

# Improve the ITIL process in Incident Management matching Lean-eTOM

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**Abstract**—Due to fast evolution on the services provided by telecommunication companies, the Information Technology (IT) environment has been gaining an increasingly importance inside organizations. It is no more a silent partner, involved only on the daily's operations, without any influence on the company's strategy and management. In the recent years, Information Technology Infrastructure Library (ITIL) and Enhanced Telecom Operations Map (eTOM) have been adopted by many organizations. However, these frameworks focus on the elaboration of what needs to be done, but give only limited assistance concerning the implementation. The aim of this work is to study an innovative approach of Lean methodology applied to IT. Starting on ITIL concepts, eTOM framework and Lean methodology, it is intended to build a methodology of business process transformation in order to optimize the incident management of an operations area of a big telecommunications company.

**Index Terms**—(Simplification; Incident management; ITIL; Lean IT; eTOM; Continuous improvement).



## 1 INTRODUCTION

ONE of the hottest business buzzwords is simplification. Business simplification is an opportunity to bring business and customers closer, together in ways never before thought possible [1]. The purpose of this work is to study an innovative approach of **Lean** methodology applied to IT, which is a methodology to organize, manage, develop and improve business processes with the aim of “doing more with fewer resources”, and to propose the building of a methodology of business process transformation in order to optimize the Incident Management of the Operations area of a big telecommunications company, through the convergence between the **Lean** methodology based on continuous development of processes, ITIL Incident Management process and some of the components of the eTOM process framework.

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## 2 RELATED WORK

There is some work done related to IT services improvement using **Lean** principles and related with the convergence of processes between eTOM framework and ITIL set of good practices. The work “Infosys: Applying Lean to ITIL Event Management process” [2], illustrates a case study for a certain organization that implemented ITIL Event Management process, and shows that this improvement based on ITIL best practices produced some good results, like good impact of proactive event monitoring and management on the stability of IT and efficiency improvement through automation. On paper “Lean principles, learning, and knowledge work: Evidence from a software services provider” [3], the applicability of lean production to knowledge work is examined by investigating the implementation of lean principles at an Indian software services firm. The work of Benhima *et al.* [4], presents a methodology for Telco business process transformation harmonizing eTOM selected components with a focus on the engineering aspects related to the process, and **Lean Six Sigma**.

### 3 INCIDENT MANAGEMENT - A PROCESS TO IMPROVE

eTOM and ITIL do not provide any tool or technique to change and optimize the processes, thus a methodology of processes management was necessary. In order to mitigate these limitations, there was the intention to use an innovative approach, but one that has been previously used on related works in order to get some ideas to test on this thesis. One of the most popular methodologies of processes improvement is the Lean methodology which have already been successfully used on some IT processes improvement projects. As Lean principles requires few training and much action, small teams can produce fast and visible results starting with a simple set of tools, and as the organization processes were already organized following eTOM framework and there was no need to build a process from the beginning, Lean methodology appeared as a good choice to implement the processes improvements needed. As Lean principles state, there is always waste to eliminate and processes to improve [5], so it was needed to choose which operational processes needed more improvement and which was the waste to eliminate. The incident management was organized following eTOM best practices, but had some issues. The major issues were: multiple incident ticket systems, multiple monitoring and alarm systems working in parallel, complex interfaces to open incident tickets, several incidents that were not logged, lack of automation on the distribution of incidents to the responsible team, and several systems without monitoring and alarms.

### 4 LEAN METHODOLOGY

The methodology used to the project of the incident management process improvement, is based on the Lean principles can be summarized on the steps illustrated on Figure 1. Following one of the most important principles of Lean, which states that there is always waste to eliminate [6], this methodology can be continuously applied to the process in order to constantly improve it.

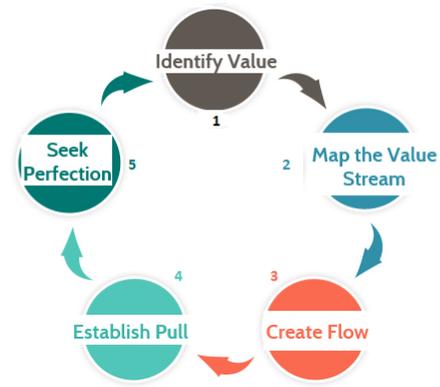


Figure 1. Lean Methodology

### 5 IMPLEMENTATION

The methodology presented above was followed in order to improve the incident management process on an operations team at Portugal Telecom. The following needs, concerns and complaints, regarding the incident management process were identified:

- The need to have a unique and much simpler system to open incident tickets.
- The need to have all incidents and requests logged with a ticket.
- The need to have an alarm pattern with a list of the alarms that all network management systems must have.
- The need to have all network management systems being monitored by supervision team.
- The need to have more automation between alarm and ticketing systems.
- The need to reduce the number of alarms not recognized, not treated and without an associated incident ticket.
- The need to have all the alarms from network management systems centralized on an unique group of an unique alarm system.
- The need and complaint about the lack of documentation about the systems managed by the team.
- The need to have all network management systems registered with a CI - Configuration Item.
- Complaint about the incident notifications and requests from the customers were ar-

iving from: direct email; team email address; telephone; two ticketing systems; and only the last ones were logged but having the difficulty to manage tickets in two different systems.

- Complaint about having too many alarm systems, doing related work in parallel.
- Complaint about being flooded with notifications from ticketing system.
- Complaint from system administrators of not receiving any alarm from some systems and having knowledge of some incidents only from external customers.
- Complaint from supervision teams that some alarms reporting incidents didn't have any procedure nor any indication about what to do with that incident and to which team they should report the incident.
- Concern about the possibility of being flooded by too many alarms.

### 5.1 Value Stream Map

The process was observed where the work is done, daily and during more than 2 years of working on the team - Gemba Walk. The "AS-IS" value stream of the process created with Lean tool process flow mapping and with the "AS-IS" process mapped and having collected the customers expectations, we can categorize the following activities from the "AS-IS" mapping, as Non-Value-Adding: Having incidents not logged; Having two ticket systems to perform, in parallel, the activities of incident identification; incident categorization; incident prioritization; and incident closure.

### 5.2 Waste Elimination

In order to eliminate the waste, the change plan created was divided in two parallel projects: one to implement the application to simplify and improve the incident ticketing opening, and other to eliminate the wastes related with the Event Management. This last project was called "Network Management Systems Monitoring". To implement this monitoring project, it was decided to use a PDCA (Plan, Do, Check, Act) Cycle of continuous improvement with a goal of five months to implement an alarm pilot

system. 4 types of IT Waste were identified before the implementation process:

- 1) Over provisioning.  
In the excessive number of monitoring system doing equal work in parallel.
- 2) Transportation Issues.  
Like complex interfaces to open tickets.
- 3) Non-Value-Adding-Processing.  
Because of the existence of two different ticket systems working in parallel.
- 4) Defects.  
Wrong or lack of information on the alarm procedures.

After the methodology implementation, all kinds of waste identified were eliminated.

## 6 CONCLUSIONS

The objective of this work was accomplished, the incident management was improved with success following the Lean methodology proposed. Today the incident management process is more simple, with less waste and more efficient. The major benefits are: the simplification of the incident logging process; the simplification of processes regarding the management of the incident ticket; having only one ticketing system and with all the incidents being logged; the major reduction on the OPEX related to management systems (-77%); the creation of monitoring and alarms for all the network management systems, centralized on one unique *umbrella* of alarms, which will help on the monitoring and will improve the incident management, as will reduce the reaction time to a incident and thus helping with the main objective of incident management, that is the recuperation of a failure service as soon as possible. Although the major improvements obtained, there is always waste to eliminate and processes to improve. The absence of a functional escalation process and the absence of a special process to deal with critical incidents are the main improvements needed, in order to follow the best practices. Following the good results obtained with the convergence between eTOM and ITIL processes and the improvement achieved following a Lean methodology, the work done for this thesis should be extended to the other ITIL service

operations processes and matching with eTOM Operations processes. As future work to do, the most important is to continue the improvement of the processes and services provided to the customer. The simplification and the convergence of processes are two key principles to follow.

## REFERENCES

- [1] SAP, "Why You Should Pay Attention to Business Simplification Now," 2015. [Online]. Available: <http://goo.gl/tQXx74>
- [2] R. N. I. Nand and S. Chaganty, "Infosys: Applying LEAN to the ITIL V3 Event Management Process. itSMFUK Conference," 2008.
- [3] B. R. Staats, D. J. Brunner, and D. M. Upton, "Lean principles, learning, and knowledge work: Evidence from a software services provider," *Journal of Operations Management*, vol. 29, no. 5, pp. 376–390, 2011.
- [4] M. Benhima, A. Himi, C. Ameyao, and E. A. Adou, "Telco Business Process Transformation using Agile Lean Six Sigma and Framework components : focus on the core engineering aspects with a case study," vol. 10, no. 1, pp. 37–51, 2013.
- [5] D. . Womack, J. P., Jones, D. T., & Roos, *Machine that Changed the World*, 1990. [Online]. Available: [http://books.google.com/books?hl=en&lr=&id=\\_n5qRfaNv9AC&pgis=1](http://books.google.com/books?hl=en&lr=&id=_n5qRfaNv9AC&pgis=1)
- [6] J. P. Womack and D. T. Jones, "Lean Solutions : How Companies and Customers Can Create Value and Wealth Together," pp. 1–3, 2005. [Online]. Available: <https://www.lean.org/WhoWeAre/NewsArticleDocuments/ACF61A0.pdf>