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CATALOG OF IT SERVICES - TOOLS TO IMPROVE QUALITY AND SAFETY IN IT SUPPORT COMPANY

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Abstract: *Nowadays, in order to become competitive on the market, every company needs a modern and up-to-date IT system. An IT system becomes efficient when users are aware of its tools and can use them to their full potential. IT support in an organisation is made up of several categories of analysis, development and maintenance services, the operation of which demonstrates the value of the IT department. All of these tools are built according to good management criteria in line with industry best intentions and practices, and their definition in the IT Service Catalogue demonstrates the association between services and their value for money. The IT Service Catalogue (ITsC) is also intended to provide transparency to the most novice IT user and to present known and up-to-date conditions, requirements and constraints for the use of the IT service. The ITsC includes the definition, documentation and specialist connections required for each IT service, the service's SLAs, the costs of the service, including related IT operations (back-up, installation, configuration, etc.), the service's operating mode and the user's rights. The service catalogue is usually linked to an internal, public platform or a specialised Helpdesk application.*
Key words: *IT services catalog, IT management, IT services, IT security, IT best practices*

1. CATALOG OF SERVICES - STRATEGIC ROLE, FUNCTIONS AND DEVELOPMENT

ITsC management is the result of a continuous process, which is composed of all the activities of the IT department. The IT Service Catalogue was first introduced as part of the IT Infrastructure Library (ITIL® - "ITIL® is a (registered) Trade Mark of AXELOS Limited. All rights reserved.") for service management IT by the UK government [1]. The UK government was dissatisfied with the quality of IT services and commissioned a specialist department to develop a best practice framework for making UK IT resources more efficient in both the public and private IT sectors. ITIL and the service catalogue are at the heart of this infrastructure which includes:

- Services strategy
- Service design
- Service transition
- Service operation
- Continuous service improvement, Figure 1 [2]

Fig. 1 ITIL Infrastructure [2]

The IT service catalogue forms the basis of all services offered by a company's IT department and contains a centralised list of all services in IT portofolio of organisation, Figure 2.

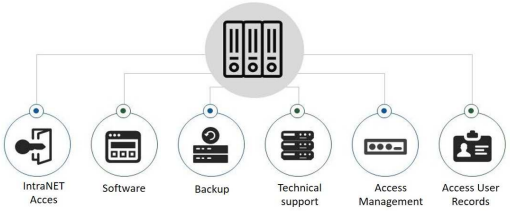

Fig. 1. IT Services in organisation

In addition to the function of centralising services, the Catalogue can, if maintained and updated, be the foundation for the development of the company's IT services, both from the point of view of its addressability: IT specialists, internal or external users, partners, but also from the point of view of a business card on management's vision for the modernisation and implementation of breakthrough technologies.

The objectives of a ITsC are:

- To inform IT specialists, internal and external users and business partners widely and in an accessible way about the IT solutions used by the company;
- Login requirements from the intranet or internet, in accordance with business confidentiality agreements;
- Conditions for registration and steps of the user access procedure;
- Digital library of forms;
- User guide;
- Implementation of a notification system on the resolution of the request;
- Availability and access points.

The service catalogue includes all available services, services in development, withdrawn services (no longer available) or offers the possibility to request new services, Figure 3.

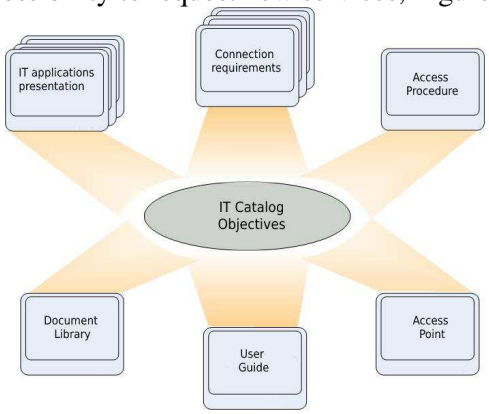

Fig. 2. Objective for ITsC

A catalogue service consists of two components - the catalogue component for the Customer (internal or external users, business partners, public, etc.) and the technical component for the IT (technical) staff.

The catalogue component for the Customer is usually presented in a self-service web portal that provides the means to initiate the request for IT services.

The main aspects that a user should find in this portal are:

- Name of the service
- Service description
- Status - Active/Declining/Development
- Category
- Beneficiary
- Characteristics, functions
- Requirements/requirements
- How to obtain
- Delivery point
- Costs/Tariffs
- SLA - Service Level Agreement (agreed with beneficiary)
- Opening hours
- Support.

The technical service design component includes all the technical aspects necessary for the Client to deliver the service: technical hardware, software resources and their relationships, settings, dependencies, minimum requirements, etc. All technical aspects are described in this component including the SLA that is agreed between the IT department and the Client. An important feature that is listed here is the level of importance of the service - critical [3].

These characteristics provide all the necessary information to the Client for identifying the need of the service, conceptualizing, designing and optimizing the IT services needed to run the company's business.

ITsC is at the same time a guide for introducing non-specialist staff to the use of IT services, whether they involve complex applications or are limited to the use of a smartphone and e-mail. An ITsC can also be used to track and interpret the use of IT services, and to monitor the demand for IT services [3].

For the IT department the service catalogue is very important in terms of some features:

- Cost - allows easy and fast budget projection, it is a very useful component for both the beneficiary and IT;
- SLA - service availability - is a very important component being a very powerful tool for the IT department providing the service being directly reflected in the cost of the service.

Once the SLA is agreed with the beneficiary this component obliges the IT department to ensure the availability of the service but at the same time gives it a powerful tool to negotiate the budget, high availability comes with higher costs [4].

2. SECURITY OF IT SERVICES

The protection of a company's computer data aims to control access and stop attempts to misuse data, intentionally or not, by various agents (users or applications), who may or may not be from the organisation that owns the computer system [4]. The protection of computer data is part of the information security domain "...which is not restricted to computer systems or information in electronic or machine-readable form, but applies to all aspects of data and information protection" [5].

Data protection is characterised by confidentiality, integrity, availability of information.

Confidentiality can be defined as the set of measures taken in order to prevent unauthorised access by individuals or a group of individuals to certain data or information, i.e. ensuring that data and/or information that have a certain status are accessible only to authorised users.

Confidentiality can be ensured by different means, depending on the purpose:

- Access restriction: refers to ensuring confidentiality by preventing access to specific data or information. Access restriction can be implemented either physically, by placing work equipment or servers in separate rooms with special doors, monitored access and fire protection and burglar alarm systems, where only authorised personnel have access;
- Information or data concealment refers to ensuring confidentiality through obscurity, the area where sensitive data is stored being masked with specialised applications;
- Encryption, is a modern, powerful mechanism by which data confidentiality can be ensured when the processes outlined above have been overcome. Encryption transforms the information, both in form and content, into an unintelligible message so that it is impossible to read without applying the encryption key.

Data or information integrity is the totality of safeguards in place to prevent unauthorised alteration or destruction of information. Integrity can be ensured by:

- Restricting access of unauthorised persons to the IT system;
- Authenticating users and authorising them according to their authentication data;
- Encrypting data so that information cannot be understood by intruders;
- Introduction of verification keys, so that if the information is altered, the changes can be identified by the recipient of the data.

Data availability is the totality of processes required to monitor access to data in a timely and secure manner for authorised users. Data availability is ensured by the following processes:

- Authentication and authorisation of the applicant's access level;
- Preventing and alerting in case of unauthorised access;
- Prevention of Denial of Service (DoS) attacks
- Perform periodic backups and use redundant solutions.

Data network protection has a combined purpose: to protect networks from unauthorised access and network applications from attack by malicious people. As more IT services become available to an increasing number of users, the network becomes more exposed to a wide range of vulnerability threats. Attacks on networks can compromise both the availability of network applications and the organisation's data if the attack is aimed at altering the content of documents or databases.

The network security strategy is based on two principles of best practice:

- Everything that is not forbidden is allowed;
- Anything that is not allowed is forbidden.
- The protection of local data networks is based on the following principles:
- Identification of users accessing the network and permitted access rights;
- Control access to network applications, data and critical services.

The computer network access control strategy is known as the **AAA concept, or Triple A, Authentication, Authorization and Accounting,** Figure 4:

- Authentication, users accessing the network must validate that they are who they say they are;
- Authorisation, is the verification, after the user has been identified, at what level they are allowed to access the network and what they can do with these resources;
- Accounting, records and tracks what the user is doing on the network, what areas they are accessing, and the amount of network resources they are consuming.

Fig. 3. AAA Concept

The use of security monitoring tools facilitates the monitoring and verification of vulnerabilities in the network infrastructure so that any unauthorised access can be detected and addressed in advance.

In conclusion the following should be noted and assumed:

- Total security is a desideratum, it is necessary to establish the level of security under reasonable conditions specific to the organisation's activity;
- Awareness of users that a significant percentage of security incidents are the result of acts within the organisation, over 80% [6];
- The analysis, design and configuration of a security solution must be addressed from the top management level of the organisation;
- The IT security management system is dependent on employee awareness and involvement to resolve security incidents.

The transition to ISO 27001:2013 facilitates the following, Figure 5:

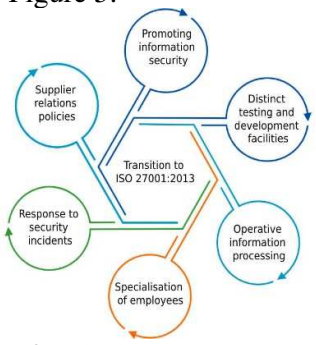

Fig. 4. Objective ISO 27001

- promoting information security in project management based on the defined objectives of the organisation;
- restrictions on working with external equipment and prohibition of software installations, except for authorised personnel;
- providing a different environment for secure systems development and testing;
- policies in dealing with suppliers, communication with third parties;
- decision evaluation, response to security incidents;
- availability of information processing facilities
- specialisation of specialist staff.

3. BEST PRACTICIES IN IMPLEMENTING IT SERVICE CATALOG

The service catalogue is not a new idea, but this concept must respond more specifically to the requirements of customers who want to configure and customize their services even in the situation of company standards or procedures [7].

This is a consequence of users evolving from using application packages to configuring automated workflows and wanting a unification of where information is stored.

Although the development of a service catalogue seems straightforward, the ITsC must be created with the beneficiary at the center. The beneficiary must be encouraged to use ITsC and the IT department must create services that add value to the company.

Creating an IT service catalogue is often a challenge that is achieved through continuous communication between the beneficiary and the IT department. The beneficiary outlines the business requirements, requests availability at the lowest possible cost and the IT department is the one that through the Service Strategy component is responsible for establishing the technical requirements of the service. This is also where the business need for service availability is negotiated, the SLA value is directly reflected in the cost/availability ratio as well as ensuring continuity of service in the event of interruption [8].

In daily practice, the demand for IT services very often overlaps with the demand for IT technology, but this is a demand that should not be treated as a demand for services, Figure 6. A comprehensive list of all the equipment a user can request from the IT department should be distinctly contained in the help-desk application or linked to the list of requirements for a job [9]. These requirements may include, but are not limited to, the following examples:

- List of equipment and applications required for a new employee: allocation of a PC/laptop, smartphone/tablet and landline phone, location of office space or need for other non-IT resources;
- Creation of user account, access rights to standard applications and services;
- Installation of hardware and software according to company standard
- Access to department-specific information or application suites, e.g. ERP (Enterprise Resource Planning), banking applications, etc. [10].

In this case we can talk about user-oriented IT service demands that need to be met quickly and efficiently. But this list must necessarily include funding approval mechanisms to ensure that the service purchase will be approved and settled according to internal company rules.

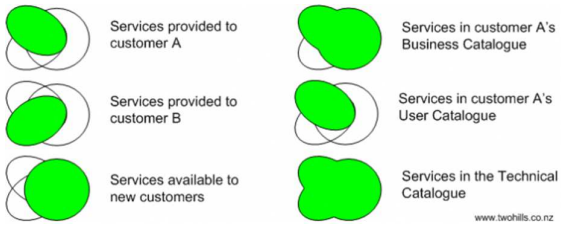

Fig. 5. IT services example

Although the above examples belong to the information technology domain, they should be carried out by a dedicated service/portal so that there is no confusion between IT specialists, service users in the company and customers.

The main connections between the IT component and the internal beneficiaries or business partners of the organization have been made in the paper. The benefits are obvious for both parties, and can even be extended by allowing public access to software catalogue. For example, NASA provides the software catalogue [11].

The success of a ITsC implementation depends on how users are educated, for whom the getting used to it may seem difficult, but they will be more receptive if the first steps are targeted at the most popular services.

It will be helpful in the accommodation phase to establish jointly with users the SLA, which will allow realistic timeframes and contribute to improved user satisfaction. It is also very useful to maintain communication with the beneficiary, both on the status of the request, which will avoid duplication of requests.

As the catalogue evolves, the use of overly technical terms or notions should be avoided.

4. CONCLUSIONS

An IT service catalogue is a single source of accurate information about all IT services offered by an organization's IT department. ITIL defines a service catalogue as a centralized database of accurate information about active IT service offerings and a subset of the IT service provider's service portfolio.

A well-designed service catalogue acts as a single point of contact for end users to view the list of available services and their attributes, such as availability, SLA, costs (if applicable) and service owners.

Without a service catalogue, end-users will not be able to use the knowledge they have gained about the IT segment in their organization, they will not know which applications have reached maturity, and last but not least, they will not know enough about the availability of the IT resources they could access.

At the same time, this can lead to an additional burden on the service desk, which repetitively consumes the productivity of the IT service offering process, which with a service catalogue in place, simply has to pass incoming requests through pre-configured workflows.

A further benefit is the support for IT administrators to allocate resources to services that deliver the greatest value to end users, ultimately having a positive impact on the business objectives of the organization.

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CATALOG SERVICII IT - INSTRUMENTE DE ÎMBUNĂTĂȚIRE A CALITĂȚII ȘI SIGURANȚEI ÎNTR-O COMPANIE DIN DOMENIUL SUPORT IT

Rezumat: În prezent, pentru a deveni competitivă pe piață, fiecare companie are nevoie de un sistem informatic modern și la zi. Un sistem IT devine eficient atunci când utilizatorii sunt conștienți de instrumentele sale și le pot folosi la întregul lor potențial. Suportul IT într-o organizație este alcătuit din mai multe categorii de servicii de analiză, dezvoltare și întreținere, a căror funcționare demonstrează valoarea departamentului IT. Toate aceste instrumente sunt construite după criterii de management bun, în conformitate cu cele mai bune intenții și practici din industrie, iar definirea lor în Catalogul de servicii IT demonstrează asocierea dintre servicii și raportul calitate-preț al acestora. Catalogul de servicii IT (ITsC) este, de asemenea, menit să ofere transparență celui mai începător utilizator IT și să prezinte condiții, cerințe și constrângeri cunoscute și actualizate pentru utilizarea serviciului IT. ITsC include definirea, documentarea și conexiunile de specialitate necesare pentru fiecare serviciu IT, SLA-urile serviciului, costurile serviciului, inclusiv operațiunile IT aferente (backup, instalare, configurare etc.), modul de operare al serviciului și drepturile utilizatorului. Catalogul de servicii este de obicei legat la o platformă internă, publică sau la o aplicație specializată de Helpdesk.

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