

USE OF ITIL

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Abstract - This paper compares the ITIL with other most familiar methodologies for managing IT services. I carried out a SWOT analysis of the application of ITIL and described additional ITIL research in the sectoral areas. I explained why organizations use ITIL and performed an analysis of using ITIL in teaching in Serbia. I further explained I described the most popular examples of developing own ITIL as well as the best practice in applying ITIL in state-owned organizations. My motivation for researching the application of ITIL lies in looking at the broader aspects of using ITIL as an ITIL lecturer at FTN. The goal of all these analyzes was not to get into the ITIL's guidelines and content, but to investigate and demonstrate in one place all the applications, benefits, possible upgrades of ITIL, and the use of ITIL in theory and practice.

I. INTRODUCTION

IT Service Management (ITSM) is a relatively new way of managing IT resources. Traditionally, IT management has focused on managing technological products: hardware, software and IT systems. In recent years, the focus of IT management has been shifting from managing IT products to a more comprehensive management of the ultimate IT services. This shift occurred due to companies that wanted to better understand and manage their IT investments in order to maximize their value and reduce risks.

As a result, a number of frameworks and standards for managing IT services have emerged. These frameworks cover a wide range of IT services management topics (ITSM): Management, processes, controls, services, and continuous improvement. Among these frameworks and standards, ITIL (Information Technology Infrastructure Library) has a key position. Since its launch in the late 1980s, ITIL has become the default standard of good practice in IT service management.

II. ITIL COMPARISON WITH OTHER METHODS FOR MANAGING IT SERVICES

A. COBIT

Control Objectives for Information and Related Technology (COBIT) is an internationally recognized framework for IT Governance, that is, a framework for managing, monitoring and steering IT in one organization. Cobit was developed by the IT Governance Institute, a non-profit organization founded in 1998 in the pillar of ISACA ("Information Systems Audit and Control"). While ITIL enables IT services to be organized through their lifecycle, Cobit is the control framework that provides a reference process model for IT business and helps IT Governance generate the highest possible value on the job

through its IT investments, thereby reducing risks and adapting resources.[1]

B. CMMI

CMMI is an abbreviation that means Capability Maturity Model Integration. CMMI is a combination of models for improving process for system engineering, software engineering, integrated product development and procurement of software.

Process areas can be grouped into four categories:

1. Process Management
2. Project management
3. Engineering
4. Support

While CMMI focuses on software development, maintenance, and product integration, ITIL is expanding to scale and provides a framework for IT service management that includes the life span of hardware. It covers both software and hardwares.[2]

C. Balanced Scorecard

Balanced Scorecard (BSC) puts emphasis on adopting strategic goals and focusing on their achievement. It represents an instrument, or a methodology for transforming organizational strategic goals into performance indicators. [3]

D. SIX Sigma

SIX Sigma is a business upgrade based on finding and elimination of errors and causes of errors or defects in the business (processes), focusing on the output parameters critical to the customer or user. While both models help businesses, Six Sigma and ITIL are generally not used together, but combined as a complementary set of practices that increase business performance from various angles [4].

E. ISO / IEC 20000

ISO/IEC 20000 is a standard that relates to the management of IT services and enables IT organizations to ensure that the processes and services they provide are in line with the needs of all stakeholders and in line with best practice in the field. The standard was developed by the ISO JTC 1 / SC 7 Technical Committee, which was derived from the BS15000 standard, which has since been withdrawn. While there are many similarities between ITIL and ISO / IEC 20000, the biggest difference is that ITIL is a freelance and ISO / IEC 20000 standard. There are differences in the organizational structure and size as well as the requirements of the management system. [5]

F. ISO / IEC 27001

In October 2005, the British Institute for Standardization (BSI) published the ISO / IEC 27001 standard called Information Technology - Information Security Management System - Requirements. The objective of ISO/IEC 27001 is to ensure the confidentiality, integrity and availability of information to interested, authorized parties, by setting up adequate information protection mechanisms.

While ISO / IEC 27001 is an international standard and defines the requirements for providing information protection, adaptable to any type or size of organization, ITIL is a best practice framework that provides a set of best practices for IT service management, providing guidance for improving the quality of IT services, processes, and function. [6]

TABLE I.
LIST OF THE MOST IMPORTANT FEATURES OF SERVICE MANAGEMENT METHODOLOGIES

Methodology	Last version	Description	Application	Advantage	Fault
CMMI	1.3	Program for training and assessment of process improvement	Provides guidance in improving the process on a project or organization.	Compatible with other methodologies, it's always evolving	It is not suitable for any organization, too much documentation, the implementation time
Balanced Scorecard	2017	Method of performance measurement	Measures the effectiveness of the activities according to the strategic plans of the company	Adds the structure to the business strategy, makes it easy to see the strategy for employees	It can be a rounded frame, can not be followed exactly by examples
SIX Sigma	2017	Methodology for elimination of defects in any process	Tool for improving new or existing processes	Provides a systematic approach to process improvement	It requires total commitment, complicated
ISO/IEC 20000	ISO/IEC 20000-6:2017	Standard for IT service management requirements	It allows organizations to achieve compliance with the IT services management system and thus improve their delivery	It reduces the process time and cost and increases customer satisfaction	It's not easy to process its certification, required and requires a lot of resources
ISO/IEC 27001	ISO/IEC 27001:2017	Standard for information security	It helps organizations secure information security	The most popular standard with the highest certification	Customers can not rely solely on it

III. SWOT ANALYSIS OF ITIL APPLICATION

Taking into account the rich history of the ITIL template, its global growth and various levels of successful adaptation, it is good to make a SWOT analysis of the frame itself. This analysis will highlight some challenges in ITIL implementation as well as critical success factors. Also SWOT analysis is an essential element in finding the answer to the question: "Is ITIL a sufficient set of knowledge for the implementation of ITSM?" SWOT Analysis is a method of strategic analysis used to determine Strengths, Weaknesses, Opportunities and Threats.

A. ITIL Strength

1. Universally accepted as a good practice of ITSM guidance, with a focus on processes and services
2. An open and non-profit frame, free for everyone to use it
3. Supported by the vast community of ITIL practitioners gathered around it (SMF forum service management)
4. It includes a well-established and well-known certification scheme for individuals globally recognized in the IT industry
5. It establishes a common vocabulary within the IT industry that promotes understanding and simplifies communication

6. It provides a good structure, promotes process discipline, documentation, analysis and measurement
7. Once adopted, ITIL will assist in the collection and maintenance of organizational knowledge
8. It promotes focus on customers and value creation as the main purpose of IT organizations.

B. *ITIL Weaknesses*

1. Does not cover sufficient knowledge complementary to managing the services needed for a successful ITSM transformation: organizational change, management, control, organizational design, etc.
2. Missing benchmarking and different models of maturity for extensive processes
3. Unbalanced management by scope and versions: lack of detail in some areas, too much detail in other areas
4. The content that is often too academic and theoretical - is difficult to apply in a practical, pragmatic sense.
5. The certification scheme is available only to individuals, not to organizations and product manufacturer.
6. A certification scheme that is considered too complex.
7. Adoption and implementation abandoned by the capabilities of individual organizations.

C. *ITIL Opportunities*

1. Commitment of implementation instructions. Extension of the area to address implementation instructions, and other complementary guidance for successful implementation, transformation and permanent adoption.
2. Become a choice for academic management for IT management: use as a framework for higher and lower education programs that deal with IT management and IT services management.
3. Establish global credentials for individuals and organizations that would evolve into a recognized profession (eg: Professional Engineers).
4. Recognize other existing ITSM-related methods, frameworks and guidelines and formalize its leading role between ITIL and these other guidelines.
5. Establish and provide guidelines for incrustation and models of maturity for processes in areas where they work.

D. *ITIL Threats*

1. The latest version (version 3) may not meet global acceptance as it has significantly changed its focus, content and message exchange from previous versions (version 1 and version 2).
2. COBIT and Val-IT frameworks offer serious competition to ITIL in the areas of value management, control and control, and these are essential elements of any ITSM implementation - ITIL should accept COBIT and Val-IT and establish full alignment or provide an improved alternative.
3. The open and insensitive nature of the framework exposes the interpretation, resulting in a large variation in the approach to adoption, scope and results.
4. The continuation of the lack of documented accomplished benefits and the related lack of credible

research can jeopardize the long-term viability of the framework.

IV. ANALYSIS OF LECTURING ITIL IN TEACHING

A. *Faculties teaching ITIL in Serbia*

At the faculty of technical sciences in Novi Sad, lectures are held in the subject: "Methodologies and systems for managing IT resources" The program is implemented from 17.06.2010. years. The aim of the course is to enable students to organize and implement business processes for managing IT resources. After this course, students will be trained to apply ITIL guidelines for managing IT resources.

The content of the lecture consists of:

1. Management of IT services
2. Service life cycle
3. Basic principles and models of IT resources management
4. Generic Concepts
5. Business Process Management
6. Role Management
7. Function management
8. Technology and architecture for the implementation of ITIL recommendations

Methodology of teaching consists of lectures, computer exercises and consultations. The final exam is oral. Students take the practical part of the material into a computer lab by solving mandatory tasks. Students can also do optional work. Tasks are evaluated and assessment is formed based on attendance, assessment of compulsory assignments, papers and grades at the final exam. At the faculty of organizational sciences from Belgrade, lectures are held "Management of Information Systems Development".

The subject is about:

1. Characteristics of information systems for services
2. Life cycle problems of IT services
3. How to manage IT services
4. Introduction to ITSM
5. Service Level Agreement
6. Standard ISO / IEC 20000
7. ITIL - Best Practice
8. ITIL - Key Processes
9. Service strategy
10. Design services
11. Service Transition
12. Service execution
13. Continuous improvement of the service
14. ITIL benefits

At the Faculty of Computer Engineering in Belgrade, ITIL's main topics are dealing with the management of IT services. Topics include: Services and Quality, Strategy, Design, Transition, Performance and Continuous Service Improvement, Incident Management, Problem Management, Change Management, Version Management, IT Configuration Management, Management of Existing IT Infrastructure and Management of IT Services Phases. Work in the framework of: ITIL, IBM Trivoli Unified

Process, Microsoft Operations Framework, ISO/IEC 20000.

V. ADDITIONAL RESEARCH

A. Use ITIL

The IT sector is what is running the business nowadays. The fact is that the profitability of the business and the loyalty of the shareholders depend on the high availability, reliability, security and performance of IT services. This fact made the relative maturity or immensity of IT management very visible. This means that process improvement is key to success.

By enhancing IT processes, the organization will begin to:

1. Improves the use of resources
2. Becoming more competitive
3. Reduces processing
4. Eliminates excess work
5. Improves the timing of project delivery
6. Improves the availability, reliability and security of IT services to a critical extent
7. It justifies the quality of service costs
8. Provides services that meet customer requirements
9. Integrates central processes
10. Learning from previous experience
11. Provides demonstrated performance indicators

B. Companies that have made use of their ITILs using ITIL to the public

Government

Ontario Justice Enterprise: Accepted ITIL in 1999 and created a virtual help / Service desk that reduced support costs by 40%.

State of Illinois: Implementing a strong business architecture and IT management program in cooperation with ITIL has saved the state \$ 130 million a year.

Victorian State Revenue Office (Australia): Complete the complete ITIL implementation in August 2005, resulting in a savings of \$ 2 million a year and an improvement in skills. They also became the first in the world to receive an ITIL certificate (BS15000-AC8018).

Finance (banking and insurance)

Visa: It started embedding guidelines for incident management in 2002, which resulted in improved network tracking and disappearance, and a 75% decrease in incident time.

PEMCO: The investment in Itil Essentials training in 2002 resulted in a total savings of \$ 500,000 over the course of 12 months.

Zurich Life: Since the application of ITIL in order to maintain the Service Desk, the company has reduced the number of contracted staff from 30 to 10. Sallie Mae: The adoption of ITIL Service Support in 2005 began, resulting in a 40% reduction in call duration and an increase in the percentage of problem-solving through the first call.

Telecommunication

Avaya: ITIL helped this telecommunications provider to reduce their IT budget by 30% and now look at IT as part of the business rather than the operational cost. Telkomsel: In addition to improving the customer service in this Indonesian mobile provider, ITIL has helped reduce operating costs by 50-60%.

Production

Procter & Gamble: Launched the use of ITIL in 1999 and achieved operating costs by 6-8%. The second ITIL project has reduced Help Desk calls by 10%. And for four years, the company reported a savings of \$ 500,000. Caterpillar: Accepted a series of ITIL projects in 2000. After the application of the ITIL Principles, the percentage of achieving a specific response time for Web Services Incident Management jumped from 60% to more than 90%.

MeadWestvaco: ITIL started to use in 2003. To date, the company has eliminated more than \$ 100,000 annually from an IT maintenance contract. Shell Oil: It used ITIL best practices and reduced software development time and made \$ 5 million a year. Finisher: A computer parts manufacturer who accepted ITIL in 2002 and achieved Service Desk standardization. The result was a growth of customer satisfaction from 33% to 95%. They also reduced IT costs from 4% to 2.4%.

Education

Purdue University: Information Technology at Purdue (ITaP) has trained half of their permanent ITIL employees in 2003, and implemented ITIL-based Service Desk. That's why they reduced the second level calls by 50%. They also launched a \$ 73 million project without the need to hire more workers.

Health

Hospital Corporation of America: Notable ITIL success and cost savings, as well as consistent delivery of IT services.

MultiCare: After implementing ITIL, a non-profit health organization has experienced drastic improvements in IT services and organizational productivity.

C. Why Organizations Choose ITIL

In addition to ITIL's key roles in giving structure to organizational process management, there are several other motivations for selecting ITIL implementation. A 2010 survey showed that one of the benefits is that ITIL is a well-recognized framework for best practice in terms of companies being satisfied and improving business performance after implementation. What is the fact is that it takes time to implement the ITIL process and that it is necessary to direct people to work accordingly. Also, it does not make sense to implement ITIL just for impressions. The goal of the implementation is to create a stable and good functioning of the organization. The research further showed that companies are introducing ITIL to professionalize the IT department. One of the possible reasons for this is that users or consumers sometimes express dissatisfaction with some of the

services provided by IT units to their business areas. The desire to professionalize IT services can also come from internal IT staff, without the external pressure that triggers the initiative. With an overview and knowledge of IT staff, organizations can understand that ITIL can be a useful way of ensuring the quality and consistency of the services they provide.

Also, Research further shows that more than 70% of respondents claim that the initiative for the introduction of ITIL came from the leading IT manager or IT manager operations. But it's hard to see the difference between people who have the authority to run projects and people who first mentioned this ITIL implementation idea. Also, most respondents hold managerial positions. So 70% can be a high number because of the possible bias of the respondents themselves. [7]

VI. DEVELOPMENT OF OWN ITIL IN PRIVATE ORGANIZATIONS

Some companies have developed ITIL according to their needs and requirements. For example, Microsoft, HP and IBM have their own ITIL versions that focus on their own software and hardware. Each of these organizations is at different stages of application of ITIL.

A. Microsoft - is developing its own Microsoft operations framework (MOF)

Microsoft operations framework (MOF) is a collection of best practices, principles, and models that provide a comprehensive technical guidance for achieving reliability, availability, support and manageability of solutions and services based on Microsoft products and technologies. MOF provides the basics of the operational methodology and framework for IT operations. Product-specific operations guides, such as the "SQL Server Operations Guide", provide detailed operational information specific to server products. This guide provides guidelines for managing operations that are specific to Commerce Server 2007.

MOF provides relative, practical and applicable guidelines for today's IT professionals. This free downloadable framework includes the entire lifecycle of IT services management, providing organizations with the knowledge to continually integrate business and IT goals while establishing and implementing reliable and cost-effective IT services. [8]

B. HP - is developing its IT Service Management Reference Model

In order to help its customers move forward with greater ease and confidence, HP has compiled a team of ITS experts worldwide to develop the HP ITSM Reference Model, which can be used as a tool for corporate IT organizations. The HP ITSM Reference Model functions as a fully integrated IT process map.

It has proven to be priceless for companies around the world because they want to understand the problems of their people, processes and technologies and to consider the best solutions for them.

And as a reference tool, this model provides a consistent presentation of the IT process, making it useful

in initiating a meaningful dialogue between all parties involved in IT processes and solutions requirements. [9] HP has organized IT processes in five different groups that focus on different aspects of the life cycle of the service.

1. Insurance of service delivery
2. Compliance of IT business
3. Design services and management
4. Development and application of services
5. Service operations

C. IBM - is developing its IT Process Model

Managers are increasingly concerned that traditional sources of earnings can not meet the results necessary to achieve the goals of the announced profit over the next five years. IBM's global executive management study was conducted to understand how company directors look at innovations in order to get their current insights and find out what's on their innovation programs. The study shows that directors increase the innovative horizon.

To help IT organizations in this challenge, IBM has developed the Process Reference Model for IT for generic representation of processes involved in the complete IT management domain. It contains a thorough overview of the IT process.

PRM-IT has complemented the content of ITIL Version 3 based on its rich experience with IT management in a wide range of IT considerations and experiences from managing thousands of IT environments, both large and small. The Process Reference Model for IT identifies a set of IT management processes that are necessary to shift from a uniform cost center to a principled decision-making process that involves changing business and technology conditions while managing the existing complexities of the system.

The guiding principles that are subject to this model are:

1. Regardless of the organization or technology, there is a fundamental set of processes necessary to manage any information technology environment.
2. These processes do not exist or function in isolation, but are interconnected with one another.
3. There is no unique correct decomposition of the process or any way of demonstrating that this IT process is always superior to other methodologies.
4. For example, well-established processes from ITIL represent the default standard of a subset of the IT process, better known as Service Management

VII. ITIL DEVELOPMENT IN STATE ORGANIZATIONS

ITIL is currently in the function of most of the modern world in every industrialized nation. It was adopted by governments and business organizations of Europe (Including Germany, Spain, Italy, Denmark, Sweden, Switzerland). It is also widely used in Japan, Singapore, Australia, Canada and the United States.

ITIL has become an internationally accepted standard for the IT Service Management structure.

A. State of California

California is one of the countries that use ITIL to improve its IT sector. The California Department of Technology (CDT) is dedicated to partnering with state, local and educational entities to provide services, developing innovative and appropriate solutions for business needs and quality assurance for information technology in the country.

CDT is the Guardian of Public Data, a leader in IT services and solutions and has wide responsibility and authority over all aspects of technology in the California government, including: Policy formulation, agency coordination, IT project oversight, information security, and service delivery technology.

Using ITIL, they defined a number of services divided into the following groups:

1. Professional services
2. Infrastructure services and platforms
3. Software services
4. Cloud-based services
5. Network and Telekom services
6. E-mail and mobile services

They also provide information protection through security management and monitoring operations. They contain incidents management policies, privacy, risk and technology recovery.

For project delivery, the Project Approval Lifecycle PAL framework is divided into four phases. Each phase is separated by the approval gates. Each phase consists of a set of prescribed, mutually functional and parallel activities for the development of results that are used as values for the next phase. The gates consist of a set of "yes / no" questions that are necessary for making decisions at a given moment. [10]

B. State of North Carolina

In 2006, the North Carolina IT Department (ITS) made some improvements with ITIL in less than three months and started managing incident and change. In this way they achieved the following:

1. ITS has improved its ability to handle incidents within its target time frame by 32%
2. ITS has improved its ability to address service requirements in its target time frame by 20%
3. Compliance with the change management process has increased more than double, which has led to a decrease in incidents and a reduction in the continuing improvement of ITIL Version 3. [11]

C. US Army

ITIL has found application in military institutions because of its commitment to innovation and leadership. One of the most important items for each organization is control over costs and how to effectively monitor them. The military uses ITIL to develop a policy program for helpdesk and management policies for desktops, for efficient IT management, control and continuous improvement of services. [12]

VIII. CONCLUSION

The fact is that the adoption of ITIL leads to improvement of the level of services to the user base. More than half of the companies that have adopted ITIL have reported obvious improvements in customer satisfaction. ITIL also helps employees. Not only increases their working ability, but also the satisfaction of their work. It turned out that the size of the company is not a limit and does not jeopardize the chances of success of adopting ITIL. ITIL adoption remains a matter of choice rather than morality. Those who adopt ITIL have a slightly higher tendency to adopt other standards of external practice in their work. Those who reject ITIL will probably reject other standards.

Fifth companies that adopted ITIL acknowledged that they had gained a competitive advantage on the market of their companies using it. And by definition, not all market leaders can be so that this fifth is devoting commercial advantage to ITIL.

ITIL is definitely just an IT issue. Business, strategic, commercial and political issues, although important at the level of the organization, are not necessarily the ITIL implementation components. All parts at all IT levels should be prepared for procedural and operational changes. Although ITIL is of great benefit if properly adopted, it is not a cure for all procedural diseases. His processes, although detailed, do not cover everything.

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