TELECOMMUNICATIONS PROCESS MODELING BASED ON eTOM BUSINESS PROCESS FRAMEWORK

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ABSTRACT

In the time of digitalization, telecom market liberalization, competitive regulatory and licensing frameworks, companies in the telecommunications industry have been facing the problems of managing constant changes and process complexity involved in permanent developing the products and services they offer to their clients and end-users. Many companies have been a long time analyzing these constraints and requirements to reduce time to market and OPEX/CAPEX costs as well as increase their profits while at the same time having satisfied customers and efficient and effective employees. By applying rapid response in order to be competitive in the current market, these companies strive to establish their organization and business based on well-defined and efficient business processes in a way of connected, structured activities or tasks resulting in a particular service or product for the end-users.

The objective of this paper is to emphasize the importance of creating and maintaining an adequate business process mapping in the organization, especially those companies that provide services to end-user and that run business with different enterprises. As one of the very well developed and accepted business process frameworks is eTOM (Enhanced Telecom Operations Map), organization-, technology-, and service-independent framework, as a method and a tool for describing and analyzing various levels of business processes according to their significance and priority, spanning details from high-level decomposition to specific business-context areas.

Keywords: TMForum**,** eTOM, OPS, SIP, ITU, process, process modeling, process map

1. INTRODUCTION

In order to meet the needs of end-users as well as the demand for new services in the last two decades, the telecommunications industry has faced unprecedented challenges in creating new products and solutions that combine data services and communications services. In an effort to respond quickly to such demands as well as to maintain a competitive position in this market, the organization and operations of these companies must be incorporated into well-defined and efficient business processes as a set of related, structured and traceable activities. The industry has a need to clearly define and understand the business processes involved in running its business in a comprehensive environment (regulatory environments, suppliers, vendors, customers) in order to be profitable. At the same time, this makes necessary having a common view and understanding of business processes to allow for an efficient business to business cooperation.[1,6]

For this reason, telco industry experts have been strongly interested in proposing and adapting innovative business models and frameworks to improve their business processes and become more agile in the fast-growing telecommunications industry. The model established by the

TeleManagement Forum (TM Forum) is the Business Process Framework (BPF) of the Enhanced Telecom Operations MAP (eTOM). It is a comprehensive, industry-agreed, multi-layered view of the key business processes required to run an efficient and effective telco company. This business process framework covers essentially four main components playing important roles in the business processes, including customers, services, infrastructure resources, and also service providers.[4,5]
Also, according to TM Forum, 90% of the world's largest service providers have already adopted TM Forum Frameworx suite of standards, which provide the blueprint for effective business operations, enabling assessment and improved performance. [2]

1.1. TM Forum

As a neutral, nonprofit member organization that promotes collaboration and collective problem solving within the telecommunications industry, TM Forum has been accepted by over 850 global companies working together to break down technological and cultural barriers between digital service providers, technology vendors, consulting organizations and system integrators.[3]
With their positive business experiences and achievements, representatives of the most significant companies in the telecommunications industry all over the world contribute to jointly solving complex challenges across the telco industry, introducing new services and innovating technological solutions to accelerate change in the new digital era.
By creating an open environment for collaboration and hands-on support that allows service providers and vendors to quickly transform their businesses, IT systems, and ecosystems to take advantage of the opportunities offered by the rapidly evolving digital world. [2]

1.2. eTOM

As a product contributed by a large number of TM Forum member companies, eTOM was developed in the 1990s and formally approved by ITU in 2004. As a reference framework for categorizing all the business activities applied by a service provider in a structured manner and at various levels of detail, the focus of the eTOM is on the business processes, the linkages between these processes, the identification of interfaces, and the use of customer, service, resource, supplier/partner and other information by multiple processes.

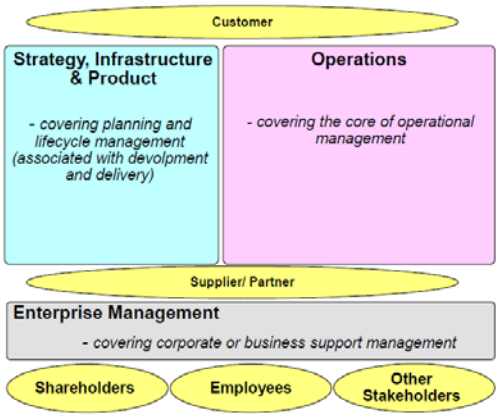


Figure 1. eTOM overall conceptual view Level 0, (source: [10])

In its more than 20 years of evolution as a telecom process framework, each new version of eTOM adds new reflections to positive business practices and structural contributions, in an effort to improve the existing BPF.
Basically, eTOM is a blueprint for telecommunications companies to apply the best business practices, previously considered and adopted as the most effective methods for achieving a success in all of the business process-driven approaches.[7,8]

2. DISCUSSION

Through the highest conceptual presentation of the eTOM business process framework (Figure 1), three main vertical process areas are observed:

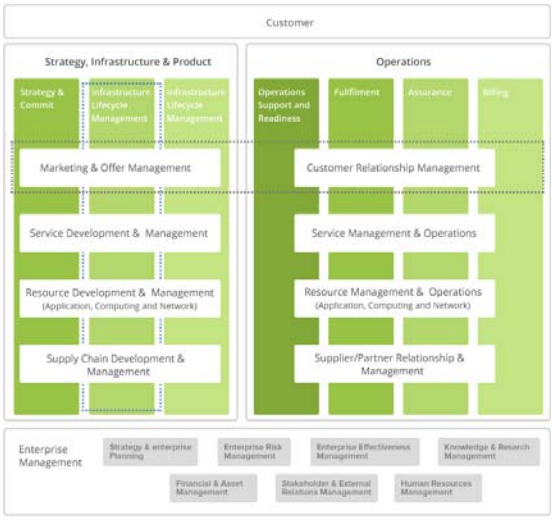
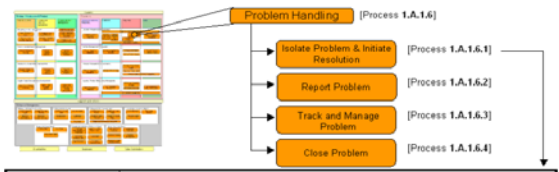


Figure 2. eTOM - Level 1
(source: TeleScope Consultancy)

- Operational process area - Operations (OPS) is due to user orientation, the most important area of the eTOM process framework, and for this reason we can say the most developed area. All operational processes to support user operations and their management are contained in this segment.
- The process area of strategy, infrastructure and products - Strategy, Infrastructure & Product (SIP), contains processes that develop strategic commitments within the organization - strategy planning and development, procurement management and development issues in the field of infrastructure and products. These processes are certainly a prerequisite for the continuous provision and direction of processes within the operational process area (OPS).
- Process management area of the organization - Enterprise Management (EM) is sometimes considered as a corporate process and due to its general support to the company can, if necessary, be associated with any other process groups. [8,9,10]

In addition to the business-to-customer relationship strategy, eTOM also includes strategies for generating, maintaining, and improving business-to-business relationships.[10]
The eTOM uses a hierarchical decomposition to structure the business processes and defines process descriptions, inputs and outputs, as well as other key elements for each process at each level. *[Figure 2.]*



Process Name	Isolate Problem & Initiate Resolution
Process Identifier	1.A.1.6.1
Brief Description	Receive & isolate problem, and initiate resolution actions
Extended Description	The purpose of this process is: •To register and analyze received trouble reports from customer. •To register received information about customers impact by service affecting problems and reported problem information. •To isolate the source / origin of the problem in order to determine what actions have to be taken. •To initiate the resolution of the problem.

Figure 3. eTOM - Level 2-3
(source: [10])

The eTOM Framework contains seven „end-to-end“ vertical process groupings that are the processes required to support customers and to manage the business. The focal point of the eTOM is the core customer operations processes of Fulfillment, Assurance and Billing (FAB) under Operations domain. Operations Support & Readiness (OSR) forms the fourth vertical grouping under OPS, and is differentiated from FAB real-time processes to focus on enabling support and automation processes in FAB.

In contrast to the OPS process area, the SIP process area contains three groups of processes related to the strategy and commitment of the organization, infrastructure and product lifecycle

management. They represent a special process area since they do not provide direct support to users but only provide support to processes in the operational process area.
Further hierarchical decomposition of process areas into subprocesses or process elements creates a structure for the formation and harmonization of business process flows within the organizational environment. [Figure 3]
At the intersection of vertical and horizontal process areas [Figure 4], different process elements are created that can be seen at different levels of detail through the hierarchical structure of the eTOM business framework. Each process element, at each level of detail, is clearly indicated, its role clearly defined, and the interfaces, input and output data accurately described. [12]
The eTOM layers can generally be described as following: Level 0: Business activities and

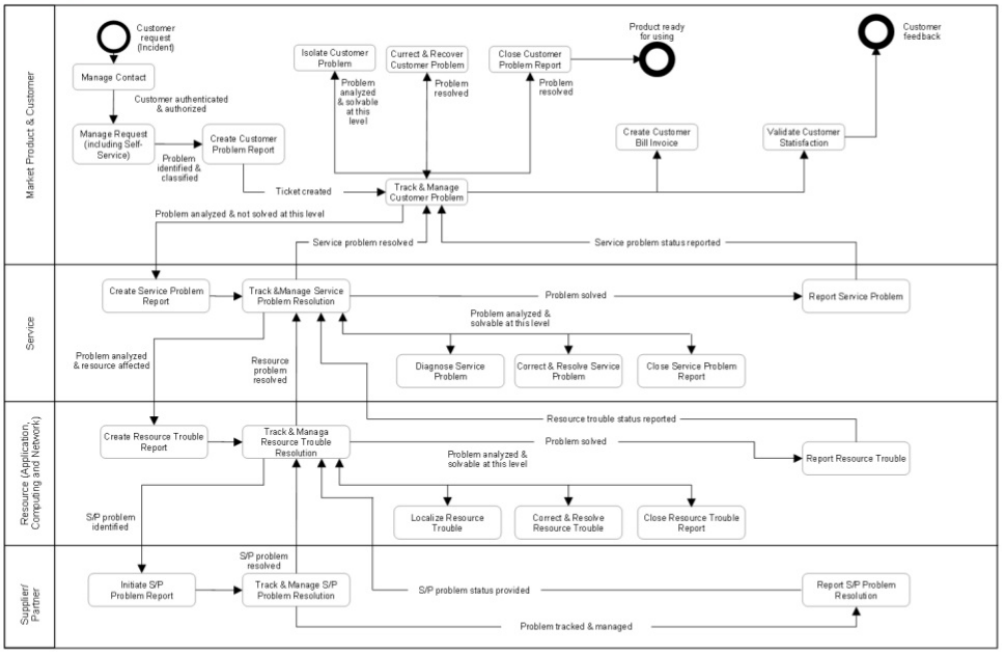


Figure 4. eTOM - Level 3 Process Flow
(source: RobertBartolic.com

goals that distinguish operational customer-oriented processes from management and strategic processes, Level 1: Process Groupings including business functions and standard „end-to-end“ processes, Level 2: Core Processes that combine to deliver service streams and other „end-to-end“ processes, Level 3: Tasks and associated detailed "success model" business process flows, Level 4: Detailed design of subprocesses and connection of processes with written procedures. It defines in more detail the business process flows that should be based on the specific case of the company. Level 5: Further decomposition into operations and associated operational process flows where required. Linking process and data models to systems and software development environments.[1]
The structuring of business processes and their decomposition considered through the eTOM business framework is a continual development process in which many experts from the telco industry participate. So far, several levels of process detail have been developed, ie. The process elements, but not all the process elements are decomposed into new ones at lower levels. Only those for which it was considered necessary to harmonize their complexity of business activities or relations with other process elements through further decomposition with business practice. In this way, over 300 process elements have been developed and harmonized, which certainly

creates the possibility for creating different process flows in the realization of "end-to-end" business processes.
Since its first (TOM v.1.0) version (1995-1998), with many additions and improvements, the eTOM process framework has currently been developed into eTOM v.20.5.

The term quality management (QM) is often used synonymously with the term process management (BPM), and the process-oriented quality management system includes, manages and directs all processes in the organization. In the latest version of the ISO 9001 standard, quality management is strictly based on the following seven principles: customer orientation, leadership, people involvement, process-oriented approach, continuous improvement, evidence-based decision making and relationship management. One of the most important factors that indicate the level of success in the implementation of ISO 9001 is process management.[13,15]
In the process approach, understanding the interaction of process maps is a key factor. Typically, companies have some type of flow diagrams or maps showing their interaction of internal and external processes. This is the most common method to demonstrate compliance with the process requirements in ISO 9001:2015 clause 4.4.
However, there is a significant problem of insufficiently considered structural and hierarchical presentation of business processes in some companies because it is not a strict requirement of the ISO 9001 standard in the field of QM. At the same time, companies rarely have engaged certain human resources (the process managers) in their organizations that would continuously and consistently deal with this issue.
These problems become especially evident in the change management, timely reengineering of processes, or finding shortcomings in „end-to-end“ process flows.

3. CONCLUSION

Each company set up its business on certain process flows established and managed in its own way. Improving the process is key to business excellence. Every business process is important, and every improved process is progress. An organization can reach its full potential only when all its processes are as efficient and effective as they can be. Therefore, the approach to process improvement - and achieving process excellence - is of great importance for gaining the benefits that organizations need.
The availability of standard structure, terminology and classification scheme of business processes and their constituent blocks certainly could help in creating consistent and high quality process flows from „end to end“ as well as in reviewing of existing processes to eliminate duplication where different processes deliver the same business functionality. In this way, companies are able to move from a manually intensive, inconsistent, inflexible business environment to one that provides significant improvement in customer focus, service quality, unit cost, and time to market.
eTOM Business Process Framework as the consensus industry agreements on reference business process structure (the “static” process view) and decompositions down to an appropriate level, applies these principles in typical business scenarios to show process flows in which these process elements are used (the “dynamic” process view). The eTOM business process framework is generic and abstract enough to be applied to a business environment of any service company.

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