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PROPOSAL OF A MATURITY MODEL TO DEPLOY A SERVICE CATALOG

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ABSTRACT

The demand for services that boost business processes of an organization and the diversity of the necessary IT infrastructure resources that provide them causes a disparity in idealized goals with found scenarios. Therefore, an organization may not have the exact answers to questions like: what are the purposes of an IT service and what your requirements, maintainers and users? This paper proposes a maturity model for building service catalogs in accordance with the frameworks ITIL (Information Technology Infrastructure Library) and COBIT (Control Objectives for Information and Related Technology), in order to enable the alignment of the IT services with the organization's business.

KEYWORDS

Service Catalog, IT Governance, ITIL, COBIT.

1. INTRODUCTION

Information technology is a key component and has been widely and heavily used in strategic and operational levels. Nowadays, it is been handled not only as a technology that gives support to the organizations, but also assuming a strategic role in organizational setting (Albertin & Albertin 2008).

Based on these uses and in the competitiveness in the current economic scenario, organizations are increasingly dependent on IT to make right decisions in smaller times. Therefore, they must organize and develop it in a controlled way and in alignment with business goals. IT Governance is used to achieve these goals (Lunardi, Becker & Maçada 2010).

IT Governance consists of a tooling for specifying the decision rights and responsibilities, in order to encourage desirable behavior in using IT, helping corporate governance in decision making (Weill 2006).

Given the complexity and wide range of resources and services to organizations, it is necessary the documentation, constant updating and continuous improvement of the information about the services. Attributes as the objective, resource utilization, service responsible and troubleshooting, make a service offered by IT being in full compliance and alignment with the organization's business. Some items may be exemplified in Figure 1.

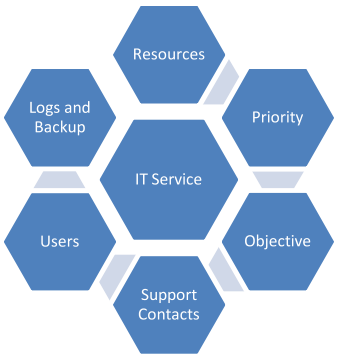

Figure 1. Example of attributes of an IT Service

This paper aims to propose a Maturity Model for building a Service Catalog, which is handled as a project in accordance with the frameworks ITIL (ITSMF 2007a) and COBIT. The proposed model is important to IT Governance, as it allows keeping existing services aligned with the organization's business and demonstrates to higher organization sectors what services are offered.

According to a study by consulting Enterprise Management Associates (Enterprise Management Associates 2009) with IT leaders, the key benefits of the Service Catalog mentioned were:

- alignment of IT with business;
- standardization of IT services;
- improving the quality of services;
- agility in communicating with the support;
- costs reduction and workflow.

Among the major problems caused by the absence of a Service Catalog are: the complexity of the organizational structure of services, delays in procurement of goods and services, undocumented information lost after changing a team member and the difficulty in treatment of the Service Desk, generating a bad image of the IT department. The Service Desk is a unique way to manage requests and service calls (Briganó & Barros 2010).

From the standardization of handling incidents related to IT services, it is possible to the support team to classify requisitions of the same service, providing the visualization of recurring problems.

The decision making, which must be grounded by concise data and with extreme accuracy, is assisted directly by Service Catalog, where every need of acquisition or change in processes are positioned by the impacts on existing services, presenting updated data about requirements, necessary staff and costs.

The remainder of this paper is organized as follows: section 2 presents the theoretical foundation in the areas of IT Governance, ITIL, COBIT and Service Catalog. Section 3 presents the proposal of this paper: a maturity model for deploying IT service catalogs. Section 4 closes the paper with final remarks.

2. THEORETICAL BACKGROUND

2.1 IT Governance

IT Governance is the set of organizational structures and processes that involve senior management, IT managers and business managers in decision making about the use of IT, in the coordination of actions arising out of such decisions and in the monitoring of their results, in order to promote the alignment between strategies and operations in the areas of IT and business (Weill 2006). IT Governance consists of aspects of leadership, organizational structure and processes that ensure that the IT areas support and improve the goals and strategies of the organization (ITGI 2007).

According Soula (2013), governance is the only comprehensive area that unites IT, business and services. Governance is what sets common guidelines, policies and rules, which the business and IT areas use to conduct the organization.

ITIL (ITSMF 2009e) states that governance is expressed as a set of strategies, policies and plans, having the following activities:

- Evaluate: activity that relates to assessments performance of the organization on a daily basis;
- Direct: relates to the communication of the strategy, policies and plans;
- Monitor: where those charged with governance in the organization are empowered to determine whether it is being effectively treated and if there are exceptions (Soula 2013).

Consequently, according to the COBIT (ITGI 2007), there are five IT Governance focus areas:

- Strategic alignment: aims to ensure the link between business plans and IT, defining, maintaining and validating the IT value proposition;
- Value delivery: is the implementation of the IT value proposition, concentrating on optimizing costs and providing the intrinsic value of IT;
- Resource management: refers to the better use of investments and management of IT resources: applications, information, infrastructure and people;

- Risk management: transparency about the significant risks to the organization and integration of risk management activities of the company;
- Performance measurement: monitors strategy implementation, project completion, resource usage, process performance and service delivery.

2.2 ITIL

ITIL is a library of best practices for managing IT services and was developed by the British government as a mean to ensure the quality of services provided and consumed. It covers IT services throughout its life cycle and is divided into stages, which helps an adequate management (ITSMF 2007b).

The ITIL practices are grouped into five official books published by IT Service Management Forum, being:

- Service Strategy: identification of business needs and decisions related to the services offered;
- Service Design: directioning in the integration of business needs with IT services, based on information from service strategy;
- Service Transition: service deployment arranged in the design allowing its operation;
- Service Operation: monitoring the service throughout its running;
- Continual Service Improvement: provision of a reference for the evaluation and improvement of processes and managed services, maintaining its alignment with business needs.

According Soula (2013), over the years, ITIL has turned into much more than a series of helpful books on IT service management. The framework for the development of best practices in IT service management is in continuous growing, by the contribution of consultants, teachers and suppliers of technologies or products.

2.3 COBIT

COBIT is accepted as a set of good practices in security and control of IT and has as missions the research, the development and the promotion of an international set of generally accepted control objectives for IT (Lopes et al. 2010).

According to COBIT (Fagundes 2012), to achieve the business objectives, information should be arranged according to defined criteria controls, and based on comprehensive requirements of quality and security, seven distinct criteria and overlapping were defined:

- Effectiveness: dealing with information relevant to the business process to be delivered in time, correct, consistent and usable;
- Efficiency: relates to information delivery through the most productive and economical use of resources;
- Confidentiality: is related to the protection of confidential information to avoid improper disclosure;
- Integrity: relates to the reliability and completeness of information as well as its validity in accordance with business values and expectations;
- Availability: relates to the availability of information when required and the safeguarding of necessary resources and associated capabilities;
- Compliance: deals with adherence to laws, regulations and contractual obligations to which business processes are subject;
- Reliability: relates to the delivery of appropriate information to manage the organization and exercise its governance responsibilities.

To make IT Governance efficient, it is important to evaluate the activities and risks that must be managed. Usually, they are ordered by areas of responsibility for planning, construction, processing and monitoring. In the COBIT model, these areas are called:

- Plan and Organize: provides direction to solution delivery and service delivery;
- Acquire and Implement: provides the solutions and passes them to be turned into services;
- Deliver and Support: receives the solutions and makes them usable for end users;
- Monitor and Evaluate: monitors all processes to ensure that the defined direction is followed.

COBIT and ITIL do not compete with each other and are not mutually exclusive. They can be used together as part of the overall management of an organization. COBIT is positioned at a high level, is driven

by business requirements, covering the entire range of IT activities and focuses on what needs to be achieved rather than how to achieve the governance, management and control. Meanwhile, ITIL provides the best practices to manage and improve their processes, providing IT services of high quality at justifiable costs (Silva Neto 2011).

2.4 Service, Service Portfolio and Service Catalog

ITIL (ITSMF 2007d) defines that IT service is a service provided to one or more customers by a service provider that supports the business processes of the client. The IT Service is made from a combination of people, processes and technology. The IT services should be defined by service level agreements.

According to Lopes (2010), based on IT Management, there is the IT Service Management, which is a skill set of the organization to provide value in the form of services, a professional practice supported by an extensive body of knowledge, experience and skills.

The IT team has the responsibility to provide services efficiently. However, this efficiency is achieved not only with the quality of the service running, but also for defining the order in which they are designed to react in case of failure, the maximum time that may be unavailable and procedures of contingency and recovery. Construction of the Service Catalog is the starting point for determining the location of the service as the logical and physical structure in which they are installed and if they share infrastructure with other services in operation, making it easier to track the dependencies for the service to be executed.

Aiming at the constant improvement of services and expansion of infrastructure, the expansion of a service requires a detailed documentation about their attributes. Based on these data, the administrator can view the impact of necessary changes to the service (dependencies, users, peak usage times and high availability) for this service to be extended and gives support to a wider range of resources.

According to ITIL (ITSMF 2007f), the Service Catalog composes the concept of Service Portfolio, which represents not only the services currently used, but also all those who were offered and those who intend to go into operation. The Service Portfolio is divided into three groups:

- Pipeline: where the demands are received and decision making;
- Service Catalog: only composed by enabled services and released to be in production;
- Obsolete Services: that maintains the information about the services that are no longer offered, but already composed the Service Catalog.

Portfolio management is a process of decision making about investment, resource allocation, and is responsible for defining, analyzing, approving and hiring any service. Once approved, the service is developed and released for production, composing, the Service Catalog (Lopes et al. 2010).

According to ITIL (ITSMF 2007c), the purpose of the Service Catalogue is to provide a single source of consistent information for all approved services and ensure that it is widely available for those who need to access it.

The Service Catalog provides a central source of information (such as infrastructure, location, resources, personnel) regarding the IT services available, ensuring that those responsible can view its attributes, the business processes that deal and the quality levels expected (Fagundes 2012). COBIT has a specific chapter to define, manage and secure the IT Service Catalog of the organization, included in the Deliver and Support domain.

According to COBIT, it is necessary to define and manage service levels, because the effective communication between IT management and the business clients over the necessary services is made possible through a defined and documented agreement that addresses the IT services and expected service levels, including monitoring and timely reports to stakeholders.

The Service Catalog must also manage the outsourced services, defining clear roles, responsibilities and expectations in outsourcing agreements. The effective management of outsourced services minimizes the business risk associated with suppliers who do not fulfill their role (ITGI 2007).

The expansion and the occasional output of staff, both in the team that provides a service as in its users, needs a document of organizational policy, aiming to equalize the knowledge that everyone makes the service achieve the expected goal for the organization business.

This document makes the IT team keeps the service up and running, the support team always bases this delivery between management and users of the service and these are in turn aligned with the business needs.

Based on these procedures, the goal of Service Catalog is defined as supporting the organization's decision making regarding the existing and needed portfolio of services to achieve the business objectives, documenting all their attributes and modifications.

3. MATURITY MODEL TO DEPLOY A SERVICE CATALOG

In order to compose the Service Catalog, one should consider the services currently offered by IT, from the most basic, wholly technical services, until the business services, which possess greater visibility of users and management. Applications and advantages of building a Service Catalog are demonstrated in this work. However, its effectiveness within an organization may not be immediately achieved, because each corporation has different concepts and contents of existing resources.

According COBIT (ITGI 2007), the positioning of the organization and the processes for developing Service Catalog are achieved by means of a maturity model. In this section, the proposal of a maturity model to deploy service catalogs is presented. This model can be classified, based on the questions proposed in this paper, as a method of self-assessment to situate the organization environment (later exemplified in Figure 2), using the results to set goals based on where the organization intends to position itself in the scale, planning projects and prioritizing them according to the analysis of benefits versus costs.

Existing patterns and structures best practices are guidelines for organizations to achieve operational excellence in IT service management. The type of guide that each organization requires varies depending on their stage of development (Soula 2013).

Maturity models seek to establish levels of evolution processes, called maturity levels, that characterize stages of improvement in processes implementation in the organization (SOFTEX 2011). These levels have different ratings on different methodologies consulted, as the Organizational Project Management Maturity Model, based on the PMBOK Guide, which consists in four levels: Standardize, Measure, Control and Continuous Improvement (Silva Neto 2011).

Another model referenced was the CMMI, Capability Maturity Model Integration, provided by the Software Engineering Institute (SEI), defining the levels: Initial, Managed, Defined, Quantitatively Managed, and In Optimizing (Ehsan et al. 2010).

The main purpose of CMMI is to provide guidelines based on best practices for process improvement and organizational skills, covering the lifecycle of products and comprehensive services in the design, development, procurement, delivery and maintenance (Fernandes & Abreu 2012).

The CMMI maturity model describes an evolutionary path that begins with immature processes and follows up a disciplined process where is possible control using metrics and statistical models (Morgado 2007).

Finally, a model found in the Brazilian scenario, the Reference Model for Improving the Software Process (MR-MPS), maintained by the Association for Promotion of Brazilian Software Excellence (SOFTEX 2011), in partnership with other Brazilian companies, exemplifies the seven levels of maturity: In Optimization, Quantitatively Managed, Defined, Broadly Defined, Partially Defined, Managed and Partially Managed.

A maturity level can be considered an evolutionary step for the improvement of the organizational process as a whole and consists in specific and generic practices that are part of a predefined set of process areas. The achievement of the targets corresponding to these process areas is a prerequisite for achieving maturity level corresponding (Fernandes & Abreu 2012).

In all consulted models, the positioning of an organization in maturity levels is achieved through a series of questions in which IT staff assumes that the organization does not have any management level and starts the maturity scale in its lower classification. Then, the organization will be able to determine the current level and the necessary measures to advance in the proposed scenarios. Figure 2 illustrates the questions related to services that can be applied to determine the position of the organization using the proposed maturity model.

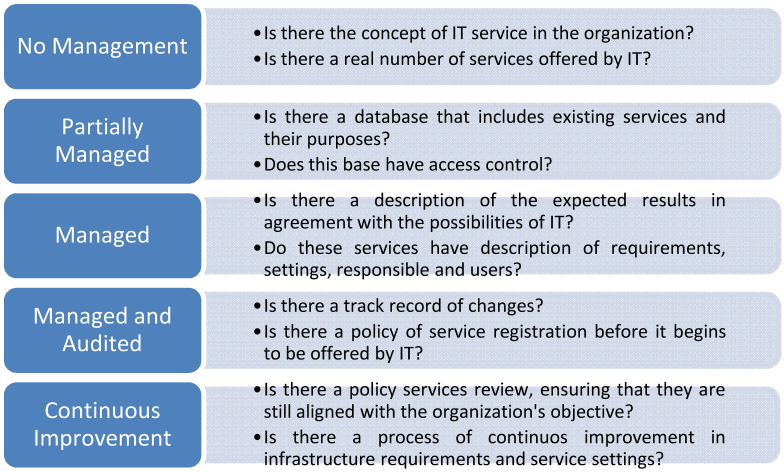

Figure 2. Examples of questions by Maturity Level

In the maturity model proposed in this work, the maturity level is determined by any answer that is not affirmative in its entirety, assuming that when partially meets, or when is not meet, is exactly the point where the construction work of the Service Catalog should be started. The levels of maturity that classifies the businesses as well as the objectives and issues to be solved for this advance in the construction of the Service Catalog are presented below.

3.1 Level 1 - No Management

At this level, there are several services offered by the IT department, but there is no way to specify which and how many there are, their functionalities, responsible and not even what are the outsourced services and what are provided internally. The main focus of this level is to identify and to quantify all the services offered by IT.

3.2 Level 2 - Partially Managed

There is the identification of the offered services, but these are not kept in a database or document with the existing services and their respective objectives, having access control to these documents and availability to access them.

3.3 Level 3 – Managed

There is a repository that contains the existing services, but these do not have description of requirements, configuration, accounting, support contacts and users, aiming to identify the list of items in the model in the Service Catalog in all the identified services. At this level, it is necessary to define the expected outcome for the business of the organization in accordance with the possibilities of IT area.

3.4 Level 4 - Managed and Audited

There is a repository that contains the existing services with their respective attributes, however, there is a policy of updating data, information on recent changes, and a policy of service registration before it begins to be offered by IT. At this level, the adoption of the concept that a service has changed, must appear in track record of changes and also that each new service must be entered in the Service Catalog and only after this registration, it will be available for use.

3.5 Level 5 - Continuous Improvement

All existing services are registered and constantly updated. The new services to be offered undergo a registration process, requiring only the creation of a conference policy and updating of existing data, as well as evaluating improvements to be implemented, accompanying if these remain aligned with the mission and objective of the organization.

Based on the found scenarios and on the proposed maturity levels, the workflows and processes for progress in the model can be listed as shown in Figure 3.

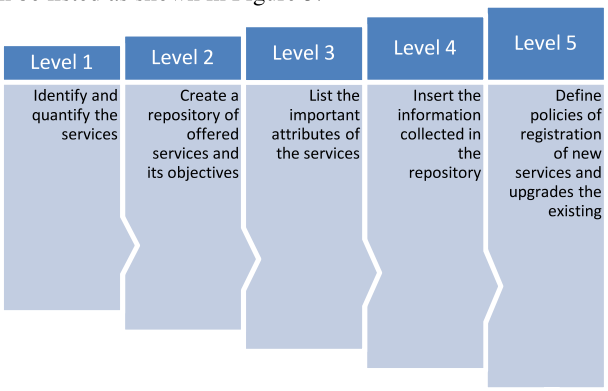

Figure 3. Maturity Levels and Activities

Through the concepts described in this paper, it is possible to build a catalog where the IT area can show the offered services and what is needed to maintain them.

Finally, the workflow for building a Service Catalog can be shown in Figure 4.

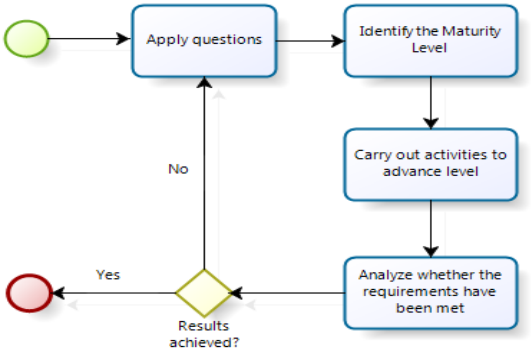

Figure 4. Application Process Maturity Model

4. CONCLUSION

Based on this work, it is possible to simplify the services offered in an organization, having at hand a knowledge base that contains the services that the organization needs with priority and others with specific tasks.

The process of continuous improvement is achieved by the updates in Service Catalog, which cannot be treated as a static database, but rather a constantly updated source of information about what is offered to the organization.

From this work, it is possible helping in the creation of service level agreements, with the premise that all services are documented and what should be expected of them is defined. These agreements are intended to ensure that the objectives of the services are met and that their requirements are always met.

Based on the learned lessons, the Service Desk can use these cataloged services as items to be listed in each service request, with the accuracy that all services are registered and only them should generate requests, idealizing the creation of graphs of failures and outages and classifying services that require more time and support costs. It can be also, in an extreme level of maturity, determine the costs of existing services, providing information of the resources of the organization to maintain them.

Future work will use these concepts and demonstrated advantages for the construction of questionnaires, resulting in key aspects to compose the Service Catalog and the application and development of the same.

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