



Information Systems in the Telecommunication Industry

Enhanced Telecom Operations Map (eTOM)



Hochschule für Telekommunikation Leipzig (HfTL)
University of Applied Sciences, www.hft-leipzig.de/en.html

Agenda

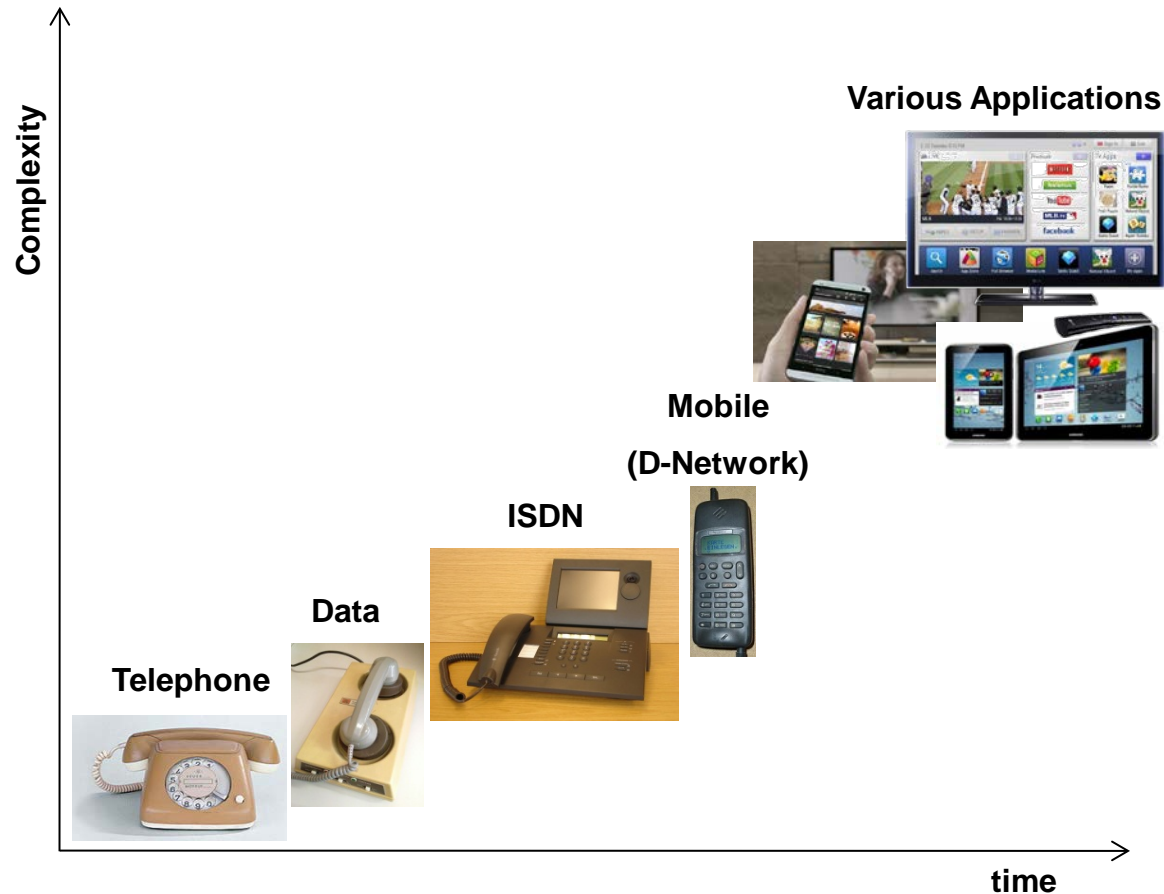
- Today's Telecommunications Industry
- Business Process Framework (eTOM)
- Applying eTOM

The Telecommunication Industry has changed!

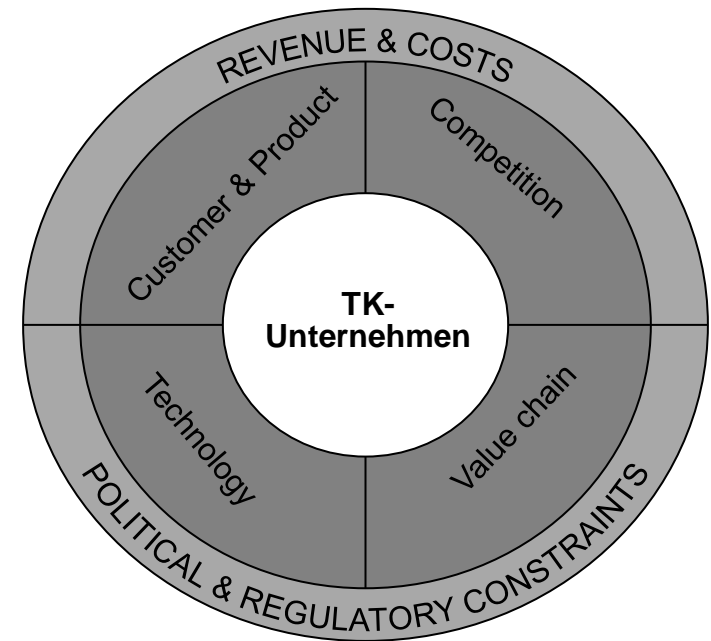


Changes of...

Technology

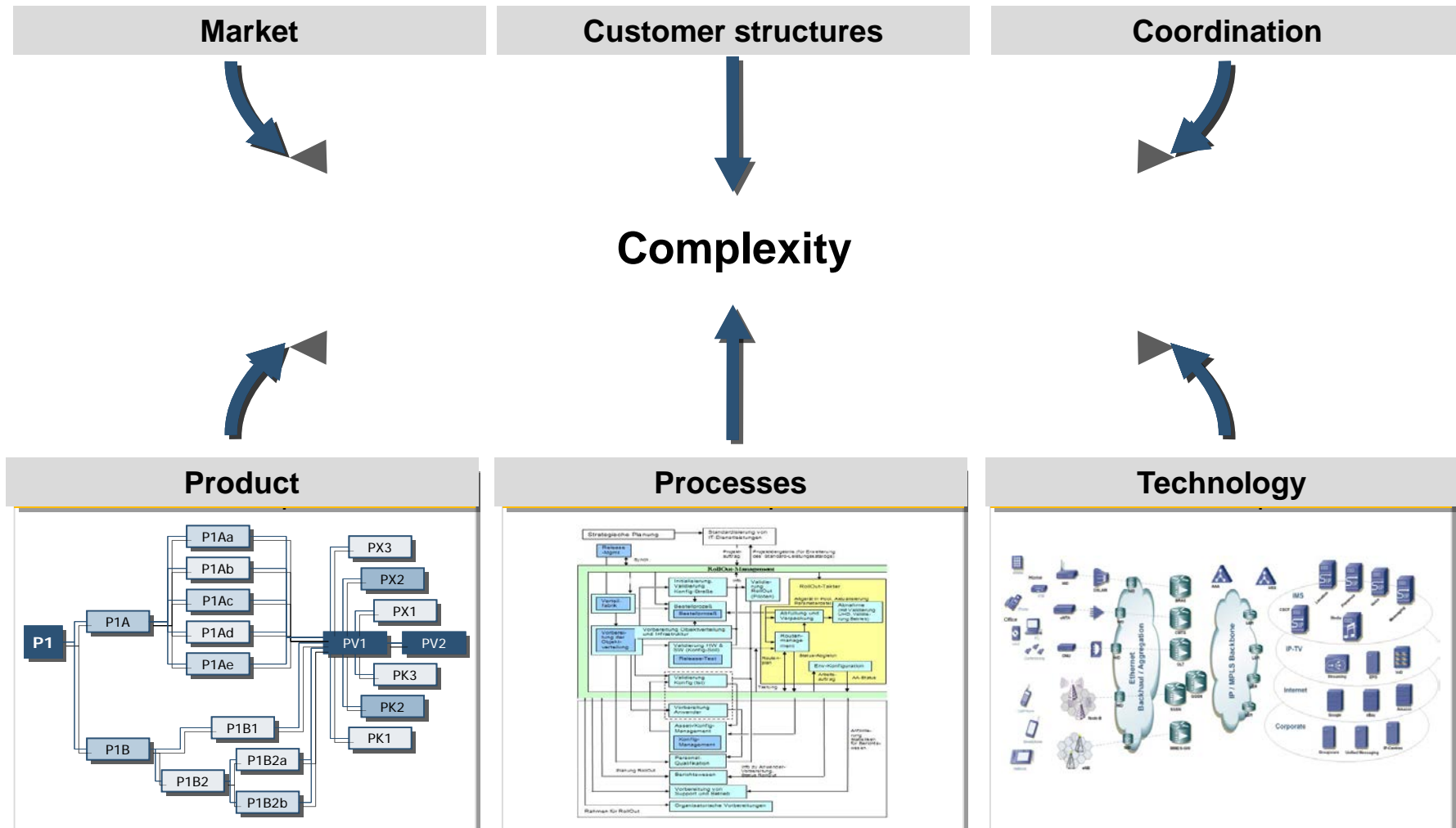


Telco Companies



Source: Czarnecki 2013, S. 68

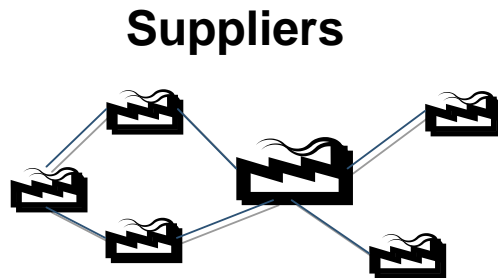
Challenges of Telco Companies



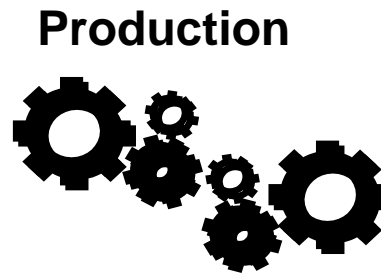
What can we learn from general production approaches?

Typical general value chain:

Provisioning of production factors



Composition of semi-finished and finished products

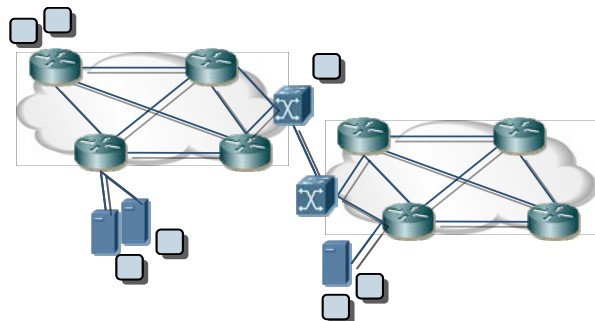


Sales of products

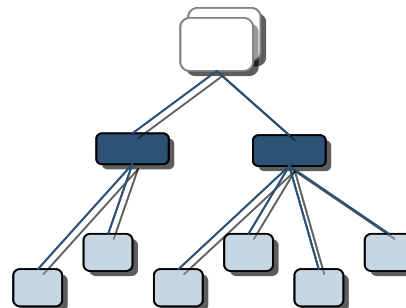


Telecommunication industry:

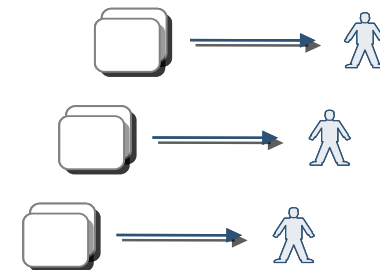
Network



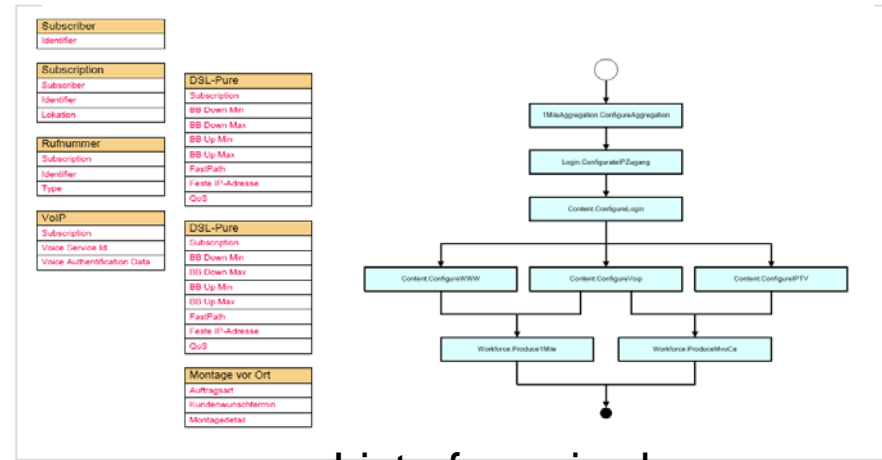
OSS



BSS



Telco Production

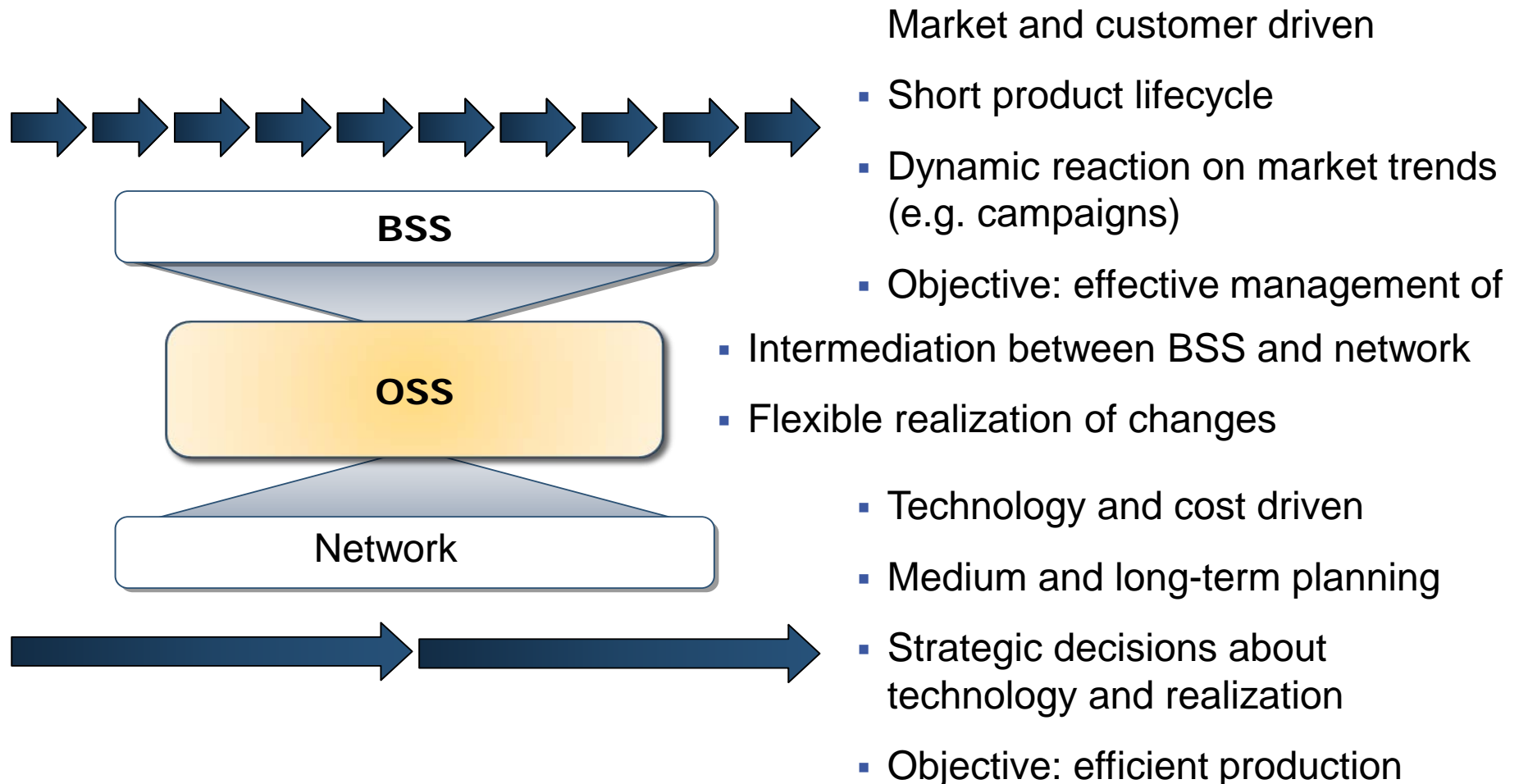


- List of required resources
- List of required activities (workflow)
- Reservation of resources
- Required manual activities
- Configuration and activation



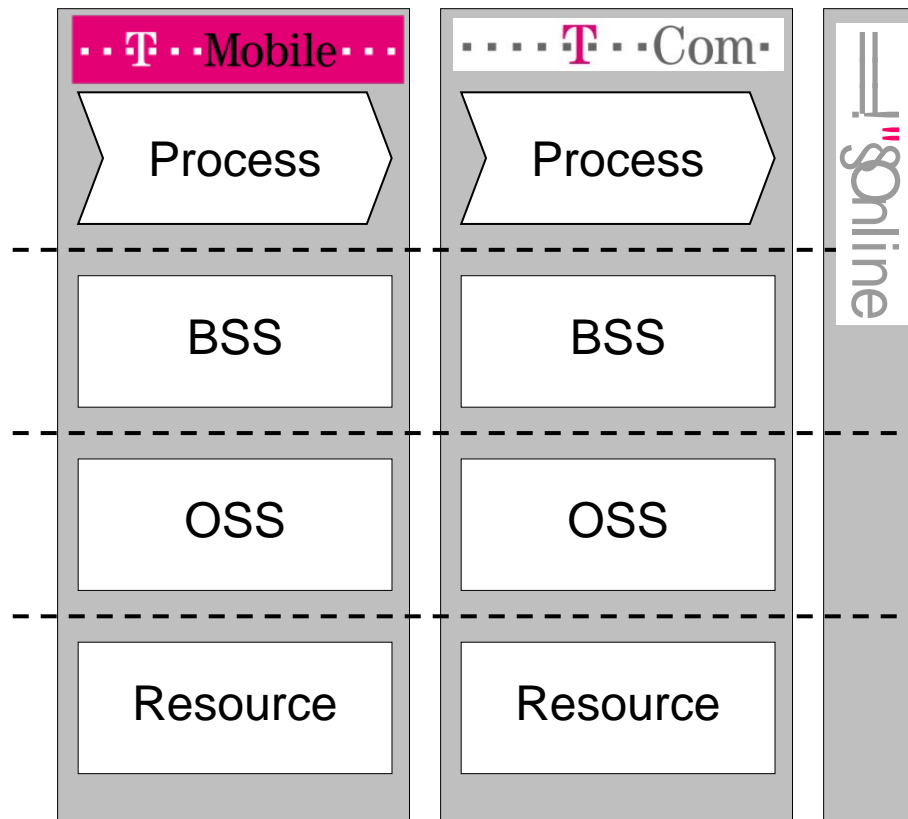
Source: Detecon

Telco Applications – High-level Structure

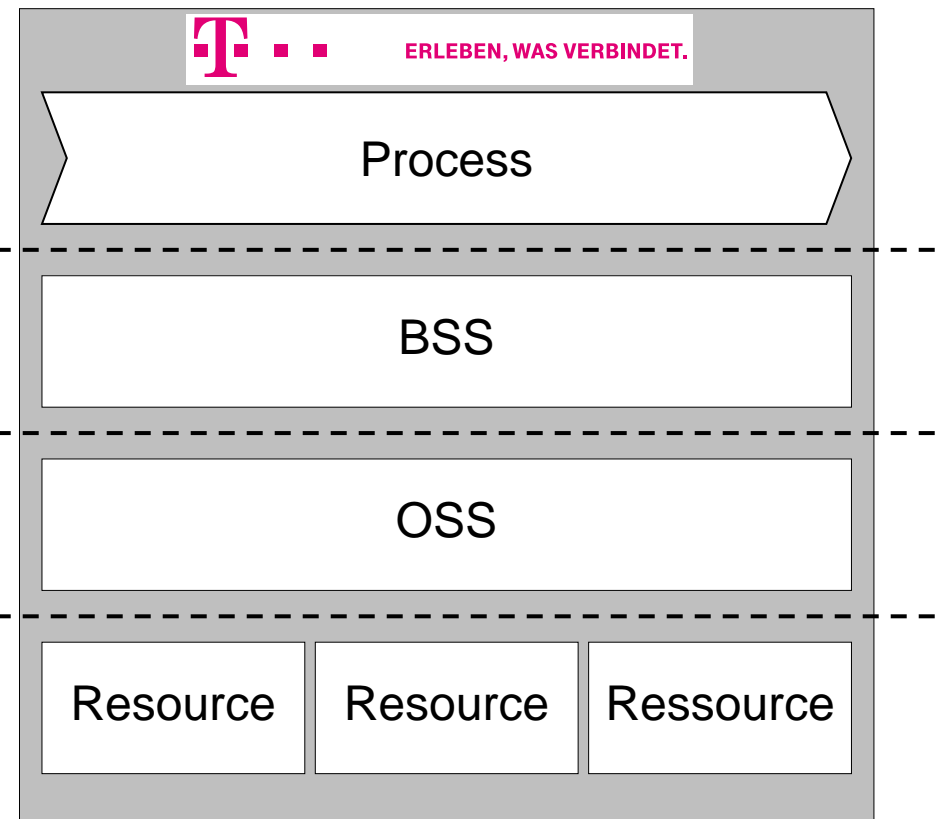


From silo-oriented to integrated architecture

Silo-oriented Architecture



Integrated Architecture



What is the TM Forum?

The TM Forum is an international association for telecom operations and systems. It has around 900 member companies in 95 countries encompassing the most important players in the whole telecom value chain. It has 3 primary roles:

Guidance/ Leadership –

Providing the telecom industry with a common language and ways of seeing things to reduce fragmentation to a minimum

- Best practices
- Frameworks
- Information
- Training
- Education
- Benchmarks

Standards –

Providing the telecom industry with standards to support cost savings during development and deployment

- Interfaces
- Contracts
- Data models
- Test specs and tools

Ecosystem –

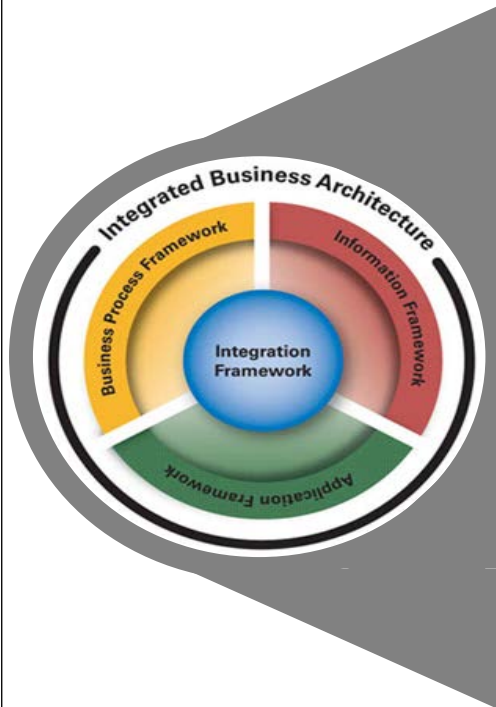
Providing the telecom industry with a capability for networking, enabling business flow and ideas exchange through conferences, webinars and online information exchange

TM Forum Introduction

http://www.youtube.com/watch?v=F_vveB-ruGU



TM Forum Reference Models – specific for telecommunication industry



■ Business Process Framework (eTOM)

the process reference model for both strategic and operational processes



■ Information Framework (SID)

a common reference model for enterprise information including entity relationship models



■ Application Framework (TAM)

a reference model that provides a common language to describe systems and their functions, as well as a common way of grouping them



■ Integration Framework

delivers a service oriented integration approach with standardized interfaces and support tools



Statements from the market...

“eTOM standard is a key part of Deutsche Telekom’s IT strategy, allowing us to reduce both risk and costs.”

Steffen Roehn, former CIO, Deutsche Telekom



“The TM Forum standards (for processes & architecture) helped Vodafone to build a secure and flexible OSS, as well as a central provisioning strategy”

Albert Hitchcock, CIO, Vodafone Group

“Our new Business Process Framework is an essential driver and key instrument for addressing our strategic goals, customer focus and operational excellence.”

Mansoor Al-Khater, Executive Director Group Strategy, Qatar Telecom

“The TM Forum standardized processes and architecture definitions [...] enabled STC to jump directly to industry best practices for process implementation.”

Maziad Al-Harbi, General Manager of the Network Services Solution, Saudi Telecom Company

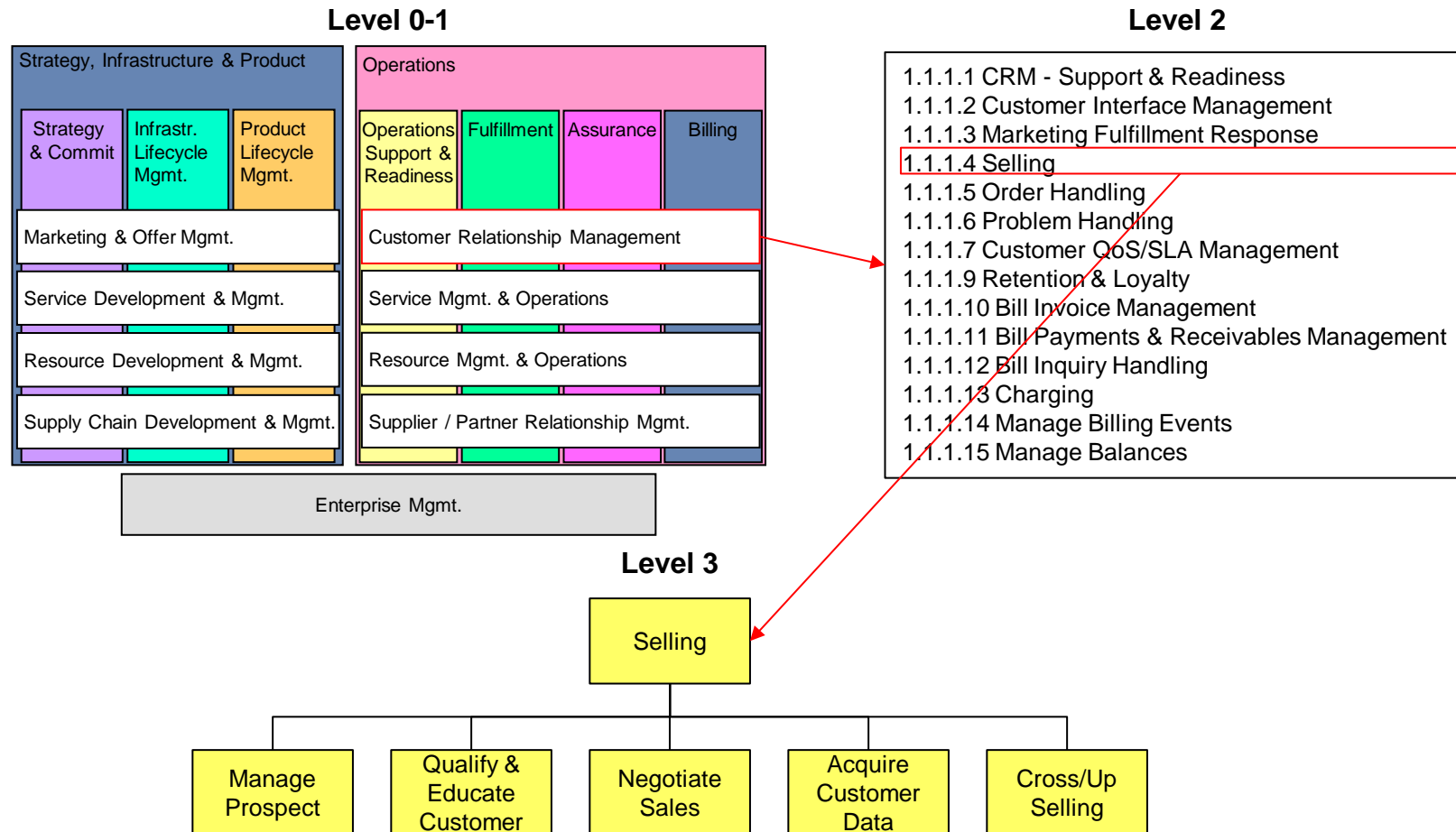
Reference Model - Definitions

- „A reference model – specifically: reference information model – is an information model used for supporting the construction of other models.” (Thomas 2006)
- “Reference models are information models that are developed with the goal of being reused for different, but similar purposes.” (Becker et al. 2007)
- The construction and application of reference models is called reference modeling (Referenzmodellierung). (vom Brocke and Fettke 2012).

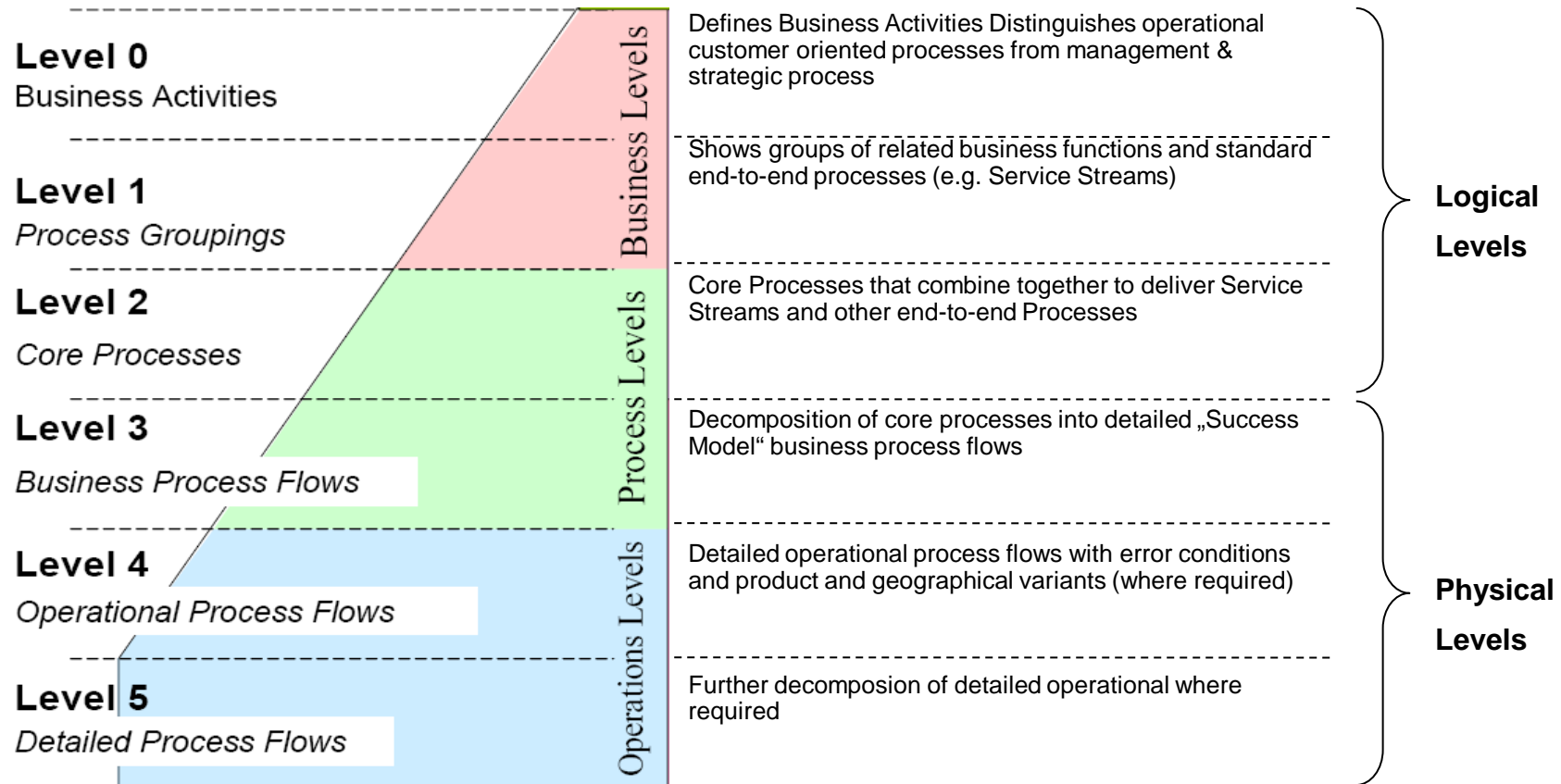
Agenda

- Introduction
- Business Process Framework (eTOM)
- Applying eTOM

eTOM is a collection of processes that can be decomposed on different levels of detail.



eTOM Decomposition



Entities as Structural Element

Entities

Market/Sales, Product and Customer

Service

**Resource
(Application, Computing and Network)**

Supplier/Partner

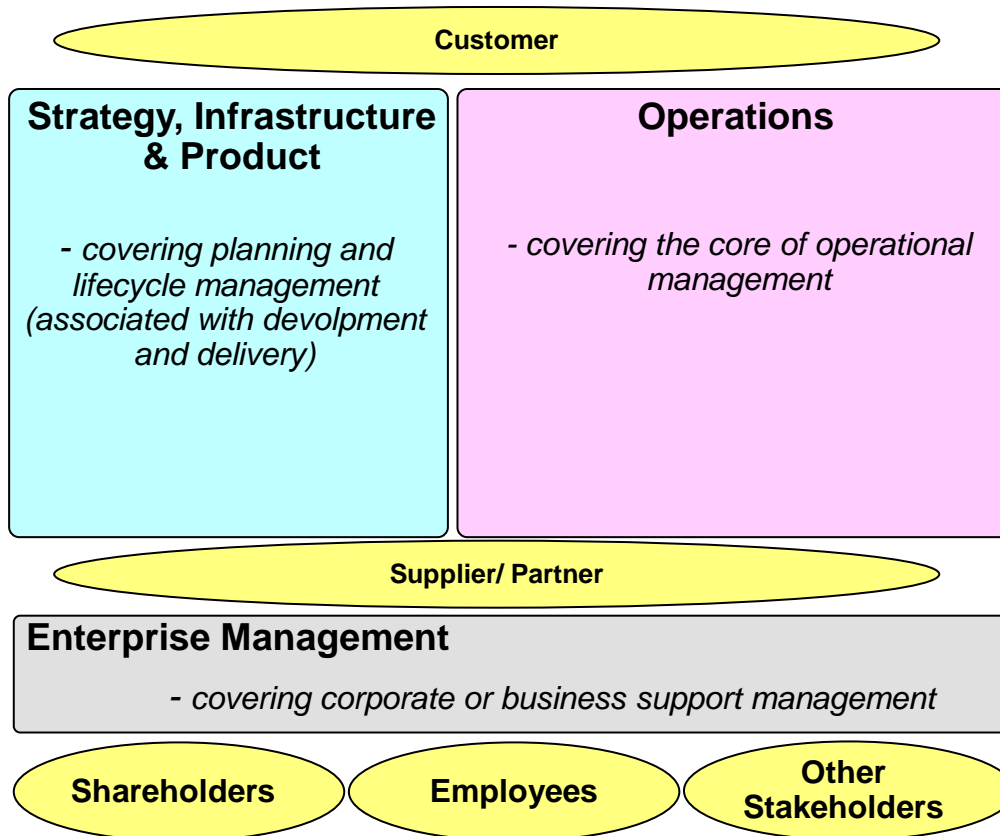
Enterprise

Remarks

- Market/Sales supports sales and marketing activities to gain business from customers and potential customers
- Product is concerned with the lifecycle of products and information related to products lifecycle
- Customer is individuals or organizations that obtain product from an enterprise
- Service consists of information used to manage the definition, development and operational aspects of services provided
- Resource consist of information used to manage the definition, development and operational aspects of network, as well as information and application resources
- Enterprise represents information necessary to support the overall business

eTOM - Conceptual View (Level 0)

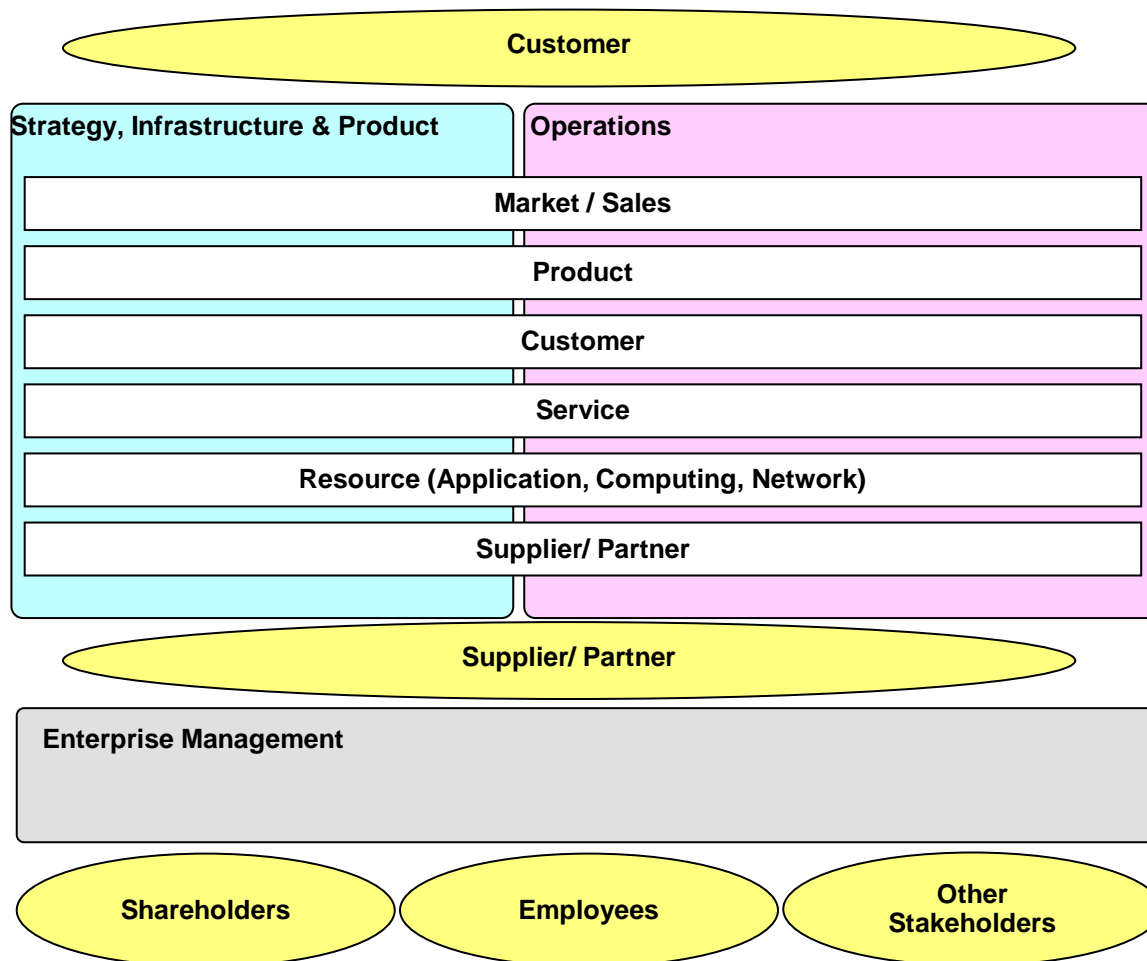
eTOM's Three Major Process Areas



Remarks

- The Framework differentiates Strategy and Lifecycle Processes (SIP) from the Operations Processes in two large process areas
- They are differentiated because, unlike Operations, SIP Processes do not directly support the customer, are intrinsically different from the Operations Processes and work on different business time cycles
- The third major process area is concerned with management of the enterprise itself
- There are different internal and external entities that interact with the enterprise, as shown in the figure

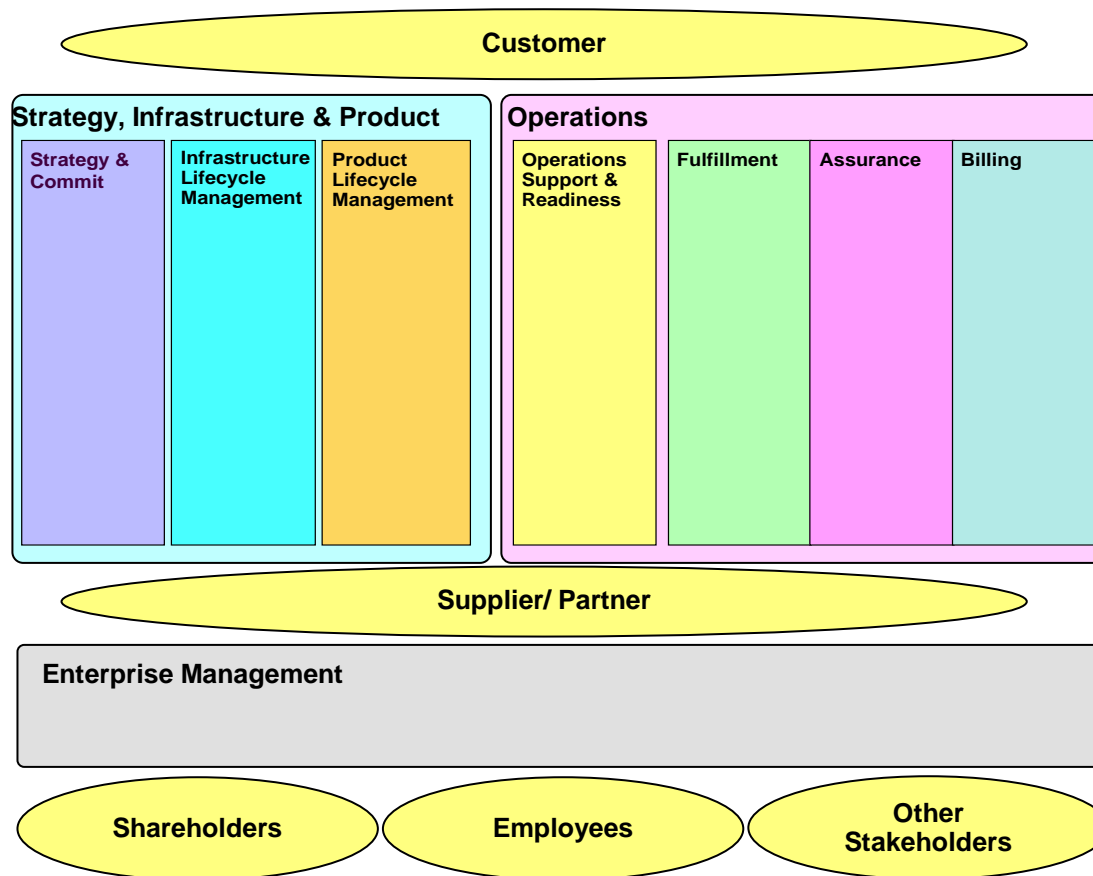
eTOM - Horizontal Level 1 Process Groupings



Remarks

- Functionally-related processes within the business are e.g. those involved in managing contact with the customer or in managing the supply chain
- This structuring by horizontal functional process groupings is useful to those who are responsible for creating the capability that enables, supports or automates the processes
- The horizontal functional process groupings can therefore often represent the CIO's view of the eTOM framework

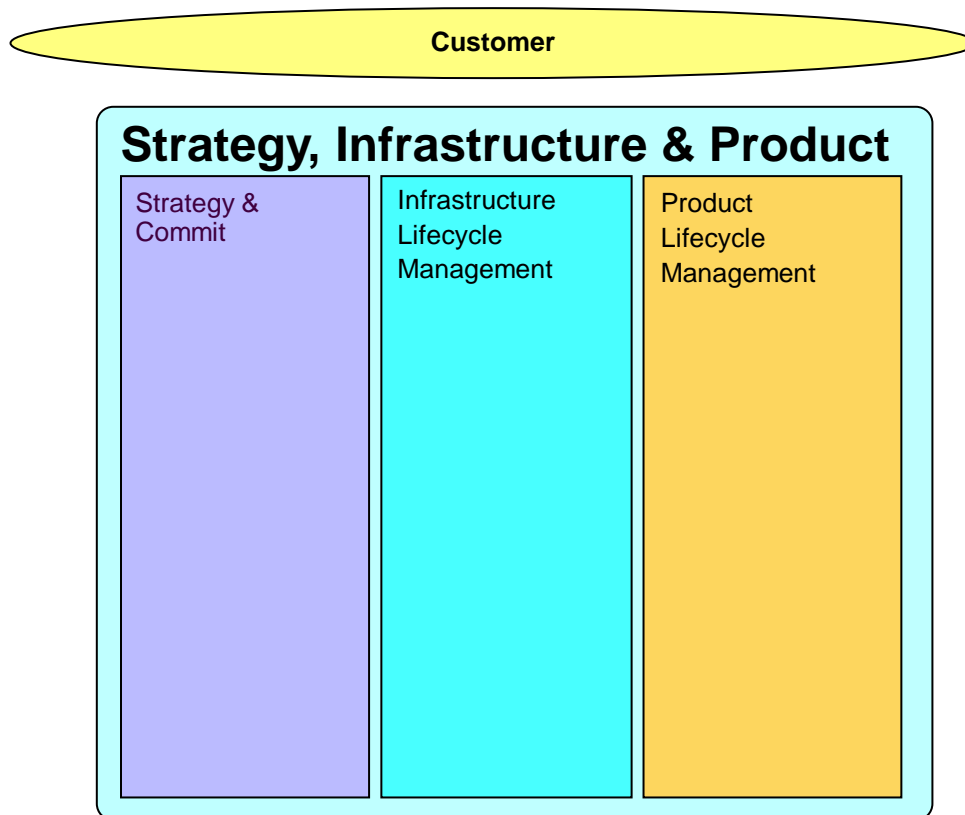
eTOM - Vertical Level 1 Process Groupings



Remarks

- End-to-end Processes are e.g. those involved in the overall billing flows to customers
- This end-to-end view is important to those people who are responsible for changing, operating and managing end-to-end processes
- These processes tend to span organization boundaries, and so the end-end effectiveness of these processes is an area of concern to senior management and particularly the CEO
- The vertical process groupings therefore often represent the CEO's view of the eTOM framework

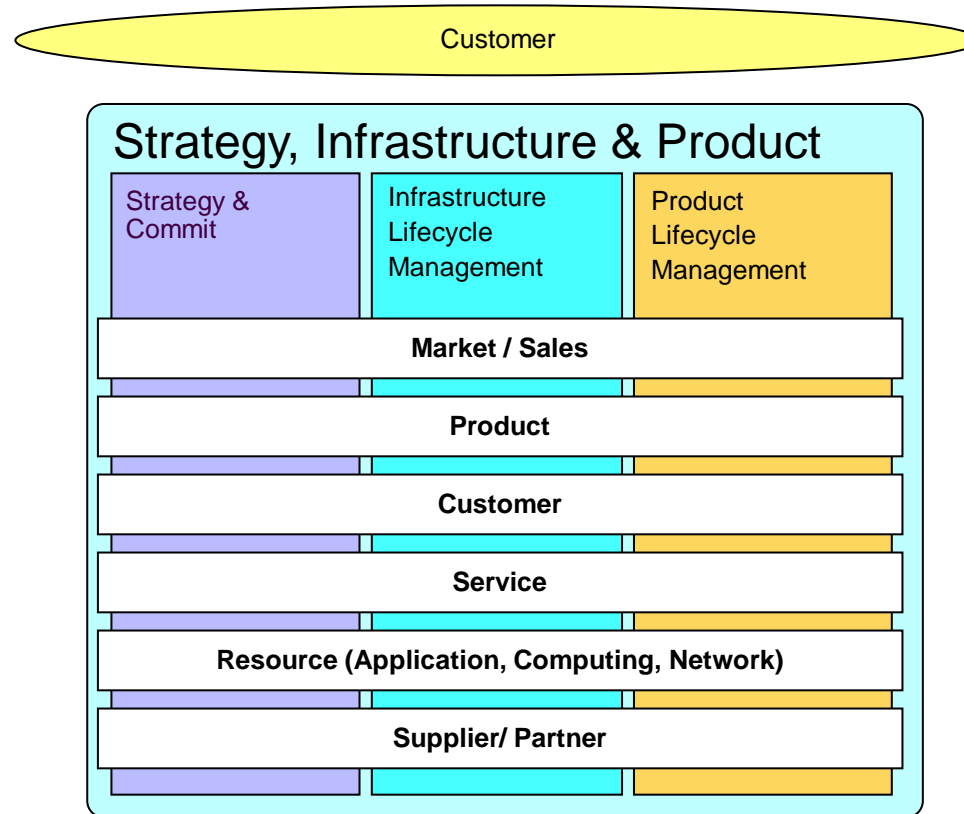
SIP - Vertical Level 1 Process Groupings



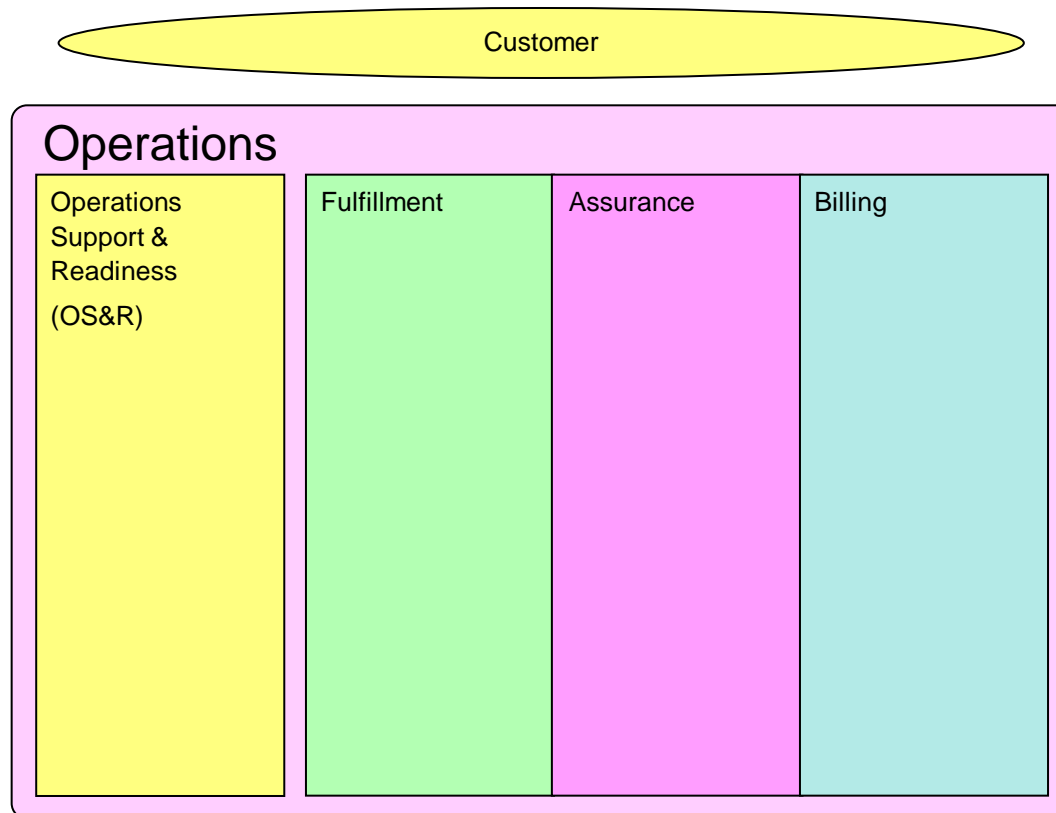
Remarks

- Strategy & Commit is responsible for the generation of strategies in support of the Infrastructure & Product Lifecycle processes. It is also responsible for establishing business commitment within the enterprise to support these strategies
- Lifecycle Mmgt. drive and enable core operations and customer processes to meet market demand and customer expectations
- Infrastructure Lifecycle Mgmt. Is responsible for the definition, planning and implementation of all infrastructures and business capabilities and Product Lifecycle Mgmt. for products in the enterprise portfolio

SIP – Level 0-1



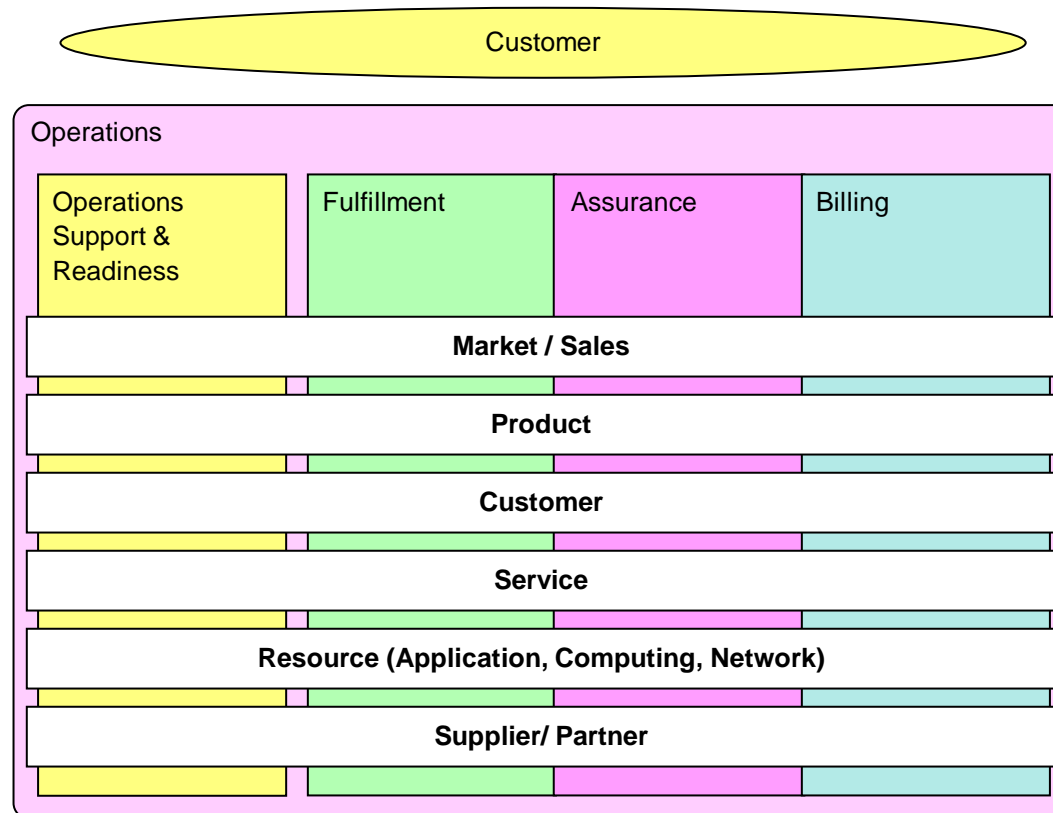
Operations – Vertical Level 1 Process Groupings



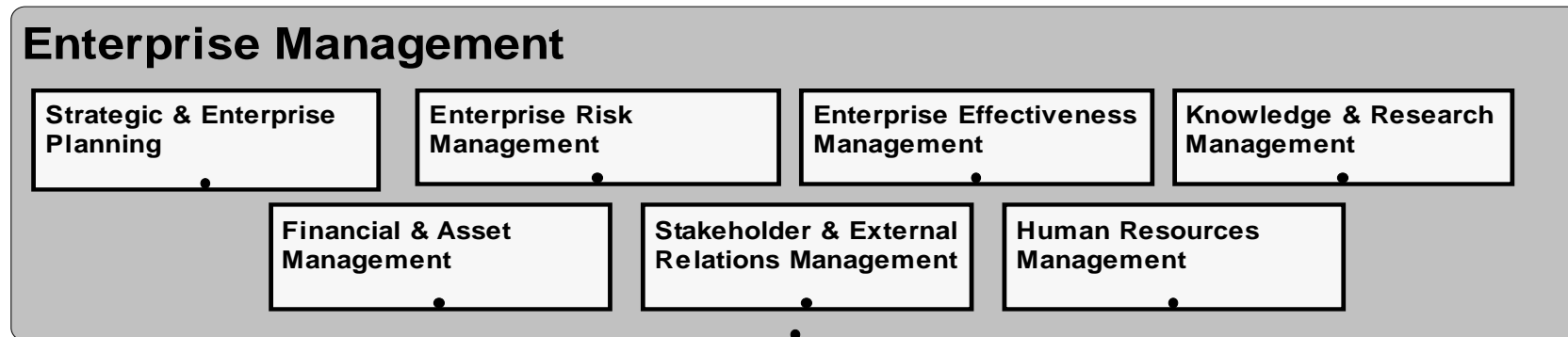
Remarks

- Fulfillment is responsible for providing customers with their requested products in a timely and correct manner
- Assurance is responsible for the execution of pro- & reactive maintenance activities to ensure that services provided to customers are available and performing to performance levels
- Billing is responsible for the collection of appropriate usage records, production of bills, for providing pre-bill use information and billing to customers and performing payment collections
- OS& R is responsible for providing management, logistics & administrative support to FAB

Operations – Level 0-1

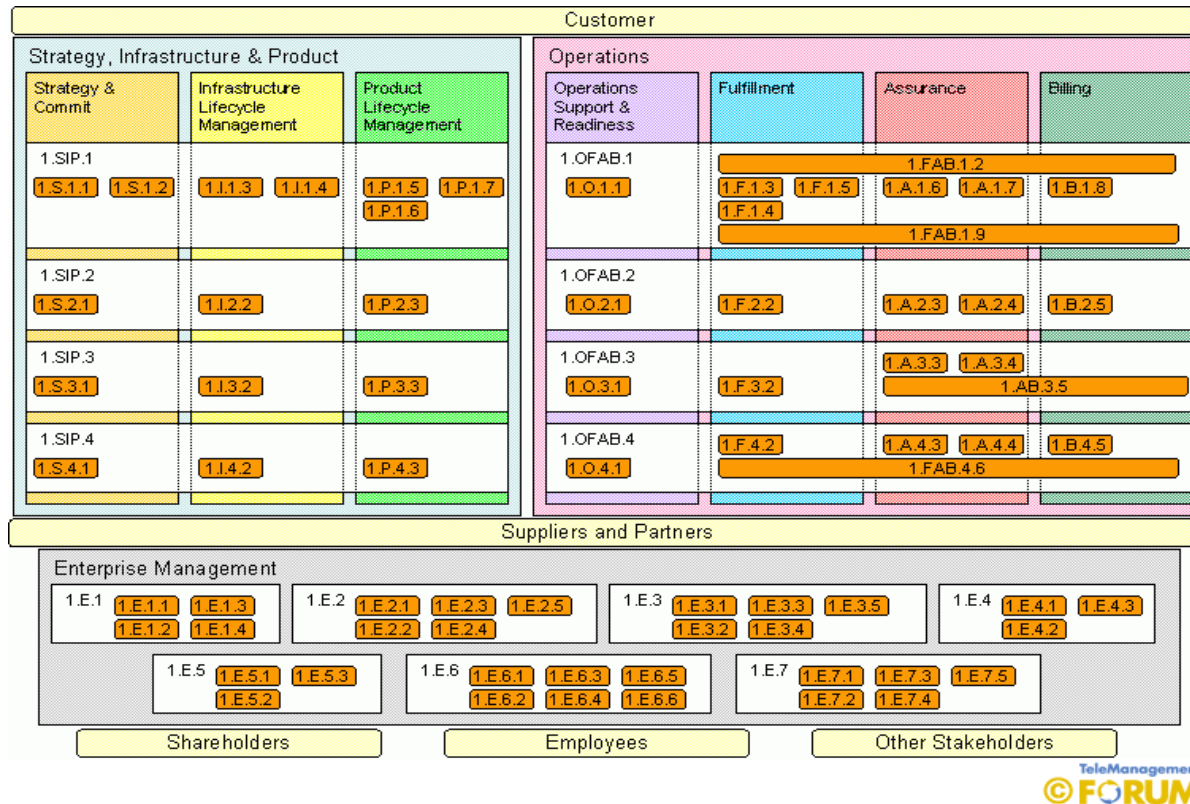


eTOM – Enterprise Management



- Setting and achieving strategic corporate goals and objectives
- Provide support services required by the entire business
- May interface with many strategic, infrastructure and operational processes

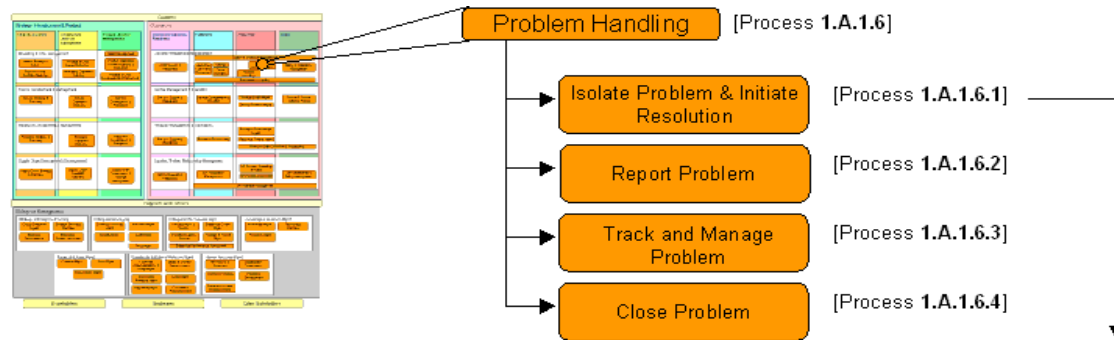
Process Decomposition – Level 2



Remarks

- The level 2 business processes are derived from the logical intersection of process areas (columns) and functional process structures (rows).
- Process flows can be developed at level 2.
- Examples of level 2 processes:
 - Customer Interface Management
 - Selling
 - Order Handling
 - Problem Handling

Process Decomposition – Level 3

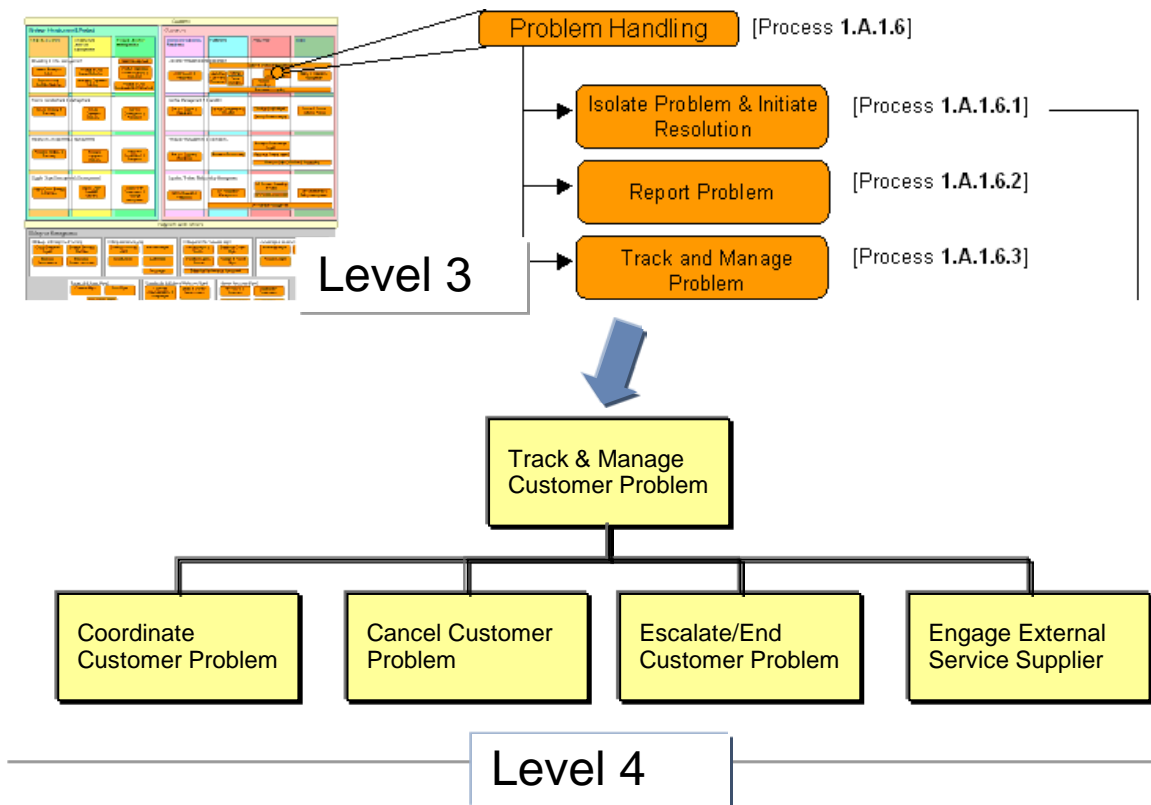


Process Name	Isolate Problem & Initiate Resolution
Process Identifier	1.A.1.6.1
Brief Description	Receive & isolate problem, and initiate resolution actions
Extended Description	<p>The purpose of this process is:</p> <ul style="list-style-type: none"> •To register and analyze received trouble reports 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.

Remarks

- The level 3 processes into which a level 2 process decomposes represent individual tasks that manage the lifecycle of the business entities.
- The diagram depicts an example of a level 3 process.
- The eTOM level 2 process "Problem Handling" is decomposed into its sub processes: "Isolate Problem & Initiate Resolution", "Report Problem", "Track and Manage Problem" and "Close Problem".
- Process flows can be developed at Level 3.

Process Decomposition – Level 4



Remarks

- The level 4 processes into which a level 3 process decomposes represent individual tasks that manage the lifecycle of the business entities.
- The diagram depicts an example of a level 4 process.
- The eTOM level 3 process “Track and Manage Problem” is decomposed into its sub processes: “Coordinate Customer Problem”, “Cancel Customer Problem” and “Engage External Service Supplier”.
- Level 4 are described in GB 921 DX

tmforum Frameworkx

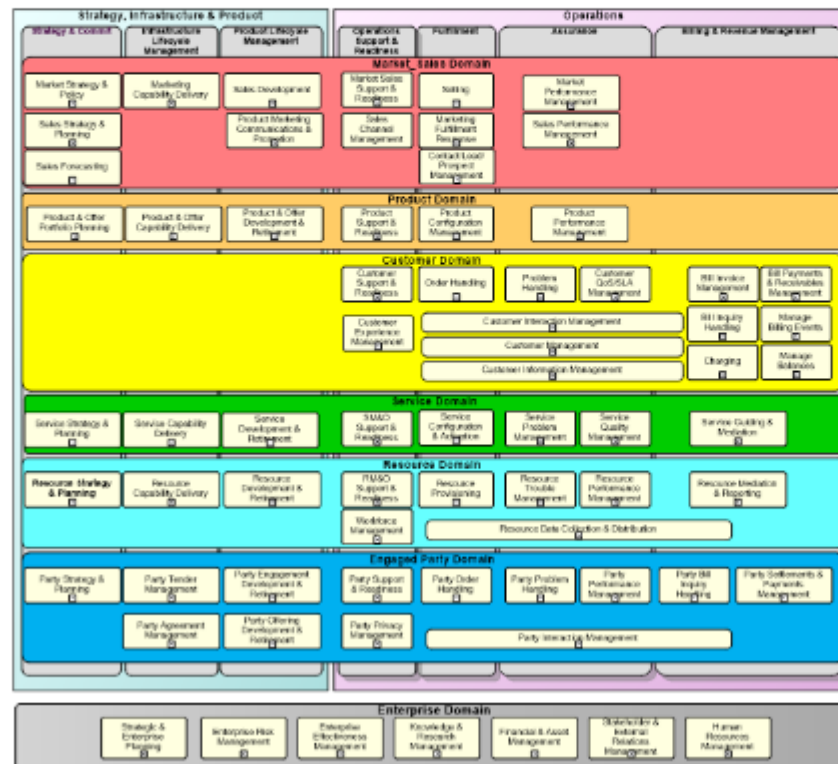
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Frameworkx Home
Application Framework (TAM)
Business Process Framework (eTOM)
Business Process Framework Flows
Information Framework (SID)
Business Metrics High Level
All Diagrams
Framework Processes
Framework Applications
Information Framework ABEs
Framework Metrics
Views

Business Process Framework Level 1 Overview - START HERE



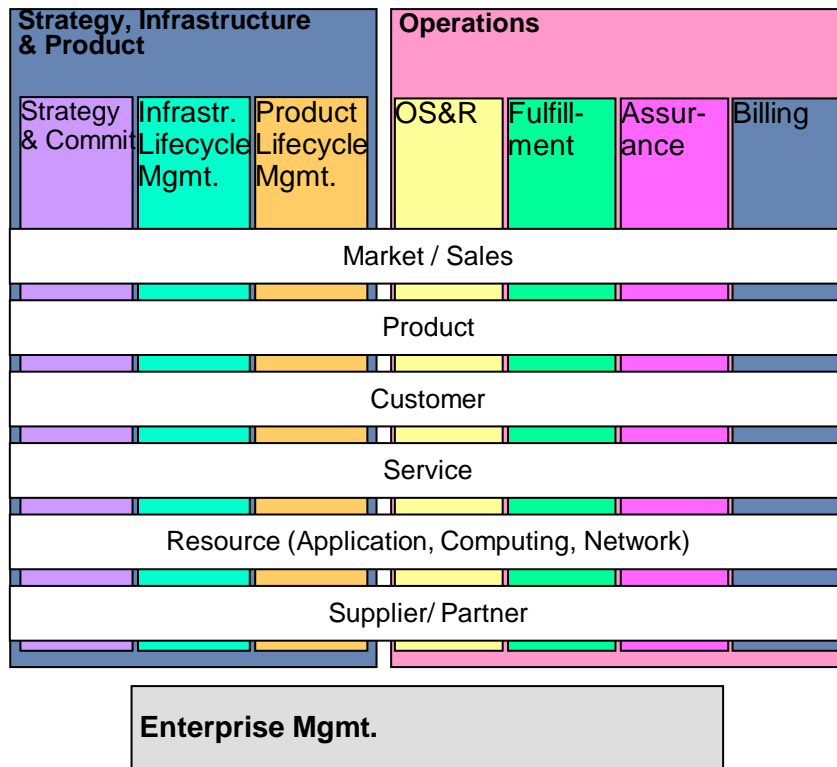
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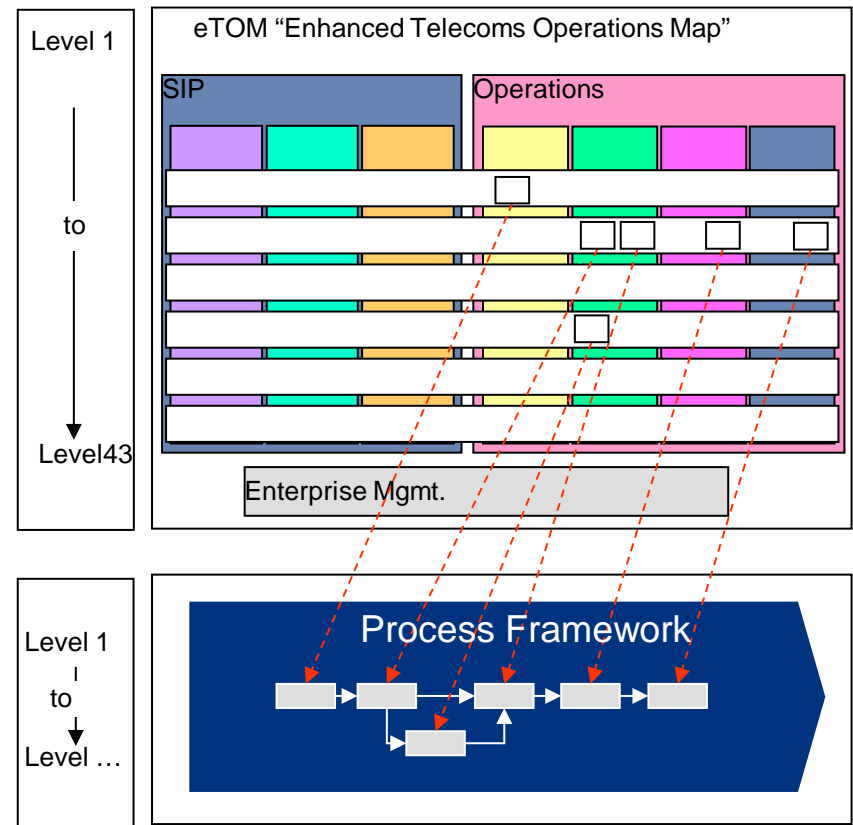
How to use eTOM?

What Is eTOM?

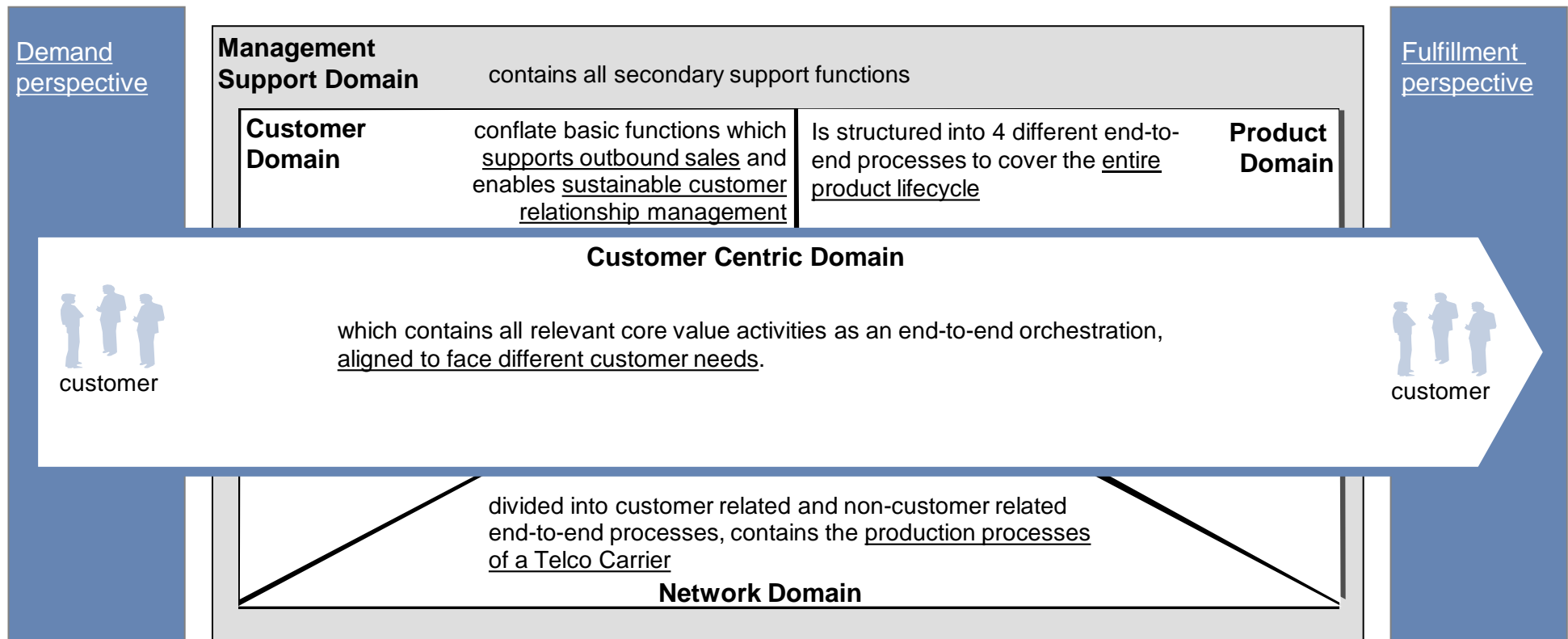
eTOM "Enhanced Telecoms Operations Map"



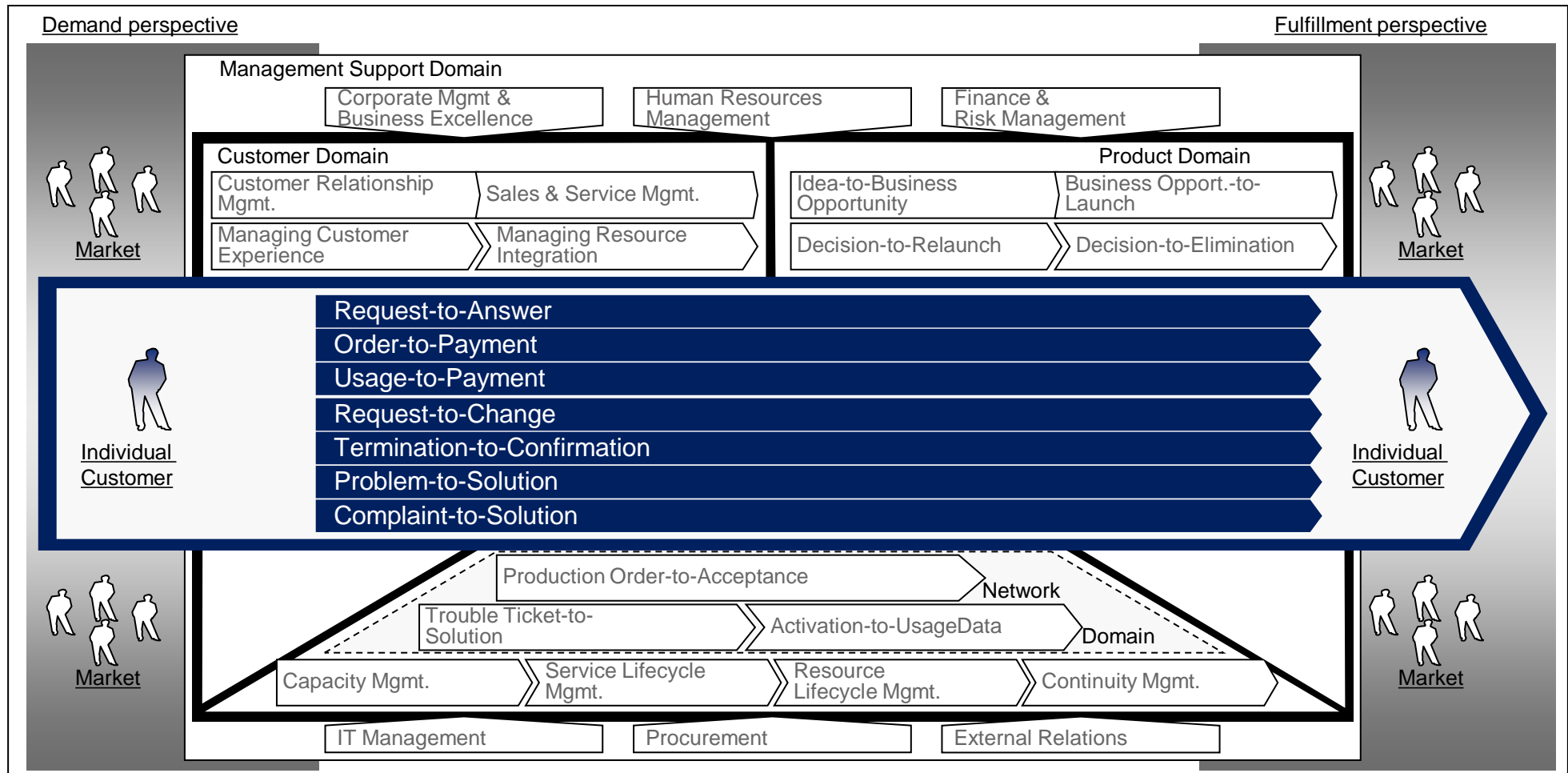
How to Use eTOM?



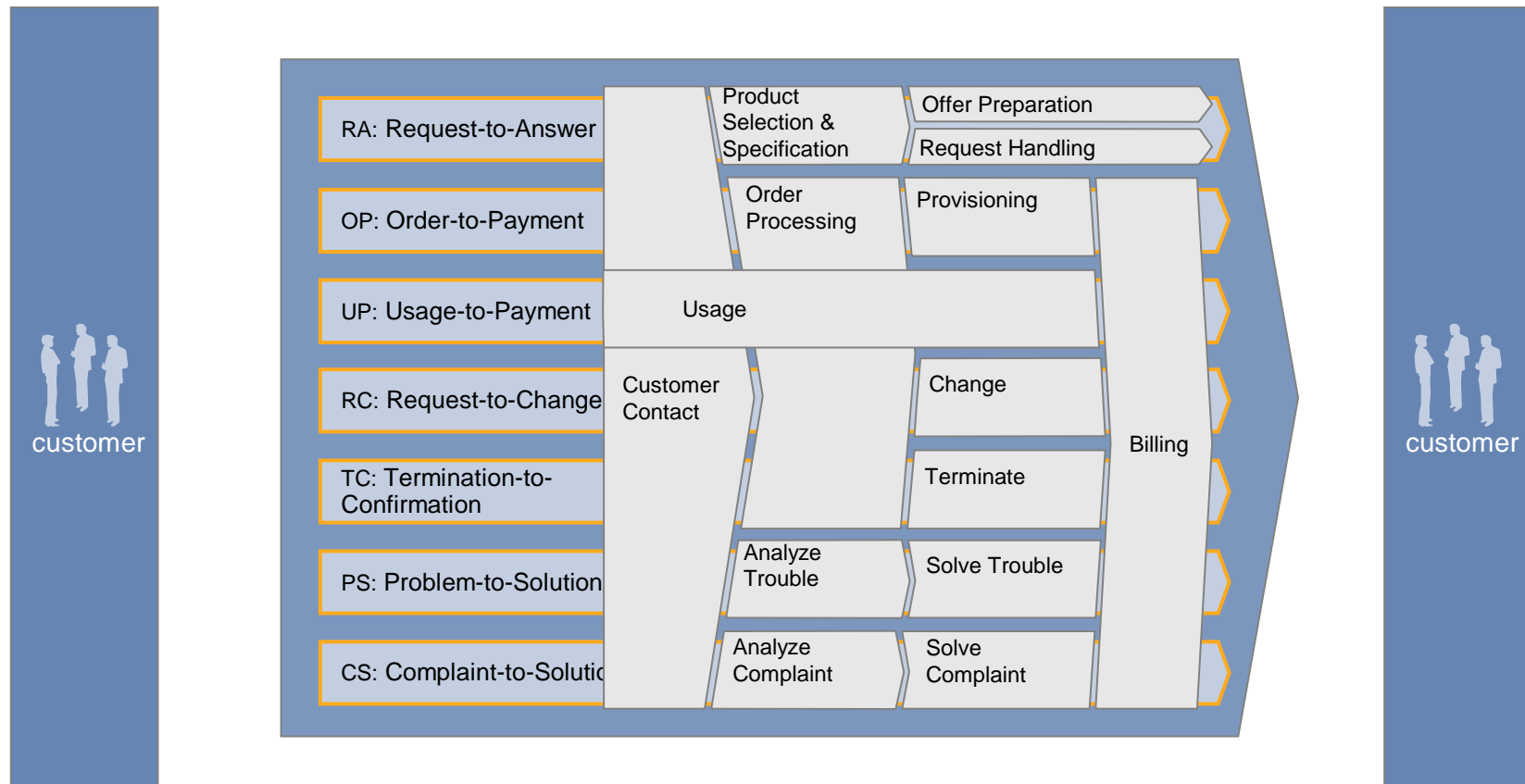
Reference Process Flows (Level 0)



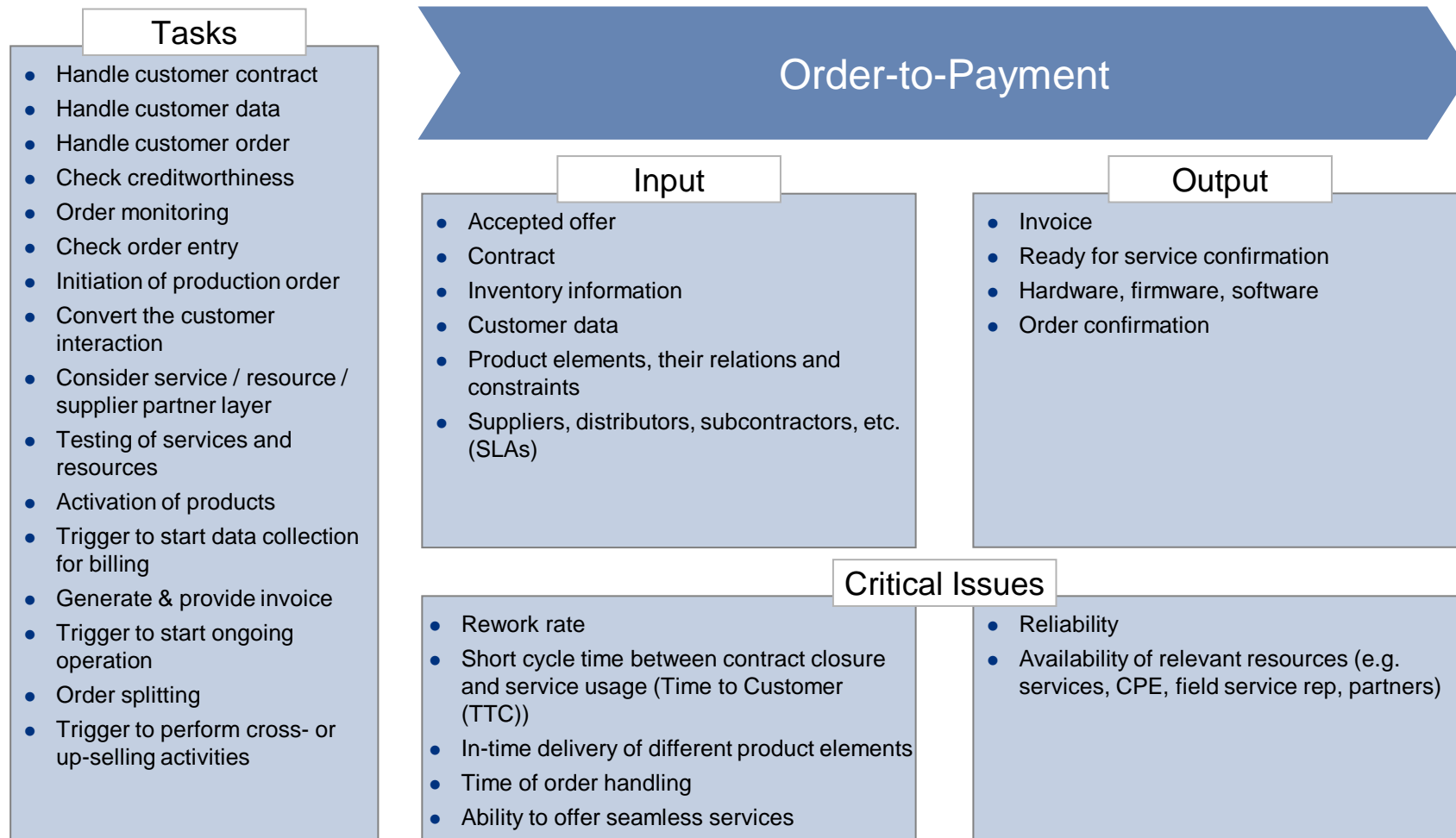
Reference Process Flows (Level 1)



Customer-centric Process Domain – Level 1-2



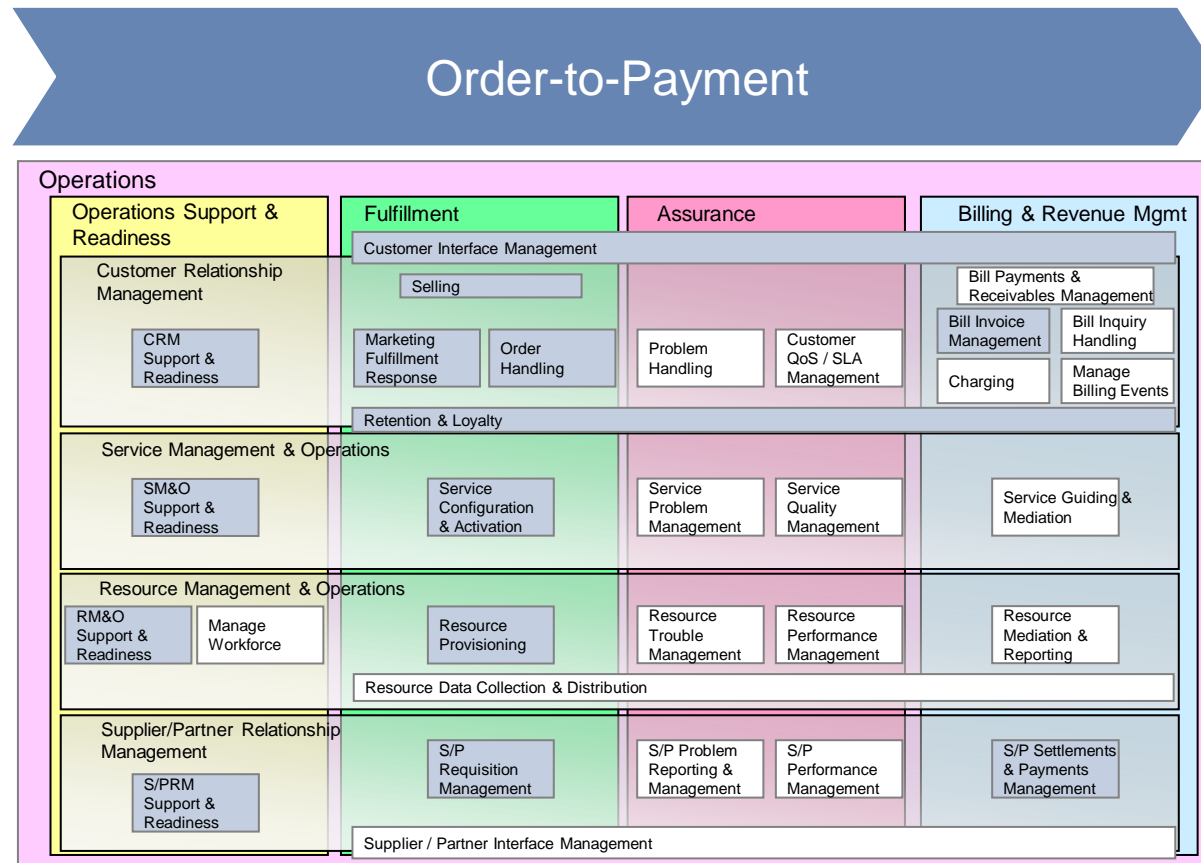
The process „Order-to-Payment“ contains the customer interaction order to billing.



Order-to-Payment – Level 2

eTOM Level2

- 1.1.1.1 CRM - Support & Readiness
- 1.1.1.2 Customer Interface Management
- 1.1.1.3 Marketing Fulfillment Response
- 1.1.1.4 Selling
- 1.1.1.5 Order Handling
- 1.1.1.9 Retention & Loyalty
- 1.1.1.10 Bill Invoice Mgmt
- 1.1.2.1 SM&O Support & Readiness
- 1.1.2.2 Service Configuration & Activation
- 1.1.3.1 RM&O Support & Readiness
- 1.1.3.2 Resource Provisioning
- 1.1.4.1 S/PRM Support & Readiness
- 1.1.4.2 S/P Requisition Management
- 1.1.4.5 S/P Settlements & Payments Management



TM Forum YouTube Channel:

<http://www.youtube.com/channel/UCLKFQ99UR0KRtF3BTQzurOw>

The image shows the YouTube channel page for TM Forum. The header features the TM Forum logo and a decorative banner with various icons. Below the header, the channel name "TM Forum" is displayed, along with a "Abonnieren" (Subscribe) button showing 218 subscribers. The navigation menu includes "Übersicht", "Videos", "Playlists", "Kanäle", "Diskussion", and "Kanalinfo". The "Videos" tab is selected, showing a grid of 12 video thumbnails. Each thumbnail includes a video player preview, the video title, and the number of views and upload time.

Video Title	Views	Upload Time
Peter Sany at Smart City InFocus 2015	15 Aufrufe	vor 3 Wochen
Deputy Mayor Mr Guo Baichun interview at Smart City InFocus 2015	14 Aufrufe	vor 1 Monat
David Pleasance Interview at Smart City InFocus 2015	18 Aufrufe	vor 1 Monat
Radhika Venkatraman Interview at Smart City InFocus 2015	18 Aufrufe	vor 1 Monat
Samir Saini Interview at Smart City InFocus 2015	24 Aufrufe	vor 1 Monat
Shawn Slack Interview at Smart City InFocus 2015	15 Aufrufe	vor 1 Monat
Projjal Dutta Interview at Smart City InFocus 2015	61 Aufrufe	vor 1 Monat
Paulo Carvalho Interview at Smart City InFocus 2015	2 Aufrufe	vor 1 Monat
Young Hoon Choi Interview at Smart City InFocus 2015	4 Aufrufe	vor 1 Monat
Jane Chen Smart City InFocus 2015 Interview	1 Aufruf	vor 1 Monat
Paul Wilson Interview at Smart City InFocus 2015	2 Aufrufe	vor 1 Monat
Peter Marx Interview at Smart City InFocus 2015	4 Aufrufe	vor 1 Monat

eTOM – Recommended Literature


BISE – RESEARCH PAPER

Reference Process Flows for Telecommunication Companies

An Extension of the eTOM Model

New business models, innovative services and technologies require transformations in the telecommunication industry. With the Enhanced Telecom Operation Map (eTOM), the TM Forum offers a recognized reference process model for telecommunication companies. However, eTOM only offers a hierarchical collection of processes on different levels of abstraction. In this paper, we extend the eTOM model by reference process flows. We offer a control view in terms of a sequential ordering of tasks and hence a real process flow. This provides an end-to-end view on the customer. Furthermore we show how the reference process flows assist companies towards a structured and transparent re-design of their processes. Our results have been accepted and published as standard by the TM Forum.

DOI 10.1007/s12599-013-0250-z

 Czarnecki C, Winkelmann A, Spiliopoulou M (2013b) Reference Process Flows for Telecommunication Companies: An Extension of the eTOM Model. Business & Information Systems Engineering 5:83–96.

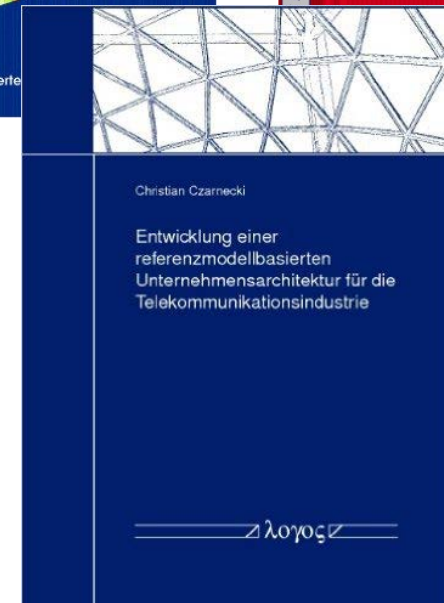
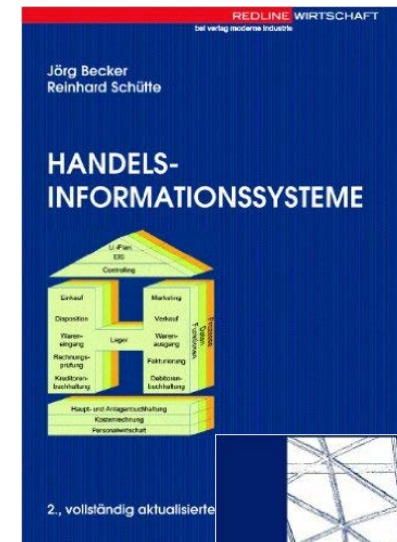
Further Literature

Information System in General

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- Laudon, K. C., Laudon, J. P., Schoder, D. (2010), Wirtschaftsinformatik – Eine Einführung, 2., aktual. Aufl., München 2010.
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- Czarnecki, C. (2013) Entwicklung einer referenzmodellbasierten Unternehmensarchitektur für die Telekommunikationsindustrie. Logos Verlag.
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- Bruce, G., Naughton, B., Trew, D., Parsons, M. und Robson, P. (2008) Streamlining the telco production line. Journal of Telecommunications Management, 1(1), S. 15 – 32.



**Thank you for your kind attention.
Any questions?**