



# Introduction to eTOM

## White Paper

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## Contents

<a href="#">Introduction</a> .....	3
<a href="#">What Is NGOSS?</a> .....	3
<a href="#">History and Context of eTOM</a> .....	5
<a href="#">What Is eTOM?</a> .....	6
<a href="#">Using eTOM</a> .....	9
<a href="#">eTOM and ITIL®</a> .....	11
<a href="#">References</a> .....	13

## Introduction

This paper provides a high-level overview of the Enhanced Telecom Operations Map (eTOM) Business Process Framework. eTOM is part of the New Generation Operations Systems and Software (NGOSS) standard, developed by the TeleManagement Forum (TM Forum).

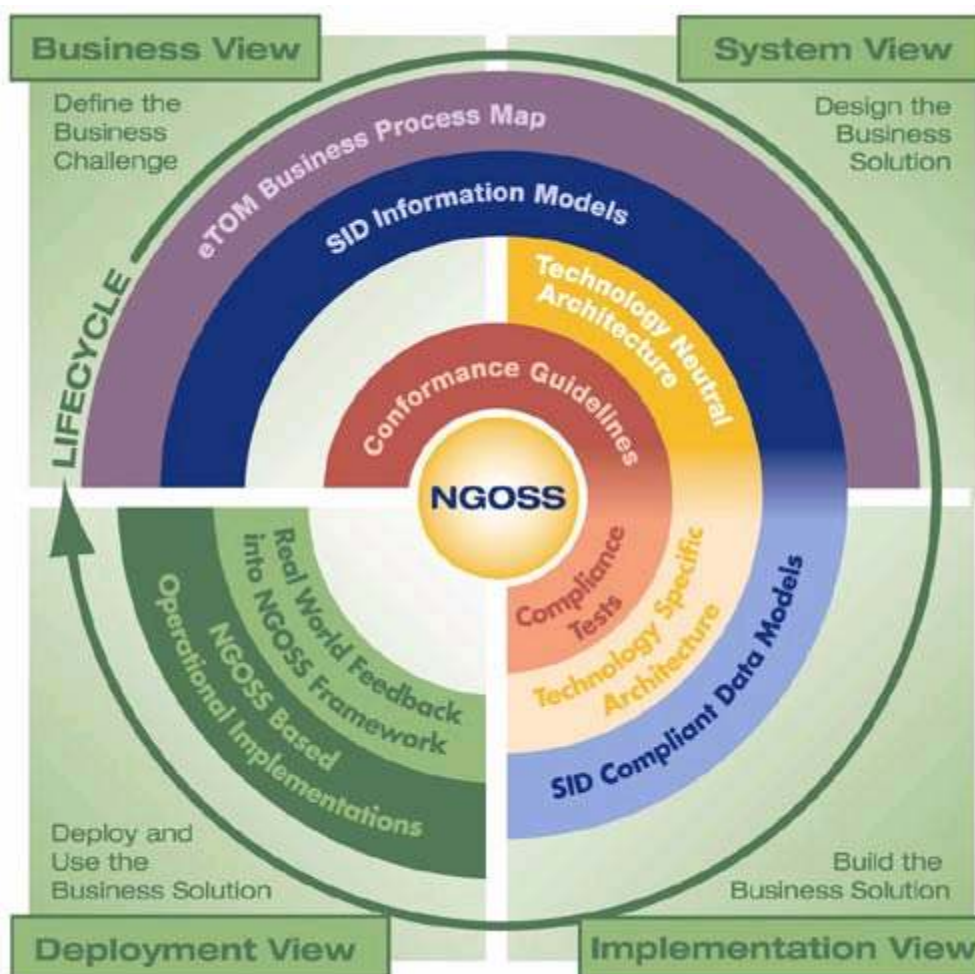
The TM Forum is an industry association focused on transforming business processes, operations, and systems for managing and monetizing online information, communications, and entertainment services. The TM Forum has more than 700 members (operators, suppliers, and integrators) in over 75 countries from across the converging industries of telecom, cable, media, and the Internet. The focus of the TM Forum is on automating operational management and business processes.

## What Is NGOSS?

NGOSS (Figure 1) is a comprehensive, integrated framework for developing, procuring, and deploying operations and business support systems (OSSs/BSSs) and software. It is available as a toolkit of industry-agreed specifications and guidelines that cover key business and technical areas including:

- eTOM Business Process Map: An industry-agreed set of integrated business process descriptions, created with today's customer-centric market in mind, used for mapping and analyzing operational processes.
- Shared Information/Data (SID) Model: Comprehensive, standardized information definitions acting as the common language for all data to be used in NGOSS-based applications. A common information language is the linchpin in creating easy-to-integrate software solutions.
- Technology Neutral Architecture: Key architectural guidelines and specifications to ensure high levels of flow-through amongst diverse systems and components.
- Compliance and Conformance Criteria: Guidelines and tests to ensure that systems defined and developed utilizing NGOSS specifications will interoperate.
- Lifecycle and Methodology: Processes and artifacts that allow developers and integrators to use the toolset to develop NGOSS-based solutions employing a standard approach.

Figure 1. NGOSS Structure (Copyright TM Forum)



NGOSS presents a number of benefits to the various industry players, such as:

- For service providers
  - Facilitate the implementation of cost-effective OSS/BSS solutions through standard specifications and interfaces
  - Provide long-term direction for IT strategy by specifying a business process framework
  - Enable IT systems to support rapidly evolving integrated service offerings by offering a logical system view independent of the particular service or software provider
  - Reduce operational costs through tighter coupling of business processes and more automation
- For OSS software vendors
  - Reduce development costs by using a standard framework specification
  - Simplify interoperability with other components based on a standard set of interfaces and use cases
- For systems integrators
  - Facilitate predictable, repeatable, and scalable implementation projects by using standard components
  - Enable a broader, multivendor portfolio without a steep learning curve through the use of a common set of specifications

The goal of NGOSS is the rapid development of flexible, low-cost-of-ownership solutions to meet the business needs of today's service providers. NGOSS can be applied throughout service provider organizations for:

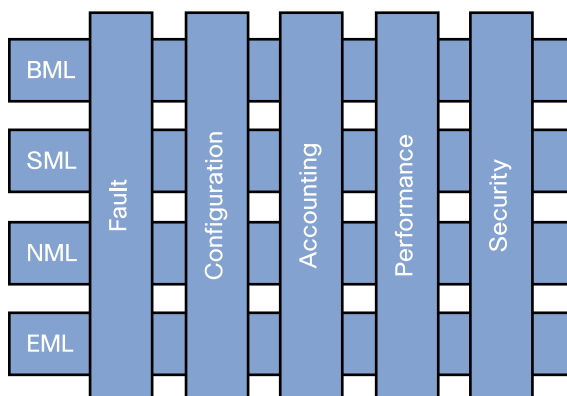
- Business process redesign: Service providers utilize the eTOM to analyze their existing business processes, identify redundancy or gaps in their current strategies, and re-engineer processes to correct deficiencies and add automation.
- Designing and specifying OSS/BSS solutions: NGOSS defines detailed information models, interface, and architectural specifications that service providers can utilize to stipulate and procure future solutions.
- Software application development: The NGOSS components, the eTOM, the SID, the Technology Neutral Architecture, the Methodology and Lifecycle Guidelines, and the NGOSS solutions suites are designed to walk software engineering organizations through the process of creating NGOSS-compliant OSS/BSS components.
- Systems integration: When faced with integration challenges, NGOSS's well-defined business and system language, interfaces, and architecture provide the system integrator with a clear direction for repeatable and cost-effective integration of multivendor, disparate systems.

## History and Context of eTOM

In 1996, the International Telecommunication Union (ITU) Telecommunication Standardization Sector (ITU-T) released recommendation M.3010 (further expanded to M.3013), which introduced the concept of the Telecommunication Management Network (TMN). Recommendation M.3010 was developed as a framework for service providers to manage their service delivery networks. It consisted of four management layers at different levels of abstraction: functional, physical, informational, and logical. The logical level was further abstracted into four layers: Business Management Layer (BML), Service Management Layer (SML), Network Management Layer (NML), and Element Management Layer (EML).

In 1997 ITU-T published recommendation M.3400 (Figure 2) extending the TMN framework, which introduced the concept of fault, configuration, accounting, performance, and security (FCAPS).

**Figure 2.** TMN FCAPS Structure



Between 1995 and 1999, the TM Forum developed TOM, which evolved into eTOM. eTOM was developed between 2000 and 2002 and was also released as ITU-T Recommendation M.3050.

The main differentiator between eTOM and TMN is that the TMN approach was built on the requirements to manage network equipment and networks (bottom up) while eTOM was built on the need to support processes of the entire service provider enterprise (top down).

Other related standards and management frameworks have been developed, including IT Information Library (ITIL<sup>®</sup>), Service-Oriented Architecture (SOA), and various enterprise architecture frameworks (such as Zachman).

## What Is eTOM?

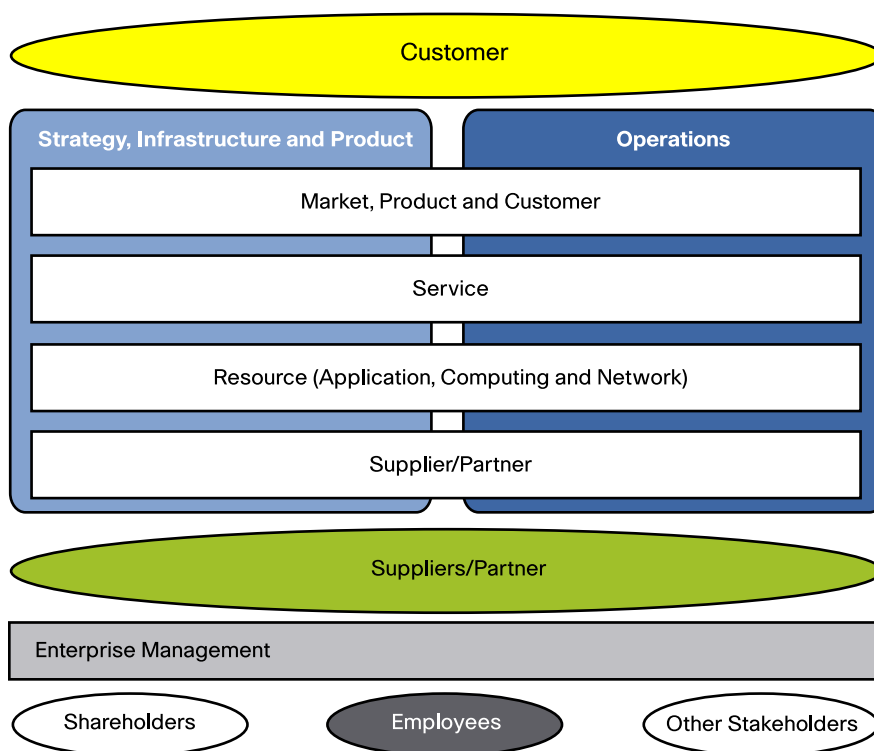
The Business Process Framework (eTOM) describes and analyzes different levels of enterprise processes according to their significance and priority for the business. The framework is defined as generically as possible so that it remains organization-, technology-, and service-independent.

For service providers, the Business Process Framework serves as the blueprint for process direction. It also provides a neutral reference point for internal process reengineering needs, partnerships, alliances, and general working agreements with other companies.

For suppliers, the Business Process Framework outlines potential boundaries of software components that should align with their customers' needs, as well as highlighting the required functions, inputs, and outputs that must be supported by their products. At the overall conceptual level (Figure 3), the Business Process Framework can be viewed as having the following three major process areas:

- Strategy, Infrastructure, and Product (SIP) covering planning and lifecycle management
- Operations covering the core of day-to-day operational management
- Enterprise Management covering corporate or business support management

**Figure 3.** eTOM Level 0 Model (Copyright TM Forum)

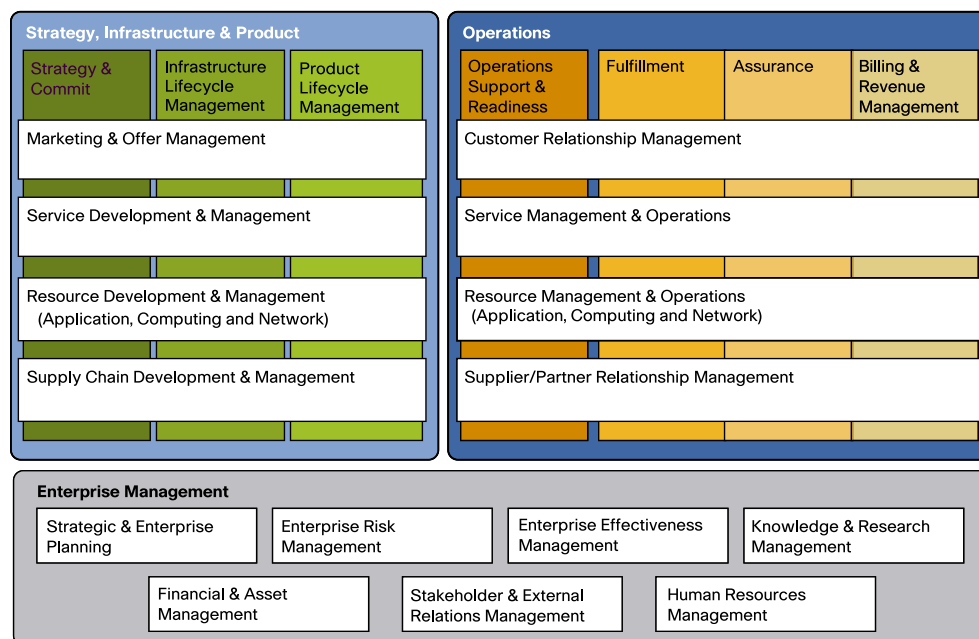


The Level 0 Framework also includes views of functionality as they span horizontally across an enterprise's internal organizations:

- Market, Product, and Customer: High-level view of the market and the enterprise's offerings
- Service: Product components developed by the enterprise
- Resource (Application, Computing, and Network): Consumed in the production of the Service
- Supplier/Partner: Providing products and services to the enterprise for the production of the Service

A more detailed view of the Enterprise processes is presented in the Level 1 eTOM model (Figure 4). The model shows seven end-to-end vertical process groupings required to support customers and manage the business. Among these vertical groupings, the focus of eTOM is on the core customer operational processes of Fulfillment, Assurance, and Billing (FAB). Operations Support and Readiness (OSR) is the “back-office” environment that enables support and automation for FAB. The SIP processes do not directly support the customer and they include the Strategy and Commit and the two lifecycle process groupings.

**Figure 4.** eTOM Level 1 Model (Copyright TM Forum)



The next three figures show the Level 2 core processes for the Operations, SIP, and Enterprise Management areas. Each core process is generally part of one vertical Level 1 grouping and also one horizontal process grouping. In some cases a Level 2 process is “stretched” across several Level 1 vertical groupings because the process concerned is needed in several Level 1 verticals.

Figure 5. Operations Level 2 Processes (Copyright TM Forum)

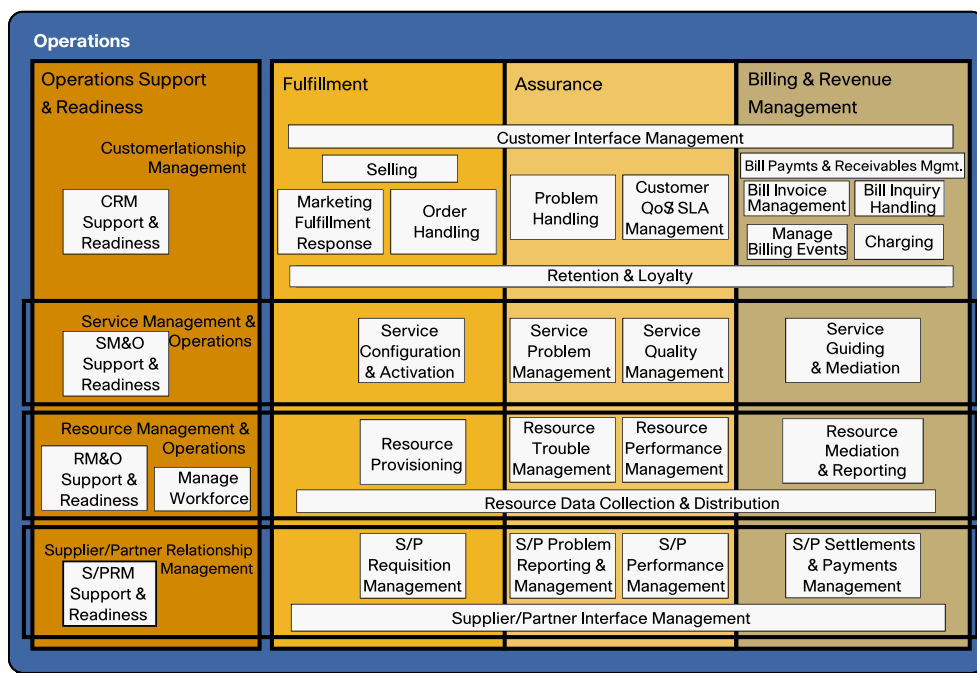
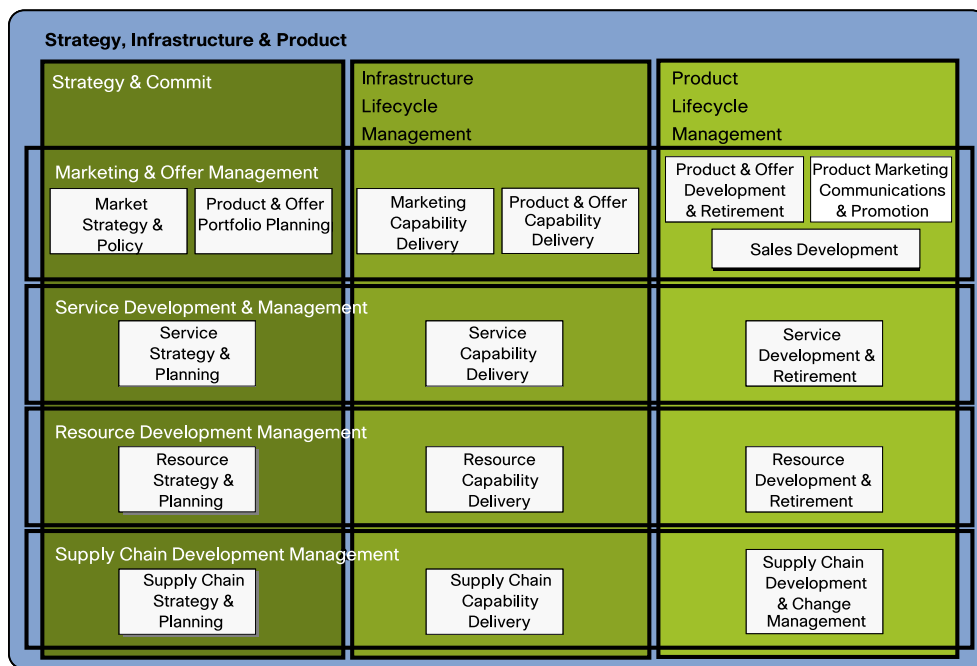
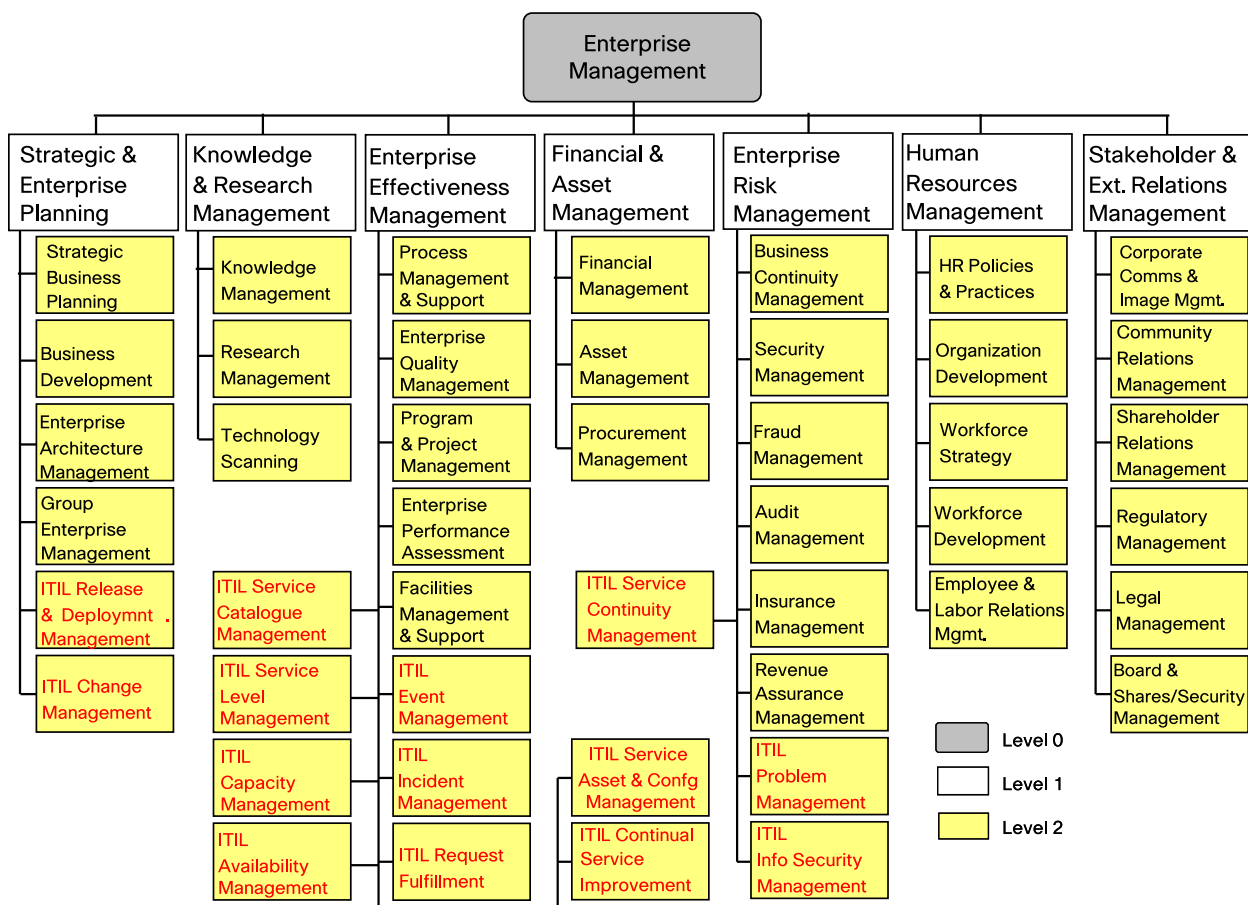


Figure 6. SIP Level 2 Processes (Copyright TM Forum)





**Figure 7.** Enterprise Management Level 2 Processes (Copyright TM Forum)

Each process shown in the Level 2 model is further detailed through process decomposition. This is achieved by analyzing each process and subdividing its functionality into lower-level processes. This procedure can be continued at lower levels as required. The eTOM layers can generally be described as following:

- Level 0: Business Activities 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 together to deliver service streams and other end-to-end processes
- Level 3: Tasks and associated detailed “success model” business process flows
- Level 4: Steps and associated detailed operational process flows with error conditions and product and geographical variants (where required)
- Level 5: Further decomposition into operations and associated operational process flows where required

### Using eTOM

eTOM is widely used in the service provider industry because it provides important benefits, such as:

- It makes available a standard structure, terminology, and classification scheme for describing business processes and their constituent building blocks
- It supplies a foundation for applying enterprise-wide discipline to the development of business processes
- It provides a basis for understanding and managing portfolios of IT applications in terms of business process requirements

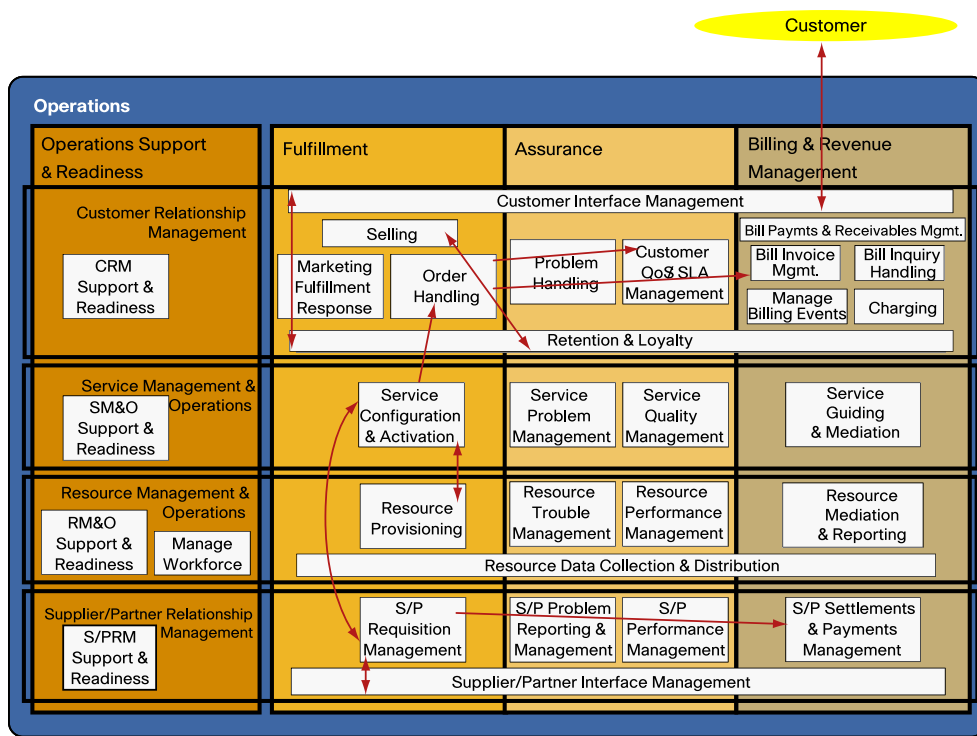
- It enables the creation of consistent and high-quality end-to-end process flows, with opportunities for cost and performance improvement, and for re-use of existing processes and systems
- Its use across the industry will increase the likelihood that off-the-shelf applications will be readily integrated into the enterprise, at a lower cost than custom-built applications

The focus of eTOM is on the business processes used by service providers, the linkages between these processes, the identification of interfaces, and the use of customer, service, resource, supplier/partner, and other information by multiple processes. eTOM represents an industry consensus on the service provider processes, which has been harmonized across the global scene and is based on TM Forum Member contributions. It is allowable, and indeed expected, that this will mean that eTOM must be tailored and/or extended for use within an individual company.

eTOM can be used to analyze existing organizational processes in order to discover gaps, to eliminate duplication and to optimize processes. It can also be used to develop new organizational processes by using the eTOM framework as is, by using only parts of it or by extending the eTOM framework. Extensions to the eTOM framework can be applied by decomposing Level 3/4 processes and adding organizational specific details at the lower process level. The two main techniques used to analyze existing organizational processes are through process interaction and process flows, illustrated in Figures 8 and 9.

Figure 8 shows an example of the process interactions for a new order. The customer places an order through Customer Interface Management. The Order Handling will trigger Service Configuration and Activation, then Resource Provisioning, then Supplier/Partner Requisition Management and finally Bill Invoice Management. A process interaction diagram does not show the sequence or the timeline of these interactions.

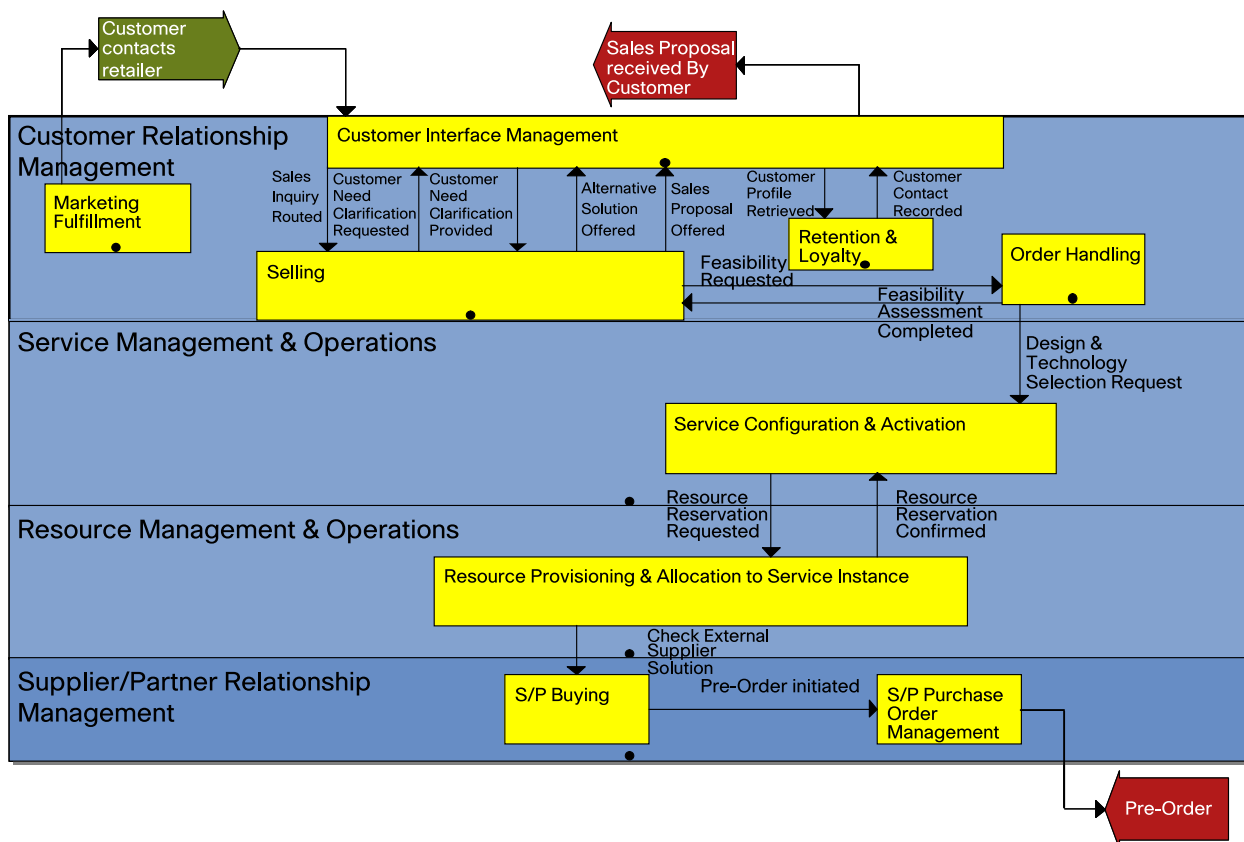
**Figure 8.** Process Interaction Example



In contrast, a process flow diagram presents the sequence of the process interactions as shown in Figure 9. The following example represents the same new order activities as in the previous process interaction example. A process flow can show interactions between processes at different levels. The level 1 processes are the four blue “swim lanes” and the level 2 processes are the yellow boxes. The triggers are conditions marked on the arrows

between processes. The large green arrow is an external trigger into this flow and the large red arrows are external triggers from this flow.

**Figure 9.** Process Flow Example (Copyright TM Forum)



**eTOM and ITIL®**

ITIL®<sup>1</sup> provides a framework of Best Practice guidance for IT Service Management started in the 1980s and currently at version 3. Just like eTOM, it is developed through consensus and is based on industry experience. Unlike eTOM, it is not a standard, however ISO 20000 is a standard based on ITIL®. ITIL® provides a set of processes and standardized terminology. It is the most comprehensive, non-proprietary, publicly available guidance for IT Service Management.

Although both frameworks overlap in scope and have a similar approach of presenting a process view of the enterprise, there are also many differences between them. Both similarities and differences are shown in Table 1.

**Table 1.** eTOM-ITIL Similarities and Differences

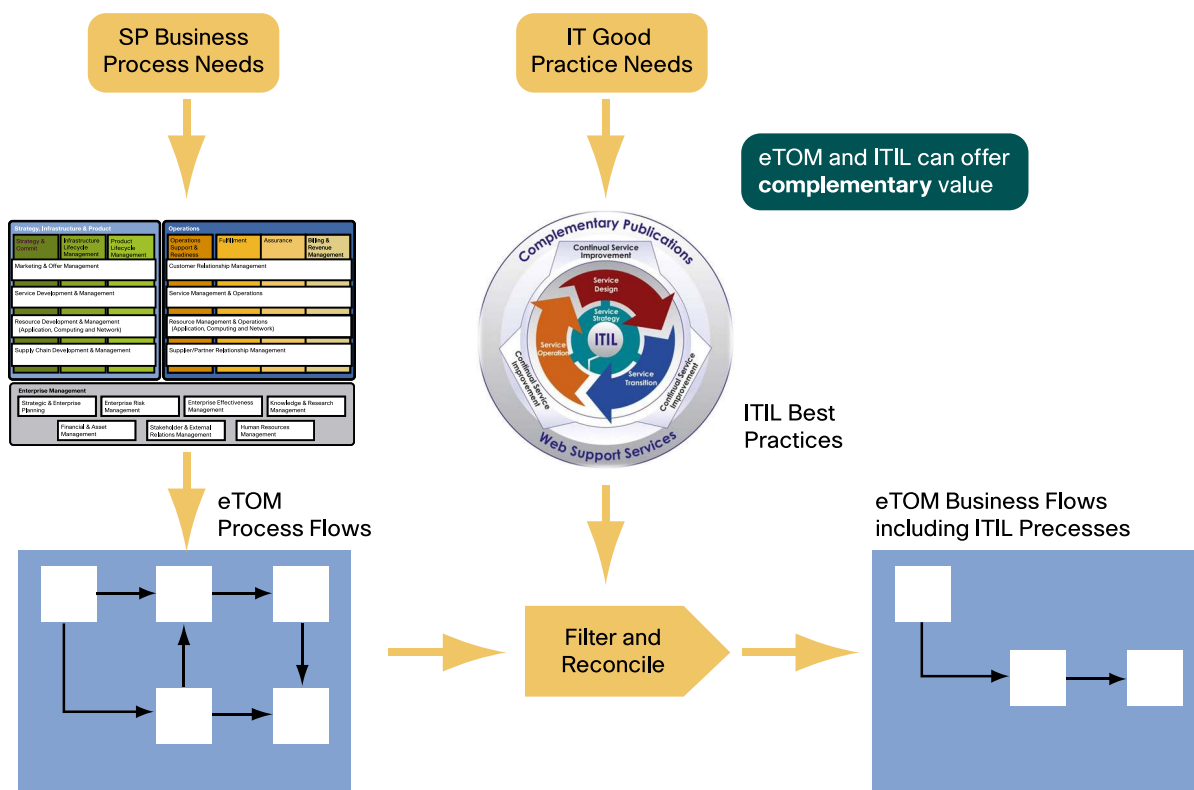
	eTOM	ITIL®
<b>Context</b>	<ul style="list-style-type: none"> <li>eTOM is a prescriptive catalogue of Process Element categories and a total enterprise process framework for the ICT industry.</li> </ul>	<ul style="list-style-type: none"> <li>ITIL® is a set of nonprescriptive guidelines for IT/ICT Service Management.</li> </ul>
<b>Objectives</b>	<ul style="list-style-type: none"> <li>Provides a business process blueprint for service providers to streamline their end-to-end processes.</li> <li>Enables effective communication and common vocabularies within the enterprise as well as with customers and suppliers.</li> </ul>	<ul style="list-style-type: none"> <li>Aligns IT services with the current and future needs of the business and its customers.</li> <li>Enables standard terminology across business and IT.</li> <li>Improves the quality of the IT services delivered.</li> <li>Reduces the long-term cost of service provision.</li> </ul>

<sup>1</sup> This document assumes prior knowledge of ITIL.

<p><b>Scope</b></p>	<ul style="list-style-type: none"> <li>• Provides a top-down hierarchical view of business processes across the whole enterprise and does not itself address how these processes are supported by automated or human action (this is, however, addressed in the wider NGOSS program of the TMF).</li> <li>• Processes are developed through iterative decomposition.</li> <li>• It focuses on identifying the commonality of enterprise processes required among similar services, such as telephony, data, Internet, mobiles, etc., for delivering high-quality, end-to-end service management.</li> <li>• eTOM focuses on service delivery to external customers.</li> </ul>	<ul style="list-style-type: none"> <li>• The ITIL® processes represent flows in a number of key operational areas, with a strong orientation towards how these processes will map onto IT support environments.</li> <li>• Processes are developed through flows.</li> <li>• It is primarily nonprescriptive, offers advice and guidance on the implementation and continued delivery of service management, including planning common processes, roles, and activities with appropriate reference to each other and how the communication lines should exist between them.</li> <li>• ITIL® is primarily focusing on serving internal IT customers.</li> </ul>
<p><b>Adoption</b></p>	<ul style="list-style-type: none"> <li>• eTOM has been adopted as ITU International Standards for the Telecom Sector, and primarily used by Service Providers in the ICT industry. eTOM is advanced by TM Forum: <a href="http://www.tmforum.org/">http://www.tmforum.org/</a></li> </ul>	<ul style="list-style-type: none"> <li>• ITIL® is a set of best practices that is used by tens of thousands of companies worldwide and continues to be advanced by itsSMF local chapters: <a href="http://www.itsmf.com/">http://www.itsmf.com/</a></li> </ul>
<p><b>Implementation</b></p>	<ul style="list-style-type: none"> <li>• eTOM is a framework; therefore, the implementation will be different from company to company.</li> <li>• The implementation of eTOM is supported by other TMF/NGOSS specifications, including the Shared Information/Data Model (SID), NGOSS Lifecycle and Methodology, and other related specifications.</li> </ul>	<ul style="list-style-type: none"> <li>• ITIL® is a framework; therefore, the implementation will be different from company to company.</li> <li>• Until recently, ITIL® did not provide guidelines on the implementation order or means to assess the maturity of the service organization. In Version 3, more attention is being paid to implementation guidelines.</li> </ul>
<p><b>Compliance</b></p>	<ul style="list-style-type: none"> <li>• eTOM compliance is achieved through the TMF/NGOSS Compliance Program; its certification is on tools not on organizations or processes. NGOSS compliance program encompass the conformance tests of other NGOSS specifications that further define the business objects and operations framework required for effective eTOM implementation.</li> </ul>	<ul style="list-style-type: none"> <li>• ITIL® is not a standard, nor is it a set of regulations, and, therefore, neither tools, processes, or people can be deemed "ITIL® compliant." Processes and organizations can be assessed against ISO 20000, the IT Service Management standard based on ITIL®. However, neither tools nor individuals can be certified against ISO 20000.</li> </ul>

In June 2004, a joint eTOM-ITIL® team was created in order to explore the inter-working of the two frameworks. The team's findings are published in the GB921V and TR143 documents, part of the eTOM specification. GB921V shows how the two frameworks can work together by integrating ITIL® processes into eTOM process flows. TR143 presents a strategy of further converging the two frameworks as shown in Figure 10.

**Figure 10.** Converging eTOM and ITIL®



The conclusions of the joint eTOM-ITIL<sup>®</sup> team are that the two frameworks are compatible, complementary and mutually supportive. eTOM and ITIL<sup>®</sup> can be integrated by using ITIL<sup>®</sup> best practices to specialize eTOM processes.

## References

- TM Forum: [www.tmforum.org](http://www.tmforum.org)
  - The whole NGOSS documentation (including eTOM)
  - White papers
  - Collaboration groups
  - Courses and certification exams
- ITIL<sup>®</sup>
  - Official ITIL<sup>®</sup> site: [www.itil.co.uk](http://www.itil.co.uk)
  - itSMF International: [www.itsmf.com](http://www.itsmf.com)
- ITU-T

Official site for the M series recommendations: [www.itu.int/rec/T-REC-M/e](http://www.itu.int/rec/T-REC-M/e)



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