Implementing the Service Catalogue Management

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Abstract – The Service Catalogue is a fundamental need of Information Technology (IT) organizations because it describes in a formal document the available services that these organizations have to provide. The catalogue contains the respective Service Level Agreements (SLA) that should be met, setting expectations between clients and providers of services. The Service Catalogue is integrated with other processes, including Service Level, Financial, Demand and Request Management – all these perfectly described in the ITIL books. However, about 30% of IT Service Management (ITSM) projects do not finish as a result of poorly defined IT services. This research proposes some solutions that try to mitigate the risks of a service catalogue implementation. The proposed solutions include a service definition, its components, the roles involved in its management, an identification process and a lifecycle process. The proposal was implemented in a private company, where we identified the services that composite the service catalogue.

Keywords— Service Definition, Service Catalogue, Service Level Agreements, Service and Service Request Lifecycle Processes

I. INTRODUCTION

This research focuses on IT departments that provide services to other (primarily non-IT) departments of the same company. The application of the proposals to other environments (e.g., in multi-business situations) will be studied in the future.

The need to describe a service is like the need to label goods or products in a supermarket. A product label provides a brief summary of the good to which it is attached. Prospective buyers can use this information, together with the price, to make a rational purchasing decision. Product labeling occurs for the safety and benefit of purchasers and providers. The same reasoning can be made with services [1][2].

Describing the services’ attributes requires a clear service definition and a service identification process [2].

The act of transforming resources into services is the base of the service management and without it an organization is just an aggregate of resources that by itself does not bring value to the business [3]. Nowadays, IT departments are imposed to justify their services and to analyze them from a cost-benefit point of view [4][5]. For that reason a service catalogue is a key element of an organization. The service catalogue may also be seen as a structuring element, because it allows a cost projection and it captures indicators of consumption and efficiency of the processes. A service catalogue can also be related with the following advantages [6][7]:

- Cost reduction: by the automation of the service subscription and delivery processes;
- Transparency of costs: by the use of chargeback mechanisms;
- Increase of operational efficiency: by the services standardization and by the delivery process optimization;
- IT recovery: because IT begins to be seen as a partner and a business facilitator;
- Increase of users’ satisfaction: by the processes transparency and by the expectations’ alignment.

II. PROBLEM

The Service Catalogue and Level Management are crucial IT management processes because most of the other processes are based on these. So, if these processes are poorly implemented, many other processes will suffer. For example, it has been reported that about 30% of ITSM projects do not finish because of problems caused by the service definition [8]. Although ITIL and other frameworks, such as CMMI for Services, describe how to manage IT services, these frameworks do not describe how to implement them – not to mention how to integrate them in practice with all other processes. For example, in a study with around 100 companies that tried to implement a Service Catalogue, only 57% reported the project was successful while 12% reported the project was completely unsuccessful. Furthermore, 34% of those companies mentioned service definition as one of the "top risks" for successful catalogue implementation [8].

When IT leaders confuse assets (that is, technology) with services, they confuse the business value of those assets with the business value of the managed activities around those assets. The business value of technology is ultimately determined by how it is used (or not). This accountability rests with the business; IT has little or no control over it. What IT does control is its own organizational effectiveness in provisioning and managing those assets [9].

On other hand, if IT does not understand the difference between a service and the elements that allow to provide it (process and assets), then they will tend to classify these elements as services. But the clients of IT have little interest in how to provide the services, because they only concern with results [10]. By consuming the limited interest of the clients with things that do not capture their attention (software,
hardware, process and more), the IT are undermining its credibility and inhibiting a better alignment with the business [11]. Then the business fails to optimally use the IT skills and everybody loses.

IT cannot manage what it does not understand. If IT does not have an articulated IT Service Portfolio then IT managers cannot establish relations between the service results and the elements that work together to achieve those results. When this happens, IT has no frame of reference for knowing what matters to its customers, how well IT is performing in relation to expectations, or what needs to change to meet or improve expected results.

Distinguishing between assets and services is critical for the evaluation of an internal IT performance against other external alternatives, allowing better sourcing decisions [9].

### III. RELATED WORK

The service concept is fundamental to understand the main principles of the best practices that the IT industry tries to follow. In order to comprehend this concept a new way of thinking is necessary and it contrasts with the traditional instincts of the IT experts (that normally consists in components, such as software and hardware) [12]. This mindset requires instead an alternative outlook to be maintained, with the focus being the service-oriented or end-to-end view of what their organizations actually provides to its customers. In other words, it is focused in the results/value that IT can provide [13].

#### A. IT Services

According to ITIL, a service is “a means of delivering value to customers by facilitating outcomes customers want to achieve without the ownership of specific costs or risks” [14]. Although this definition represents a good start to comprehend the general lines of what a service is, it is an abstract definition and does not identify all the service features, components and relations with the IT assets.

In the majority of the dictionaries the “service” concept is associated with intangibility, being defined as an action, not a thing, which cannot be stored or reused. It responds to user needs by adding benefits to their operations.

To explain the key features of a service it is helpful to use an analogy with the food industry. When we cook at home, we need to go to a grocery store, buy the ingredients, take these ingredients home, prepare and cook the meal, set the table and clean up the kitchen afterwards. As alternative, we can go to a restaurant that delivers a service that provides us with the same outcome (a nice meal) without the time, effort and general fuss if we were to cook it ourselves. However, the quality of a restaurant is not only influenced by the value of the food, but also by:

- The cleanliness of the restaurant;
- The friendliness and customer service skills of the waiters and other staff;
- The environment of the restaurant (lighting, music, decorations etc.);
- The variety of meal and drinks;
- The time taken to receive the meal (and was it what we asked for?).

If just one of these factors does not meet the clients’ expectations then ultimately the perceived quality and value being delivered are negatively impacted. If IT staff focus on the application or hardware elements being provided and forget or ignore the importance of the surrounding elements that make up the end-to-end service, just like in the example of the restaurant, the customer experience and perceived quality and value will be also negatively impacted [13].

#### B. Service Catalogue Management Process

The Service Catalogue Management process provides a unique information source of the agreed services and it ensures that the catalogue is available for users to consult [14]. The service catalogue is formed by the active services and by the ones that will be active in short term. In some cases it can be very detailed and describe besides services, politics, prices, service level agreements and sourcing conditions [15][16].

The service catalogue can have two levels:

- Business Service Catalogue:
  - Contains details regarding the available services, relations with business processes and represents the customer view of the catalogue;
- Technical Service Catalogue:
  - Contains information about available services, relations with the support processes and the respective Configurations Items;
  - It is not visible by the customers.

Although ITIL and CMMI identify the principal aspects of what a service catalogue is, they fail to explain how to implement this concept. For example, in the case of the service identification process, ITIL only says that the integration between the business needs and the IT capabilities must be done. And the CMMI defends that when identifying the services it is necessary to respect the organizational politics, standards and models. Neither explains how to identify the services of an organization.

#### C. Related Processes

There are several processes related to the service catalogue management, because it runs as the base for some of these and also because it needs some input of others.

1) Request Management

According to ITIL, a service request can be defined as a “request from a user for information, or advice, or for a standard change or for access to an IT Service” [17]. From the customer point of view this definition makes sense, because all the requests made by him to the IT are service requests, although some may correspond to incidents or changes. But the same is not applicable to the IT employees, because they mostly understand what represents each request. ITIL starts to address it, but does not explain how to manage each concept. Some key questions remain without answer: What is the difference between incident, change and service request? How and where should those concepts be recorded?
When a standard change is made, should it be recorded as a service request?

2) Service Level Management

Service Level Management intends to define, to document, to agree, to monitor, to measure, to report and to review the quality level of the services. In its context it should be defined a Service Level Manager (SLM) employee, who acts as the IT representative inside the business and vice-versa. SLM has the responsibility to manage the business expectations and to ensure that the services are delivered according to these expectations [18].

3) Others

There are others processes related to the service catalogue, such as financial management, demand management or suppliers management, but the scope of this paper does not include them.

IV. SERVICE MANAGEMENT PROPOSAL

This section describes the service management proposal that tries to respond to the referred problem.

A. Service Management

This section identifies the service definition proposed, as well the service components, the involved roles, the service identification process and the service lifecycle process.

1) Service Definition

After analysing several service definitions, the proposed definition is that every service:

- Is an action not a thing and is intangible;
- Is simultaneously produced and consumed, so it cannot be stored or reused;
- Responds to identified needs;
- Can be sold to external companies;
- Uses capabilities and resources (people, tools, information, etc);
- Follows a delivery process;
- Adds value to buyers (this value may be valid for an agreed period);
- May contain tangible results;
- Is described with user terms.

As service examples may be considered: access and support to computer, application, printer or phone, and project or formation assistance. There are some examples of things that should not be classified as services: software XPTO, send email, change password or server.

2) Service Components

Each service should have defined the following components:

- Name – The service name must be defined in user terms and it has to identify the business value of using the service;
- Description – Short description of the service;
- Image – Each service should have an image associated that helps to identify it;
- Categories – All services should have defined a category and a subcategory. This allows to aggregate services in groups, which can optimise a service search;
- Base Cost – Represents the cost of the base features;
- Base Features – List of the base features that compose the service;
- Optional Features – List of optional features from which a service requester can choose when requesting a service. The respective cost must be defined for each optional feature;
- Exclusions – Identifies the features that the service does not offer (when relevant to mention);
- Prerequisites – List of prerequisites necessary for the service request;
- State – Identifies the state of the service;
- Service Level Agreements (SLA) – List of SLAs from which a user can choose only one. Each SLA should have three indicators: Maximum delivery time, incident resolution and service availability. Each SLA must have an associated cost;
- Penalties – Penalties that the service provider should pay if the SLA is broken;
- Validity – List of periods that indicate the time during which a user can enjoy the service value. Each period must have an associated cost;
- Service Owner – IT employee accountable for the service. He must maintain the service information updated and ensure the achievement of the SLAs.
- Requester – Identifies who has permissions to request the service;
- Delivery Process – Identifies the tasks needed to deliver the service.

3) Roles

In the following sections are mentioned some roles that intervene in the service management. These are:

- User – Employee that requests services;
- Receiver – Employee that needs the service (may be the same that the user);
- Approver – Chief of the user’s department. The employees with this role are accountable to approve/reject the users’ service requests. This role represents the IT customer (pays for the services);
- IT Technician – IT employee that delivers the services;
- Service Owner – IT employee accountable for one or more services provisioning;
- Service Provider – Principal accountable for the service provisioning. Has the responsibility to approve or reject the publication of services in the catalogue. Normally the Chief Information Officer (CIO).

4) Service Identification Process

The proposed process is an iterative process compound by five steps: definition of the general lines of the offering,
identification of the business needs, analysis of the IT capabilities, documentation of the service catalogue and catalogue acceptance.

![Figure 1 – Service Identification Process](image)

The first step, the definition of the general lines of the offering, corresponds to the identification of the categories and subcategories in which the services are divided. These categories should name the main areas where the IT acts and that are visible to the customers. This activity may be done by the IT managers as preparation for the next stage. It should not define services, only categories and subcategories, because the first sketches of services should be achieved with the help of the customers.

The second step involves interviews with the business units in which the consumption needs (service name and description), the historical relationship, the expected service levels, the business process that triggers the service requests and some improvement suggestions should be identified and documented. As the first service descriptions are defined with customers’ help, it is guaranteed that these definitions are business oriented [19]. On the other hand, the impact of the IT services in the business processes becomes clear. Because this phase is where the customers became aware of the service catalogue project it is important to take some change management actions, such as explaining the importance and advantages of a service catalogue.

In the IT capabilities identification step the IT managers should identify the IT capabilities and resources, the underpinning contracts, the customer relation systems and the IT processes maturity. This analysis checks if the IT capabilities can correspond to the customers’ expectations or not. This step can use existing audit techniques and frameworks like COBIT [20].

The fourth step proposed is the documentation of the remaining services’ components. In this step IT managers should compare the business needs with the IT capabilities and they should document the services’ components according to this comparison.

The last step of this process is to validate with the business units if the documented service catalogue can be officialised and if it can be used in other processes. If all the business units agree with the service catalogue then the process ends, but if not a new cycle must be started.

5) Service Lifecycle Process

This process identifies the service states, the activities that change these states and who has permissions to perform these activities.

![Figure 2 – Service Lifecycle Process](image)

This process starts when an IT employee (with Service Owner permission) fills the service attributes. Then he can submit the service for publication, which would change the state of it to “Submitted”, or he may save the inputs as “Draft” and ask for publication later. When submitted, the service must be validated by the Service Provider. If he approves it then the service state changes to “Published” and it becomes available for user requests. But if the Service Provider rejects the service then its state changes to “Rejected” and it does not stays available for the users. All the published services can be unpublished by the respective Service Owner without the Service Provider’s approval, which allows to mitigate some errors that may occur in the publication phase.

V. SERVICE MANAGEMENT EVALUATION

The big flaw of the current service catalogue literature is the lack of examples. This section introduces some practical examples based on the proposal section.

A. Service Summary

In the next table is an example of a service summary.

<table>
<thead>
<tr>
<th>Service</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to a Standard Desktop</td>
<td>Installation and support of a Standard Desktop</td>
</tr>
<tr>
<td>Computer</td>
<td>Computer</td>
</tr>
</tbody>
</table>


Table 1 – Example of a service summary

B. Service Catalogue

This subsection lists a hypothetical service catalogue that an IT department can have. As the majority of the services provided by the IT companies and departments are similar then this list can be used as a base for the service identification process.

The services should be grouped by categories, such as Job Position, Applications, Communications, Consulting and Support to the previous.

1) Job Position

These services are directly related with job positions and give the basic utilities to customers. These services are normally the ones that the user easily associates with IT. In this list are the supply of computers (desktops and laptops), which can have several versions, the installation of printers and the support to videoconferences and formations.

- Desktop Computer
  - Standard Desktop Computer
  - Executive Desktop Computer
- Laptop
  - Standard Laptop
  - Executive Laptop
  - Industrial Laptop
- Printing, Scanning and Fax
  - Shared Printing
  - Standard Individual Printing
  - Executive Individual Printing
  - Individual Fax
- Corporate Videoconference
  - Standard Videoconference
  - Premium Videoconference
- Others
  - Formation Support (logistics preparation)

2) Applications

This category identifies the services related to applications. In this section, one should only define as services the main applications and systems that IT can give access to and support. For remain applications that are less important we propose the definition of a service named “Installation of a requested software”, which lists in its optional features all the existing applications. This section is also composed by the Development subcategory, which includes the services of software development.

- Enterprise Portal
  - Intranet
  - Financial Management System
  - Webmail
  - Documents Management System
  - Files storage
  - Internet
3) Communications

IT departments may also be responsible to supply services related with the communications:

- Voice communications
  - Corporate fixed voice
  - Standard corporate mobile voice
  - Executive corporate mobile voice
  - Corporate mobile voice and data (PDA)
- Data communications
  - Communications with external entities
  - Communications for Video vigilance

4) Consulting

A group of services that usually the IT customers do not know that exists is the consulting services. This is because these services’ deliverables are mainly intangibles. The definition of this type of services is crucial to show to the customers that the IT role goes behind the supply of technology:

- Projects’ support
  - New project preparation support
  - Support during a project
- Others
  - New solutions’ consulting
  - Studies, opinions and IT politics

5) Support

Support could include some auxiliary services that only can be requested as features of the main services. The support and maintenance of the deliverables are a clear example of this kind of services:

- General support
  - General support level 1
  - General support level 2
  - General support level 3

The support is divided by levels of service quality. In the level 1 the support is only done on business days and in labour hours, in the level 2 it is extended for the 24 hours and in the level 3 it is 24 hours per 7 days a week.

VI. CONCLUSION

The application of a service catalogue may have a huge impact in an organization, because it defines the offer that a service provider has and it works as a formal communication means with the customers. This is important, because it contributes to a better alignment between the two through a document that both comprehend. But for that to happen it is necessary that both understand the base concept that relate them, the services. Analysing the gap model presented in [21], our proposal allows a service provider to close the Gap 1 because it translates the customer’s service expectations into clear service agreements and also Gap 2 because it uses the service agreements as a basis for planning and implementing the service delivery. Without a unique and centralized comprehension of what IT provides to the business, the base of the relation between the two becomes obsolete and everything that is built on it will have problems. For example: How can a chargeback process be accepted by the customers if the services are not documented and agreed? How to maintain users of a Service Desk satisfied if the IT technicians do not know who receives what (services)?

In the future we plan to integrate the proposals with financial management (an ITIL strategy process) and with ITIL operation processes such as request, incident, problem and change management. We also intend to design an IT dashboard based on metrics from all these processes, to build a prototype that implements these proposals in practice, to implement the prototype in a company and to analyse the results from the data collected to improve the processes.

REFERENCES