Design of an enhanced Integrated Management System with Customer Experience Focus: The Business Process Framework (also known as eTOM) and ISO9001 together

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Abstract

The purpose of this paper is to suggest an enhanced Process model with customer experience focus and its related documentation structure applicable to many industrial contexts. Since the Business Process Framework, also known as eTOM, is originally a Process Model for Telco industry and now being used broadly in many industries, ISO9001 is a historical and generic standard with customer focus, and there is always a question about how to integrate the Business Process Framework and ISO9001, the enhanced process model will be based on the integration of the Business Process Framework and ISO9001 highlighting the customer aspects to meet the current trends within Telco and many other industries. The management system, containing the organization, the processes based on this integration, and the performance management system is called an Integrated Management System (IMS). The paper focus is on the processes and its introduction is about Telco Business context since the Business Process Framework was born within this industry. But, the suggested IMS is applicable to many service companies and many organizational units of any industry (Ex.: any Information System organizational unit, with its service Portfolios, of any industry) since the Business Process Framework and ISO9001 are too.

Keywords: eTOM, Business Process Framework, Process Architecture, Process decomposition, Process flow, Process design, Use case, Customer Experience, ISO9001, Integrated Management system, IMS, Quality

1. Introduction to Telco Business Context

Traditionally in our industry, organizations delivered end-to-end products to their customers. As such, the entire value chain was controlled by a single enterprise, if necessary via interconnection arrangements with other organizations. However in a liberalized marketplace, organizations have to respond both to the customer's increased demands for superior customer service and to stiffer competition. They have therefore been expanding their markets beyond their self-contained boundaries and broadening their business relationships.

Organizations face very different regulatory environments and their business strategies and approaches to competition are quite distinct, nevertheless they share several common characteristics:

- Heavily dependent upon effective management of information and communications networks to stay competitive
- Adopting a service management approach to the way they run their business and their resource infrastructure
- Moving to more of an end-to-end Process Management approach developed from the customer's point of view
- Automating their Customer Care, Service and Resource Management Processes
- Need to integrate new applications with existing systems
- Focusing on data services offerings

- Focusing on total service performance, including customer satisfaction
- Integrating with current technology (e.g. SDH/SONET and ATM) and new technologies (for example, IP and DWDM)
- Emphasizing more of a "buy" rather than "build" approach that integrates systems from multiple suppliers

Some organizations choose to operate their own resource infrastructure, while others choose to outsource this segment of their business. The effective exploitation of this resource infrastructure, whether directly operated or outsourced, is an integral part of the service delivery chain and directly influences the service quality and cost perceived by the end customer. Organizations need to become skilled at assessing outsourcing opportunities whether in infrastructure areas or other areas and then, be skilled at integrating and managing any outsourcing arrangements.

To meet both existing and new demands, organizations still urgently require well-automated operations processes whether they are incumbent providers or new entrants. Some organizations struggle with high growth from a start-up phase, others with the commoditization of key cash-cow services, and yet others with the move from a manual-intensive, inconsistent, inflexible environment to one that provides significant improvement in customer focus, service quality, unit cost, and time to market. Organizations have to pervasively do business electronically with trading partners, suppliers and wholesale and retail customers. For the growing mobile/wireless and IP services markets, these organizations are focused on quickly provisioning new customers and supporting service quality issues, while continually reducing development and operating costs. For all organizations, there is an intense drive to introduce both new value-added services and dramatic improvements in customer support. There is also an increasing need for organizations to manage the integration required in mergers and acquisitions activity due to the consolidation trend the industry is now experiencing.

For the full range of organizations involved in the information, communications, and entertainment industry, the leading focus of the TM Forum's mission is to enable end-to-end process automation of the business and operations processes that deliver information and communications services.

To achieve this mission, TM Forum issued a set of Frameworks, called together Frameworx, giving a 360° view of the business since they address and cover its different key aspects. Each Framework has a specific focus:

- The Business Process Framework (also known as eTOM) has a Process Focus,
- The Information Framework (also known as SID) has an Information Focus,
- The Application Framework (also known as TAM) has an Application Focus,
- The Integration Framework is focused on the integration issues and challenges,
- The Business Metrics is focused on how to measure the performance of the business based on a balanced scorecard that covers:
    - The Customer Experience
    - The Operational Efficiency, and
    - The Revenue and Margin.

The above Frameworks are interrelated. For example, The Business Process Framework defines the processes, SID defines the information used and acted on by the processes, and the Business Metrics Framework measures the performance of the processes.

2. Introduction to the Business Process Framework

The Business Process Framework is one component of the Frameworx (formerly known as NGOSS) Frameworks used to support the previously mentioned TM Forum mission with a process focus.

The purpose of the framework is to continue to set a vision for the industry to compete successfully through the implementation of business process driven approaches to managing the enterprise. This includes ensuring integration among all vital enterprise support systems concerned with service delivery and support. The focus of the framework is on the business processes used by organizations, the linkages between these processes, the identification of interfaces, and the use of Customer, Service, Resource, Supplier/Partner and other information by multiple processes. Exploitation of information from every corner of the business will be essential to success in the future. In an ebusiness environment, automation to gain productivity enhancement, increased revenue and better customer relationships is vital. Perhaps at no other time has process automation been so critical to success in the marketplace. The over-arching objective of the framework is to continue to build on TM Forum's success in establishing:

- An 'industry standard' business process framework.
- Common definitions to describe process elements of an organization.
- Agreement on the basic information required to perform each process element within a business activity, and use of this for business requirements and information model development that can guide industry agreement on interfaces, shared data model elements, and supporting system infrastructure and products.
- A process framework for identifying which processes and interfaces are in most need of integration and automation, and most dependent on industry agreement.

The Business Process Framework and the associated business process modeling, describes for an enterprise the

process elements and their relationship that are involved in information and communications services and technologies management. Additionally, the points of interconnection that make up the end-to-end, customer operations process flows for Fulfillment, Assurance, Billing & Revenue Management within Operations, and for Strategy, Infrastructure & Product are addressed by the framework.
Organizations need this common framework of processes to enable them to do business efficiently and effectively with other entities and to enable the development and use of third-party software without the need for major customization. In an ebusiness environment, this common understanding of process is critical to managing the more complex business relationships of today's information and communications services marketplace. ebusiness integration among enterprises seems to be most successful through strong process integration. Recent industry fallout, particularly in relation to dotcoms, does not reduce the pressure for ebusiness automation – it strengthens the need to capitalize on ebusiness opportunities to be successful.
However, the framework is not just an ecommerce or ebusiness process framework, it supports traditional business processes with the integration of ebusiness.

3. Structure of the Business Process Framework

The Business Process Framework is a reference framework or model for categorizing all the business activities that an organization will use. It is not an organization business model. In other words, it does not constrain the strategic issues or questions, such as who an organization's target, customers should be, what market segments should the organization serve, what are an organization's vision, mission, and so forth. A business process framework is one part of the strategic business model and plan for an organization.
The framework is better regarded as a business process framework, rather than a business process model, since its aim is to categorize the process elements and business activities so that these can then be combined in many different ways, to implement end-to-end business processes (for example, fulfillment, assurance, billing & revenue management) which deliver value for the customer and the organization.
Organizations doing business in today's distributed value chain also need an industry standard framework for procuring software and equipment, as well as to interface with other organizations in an increasingly complex network of business relationships. Many organizations have contributed their own process models because they recognize the need to have a broader industry framework that doesn't just address operations or traditional business processes.
The TM Forum initially identified business processes as a consensus tool for discussion and agreement among organizations involved in the information, communications, and entertainment industry. This encouraged convergence and general support for a broad common base in this area, which has been built on and extended with the framework, to enable:

- Focused work to be carried out in TM Forum teams to define detailed business requirements, information agreements, business application contracts and shared data model specifications (exchanges between applications or systems) and to review these outputs for consistency
- Relating business needs to available or required standards
- A common process view for equipment suppliers, applications builders and integrators to build management systems by combining third party and in-house developments

The anticipated result is that the products purchased by organizations and network operators for business and operational management of their networks, information technologies and services will integrate better into their environment, enabling the cost benefits of end-to-end automation. Furthermore, a common industry view on processes and information facilitates operator-to-operator, operator-to-customer, and operator-to-supplier/partner process interconnection, which is essential for rapid service provisioning and problem handling in a competitive global environment. This process interconnection is the key to ebusiness supply chain management in particular.
The framework also provides the definition of common terms concerning enterprise processes, sub-processes and the activities performed within each. Common terminology makes it easier for organizations to negotiate with customers, third party suppliers, and other organizations.
The framework focuses on seven key concepts, or entities, or domains, with which an enterprise's processes act on and use as it carries out its mission. The seven concepts are shown in Figure 1.1 - Key Framework Concepts.

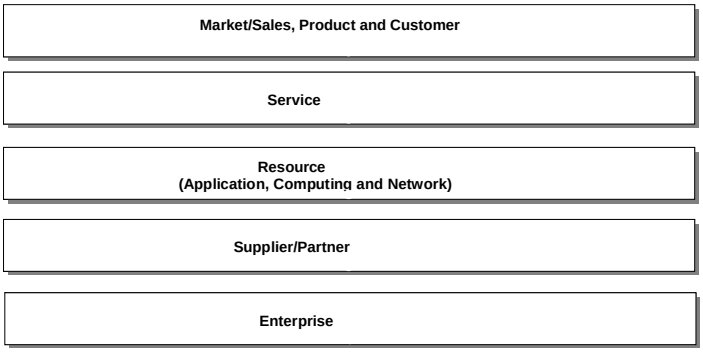

Figure 1.1 - Key Framework Concepts

Market/Sales supports the sales and marketing activities needed to gain business from customers and potential customers. On the Sales side, this includes sales contacts/leads/prospects through to the sales-force and

sales statistics. Market includes market strategy and plans, market segments, competitors and their products, through to campaign formulation.

Product is concerned with the lifecycle of products and information related to products' lifecycle. It includes the strategic portfolio plans, products offered, product performance, product usage, as well as the product instances delivered to a customer

Customer is individuals or organizations that obtain products from an enterprise, such as an organization. It represents of all types of contact with the customer, the management of the relationship, and the administration of customer data. Customer also includes data and related to the customer bills for products, collection of payment, overdue accounts, and the billing inquiries and adjustments made as a result of inquiries.

Service consists of information used to manage the definition, development, and operational aspects of services provided by enterprise. Service support various The Business Process Framework processes that deal with the definition, development and management of services used to realize products offered by an enterprise. This includes agreement on service levels to be offered, deployment and configuration of services, management of problems in service installation, deployment, usage, or performance, and quality analysis. Service also supports planning for future services, service enhancement or retirement, and capacity.

Resource consists of information used to manage the definition, development, and operational aspects of networks, as well as information and application resources that enable Products to be realized. It supports the The Business Process Framework processes that deal with the definition, development and management of the infrastructure of an enterprise. Resources also provide usage information which is subsequently aggregated to the customer level for billing & revenue management purposes. It also enables strategy and planning processes to be defined.

Supplier/Partner encompasses, planning of strategies for Supplier/Partners, handling of all types of contact with the Supplier/Partner, the management of the relationship, and the administration of Supplier/Partner data. It also supports bills, disputes and inquiries associated with a Supplier/Partner.

Enterprise represents information necessary to support the overall business, corporation or firm, which is using the Business Process Framework for modeling its business processes.

Developing a process framework starts with identifying key process areas that deal with these entities shown in Figure 1.2 - Level 0 Process Areas. These three areas represent the foundation of the business process framework and are referred to as Level 0 processes. Some guidance was provided by an earlier version of the process framework that focused only on operational processes, such as fulfillment and assurance. This process area is called Operations.

Considering that there must be a set of processes that enable operational processes, a second key process area can be defined. This process area deals with strategy, infrastructure, and lifecycle processes upon which operational processes depend. Included in this process are processes that define market strategies, resource strategies, and the offerings that are made available to the market. It is referred to as the Strategy, Infrastructure, and Product process area.

The third major process area, concerned with management of the enterprise itself, includes processes that support the other two areas. The idea for this process area comes from other enterprise-wide process frameworks, such as Michael Porter's value chain that includes a number of supporting processes, such as Human Resources. This process area is called Enterprise Management.

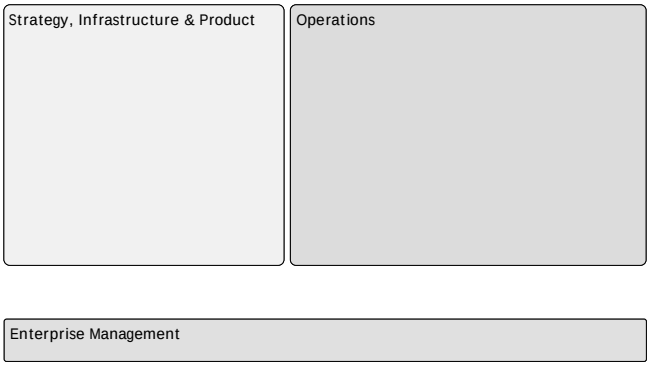

Figure 1.2 - Level 0 Process Areas

One final aspect of the overall process framework shows the internal and external entities that interact with the enterprise. These are shown as (as ovals) in Figure 1.3 – The Level 0 Conceptual Process Framework. This figure, which is sometimes referred to as the The Business Process Framework level 0 diagram, also shows the key business entities overlaid upon the level 0 processes that act upon them.

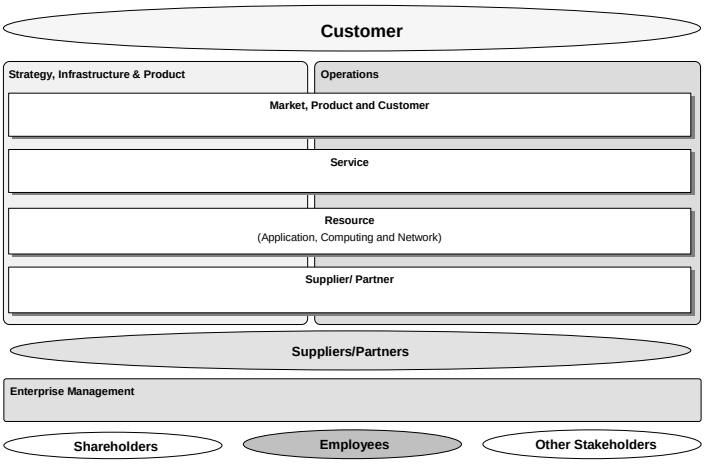

Figure 1.3 - The Level 0 Conceptual Process Framework

4. Decomposing the Framework Processes

The Business Process Framework represents a process hierarchy. Each level of the hierarchy represents the decomposition of the higher level. Arriving at the next level of the Business Process Framework was based on traditional groupings of processes and on processes that specialized on achieving broad enterprise goals.
The Level 1 vertical processes groupings were deduced by considering traditional Fulfillment, Assurance, Billing & Revenue Management processes that make up operational processes. The name of the Strategy, Infrastructure (SIP), and Product process area helped arrive at the vertical process groupings for this process area. Considering specialized processes, such as Enterprise Risk Management, that support the enterprise helped identify the Level 1 processes in the Enterprise Management process area.
The separation between the SIP and Operations Level 0 process areas helped to identify the horizontal Level 1 process groupings.

Figure 1.4 -The Business Process Framework - Level 1 Processes shows how the three level 0 process areas are decomposed into their constituent Level 1 process groupings. This view provides the Level 1 decomposition of the Level 0 processes that offers an overall view of the framework.

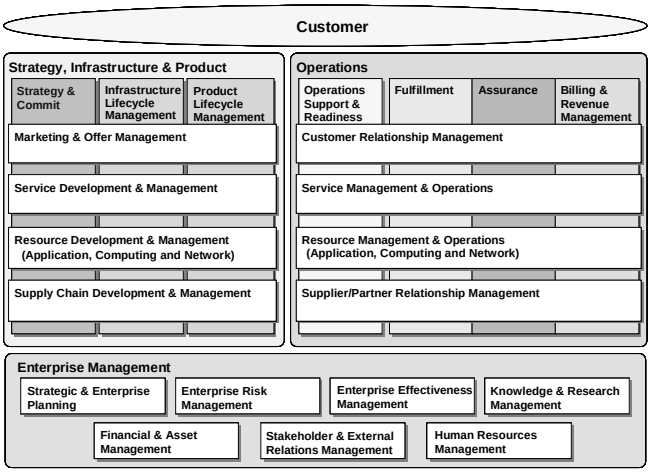

Figure 1.4 -The Business Process Framework - Level 1 Processes

In the figure there are seven end-end vertical process groupings, which support customers and manage the business. Among these end-to-end vertical process groupings, the focal point of the framework is on core customer operations processes of Fulfillment, Assurance and Billing & Revenue Management (FAB&RM). Operations Support & Readiness (OSR) is differentiated from FAB real-time processes to highlight the focus on support and automation in FAB, such as on-line and immediate support of customers, as well as ensuring that the operational environment is in place to enable the execution of the FAB processes.
The horizontal functional process groupings in Figure 1.4 distinguish functional operations processes and other types of business functional processes, for example, Marketing versus Selling, Service Development versus Service Configuration, and so forth. Among these Horizontal Functional Process Groupings, those on the left (that cross the Strategy & Commit, Infrastructure Lifecycle Management and Product Lifecycle Management vertical process groupings) enable, support and direct the work in the Operations process area.

5. Decomposing the Framework Processes Further

Figure 1.5 shows an example of framework Level 2 processes Strategy, Infrastructure and Product processes. In practice it is this level at which users tend to work, as this degree of detail is needed in analyzing their businesses. Level 2 processes represent core business processes. Core processes combine together to deliver service streams and other end-to-end processes. The other two process areas of the framework are similarly decomposed and are shown in the next two figures. In practice it is the level 2 decomposition of the Level 1 processes at which users tend to work, as this degree of detail is needed in analyzing their businesses.

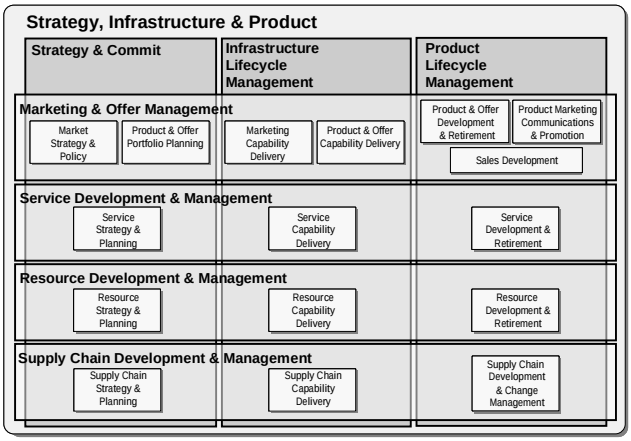

Figure 1.5 - The Business Process Framework Level 2 Strategy Infrastructure, and Product Processes

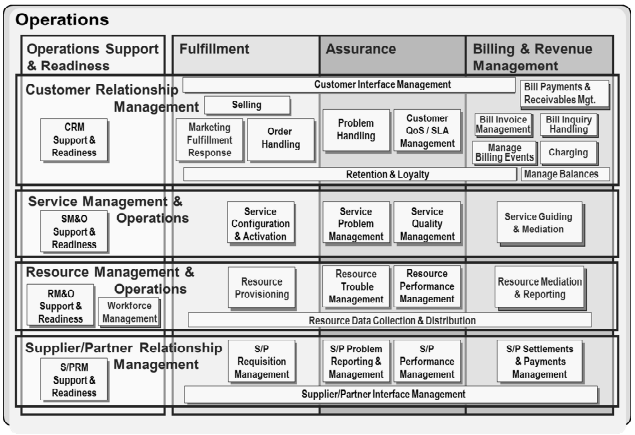

Figure 1.6 - The Business Process Framework Level 2 Operations Processes

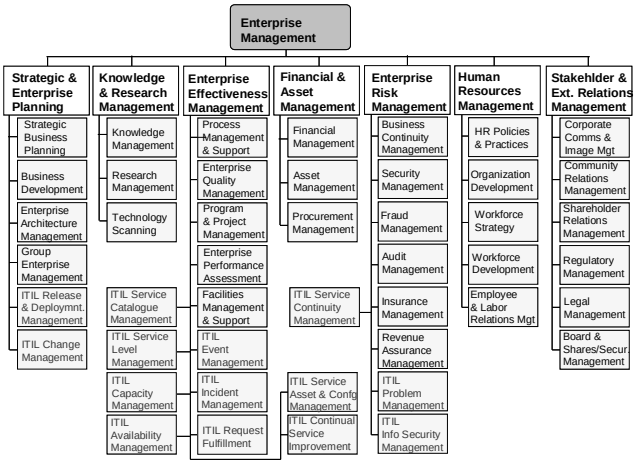

Figure 1.7 - The Business Process Framework Level 2 Enterprise Management Processes

Each L2 process focuses on managing the life of a small number of business entities to achieve its goal(s). This demonstrates a direct relationship between the Business Process Framework and the Information Framework (aka SID). For example, Service Configuration & Activation focuses on the life of Service and Service Order business entities. Each of these entities is present in the Information Framework. Similarly Customer Problem Handling focuses on the life of a Customer Problem.

This relationship is used to assist in arriving at the next level of the Business Process Framework's decomposition, which is referred to as Level 3. The Level 3 processes into which a L2 process decomposes represent individual tasks that manage the life cycle of the business entities. An example of the L3 processes into which Problem Handling decomposes is shown in Figure 1.8 – The Business Process Framework Level 3 Process Decomposition.

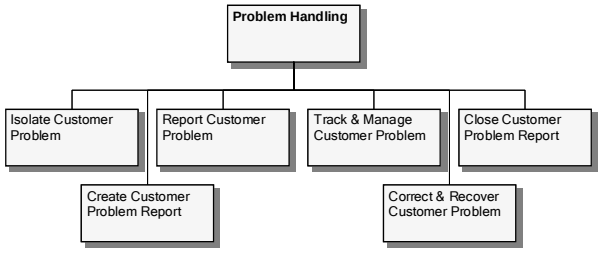

Figure 1.8 - The Business Process Framework Level 3 Process Decomposition

Further decomposition into lower levels, level4 and below, is an ongoing work and depends on process complexity and member's interests and expectations.

An example of this work is depicted in the decomposition diagram for Isolate Customer Problem is shown in Figure 1.9 – The Business Process Framework Level 4 Process Decomposition. Some of the processes names represent interpretations that were made based on the analysis of the Isolate Customer Problem detailed description. All of the L4 processes deal with the "isolate" state of the Customer Problem, which is typical for processes at this level of decomposition.

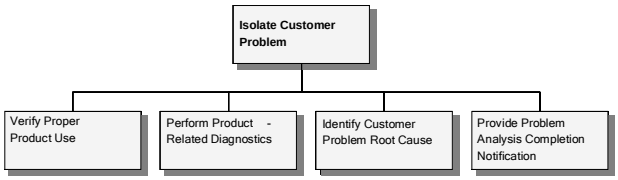

Figure 1.9 - The Business Process Framework Level 4 Process Decomposition

Process decomposition provides Insight into the structure and content of process areas (groupings) and represents a finer level of detail at lower process levels. And, while decomposition represents a comprehensive view of process capability and functionality, it only provides a static perspective of process.

6. Process Flows

A process model should also provide insight into the behavior and interaction between processes. This is the purpose of process flow diagramming, which represents a dynamic perspective of processes and typically provide a partial view of process behavior. Process decomposition used together with process flow diagrams can be used to enhance/refine the overall process model.

Figure 1.10 shows an example of a process flow diagram. In addition to the interaction between processes, process flow diagrams depict events which trigger the execution of processes shown by the arrows directed towards a process. Arrows directed out of a process show points of termination for the flow. Arrows between processes represent flows of control as well as the information exchanged between interacting processes.

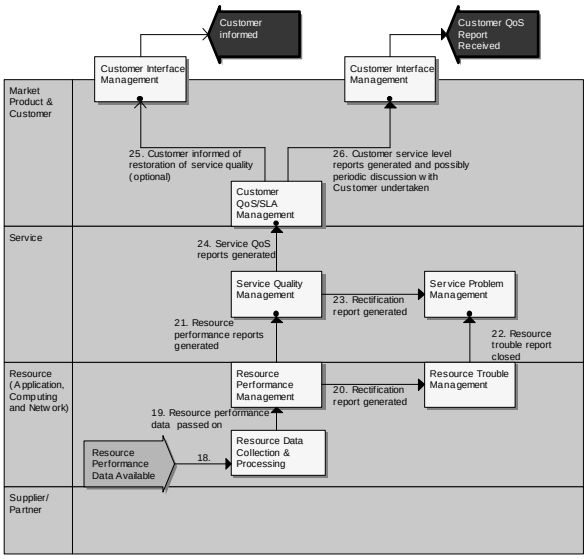

Figure 1.10 - The Business Process Framework Process Flow

7. Customizing/Extending the Business Process Framework

This chapter thus far has described the basic Business Process Framework structure and its relationships to other Frameworks. Described next is a summary of how to add business specific extensions to the framework.

The framework can be used as a baseline for a process model. Each organization must decide on how close to the baseline it wants to be. Keeping to the baseline is the focus of this section. Guidelines provided in GB921U – User Guidelines for Business Process Framework should also be followed when making extensions.

An organization's should consider how close its implementation of the process framework will be kept to the baseline represented by the framework. For example:

- L0 processes – shouldn't change, but one or two could be omitted
- L1 processes – shouldn't change, but some could be omitted or added
- L2 processes – shouldn't change, but
  - Some L3s may be elevated to L2 "status"
  - Some may be added
- L3 processes – shouldn't change, but
  - Some L3s split at "&", "/", ","
  - Some may be added
- L4/lowest level processes – under development, but
  - This is where extensions should appear if the baseline is retained to L3
  - This is where process specialization should appear regardless of maintaining the framework as a baseline. Specializations may include organizational, geographical, and technology specific extensions.

8. Design of an enhanced Integrated Management System with Customer Experience focus: Business context and architectural foundation

8.1 Key drivers

Any industry is now more and more concerned by the customer experience and making, as much as possible, each customer interaction an excellent experience. This experience is essential to the business in its current and future state. Consequently, it becomes a must to design a Process Model with customer experience focus. Since:

- ISO9001 is a mature and historical standard with a customer focus,
- There is always a question how to integrate it with The Business Process Framework, and
- The Telco and many other industries need this integration.

It is worthy to identify the ISO9001 customer's aspects and other useful requirements and integrate them into The Business Process Framework. The management system, containing the organization, the processes based on this integration, and the performance management system is called an Integrated Management System (IMS) and the paper focus is on the processes.

This IMS has the benefit to improve by, at least, reducing the number of running processes:

- The Customer Experience,
- The Operational Efficiency, and
- Revenue & Margin.

In the coming section, the design of this IMS will be detailed.

8.2 The IMS design foundation: key steps

The key steps to build the IMS architectural foundation, as inspired from ISO9001 with a variation, are:

- Develop the IMS Manual:
  - The output of this step is the IMS manual which specifies the key components of the integrated management system.
- Develop the Use Cases:
  - The outputs of this step are the Use cases (Procedures)
- Develop the Operational Workflows:
  - The outputs of this step are the operating workflows. Operating Workflows links the use case to the applications.
- Structure the Documents and Quality Records:
  - The output of this step is a structure to host the documents and the quality records resulting from the procedures / operational workflows executions.

For these key steps, the following items will be elaborated:

- The main components of the outputs

- Reference documents (TM Forum, ISO9001 …) that can be used to elaborate the content of each output where applicable
- Some examples will be provided to illustrate some IMS components. For these examples, the virtual name "OpTel" will be used referring to a service company.

The figures for The IMS decomposition will show only the impacted processes. The non impacted ones could be found in the figures of the previous sections.

8.3 The IMS documentation structure

The IMS documentation structure, as shown in the Figure below, is composed of:

- The Quality Policy
  - It is suggested to be part of the IMS manual in the current paper but highlighted in the Pyramid for its high importance.
- The IMS manual
- The Process decomposition
  - It is part of the IMS manual but highlighted in the Pyramid for its high importance. The process elements making the decomposition will be defined by the standard items, as stipulated by TM Forum, : ID, name, context, brief description, and extended description.
- High level Process interactions
  - It is part of the IMS manual but highlighted in the Pyramid for its high importance. This will be detailed in the coming sections.
- The Use Cases (called also procedure). The term use case and procedure will be used interchangeably. This will be detailed in the coming sections.
- Process Flows. This will be explained later.
- The Operational Workflows

Figure 1.11 – IMS Documentation Structure

9. The IMS Manual Design: Key components and example

The key components that might be in the IMS manual are:

- The company presentation (mission & goals, services, Flow charts with the organizational hierarchy, …)
- Quality policy
- Quality objectives
- Process decompositions
- High level Process Interactions
- List of use cases (procedures) including the 6 mandatory ones for ISO9001:
  - Control documents
  - Control records
  - Conduct internal audits
  - Control nonconforming products
  - Manage corrective actions
  - Manage preventive actions
- Use Case Sheet template

9.1 Quality policy

Top Management, as stipulated by the ISO9001 standard[1], should ensure that the quality policy:

- Is aligned with the company's goals
- Includes the commitment to satisfy the requirements and ensure the IMS efficiency
- Provides a framework to establish and review the quality objectives
- Is communicated and understood within the company
- Is reviewed to verify its suitability

To support the quality policy definition, the TM Forum Business Metrics and Customer Experience reports could be used.

Example [2]

OpTel is committed, at all levels of the company, to total customer satisfaction. To meet this commitment, we are committed to fulfill the customer expectations and continuous support and monitoring of the customer experience drivers[3]:

- **Customer support** – availability, accessibility, breadth, speed and effectiveness of support;
- **Service quality** – the perceived quality of services, including availability, usability, sustainability, capacity, performance, stability and security;
- **Billing, charging and cost management** – the range and flexibility of billing/charging options available, and the ability of the customer to control costs based on transparency of billing information;

[1] Scott Dawson, Core Business Solutions
[2] ISO 9001: 2000 Quality Management System Design, by Jay J. Schlickman
[3] Customer Experience Management: Driving Loyalty & Profitability, TM Forum 2009

- **Product and service portfolio** – the range of products and services a CSP offers its customers, including devices, connectivity services, content, applications, etc.
- **Marketing and sales** – pricing, merchandising, offer management, campaign management and initial ordering;
- **Brand** – includes reputation for product excellence, image, responsiveness and trustworthiness.

OpTel IMS is based on the integration of the Business Process Framework and ISO9001, and we are fully committed to continually improve the effectiveness of our system by means of constant top management review and oversight. This level of attention is complemented by formal management reviews, internal audits, extensive training, and an aggressive corrective and preventive action program that includes cross-functional teams for root-cause analysis and problem resolution.
To ensure the integrity of our system, quantitative quality objectives based on operational metrics are established, monitored, measured, and reviewed by managers who are held accountable for their results. The quality objectives are defined based on three performance domains: Customer Experience, Operational efficiency and Revenue and Margin. In addition, all of our employees are thoroughly trained in quality management methods and are supplied with the resources required to ensure that such methods are effective.
At OpTel, business objectives and quality objectives are synonymous.

9.2 Quality objectives

The quality objectives, as stipulated by ISO9001, should be established, measurable with targets and aligned with the quality policy. To support the quality objectives definition, the TM Forum Business Metrics and benchmarking results could be used.
Example
The quality objectives are (Extract):

- Improve the % First Call Resolution
  - Metric ID CM-CE-2c
  - This metric measures Number of contacts that are closed on first contact / Total number of customer contacts (Customer calls to contact center)
  - Target : Achieve 90% of % First Call Resolution

9.3 Process decompositions (or maps)

This part of the IMS manual should show the process decompositions (or maps). Since The Business Process Framework offers a Telco process model, it will be used as the quality/process backbone where ISO9001 inputs will be integrated and embedded in. An enhanced The Business Process Framework process decomposition will be suggested below. This enhanced decomposition will be named "IMS process decomposition".

9.3.1 IMS Process decomposition: Enterprise Management (EM) process area

The suggested IMS process decomposition in the EM process area is shown in the figure below which only presents the process extensions.

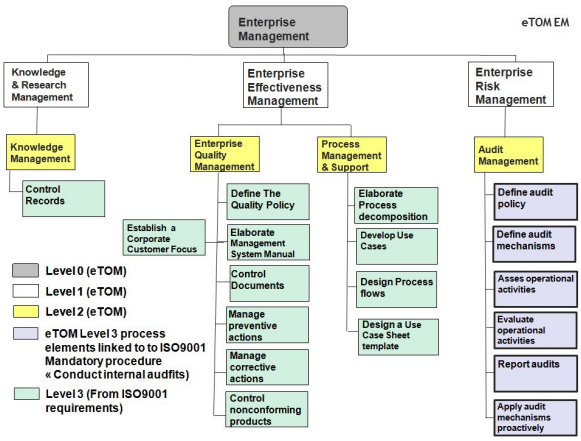

Figure 1.12 – IMS process decomposition in the Enterprise Management process area

Eleven new processes are suggested:

- "Control Documents" as a level3 process element under "Enterprise Quality Management":
  - *Related concept (s)*:
    - Document: it is the information support (Ex.: IMS Manual, Form, Procedure) and the information contained in the support.
    - The information: is what the work activities manipulate for their executions.
  - *Special note (s)*: This is a mandatory ISO9001 procedure
  - *Description*: the main purpose, as stipulated by ISO9001, of this process is to control all the documents required by the IMS.
  - *References* : ISO9001 chapter 4.2.3
- "Control Records" as a level3 process element under "Knowledge Management":

- *Related concept (s)*:
  - Record: it is a document stating the achieved results or providing evidence of the work activities execution
- *Special note (s)*: This is a mandatory ISO9001 procedure
- *Description*: the main purpose, as stipulated by ISO9001, of this process is to define the required controls related to the identification, storage, protection, accessibility, keeping and eliminating the records.
- *References* : The Business Process Framework detailed description of Knowledge Management, ISO9001 chapter 4.2.4

- "Define the Quality Policy" as a level3 process element under "Enterprise Quality Management":
  - *For details:* refer to the sub-section 9.1 of the current paper

- "Elaborate Management System Manual" as a level3 process element under "Enterprise Quality Management":
  - *For details:* refer to the section 9 of the current paper

- "Manage preventive actions" as a level3 process element under "Enterprise Quality Management":
  - *Related concept (s)*:
    - Preventive action[1]: it is a pro-active action i.e. dealing with the problem before it happens.
  - *Description*[4] : the main duties of this process are : review potential problems, decide the potential cause of the problem, decide an appropriate course of action to stop the problem occurring, put the plan into action and ensure that the preventive action has solved the potential problem
  - *References* : ISO9001 chapter 8.5.3, http://www.iso-9001-checklist.co.uk

- "Manage corrective actions" as a level3 process element under "Enterprise Quality Management":
  - *Related concept (s)*:
    - Non-conformance: is a requirement not met.
    - Corrective action[4]: it is a re-active action i.e. dealing with the problem after the event.
  - *Description*[4] : the main duties of this process are: review non-conformance (Ex.: customer complaints), decide the cause of the problem, decide an appropriate course of action to stop the problem recurring, put the plan into action and ensure that the action has solved the problem.
  - *References* : ISO9001 chapter 8.5.2, http://www.iso-9001-checklist.co.uk
- "Control nonconforming products" as a level3 process element under "Enterprise Quality Management":
  - *Related concept (s)*:
    - Nonconforming Product: When one or more characteristics of a product fail to meet the specified requirements, it is referred to as a nonconforming product. When a product deviates from specified product requirements, it fails to conform.
  - *Special note (s):* This is a mandatory ISO9001 procedure
  - *Description:* the main purpose, as stipulated by ISO9001, is to define the required controls, responsibilities and authorities related to nonconforming products treatment
  - *References* : ISO9001 chapter 8.3
- "Establish a Corporate Customer Focus" as a level3 process element under "Enterprise Quality Management":
  - *Description:* the main purpose is to establish the corporate customer focus throughout the business with its different subject matter expertise domains especially those with a direct and high impact on the customer. This focus should ensure that the customer requirements are determined and respected to increase customer satisfaction.
  - *References:* ISO9001 chapter 5.2
- "Elaborate process decomposition" as a level3 process element under "Process Management & Support":

[1] http://www.iso-9001-checklist.co.uk

- *Related concept (s)*:
  - Generic Process Decomposition: it is a decomposition without any specialization. The specialization might be based on many criteria (Ex. : Technology, Geography) Product line, Customer Segment)
  - Specific Process Decomposition: it is a decomposition specializing the generic one. Several specific decompositions might be associated with a generic one. Specialization occurs at Level4 and below. In the example (Figure 1.14), the specialization occurs at Level5.
- *Description:* the main purpose is to elaborate generic process decompositions and specific ones where applicable. For each process element part of the decomposition, as stipulated by The Business Process Framework, the following items should be specified: ID, Name, Context, brief description, and detailed description.
- *References:* TM Forum The Business Process Framework documents (GB921 U, GB921 D, GB921 DX)
- *Example:*

Part of OpTel Business requirements is to manage troubles associated with specific resources. For this purpose, The Business Process Framework suggests the process "Resource Trouble Management" with the following structure:

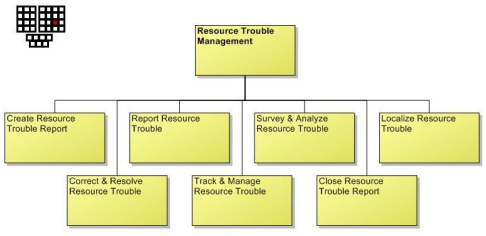

Figure 1.13 – Process Architecture example, source: TM Forum

Further decomposition, with specialization, of the above process is detailed on the figure below:

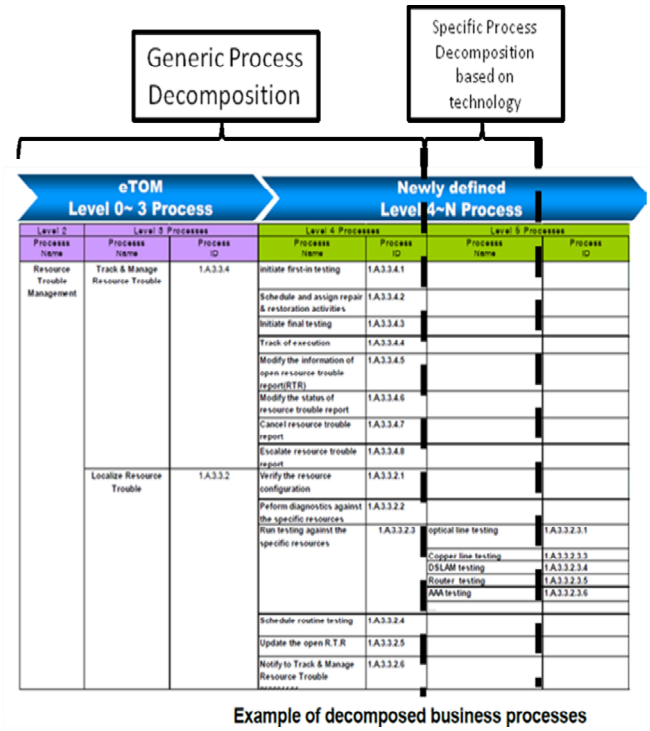

Figure 1.14 – Example of generic versus specific process decomposition, source: TM Forum

- "Develop Use Cases" as a level3 process element under "Process Management & Support":
  - *Description*: the main purpose is to develop the use cases associated with the process elements making the process decomposition. A use case could be developed at level2 (High level Use Case) or at Level3 or below (Detailed Use Case or Task level Use Case). A use case could be generic or specific. The specific one is associated with specialization criteria (Ex.: Technology, Geography, Product line, Customer segment). The use case will inherit the process element items (ID, Name, Context, brief description, and detailed description) and add other ones such as actors, preconditions and post conditions. The Use Case sheet template developed by the process "Design a Use Case sheet template" should be used.
  - *References*: TM Forum documents (GB921 D, GB921 DX, GB942 Map, Quick Start Packs, GB921 Y, GB921 Z, Business Metrics, SID documents)
  - *Example*:

The table below shows an example of a Use Case textual format (in part):

Level 1	Assurance	Level 2	Resource Trouble Management	Level 3	
Title	Track & Mange Resource Trouble				
Summary of responsibility	Ensure testing, repair and restoration activities are assigned, coordinated and tracked efficiently, and that escalation is invoked as required for any open resource trouble reports in jeopardy.				
Pre condition	1	Related resource trouble report (RTR) should be exist			
Basic flow	1	Request resource testing for the open [RTR information]			
	1.1	Query [Resource Information] to the [1.O.3.1.5 manage resource inventory], using the 'Resource ID' attribute of the open [RTR information] as key.			
	1.2	Decide testing type and make [test request information]			
	1.3	Request resource trouble diagnose to [1.A.3.3.4.1 initiationg first-in testing] by passing the selected [test request information]			
	2	Update or add [testing result information] to open [RTR information]			
		… [elapse]			
Exceptional flow	E1.1	If not exist the requested [resource information], cause error.			
		…			
Post-condition					
Additional Item					
Business entity	RTR Info.	RTR ID, action Type, interaction date, interaction complete date, trouble cause, interaction status, processing priority, resource ID, parent interaction ID, RTR creation type, …			
	Test request Info.	Resource ID, resource name, resource type, testing type, …			
	Testing	Test ID, related RTR ID, testing result, testing type, testing date, …			

Source: TM Forum Documentation

A diagram format of use case could be also elaborated.

- "Design Process Flows" as a level3 process element under "Process Management & Support":
  - *Related concepts:*
    - High level process interactions: These interactions will show the high level sequence in which the process elements, using their standard items as defined in the process decomposition, are executed with the high level information flow.
    - Process flow: This is a more detailed process interaction using the use cases. A process flow becomes then an orchestration of use cases. A process flow is called generic if it uses generic uses cases, is called specific if it uses specific uses cases, is called high level if it uses high level uses cases, and is called detailed if it uses detailed use cases.
  - *Special note (s):* The IMS manual is more concerned by the high level process interactions.
  - *Description*: the main purpose is to elaborate high level Process interactions, and process flows.
  - *References*: TM Forum documents (GB921 U, GB921 E, GB921 F, GB921 K, GB921 J, Quick Start Packs, Excel Spreadsheet of Business Performance Measurement System)
  - *Example(s) of a generic process flow:*

The Figure 1.15 shows the generic end to end process flows related to the customer. It contains seven process flows from and to the customer: Request-to-Answer, Order-to-Payment, Usage-to-Payment, Request-to-Change, Termination-to-Confirmation, Problem-to-Solution, and Complaint-to-Solution.

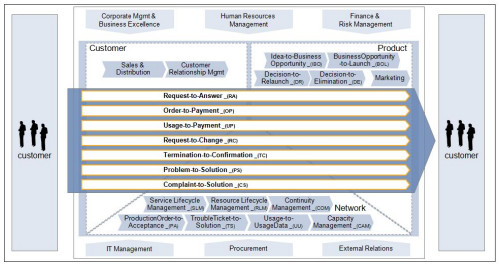

Figure 1.15 – Customer end-to-end Process Flows, source: TM Forum

The Figure 1.16 shows the process elements associated with Order-To-Payment.

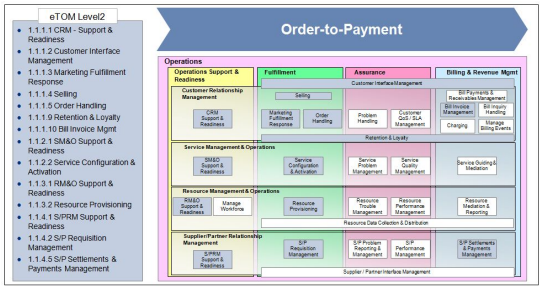

Figure 1.16 – Proces elements associated with Order-To-Payment_OP, source: TM Forum

The Figure 1.17 shows part of the high level process interactions related to Order-To-Payment (Level2 (s)).

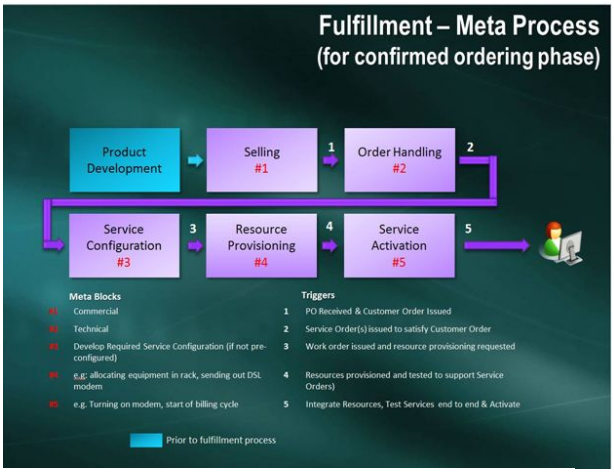

Figure 1.17 – Part of the high level Process interactions related to Order-To-Payment, source: TM Forum

9.3.2 IMS Process decomposition: Strategy, Infrastructure and Product (SIP) process area

In this section, enhanced process decomposition in the Strategy, Infrastructure and Product process area will be suggested. The enhancements consider ISO9001 and market experience inputs. The enhanced decomposition Level2, shown in Figure 1.18 is inspired from the book "The eTOM, A Business Process Framework implementer's Guide". Since the focus in on the customer, the Customer Development and Management (Level1) will be enhanced. This Level1 contains four suggested Level2 processes: Customer Strategy and Policy, Customer Capability Delivery, Customer Development & Retirement, and Customer Channels management with the Following details:

- The main goal for the process "Customer Development & Retirement" is to develop and deliver new or enhanced customer specifications related to the different customers' interaction modes, customers' lifestyles and their individual behaviors, and manage the exit/termination for a customer relationship when applicable and required.
- The main goal for the process "Customer Channels management" is to identify the customer locations that might impact the service provider business. Since the customers are becoming mobile and social, one of the channels is the social media. This process will provide inputs to all other relevant processes to take benefit of these channels (Ex.: Sales processes to use the social media for sales).
- The main goal for the process "Customer Capability Delivery" is to plan and deliver the total capabilities required to deliver the customers' requirements.

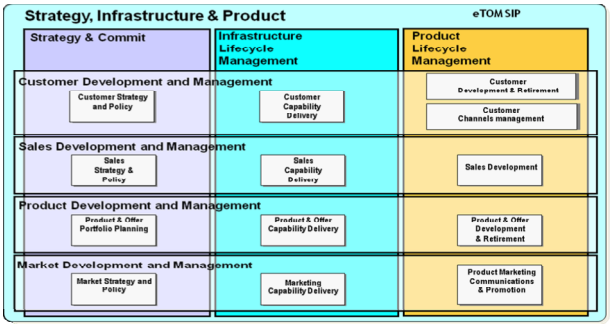

Figure 1.18 – IMS process decomposition in the Strategy, Infrastructure and Product process area (Level2), Source: TM Forum

The Figure 1.19 presents the suggested process decomposition in the SIP area (Level3). It does only show the process extensions in SIP.

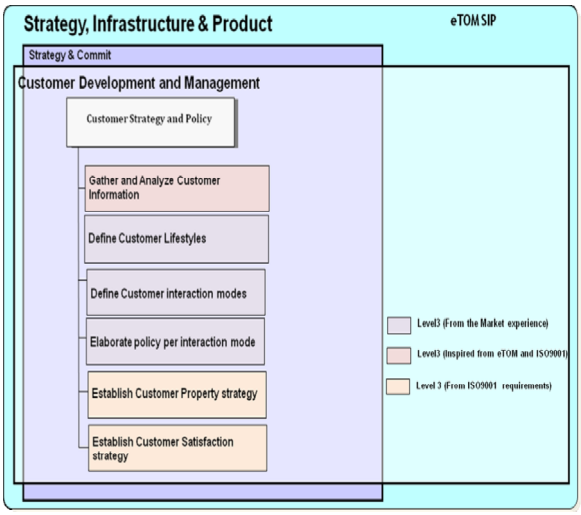

Figure 1.19 – IMS process decomposition in the Strategy, Infrastructure and Product process area (Level3), Source: TM Forum modified

Six new processes (level3) are suggested:

- "Gather and Analyze Customer Information" as a level3 process element under "Customer Strategy and Policy":
  - *Description:* the main purpose is to research customer information, analyze it, and predict the customer future behaviors.
  - *References:* ISO9001 chapters (8.2.1)
- "Define Customer Lifestyles" as a level3 process element under "Customer Strategy and Policy":

- *Related concepts*
  - Lifestyle [1]: is a way of life or style of living that reflects the attitudes and values of a person or group.
- *Special note (s):* The background for this process comes from the major trends in the worldwide market regarding customer strategy. The trend consists of a strategic shift from "Mass Production" (Make to Store, Build it and they will come to buy it) to "Mass Customization" (Make To Order, Make it as required by the customers). This trend means service personalization and great impact on some key KPIs (Ex.: Churn, ARPU). This personalization requires a deep knowledge about the customer lifestyles. To a given customer, many lifestyles could be associated.
- *Description:* the main purpose is to identify the different customer's lifestyles.
- *Example (s) related to the special notes:*

DOCOM is the number one Service Provider in Japan with more than 50 million subscribers. DOCOMO defined different roles for mobile phones. In addition to the role of communication tool, information tool and lifestyle tool to support customers' different lifestyles, mobile phones will also assume the role of assisting customers' individual behavior to play the role of Personal Assistant.

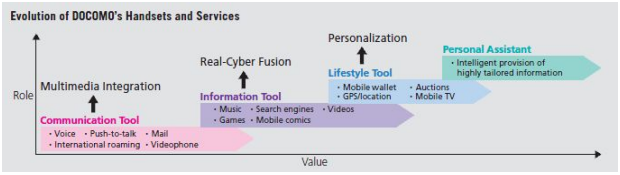

Figure 1.20 – From Lifestyle Tool to Personal Assistant, source: DOCOM, Japan

- "Define Customer interaction modes" as a level3 process element under "Customer Strategy and Policy":
  - *Related concepts:*
    - Interaction mode: is an interaction between the customer and any channel/location impacting the service provider business to meet a specific customer or potential customer need. This is also called "Customer Journey".
  - *Description:* the main purpose is to identify all the customer interaction modes. To build an initial list of these modes, the focus should be on where the social distance **[customer or potential customer – channel/location]** is the smallest possible. Smallest means where the interaction is high and strong. In our days, the smallest social distance is more and more seen in the social media (Ex.: Facebook, Twitter).
  - *References:* TM Forum Business Metrics, The Social Media Management Handbook (Accenture : Nick Smith, Robert Wollan, Catherine Zhou)
  - *Example:*

Below are some examples of interaction modes:

- Hear my voice
- Get information
- Keep me informed
- Buy a Product
- Ask for Support
- Pay a Product
- Think to Leave
- Decide to Leave

- "Elaborate policy per interaction mode" as a level3 process element under "Customer Strategy and Policy":
  - *Related concepts:*
    - Policy per interaction mode: A policy is the set of guidelines to meet the customers' expectations per interaction mode.
  - *Description:* the main purpose is to elaborate a policy per interaction mode.
  - *Example:*

Below is an example of an interaction mode and its suggested policy:

Interaction mode	Policy
Getting support	• Each customer should know all the support channels • Each customer should be able to use the support channels • Each customer complaint should be received with good manners • ….

[1] http://www.thefreedictionary.com

- "Establish Customer Property strategy" as a level3 process element under "Customer Strategy and Policy":
    - *Description:* the main purpose, as stipulated by ISO9001, is to identify, verify, protect, and save the property that the customer provided for use or to be incorporated in a product. The property may include the intellectual property (Ex.: Customer drawings...) or personal data.
    - *References:* ISO Chapter (7.5.4)
- "Establish Customer Satisfaction strategy" as a level3 process element under "Customer Strategy and Policy":
    - *Description:* the main purpose, as inspired by ISO9001, is to define how to measure customer satisfaction.

9.3.3 IMS Process decomposition: Operations process area

The IMS decomposition (Level2), shown in Figure 1.21, is inspired from the book "eTOM, A Business Process Framework implementer's Guide".

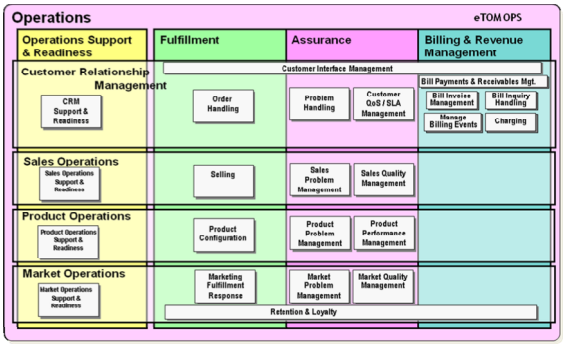

Figure 1.21 – IMS process decomposition in the Operations Process area, Source: TM Forum

Figure 1.22, comes from The Business Process Framework. The suggested enhancements are:

- Extend the description of the process elements (Level3) making the CRM Support & Readiness to support compliance to the policies defined by the process "Elaborate policy per interaction mode".
- Extend the process "Support Customer QOS/SLA management" to include in addition "Build Customer 360° view" as part of its responsibilities. This can be achieved by combining tangible data (data internal to the service provider) with the intangible data (data external to the service provider like the one coming from social media)[1].

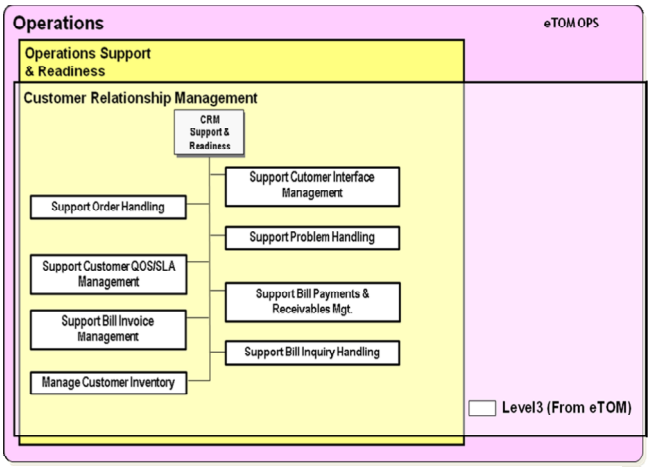

Figure 1.22 – IMS process decomposition in the operations process area (Level3), Source: TM Forum

9.4 Processes interactions

This part of the IMS manual should show the process high level interactions (Level2). The process related to this section is named "Design Process Flows" which was explained in a previous section.

9.5 Use Case Sheet template

The use case sheet template could include, in non exhaustive perspective, the following items:

- Title
- Summary of responsibility

[1] Thanks to Paul Morrissey (C,Eng, F.I.E.T) for the inspiration (Africa Summit in Johannesburg, Sept 2012).

- Actors
- Preconditions
- Basic flow
- Exceptional flow
- Post-conditions
- KPI (s)
- Business entity (s)
- Business rule (s)

10. Conclusion

This paper suggests an enhanced Process Model which highlights key aspects of the customer experience using The Business Process Framework and ISO9001 integration. This enhancement is to support the Customer Experience improvement which is a worldwide trend within many industries.

This paper highlights and makes the customer processes more visible based on The Business Process Framework and ISO9001 international standards.

The paper addresses the harmonization of The Business Process Framework and ISO9001 for which there is always a question within Telco industry.

The paper presents also an approach to build the Integrated Management System with its related structure.

The suggested IMS could be applied to many service companies and many organizational Units of any industry (Ex.: any Information System organizational unit offering services of any industry) since the Business Process Framework and ISO9001 are too.

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