section XXX, taking as reference the manuals presented before and a set of standards, and a first approach to the solution to adopt in section xxx, achieved through interview method with the client in order to define some concrete aspects of the project.

2   Objectives

The main objective of this thesis is to design a process for project and evolving maintenance requests management that arrive to an information systems department of an organization.This process should be designed taking in account

the background of a specific organization, but is as more interesting as more generally applicable it is.

Based in the process we want to design, we also need to define the activities that belong to it and assigning responsibilities through an RACI Matrix (Responsibility Assignment Matrix). These responsibilities need to take as basis the organization structure in terms of roles and responsibilities. The supporting artifacts to the process will also be defined according to its importance to each activity belonging to it.

After designing the process and the respective RACI matrix and supporting artifacts, the objective is to design an logical application architecture for supporting the process, based on the existent market solutions for project and maintenance management. This architecture must be able to fully support and integrate the designed processes in the global structure of the organization, being able to be directly applied.

3 Problem Contextualization

This thesis is aligned with a real case of an organization with 600 collaborators where the information systems department management has 15 elements including the director and the team leaders. This management is composed by the department of evolving maintenance and the department of projects execution, treated forward as projects department and maintenance department, respectively.

When a request is submitted to the information systems management, it must be classified into a maintenance operation or a project execution. A correct classification is fundamental, in the way it defines from which is the responsibility to deal with the request fulfillment.

The request classification will depend on many factors. We can decide it by taking in account aspects like the risk to the business or the financial impact for the organization. In the end, it depends on the organizational culture and how it considers what is a maintenance operation and what is a project.

After classified, we need to define the request fulfillment in terms of processes to consider and communication channels between the project and the maintenance department, assuming they are independent but need to be coordinated.

Considering the software life cycle processes, presented by the International Standard ISO/IEC 12207 presented in more detail in section xxx, we can divide this processes in two groups: Software Specific Processes and System Context processes.

The system context processes are more focused on systems engineering, providing a system context for dealing with a standalone software product or service or a software system. The software specific processes are, on the other hand, used for implementing a software product or service that is an element of a larger system.

The main challenge of our problem is to identify and implement the necessary processes from the software life cycle processes that are important for our objectives, defining activities and responsibilities inside the organization.

As long as we are dealing with an established organization in the market, we need to take in account that our process will be implemented in an existent organizational structure. It is necessary to develop a logical application architecture, using market solutions from the area of Project management and IT service management, that will be architecturally integrated to support our process. We will need to assess the market solutions already available to conclude which are the best in terms of features and interest for the project.

4 Related Work

In this section we will present a set of literature references on the subjects related to this thesis. We will present the most important frameworks on Information Systems Management and Governance. This process has the objective to come up with a choice of a frameworks or a set of them to implement our processes for project and maintenance management

In terms of logical application architectures, we will provide an analysis of the main features of a set of Project Management and Information Technologies Service Management solutions available in the market. Our objective is to conduct an comparative analysis relating all the solutions and choose the ones that best fit our purposes for use on an logical application architecture.

4.1 Frameworks for Information Technologies Governance and Management

In this section we will present the three frameworks we consider the most relevant for this thesis: COBIT 5, ITIL V3 and PMBOK. This three frameworks provide, from different perspectives, guides and principles for IT Governance and Management, providing processes for achieving a successful implementation of this principles in an organization.

IT Governance and IT Management One important concept to define is the difference between IT Governance and IT management. They are many times confused and some authors already tried to explain the difference between the two concepts.

Considering the definition given by Van Grembergen *et al.*, ""IT Management is focused on the internal effective supply of IT services and products and the management of present IT operations. IT Governance in turn is much broader, and concentrates on performing and transforming IT to meet present and future demands of the business (internal focus) and the business customers (external focus).""".

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Considering the COBIT 5 view for this question, it makes a clear distinction between governance and management, in the way these two disciplines encompass different types of activities, require different organizational structures and serve different purposes.

Governance ensures that stakeholder needs, conditions and options are evaluated to determine balanced, agreed-on enterprise objectives to be achieved; setting direction through prioritisation and decision making; and monitoring performance and compliance against agreed-on direction and objectives.Management plans, builds, runs and monitors activities in alignment with the direction set by the governance body to achieve the enterprise objectives.
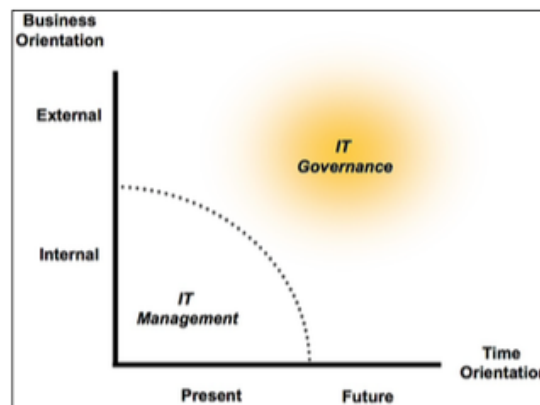

Fig. 1. IT Governance and IT Management

Considering both definitions and the figure 1, we can conclude that IT Governance has a bigger dimension that IT Management, but are disciplines that need to be related and complementary to achieve success inside an organization.

COBIT 5 Control Objectives for Information and Related Technology (CO-BIT) is a framework created by the Information Systems Audit and Control Association (ISACA) for IT Management and IT Governance.

COBIT 5 provides a comprehensive framework that assists enterprises in achieving their objectives for the governance and management of enterprise IT. Simply stated, it helps enterprises create optimal value from IT by maintaining a balance between realizing benefits and optimizing risk levels and resource use [1]. The framework is built on five basic principles:

- **Meeting the Stakeholders Needs**
- **Covering the Enterprise End-to-end**
- **Applying a Single, Integrated Framework**
- **Enabling a Holistic Approach**

– **Separating Governance from Management**

It also defines seven enablers, explained by COBIT as factors that, individually and collectively, influence whether governance and management over enterprise will work or not. This enablers can be categorized as:

– **Principles, Policies and frameworks**
– **Processes**
– **Organizational structures**
– **Culture, ethics and behavior**
– **Information**
– **Services, infrastructure and applications**
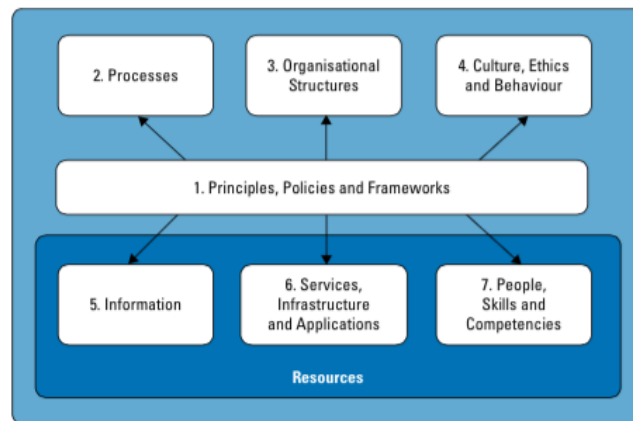– **People, skills and competencies**

Fig. 2. COBIT 5 enablers

Image 2 presents the COBIT 5 enablers previous defined and how they relate among themselves int terms of its importance for organization. Each enabler has stakeholders, a set of goals, a life cycle and for each can be defined good practices.

Considering figure 3, COBIT 5 process reference model considers two big domains of processes: Governance and Management. The governance domain contains five processes in the domain evaluate, direct and monitor(EDM). The management domain has four internal domains of processes:Align, Plan and Organise(APO), Build, Acquire and Implement(BAI), Deliver, Service and Support (DSS) and Monitor, Evaluate and Assess(MEA).

All processes for management and governance are presented in the appendix and all the implementation details are presented in COBIT 5: Enabling Processes.[REFERENCE HERE]

COBIT 5 includes a process capability model based on ISO/IEC 15504 Sotware Engineering - Process Assessment standard. [REFERENCE HERE] This
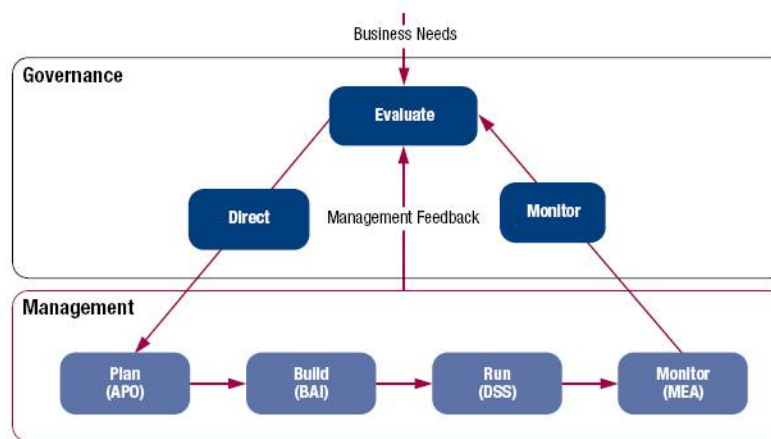
Fig. 3. COBIT 5 domains

models allow to measure the current level of maturity of enterprise processes, presenting the gap between the current level and the desired one the enterprise wants to achieve. This new capability model is an improvement of the previous on COBIT 4.1, being more simplified and compliant with a generally accepted process assessment standard. Relating to other frameworks and standards, CO-BIT tries to establish a framework that is compliant with the most widely accepted standards in IT Governance and Management. In figure 4 we can see the standards COBIT 5 relates by processes domain, with special attention to ITIL V3, ISO/IEC 20000, PMBOK and CMMI, that are closely related to this thesis problem.

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5 Architecture (2/3pgs)

Your proposed architecture. Can have lots of pictures and bullet points so it is easy to understand.

6 Evaluation (1/2pgs)

Explain how you are going to show your results (statistical data, cpu performance etc). Answer the following questions:

– Why is this solution going to be better than others.
– How am I going to defend that it is better.

7 Conclusions

Wrap up what you wrote.

A   Appendix

Appendix files and refs will go here. Such as your thesis work scheduling.

A.1   Work Scheduling Example

Simple work schedule is presented in Table **??**. You can do something more fancy link a Gantt chart or whatever.

References

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