itSMF International
The IT Service Management Forum

IT Service Management
GLOBAL BEST PRACTICES

Collector's Edition

Standards and frameworks

Chapter 8

8.1 Introduction

The IT organization of today is in the firing line from a quickly changing market, increasing business demands, and hectic, daily IT events. To take control in this complex and fickle environment, organizations seek the support of a strong management structure.

Over the years, this need has resulted in a forest of IT management frameworks, standards, models and methods, in which it is often hard to find ones way. How do we know what model or framework is the best for our organization? In "IT Service Management, best practices 4", Derksen and Noordam[1] state that the key question that organizations should ask themselves is: which framework or model provides the best support for the targets and objectives of their organization?
The objectives you have may concern a specific part of your organization, for instance, application management, or they may have a much bigger scope, for example, the creation of an architecture that embeds service interdependencies enterprise wide. Both varieties are covered in this chapter by, respectively, the introduction of the application management framework, ASL and the introduction of the enterprise service architecture model, VSM.

When you have already chosen a particular framework, your next consideration may be: how can we make the most of this framework in our organization? You don't necessarily need to implement the framework exactly as it is prescribed, or as it is practiced by other organizations. The story of how an Australian bank adapted the ITIL® framework acts as an example.

Another thing that might obscure your choice of framework or model is the proprietary nature of many of these instruments. Therefore, the introduction of ISO/IEC 20000 is of great value to the IT service management market, being the first international independent quality standard for IT service management. This chapter includes an overview of this relatively new standard.

CONTENTS

This chapter includes four articles about IT service management frameworks, models and standards:

- **ISO/IEC 20000: The compass to guide your path in the best practice universe**
  Authors: Alejandro Enrique Debenedet (EXIN International, Argentina) and Luis Miguel Rosa Nieto (EXIN International, Spain)
- **The Viable Services Model: Service quality, service interdependence and service completeness**
  Author: Tom Graves (Tetradian Consulting, Australia/UK)
- **Bridging the gap between business and technology**

1 *Derksen, B. en P. Noordam (2007). Modellen die werken. In: IT Service Management, best practices deel 4. Zaltbommel: Van Haren Publishing for itSMF.*

Authors: Michael Davies (ProActive Services Pty Ltd, Australia) and David Chesterfield (Suncorp Metway Ltd, Australia)

- **The Application Services Library, adapted to the IT services world of the future**
  Author: Remko van der Pols (Getronics PinkRoccade, The Netherlands)

SHORT SUMMARIES

Debenedet and Rosa Nieto open this chapter with an overview of the first international IT service management standard, ISO/IEC 20000. The authors introduce this first independent standard as the "navigator that can guide us through the complex network of models and proposals for IT service management". They position ISO/IEC 20000 in the past, present and future, and discuss the topics that are related to implementation: organizational impact, roles involved, cultural change, communication and training, project and process approach and integration with other standards. The authors complete their overview by answering questions that many organizations will be interested in: what are the requirements for compliance and what certification programs are available?

Graves introduces a model for enterprise architecture and service management design in large organizations. He states that we need a model that allows us to understand services, not just as individual items, but also in the context of their interdependent relationships with other services, both IT and non-IT. Existing frameworks such as ITIL don't really cover the issue of interdependencies, particularly beyond IT. Inspired by Stafford Beer's Viable System Model (VSM), a proved business model, Graves developed the Viable Services Model (xVSM), and explains how we can apply "viable system" principles to service management, with limited adaptation. He describes applications of this "Viable Services Model" in two large Australian organizations, and provides us with a checklist and process to apply xVSM in service management.

Davies and Chesterfield describe how an Australian bank finally began to build the bridge between business and IT, once they realized how to make the best use of ITIL. The case study describes the bank's journey to IT service management, starting with the initial IT service management assessments and improvement actions. They lead us on the road to the bank's "discovery" and understanding of ITIL's ICT infrastructure management processes (ICTIM), and explain how this made a vital contribution to the bank's process management implementation. The understanding of ICTIM led to the establishment of a National Operations Centre and this proved to be the turning point on the road to a business- and value-oriented culture. The authors conclude by exploring where the bank is situated in relation to the ongoing process of service improvement and the service lifecycle approach of ITIL V3.

The Application Services Library (ASL) is a Dutch framework for application management that was designed five years ago to complement ITIL. **Van der Pols** explores the adaptation of ASL to trends and developments in the ITSM market, in particular the segmentation of services. He evaluates a strength-weakness analysis of ASL, and analyzes the impact of the segmentation of services on the central concepts of ASL - at management and operational level. The author concludes that integration of services – instead of processes - is the main challenge for ASL (as well as of other frameworks) and the answer to this challenge is the definition of good and complete interfaces. Standard implementations will no longer exist, each implementation of a framework will have to be customized to the situation at hand.

8.2 ISO/IEC 20000: The compass to guide your path in the best practice universe

ISO/IEC 20000 is the first international standard for IT service management. Worldwide adoption is increasing, and information about implementations is in progress. Alejandro Debenedet and Luis Miguel Rosa Nieto provide an overview of the standard in past, present and future and show us how to approach an ISO/IEC 20000 implementation project.

INTRODUCTION

ISO/IEC 20000 is the international standard designed to promote a management model that enables organizations providing IT-based services to obtain adequate levels of quality. ISO/IEC 20000 is establishing itself more and more firmly as the compass that allows us to guide ourselves through the complex network of models and proposals related to IT service management. The fact that the guide is an international standard means that it is a point of anchorage from which we can evaluate other models and reference the value they bring to an organization.

This state of affairs prompts us to share, with the community, the current situation of ISO/IEC 20000, a general analysis of how it is being implemented in organizations, and the motives behind certifying management systems and professionals.

ISO/IEC 20000 AS A GUIDE FOR NAVIGATING THE VARIOUS FRAMEWORKS AVAILABLE

Currently, we find ourselves at the dawn of the age of best practices, frameworks and standards for IT service management, an industry that began only sixty years ago. Compared to other professions such as medicine, law and academia, IT is part of our modern age and has been developing in much the same way as a growing child, taking information concepts and experience from a variety of sources, haphazardly and without verifying its accuracy, yet hoping that the desired outcomes will be obtained. For these reasons, when best practices such as ITIL®, or the later BS 15000, appeared on the scene in the late 1980s, many organizations adopted them in the hope that these guidelines would finally bring order to chaos, bring IT into the realm of business, and make IT services more attainable, controllable, justifiable and cost effective.

It was in this context that the development of ISO/IEC 20000 began. While it originated as a "fast-track" version of BS15000 - in other words, the adoption by ISO and IEC[1] of the British Standards with minimal changes, but endowing the standard with the required international and regulatory seal of approval - ISO/IEC 20000 developed from non-existent to a "promise come true" in the field of IT service management. This is why many are beginning to see it as the possible link or connection, between several best practices, frameworks, processes (both public and private) and other standards, as suggested by figure 1. ISO/IEC 20000 is independent from all of these standards, and could be considered a "neutral" framework.

[1] *ISO = International Organization for Standardization (ISO); IEC = International Electrotechnical Commission (IEC).*

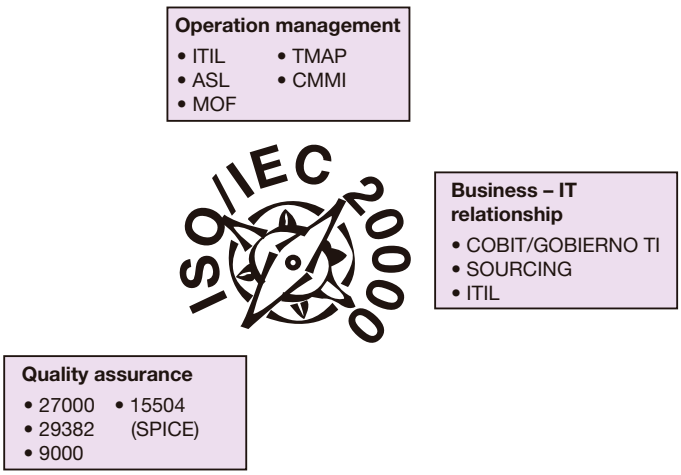

Figure 1 ISO/IEC 20000 has established itself as the guide for navigating the various best practices and frames of reference

ISO/IEC 20000 actually consists of two parts, the first being what must be done (requirements) and the second being what is recommended to be done (code of practice) in order to comply with the standard. Also, if the organization wants to go one step further, it can apply for a compliance audit, which gives the organization the opportunity to obtain the international certification that acknowledges that the organization complies with the standard (see figure 2).

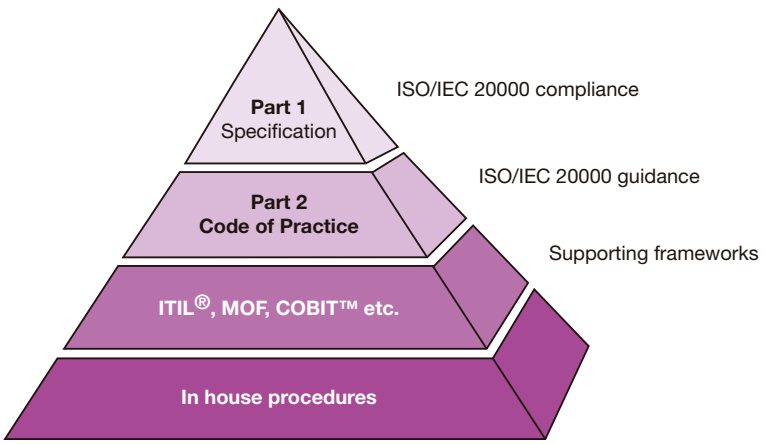

Figure 2 Part 1 and 2 of the ISO/IEC 20000 standards inside the pyramid, as well as the different levels of support

However, reality shows that there are neither defined nor implicit controls between ISO/IEC 20000 and frameworks such as MOF[2], ITIL, other ISO standards or CMMI[3]. Each of these frameworks has its own development interest groups. To some extent, the adoption of these models allows the service providers to attain compliance and eventually ISO/IEC 20000

[2] *MOF: Microsoft Operations Framework*
[3] *CMMI: Capability Maturity Model Integration*

certification. If, for example, we look at ITIL, it is clear that this set of best practices shares processes with the same denominations as ISO/IEC 20000, although the ISO/IEC standard lists some processes beyond the scope of ITIL. From the perspective of the standard, it should be noted that elements related to information security mentioned in ISO/IEC 20000 are covered in greater detail in ISO/IEC 27001; concepts of software asset management are developed further in ISO/IEC 19770, and, of course, the content related to requirements for management systems and to planning the implementation of service management is covered by ISO/IEC 9000.
Clearly, the application of ISO/IEC 20000 leads to the adoption and adaptation of essential parts of other standards, best practices and frameworks, which can be enhanced when these models are applied directly after the organization has become compliant with ISO/IEC 20000.

ISO/IEC 20000 TODAY

Current statistics show that worldwide interest in the diffusion and adoption of ISO/IEC 20000 by IT service providers is growing constantly and at an unprecedented rate. Despite the fact that data for this standard lacks the depth, and, therefore, possibly the relevance of other standards, certain statistics show signs of a promising future. ISO/IEC 20000 is second only to ISO 9000 in terms of growth; its growth knows no borders, and there are organizations adopting the standard worldwide. Professional certification programs are being developed and implemented internationally, even though they are only available in English. By analyzing the data available, it is worth noting that international acceptance of the standard has taken place gradually:

- Countries that adopted the standard early (and which, therefore, have reached a higher level of maturity):
  - United Kingdom
  - United States
  - The Netherlands
  - Australia
  - Japan
- Countries that have emerged strongly, and with a group of companies that support implementation of the standard and that adopt the standard on both a private and public level:
  - China
  - India
  - Germany
  - Brazil
  - Italy
  - Canada
  - Spain
  - France

The status and international recognition obtained by the standard is supported by ISO. The committee (ISO/IEC JTC1/SC7/WG25) that helped to create and maintain the standard, and which was responsible for its initial disclosure, includes members from the various countries and geographic regions represented by the organization; thereby developing a standard that is truly internationalized and that does not need to be adapted to different cultures, since cultural differences have been taken into consideration since the standard's conception.

THE IMPLEMENTATION OF ISO/IEC 20000 WITHIN ORGANIZATIONS

This section focuses on topics that are related to the implementation of ISO/IEC 20000: organizational impact, roles involved, cultural change, communication and training, project and process approach, and integration with other standards.

Organizational impact

Any effort within an organization that leads to the implementation of a management model will inevitably impact that organization. The scope of this impact depends on the organization's maturity in terms of its management practices, and whether or not there were previous models in place regarding quality and/or IT service management. The fact that an organization had previous models in place, means that transformation of policies, training, and awareness within the organization will not be as deep as if starting from scratch. However, the implementation of an ISO/IEC 20000-compliant management model will entail greater complexity, as the organization is not "starting from scratch" but integrating common management elements with practices already in place. In this context, it is important to list a number of common elements that need to be integrated:
If the organization is relatively mature in terms of the alignment between its information systems management and its IT service management practices:

- To some degree, processes have often already been identified and managed within the organization.
- It is very likely that designated individuals are in charge of the management and operation of the various processes and functions.
- A focus on continuous improvement and the need for management to observe the minimum requirements imposed by the standard must be added to the elements already in place (processes and managers).

If the organization has an ISO 9000-based quality management system in place:

- A solid foundation and awareness of the continuous improvement cycle will already exist, as well as a PDCA process (Plan, Do, Check, Act), which is included in both standards.
- This will facilitate this element of the quality management system, but at the same time, having an ISO 9000-based system means that the activities of each management and improvement cycle must be aligned for the general management of the company and especially for IT.

If the organization has an information security management system in place based on ISO/IEC 17799 or ISO/IEC 27000:

- A notion of continuous improvement, based on Deming's PDCA cycle will exist within the organization, as this cycle is also part of the information security standards, however probably only within a limited section of the company.
- The elements of information security that are included in the ISO/IEC 20000 standard must be much more thoroughly covered by the organization

We can, therefore, conclude that the implementation of an ISO/IEC 20000-based management system will have a degree of impact that is inversely proportional to the maturity level of the organization. In organizations that have no previously implemented management models, including those listed above or other similar management systems, it is expected that the implementation of this standard will have significant impact. In this case, the effort and initiative taken by the organization to facilitate the cultural changes and to raise awareness regarding the IT service management system (QMS awareness) will be all the more worthwhile.

Roles involved

According to ISO/IEC 20000, the implementation of a management process should involve different resources who are responsible for the decisions and tasks within the organization. The RACI matrix is a useful tool for clearly illustrating these resources and their responsibilities as related to the various elements of the management system. This diagram is summarized below.

The RACI matrix

This diagram illustrates the relationships between the activities and the roles carrying out these activities, as well as their degree and type of involvement.

The RACI matrix distinguishes between four types of roles:

- **Responsible**
  - the resource that carries out the task to completion; the Responsible is designated by the Accountable
  - the responsibility may be shared among various individuals
- **Accountable**
  - the resource who is ultimately responsible for the task; however, not the resource who performs the task (normally the role specified as "accountable" is hierarchically superior to the resource who performs the task)
  - there can only be one "A" for each task
  - this resource has the decision-making power for the task (whether to carry out the task or not)
- **Consulted**
  - the resource or role that must be consulted prior to a decision or final action; this role involves two-way communication
- **Informed**
  - the resource who must be informed after an action or decision; this role involves one-way communication (communication to the Informed)

The following diagram shows the different RACI responsibility types for an imaginary process related to maintenance requiring an interruption in service.

- **R**esponsible: the technician is in charge of carrying out the task
- **A**ccountable: the person who is in charge of change management
- **C**onsulted: the client (in charge of the department that is the user or receiver of the service being maintained) must be consulted, so that the chosen time for the service interruption can be approved
- **I**nformed: the users (personnel in the client's department) are informed of the interruption in service

Differences may exist in organizations, depending on their functional and hierarchical distribution and assignments; nevertheless the models of table 2 are applicable to most organizations regardless size (e.g. large corporations, small and medium-sized companies), type (e.g. governmental organizations, private companies, non-profit organizations) and geographic location (e.g. national, multinational).

The participation and tasks of the resources involved in the project change throughout the duration of the project, and, for this reason, we describe their responsibilities according to three well-defined phases:

- decision
- implementation
- daily execution (and maintenance)

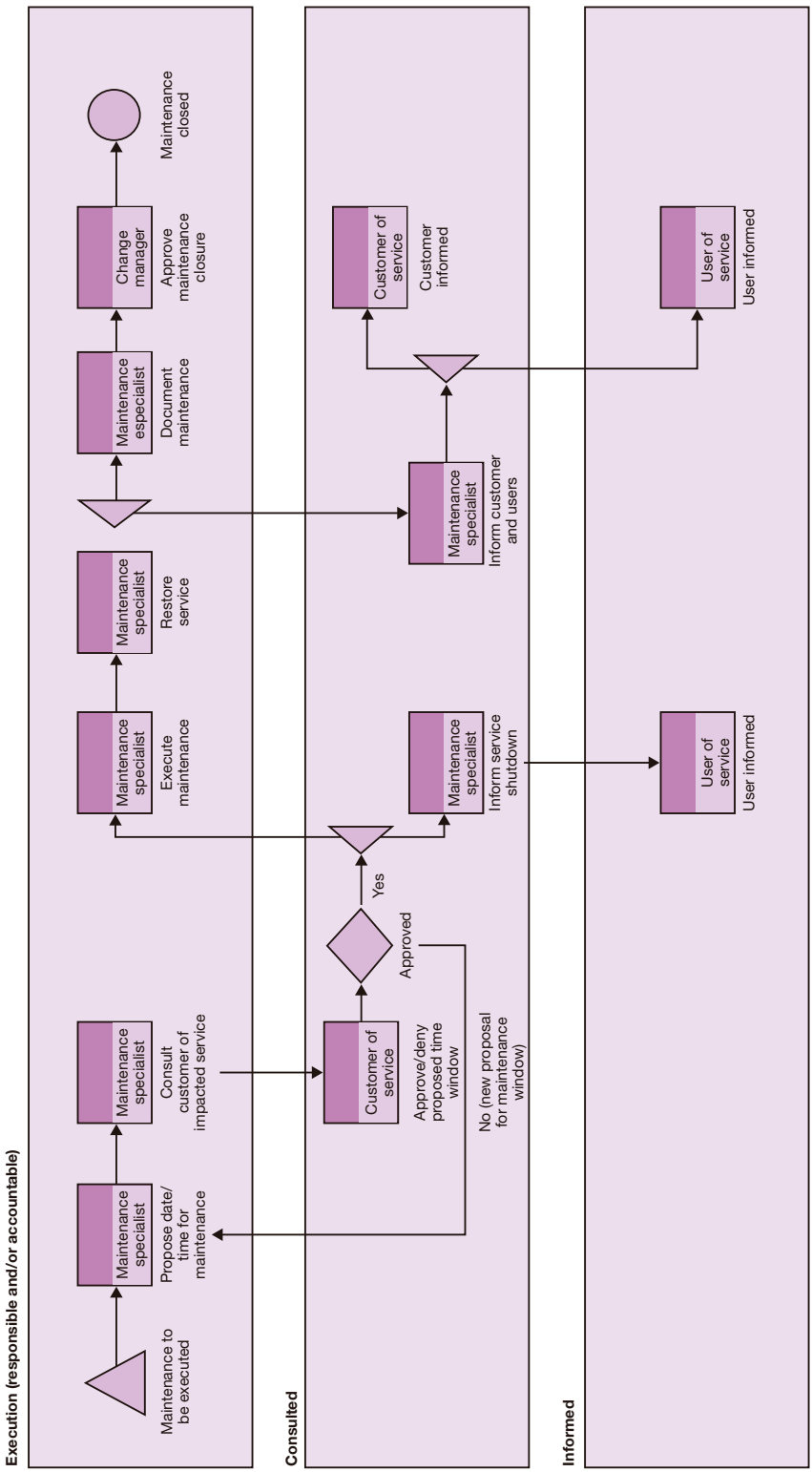

Figure 3 Roles and responsibilities according to RACI in an imaginary workflow for service maintenance

	General management	IT director	ISO/IEC 20000 project manager	Chief quality manager	IT quality manager	IT middle managers	Supervisors and IT process managers	IT personnel and IT specialists	In-house/external consultants	In-house/external auditors
Phase 1: Decision										
Propose the implementation of ISO/IEC 20000	C	A		C	R					
Carry out initial self-assessment		A			R					
Define scope (including need for certification)	C	A	R	C	R	I	I			
Define the impact in the global management system		A		R	R					
Define project planning										
Define budget requirements		A	R		C					
Define project team		A	R		R					
Define requirements for external support										
Decide the implementation of ISO/IEC 20000	A	R		C	R					
Phase 2: Implementation										
Define roles and responsibilities for the daily management system		A	R	I	C	C	C	I	R	
Establish procedures for the IT processes			R	C	A	C	C	C	R	
Establish IT support systems requirements		A	R		R	C	C	C	R	
Define and execute integration with complete management system	C	C	R	A	R	I	I	I	R	
Design the communication/training plan		A	R		C	C	C	I	R	
Execute the communication/training plan			A						R	
Implement the system		A	R	C	R	C	C	I	R	
Carry out initial audit of the system			A							R
Establish improvement program		C	R	C	A	C	C	I	R	
Optional: certify management system		A	R	C	R					R
Phase 3: Daily execution and maintenance										
Daily management aligned with management system		A			R	R	R	R		
Internal audit of the management system (management cycle)		A			R					R
Plan and establish improvement program (management cycle)		A			R	C	C	I		
Execute and monitor improvement program (management cycle)		A			R	C	C	I	R	
Assess improvement program (management cycle) and initiate new one		C		C	A	C	C	I	R	
Optional: external audit of the management system (renewal)		A			R					R

Table 1 RACI responsibility example for ISO/IEC 20000 implementation and operation

As we can see, the most important roles in the various phases are:

- the personnel and specialists of the organization, on whom the success or failure of the project and the daily functioning of the system ultimately depends, despite the fact that such personnel do not have much influence on the organization's decisions (R,A,C); their attitude and motivation are fundamental
- the IT director, as the sponsor, the resource who is ultimately responsible (together with the general management) and the project facilitator
- the IT quality manager, who is responsible for the majority of the tasks, in collaboration with the project manager
- the project manager (a role that can also be assumed by the IT quality manager); the project manager becomes responsible for day-to-day quality management, once the implementation phase of the project is completed
- the project team, which consists of consultants (either internal or external) who are highly knowledgeable with respect to the standard, and experienced at putting the standard into practice
- the auditors (either internal or external) who verify the degree of success of the implementation, based on the results of any audits carried out

Going into greater detail, we review the profiles and functions of the following roles:

Project approach (implementation)

Project manager

- mission: plan and carry out implementation
- profile
  - highly familiar with ISO/IEC 20000 and quality management systems
  - in-depth knowledge of IT Service Management (ITIL, CobiT®[4], AS 8015[5], ISO/IEC 27001)
  - knowledgeable and experienced with regard to project management
- duties and responsibilities
  - obtain and maintain approval from management
  - inform management
  - plan implementation
  - carry out implementation
  - manage resources (internal and/or external)

Consultant

- mission: technical support during project implementation, contribution of knowledge (ISO/IEC 20000) and experience (previous standard implementation projects)
- profile
  - consulting experience
  - knowledge of ISO/IEC 20000
  - knowledge of quality management models and systems in general (ISO 9000) and specifically related to IT service management (ISO/IEC 27.001, AS 8015, ITIL)

[4] *CobiT (Control Objectives for Information and related Technology): an IT management framework created by the Information Systems Audit and Control Association (ISACA), and the IT Governance Institute (ITGI) in 1992*

[5] *AS 8015: first standard for corporate governance for ICT, published by Standards Australia in 2003*

- duties and responsibilities
  - provide support during implementation
  - perform all the assigned tasks, assigned during planning (support for process development, training, and/or communication, etc.)
  - inform the project director of any problems

Auditor
- mission: determine the level of maturity of the implementation of the standard by comparing the practices being carried out within the organization and their alignment with the requirements set forth in the standard
- profile
  - auditing experience (as a lead auditor)
  - experience as an IT service management specialist
  - consulting experience
  - knowledge of ISO/IEC 20000
  - knowledge of the standards for accreditation of certifiers (ISO 17021, EA 7/03 for information security and ISO 19011 for quality systems auditing)
- duties and responsibilities
  - direct and lead the auditing team
  - carry out the management system audits
  - complete audit reports
  - monitor and evaluate the corrective actions carried out to neutralize any non-conformances detected by the specified deadline (if applicable)

Process approach (operations)
Quality management system director
- mission: guarantee that the quality system is fully implemented and monitor quality system operations and their relationship with other management systems (service management, other quality systems – ISO 9000, ISO/IEC 270001)
- profile
  - management experience in terms of managing people, resources, objectives/goals
  - for other qualifications, the profile of the quality management system director coincides with that of the project manager, although in this case, the QMS director carries out his duties in a different cycle (not a project-based cycle).
- duties and responsibilities
  - lead the operations and improvement cycles for the management system according to PDCA
  - define, negotiate and reach consensus (with other directors) regarding improvement plans for service management
  - implement and verify the efficiency of the plans
  - define and co-ordinate the audit plan (internal audits)
  - represent the organization during external audits (if applicable)

Process managers
- mission: manage the day-to-day operations in his/her area of responsibility in accordance with business parameters and management system requirements.
- profile
  - management experience in terms of managing people, vendors, resources, objectives/goals

  - knowledge of the ISO/IEC 20000 standard, especially the requirements and code of practice that fall under his/her responsibility (support, changes, information security, etc.)
  - technical knowledge pertaining to his/her area of responsibility
- duties and responsibilities
  - plan the day-to-day operations within his/her area of responsibility (plan)
  - manage the daily operations in his/her area of responsibility (execution and maintenance)
  - develop, implement, and monitor the management indicators within his area of responsibility, providing information on performance within his area of responsibility (check)
  - participate in the improvement cycle, within the management system, implementing the improvements related to his/her area of responsibility (act)

Auditor
- mission: audit the management system and its compliance with the requirements of the standard, in order to provide information on priority areas of improvement
- the profile, duties and responsibilities are the same as those listed in the project approach phase

In this article, certification of the ISO/IEC 20000-based quality management system is described as optional, since it is up to each organization to decide whether or not it is worthwhile to have the implementation of this management system certified. This decision must be included in the scope definition activity, together with the services and/or locations to be covered by this management model. All of these factors will be discussed in greater detail in the section on implementation. The overview of roles and related activities above is included for those organizations who decide to pursue certification of the system.

Cultural change

The focus of a company's management and the way the company operates - whether or not the company strives to improve its commitment to quality services - is very much influenced by culture. Experience tells us that if the efforts to implement a quality management system only focus on the development and implementation of a series of process and support tools, the project will be doomed from the start. This is the reason why it is important to identify the elements of a company affected by this "cultural influence":
- company policy
- the commitment of management (at all levels)
- the will and motivation of all parties involved (stakeholders)

Without understating the importance of the first two elements, the will and motivation of all stakeholders involved is undoubtedly a key element in the day-to-day affairs of an IT service provider. The term "stakeholders" is used in a wide sense here, and includes not only the employees working in the various IT areas, but also all vendors and clients, both external and internal. The commitment of all these parties is certain to result in a positive perception of change. This means that all of the stakeholders' expectations must be met, and, moreover, that all their concerns and objections must be resolved with respect to the upcoming change. Such objections or resistance to change are generally manifestations of "fear" of the unknown, or a lack of confidence concerning the consequences of the new proposal:
- on an individual level (workers)
  - greater volume of work (bureaucratization)

  - greater competition
  - a need for further knowledge
- for middle and top management
  - greater volume of work (bureaucratization)
  - power lost to any new management positions that the new model may require
  - a lack of confidence concerning the audits and the reviews, and on the interpretation that may be done on its results

Communication and training are the most effective tools for overcoming resistance to change. The next section will demonstrate how both can be used to persuade those in the organization to be in favor of the quality management system for IT services.

Communication and knowledge of management systems (SQM awareness)

As we have seen, the factors that can lead to a non-receptive attitude towards the introduction of an ISO/IEC 20000-based management model in the organization are the result of not knowing the consequences of the decision and of the standard itself.
To overcome this resistance, a communication and training campaign must be undertaken. This campaign must, at least, include communication and training.

Communication

Raise awareness, through all possible means, of the objectives and benefits of the project, not only at the project start, but throughout the entire duration of the project. Some ideas include:

- project kick-off event with a clear, positive message from top management
- electronic publication (email, internet, etc.) of the objectives and goals of the project, as well as a description of the project phases, the results and the responsibilities of each section of the organization throughout the project
- weekly project breakfasts: the project manager can meet with others in the organization to communicate and update employees on the project, and respond to any questions or concerns
- physical or electronic deliverables, for example, a magazine or newsletter on the project; the publication should highlight the progress made so far, the end results of the planning phase, and should provide related news and information about the standard

Training

The campaign must provide all personnel with the necessary ISO/IEC 20000-related knowledge:

- basic knowledge
  - aimed at all levels within the IT organization
  - the objective is to neutralize negativity or resistance towards the project and to raise awareness, not only of concepts, but especially of expected benefits
  - this training can take the form of a training plan or of internal seminars given by qualified personnel
- intermediate knowledge
  - aimed at personnel with management responsibilities within the IT organization
  - the objective is to provide management personnel with sufficient knowledge of the standard, especially knowledge of the sections of the standard that mainly apply to their area of responsibility, in order to facilitate their daily activities and their participation in the implementation of the new management model

  - this training can take the form of a training plan, but it must be taken into account that training content should be specialized according to the role of each of the staff members involved
- advanced knowledge (expert)
  - aimed at personnel who are key figures in the organization in terms of implementation and maintenance of the system
  - the objective is to provide the personnel who play major roles in the implementation and maintenance of the system with advanced and in-depth knowledge: IT quality manager, project manager (a role that may be assumed by the IT quality manager), and consultants and auditors for the system
  - must be formulated in a detailed training plan

Implementation

It is possible to distinguish two different phases in a company's adoption of an ISO/IEC 20000 management system:

1. Project approach: the implementation of an ISO/IEC 20000-based management model within a company must be carefully considered and managed, as a separate project in and of itself.
2. Process approach: the consolidation of the system and its day-to-day use and optimization.

The diagram of figure 4 illustrates these two approaches.

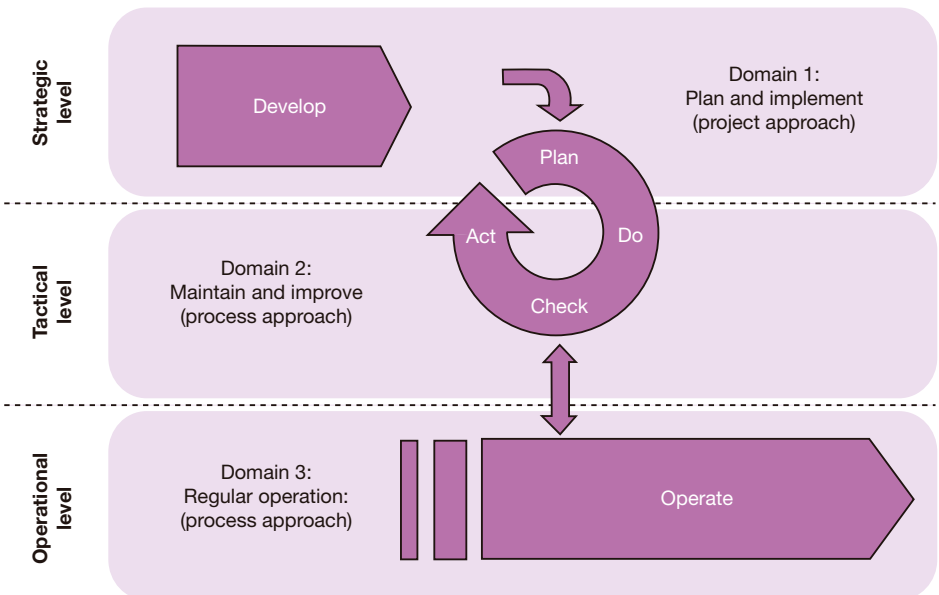

Figure 4 ISO/IEC 20000 implementation and management model

1. Project approach

Although this approach includes activities at all levels (strategic, tactical, operational), the implementation project itself can be considered to be part of the company's strategy. In

this respect, it is worth pointing out over the particular activities of any project, the specific elements of a management system implementation:

- project focus
  - scope definition (units/departments/sites)
  - intention/lack of intention to pursue certification of the management system (described in section “Compliance and certification”)
  - definition of the communication and training needs
- assessment of the maturity of the IT service management practices within the organization
  - in this way, the company can try to obtain benefits by integrating those aspects of the organization’s practices that are already mature
- planning and establishment of the project phases
- definition of internal and/or external support requirements
- need for support tools for both the management of the processes to be defined, as well as for the management system itself (process modeling, etc.)

2. Process approach

Once this model has been adopted to support daily management, we distinguish three levels in the organization’s daily operation:

- **Strategic** - Basically refers to planning. On this level, decisions are made with respect to:
  - the improvement cycle: when and how to carry out system reviews
  - definition of objectives and goals (quarterly, biannual, yearly cycles ...)
  - the scope: benefit/lack of benefit if the current management system scope is extended, and planning for this extension, if applicable
  - resource allocation
- **Tactical** - Level on which the management system activities are carried out. These activities were planned at the strategic level, and include:
  - audits and reviews
  - implementation and monitoring of indicators
  - execution of improvement plans
- **Operational** - This level concerns the execution of regular operations within the limits of and in accordance with the management model, the planning of this management model, and the actions taken to improve the model.

Integration of quality systems (ISO 9000, ISO/IEC 27000, ISO/IEC 20000)

For some organizations that implement ISO/IEC 20000, these efforts are in no way equivalent to a first step towards a management system based on international standards like ISO 9000 or ISO/IEC 27000. Proper integration of the various quality management systems is a key factor for obtaining maximum benefit of these systems. Correctly aligning these models results in a single management system that integrates various aspects including:

- global quality management system
- IT service management
- security management

Some of the benefits include:

- a single structure for the entire system
  - processes
  - procedures
  - PDCA cycle
  - integrated tools
- integrated audits for the entire system

- consolidated improvement projects and initiatives, improving compliance and avoiding duplication of effort
- a message to the organization that is both consistent and clear
- reduction in the efforts and resources needed to maintain the system

Some of the more concrete aspects regarding the relationship between these standards and their integration are discussed below.

ISO 9000 and ISO/IEC 20000

When integrating with ISO 9000, the company must consider the broad framework offered by this standard. In an organization whose management already complies with ISO 9000, the following elements will generally already be covered:

- general requirements for the management system
- management's responsibility
- provision of resources
- PDCA cycle
  - planning
  - monitoring and follow-up
  - improvement

To a lesser degree, the following elements, which are in some way common to both standards, should be partially integrated:

- customer relationship management
- product and service control
- service provision

ISO/IEC 27000 and ISO/IEC 20000

For ISO/IEC 27000, if an organization utilizes this model for its management system, the requirements related to information security, formulated in ISO/IEC 20000, will have already been covered in depth.

This means that the updates and reviews (audits, review and improvement cycles) that are carried out in relation to information security, must refer to the practices implemented according to ISO/IEC 27000, while those elements formulated in ISO/IEC 20000 can be disregarded, as the ISO/IEC 27000 requirements supersede those of ISO/IEC 20000 in terms of information security.

COMPLIANCE AND CERTIFICATION

What is compliance?

The ISO standards for management systems, in particular ISO/IEC 20000, are made available to organizations as guides outlining management systems that help to improve the effectiveness and efficiency of operations and management within the organization. The organizations that base their management on the standard will earn a higher or lower alignment rating, representing the degree to which the organization is aligned with the details and requirements of the standard, depending on their purpose (scope) and the degree of success of the implementation project. This alignment rating is what we refer to as "compliance".

Certification versus compliance

ISO/IEC 20000 is a certifiable standard. This means that the compliance rating earned by organizations can be submitted to a third party (an independent organization, known as a certification body) for evaluation, and that the statement of compliance is endorsed by a third party. This evaluation is carried out through one or more audits, in which independent auditors review the degree to which the daily management and operational practices of the organization pursuing certification comply with the requirements set forth in the standard. These audits are carried out on behalf of the certification body. Specifically, for ISO/IEC 20000, the requirements to be audited are found in part 1 of the standard.

If the aspiring organization meets the minimum requirements of the standard, the auditors will issue a positive report, and the certification body will grant certification to the organization, for the areas of the organization (sites/departments/services) that fall within the scope of its management system. This acknowledgement is temporary and must be renewed by the organization through successive audit cycles carried out by the certification body. These audit cycles are usually annual with renewal (or termination) of the certification taking place every three years, if the company continues to prove its compliance (or not) with ISO/IEC 20000 during audits.

Advantages of certification by a third party

The endorsement of an organization by a certification body is advantageous to the organization for the following reasons:

- proof of the organization's level of compliance with the requirements in the standard, for the market and for society
- recognition of prestige and image
- possibility to demonstrate the organization’s compliance with the practices set forth in ISO/IEC 20000, for clients or bodies to whom the organization provides or wishes to provide services; this is especially important if compliance is a requirement for participating in a bid or call for tender (public or private)
- the awareness and the commitment to maintain the “moment” creates the drive to maintain standard-compliant management practices, since “continued compliance” is necessary to conserve the certification during future certification reviews

Benchmarking

The degree to which an organization is compliant with ISO/IEC 20000 (whether certified or not), is also extremely valuable as a tool for making comparisons among organizations (benchmarking). To do this, the compliance criteria formulated in the standard (requirements) can be used as points of assessment for the company’s practices, since ISO/IEC 20000 is an international, universally available standard that is recognized for its prestige.
The value of ISO/IEC 20000 as a benchmark is especially interesting as a means of evaluating maturity, as in the following situations:

- public interest studies, sponsored by local and national administrations, to evaluate the state of the IT service industry
- industry-based studies, sponsored by associations and employers associations, whose members see this tool as an opportunity to improve their competitive edge
- internal studies, for corporations that include various units or organizations providing IT services (in different countries or sites, for different business lines, for different internal or external clients, etc.)

In all these cases, benchmarking should be carried out in order to identify opportunities for improvement, as a source for improvement plans sponsored or led by the body promoting the study (e.g. public organizations, corporations, business associations).

Need for international recognition and certification of professionals

As adoption of ISO/IEC 20000 is spreading worldwide, the professionals involved in the implementation of the standard, whether in operations, definitions, project management or process auditing, must also obtain certification that demonstrates and endorses their knowledge and experience. This field is already being seen as more than just an idea or as something that could be of interest only to a selected few, but as something that should be a requirement for any organization that seeks compliance with the standard.
In this way, a need arises to create a professional certification program. This program must be sustainable over time, developed by the most recognized professional in the industry, maintained and spread worldwide, and must fulfill the needs of IT professionals and training companies.
Based on the experience of organizations with years of certifying individuals in different IT domains, the experience of non-profit organizations that assist IT professionals worldwide, and the results of early efforts to develop a certification program, we now have programs that provide the desired level of certification and recognition sought by professionals and organizations. After research, we can mention three certification programs for individuals, offered by:

- itSMF UK
- EXIN/TÜV SÜD Akademie
- IRCA

Taking into account the historical development of this type of certification, we note that itSMF UK (Great Britain) as well as EXIN (The Netherlands) developed exams based on ISO/IEC 20000 in the past. EXIN´s approach was to give the candidate the opportunity to go from basic to advanced theoretical and practical knowledge on ISO/IEC 20000 and concepts on Quality Management Systems and ISO 9000. On the other hand, itSMF UK chose an approach based on the basic activities expected of professionals who intended to support and enable companies to bring their IT service processes into compliance with the standard (either as subcontractors or employees), mainly auditors or consultants.
Professionals who wished to be recognized for their qualifications would choose a certification program based on the marketing of each or the course content as provided by the training providers. Still none of them could show a candidate's progress in terms of concepts and terminology, and assess the candidate's aptitude in a complete way, making it hard for an organization, either public or private, to evaluate the real value that such certified professional could provide to an implementation process.

In November 2007, EXIN and TÜV SÜD Akademie introduced a new multi-level certification and qualification program for IT professionals titled: *IT Service Management according to ISO/IEC 20000.* The new program is based on the roles and activities of professionals, and focuses on the core principles and concepts of both IT service management and service quality management. This program is similar in structure to programs that have proven successful, since it uses certification by level, from a basic or fundamental level (Foundations) to a master´s level based on occupational role (consultant or auditor). Between these two levels are intermediate levels providing practical knowledge (see figure 3).

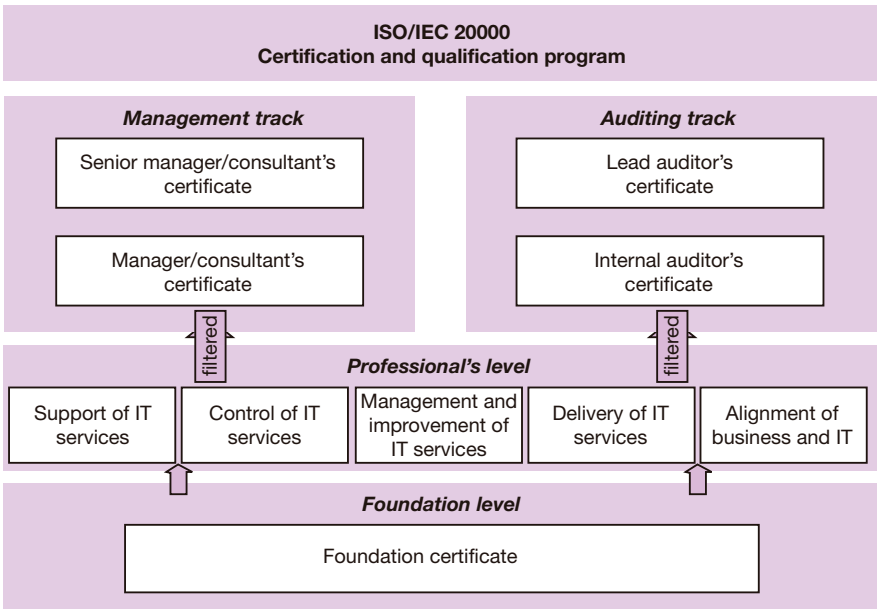

Figure 5 ISO/IEC 20000 certification and qualification program

In the future, the various players are expected to gradually assimilate to this type of program, at least to some degree. In this way, they will provide a common, universal knowledge base, from which all parties involved (professionals, organizations, certification bodies, IT community) will benefit equally. We can certainly expect variations and possible modifications, for example, in the amount of certifications granted by level, but the 3-level structure (or a 4-level one at the most) is likely to remain, because:

- it is easy to understand
- it provides a career plan
- it is similar to other programs available in the industry
- it allows for "cross-recognition" between the various program levels (acceptance of other certificates as "equivalents")

General description of the programs available

This section contains a description of the certification programs. It identifies the various parts, but refrains from offering judgments favoring one program over another: although they belong to different organizations, we expect them to collaborate in an unbiased manner soon. Also, we expect their certification programs (that currently even share certain certificate names) will be equivalent in the near future.

itSMF UK

itSMF UK has created a certification program for organizations, and a training and certification program for individuals consisting of two exams, one for consultants and the other for auditors. The program for individuals is the topic of this section.

Prior to the exams, candidates can take a training course that normally lasts two to three days, and that includes a review of both parts of the standard and the activities carried out to develop the specific skills of the certificate being pursued.

In all cases, and as with all other organizations that deal with this type of certification, the type, course materials, and the certification provider are rigorously evaluated in order to ensure the quality of the training program. In particular, the majority of the organizations that offer courses for auditors require previous experience as auditors prior to taking the exam. This is the reason why this certificate (ISO/IEC 20000 for Auditors) focuses primarily on organizations that currently have experienced auditors. Furthermore, previous knowledge of both service management and ITIL is recommended.

ISO/IEC 20000 for Consultants has the same general structure as explained above, with the addition of practices focused on consulting activities beyond auditing. However, it is the intention of the program that both the program for consultants and the program for auditors teach the importance of each role in the compliance/certification of the organization, so that both auditors and consultants can work together in co-operation. For both courses, the concepts tested include:

- knowledge of the standard
- how to apply concepts
- how to help or evaluate an organization seeking compliance with the standard
- recognition of the tools and the steps to evaluate the likelihood that an organization will obtain certification
- initial evaluation and audit help
- organizations involved in the certification of an organization (i.e., RCB)
- preparation for the candidate so that they can obtain the qualification desired (consultant or auditor)

In addition to these certifications, itSMF UK unveiled an update to its programs at its annual conference (Brighton, UK) in October 2007, with the introduction of a beginner's level certification program that will be named ISO/IEC 20000 Foundation. This new certification was created in collaboration with BSI and ISEB. itSMF UK wishes to promote its program on a worldwide level and to take advantage of the international structure of the various chapters of the itSMF.

EXIN/TÜV SÜD Akademie

The EXIN/TÜV SÜD Akademie association has promoted the certification program represented in figure 3, which has served as an example to illustrate how the IT community hopes that the certificates currently available will develop. The EXIN/TÜV SÜD association has defined each of the levels available, and has developed a program of content requirements and definitions for the courses, elements that are very useful when selecting the training necessary to obtain certification.

To maintain and guarantee the desired quality levels, the organizations that provide training based on the program developed by EXIN/TÜV SÜD must conform to a strict accreditation program, that evaluates items such as the course material, the trainers, and the legal formation of the organization.

The EXIN/TÜV SÜD Akademie certification program for IT service management according to ISO/IEC 20000 is based on what, according to the standard, an IT service management function must and should accomplish:

- it has a strong focus on managing service quality
- it introduces different aspects on how to implement the different processes and activities
- it is designed to be framework-independent, and can be used alongside and in combination with other certification programs such as ITIL and MOF

The main points of each level are detailed below.

The Foundation Certificate
This certificate qualifies professionals in IT service management at a basic level of knowledge and understanding of IT service management according to ISO/IEC 20000. The certification is based on an introduction and overview of the main principles and concepts in the field, and a basic knowledge of the ISO/IEC 20000 standard. The only requirement for the Foundation certificate is to pass the multiple-choice exam.

The Professional Certificate
This certificate qualifies professionals involved in planning, monitoring, reporting and optimizing processes and activities in one or more of the four main areas of IT service management (as defined in the Q-Model, see figure 4).

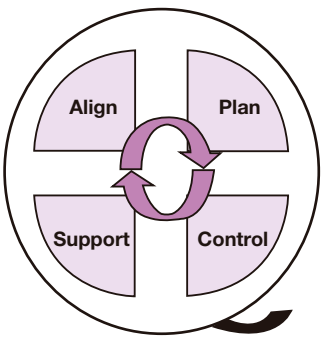

Figure 6 Q-Model as defined by EXIN/TUV SUD certification program

The certification is based on the knowledge, understanding and skills needed to perform these core tasks, including the knowledge and understanding of how to manage and improve the process areas according to the guidance provided in the ISO/IEC 20000 standard.
To obtain one of the four Professional qualifications (i.e. a track certificate) three certificates (or exemption for them) will have to be obtained:
- the Foundation Certificate
- the Professional Certificate in management and improvement of IT service management processes
- one of the certificates for Support, Control, Alignment or Delivery of IT Services

Each holder of a Professional certificate attending an accredited training course must successfully complete a practical assignment, and pass the case-based multiple-choice exam.

The Manager/Consultant Certificate
This part of the certification program aims at qualifying professionals in supporting an organization in implementing and optimizing its IT Service Management functions, in line with or to fully satisfy the requirements of ISO/IEC 20000.
The Manager/Consultant training and exam focuses on:
- how to motivate for quality IT service management and certification
- how to design service improvement programs aligned to the organization's strategy

- how to manage service improvement programs
- how to evaluate IT service management

Organizational and communication skills must be practiced and applied in an assignment. To qualify as a Manager/Consultant in IT service management according to ISO/IEC 20000 one must:

- hold (or be exempted for) one of the Professional qualifications
- attend an accredited training course
- successfully fulfill the assignment(s)
- pass the scenario-based essay style exam (2 hours, 5 questions)

The Auditor Certificate

The audit certificate will be based on an audit course taking the participants stepwise through the entire process, using the knowledge and understanding in ITSM and SQM as proven by a Professional certificate. The main purpose at this level is to recognize proof of compliance to the standard, allowing an organization to pass the certification process and obtain the certification distinction.

The exam tests the application of the understanding. In addition, skills and practical assignments are an integral part of the training course.

This certification program provides benefits to all parties involved, such as:

- a practical way of improving quality
- certification and training course concept in line with the company
- suited for IT staff with experience in other well-known standards and best practices, such as ITIL®, MOF, CobiT®, ISO 9000, CMMI and ASL[6]
- based on competencies required by employers.
- aimed at professional development of various groups of IT staff
- modular structure
- option to enter the program at different levels
- recognized, independent certification

IRCA

Unlike the two certification programs described above, the International Register of Certificated Auditors (IRCA) is more specific. From the very start, IRCA focused exclusively on training for auditors and had no intention of creating a complete ISO/IEC certification program.

The IRCA certification program, known as ITSMS - Information Technology Service Management Auditor Certification Programme - has 6 different tracks:

- Provisional Internal Auditor
- Internal Auditor
- Provisional Auditor
- Auditor
- Lead Auditor
- Principal Auditor

The objective as stated on IRCA's website is: "[…]Re-assurance that IRCA auditors employed to audit organizations' quality management systems for certification to ISO 20000 are competent and committed to continuing professional development[…]".

[6] *ASL: Application Services Library*

Clearly, the goal of a model like this is for certified auditors to gain the proper practical knowledge, including the candidates' previous auditing experience.
It is worth noting that, besides knowledge of both parts of the ISO/IEC 20000 standard, auditors who wish to obtain individual certification must also be familiar with ISO 19011:2002, which serves as a guide for quality and/or environmental management system auditing.
As with the rest of the auditing certificates, the number of candidates for this program is limited, and requires that participants have had previous experience, that they have passed a previous course in IT service management (at the time of publication of this article, IRCA recommends a fundamentals course from ITIL), and that they have performed at least three audits (for Lead Auditors).

FUTURE EXPECTATIONS AND CONCLUSIONS

Projection and expected updates to the standard

The ISO/IEC 20000 standard is continuously evolving and adapting to the needs and changes within the industry and with respect to IT clients.

The current version, ISO/IEC 20000:2005, was published in 2005 by "fast-tracking" approval of a standard based on the British Standard BS 15000. To guarantee that the standard will adapt to worldwide needs and requirements, its publication was linked to a period of review and modification, which is currently in progress. This review involves improvements to parts 1 and 2 of the standard. The improvements take into consideration the contributions made by the various national certification organizations from ISO member countries. Other lines of action are also being drafted.

The new lines of action to be included in future versions of the standard are the following:

- Guide to the scope and applicability of the standard
  This addition aims to provide advice regarding the definition of the scope and applicability, which each organization is advised to establish when pursuing compliance with the requirements set forth in section 1 of ISO/IEC 20000. To do this, guidelines will be provided that will be supported by examples that serve as an aid to understanding and applying these guidelines.
- Process Reference Model (PRM) and Process Assessment Model (PAM)
  – The Process Reference Model will provide a guide to assist organizations, so that the processes they implement, accomplish their mission or purpose within the organization.
  – The Process Assessment Model, which uses an approach similar to CMMI, will facilitate the assessment of process maturity based on a series of levels.
- Incremental Conformity Model to the standard
  This model aids organizations who wish to pursue incremental conformity with the standard and will propose, by means of a guide or a set of recommendations, a division of the requirements listed in section 1 of ISO/IEC 20000. This allows the requirements to be fulfilled one by one, until all requirements included in the standard are met.

Conclusions

As stated in this article, the market has great expectations for this standard and has taken firm steps and given unequivocal support to extending the independent, international and all-inclusive development of ISO/IEC 20000.

According to a survey of Axios Systems, presented in November 2007, in which 278 IT professionals from large and mid-sized enterprises, in both the public and private sector were interviewed: 18% of the respondents are accredited with ISO/IEC 20000, compared with just 2% last year. This emphasizes the value that organizations are recognizing in the best practice standard. Additionally, 70% also stated that, during this year, ITSM as a broad concept has contributed to improve the support of IT for the business. Tasos Symeonides, founder and CEO of Axios Systems, said: “IT professionals have recognized the value that ITIL and ISO/IEC 20000 can bring in aligning them more closely to the business”.

ISO/IEC 20000 will continue to mature and expand, and will reach the distinction of being the indispensable and fundamental guide that enables organizations to continuously and unwaveringly navigate the turbulent sea of best practices and frameworks for IT service management.

According to ISO 9000, the foundation for standardized quality systems consists of eight quality management principles that will be used by top management to achieve improved performance within the organization:

1. customer focus
2. leadership
3. involvement of people
4. process approach
5. system approach to management
6. continuous improvement
7. factual approach to decision-making
8. mutually beneficial supplier relationships

As pointed out in this article, ISO/IEC 20000 takes all these principles into account. They make up an integral part of the standard. With the help of internal resources (ISO/IEC 20000 committees) and associated resources (non-profit organizations that support IT professionals), which have served to broaden the boundaries of the standard.
A study concerning the future of the market shows that the next steps must include:

- independent and international professional certifications
- the expectation that more and more organizations will pursue compliance with the standard
- developments in the countries' public administrations, leading to legislation that requires certification for public and private organizations
- more certified organizations
- mindful of the need for updates, the ISO/IEC 20000 committees are already working hard on new sections for the standard, which are currently in different phases of completion

Because there is already a large amount of literature on this subject, and the standard itself is readily available, this article does not aim to cover all aspects of the standard. Instead, the aim of the article is to make updated information available, which allows the reader to form their own conclusions with regard to the various aspects, and to let the reader understand how to approach an ISO/IEC 20000-based project.
There are elements that will change in the future and the standard will continue to be modified to accommodate these changes, perhaps even changing the needs and requirements of the IT sector of the market. For example, there is still much progress to be made in the area of training: Is a simple model consisting of two or three different certificates

adequate, or will a more complex training model be required, i.e. a model that comprises different levels and includes the opportunity to build a career?
The current situation confirms that this standard is not something temporary, but is, rather, a solid set of guidelines, supported and maintained by all participating members from the IT community, and valued by organizations in general, who see the benefits of the model it provides and the firmness of the principles it promotes.

The short-term and long-term future will bring greater coherence to this IT service management work. ISO/IEC 20000 will increasingly serve as a compass, the guide that enables us to locate "north" and enables service providers to achieve their desired results. We are moving from our current position to our goal, and ISO/IEC 20000 is our unquestionable guide.

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8.3 The Viable Services Model: Service quality, service interdependence and service completeness

How can we ensure that each service contributes appropriately to the viability of the whole enterprise? Tom Graves introduces the Viable Services Model and describes how we can use it for business transformation, enterprise architecture and ITIL implementation efforts.

INTRODUCTION

If you are reading this book, it is probable you are engaged in some aspect of IT service management. As such, one of your key concerns is likely to be around the balance of services, how the services support each other.

This applies not just to the IT services, but to services in general. If we take a broader view of service-oriented architecture, *every* activity and function within the enterprise – whether IT-based or not – is a kind of service. So to gain the best value – the best balance – from our services and service management, we need to understand those services not just as individual items, but also their interdependent relationships with other services, both IT and non-IT.

Existing service frameworks do cover some of these interdependencies, but usually not enough to be useful at an *enterprise* level, or to expand much beyond an IT-specific scope. ITIL® V2, for example, includes an explicit business perspective, but does not really provide any mechanism to trace end-to-end chains of services as they switch between IT-based, manual and machine-based business processes. It does cover security, but primarily in an IT-centric sense, not business security as a whole. At an enterprise level, even for IT services alone, we need a broader framework to place those services within their full enterprise context.

One long-established framework that may be useful for this purpose is Stafford Beer's "Viable System Model". It has been proven in practice for almost four decades, primarily as a method for designing flexible and resilient business management structures. But the same viable system principles work well for modeling service-interdependencies, and need only minor extensions to become a valuable addition to the service manager's toolkit.

This article describes the resultant Viable Services Model, and summarizes its use in enterprise architecture and service management design for two large enterprises in Australia. The first sections set the context for the model within service management and enterprise architecture; subsequent sections describe the model and the associated checklist and processes for its use in service management practice.

SERVICES IN CONTEXT

IT services do not exist in isolation – they exist to serve a broader business purpose. This may sound obvious, but in the pressures of day-to-day service management, it is a fact

that is all too easy to forget. The tendency to do so is understandable in IT-centric enterprises such as banks and insurance organizations; but in most other forms of enterprise, for which IT is merely one of many categories of business service, this mistake can be immensely destructive, and perhaps *the* key source of contention between IT and business.

One of the core requirements for IT service management, then, is to find a means to keep the broader business context in mind at all times – even down at the real-time levels of service implementation. ITIL aims to do this to some extent, with the Business Perspective of version 2 (itSMF, 2005), or the Service Strategy component of version 3 (itSMF, 2007). Both versions of ITIL also provide extensive descriptions of the human services needed to manage the IT services provided to the business. But there is no real means in ITIL to link these *non*-IT services to their equivalents elsewhere in the business, or to map services of any kind anywhere beyond the IT boundary. And there is no means to map end-to-end service chains or process webs: in effect, beyond IT, everything just becomes a black-box, often with ill-defined interfaces and interchanges.

On the other side of the boundary, outside of the IT services silo, we are likely to find other frameworks such as the ISO9000 series (Tricker, 2006) and "Six Sigma for IT Management" (itSMF, 2006), which aim to address product quality and service improvement concerns. Yet these too are often applied in a fragmented fashion, constrained to a mere handful of organizational silos or functions. And unless there is some framework which provides a view across the *whole* enterprise, that ties the enterprise together as a whole, the result is organizational ineffectiveness, and lost opportunities for whole-of-enterprise improvement.

In principle, provision of that kind of overview framework would be the role of enterprise architecture. But in practice, in Australia at least, existing architecture-frameworks such as Zachman (2007), TOGAF (Open Group, 2007) and FEAF (OMB, 2002) are still too IT-centric to be of much use at a true *enterprise*-wide scope. Concerns on this have been expressed by increasing numbers of presenters at recent TOGAF conferences, for example. Although the overall architectural approach and methodologies would seem to need only minor adjustments to be appropriate for broader use, it is becoming clear that the underlying metamodels would need a major rethink, right back to first principles. And although some vendors are starting to address this need, we cannot afford to wait for the tools to catch up: we have real-world service management issues to address, right here, right now.

One way to resolve this problem is to leverage the current IT emphasis on service-oriented architectures. To do this, we adapt a design principle from the Unix operating system: there, every device – disk, printer, screen, network, whatever – is managed as if it is a file. In the same way, for service design, we can assert that *every business function and activity in the enterprise provides a service*. From this perspective, we no longer look at IT services in isolation: *everything* is a service. Service management is itself a service, providing "service management services" to support the functioning of the overall enterprise. Every service could be implemented in almost any way, using any mix of IT-based, people-based or machine-based processes. And every service exists within the context of the whole, a web of dependencies between service providers and service consumers at every level of the enterprise.

But if so, how would we keep track of all those interdependencies? How can we ensure that we have the right service quality, the right service agreements between each provider and consumer? How can we ensure that each service is complete, with all the interrelationships

it needs with other services? The answers would seem to lie in a broader view of service-oriented architecture.

SERVICES AND ARCHITECTURE

Most current approaches to service-oriented architecture focus only on services that provide end-to-end value chains, and often only on the low-level IT-centric parts of these processes. But once we make the jump to viewing *everything* as a service, it becomes clear that the end-to-end value chains are only a small part of the story: the value-generating services depend on a myriad of supporting infrastructure services, threading through every part of the enterprise.

Imagine any simple value chain, in insurance or logistics or the like. For example, in logistics, we might summarize the core processes – the core **value-generating services** – as follows:

- receive items – collect from customer, collect from service-point, receive bulk shipment, receive from international partner, verify manifest, etc
- process items – verify charges, verify pre-payments, sort items, transport items between hubs, etc
- deliver items – deliver to customer, transfer for customer pickup, deliver to international partner, receive end customer payments, verify delivery, etc
- charge for items – reconcile manifest, bill customer, receive payments from customer, etc

Collectively, such value-chain services are often described as the *profit centers* of the enterprise. To do their work, these profit centers call upon support and **infrastructure services** provided by other business units:

- IT services
- labor-management services
- building services
- transport services, etc

Sometimes these infrastructure services are integral to the main value chains: transport services in a logistics value chain, for example, or IT services in an insurance value chain. The catch is that where these services do not link directly into the value chains, they may be described only as operational overheads, as *cost centers* – and hence, without enough awareness of what parts they play in underpinning the value chain, in danger of becoming targets for arbitrary cost cutting. This is important, because *without the support of appropriate infrastructure-services, the value-generating services will operate ineffectively, or fail to operate at all*. If we place all of our attention on the value chain services, the true sources for many service management problems, or solutions to those problems, in effect become invisible. And if services are invisible, so are their costs – a common reason why benefits from a system redesign can turn out to be hard to achieve in practice, or why a redesigned process can suddenly fail without warning.

This applies even more to other, often abstract-seeming **pervasive services** that operate in the background of any enterprise, such as:

- strategy and policy
- business intelligence
- audit and review
- security management
- quality management

- knowledge management
- process improvement, etc

These pervasive services often operate *across* the enterprise in an amorphous, distributed manner, sometimes visible only at specific levels or in specific domains within the organization. In some cases there may not even be a business unit with overall responsibility for them, or perhaps it is too small to be noticeable: for example, the entire knowledge management domain for one of the largest Australian organizations was assigned to a team of just three people with a minimal budget and almost no resources. In another example, just one person was supposedly responsible for all security and privacy issues in a three thousand person organization. It is clear that much more happens in the area of security management, in that example, than the work of just one person. But the effective services in each case are bundled into other, more visible services – in other words, as an embedded part of the work of the value chain services and infrastructure services. Yet when different types of work are bundled together in this way, it becomes hard to redesign the resultant business processes to give reliable or predictable results – and especially hard to identify all the hidden costs and complexities which can, again, cause a restructured process to fail without warning.

So a key role of a full service-oriented architecture is to surface and unbundle all of these services and their interrelationships. For most real-world purposes, we will need to model these interrelationships at both coarse and fine levels of granularity – which unfortunately increases the complexity of the models. Yet we also need clarity and simplicity to make the models understandable. We therefore require a simple and consistent means to balance these opposing needs.

One well established method to do so is to model this through *patterns*. Of these, perhaps the best known business pattern is *recursion*, such as in a hierarchy of reporting relationships: the same basic structure repeats at multiple levels of the enterprise. Similarly, in conventional enterprise architecture, the Zachman framework describes multiple layers that expand out into greater and greater detail descending downward from high-level strategy to low-level implementation and real-time operations:

1. **overall scope** (context model) – small numbers of abstract entities identifying the core of the enterprise's business purpose
2. **business view** (conceptual model) – entities used for high-level business reporting
3. **systems view** (logical model) – tens to hundreds of entities, used for implementation-independent system designs
4. **design view** (physical model) – hundreds to thousands of entities, used for implementation-specific system designs
5. **implementation view** ("sub-contractor" model, or detailed representation) – often thousands to millions of business components, specified for use in live business processes
6. **real-time view** (live operations) – innumerable instances of entities created, reviewed, updated, deleted in the actual running of the enterprise

If we view the relationships between services in the same way, a similar kind of recursive pattern emerges. Each level links to the enterprise context in specific yet similar ways; each level expands out the detail needed to implement the services of the layer above; and each level has a similar set of information relationships with the level above and below, and with the consumers of its own services. Definitions for performance indicators, critical success

factors and the like cascade downward; activity reports cascade upward, to be aggregated into a layered Balanced Scorecard, for example; exceptions likewise cascade upward to be resolved at the appropriate level; and each level has its own context-specific service level agreements.

For service management purposes, though, we would need a more enhanced pattern to flesh out the detail of the infrastructure services and their roles and interrelationships. For this, we can turn to formal systems theory – in particular, a long-established management design framework called the Viable System Model.

VIABLE SYSTEMS AND VIABLE SERVICES

Why use a viable system?

Although it can at first seem somewhat abstract, systems theory provides a means to understand the whole of any large complex system. But why "*viable* systems"? The principle here is that one of the best ways to understand an enterprise is to use the analogy of a living, self-contained, self-maintaining entity. In other words, for *organization*, think *organism*.

In turn, we could describe a living organism as a complex set of coordinated services: muscles provide moving services, blood vessels provide energy services, nerves provide signal and information services, and so on. These services are often arranged in hierarchies: major veins branch into minor veins, and then into smaller and smaller capillaries.
Each service has some local specialization, but they each also share many of the same characteristics – sub-systems or sub-services, in effect. So *every* sub-unit in a viable system must, for example, be able:

- to *do* its task (in other words, deliver its service)
- to *sense* and report on its perception of its internal and external environment
- to *remember*, using some kind of repository of knowledge about its past
- to *coordinate* its activities with other systems and services
- to *plan* its activities in some way, coordinating strategies and tactics with others
- to *adapt* to and, where possible, improve its own environment and operation
- to maintain a sense of *purpose*, to contrast its present state with a desired future state.

What is the Viable System Model?

The Viable System Model (VSM) developed by Stafford Beer and others (Beer, 1972; Beer, 1979) applies the principles above to the analysis of an organization's structure, and particularly the network of connections that Beer describes as "the brain of the firm". The model is **recursive**, in that the same general pattern of relationships and interconnections recurs at each level of the organizational hierarchy.

This is especially useful for service-oriented architecture because it places less emphasis on the "doing" part of the system – the more visible value chain services – and more on management and coordination. This helps to surface the interconnections with those hidden infrastructure services, and thus makes whole-of-system process analysis and redesign more reliable.

The model has been applied successfully to a very wide range of organizations at every scale, from small co-operatives to the administration of an entire country (Walker, 2006).

In its basic form, the VSM asserts that every viable system contains a hierarchy of sub-systems, each containing six distinct subsidiary components:

- **operation** (VSM "system-1") – delivers the function or service of the sub-system
- **coordination** ("system-2" – provides the communication channels for process choreography
- **validation** ("system-3*") – verifies correct operation and validity of reporting through random audit, etc
- **direction** ("system-3") – provides run-time management ("inside / now") including definition of interfaces, rules, resources, rights and responsibilities for the attached operations sub-units
- **foresight / strategy** ("system-4") – monitors the system's environment ("outside / future") through mechanisms such as business intelligence, to provide guidance to the overall system to enable it to adapt and remain viable
- **policy** ("system-5") – provides decisions to guide the overall system's choices and balance demands across the whole system

The system-1 provides the "brawn" for the service delivery, and is usually represented as a circle on VSM diagrams. The cluster of system-3, -4 and -5 (direction, foresight, policy) provides the "brain" for that specific service and level; each is represented on VSM diagrams by a square symbol, within another enclosing square for the overall "brain" cluster. Each cluster may support any number of "system-1" operations sub-systems.

Each "system"-type also communicates and coordinates with other "systems" of the same type in the levels above and below in the hierarchical tree: higher level policy expands outward into lower level policy, higher level direction expands outward into context-specific detail at lower levels, and so on.

Every link between levels and between "systems" is also an information path – a relevant point for IT service design. Overall, the information structure described by the model closely resembles the network of nerves and ganglions in a living body – as would be expected if this represents "the brain of the firm".

The system-2 and system-3*[1] components are somewhat outside of the management / operations partition – in other words, coordination, choreography and validation are always somewhat distinct, as separate "infrastructure services" that pervade everything. They are represented in VSM diagrams by an upward pointing and downward pointing triangle respectively. These are closer in metaphor to a living organism's lymph system, or the clean up function of white corpuscles in the bloodstream, than to the point-to-point communication of the nerves. (The system-2 coordination services are less diffuse than system-3* validation, but share some of the same characteristics of all-pervasiveness: they need to link directly to everything, often without mediation by anything else.)

The key point is that each system-1 service-delivery is itself also a viable system at the next level downward of the recursion, and hence contains its own set of VSM sub-systems – operations, coordination, direction, validation, foresight and policy.

[1] *System-3* validation functions were originally regarded as part of system-3 direction, but later recognized as being separate yet strongly related to system-3 – hence the '*' symbol to indicate the distinction.*

Hence in this model the organization's "brain" is not something separate from operations – as it is, for example, in classical Taylorist "scientific management" (Taylor, 1911) – but is distributed throughout the entire organization as an inherent part of every component and of every service. Figure 1 shows a simplified version of the standard VSM.

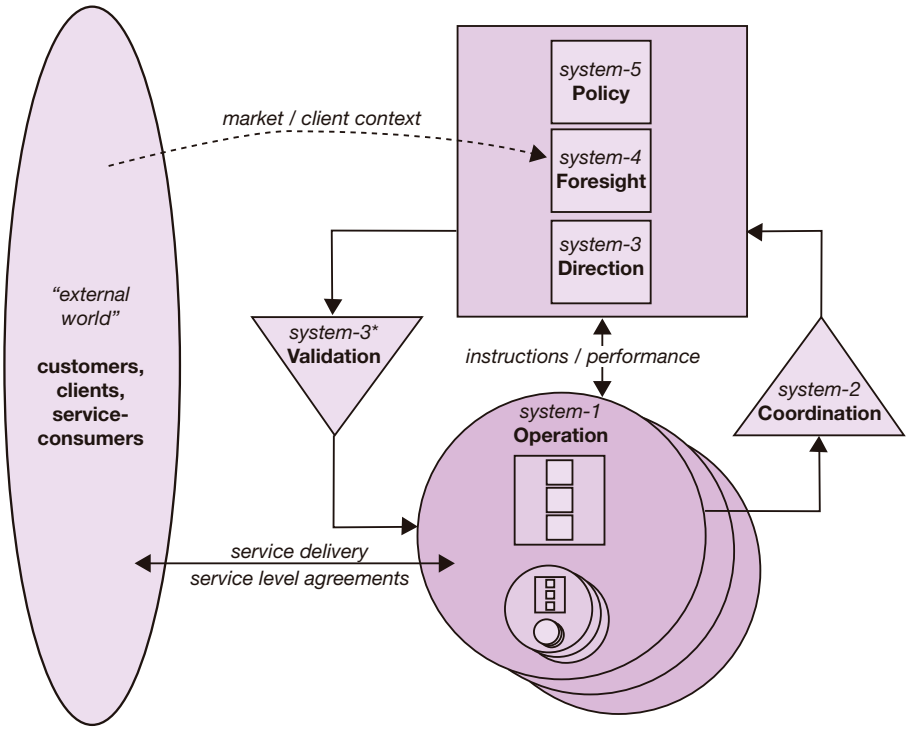

Figure 1 Standard representation of VSM

There are also what Beer describes as "algedonic" connections, via which any sub-system can escalate an urgent issue directly to any other system at any other level, bypassing the regular communication paths. This is a common design requirement for service management structures, of course; and by contrast, their absence is a common cause of failure, through business management with overly rigid control of communication hierarchies, penalizing any attempt to bypass "the proper channels" even in an emergency.

From viable systems to viable services

The system-3* validation processes and the algedonic communication are perhaps best understood not as "systems" in their own right, but as interactions *between* "systems". The resultant web of vertical, horizontal and diagonal interconnections links services across all of the organization's otherwise separated silos – supporting the interdependencies that maintain the viability of the organization as a unified whole. In using the Viable System Model within a service-oriented architecture, the emphasis shifts from viable *systems* to viable *services* – and hence a stronger emphasis on these interactions between the main VSM "systems".

In practice, there are a broad range of these interactive support services. In our work on quality system architecture for a large logistics organization, we identified at least four

additional interactions of this type which linked well with ISO-9000 principles. To distinguish these extensions from the original VSM systems, we assigned labels with letters rather than numbers, as follows:

- "X": **exception-management** for short term – algedonic links (equivalent to ISO-9000 "correction") between "system-1" and "system-3" or "-4"
- "C": **corrective action** (as per ISO9000, also preventive action) – arises from review of system-3* and X-transactions; also driver for "P"-transactions (below)
- "M": **issue-monitoring** and **issue-management** – usually triggered by X, system-2 or -3
- "P": **process-improvement** – monitor and review of interactions up and down between any numbered "system"

The list of interaction types could be extended further, to include similar pervasive concerns such as security, for example, or health and safety – see the "Lessons learned" section later – but this set was sufficient for the needs of that particular project. So far this may still seem somewhat abstract. But if we remember that this describes the relationships needed for the *viability* of services within the overall enterprise, it becomes clear that this has direct, concrete applications, because it identifies the infrastructure services needed to support every service. It also tells us that if any of the interactions denoted by the lettered systems are missing, the system cannot perform well, especially in the longer term; and if the support implied by any of the numbered systems is absent, the service will impact on the viability of the entire enterprise, and may not operate at all.

In effect, this "Viable Services Model" (xVSM, as an extended VSM) provides us with a map of essential interdependencies between services. We can then use this map to verify service completeness, and assess and where appropriate, improve existing service structures and service relationships.

Any apparent gaps in service interdependencies identified in the assessment would imply unrecorded functions or services, operational risks, untraceable costs, or lost opportunities for improvement – all of which are significant for every organization.

Viable services checklist and process

To apply the xVSM in service management, use the following procedure:

1. Identify scope
2. Identify service completeness relationships
3. Identify service and service link implementations
4. Conduct gap-analysis review
5. Take action as appropriate

Step 1: identify scope

Select any appropriate business function or service – whether high-, mid- or low-level – for which an assessment is required. Typical reasons for an assessment would include business transformation, process reengineering, check of technology or regulation, and identified or suspected problems with quality, security, etc.

From the selected starting point, create a preliminary overview model of decomposition of services in scope, from higher level to lower level. Identify basic links between these services, such as horizontal value-chains and process-choreography, and vertical instruction- and reporting relationships.

Step 2: identify service completeness relationships
For *each* service listed in the overview model, identify links (if any) with other business functions or capabilities that provide, at the least, every one of the following support services:

- 5: what services or functions define this service's *policy*?
- 4: what services or functions define this service's *tactics*, or monitor the *outside environment*?
- 3: what services or functions *define*, *manage* and *oversee* this service's tasks, responsibilities and resources?
- 3*: what services or functions conduct *random checks* or *audits* on this service, to verify and validate its performance?
- 2: what services or functions *coordinate* this service's operations with those of other services?
- 1: what "downline" services or functions does this service *aggregate*, and how does it manage that aggregation?
- X: what services or functions support management of *run-time exceptions* for this service?
- C: what services or functions support *corrective action* and preventive action for this service?
- M: what services or functions does this service use to *monitor*, track and manage *quality issues* and other issues?
- P: what services or functions support *process improvement* and service improvement for this service?

Note that multiple links may exist for each item in the checklist. Where a link exists, add entities for the respective service and connection path to the model. Tag the connection path with the respective system type label, such as by adding a character prefix to the connection's caption, or by an appropriate color code.
Where a required link does not exist, add a placeholder entity and appropriately-labeled connection path.

Step 3: identify service and service-link implementations
For each service and connection path listed on the updated model:

- Identify the service implementation type – IT-based, human-based, machine-based or composite.
- Identify the type and content of each xVSM connection path between the service and its related services – for example, an IT-based transaction, a human-based transaction such as an audit review, a machine-based operation, etc.
- Confirm that the transactions across each connection path fulfill all the needs for the respective xVSM interrelationship between the services – for example, that all policy escalations or process choreography needs are addressed.
- Where a single xVSM role for a service is delivered by multiple sources – for example, multiple stakeholders for system-5 policy-development, or business-units in different divisions providing system-4 strategic foresight and business intelligence – ensure that transactions on all the respective connection-paths are similar, symmetrical and non-conflicting.

(For existing services and connections, identify the current implementation; for "missing" services – those represented by placeholder entities in the model – identify probable requirements for implementation.)
Record this information either as metadata within the model, or in a separate linked document.

Step 4: conduct gap-analysis review
Review the updated model and metadata for "missing" services – placeholders in the model – and for incomplete or inappropriate transaction sets across connection paths between services. Identify the needs, connection paths and transactions represented by any identified issues. Specify the key performance indicators, critical success factors and overall constraints for probable service level agreements across each connection path. Beware of making early assumptions about implementation methods – for example, that a reporting transaction should "obviously" be implemented via an IT-based web service – as doing so can limit future potential for process reengineering or flexibility for disaster recovery.

Step 5: take action as appropriate
Develop proposals for change, using the organization's enterprise architecture and change management processes, and action the changes as appropriate.

In practice, steps 2-5 will often occur iteratively, with each update cycle providing new information about actual or potential gaps in service completeness. Note, though, that this may give outsiders the mistaken impression that the process steps may occur in any order, since different sections of the overall scope may be completed at separate times or even in separate projects.

It would also be common for the xVSM process to be used within a larger scale business transformation or enterprise architecture project. In any case, as described in step 4, the assessment and subsequent action should always be guided by the organization's existing standards and processes for governance, change management and the like.

APPLYING THE VIABLE SERVICES MODEL

To illustrate the use of this process, let us turn to some examples of real life applications of the xVSM in two large Australian organizations (some details have been intentionally suppressed or amended in order to preserve commercial confidentiality).

In both cases, the xVSM assessments evolved out of, and depended on, the development of a broad scope functional business model – in effect, a high- to mid-level model of business services. The results of the xVSM assessment provided content for further expansion and clarification of the functional model.

Case 1: Logistics organization

The first example is from a large logistics enterprise, operating nationally but also with some international links.

Background and scope
The focus for the project was a business transformation exercise for the logistics operations area, to support new high margin product features such as online real time track-and-trace for logistics customers. (Other divisions of the organization managed large customer contracts and the increasing business in support of direct mail clients, but those were not included in the scope for this project.) Since the issues covered a broad range of IT-based, human-based and machine-based processes, the project team was created from a consortium that bridged across service management, process modeling, business analysis, and enterprise architecture. The overall aim of the project was to develop a blueprint for all

aspects of service management for the entire division, including the IT architecture, business architecture, process architecture and service architecture.

Functional business model

The first major deliverable for the project was the functional business model, describing and categorizing all business activities within the division. Business analysts within the team reviewed existing activities to derive a picture of the enterprise that, as far as practicable, was independent of any assumptions about actual implementation. The aim there was to simplify future process re-engineering which might change the mix of IT-based, human-based or machine-based processes.

Business functions were categorized into a four-level hierarchy, from the most abstract (equivalent to Zachman's level-2 "context" layer) to a level close to actual detailed operations (equivalent to Zachman's level-5 "sub-contractor" layer). The fine granularity down to the operations level permitted a detailed mapping for Activity Based Costing. The full model cannot be shown here, for reasons of space and commercial confidentiality, but as figure 2 illustrates, the topmost level was a fairly straightforward single-pass value chain, with division-specific support functions shown above, and enterprise-wide support functions below.

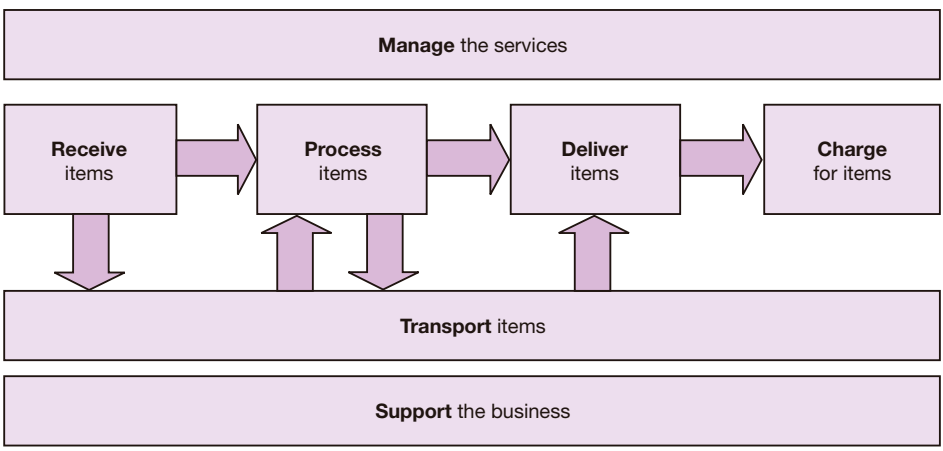

Figure 2 Logistics highest-level function-map

Mapping functions to VSM

Even at this level of coarse granularity, the mapping to the original VSM is both clear and relevant. The value chain – accept items, process items, deliver items, also passing through transport items – provides the division's system-1 service-delivery functions; the manage-functions provide the system-3 to system-5 services; and the enterprise-wide support functions are a separate division's system-1 services. This in turn implies another level above, providing an overlighting system-3 to system-5 – in other words, the enterprise-wide management and service management.

The hierarchical relationships also become more evident when we look in more detail at relationships between functions at lower levels – see table 1. Each of the major value chain tasks also includes its own line management, though the longer term strategy, foresight and

policy services in practice are mostly provided by external units in the management group. Note that there may be multiple strategy and policy services linked to each service – in other words multiple stakeholders in the purpose and role of the business function.

VSM function	Business functions (services)
5: Policy	manage - develop policy
4: Foresight	manage - equipment - design / specify / evaluate equipment manage - design infrastructure manage - property - specify property requirements manage - containers - specify container requirements process - manage item processing - review performance
3: Direction	process - manage item processing - dock management process - manage item processing - estimate process volumes process - manage item processing - quality control process - manage item processing - staffing & rostering process - manage item processing - monitor operations process - manage item processing - time & attendance
3*: Validation	(not represented? – one reference to “quality control”)
2: Coordination	(not represented? – one reference to “plan & schedule”)
1: Operation	[self] - move items using conveyor system [self] - move items manually [self] - move items using forklift [self] - manage empty containers

Table 1 Example VSM crosslinks for “move items between steps” service

Note the crosslinks which are *not* in the table: mappings for system-3* validation and system-2 process choreography. What was disturbing was that these were absent from the original model because, for the most part, there were no matching functions in the real organization. Clearly the activities did occur in some manner, because the value chain operated at a commercially viable level; but there were few examples of explicit business functions that addressed these viable system roles – a fact which was reflected in known problems with process quality and coordination. In this sense, the VSM became a predictive diagnostic, highlighting potential gaps in service interrelationships.

Extended mapping to xVSM

Further problems were highlighted when we mapped operations-level business functions against the extensions of the full xVSM – the “lettered” interrelationships. For example, there were several business functions labeled “corrective action”, but in practice the emphasis for almost all of them was closer to “get the job out of the door” than “identify and resolve root causes of incidents” – in ISO9000 terms, “correction”, the xVSM “X” exception management role rather than true “C” corrective action. The only “P” process improvement function listed in the model was in a single business unit that was split somewhat unsatisfactorily across head offices in two separate cities; and there appeared to be no be business function anywhere that was responsible for shared, nationwide “M” incident monitoring.

Again, all of these absences were reflected in known intractable difficulties with process quality. And it was clear that unless these were resolved, it was likely that any attempt to introduce high technology track-and-trace systems would simply aggravate the problems.

One of the major tasks arising from this exercise, for example, was to identify those business units that genuinely *were* doing true corrective action, and leverage that capability more broadly across the organization.

We also mapped the xVSM "systems" against another variant of the functional business model, called the "business systems model". This clustered the business functions into "systems" that were in physically or operationally distinct areas of the organization but did similar work or used similar information – in other words, the natural xVSM groupings. Following the logic of xVSM, we assumed that functions for all the VSM numbered "systems" had to exist somewhere, otherwise the organization would not have been viable. If so, apparently absent "systems" would indicate untraceable costs for Activity Based Costing. In the same way, the xVSM lettered-"systems" could be absent or simply undescribed in the function model, but in either case would represent potential or actual lost opportunities for process improvement.

The results were disturbing. In xVSM terms, barely half of the organization's costs could be traced to the respective business function, and barely *one-sixth* of the full set of functions needed for reliable process quality could be identified within the enterprise. In a significant number of cases these business functions did actually exist – yet there was no way to identify them within the organization's existing models.

xVSM functions and quality management

As a final exercise, a brief business analysis was carried out to model the communication paths between related functions. As would be expected in a traditionally hierarchical industry, the primary VSM vertical pathways – particularly the upward links between each operations service and its respective management – were relatively easy to identify. But the hierarchical culture impacted on the less-hierarchical VSM links for cross-functional coordination and random audit, and especially on the hierarchy-sidestepping algedonic links. Indeed, there was all too much evidence of the "Taylorist trap", in which even simple exception issues would be escalated repeatedly to higher and higher levels, who in turn did not have sufficient on-the-ground experience to make the appropriate decisions.

The "silo" mentality had its worst impact, though, on the pervasive community-of-practice links needed for the organization-wide *x*VSM functions – in other words between X, C, M or P functions at every level, both horizontally and vertically. In practice, such links barely existed at all: instead, there were isolated pockets of excellence in concerns such as incident tracking and statistical qualitative analysis, scattered around the organization at various levels and locations, with almost no support or even understanding from above, and frequently suffering from a palpable sense of frustration and alienation sometimes bordering on despair. This again was reflected in poor end-to-end process coordination and intractable quality problems throughout the entire organization.

Resultant actions

These concerns themselves were not news, of course, especially to the more experienced business analysts on the transformation team. But the xVSM mappings to the function models not only helped to clarify some of the causes, in service incompleteness and missing interdependencies, but indicated places where change efforts would bring the greatest rewards for the organization. The simplicity of the xVSM concepts and visual models also played a key part in garnering support from the executive to promote new communities-of-practice for organization-wide knowledge sharing.

One of the end results has been a much stronger emphasis on support for distributed quality management, and for service management principles and practices overall throughout the enterprise. And with a stronger awareness of whole-enterprise interdependence, the scope of the business transformation project has also been expanded from its original focus on a single division, to now cover the whole organization and even some of its partner-relationships.

From an xVSM perspective, all of this was achieved for very little real cost. Development of the core business function model was non-trivial, especially in an organization of this size and complexity, but it had already been created as part of the transformation team's deliverables. From this existing base, and even including the business analysis to identify the "hidden" players in the quality management domain, the entire xVSM assessment probably accounted for less than one person-month of consultant effort. And although the xVSM framework was just one tool amongst many in use for the business transformation team's work, there was no doubt that it proved innovative and valuable in this context.

Case 2: Government department

Some months later, an opportunity arose to apply and refine the xVSM model in a radically different business context – a sizeable state government department in the human services sector.

Background and scope

In the logistics organization, there had been only one main business value chain – a straightforward single path from accepting an item to delivering it – and information rarely needed to be maintained much beyond delivery and billing. By contrast, the government department had at least four main business areas, with an almost infinite number of permutations for business processes. And its information needed to be maintained in a high security, high privacy context, literally for a lifetime, in conjunction with a broad range of other government and non-government agencies, whilst the respective government policy might well change from week-to-week. In other words, it was again not an IT-centric organization, but one with extremely complex information management requirements, and potentially problematic intersections between human-based and IT-based parts of the business processes. It was also undergoing almost continuous review and change under the most intense political and public scrutiny – not an easy environment in which to work!

Functional business model

The nominal focus for the assignment was to set up an enterprise architecture capability with a strong IT emphasis, but it soon became clear that this would be both premature and too narrow in scope. Instead, the first priority was for an organization-wide business function model that would define the overall scope and lay a foundation for future enterprise architecture and service management efforts.

The available time and resources were not sufficient for a full four-tier function model as at the logistics organization, so a three-tier structure was developed, identifying business functions via references drawn from a wide variety of sources such as the annual report, the internal intranet and brochures on services to the public.

The first layout for the model resembled that for the logistics organization, with the four main business areas vertically in the centre, and other support functions at the edges, to resemble the sides of an enclosing box. Figure 3 shows the high level version of the initial model, simplified somewhat and amended to maintain commercial confidentiality.

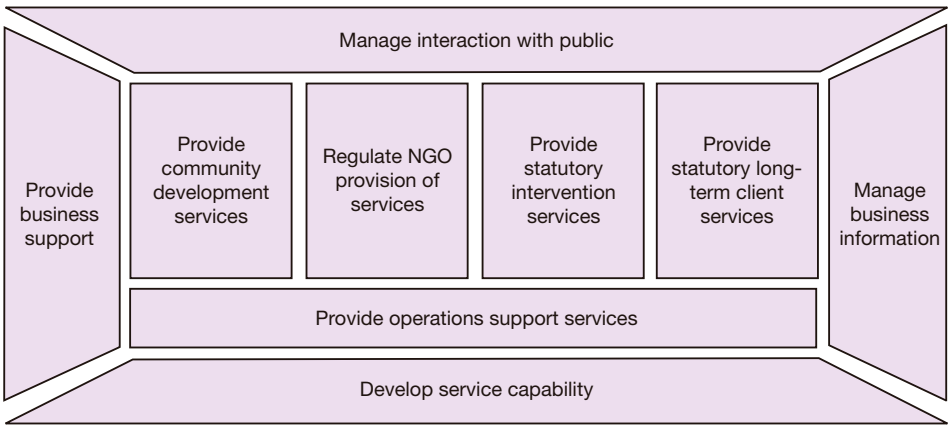

Figure 3 Human Services initial high-level function-model

xVSM as basis for functional business model

This proved useful as an initial basis for discussion – several people commented that it was the first time they had been able to get a sense of the organization as a whole – but the consensus was that the layout gave too much emphasis to existing business units and not enough to the overall flow of the business, with clients and their casework moving back and forth over time between the different arms of the enterprise. A quick review showed that an xVSM approach could work well as a guide for an alternative layout, as shown in Figure 4.

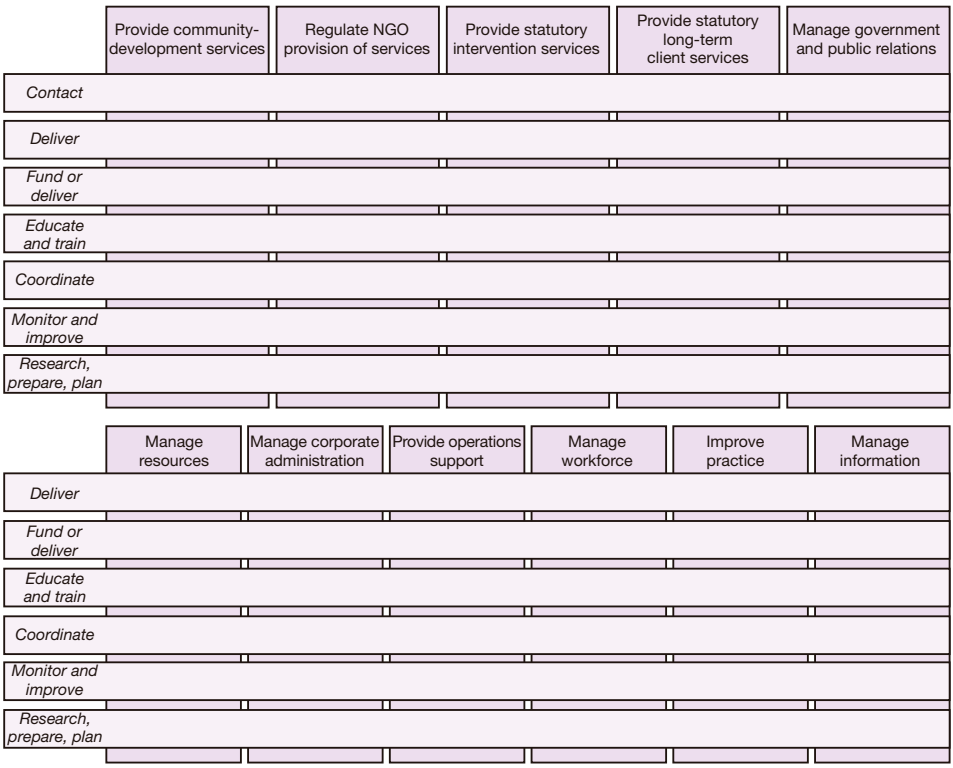

Figure 4 Human services xVSM-based high-level function model

In effect, this is a matrix based on an inverted, simplified two-layer xVSM, with separate layers for the customer-facing business functions – the equivalents of the value chain services in a commercial context – and the support functions. In each case the service delivery functions are shown at the top – split into sub-sections for contact channels (customer-facing services only), direct delivery, funded delivery and education or training – and the context-specific foresight, strategy and policy development shown below in each of the two layers. This inverted layout was chosen because it aligned well with another business-results model already much in use in the organization.

All of the identified business functions were re-mapped into this matrix. The resultant function map was then re-assessed in gap-analysis.

xVSM gap-analysis

This matrix layout highlighted several gaps – both apparent and real – in the overall set of services. Some were intentional, and expected – for example, some services did no external education, or funding of NGO-supplied services. But as with the logistics organization, unintended gaps occurred, particularly for the pervasive xVSM support services – corrective action, incident tracking and so on. Poor awareness of non-IT aspects of security, for example, was a particular known problem.

The key point from this layout was that it made the service incompleteness *visible* – and thus evidently in need of action to resolve the gaps.

Resultant actions

Unfortunately, the model also highlighted the previously unacknowledged reality that the key obstacles for further enterprise development were likely to be cultural rather than technical. This hypothesis was confirmed in subsequent business analysis activities. In particular, relationships between business and IT were poor to non-existent, leading to frequent miscommunications and poor alignment between business needs and delivered IT services.

It was accepted that issues of this type and magnitude would take at least two or three years' patient effort to resolve, and were far beyond the scope of the original assignment. Further developments of the enterprise architecture and its underlying service management were shelved until the issues could be addressed. However, the xVSM-based service model continued to be used extensively as a means to create new dialogue between business and IT.

SOME LESSONS LEARNED

Experience with the xVSM in these projects suggested some additional value points and potential for further development of the model.

Improved business-IT dialogue

Perhaps the key value in both examples was that the VSM / xVSM approach to service modeling treated IT-based and non-IT-based services in exactly the same way, and hence was *not* perceived as IT-centric. This in itself assisted in allaying business suspicions about IT service management, and helped to create channels for improved business-IT dialogue. The framework also made it easier for both technical and non-technical staff to understand transitions between the IT-based and non-IT-based services in value chains and support

functions, and the relationships between high-level business abstractions and real-world business processes.

Services as information-architecture

With increasing experience of the model from an architecture perspective, it is becoming clear that the xVSM is also implicitly a high- to mid-level service-oriented architecture for information architecture, because every service interface identified in the model will require two-way information support. At this level the information interface is implementation-agnostic, and might be implemented at a real-world level by any appropriate combination of IT and human mechanisms – for example, an algedonic exception-escalation requirement might be served by a purpose-built web service, a priority email address or a management "open door" policy. The point here is that the xVSM identifies which interfaces are necessary for the viability of the overall enterprise, and the purpose of each information interface.

Support for scalability and skills transfer

For process and service reengineering, another real advantage of structuring services and service management in this way is simplicity. Although some of the details will change with each service, the overall pattern is the same everywhere, and at every level. There is much less to learn as people move from one area to another; abstract high-level service designs are more likely to work when applied as real-world implementations; process reengineering and disaster recovery planning – which in essence depend on changing the implementation of the same overall service – have a much greater chance of success.

Extending the xVSM

The version of the xVSM described here was aimed primarily at the quality-management aspects of service management. As the case-studies indicate, the model is useful for overall service analysis and service modeling even in its present form. To create a greater alignment with ITIL and other common business frameworks, some additional pervasive meta-services would need to be added to the X/C/M/P set in the existing xVSM checklist and accompanying analysis process, such as "S" for security management, or "H" for health-and-safety.

If an "S" meta-service for security is added, the xVSM would map reasonably well with ITIL V2 and V3, as can be seen in table 2.

The mapping with ITIL V3 is less obvious at the higher level, but is more evident when the high-level categories are expanded to their individual components.
The xVSM also provided a useful bridge between business transformation and enterprise architecture development. The main problem encountered there was that, far too often, enterprise architects tended to hold a rigid IT-centric or even IT-only view of the enterprise, and could thus be more of a hindrance than a help, especially in developing the delivery-agnostic models for high-level enterprise-wide service management.

Modeling tools

For both the case studies, the models were developed using standard office graphics software. Modeling in such tools has severe limitations, and there was no doubt that a purpose-built modeling toolset would have been valuable for model development, especially in identifying and tracing xVSM vertical, horizontal, type-related and pervasive links between related services. In principle the type of toolset used for enterprise architecture would have been ideal, but unfortunately all of the toolsets tested reflected the near-obsessive IT-

centrism of current enterprise architecture. The resultant constraints in the tools' underlying metamodels meant that usability and connectivity for this purpose was little better than that of office graphics – in effect, a very high cost for little real return. The organizations in both case studies here have raised the problem with tool vendors, and it is to be hoped that it will be addressed and resolved in the near future.

xVSM function	ITIL V2 component	ITIL v3 component
5: Policy	Business Perspective Planning to Implement	Service Strategy
4: Foresight	Planning to Implement ICT Infrastructure Mgmt	Service Strategy Service Design
3: Direction	Service Support ICT Infrastructure Mgmt Application Management	Service Operation
3*: Validation	Service Support	Service Operation
2: Coordination	Service Support ICT Infrastructure Mgmt Application Management	Service Operation
1: Operation	Service Delivery	Service Operation
X: Exception	Service Delivery Service Support	Service Operation
C: Corrective	Service Support Planning to Implement	Continual Service Improvement
M: Monitor	Service Support	Continual Service Improvement
P: Improve	Service Support Planning to Implement	Service Transition; Continual Service Improvement Service Design
S: Security	Security Management	Service Operation Service Transition

Table 2 xVSM and ITIL

Politics of service-architectures

Finally, a warning that the political issues associated with this type of modeling are likely to be non-trivial, especially across the troublesome business-IT divide. Enterprise-wide modeling necessarily crosses silo-boundaries of turf, control and worldview; mutual understanding and even mutual respect across those boundaries can sometimes be notable only for its absence. In such cases, modelers may well find themselves in an unwelcome "pig-in-the-middle" position, in danger of being reviled and rejected by all parties. So this type of work not only requires technical skill and analytic ability, but also a high degree of patience, tact and diplomacy, and will only succeed if it is backed up by the full authority and support of senior management.

SUMMARY AND CONCLUSIONS

The Viable Services Model is an extended version of the proven Viable System Model, adapted to support service management and service oriented architecture for large enterprises. The model provides a checklist and process to assess and validate the

completeness of interdependencies between services of any type and at any level within the enterprise. The methodology was derived from publicly-available sources, and is non-proprietary. Although the facilities of a purpose-built toolset would be beneficial for model development, models can be created using ordinary office software or even by hand.

Providing both predictive diagnosis and patterns for successful service structure design, the model has been proven in practice as a useful adjunct to business transformation, enterprise architecture and ITIL implementation efforts, and a valuable addition to the service management toolkit.

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  - Zachman framework: http://en.wikipedia.org/wiki/Zachman_framework

8.4 Bridging the gap between business and technology

Changing to a mature, customer focused and business engaged IT organization involves more then just ITIL's service support and service delivery processes. Michael Davies and David Chesterfield describe how an Australian bank began to bridge the gap between IT and business by developing their own approach to ITIL best practice.

INTRODUCTION

Until the development of ITIL® V3, the typical focus of ITIL implementations has been on the IT Service Management (ITSM) processes described in the ITIL *Service Support* and *Service Delivery* publications. By themselves they may not be enough. This case study tells the story of how an Australian bank really began to bridge the gap between technology and the business once it gained an understanding that the true scope of ITIL is actually much larger and that other processes also make a vital contribution.

The closer relationship with the business was not achieved in isolation from the usual ITSM activity. It occurred within the overall context of a continual service improvement program. We will set the scene by describing Suncorp's business, its decision to adopt ITSM best practice in 2001 and the progress made over the next few years. Over this time, it was realized that one of the major objectives, that of bringing the ICT department closer to the business, had not been achieved.

The reasons for this were not immediately apparent; until the missing piece of the ITIL "jigsaw" was found – ICT infrastructure management. Once the processes for managing the technology itself were understood, it became possible to start building the bridge. We will describe how this was done and what still remains to be done in the future to allow the full two-way flow of communication between the business and the ICT department.

ABOUT SUNCORP

On 1 December 1996, Queensland Government-owned Suncorp and QIDC merged with publicly listed Metway Bank, to create the new allfinanz group, Suncorp Metway.
The Suncorp entity was 100% Queensland Government owned and operated as an allfinanz group. The organization began in 1916 as the State Accident Insurance Office. It extended its operations into life insurance, general insurance and Compulsory Third Party and became the State Government Insurance Office (SGIO). It added superannuation, building society and finance operations, renaming itself Suncorp.

Metway Bank was Queensland's largest locally based bank. Starting life as the Metropolitan Permanent Building Society in 1959, Metway Bank listed on the Australian Stock Exchange in 1988. In 1990, it acquired Prudential Finance Limited and the Household Building Society in 1992.

In 1986, QIDC evolved out of the Queensland Agricultural Bank, established in 1902. Initially a rural financier, QIDC expanded to include small and medium sized business commercial lending. QIDC was owned wholly by the Queensland Government.

The three companies merged to create a competitive financial institution, better geared to meet the needs of the future. It also created Australia's fifth largest listed financial services group, bringing with it the associated economic benefits of a major Australian corporate headquarters located in Queensland.
The Queensland State Government was the largest shareholder of the new group, with a 68% holding. The other 32% was held by existing Metway shareholders. The State Government indicated its intention to scale down its holding in stages within five years to no more than 15%. The merger and amalgamation was completed in 1999. Under the new, single brand, Suncorp Metway enabled delivery of the group's resources under one banner, streamlined the product range and eliminated duplication in the branch network.

After Suncorp-Metway Ltd acquired GIO in 2001, AMP Ltd's shareholding in motoring club joint ventures in 2002 and Promina Group in 2007, it is now one of Australia's top 20 listed companies and is Queensland's biggest listed corporation. The Group is owned by 222,936 shareholders and has over 7 million customers. Suncorp employs 16,000 staff, has 233 retail and business banking outlets, predominantly in Queensland, and 33 GIO agencies in NSW and Victoria. Since the Promina acquisition, Suncorp has a total representation in 450 offices, branches and agencies throughout Australia and New Zealand.

SUNCORP'S ITSM JOURNEY

Getting started

Suncorp recognized the need to improve the quality of ICT services when an organizational survey showed lower internal customer satisfaction levels with IT than the company-wide average on all key indicators. A second survey in May 2000 showed a marked improvement but there were still concerns regarding the cost-effectiveness of IT. Suncorp then decided to undergo an external assessment to gain an objective picture of their maturity, and establish a baseline against which further improvement could be measured.

The first external assessment May 2001

The scope of the first assessment was restricted to the ITIL service support processes, service level management and computer operations management. The assessment was carried out using a benchmarking tool developed by the British Government's Central Computer and Telecommunications Agency (CCTA), a fore-runner of the Office of Government Commerce (OGC). Key findings from the assessment were:

- Change management and release management were well established.
- Problem management and configuration management were still very immature.
- The service desk did not retain ownership of incidents once they were transferred to second-line support.
- The support tool in use did not facilitate process integration.

A number of detailed recommendations were made to allow process maturity to be improved over the next few years. Although Suncorp did not change the support tool, process improvements were made over the next few years, particularly in problem management.

Reassessment December 2004

Two and a half years later, towards the end of 2004, Suncorp commissioned another assessment to determine what progress had been achieved. The second assessment used the OGC self-assessment tool that was then available. Its scope was extended to include the other service delivery processes and, in addition to maturity, processes were also assessed for efficiency and effectiveness.

In general, processes had improved although availability management, capacity management and configuration management still lacked maturity. Incident management was also rather low but a revised end-to-end process was about to be deployed and it was expected that it would deliver significant benefits. There was still a bit of confusion in the use of terminology, particularly incidents and problems.

Suncorp had also launched a Branch Performance Monitoring project to establish end-to-end monitoring of critical services from a selection of locations and expected this to improve the effectiveness of availability and capacity management.

Key recommendations from the second assessment were:

- the establishment of a continuous service improvement program
- more structured approaches to configuration management, availability management and capacity management including the establishment of end-to-end service monitoring
- the clarification of roles and responsibilities and terminology within incident management and problem management
- the deployment of the end-to-end incident management and the establishment of a known error repository

The "gap" is still there!

After more than three years of improvement activity, it was starting to become apparent that, while process maturity was certainly rising, the flow-on benefits of an increased customer focus and an improved engagement with the business had not been fully realized. There were many staff in ICT operations who were not directly involved in ITSM and could not see clearly how their activities linked into service improvement. However, things were about to change.

ICT Infrastructure Management, part of the ITIL series, was published along with *Application Management* in 2002. For many adopters of ITIL, the two new publications were largely ignored, with the focus remaining on *Service Support* and *Service Delivery* right up to the release of ITIL V3. For Suncorp and some other organizations the reaction has been very different.

THE MISSING PIECE OF THE JIGSAW

Suncorp "discovered" *ICT Infrastructure Management* in early 2005 and realized that it was a key missing piece of the ITIL jigsaw. It showed how staff involved in ICT operations did not work in isolation and how they made a vital contribution to service quality. Another key message of the publication was the need for a lifecycle approach to the planning and provisioning of the ICT infrastructure, required to provide high quality ICT services. We will look at each of these elements in a little more detail and go on to show what Suncorp did with them.

Putting operational activities into context

Realizing that effective infrastructure management also involved the establishment of structured processes allowed operational and technical support staff to understand that their activities can have a direct effect, either positive or negative, on service quality and customer satisfaction. This meant that all ICT staff were potential contributors to service improvement.

The first step that Suncorp took was to conduct another external assessment in April 2005, this time focused on the operations area of infrastructure management. Key recommendations from the report were:

- the establishment of a continuous service improvement programme, as recommended in the December 2004 assessment report
- the establishment of a Operational Document Library
- clarification of roles and responsibilities for event management and IT service continuity management
- the establishment of effective communications channels between the various infrastructure management functions
- better infrastructure management process documentation
- review of change management and the gating process for infrastructure projects to ensure that adequate stakeholder consultation occurs
- increased control of the desktop computer environment

The assessment provided Suncorp with a starting point for improvement in infrastructure management activity. They asked for a course to be developed in Australia and, over the next few months, trained key operations staff to allow them to sit for the recently established manager's certificate in ITIL infrastructure management.
The course participants were introduced to a key concept of a network operations centre, and this was to become a key initiative for Suncorp in the establishment of a slightly renamed National Operations Centre.

Establishing a lifecycle approach to service management

Another key element emphasised in *ICT Infrastructure Management (ICTIM)* and *Application Management* was the need for a lifecycle approach. Operational requirements for services need to be identified and incorporated into solution design from the outset, rather than considered once the solution has been developed and is ready for testing. ICTIM provided a framework to translate strategic roadmaps into defined architectures to support the design of new service offerings.

BUILDING THE BRIDGE

There are two major elements of the bridge building process that we want to look at in a little more detail. These are Branch Performance Monitoring and the National Operations Centre (NOC). There have been other contributors such as the lifecycle approach to designing and deploying new services, but that could form the basis of another case study and cannot really be covered here in the detail it deserves.

The Branch Performance Monitoring project

Suncorp established this project in 2004 to provide availability and performance monitoring for key services from the business perspective, i.e. on an end-to end basis. To do this, robots were established in a selection of bank branches that would run synthetic transactions and

measure both availability and response times on a regular basis. Initially this interval would be set to fifteen minutes during business hours.

In addition to the branch monitoring, about thirty five customer-facing services were identified as critical to the business and these comprised the Customer Satisfaction Index (CSI). These services are monitored using scripted robotic transactions that represent typical customer usage. Once the project was implemented, Suncorp was able to report service achievements from the customer point of view and this had a major impact on business perception; they viewed IT as being much more business focused.

The establishment of the National Operations Centre

The other element of bridge building that we will describe in detail is the establishment of the National Operations Centre (NOC) in 2006.

How it was done

The following statement underpins the NOC project:

"Empower our people and harness our technologies and processes to achieve operational excellence, and move toward service excellence."

The project was tasked to deliver:

- a world class NOC with a strong customer focus and reengineered processes
- a workplace that does business through collaboration and teamwork
- an environment where staff want to come to work
- an area where staff from other areas want to come and work

The project team needed to transform the Computer Operations team and environment into a state-of-the-art NOC, which would provide a 24 x 7 stable production computing environment for Suncorp / GIO systems, through active monitoring and initial first level support for problem rectification and escalation.
To achieve this it was clear that organizational change would be key to the process. An organizational change specialist was brought in to work with the people involved throughout the process.

The NOC team operates 24 hours a day, 7 days a week, 365 days a year, with four shifts rotating Monday to Sunday. They are also responsible for "fail and fix" of all batch processing. As business continuity was paramount throughout the project, customer-aligned services were always maintained to ensure no service disruptions as a result of the project.

The project began in May 2006, addressing the following:

- **customer aligned services** - Six Sigma system review to identify areas for improvement in customer services
- **optimization** - extensive review of existing technology to reduce the number of event management tools
- **reduced complexity** - the team was technology driven, with few support processes and too many event management tools to work effectively
- **high performing team** - roster system reviewed in conjunction with HR requirements to determine a more effective roster system for the team and the business. Focused effort on re-developing the physical look and feel of Computer Operations, with a review of existing processes used by the team

The project was split to five distinct streams and achieved the following:

- **organizational change**
  - new staffing structure agreed and new position descriptions implemented
  - new rosters voted, agreed and implemented. Due to the radical change in rostered shift work, a number of rosters were developed to meet business needs. Staff were invited to vote for a favourite roster. The most popular roster was implemented.
- **processes**
  - aligning with ITIL best practice infrastructure framework
  - "As Is" processes mapped
- **Six Sigma review**
  - problem identified - Wintel focus
  - Six Sigma process undertaken and complete
- **event management**
  - piloted process for "networks" alerts to HP OpenView
  - developed a strategy to approach the remaining alerting tools,
  - tools review complete
- **building works**
  - the walls came down, opening up the area to the wider team
  - four large screens were installed for viewing through "one panel"

The key benefits to be realized from the project included:

- increased client satisfaction through customer focus
- reduced operational expenditure to support technology services
- increased staff engagement
- increased operational monitoring, tracking and analysis capability
- decrease in number of incidents and their severity
- reduction in the time taken to resolve incidents through proactive event management
- reduced number of repeated incidents
- reduced operational expenditure for security monitoring due to in-sourcing

The NOC is now fully operational and benefits are being realized. Through an increased contribution to the business's success, the team is moving closer to operational excellence.

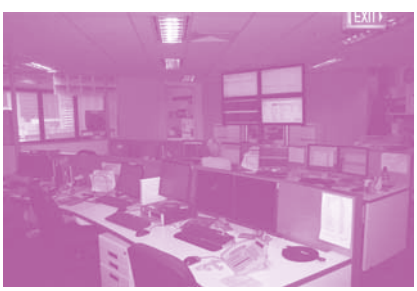

Figure 1 Suncorp's National Operations Centre (NOC)

The "wheel of fortune" – carrying out a tools audit

Suncorp recognized that, for the NOC to be successful, they needed to take great care with connecting monitoring tools to the central NOC tool. If this was not done correctly, the NOC could get flooded with events and be unable to handle them all. On the other hand, the

situation might occur where important events were not passed through the NOC and would eventually result in service failures that could have been avoided.

The first step in planning the connection of tools was to establish exactly what tools were in use and where they were used. To assist in this a "Wheel of fortune" diagram was developed showing the event and system management tools that were operating in the various technology areas. Almost sixty different tools were identified and Suncorp have plans to reduce this over time to cut licensing and administration costs.

Linking tools into the central NOC management system
The connection of tools to the central NOC tool has been a gradual process. Before each tool is connected, the possible event types are analyzed to determine which events need to be brought to the attention of the NOC for action, and which should go to the relevant technical team so that trends can be monitored. The process has been slowed down by Suncorp's recent acquisition of another insurance company and the need to merge infrastructures. The new acquisition included an IT department with its own set of processes and tools. It is Suncorp's intention to use the best elements of both departments when moving forward.

The end-to-end monitoring tools are linked into the central NOC tool and the status of each CSI system is displayed on a monitor screen in the NOC. As soon as any issue is detected, NOC staff will attempt to access the service to check if the detected event was a transient condition. If there are still issues, the service desk is alerted.

The NOC team includes an operational analyst who monitors trends and will refer potential causes for concern to problem, capacity or availability management after confirming the situation with systems management, who are responsible for the tools. The analyst does not attempt to investigate root causes, as this is seen as a problem management responsibility.

REALIZING THE BENEFITS

Seeing things from the business perspective

The first benefit of the bridge is that it has brought the business and IT closer together. Service reporting matches the customer and user experience, and IT staff have gained a clearer understanding of how the work that they do contributes to service quality. There are now many occasions when IT can alert the business of exception conditions before business unit staff are aware of the situation and faster, more effective response to incidents is possible.

The business is now keen to extend end-to-end monitoring to the next tier of applications and this will be a significant increase in monitoring activity. Monitoring has been extended to include workload volumes and profiles, and this is providing a much clearer picture of business activity. The prediction of future business workloads is also improving and this will allow more effective modelling of services.

Cultural and process improvements

Along with the building of the bridge, other improvements have become apparent within Suncorp IT. There is a spirit of cooperation between teams. Although there are a large number of staff, most people seem to know each other and work well together. As we will

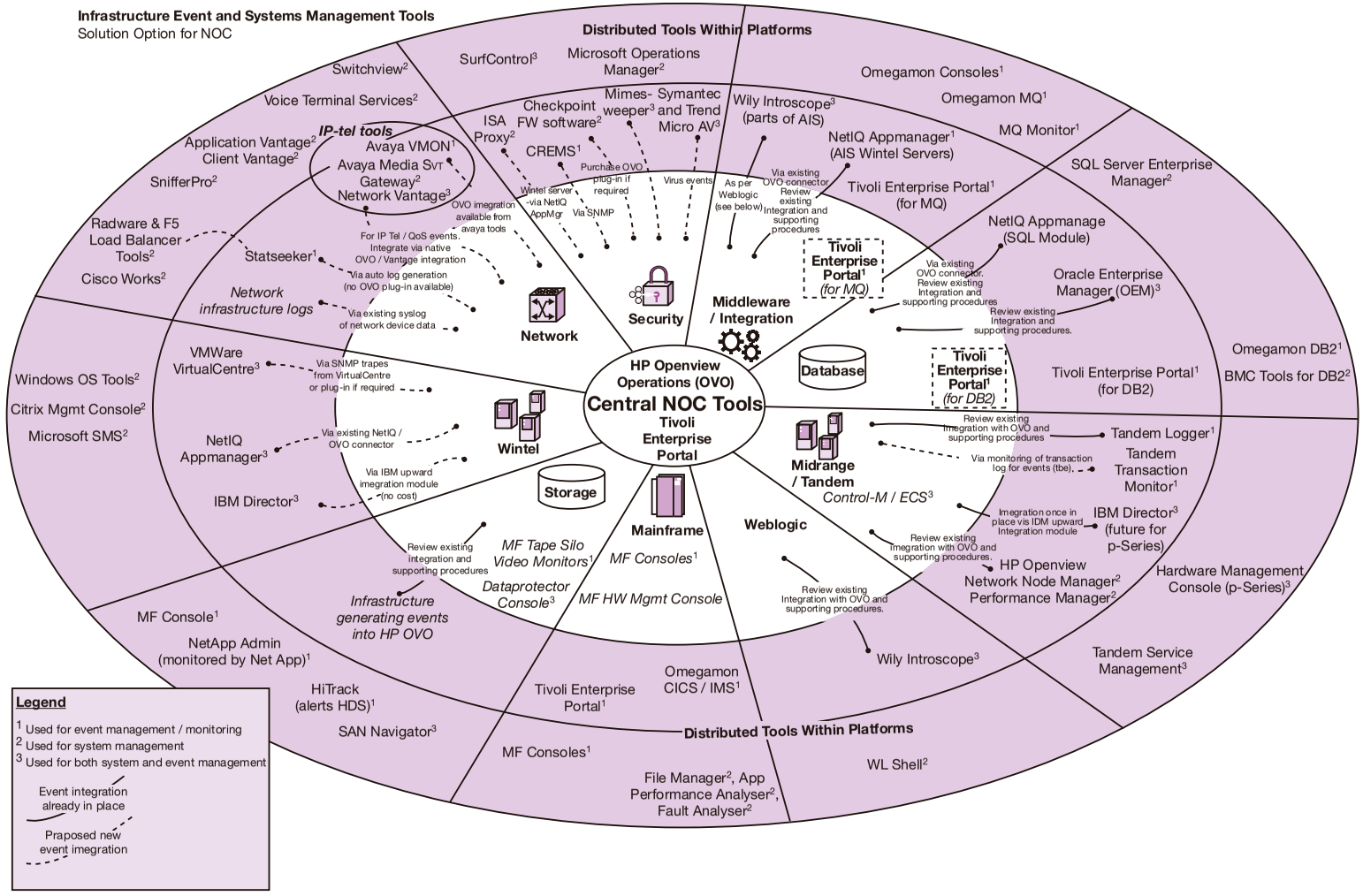

Figure 2 The "wheel of fortune"

show later, process maturity has continued to improve – particularly in the cultural dimension which represents the degree of business focus shown by a service provider.

Reaping the financial reward

In a financial services organization like Suncorp, it is also important to demonstrate how service improvement initiatives contribute to maintaining revenue and reducing costs.

In the very first week of monitoring the NOC identified a failing switch within one of the call centres. They were able to coordinate and verify the resolution prior to the call centre re-opening, saving a four hour outage to the business.
A four hour outage at the Parramatta call centre would have cost the company a significant amount of money in lost revenue.

It is clear that the systems management and monitoring tools audit, and the start of rationalisation is also starting to deliver benefits.

Through a toolset review, and standardizing on a smaller set of functional tools, Suncorp has achieved significant savings in annual software licensing fees.

Other benefits are less quantifiable but are nevertheless quite real and help to minimize service disruption to both the staff in Suncorp's business units and the external customers.

Each day, incidents are identified where branch servers reboot, which previously would not have been detected until the branch staff arrive. This would mean an outage of the branch. The NOC now has greater than 90% of these fixed before anyone notices. An hour of branch downtime is difficult to calculate in dollar terms, as it is a mix of productivity costs, loss of business and damage to reputation.

CHALLENGES ON THE WAY

Suncorp's ITSM journey has not been without its challenges. Some have been due to situations beyond the control of the IT department, while others have been due to internal issues. The important thing in Suncorp's situation is the way that it has risen to each challenge and has ensured that the lessons learned will improve the handling of similar challenges in the future. Modern organizations operate in environments where the only constant is change. The key to success is to respond to change effectively and to learn from those times where the response has not been as effective as intended.

Mergers and acquisitions

Shortly after the first external assessment in May 2001, Suncorp acquired the general insurer GIO from AMP Limited. This necessitated a merger of the ICT infrastructures that required a significant amount of IT resources and had a flow-on effect in terms of service improvement. It also meant that ITSM processes had to increase in scope to cover the expanded Suncorp entity. The ICT infrastructure merger was successfully completed but this did take longer than originally anticipated.

In March 2007, Suncorp expanded further with the acquisition of the Promina general insurance group and this now included a New Zealand component to its business operations. This time the merging of infrastructures is progressing much faster and the intention is to ensure that good practice within Promina is utilized to best effect. This has included an

examination of monitoring and systems management tools in use, to determine if they can deliver benefits to Suncorp.

Living with support tool limitations

For much of its journey, Suncorp has had to use a support tool that provided limited support for ITSM processes that were designed according to ITIL guidelines. A decision was made a number of years ago to replace the tool and Suncorp went out to tender. Problems outside Suncorp's control were encountered when the suppliers of the preferred tool ran into financial difficulties and the future of the product became uncertain. This caused the decision to be deferred.

Although this caused delays, it give Suncorp the opportunity to see that processes could still be improved without the "perfect" support tool. A new tool has, at last, been implemented but we will see that maturity was still improving before implementation occurred.

The challenge of getting configuration management right

Configuration management is recognized as being one of the hardest ITSM processes to implement well and Suncorp has been no exception to this. A configuration management project ran for eighteen months and captured a significant amount of hardware data. However, PC workstation data was never migrated into production and the Configuration Management Database (CMDB) did not include software or document configuration items. The majority of the predicted benefits of the project were not realized.

The positive side of this is that Suncorp has learnt from the experience. Prior to migration to the new support tool, extensive consultation has occurred with stakeholders such as process owners and operators, technical support groups etc. IT staff feel confident that they have been adequately consulted during this activity.

There is now a much clearer understanding of the information and level of detail that is required. Suncorp has identified the current repositories of configuration data and, very importantly, has also identified the "single source of truth" where the same information is held in a number of systems management tools. This identifies which repository is considered to hold the definitive state of that part of the ICT infrastructure.

Rolling out the standard Suncorp Desktop Platform

The final challenge that we wish to mention is the rollout of a new standard desktop and operating environment throughout Suncorp in 2006. This was a major move towards standardization of the desktop fleet and rationalization of software licences.

Although the Standard Desktop Platform (SDP) has delivered significant benefits to the business, it consumes significant financial and ICT personnel resources which has the potential to slow down service improvement.

Another lesson learned from this project is that phasing rollouts by geographic location can result in problems, particularly when a business function is split across a number of locations that are upgraded at different times. This can cause file compatibility issues when members of the same business function, but at different locations, try to share documents. The solution to this has been to adopt a hybrid approach which is predominantly phased by location but also ensures that all parts of a function split across multiple locations are upgraded at the same time, where possible.

THE SITUATION NOW

Two more recent assessments have shown the benefits that the bridge has started to deliver. Process maturity has continued to improve, ICT staff are much more business focused and there is a real sense that the IT department acts as a single team with all members doing their bit to achieve high quality services.

Process maturity assessments

Assessment in October 2006

A further external assessment took place in October 2006, and introduced Suncorp to the Process Maturity Framework (PMF). The PMF was introduced in ITIL V2 in *Planning to Implement Service Management (Appendix J)* and is included in ITIL V3 in *Service Design (Appendix H)*. PMF provides a broader scope for assessment as cultural and leadership factors are also considered. In addition to the processes themselves, the PMF looks at the additional dimensions of:

- vision and steering
- people: roles and responsibilities, skills and knowledge
- culture: moving from a technology focus towards a business and value chain focus
- technology: the degree to which support tools are used to improve process efficiency

An additional dimension of *interfaces* was also included to reflect the importance that ITIL places on process integration. The assessment now included the ICT infrastructure management processes as well as service support and service delivery.

As Suncorp was moving to another method of assessment, a parallel assessment of maturity using the OGC self-assessment tool PMF was repeated. At the time of the assessment, the NOC had only been operational for a few months.

In most cases, maturity had improved, particularly with incident management due to the successful implementation of the end-to-end incident management process. Interestingly, three processes had slipped:

- **Service level management** had dropped slightly as focus had shifted onto other areas.
- **Change management** had dropped significantly. The cause of this was due to some evidence of unauthorized change occurring and a growing recognition that information from the current support tool was of limited usefulness. The size of the drop also exposed a limitation in the OGC self-assessment tool, where a drop of 2.5 maturity levels can occur for something that can be easily rectified.
- **Release management** also suffered a drop in maturity and again a key factor was the recognition by Suncorp that configuration data in the support tool was inadequate to support effective release management.

The assessment served as a timely reminder that ITSM processes need to be monitored and prompt action must be taken to correct non-conformances. Sometimes a focus on new initiatives can cause the health of existing processes to be overlooked.

The key recommendations from the assessment were:

- to continue with the NOC implementation and the rationalization of monitoring and systems management tools
- to establish a framework to manage ongoing service improvement activity (this still would not go away!)
- to improve collaboration and knowledge sharing between teams
- to establish an effective configuration management database

- to address the change management issues identified during the assessment
- to improve service level management capability

Assessment in June 2007

The most recent assessment occurred in June 2007, to confirm that improvement was still on track, prior to the migration onto a replacement ITSM support tool. It soon became apparent that, even in an eight month period, there had been an across-the-board improvement in maturity. Importantly, change management was now back under control.

Topic	OGC maturity 2004	OGC maturity 2006	PMF maturity 2006	PMF maturity 2007	Increase in PMF maturity
Overall ITSM/ICTIM Management	n/a	n/a	3.13	3.63	16.0%
Service level management	1.5	1.0	2.31	2.98	29.0%
Availability management	1.0	1.0	2.21	3.05	38.0%
IT service continuity	3.5	4.0	2.92	3.15	7.9%
Financial management	4.0	4.5	3.56	3.71	4.2%
Capacity management	1.5	2.0	2.58	2.98	15.5%
Service desk (function)	4.0	4.5	n/a	n/a	n/a
Incident management	2.0	4.5	3.14	3.86	22.9%
Problem management	4.5	4.5	2.56	3.03	18.4%
Configuration management	1.5	1.5	2.04	2.65	29.9%
Change management	4.0	1.5	2.50	3.50	40.0%
Release management	3.5	2.0	3.11	3.40	9.3%
Design and planning	n/a	n/a	3.31	3.54	6.9%
Deployment	n/a	n/a	3.31	3.62	9.4%
Operations	3.14	n/a	2.93	3.29	12.3%
Technical support	n/a	n/a	3.08	3.35	8.8%
Overall average maturity rating	n/a	n/a	**2.89**	**3.31**	**14.5%**

Table 1 Suncorp's process maturity ratings over the last three assessments

Looking at average scores for the different dimensions of the PMF model, the dimension showing the greatest improvement since October 2006 was *culture*, indicating a clear move away from a technology focus to the adoption of the business perspective.

PMF dimension	October 2006	June 2007	Improvement
Vision and steering	3.08	3.54	14.9%
People	3.02	3.52	16.6%
Culture	2.67	3.55	33.0%
Process	2.88	3.29	14.2%
Technology	2.77	3.01	8.7%
Interfaces	2.48	2.98	20.2%

Table 2 Changes to PMF dimensions between October 2006 and June 2007

The key assessment findings were:

- the establishment of the NOC had proved to be an excellent initiative and further planned rationalisation of tools and extension of end-to-end monitoring would deliver further benefits
- continual service improvement activity was now well established
- knowledge sharing and team collaboration was steadily improving
- extensive stakeholder consultation had occurred during the planning phase for the replacement support tool
- engagement with the business had improved and IT staff were demonstrating a greater awareness of business needs

We are already doing a lot of ITIL V3!

By adopting the *ICT Infrastructure Management* guidance, Suncorp had already established a lifecycle approach to IT service management. Strategic planning is much in evidence, and technology roadmaps have a four-year horizon and are updated every six months. Program management is established and there is a well-defined gating process. A technical service catalog has been developed and the business service layer will be added. As with all financial services organizations, information security management is seen as a critical component of service design and operation.

As already described, event management is active within Suncorp. In order to define service request handling, a service definition document has been established to list the commodity services that are offered. A more formalized approach to continual service improvement has recently been adopted.

Implementing a new ITSM support tool

Suncorp recently began a conversion of its ITSM support tool from Solve to Remedy. Phase 1 went live in August 2007. This means that the CMDB and asset management modules of Remedy are up and running; the supporting infrastructure platforms have been implemented; and data was successfully migrated not only from the outgoing Solve CMDB, but also HR data and asset information from systems such as Hardcat and PeopleSoft.

The main benefits being realized are:

- reduced time and effort and increased accuracy of impact analysis on problems, incidents and changes
- increased proactiveness, timeliness and accuracy of service desk communications
- rationalization of IT assets
- reduced cost of operating and maintaining multiple systems

Further phases will cater for the integration of data from the heritage Promina group, along with the full rollout of the change management module; a pilot of the service desk (incident and problem) followed by the full roll out of service desk. The final phase of the program involves service level management.

Extension of end-to-end monitoring

End-to-end monitoring is being expanded to include all new customer facing (CSI) services that came on-board as part of the Suncorp – Promina merger. Work is already underway to produce the definitive list, along with the documentation and scripting of each individual service.

Additional "light touch" monitoring is being planned for internal services, and will be rolled out through Q2-Q3 2008. This service will monitor availability and performance of non-customer facing services through high repetition robotic transactions.

CONCLUSIONS

In this case study, we have described how one Australian company managed to start bridging the gap between the business and the technology services provider. There is still more to be done but much has already been achieved.

ITIL was always more than just *Service Support* and *Service Delivery*. In version 1, there were additional sets to *Service Support* and *Service Delivery*. In version 2, most of the focus continued to be on the two "core" publications. These books contained a wealth of knowledge that Suncorp found extremely useful, but by themselves they were not enough. It was only when the guidance in *ICT Infrastructure Management* was also adopted that the bridge could be built.

Building the bridge has provided the opportunity for production operations and hosting staff to become actively involved in IT service management. The culture has moved significantly from a technology orientation towards a business and value chain focus. Through understanding how infrastructure management processes contribute to service quality and the importance of a lifecycle approach, it has become possible to develop more structured and consistent processes that can be monitored and improved further. This has strengthened the concept of IT as a single team with all members working together to deliver services aligned to business needs.

The bridge is growing in strength and, as a result, engagement with the business has improved. The business sees that IT now has a better understanding of the way services support business processes and service performance reporting is better aligned to the business experience through increased use of end-to-end metrics. Significant reduction in service disruptions due to early detection by the NOC has delivered real benefits to Suncorp and the business now wants to expand the bridge to cover more services.

Adopting guidance from other ITIL Version 2 publications has positioned Suncorp well for ITIL V3. *ICT Infrastructure Management* introduced a lifecycle approach in the organization and this should make the transition to ITIL V3 easier. Some of the "new" processes in version 3 are already implemented. Others such as knowledge management are partly implemented. We are starting on the next stage of the ITSM journey with confidence that it is a journey worth making and that the bridge is an important milestone on the way.

Michael Davies *(Australia) is a Principal Consultant for ProActive Services and has had various roles in IT over a thirty year period. He helped to introduce ITIL into Australia in 1994 and has been advising people in its use ever since.*
David Chesterfield *(Australia) is the Executive Manager, Data Centre within Suncorp. He has more than 20 years IT experience, covering Six Sigma, Quality Management and Infrastructure Services. He has been involved in a number of ITIL projects at Suncorp.*

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8.5 The Application Services Library, adapted to the IT-services world of the future

For the last five years, the Application Services Library (ASL) has served as a framework for application management. But is it still "future proof"? Remko van der Pols analyzes ASL in the light of current IT developments and examines the possible consequences for the next version of ASL.

INTRODUCTION

In 2002, the Application Services Library was launched into the public domain as a framework for application management. The framework is promoted and supported by the ASL Foundation (now the ASL BiSL Foundation[1]), and sponsored by both IT service providers and user organizations, who benefit from sharing their best practises and using a knowledge platform for application management. The adoption of ASL in the market was quite fast, and it was implemented in many organizations, primarily in the Netherlands.

After five years, the question arose as to when a new version of ASL would be launched. One of the reasons for this question was the publication of ITIL® V3. One of the ASL strategies was to create a stable standard in order to allow organizations to benefit from their investments in their processes and best practices. But it was now necessary to check whether the ASL framework still provided the answers to both present and future questions.

Goal

In this article we describe the main features of ASL version 1.1 (see figure 1). This next release of ASL will be published as a new book. For the present, we use the name ASL 1.1, to demonstrate that the new version contains several large changes, and yet the framework does not radically change. This fits into the philosophy of taking an evolutionary approach to improve in small steps, whilst also protecting current investments in good practices.

The biggest change in ASL is the way in which it positions itself and other frameworks in the current dynamic world of ICT services. This change in point of view has a great impact, not so much in the structure of ASL version 1.1, but in how application management and processes will fit and should be implemented in the future world of demand and supply (delivery).

Structure article

After the introduction, the article starts with an analysis, addressing the current strengths and weaknesses of ASL. This analysis leads in to a discussion of several changes for the new version of ASL, and ends with conclusions in the last section.

1 *The Dutch organization that manages and develops the Applications Services Library (ASL), a framework for application management and the Business Information Services Library (BiSL), a framework for information systems management.*

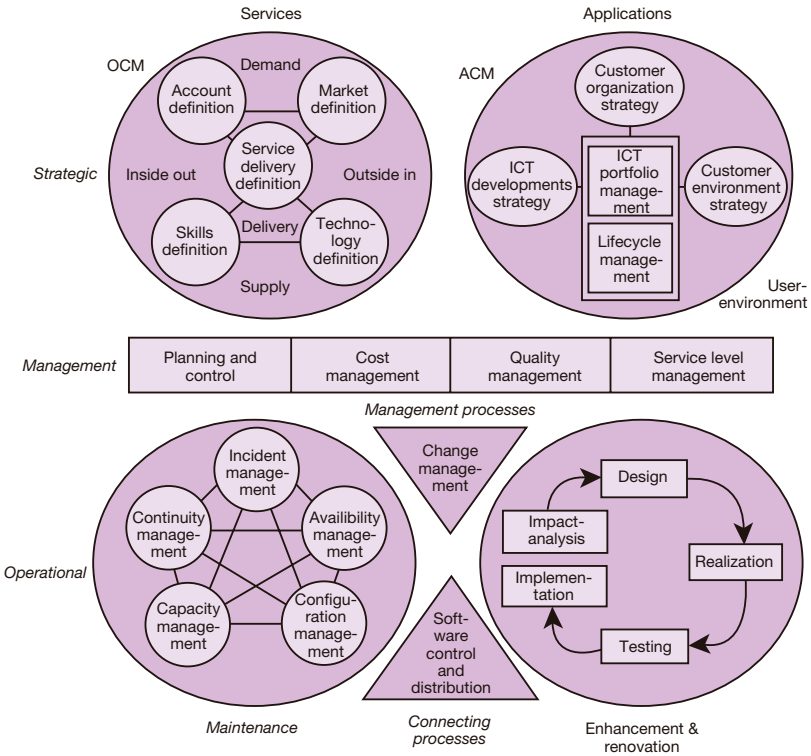

Figure 1 ASL model

Reservations

At the time of writing this article (December 2007) the development of the next version of ASL was yet to be finalized. Most of the remaining elements deal with minor issues, such as the names of processes and clusters.
Not all remarks and issues will be discussed here, but they will be included in the final book. In this article, the main lines and major issues and changes will be described, and in some places we will also address possible solutions.

STRENGTH AND WEAKNESS ANALYSIS

Two sources of information have been used for the development of ASL version 1.1:

- The ASL-BiSL Foundation has collected various remarks and questions on version 1.0, and there has also been a call for remarks. This issue list was one of the sources.
- A strength and weakness analysis has also been executed, and this fundamental analysis was a source for the larger changes.

The issue list and the analysis were well aligned.

Remarks from the issue list

The issue list was quite extensive and addressed many design decisions that were not completely clear. Many issues addressed the implementation of ASL in organizations.
The most frequent issues were:

- The alignment of ASL, ITIL and BiSL. The need for an “integral” model or a description of how the frameworks interface.

- Questions about security management (this is one of the topics covered in the continuity management process, but it needs to be better addressed).
- Remarks about the names of processes, such as implementation, software control and distribution, and cost management.

Analysis:
- Most of the remarks were detailed, and were deemed to be valid and useful. The issues showed a large degree of consistency.
- Some remarks were possibly due to a lack of understanding, leading to a review of the clarity of the relevant material.
- Some remarks were related to the trend that is described in the next section.

Evaluation of the key concepts and structure of ASL

The structure of ASL version 1.0 contained six clusters of processes (figure 1), with twenty five processes. ASL version 1.0 also addressed several issues and had several key concepts:
- the importance of having effective service levels and an orientation on responsibility for results
- a pro-active approach towards innovation: not only from the service provider's point of view (Organisation Cycle Management), but also from a user perspective, taking a long-term view of the applications (Application Cycle Management, life cycle management)
- the service team concept as a means to integrate services, for instance, application management and infrastructure management
- differentiating between external quality (as described in service levels) and internal quality (a technical or internal view on quality)

Several conclusions were made in the strength and weakness analysis, and were confirmed by the remarks on the issue list. The most important conclusions are:
- The concept of six process clusters with underlying processes is considered, by most people, to be both useful and helpful. In the past, some questions were raised about the number of processes (26), but this question no longer arises. ITIL V3 has a similar number of processes. The concept of process clusters also created the opportunity to implement at a cluster level, rather than at a process level.
- ASL had anticipated the growing trend of information chains (organizations connecting their information processes and information flows). Managing these information chains is more complex than regular information processes, because more independent organizations are required for creating and maintaining such a flow. This causes extra complexity with regard to manageability.
- ASL did not have any technology-dependent processes (e.g. workflow management) and avoided addressing "hypes" (like components) which are now considered outdated. The approach of creating a theoretical underlying object model, independent of technology and solution, made the model of ASL relatively sustainable. In hindsight, we considered this to be a good decision.
- We learned that the common practice is to start implementing the processes on the bottom level and to move upwards. The "strategic" processes (the processes on the top of the model) were initially considered to be innovative, but are now regularly implemented.
- ASL made a distinction between external quality (customer perspective) and internal quality (application management perspective). SLAs had to be considered as a specification of external quality, which should be primarily filled in by the customers.

These messages have been important and were new when they were first implemented. The relevance of these messages is still high, but they are now generally accepted as being common sense.

Sustainability of ASL version 1.0

The final question discussed was whether the ASL model is sustainable in the light of developments in the market. Many of the actual trends have been anticipated in the first version of ASL, but there is one very important trend remaining that necessitates a considerable change to the model. This trend is the segmentation and componentizing of ICT-services.

COMPONENTIZATION OF SERVICES

Reasons for componentization of services

There are many reasons for this segmentation, including:

- outsourcing
- growing importance to the business
- standardization and reuse
- variety

1. Outsourcing

Outsourcing and "professionalization" has led to a gap between suppliers (the ICT-organizations) and a demand-organization. No longer is the (internal) ICT-department the place where both delivery and ICT-strategy are positioned.
A further "componentization" of ICT service can be found on the supply side. The distinction between application management and infrastructure management has also become very common.

This can be easily explained by the fact that the business driver of infrastructure management is considered to be operational excellence, while application management increasingly depends on customer intimacy (or at least customer process intimacy). These three domains were originally introduced by Maarten van Looijen (1998), in his management model (see figure 2).

2. Growing importance

Over the last few decades, the importance of ICT (for the business) has been growing. In many organizations, ICT can be considered as a business process, rather than something that is supporting the business (e.g. a bank).
The importance of the financial information systems is so great that, in many situations, the CFO will insist on managing it (directly) and will avoid sharing power with the CIO. The same can be said for the business information systems within the primary processes of the organization. The result is that many organizations will have several demand organizations (customers). This means that several "buyers" within the business will deal with ICT-services. This also leads to componentization of ICT-services.

3. Standardization and reuse

The huge growth of ICT within organizations leads to more standardization, reuse and shared solutions, and the use of many specialized solutions. In the past, a single supplier could deliver everything, now this is almost impossible.

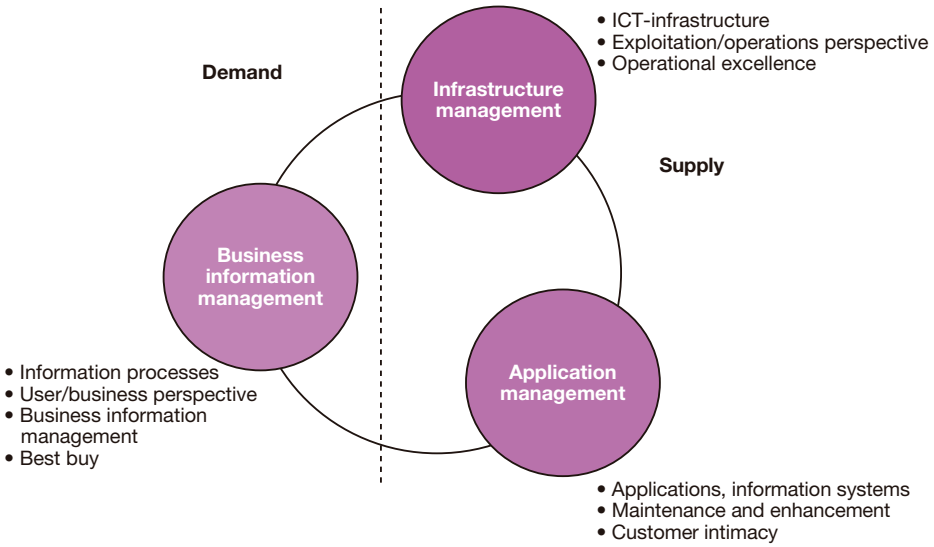

Figure 2 Management model

The consequence for application management organizations is that they have to define their core competences. They have to choose:

- which technology to use and what kind of technology can be delivered, e.g. workflow management, content management, SOA, web-based technology, mainframe development, SAP
- the segment of the market, e.g. middle and small companies, finance, government or local government, industry
- the form of delivery, e.g. projects, services, delivering man-craft

The infrastructure domain also deals with similar choices.

4. Variety

There are an increasing number of ways in which services are managed, and in which services are delivered. In the past, solutions were either custom-made or standard ("off the shelf"). Now there are many situations which fall in between these two options, and also many more extreme solutions. Examples of this variety in application management include:

- building (or maintaining) separated small and completely standard solutions/components (building blocks)
- creating large customizable application platforms
- application integration
- building or maintaining applications containing standard solutions and lots of bespoke code, maintaining solutions (packages) built by others
- building complete bespoke applications

The business model or financial model may also be completely different (for instance, based on time and materials, fixed price per service, users or usage).

Consequences for the management of ICT-services

A logical result is that, in order to deliver ICT services normally, more than one ICT organization will be required. In normal situations, the landscape of ICT suppliers and demand organizations within a business organization will appear as it does in figure 2.

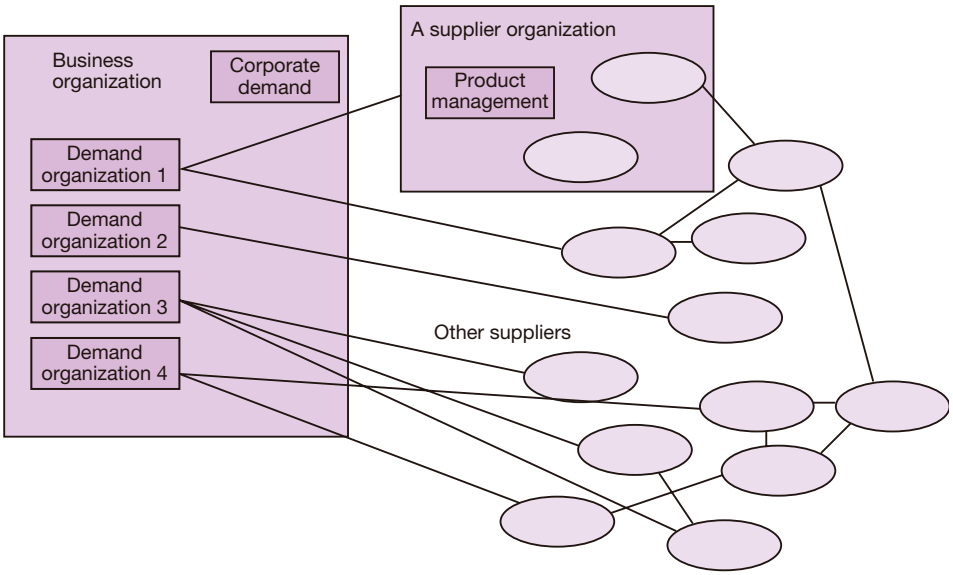

Figure 3 Modern demand and supply constellations

This ongoing development has a big effect on application management:

- Application management processes get more distinct implementations.
- Managing the ICT services will be a very complex process if some basic assumptions are not changed.

Application management gets many different implementations

Many different types of application management are possible:

- building and maintaining highly standardized components
- building and maintaining application platforms, such as large ASP-systems (with underlying infrastructure) or packages
- integrating and maintaining applications, built of standardized components with bespoke additions
- customization of application platforms and packages, e.g. SAP
- building and maintaining complete bespoke applications
- systems integration

Sometimes delivery of a working solution will require eight different ICT organizations, sometimes just one. It may be difficult, even impossible, to design integral processes, because, for example, four of the eight ICT organizations might have (internal) processes, serving many other customers. Some ICT organizations might act as a systems integrator, others as just a production factory for software.

Processes might be considered as being separate from the organization, but cannot be seen as separate from the delivered services. In the examples given above, implementation of processes will, without doubt, lead to different implementations, with differing (sequences of) steps, management information, responsibilities, influence from and interfacing with customers and interfacing points.

Managing ICT services will become a big problem

The complexity of managing a constellation (as described in figure 2) will be high. But nevertheless, this is what the market requires and the way in which market trends are developing.

There are two strategies which can be adopted to manage this complexity:

- Enlarge and make uniform the management process flow, by standardizing and add more governance.
  This strategy has some severe disadvantages:
  - Inflexibility towards suppliers. It will be difficult to change the supplier, because a new supplier has to adapt and implement the processes, which are dictated by an external force (customer).
  - Loss of responsibility for supplier results. A supplier might deny responsibility, because regulations and processes on his internal process were designed by others.
  - Organizations that deliver standard services or solutions for multiple customers may particularly disagree on this. Suppliers with multiple customers cannot and will not make their internal processes uniform for just for one customer. It would necessitate support for many different process implementations.
- A second approach is to reduce the need for management. This approach is particularly recognizable for application management.

SOA as a parallel

Over several decades, when designing or maintaining applications, Application Management has dealt with a similar issue: how to manage the complexity of the information system or application.

The latest answer to this ongoing complexity is Service-Oriented Architecture (SOA) or Software as a Service (SaaS). This concept is the last step in a continuing line, which started with structured design (modularity), developed into object-orientation and finally transitioned to SOA.

The basic solution hides an increasing amount of knowledge about how things are built by defining the interfaces. With structured design, the structure and control flow within a program or function was hidden. With object-orientation the data was hidden and the only communication permitted was by procedures (methods).

SOA can now be seen as hiding even more, including the information model, the structure of the application and the underlying infrastructure and technology.

The only means of communication is by messages and calling services, which are fully independent from any technical implementation or solution. Everything has become a “black box”. The same development can also be seen with shared service centers.

We think that the adoption of such an approach will be unavoidable for the world of ICT-management. This approach will lead to several concepts:

- *Suppliers are also becoming customers*. In order to deliver, they “buy” underlying solutions from subcontractors. Sometimes they will act as a customer for a subcontractor. Alternatively, some suppliers provide standard solutions (from their customers perspective), but decide themselves as to the functionality of the solution, what the prices should be and what the kind of services of solutions they will provide.

- *Interfaces (in a broad sense) are required between the several suppliers and the demand organization*. Integrating and managing the ICT services will be done by designing, negotiating, contracting and managing the input- and output interfaces, as in figure 3. The producing or consuming inside-processes will be a black box towards the outside world.
- *The integration question becomes dominant* (for most of the organizations). The question is how to integrate services of several suppliers and also who will be responsible for the integration. These questions will be dominant on both the demand side and the supplier side.
- *Processes will become an internal affair*. Customers are not interested in (internal) processes. The interfacing is becoming very important. The main questions are: "what do I need (to deliver)?", "what am I doing myself?" and "how will this fit?".
- *The future strategy of the supplier becomes a critical issue*. Questions will include: "what will be my role?", "what will I supply?", "what kind of services do I supply, and in which way?". The need to compete with other suppliers has grown dramatically in the last decade.

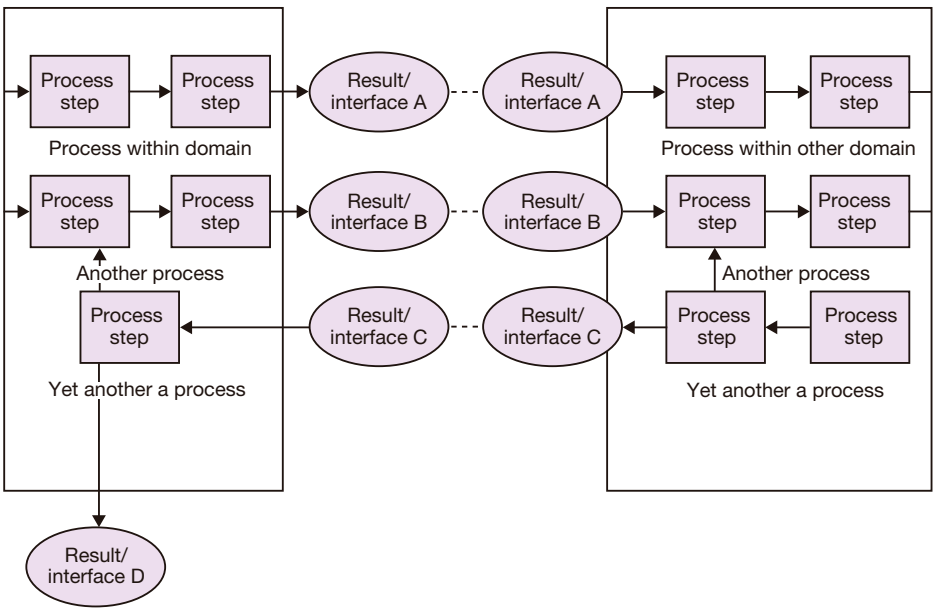

Figure 4 The role of interfaces

Impact on process models

The conclusion is that it will be almost impossible to create integral service management processes. This causes inflexibility, high complexity and many problems when implementing. For a process framework such as ASL, this has many consequences:

- ASL will act as a component for application management, with the possibilities to "integrate" underlying infrastructure management or other application management components. So it must be possible to act as an integration framework, but also as a "stand-alone" application management component.
- ASL should provide the flexibility towards many forms of application management, and also support the differences for processes. Processes might be independent from the

implementation of an organization structure, but they are not independent of the delivered services. As an example: in bespoke applications the design of the application will follow the specification, created by the customer, but when building 'standard components' the design of the component might be the first thing to be considered.
- A basic concept of ASL, best practices as a starting point for the implementation of processes, will be more important. Best practices, which might be adapted to a typical situation, will make the implementation process manageable. Thus, the concept of a best practice has the same effect as a basic component in a SOA-architecture and implementation.

IMPACT ON ASL

Impact on the central concepts of ASL

The central concepts of ASL, as stated earlier in this article, remain valid. But the development as described above creates a frame of reference in which these themes of ASL are a logical consequence of the illustrated trend:
- The need for OCM and ACM are a logical result of this trend and are gaining more importance. The need to define and position your services in the future world will be critical, in order to survive in a world with many competitors. The same is true for the products, facilities or solutions, which are maintained.
- The distinction between external and internal quality becomes dominant. Services are purchased and contracted only on non functional requirements (external quality) and not on internal technical or technological issues. This also implies that managing the internal quality will be critical.
- The service team concept is a way of reducing the complexity. But we must also conclude that some organizations do not want to fulfill such a role, whilst some customers may not want to buy it. Many outsourcing contracts show this. Sometimes the service integrator will be business functionality.
- The use of a public domain standard will become normal. The question is not whether such a standard will be used, but which standard. Also, not which process model/ framework will be important, but only the way in which you implement it. The processes will be an internal issue. Best practices will become a necessity, because the model might be the same, but the implementation will be increasingly different (taking account of the specific "local" situation).

The impact of this trend also causes major changes in ASL. The most important changes will appear on the level of management processes, because the change is in how ICT-services are being bought, managed and combined.

The upper process clusters (ACM and OCM) will remain unchanged.

The changes on management level

Therefore, the processes on the management level in ASL (the processes on the middle layer) are being changed rather significantly. One new process has been created and the content, underlying objects or names of the other processes on this level have been altered.

Contract management

ASL version 1.0 had a process "service level management". The name of this process has been changed to "contract management". Not only has the name been changed, but also the objects, which are to be managed by this process. Issues which are to be managed, include:

- the responsibilities of supplier and demand organization
- the model of how and by whom services are being managed and funded
- the way in which demand and supplier co-operate and communicate
- the assumptions and conditions, prerequisite to the ICT-services
- the requirements on contract level and the translation to (functional) service levels

This means that the scope and the importance of the process have greatly widened.

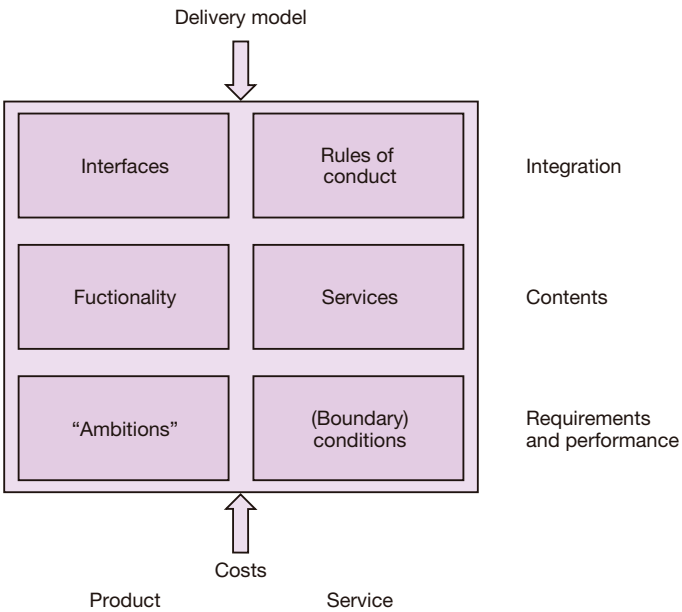

Figure 5 The agreements

Subcontractor management
The described trend also leads to a situation, where the use of subcontractors will be the rule, instead of the exception. A big change in ASL is the introduction of a process "subcontractor management". Making the right contract and managing the (output) of the services, delivered by subcontractors, will be critical in the illustrated situation.

Financial management
The name of cost management has been changed to financial management and the focus has been widened. This change also requires an explanation.
The original name in the ASL model was cost management, because the business case (from a point of view of the user organization) was positioned within Business Information Management (BiSL). Application management can not make a valid business case for a change in the business. They simply do not have the knowledge and they cannot be responsible for achieving the benefits. This assumption still holds.

Increasingly, application management will use cost calculation models, where application management does not charge the real costs (whatever they may be), but will charge by means of fixed prices.

This means a translation between external charges and internal costs. Therefore, this also requires an internal business case. The use and the role of subcontractors increases this need.

Quality management

Quality management in ASL was responsible for the internal view on quality. This meant the quality of the product, the application organization, the quality system (the infrastructure for the application development and maintenance).

But some new dimensions are added:

- Quality management is responsible for ensuring that the internal quality of processes, products, organisations and quality infrastructure is sufficient to reach the contracted demands (external focus on quality).
- However, quality management is also responsible for ensuring that the solutions/ products, processes and results of subcontractors (in combination and integration with their own services and solutions) will be enough to reach the contracted demands. The completeness of own delivery and delivery of subcontractors will be the responsibility of quality management. Thus, quality management will be the central process on the management level of ASL.

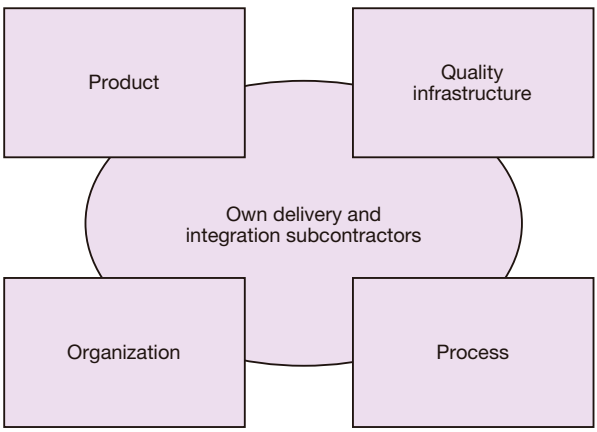

Figure 6 Objects within quality management

Planning and control

The scope of planning and control also changes. The scope is not only the planning and control of time and capacity of manpower from the organization, but it also has to deal with the plan, check and act functions from subcontractor input. The focus and the goal does not change, the complexity is increased a little.

Another issue of increasing importance is that of managing the changes on the applications as a project, whilst still dealing with organizations departments.

Changes on the operational level

On the operational level of ASL there are also some larger changes, but they are less fundamental than the ones on the management level of ASL. The most important changes are:

1. Configuration management
In ASL version 1 several best practices from the past could be found, such as naming conventions. In the new version this is removed. The relationship between the application and the underlying sources was not properly described.

The concept of services items and a service delivery database was introduced, and this is not heavily used in practice. The ASL review board has decided that this concept will stay within ASL. The underlying reason is the described trend towards shared solutions, where customers will have different versions of the object and will also buy different services. A logical consequence is that there will be an increase in the need for information about what versions are used and also about what the agreed services should be.

2. ICT Operations management
On an operational level the processes capacity management and availability management will be combined to the process “ICT operations management”.
These processes have a similar flow, similar information and also impact on each other. Availability is increasingly harmed by a lack of capacity. The issue of capacity is still important, but because of the growing power of infrastructure it becomes less and less of an issue. In BiSL these processes (including continuity management) are combined. Continuity management in application management is still a separate process, with a different scope.

3. Changing names
The names of some processes are also being reconsidered. Discussions are still in progress as to the names of the processes “software control and distribution”, “implementation” and “incident management”.

The process “incident management” will be renamed “use support”. This name not only expresses a more proactive attitude towards users (most often business information management), but also the “proactive communication” finds its place within this name.

The process “implementation” will be renamed in version 1.1 to “prepare and support implementation”. This name better expresses the activities within this process.

4. Changing names for used objects
Other changes will appear, but they will be minor and have less impact. Some of these changes are caused by the appearance of BiSL. For instance, BiSL uses the word “specification” as an indication for the functionality requirements. The meaning of this word within ASL had to be changed in order to keep both models consistent.
Several remarks were also made with regard to the Dutch naming conventions for the strategic processes, but this will not have any impact on the English names.

The next version of ASL

The next version of the ASL framework will adopt a structure that is relatively similar to the previous version. Most changes are to be found within the objects, which are managed within the processes, and in the ways how to structure these objects (see figure 5).

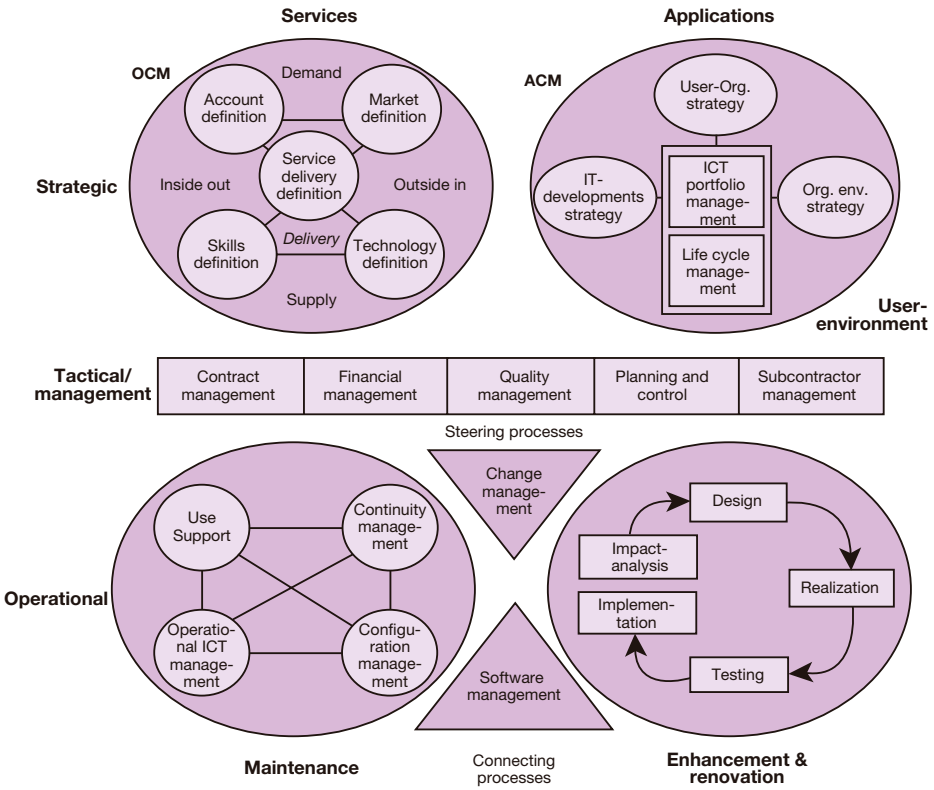

Figure 7 ASL version 1.1[2]

CONCLUSIONS

The biggest challenge: the identification and the integration of services

The market is growing towards a situation, where many ICT-organizations have to co-operate in order to deliver adequate and working ICT-services for customers.

One of the most frequently-asked questions is how ASL interfaces with other frameworks, such as ITIL or BiSL. In the process flows these connections were already mentioned, but they do not offer sufficient practical guidance.
The main message is that this integration is the biggest issue that needs to be solved. In this new world the customers will sometimes manage supply organizations and supply organizations will sometimes manage customers, with every type of variation in between. There will not be one standard solution.
Therefore, the question will not be how to integrate processes, but how to integrate services. The answer will be: by defining good and complete interfaces, and then by implementing processes to deliver and to manage the realization of the interfaces. Integration by interfacing will be the answer. This means that, for each required service, you will need good and complete interfaces in terms of services, costs of services, conditions, reliability, etc. It will be

2 *The names of some processes and clusters might still change*

a critical factor when buying or designing these services. But it will also be an object which is part of the contract and contract management. This must be decided on each occasion.

Contract management and supplier management (within BiSL) will be the critical processes, just as contract management and subcontractor management will be within ASL.

Standard process and standard integration will no longer be feasable

Achieving management and control by implementing integral processes (for customer and supply organizations) is also an illusion. Integrating processes by using complete "interfaces" will become the mechanism. Interfaces will provide the flexibility and simplicity that all parties require.
This means that a process cannot be implemented outside of the environmental context. It is too simple to expect ASL to provide a (mechanical) standard solution and standard answer to the integration and complexity needs.
Therefore, ASL can be seen as a standard solution, which has to be customized (implemented) to each situation for correct execution. It does not prescribe a single and uniform solution.

Meanwhile, ASL provides a framework and best practices which support this complexity (rather than opposing it). It provides best practices which will offer support when implementing the processes. It identifies the different situations.

The role of process models

As a consequence, there will be a change in the use and importance of processes and process models such as ASL and ITIL:

- Neither the process model nor the process are important as far as the outside world is concerned. A process will be an internal affair. As a consequence, choosing which model to use will be an internal decision.
- This does not mean that the use of processes and process models is not important: this will be the case more than ever. In order to "survive" in the competitive world of IT services, delivering the contracted services is a critical factor, and processes will be an unavoidable means to achieve this.
- But each time the situation will be different and have different goals, services and results to be achieved. This means that a standard implementation will no longer exist; each implementation is new.
  The use of best practices will significantly improve this, being used as the building blocks (components) as in SOA-architectures. Therefore, the collection of best practices will increasingly become a requisite.

We anticipate that the new version of ASL will be a step forward towards a more complex future. Best practices from other domains such as SOA have been adapted to give the answers, which are not solely to be found in our ICT sector, but which can be seen in all sectors.

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The author would like to acknowledge the contribution of the ASL Review Board, and especially of Mark Smalley.

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Metrics

Chapter 9

9.1 Introduction

If we wish to improve our services, we first need to know exactly what we actually deliver to our customers, how these customers feel about the services delivered, and what kind of improvement would have the greatest impact on their satisfaction. For all of this, we need to measure our performance, and investigate our customer's needs. This is exactly what this chapter is all about.

First, we need to find a way to get metrics working in our IT service management organization. To this end, David Smith introduces a measurement framework, which can help us create a "roadmap to improvement."

Another way to measure our organization's performance is by benchmarking it against peer organizations of the same type. Jan Sonneveld et al explain how the itSMF benchmark helps to check the performance of your organization against ITIL®, and ISO/IEC standards, and how this compares to other organizations.

Although Smith also touches on the idea that metrics should be relevant to the business, Linh C. Ho and Bryce Dunn completely focus on this aspect of performance measurement, in their article on selecting business relevant metrics. By presenting a clear step-by-step approach, illustrated by two case studies, they show the reader how to get the right metrics for the right organization.

In their second article, Ho and Dunn illustrate why the statistical improvement method, Six Sigma, makes the perfect fit for ITIL Continual Service Improvement, because of its focus on making improvements that really matter to the business. And that is, after all, what IT service management should be all about.

CONTENTS

This chapter contains the following articles on measuring and improving quality:

SHORT SUMMARIES

An organization needs to be able to identify, measure and communicate the metrics that reflect the benefits that IT is delivering to the business units. They should be able to prove that the business' investment in IT service management results in tangible and relevant improvements. In his article, **David Smith** provides the reader with a measurement framework to align IT with the business objectives, creating value through continual improvements. He first provides the basic concepts around measurements for business and IT alignment, achieving compliance and driving operational excellence. Then, he explains how to implement such metrics, by introducing a phased approach to measuring and reporting. Finally, reporting techniques show how an IT service management organization can communicate effectively with the customer on its achievements.

The itSMF benchmark described by **Sonneveld, Boyle, Van Selm, Verstralen, Bos and Alofs** covers the subjects of ISO/IEC 20000, ITIL version 2, process maturity, Total Cost of Ownership (TCO), project management and tools. It asks simple questions that can be answered with simple answers, indicating the extent to which the process is being followed. This results in an overview of an organization's competences and opportunities for improvement. As exactly the same questions are also asked of other participating organizations, and the answers are limited to percentages, the overviews can be easily compared. This enables organizations to learn from each other, and to start working according to best practices in the truest sense of the word: practices that have actually been developed in practice and have proven to be best.

Ho and Dunn state that there is still a major disconnect between business and IT, which is exacerbated by too much data and not enough information or knowledge to make informed business decisions. If organizations are really serious about integrating business and IT, they need to select the right metrics for reporting, to enable a common foundation for dialog, and ensure that the right expectations are set on each side. Ho and Dunn explain how IT and the business can select the most appropriate metrics. Then, they can move away from technical IT metrics, such as CPU utilization, to metrics that provide decision makers - at every level of the organization - with the information they need to make informed decisions.

In their second article, **Ho and Dunn** focus on the importance of ITIL Continual Service Improvement (CSI) *where it matters most*. To find out which improvements are most likely to be actually noticed by the business, a statistical improvement approach such as Six Sigma makes the perfect fit. Ho and Dunn introduce the concept of Six Sigma and explain the basics, introducing some key Six Sigma techniques, such as the control chart, the voice of the customer survey and the cause and effect diagram. Then, they map the improvement steps from the CSI seven step process to Six Sigma's Define-Measure-Analyze-Improve-Control (DMAIC) approach. The case study, which focuses on a leading European financial institution, shows how Six Sigma helps to find the improvements that are most likely to benefit the business.

9.2 How to implement metrics for IT service management

We are often too busy to ask for directions. Implementing a measurement framework should help align IT with the business objectives and create value through continual improvements. This helps us create a roadmap and keeps us from getting lost. In this article, David A. Smith presents such a framework.

INTRODUCTION

It's often been said that "you can't manage what you don't measure", which is still true to this day. Without purpose and a course to follow, the destination is uncertain and almost always unpredictable. Many management books have been written on this subject, ranging from personal development to organizational leadership. They all agree in principle that a purpose, goal or destination must be determined in order to chart a course and path to achieve them. Once the path or roadmap has been defined, the journey must be carefully planned to guide the traveller safely to the desired destination in the prescribed time within planned costs.

Measurements are like navigational aids. They help identify the destination, the roadmap to follow, hazards to avoid, milestones to reach, fuel consumption, constraints or limitations, expected time of arrival, and so on. Without navigational aids, one could get lost, end up anywhere, get stranded, fall off a cliff, run out of fuel, get in an accident, or fall asleep at the wheel.

The challenge for information technology (IT) providers is that the destination can change quickly, frequently and without notice. The information age fuelled by IT has made it possible to accelerate the pace of businesses. Product and service lifecycles have been reduced from years to days in extreme cases. The business must now lead the marketplace or stay close behind. If the business doesn't manage to do so, it will vanish as a result of heightened global competition. This has resulted in a run-away feedback loop: IT enables the business to evolve more quickly; competition requires IT to change more rapidly, efficiently and effectively. Continual change has become "the nature of the beast".

IT is quickly becoming one of business' most costly, critical and strategic assets. Of late, the money spent on IT is in question, business leaders are continually asking for proof of value delivered. This has put more strain on IT leaders to demonstrate value, reduce costs and improve services, or else be outsourced.

IT providers need navigational aids, more so than ever. This presents somewhat of a conundrum. Most IT providers are too busy to figure out how to implement measurements, let alone become experts in their use to control and manage the business of IT.

Goal of this article

The goal of this article is to endow IT providers with a flexible and scaleable measurement framework which is easy to learn, implement, manage and improve. The goal of this framework is to provide process metrics and techniques to help align IT with the business objectives in order to create value. The framework is based on a continual improvement lifecycle and helps align IT with the business objectives and create value, making processes and services more "efficient and effective". It helps the reader determine ways to:

- align IT with business objectives and verify the results
- maintain compliance requirements for business operations
- drive operational efficiencies, effectiveness and quality

The measurement framework can be implemented as a comprehensive measurement program for all processes and services, or selectively for individual process or services. It is aligned with the IT Infrastructure Library (ITIL®), also a set of best practices. The framework is compatible with the Control Objectives for IT (CobiT®) framework and supports the ISO/IEC 20000 standard for IT service management.

More details can be found in the book "Implementing Metrics for IT Service Management" (Smith, 2008). The book provides methods, concepts, examples, techniques, checklists and software templates to accelerate adoption through a "how to" based approach.

What you will learn

By reading this article, the reader will gain an insight into:

- a basic overview on how to apply Information Technology Service Management (ITSM) metrics and where to find more information
- basic measurement framework concepts
- the measurement process of monitoring, analysis, tuning, process improvement, administration and reporting
- typical measurement costs, benefits and common problems
- steps for implementing and optimizing the measurement system
- common reporting techniques

Scope

Although this measurement framework can be applied to any process, service or technology metric, the scope of this best practice document is in the context of process- and service-based measurements. Figure 1 provides an illustration of process- and service-based measurements from the "Metrics for IT Service Management" book (Brooks, 2006) and includes additional references to quality, efficiency and effectiveness measures.

Table 1 provides an example of strategic, tactical and operational processes based on the ITIL® version 2 (V2) set of best practices. Further information and specific metrics for each of these processes can be found in the book "Metrics for IT Service Management" (Brooks, 2006).

The measurement framework can be implemented as a comprehensive measurement program for all processes and services, or selectively for individual process or services.

Who should read this article

This article is intended for all levels of IT management. Specific interest by role includes:

- IT executive management

- process/service owners and managers
- measurement owner and manager
- IT team leaders
- quality managers
- service level managers

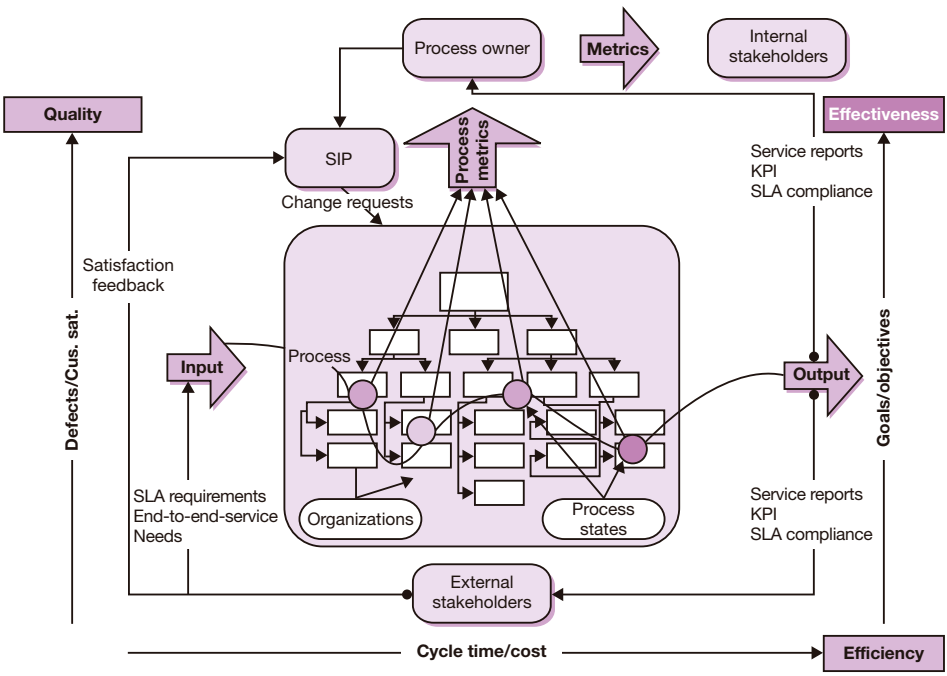


Figure 1 Process & service based measurements

Strategic	Tactical	Operational
Business perspective	Service level management	Service desk
Service improvement program	Problem management	Incident management
Risk Management	Financial management	Configuration management
Document management	Availability management	Change management
Competence, awareness & training	Capacity management	Release management
Program and project management	Service continuity management	Application development
	Security management	Application support
		Operations management

Table 1 Strategic, tactical and operational processes

HOW TO IMPLEMENT ITSM METRICS

What metrics are all about

Based on the book “Metrics for IT Service Management”, a “metric” is just another term for a measure. Metrics define what is to be measured. For IT, this includes technology, processes and services. Metrics provide the feedback mechanism allowing management to steer,

control and guide IT toward strategic objectives. The book further explains that metrics help to:

- align business and IT objectives
  - accounting of IT processes and deliverables
  - inform stakeholders
  - understand issues
  - influence behaviour
- achieve compliance
  - IT operations strategy
  - ISO/IEC 20000, CobiT®, service levels
  - critical success factors
  - minimize interruptions
- establish operational excellence
  - measure, control, and manage cost effectiveness
  - improve effectiveness and quality
  - service level improvements
  - maximize value creation

Implementing metrics

Metrics for IT service management need to measure process and service effectiveness in addition to the functions and technologies that provide them. Metrics in IT have traditionally been measured in functionally-oriented silos like the help desk, server technical services or the operations department. Information technology departments are shifting to process- and service-centric organizational models requiring metrics which report beyond the functional boundaries to determine success. For example, both the application development and IT operations departments are functionally very mature and when independently measured, appear successful. However, they don't work well with each other and together frequently fail to deliver deployments.

Metrics have been very mature for measuring technology availability on a discrete component basis, but in many cases without consideration for the end-to-end user experience. For example the application server was available 99.99% of the time but the network was not measured and turns out to be frequently not available or not responsive. Therefore, the measure of system availability (server plus network) does not match the user experience.

To solve this, a new and improved approach for implementing metrics is needed, using a continual improvement framework. This must meet new and changing compliance requirements and provide a means to gain operational excellence. The measurement framework reference model presented in this article can be quickly implemented, adapted and evolved to meet the organization's needs. Some of the key features of this measurement framework reference model include:

- continual improvement, that is, W. Edward Deming's Plan-Do-Check-Act cycle (Deming, 1986)[1]
- top-down design approach for aligning goals and objectives
- process- and service-based IT service management approach

[1] *Edwards Deming has been inspired by Walter Shewhart, one of his teachers already advocating a "learning and improvement cycle" (Shewhart, 1980). The PDCA-cycle of Edwards Deming is also known as the PDSA-cycle, which stands for "Plan-Do–Study-Act". In this case, the results are studied instead of checked.*

- scaleable and flexible fit-for-purpose model with hundreds of sample metrics and scorecards
- bottom-up reporting of facts, metrics, indicators, scorecards and dashboards
- aggregation of metrics to formulate key performance indicators
- accountability and role-based matrix models
- techniques for comparative, causal and predictive analysis
- method for filtering improvement initiatives and tracking performance status
- ability to report performance improvements and derived value-based benefits
- multiple implementation methods and scenarios
- how-to check lists for planning and implementing metrics
- scorecard accelerator templates to demonstrate principles and techniques, and to help kick-start the implementation of a measurement program

Basic concepts

There are four critical success factors for an effective measurement framework:

- enable validation of the strategy and vision
  - aligned with the IT goals and objectives
  - validation that alignment is working
  - confirm goals and objectives are met
- provide direction with targets and metrics
  - set targets through metrics
  - control and manage the processes
  - verify targets are being met
- justify with a means to gauge value realized
  - justify performance improvements with a solid fact base
  - quantify benefits realized
  - communicate value realized with factual evidence
- intervene and provide corrective actions
  - identify deviations when they occur
  - understand the root causes
  - intervene with corrective actions to minimize consequences

Figure 2 provides an outline of the measurement framework.

The measurement process

The measurement process comprises four main sub-processes which repeat to form a continual improvement feedback loop based on W. Edward Deming's Plan-Do-Check-Act cycle. The sub-processes of the measurement process are:

1. **Tuning (Plan)** - The tuning sub-process is responsible for identifying improvement opportunities and recommendations for the subject process or service which is being measured. Note that the tuning sub-process can also act as the entry point for planning the measurement program and framework.
2. **Implementation (Do)** - The implementation sub-process is responsible for implementing the recommended changes through normal change management processes. Note that the implementation sub-process can also act as the entry point for implementing the measurement program and framework.
3. **Monitoring (Check)** - The monitoring sub-process is responsible for the data gathering, calculations and validation of the required measurements.
4. **Analysis (Act)** - The analysis sub-process is responsible for comparative, causal and predictive analysis of the measurements to determine what corrective actions may be required.

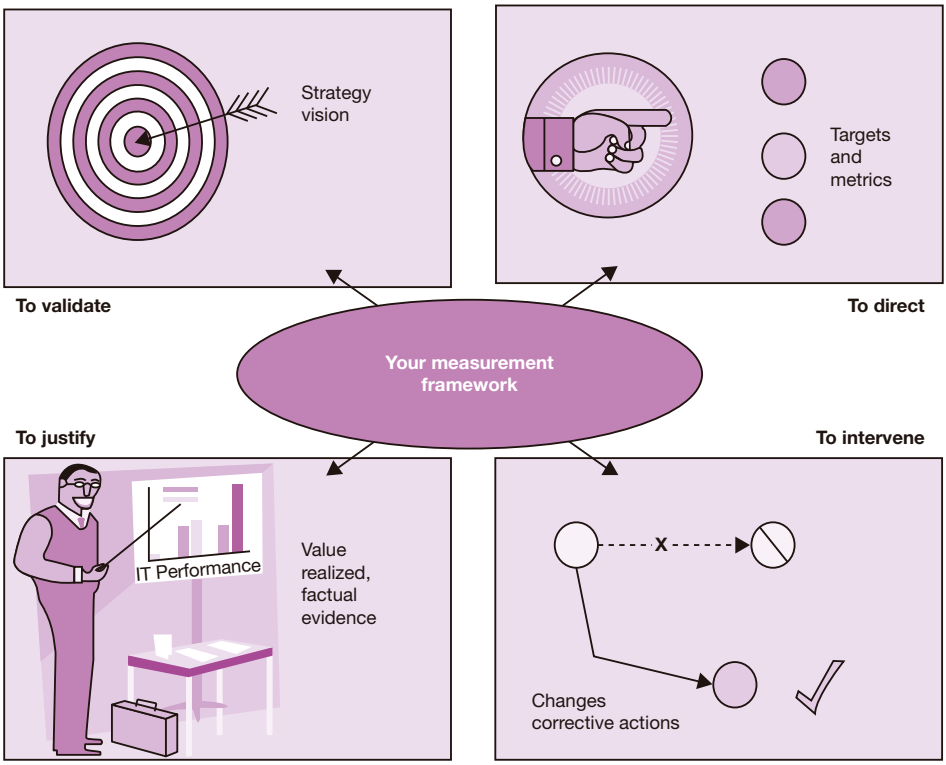


Figure 2 Measurement framework

There are two additional supporting sub-processes which provide administration and reporting:

1. **Administration** - This sub-process is responsible for the administration of the activities associated with the maintenance of the metrics and measurement database (MDB).
2. **Reporting** - This sub-process is responsible for reporting the findings and recommendations to management and various stakeholder groups, keeping them informed and aware.

There are a number of sources of information that are relevant to the measurement process. Some of these *inputs* are as follows:

- the organization's business plans, strategy and financial plans
- the IT/IS strategy, plans and current budget
- any goals and objectives set by business or IT management
- any targets and thresholds to maintain or achieve service levels
- service level agreements, service level requirements and service catalogs
- initiatives to be monitored as a result of service reviews or improvement activities
- the rolling business- and IT-program and project calendar

The *outputs* of the measurement process are used to report the status, findings and recommendations of various service management processes and services to key stakeholder groups within the organization. Some of these are as follows:

- process- and service-based performance reports
- exception handling reports

- notices and alerts
- root cause analysis and observations
- predictive analysis and observations
- change requests
- status of new and existing service improvement initiatives
- benefits or value derived from processes, services, service assessments, audits and reviews

Figure 3 shows the inputs to, the activities within, and the outputs from the measurement process.

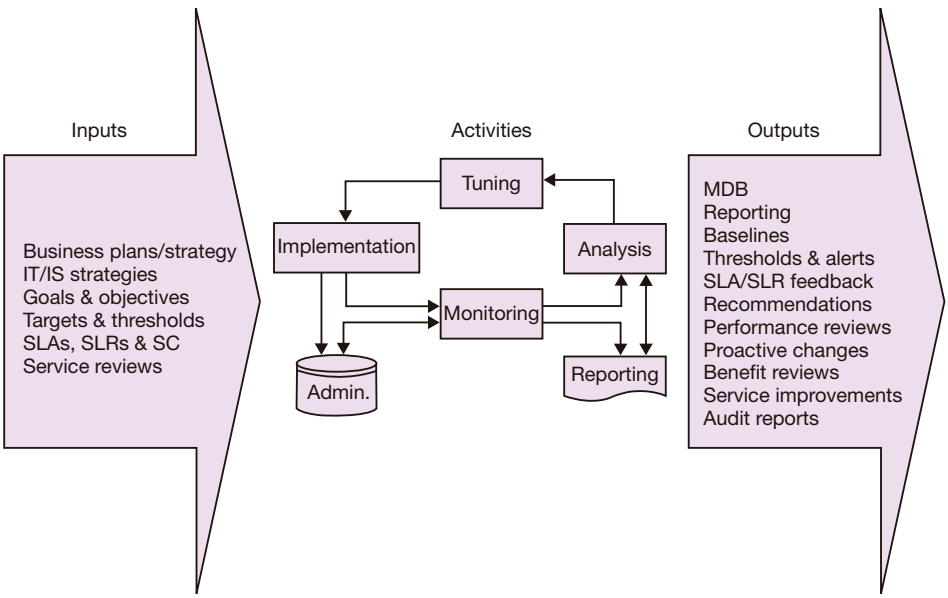


Figure 3 Measurement process inputs, activities and outputs

Measurement activities

This section describes activities for each sub-process of the measurement process. The sub-processes are carried out on a sequential basis, normally on a predefined and agreed schedule (for example monthly). Each sub-process:

- requires inputs
- performs activities
- produces outputs

These outputs provide the inputs to the next sub-process in the sequence. The sub-processes are performed on a cyclical basis. This forms a feed-back loop providing a basis for continual improvement. Like ITIL's capacity and problem management processes, some activities in the measurement process are reactive, while others are proactive.

A powerful feature of how the sub-processes can be used with the same data is the perspective from which it is analyzed, in terms of reactive (prescriptive) versus proactive (preventive).

For example, the decline of a service level or a critical process measure could set off a series of reactive event triggers. The triggers set an alert which automatically starts an investigation to determine the root cause and initiate corrective actions (prescriptive).
Another example might be where a decline of a service level or a critical process measure could set off a series of proactive event triggers. The triggers set an alert and start an impact analysis to determine which dependent services or processes are at risk and initiate preventive actions (preventive). These event triggers and actions are similar to the ITIL® event management process.

The proactive (preventive) activities of the measurement process should:
- provide the information necessary for actions to be taken before the issues occur
- produce trends of the current process or service workload (utilization) and estimate the future resource requirements
- improve change planning for IT services
- identify the changes that need to be made to the appropriate processes to maintain service levels
- actively seek to improve the service performance and provision

A number of the activities need to be carried out iteratively and form a natural lifecycle as illustrated in figure 4.

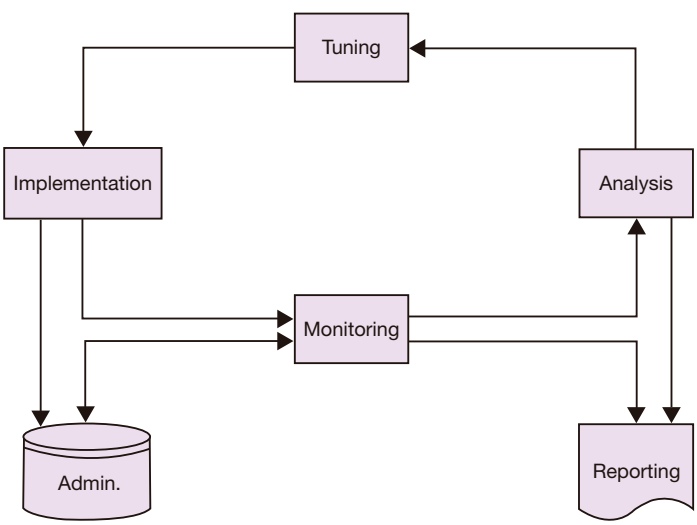


Figure 4 Measurement process lifecycle

Data collection extraction should be established and automated, where possible, for each of the processes or services being measured. The data should be transformed, loaded and analyzed, using systems to compare actual values against performance thresholds. The results of the analysis should be included in reports, and recommendations made as appropriate.

Decision analysis and management control mechanisms may then be put in place to act on the recommendations. This may take the form of:
- renegotiating service levels

- modifying policies
- making process improvements
- implementing tools
- developing new scorecards and metrics
- adding or removing resources

The cycle then begins again, monitoring any changes made to ensure they have had a beneficial effect and collecting the data for the next day, week, or month. The suggested frequency for managing the sub-processes is:

- **on an on-going basis** - main sub-process activities and the storage of data in a measurement database (MDB)
- **ad hoc** - proactive and reactive activities to initiate improvements to strategic, operational or tactical processes or services
- **regularly** - the production of the service reports, review of benefits realized and improvement initiatives

Figure 5 shows the sub-process activities together with the other activities of the measurement process that need to be carried out.

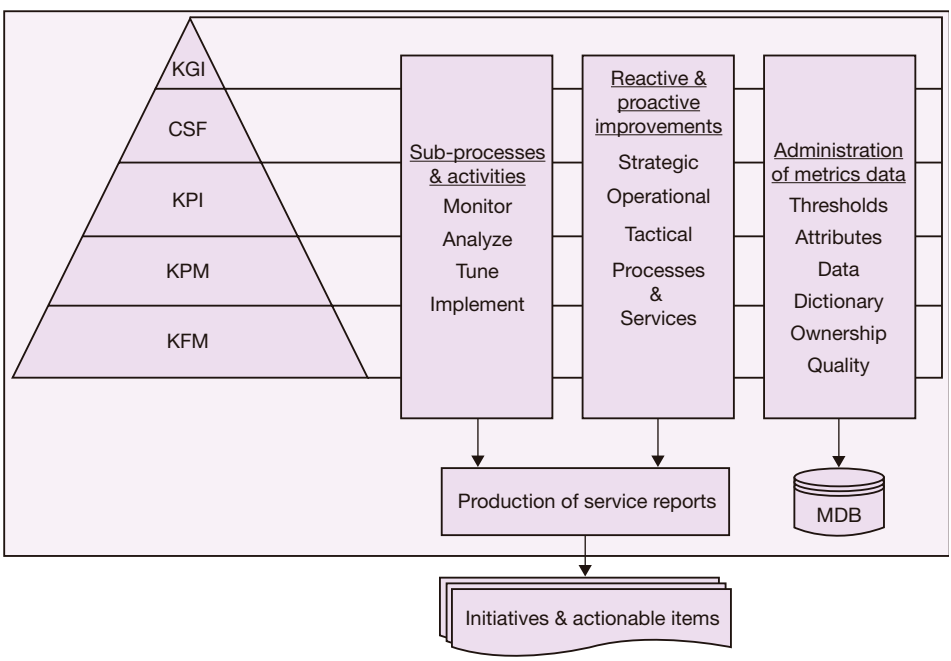


Figure 5 Measurement sub-process activities

Costs, benefits and possible problems

A well planned and implemented measurement program is one of the better investments an organization can make. Most mature organizations have well established measurement programs in their financial, human resources, sales & marketing and business operations departments where measurements are just common sense and part of the normal operating practices. Justifying the implementation of a measurement program will require examination of the costs, benefits and risks to determine the right scope and fit-for-purpose.

Costs
The first step is to estimate the project implementation costs and ongoing maintenance costs required for the measurement program.

Project implementation costs:
- **hardware and software** – metrics database, design and reporting tools
- **project management** - should be treated as a project
- **staff costs** – training and consultancy

Ongoing maintenance costs:
- hardware and software maintenance costs
- ongoing staff costs such as:
  - salaries
  - training
  - ad-hoc consulting
- storage
- upgrades
- licenses

Benefits
Measurements help improve performance, align goals and realize value. The positive benefits can be weighed against the negative consequences of not having a measurements program.

Benefits of a measurement program:
- provides the instrumentation necessary to control an organization
- direct focus on specific performance and control objectives
- easier to spot danger in time to correct it
- improves morale in an organization
- stimulates healthy competition between process owners
- helps align IT with the business goals and verify results
- drives efficiency, effectiveness and quality
- inspires continual improvements
- helps reduce Total Cost of Ownership (TCO)

Negative consequences of not having a measurements program:
- reduced visibility resulting in loss of control
- focus on “noise” instead of “what’s important”
- reactive fire-fighting mode
- low morale in organization
- unhealthy political competition
- benefits not apparent or realized
- cost effectiveness not understood
- customer complaints drive improvements
- TCO not optimized
- increasing risk

Effect on Total Cost of Ownership (TCO)
A measurement program can help reduce the Total Cost of Ownership (TCO). TCO was developed by Gartner and has become a key performance measurement for efficiency and effectiveness. TCO is the total cost of owning networked information assets throughout their

lifecycle, from acquisition to disposal. It is a measure of efficiency and cost effectiveness which can be reduced through improved IT processes and services. This entails improving the efficiency, effectiveness and quality of IT processes and services. Gartner's TCO studies revealed that the TCO for an average PC could range anywhere from $6,000 to $12,000 per user per year.

TCO measures both the "hard" and "soft" costs of information assets. Direct costs include items such as capital, operations and management costs. These costs are considered "hard costs" because they are tangible and easily accounted for. However, even more significant in many IT environments are the indirect or "hidden costs" related to user peer support, training and downtime. Because they don't occur at acquisition time, they are often overlooked in budgets. Ineffective performance causes a transfer of management and support responsibility to end users resulting in higher costs and dissatisfaction.

Figure 6 illustrates the TCO of technology assets throughout their lifecycle.

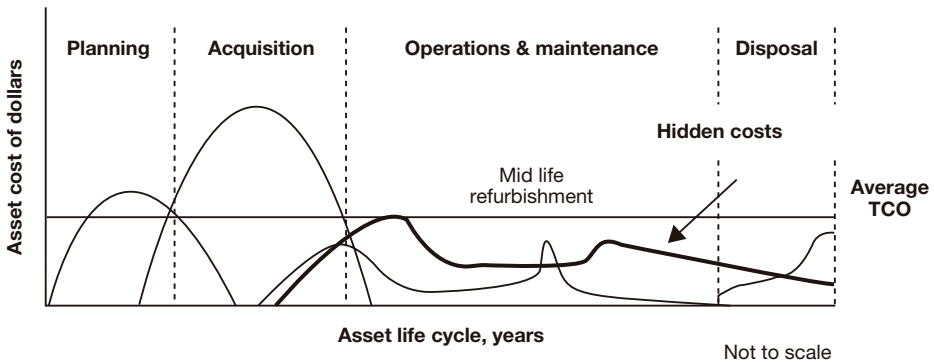


Figure 6 TCO cycle

Improving the efficiency of IT processes and services will positively impact the direct costs. Improving the effectiveness and quality of IT processes and services will positively impact the indirect or hidden costs.

Possible problems

Potential problems can be identified, prepared-for and dealt-with in advance. The following provides a list of potential problems that could be encountered and their possible solutions:

1. **no senior management sponsorship** – increase management commitment
2. **metrics conflicting with organizational goals** – align metrics to goals
3. **lack of understanding** – increase communication and check interpretations
4. **too much or not enough detail** – assess which level is needed
5. **lack of education and training** – check what is needed and take action
6. **difficulty obtaining input data** – adjust time and resources available
7. **inadequate measurement tool** – improve MDB or add sub-systems
8. **unclear goals and objectives** – increase communication
9. **unclear roles and responsibilities** – identify stakeholders
10. **takes too long to demonstrate benefits** – create quick wins

Implementing a measurement program

You need to consider the following prior to implementing a measurement program:

- where to start
- why do it
- who to involve
- what are the steps
- when to expect results
- how to make it happen

The following sections provide general guidelines, questions to be answered, ideas and best practices to help answer some of these questions. In most cases, the planning and implementation approach must be tailored and fit-for-purpose for your organization. To develop the implementation plan for the measurement program, start with the following planning activities:

- review what already exists
- plan the approach
- implement the measurement process
- optimize the measurement process
- review and audit

Review what already exists

To review what already exists, you can conduct assessments, interviews or workshop meetings in order to answer the following questions (together with any of your own):

- Is there senior management commitment?
- Who is the implementation champion?
- Does a budget exist?
- Are resources available?
- Are the skills and knowledge in place?
- What is the culture and organization structure?
- What is the business and IT vision/strategy?
- Are measurement tools and technology already in place?
- Are there demands for "business as usual"?
- Which processes are in scope?
- What are the current and desired requirements of each process (scope, goals and objectives)?
- Which processes would most benefit from this program?
- Who are the ITSM process owners and key stakeholders?
- Who is the proposed measurement process owner?
- What is the maturity level of people, processes and tools?
- What metrics and targets are in use?
- What are the potential roadblocks?

Use the answers to these questions to formulate a list of gaps. This list can then be prioritized for the next step: plan the approach.

Plan the approach

The right approach for the organization depends on many variables, like:

- internal and external business drivers
- volume of change already taking place
- the readiness of the organization (list of gaps)

- senior management involvement
- resistance to change
- current workload
- skills and capability

Information from the initial review session can be used to select the best implementation approach. There are a number of questions to consider and answer:

- **Implementation phasing** – Are we going to implement one or more processes at the same time?
- **Structure of the measurement process and metrics** – Which processes and services will best help align IT with business goals and objectives?
- **Roles and responsibilities** – Who will be responsible and accountable for the measurement process?
- **Establishing policies and procedures** – Will new policies and procedures need to be considered?
- **Communication strategy and plan** – Who are the key stakeholders and what messages need to be crafted?
- **Data collection** – What data will be necessary for the measurement and metrics?
- **Establishing baselines** – How will the baselines be determined?
- **Setting targets and thresholds** – How will targets and thresholds be determined?
- **Storage of metrics data** – Where and how will the metrics data be stored?
- **Monitoring the metrics** – How will the metrics data be monitored?
- **Performance analysis** – How will the performance of the metrics be analyzed?
- **Performance tuning** – What are the criteria for conducting performance tuning?
- **Service improvement initiatives** – What is the selection process for improvement initiatives?

Implement the measurement process

Implementing the measurement process is best treated as a project. It should complete at least one process lifecycle before being transferred to operations. The high level steps are outlined as follows:

- train staff
- conduct the initial planning phase
- initiate communications plan
- create, install and configure MDB
- design, install and configure dashboards, scorecards, KGIs, CSFs, KPIs, KPMs and facts
- establish monitoring
- analyze results
- produce reports
- process tuning
- initiate service improvements
- transfer control to operational staff
- audit and review for compliance, effectiveness, efficiency and quality

This should be customized to meet organizational requirements

Optimize the measurement process

The measurement process should be reviewed internally for effectiveness and efficiency at regular intervals. This should help determine areas for improvement and optimization. The review should assess and report on the following subjects:

- if measurement program goals, CSFs and objectives are being met
- the quality of information (completeness, accuracy, validity)
- whether benefits have been realized and communicated
- the cost effectiveness of the measurement program
- the satisfaction of the users of the measurement program

Furthermore, service improvement initiatives should be assessed and recommended.

Based on the assessment and review of the measurement process, recommendations should be acted upon for improvement and optimization of the measurement process. These should include:

- where to initiate measurement program improvements
- when to add new or improved processes
- what to update (core attributes, targets, thresholds, benchmarks)
- what to automate (data collections, reporting)
- how to improve reporting and communications

Review and audit

Like all ITSM processes, the measurement process should be reviewed for compliance, effectiveness, efficiency and quality. Audits should be performed by an independent person or group rather than the measurement process owner or manager. The general intent of the review and audit is to determine:

- what was done right
- what went wrong
- what could be done better next time
- how to prevent issues from happening again
- the causes of the issues that occurred
- how we can learn from experiences and improve

Measurement program reviews and audits should be considered at the following times:

- shortly after implementation of a new measurement system
- before and after major changes to the measurement process
- at random intervals
- at regular intervals

Reporting techniques

The data gathered in the monitoring phase of the measurement process should be analyzed. A report on the information acquired should be given to the proper (management) audience. There are many techniques for the effective reporting of metrics. At the lowest level, classification of measures by themes helps improve reporting. Trending of individual metrics provides detailed information to operational management about the state of the process or service activities. Using aggregation methods, metrics are classified and grouped together by themes for process owners and senior management to determine the health of a process or service. At the highest level, using dashboards and scorecards, reporting techniques can help to visualize the end-to-end process or service in order to quickly determine value realized and opportunities for improvement. This section discusses some commonly used techniques.

Classification of measures

Measures can be grouped by themes and classified to produce strategic and tactical types of key indicators and metrics. Classification is a method of categorizing measures into groups that help steer, control, direct, justify, verify, correct and optimize value. Some examples of classification are as follows:

- **Key Goal Indicator (KGI)** - A KGI is used to confirm (after the fact) that a business or IT goal has been achieved.
- **Critical Success Factor (CSF)** – A CSF is a business term for an element which is necessary for an organization to achieve its mission.
- **Key Performance Indicator (KPI)** - KPIs are metrics used to quantify objectives to reflect the performance of a process or service.
- **Key Performance Metrics (KPM)** - Key performance metrics are a system of parameters or ways for undertaking the quantitative and periodic assessment of a process or service that is to be measured.
- **Key Fact Metrics (KFM)** – Key fact metrics are the quantitative data which provide fact-based information on the process activities during a period of time.

Figure 7 illustrates the classification of metric themes and their relative impact, from the tactical to the strategic level.

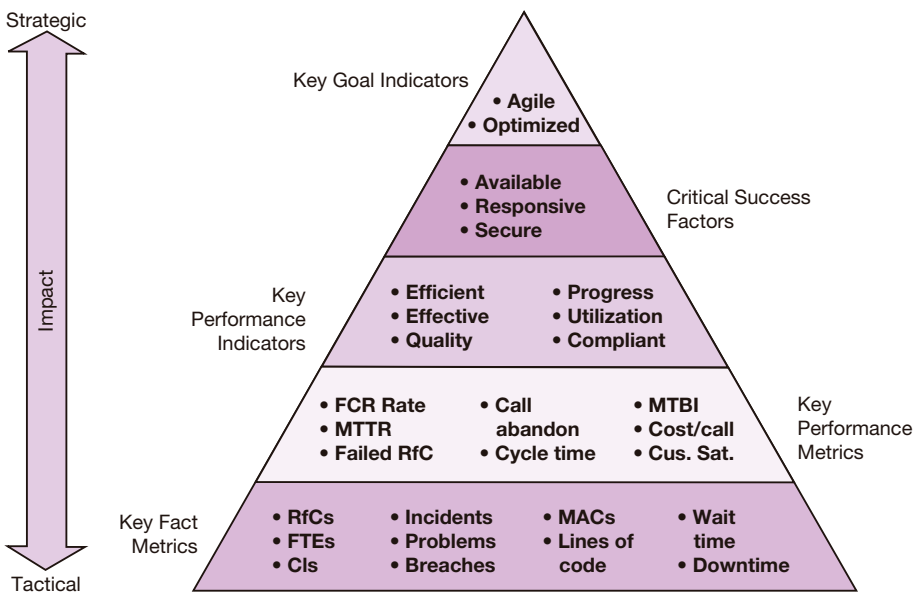


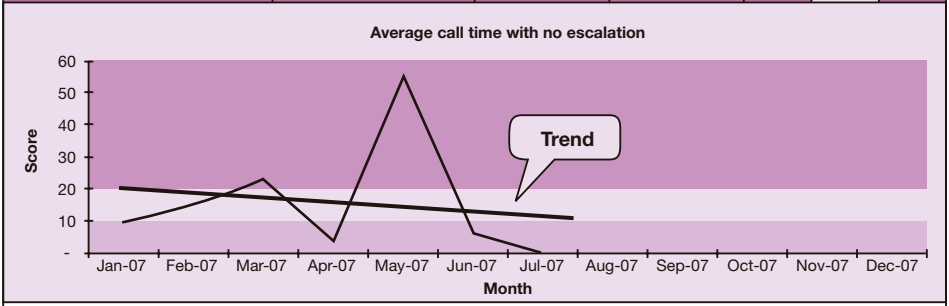
Figure 7 Sample classification of measures

Trending

Monitoring and reporting trends of individual metrics helps identify potential problem areas within a process or service. Trending helps pinpoint the hot-spots or weak links throughout the process or service. It typically includes monitoring the inputs, activities and outputs of the process over time. Thereby, it indicates variations over time and whether these variations are moving in the desired direction (better or worse). It also shows if improvements are required and if corrective actions are making a difference. Trending can be used to trigger alerts to

the metric owner. This person should then initiate a set of prescribed corrective actions or remedies. Figure 8 provides an example trending report for an incident management metric.

Incident management	Feb-07	Previous	10.0	Actual	15.0	Progress worse	Status	Yellow	IM002



Legend	Yr.	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07
———	Actual	10	15	23	4	55	6						
———	Target	10	10	10	10	10	10	10	10	10	10	10	10
	Caution	10	10	10	10	10	10	10	10	10	10	10	10
	Danger	20	20	20	20	20	20	20	20	20	20	20	20

Figure 8 Sample trending report

Aggregation of metrics

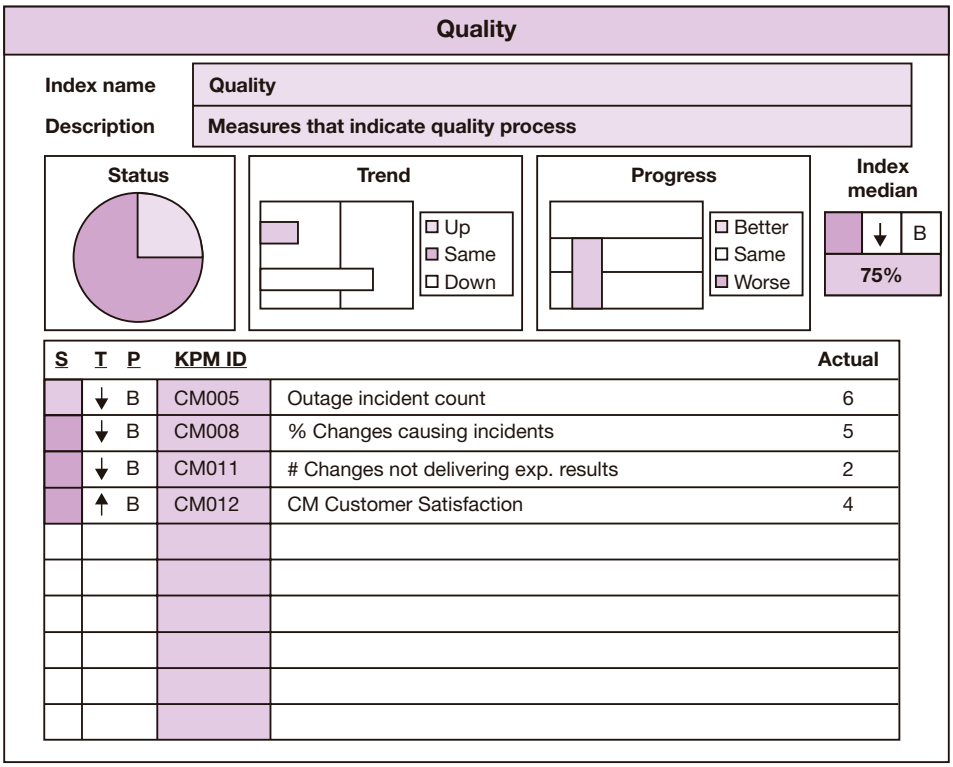
Metrics can be aggregated together using indexing techniques. Then, they can be viewed as a group-theme to create key performance indicators. For example, a key performance indicator for quality may require looking at defect rates throughout the process and include the reported level of customer satisfaction. Figure 9 provides an example of quality for the change management process.

Alignment of key measures

Aligning the key measures requires a top-down view of what is important to the organization and its stakeholders. Then, a bottom-up build of the facts, metrics and indicators to support the desired outcomes. Executive management is most interested in executing strategy and vision to meet the goals and objectives. For them, KGIs, CSFs and KPIs that support strategy attainment are most important. Senior management are concerned with justifying, directing and controlling process and service delivery to meet the strategy and vision requirements. They need KGIs, CSFs, KPIs and KPMs that support operational excellence. Managers and staff are focused on process and service delivery execution, within the guidelines specified by senior and executive management. CSFs, KPIs, KPMs and KFMs help them tactically to stay-the-course, see figure 10.

Dashboards

Dashboard reporting helps provide the instrumentation for management control. Summarized and visual in nature, dashboards make it easier to concentrate on what's important. Dashboards can also identify successes and problem areas at a glance. Dashboards can be configured and personalized to provide strategic, operational and tactical views of the organization, technology, processes, services and activities. For example, Figure 11 provides an example overview of performance, goals, benefits and initiatives for all IT service management processes.



S	T	P	KPM ID		Actual
	↓	B	CM005	Outage incident count	6
	↓	B	CM008	% Changes causing incidents	5
	↓	B	CM011	# Changes not delivering exp. results	2
	↑	B	CM012	CM Customer Satisfaction	4

Figure 9 Sample aggregation of metrics

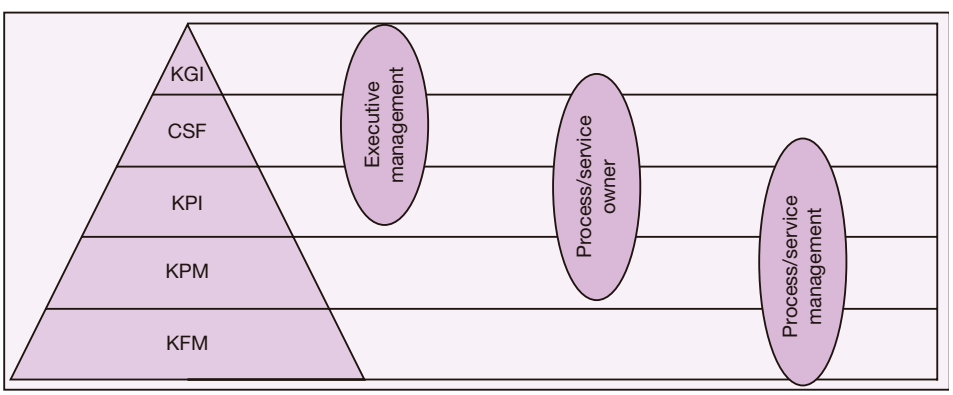


Figure 10 Alignment of key measures

Role-based dashboards

Role-based dashboards help make it easier to view, map and align relevant information by role. Figure 12 provides an example of mapping strategic information for a CIO, summarized IT service management results for senior IT management and specific process- and service-based results by process and service owners.

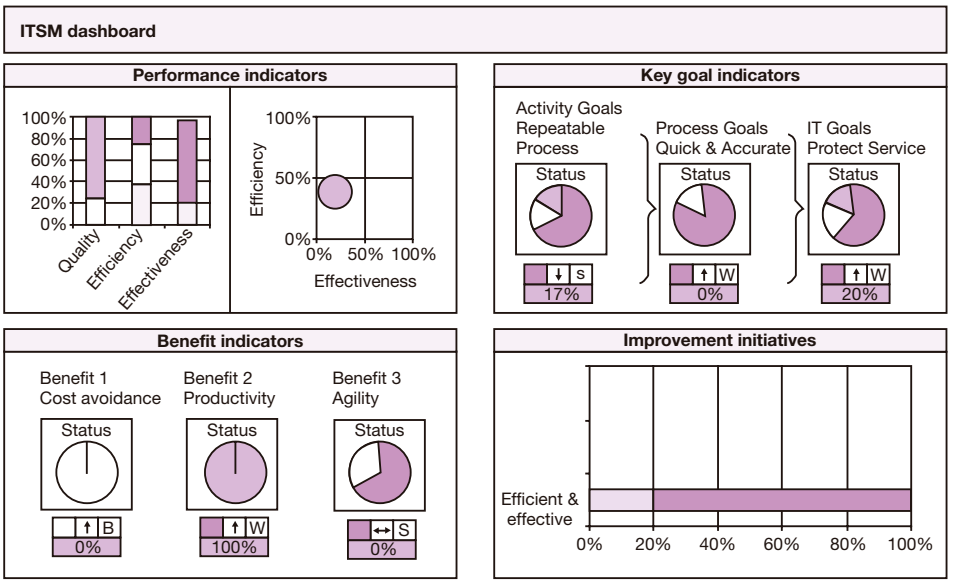


Figure 11 Sample ITSM dashboard report

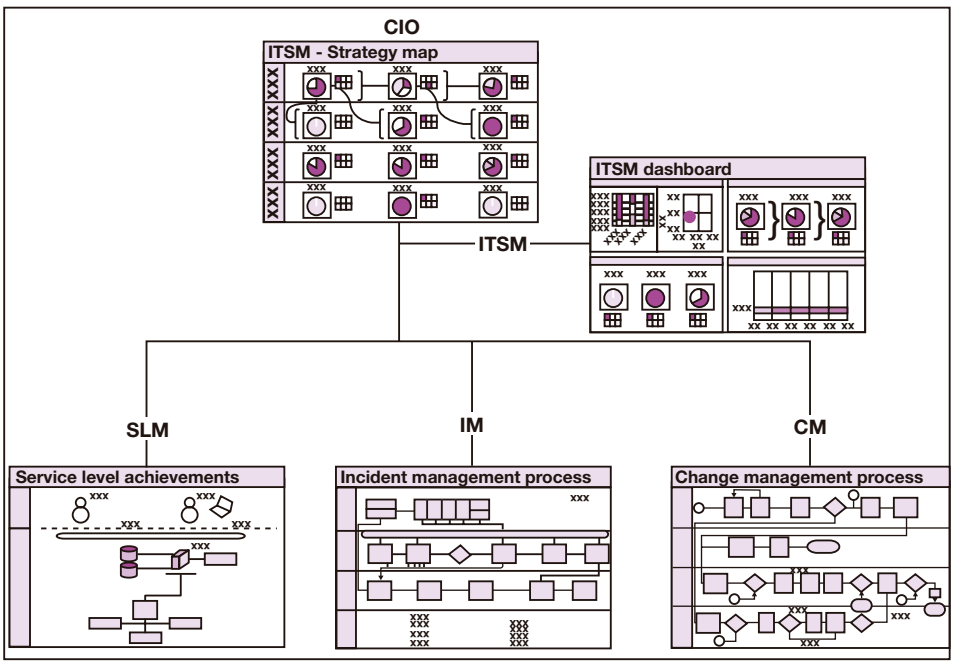


Figure 12 Sample roles-based dashboard hierarchy

Balanced scorecards

The balanced scorecard (BSC) is a methodology developed by Robert Kaplan and David Norton (1992). The balanced scorecard helps translate the organization's strategy into performance objectives, measures, targets and initiatives. This popular methodology

prescribes breaking the strategy down into perspectives using cause and effect linkages; then developing and using objectives, measures and initiatives to support each perspective. Figure 13 provides an example of four BSC perspectives.

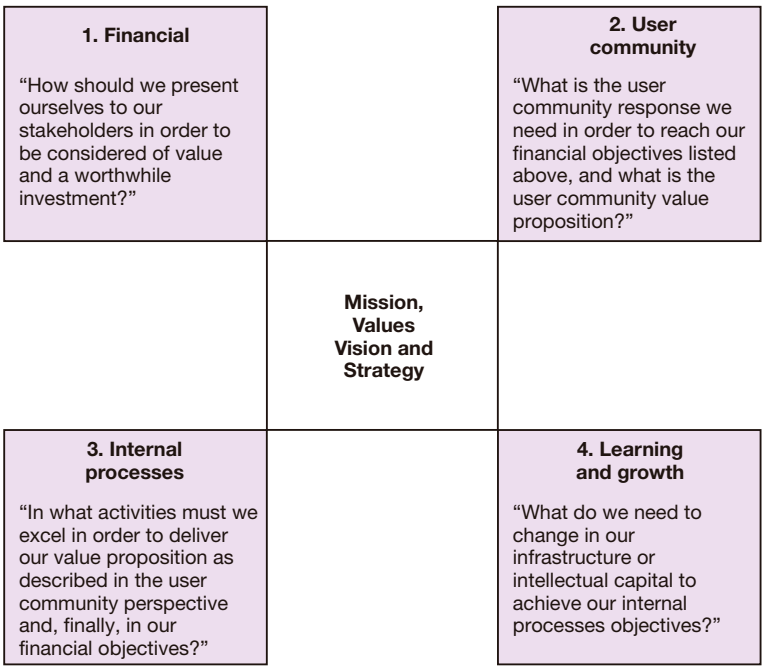


Figure 13 Sample BSC perspectives

General scorecards

General scorecards are used to present specific and summarized information by groups, themes or initiatives. Figure 14 provides an example of a series of scorecards related to a performance theme.

Cascading of scorecards

Using a cascading approach, scorecards should be designed top-down with the business goals and objectives in mind, then built bottom-up. This approach clarifies cause-and-effect linkages and helps ensure there is alignment and cohesiveness from top to bottom, see figure 15.

Strategy maps

Strategy maps are another form of a scorecard. They visually display the cause-and-effect relationships necessary to achieve the organization's vision and mission. Figure 16 provides an example of a strategy map designed to increase the value of IT to the business.

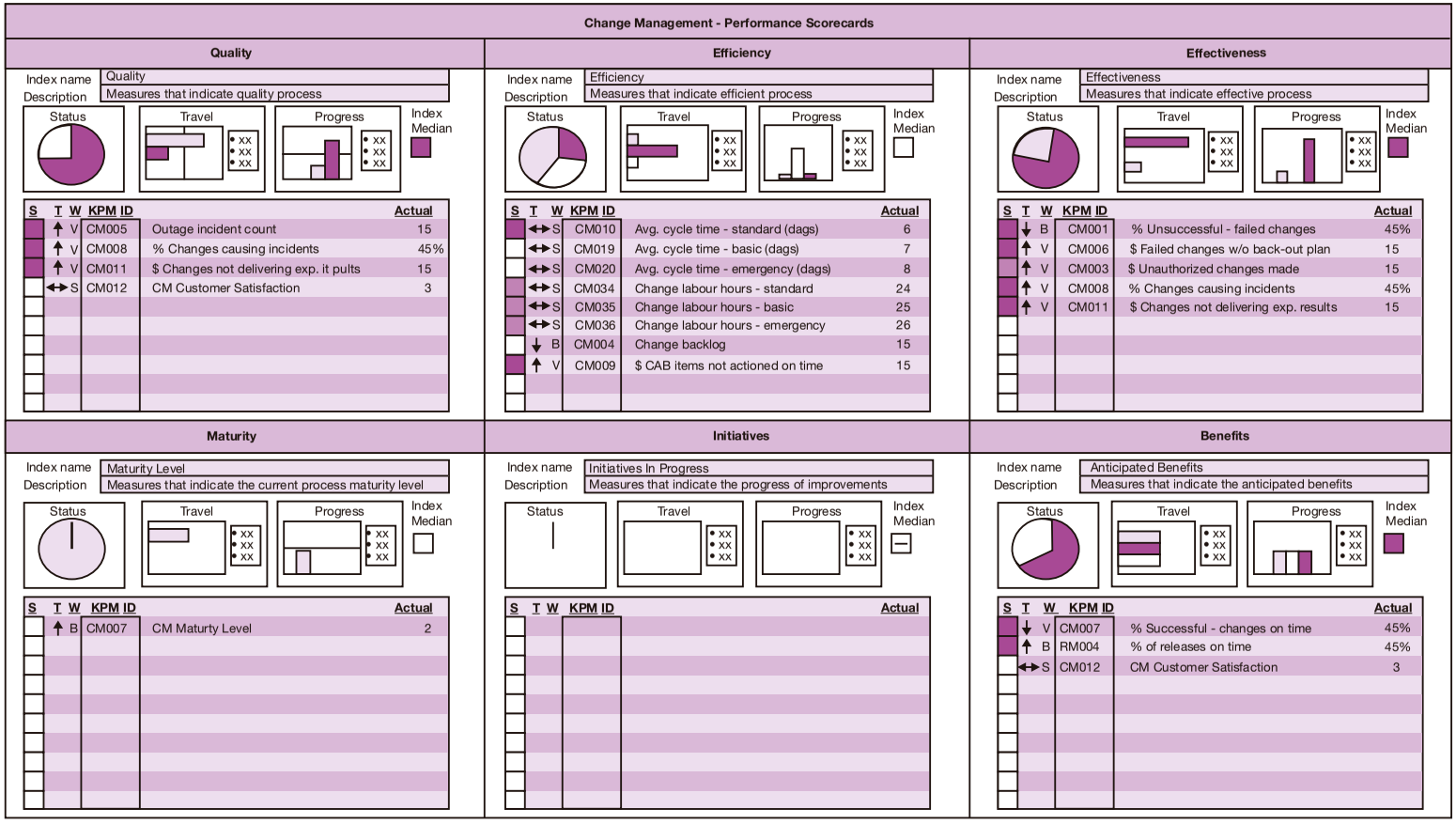


Figure 14 Sample general scorecards by themes

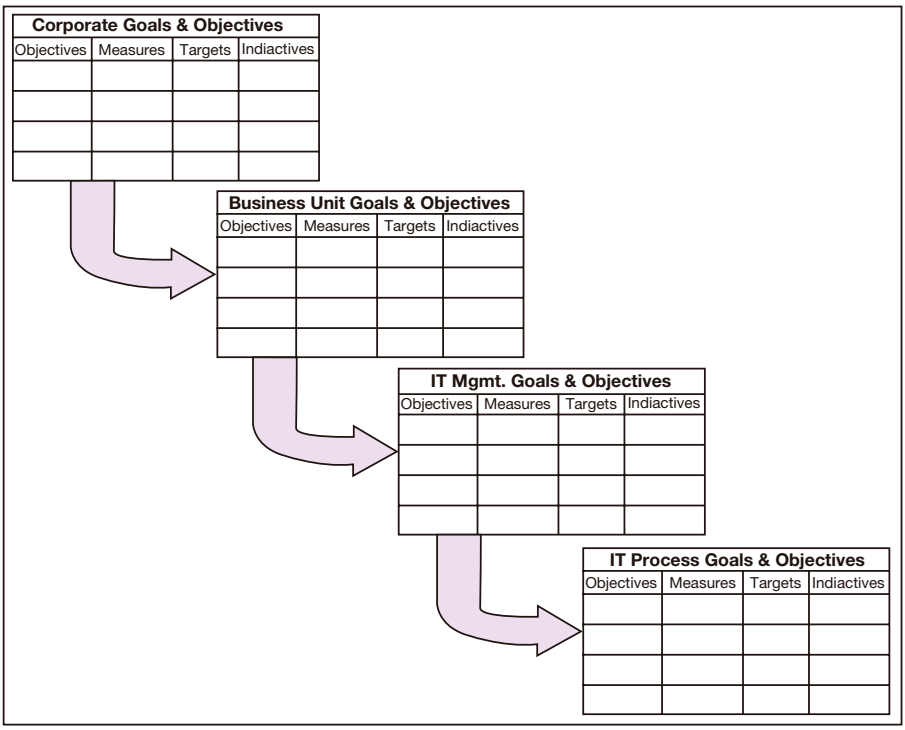


Figure 15 Cascading of scorecards

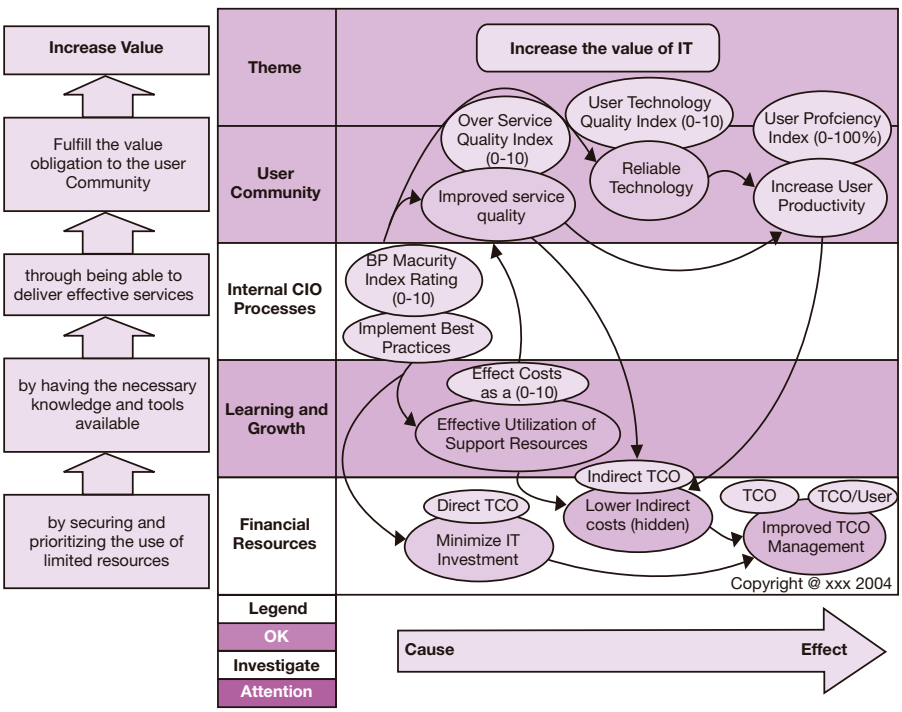


Figure 16 Sample strategy map for IT

Process map scorecards

Process map scorecards are another type of scorecard which help to:

- summarize the health of a process or service
- steer and control the process or service
- pinpoint hot-spots requiring attention
- predict where areas of improvement are required

Process map scorecards help view an end-to-end process or service as a whole. They are process- or service-centric regardless of who is responsible for the individual tasks or activities. Figure 17 provides an illustration of a process map scorecard for a change management process.

Summary

Implementing a measurement framework should help align IT with the business objectives and create value through continual improvements. It helps us to create a roadmap and keeps us from getting lost.

The measurement framework acts as the map; meeting the business goals and objectives are the destination, the critical success factors provide the directions and the metrics provide the sign posts to keep you on course.

The measurement framework presented by this article helps determine ways to:

- align IT with business objectives and verify results
- maintain compliance requirements for business operations
- drive operational efficiencies, effectiveness and quality

The framework is based upon Deming's continual improvement cycle, and comprises the following phases:

- **Tuning (Plan)** - The tuning sub-process is responsible for identifying improvement opportunities and recommendations for the subject process or service which is being measured.
- **Implementation (Do)** - The implementation sub-process is responsible for implementing the recommended changes through normal change management processes. As discussed, this phase contains the following sub-phases:
  - review what already exists
  - plan the approach
  - implement the measurement process
  - optimize the measurement process
- **Monitoring (Check)** - The monitoring sub-process is responsible for the data gathering, calculations and validation of the required measurements.
- **Analysis (Act)** - The analysis sub-process is responsible for comparative, causal and predictive analysis of the measurements to determine what corrective actions may be required.

After gathering and analyzing data, we should administer the information gathered and report on it. Commonly used reporting techniques that might be used for this are:

- classification of measures
- trending
- aggregation of metrics
- alignment of key measures

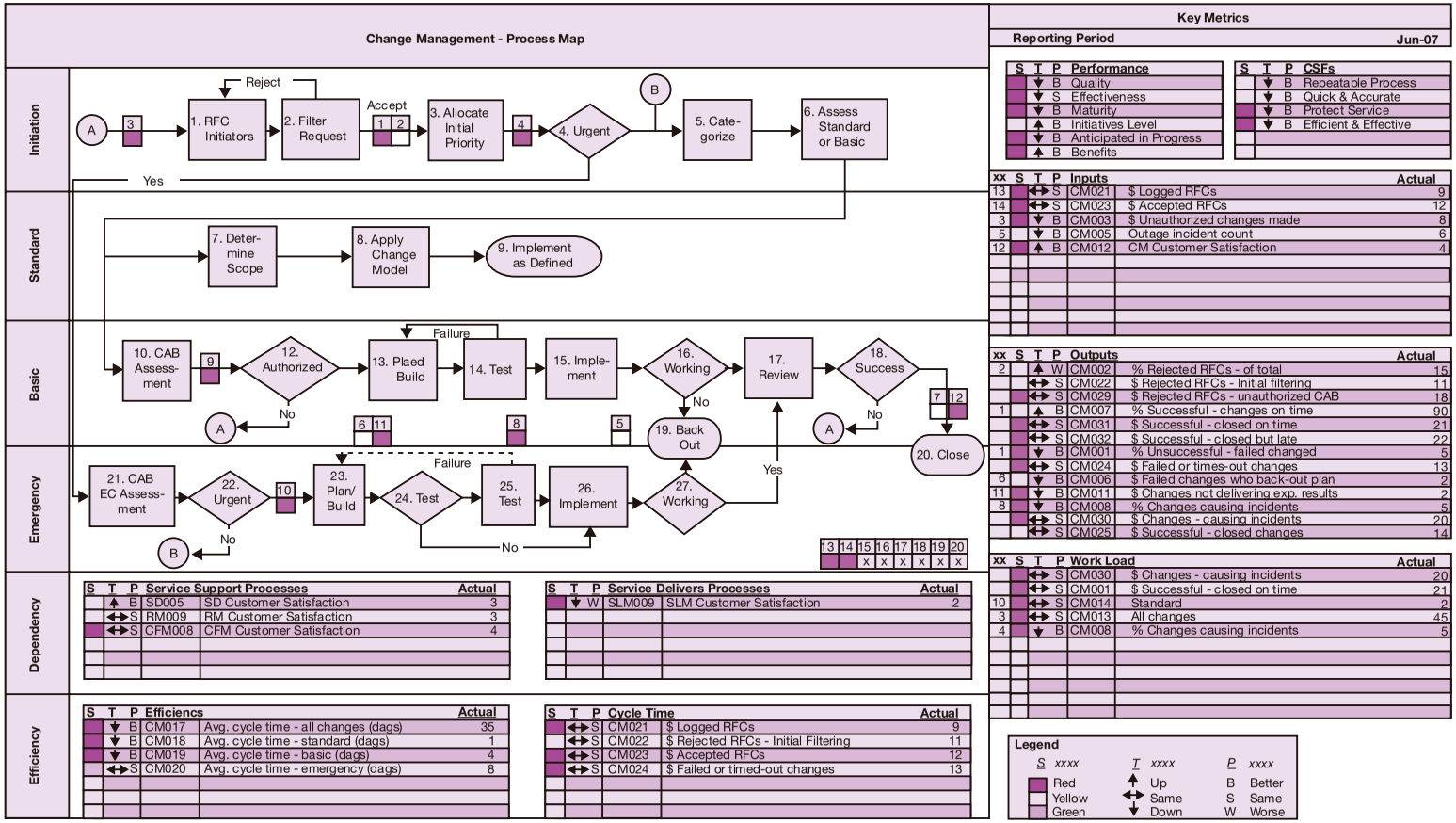


Figure 17 Sample process map scorecard

- dashboards
- role-based dashboards
- balanced scorecards
- general scorecards
- cascading of scorecards
- strategy maps
- process map scorecards

The measurement framework can be implemented as a comprehensive measurement program for all processes and services, or selectively for individual process or services.

Each organization may use this approach and the techniques discussed to create its own tailor-made measurement framework to improve its performance.

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9.3 The itSMF benchmark

Benchmarking is a best practice for everyone, including less mature organizations. It can help to improve practices and services significantly. In September 2006, itSMF Netherlands began developing a benchmarking model, which is now mature and available to all itSMF members. Jan Sonneveld et al. describe how they have designed and utilised this model, using best-in-class peers and proven benchmarking techniques.

Every reasonably large IT service management vendor (including consultancies and suppliers) has developed its own model to analyze customer performance and perhaps even measure and benchmark its operation. However, changing from one consultancy to another may cause problems in analyzing trends, due to different definitions and algorithms. Comparing apples and oranges does not yield valid results. This lack of standardization restricts some companies from measuring their IT functions in a structural way.

The itSMF benchmark provides a simple industry standard solution. The joint member model is being shared with business sectors and countries, enabling the whole of the itSMF community to learn from each other. This offers organizations the opportunity to set long-term targets, resting assured that whoever they use for advice can conform to the itSMF benchmarking standard.

To ensure the participation of many organizations, this model needs to be up-to-date with the most popular current frameworks, quality standards and maturity models. The model will have a periodic independent third party audit to ensure its quality and accuracy. Key to any benchmark is the data's integrity. Client data must be stored and managed by a reliable organization which keeps it safe and anonymous.

The itSMF Netherlands (itSMF NL) has accepted the responsibility to support and sponsor the itSMF benchmark model on behalf of the wider community. The model should be, and is, relevant to in-house IT functions, vendors and outsourcing service providers. It is especially important for this last category of vendors to use a generally accepted "open source" standard for measuring performance and cost efficiency.

The operation of the itSMF benchmark has been outsourced and revenues will be used to further improve and expand the model. Participating local chapters will receive database analyses reports, which they can publish for their members.

With the approval of the itSMF members we have decided to focus on the following main parts of the benchmarking model:

- ISO/IEC 20000
- process maturity
- total cost of ownership

- performance
- tooling

This article will initially outline the main benefits of IT benchmarking. Then, it will explore the key parts of the model and explain how they are used. Finally, it will provide some examples of the itSMF benchmarking data collection tools and show how results are being presented.

THE MAIN BENEFITS OF IT BENCHMARKING

Management and measurement go hand-in-hand. A recent survey from Bains Company (Rigby & Bilodeau, 2007), shows benchmarking as the second most commonly used management tool in large parts of the world.

Many large IT service management organizations use benchmarking as a tool to optimize IT service based on the performance of leading peers. IT benchmarking is often employed as a response to external pressures concerned with efficiency or effectiveness, forcing an organization to show how their own performance compares to their peers.

Enlightened organizations are using benchmarking in the context of continual service improvement. They are able to demonstrate improvement as well as slippage over time, alongside their Service Improvement Plan (SIP).

The main strength of benchmarking is the detailed comparison with similar best practice peers. This entails attention to detail, understanding the differences and taking action to meet upper quartile performance levels.

Benchmarking can show levels of quality that are available in the market against given unit costs.

The analysis of gaps between an organization's performance and that of benchmark peers results in the identification of strengths and opportunities. These strengths may be used to boost the confidence of IT staff and build trust with external service providers.

TEN REASONS FOR BENCHMARKING

1 Specified actions for improvement

Wouldn't it be great to have a detailed checklist of steps to become a "best practice" IT service management organization? Or, at the least, an organization with a sufficiently well performing delivery function given the cost limitations, as it is difficult to be best in all areas.

The itSMF benchmark asks the right questions and provides an organization with the answers, based on performance elsewhere within the itSMF community. The performance gaps become an organization's improvement checklist to become even better than they are today.

2 Step-by-step plan for ISO/IEC 20000

The appearance of the ISO/IEC 20000 norm led to the creation of the itSMF benchmark. We are convinced that this norm will be fully embraced by many itSMF members by the end of

2008. Gartner Research predicted in January 2006 that, by 2008, ISO/IEC 20000 would play an increasing role in the IT sourcing market.

With the ITIL® certificates, it was only possible to certify individuals for their IT service management skills. ISO/IEC 20000 certifies the IT service management organization as a whole. And that is what it is really all about.

The benchmark includes an ISO/IEC 20000 assessment, using scores and evidence to verify an organization's true position. For each process, we have identified detailed questions about whether or not an organization complies to the standard. For an example of this please refer to the section on the process benchmark. We have also identified the part of the standard to which the questions relate. This simplifies the prioritization of those items which score insufficiently.

A self assessment only relates an organization's position to the ISO/IEC 20000 standard. The itSMF benchmark also shows how its performance relates to its itSMF peers, in what respect they are ahead and where they fall behind. This helps in setting priorities as well.

3 Choose whether or not to improve

Even if an organization has a service improvement list, it would be too much to ask them to work on all items at the same time. Implementing these types of improvements is, typically, additional to daily operations. We often see a budget for operations, but rarely a budget for process improvements. Organizations look at these types of improvement projects on a case-by-case basis.

The benchmark also helps organizations to determine how much they should improve and prioritize their improvement work.

4 Choose investments

Business applications need to be available. In case of an outage, staff need to respond in a manner that re-instates the service within, or close to, service level targets. This means that we need to follow pre-determined minimum levels while working on a number of processes. The itSMF benchmark establishes these minimum maturity levels and helps prioritize process improvement projects.

An organization that still runs its IT fully in-house, can easily determine its Total Cost of Ownership (TCO). This helps identify strengths and weaknesses and offers a list of quantified action points. To clarify costs involved, we look at the number of staff employed in each process.

5 Options for cost reduction

To do more with less is the continuing challenge for IT managers. Automation tools, process design and user self-service are key to delivering high quality service at low cost. Measurement is vital to managing the IT function. This means an organization knows its assets and how to use them. A TCO survey will answer many questions on unit cost, personnel productivity and service quality.

The itSMF benchmark is all about discovering and describing best practices. As soon as processes become reasonably mature we see higher levels of cost efficiency and maturity.

6 Baseline measurement (the perfect picture)

A baseline created by a benchmark will result in a detailed picture of an IT service management organization. The high level of detail of the process questionnaires, in combination with the performance metrics and high level costs, offer a number of interesting views:

- cost versus maturity
- cost versus performance
- maturity versus performance

Such a study will uncover true strengths and weaknesses and offer detailed process improvement opportunities.

When the benchmark is repeated, the trend charts show the improvement as well as the slippage of the organization over time. Note that the peer organizations also improve over time, which continually alters the reference points.

7 Simplify management decisions

Benchmarking and gap analysis provide essential facts for sound management decisions. A study that includes various IT staff with detailed data collection enables management to identify shop-floor changes in order to improve key performance indicators.

8 The right priorities

The information from the benchmark study will help prioritize improvement projects based on peer comparisons. This way, an organization can put greater weighting on key aspects within the model to reflect areas of greater importance to them.

9 Help an organization to be effective (do the right things)

Every organization changes over time and the project portfolio is under continual pressure. Indeed, many projects don't even make it to the end. This is why organizations continually need to check and test the relevance of their current plans.

An evidence-based and prioritized project list is a solid basis for management to decide whether projects are on track or not.

10 Performance dashboard

Eventually we will be able to offer every participating member of itSMF who are benchmarking their own performance, a dashboard on their own internet pages, activated by online software with an annual subscription. The questionnaires will be online available throughout the year and after external validation (needed for quality assurance) the database will be updated. Every three- or six-months we will freeze the results and update the online dashboard. This will show current and past performance and the results of the selected reference group.

Of course, the standardized PDF reports will still be available for individual review and analysis by the external consultant to summarize the recommendations and add their views and comments.

WHO WILL BENEFIT FROM THE ITSMF BENCHMARK?

Each IT service management organization

The itSMF benchmark is a practical and comprehensive toolset to create evidence- based performance improvement plans that lead to improved ITIL processes and improved cost efficiency. It provides standardized definitions and metrics for key performance indicators and best practices. As all consultancies can use it, there will no longer be a requirement to compare apples and oranges.

This low-cost analysis makes benchmarking available to small and medium sized organizations. By completing the itSMF benchmarking questionnaires, with onsite assistance and validation, an organization will benefit from peer comparisons which will help them identify their local strengths and improvement opportunities.

The itSMF benchmark is the only available independent benchmark that enables organizations to choose the assisting (accredited) consultancy themselves. In order to gain accreditation, consultancies need to be an itSMF member and should have qualified ITIL consultants. This means the consultants should be ITIL service managers who have received ISO 20000 training.

The itSMF benchmark assures constant quality, and independent and anonymous storage of data.

Consultancies

The itSMF benchmark is a shared service centre for IT service management assessments and benchmarks. The data is stored in a central database. High quality benchmark reference groups will be created based on anonymous data within the growing database. Organizations participating in the benchmark project need to join as a partner in this initiative.

ITIL V2 and V3 recommend measurement and benchmarking as part of sound IT service management. Larger consultancies often have their own toolset to assist clients in identifying improvement opportunities. The itSMF benchmarking initiative enables smaller consultancies to also access similar tools. This enables the benefits of benchmarking to underpin more studies, leading to improved IT service quality projects and outcomes. The itSMF benchmark provides a practical assessment of IT processes as they are currently in use. The approach builds on and expands existing process frameworks. The project will expand and contract as our members dictate the direction of the service. This means that consultancies will have access to this practical tool-kit without the need for local resources and investment.

itSMF and local chapters

The Intellectual Property Rights of itSMF benchmarking are fully owned by itSMF Netherlands. This means that we can now share market trends and best practice with all of our itSMF colleagues around the world free of charge. This valuable research database will help itSMF identify performance gaps and, consequently, focus events on these specific areas. In turn, this will increase the overall quality of service management within all organizations, thus fulfilling our main goal.

Key to success is the combination of vendor and non-vendor members producing service improvement plans, based on a practical and collaborative model that is kept current by the itSMF community. Local itSMF chapters who embrace and support itSMF benchmarking will

share in the revenue of this service. They will also be able to contribute by analyzing local (anonymous) data to identify local trends. In addition, the local itSMF chapter will provide a stand and a presentation slot at their annual conference. This will enable local itSMF members to see the evidence of IT service management developments in their country, compared to what is happening across the world. The project initiators are keen to hear from members who want to contribute ideas and join the benchmarking committee.

THE MODEL

General questions

Besides obvious information such as contact details, the benchmark maps the customer's IT environment, to enable comparison to other companies. It is a widespread misunderstanding that companies can only be compared to other companies of the exact same type. Comparison of the dealing room of bank A with the branch network of bank B would prove inconsistent even though both are banks. The same can be said about comparing traveling sales staff with the administration at a large centrally oriented company. Not being able to share and compare generic parts of IT would make it impossible to have a healthy outsourcing business sector. That is why the benchmark compares generic parts of the IT organization, which is a big and important part of the day-to-day business. Creating reference groups will be a delicate but important role of the shared service center.

The benchmark also registers what type of policy is used (innovator, fast follower, follower). In the long run, this will enable an assessment of the policy's impact on cost and quality.

The most important point is that itSMF benchmarking is not self assessment. A registered external consultant validates the responses to the questions and performs audits to ensure the data is of high quality. It is important that all data is of high quality for benchmark accuracy purposes, sound strengths, opportunity assessment and credible recommendations.

Process benchmark

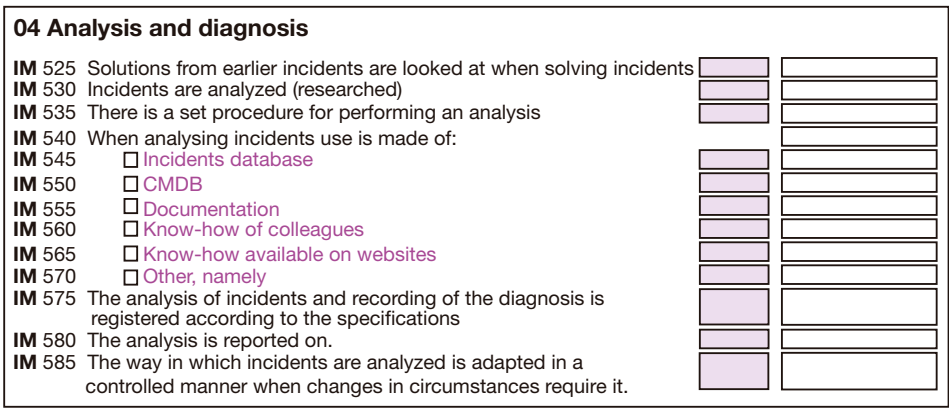
The process benchmark adopts ISO/IEC 20000, with some improvements. For example, continuity and availability management have been split into two separate processes and operations management has been added.

The process maturity component builds upon ISO/IEC 20000 and ITIL V2. It focuses on CMMI maturity levels 1 - 5. The comprehensive process study covers eighteen key IT processes. The itSMF benchmark provides simple questions that can be answered by simple answers, indicating to what extent the process is being followed:

- **0%** - no/nothing
- **25%** - little/some
- **50%** - halfway
- **75%** - many/mostly
- **100%** - yes/fully

This guarantees simplicity as well as sufficient granularity, while evidence will be checked by the selected consultant.

As figure 1 shows, the questions vary between a simple predefined list of answers in percentages, and a checklist of sub-questions which show what an organization does in more detail. The number of questions can be adjusted to the needs of the processes being developed in the marketplace. Sub-sets can be extracted to suit particular applications. The questions and format are under the control of the benchmarking committee. In 2008, the questionnaires will become available in an internet-based toolset.



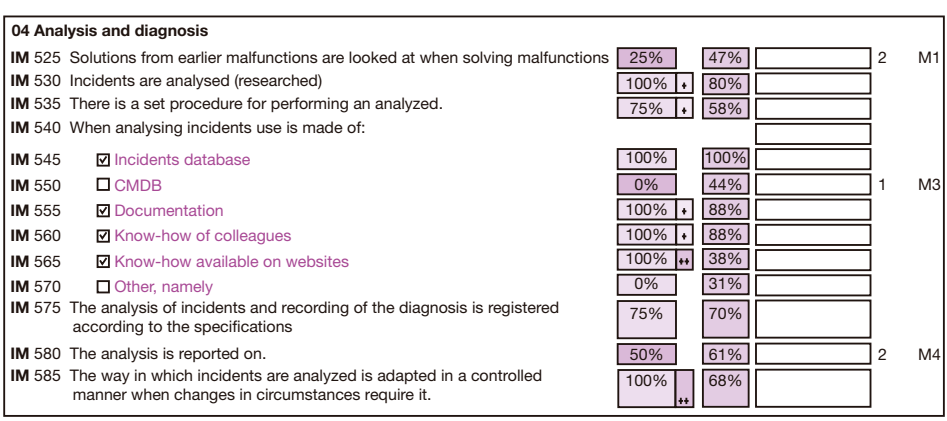
04 Analysis and diagnosis

IM 525	Solutions from earlier incidents are looked at when solving incidents		
IM 530	Incidents are analyzed (researched)		
IM 535	There is a set procedure for performing an analysis		
IM 540	When analysing incidents use is made of:		
IM 545	☐ Incidents database		
IM 550	☐ CMDB		
IM 555	☐ Documentation		
IM 560	☐ Know-how of colleagues		
IM 565	☐ Know-how available on websites		
IM 570	☐ Other, namely		
IM 575	The analysis of incidents and recording of the diagnosis is registered according to the specifications		
IM 580	The analysis is reported on.		
IM 585	The way in which incidents are analyzed is adapted in a controlled manner when changes in circumstances require it.		

Figure 1 Example question sheet incident management

Every questionnaire ends with an overall question on the evidence and the quality of the answers. This helps the shared service centre to select high performing organizations for reference groups.

Figure 2 provides an example of an incident management result sheet. The first column shows the organization being benchmarked and the second columns shows the reference group, indicating the relative position of peer organizations. When a questions is scored below 75%, the response will be marked, indicating additional effort is required. On the right there is a priority indicator and the relevant maturity level. Indicators to the right will also show ISO/IEC 20000 part 1 or 2 questions.



04 Analysis and diagnosis

IM 525	Solutions from earlier malfunctions are looked at when solving malfunctions	25%	47%		2	M1
IM 530	Incidents are analysed (researched)	100%	80%			
IM 535	There is a set procedure for performing an analyzed.	75%	58%			
IM 540	When analysing incidents use is made of:					
IM 545	☑ Incidents database	100%	100%			
IM 550	☐ CMDB	0%	44%		1	M3
IM 555	☑ Documentation	100%	88%			
IM 560	☑ Know-how of colleagues	100%	88%			
IM 565	☑ Know-how available on websites	100%	38%			
IM 570	☐ Other, namely	0%	31%			
IM 575	The analysis of incidents and recording of the diagnosis is registered according to the specifications	75%	70%			
IM 580	The analysis is reported on.	50%	61%		2	M4
IM 585	The way in which incidents are analyzed is adapted in a controlled manner when changes in circumstances require it.	100%	68%			

Figure 2 Example result sheet incident management

Performance

Within the process maturity component, itSMF benchmarking includes a number of service quality measures. These help to develop and compare an organization's service level targets against leading organizations, in the appropriate reference group. A number of performance metrics have been taken from the popular book "Metrics for IT Service Management" (Brooks, 2006). The relevant pages from the book have even been included in the questionnaire. The most important performance metrics can be identified by an exclamation mark ("!") before the question. The benchmark also requests information on if and when organizations measure the performance metrics (standard, occasionally, sample) or whether it is an estimate (reliable, average, unsure). All questions marked with "!" must be answered.

10 Service Level Management

SLPF 0a		!	Number of operational SLAs
SLPF 0b		!	Percentage of services covered by SLAs
SLPF 001	131	!	Number of SLA targets missed
SLPF 002	131	!	Number of SLA targets threatened
SLPF 003	132	!	Percentage of SLAs that require changes
SLPF 004	132		Number of SLA reviews completed on time
SLPF 005	133		Number of SLA breaches caused by third party support contracts
SLPF 006	133		Service Delivery costs
SLPF 007	134		Number of services not covered by SLA
SLPF 008	134		Number of OLAs and Underpinning Contracts not yet agreed upon
SLPF 009	134		Customer Satisfaction
SLPF 010	135		SLA -> SLA turnaround

Figure 3 Sample questions with exclamation marks

Total cost of ownership

In order to obtain a balanced view on best practice, the itSMF benchmark also has a unit cost component. Total Cost of Ownership (TCO) is calculated by using standard and proven technology benchmarking. This TCO includes all IT staff and the main infrastructure hardware and software elements. Using a standard high level model, the itSMF benchmark enables unit cost comparisons between the organization that is being benchmarked and a similar sized reference group. We aim to get 80% of the benefits using 20% of the traditional data. The itSMF benchmark requires information on:

- workload
- staff
- current year IT revenue and capital budget
- ongoing infrastructure projects
- departmental IT budgets

This information enables the benchmark to define a high level unit cost (an organization's TCO) and a number of unit costs in areas such as service desk, client server, and data network. Figure 4 shows the reference group value as 100% and the organization's value relative to it.

Project management

Organizations invest heavily in projects to deliver business benefit. The project management benchmark enables projects to be measured and compared. Best practice within project

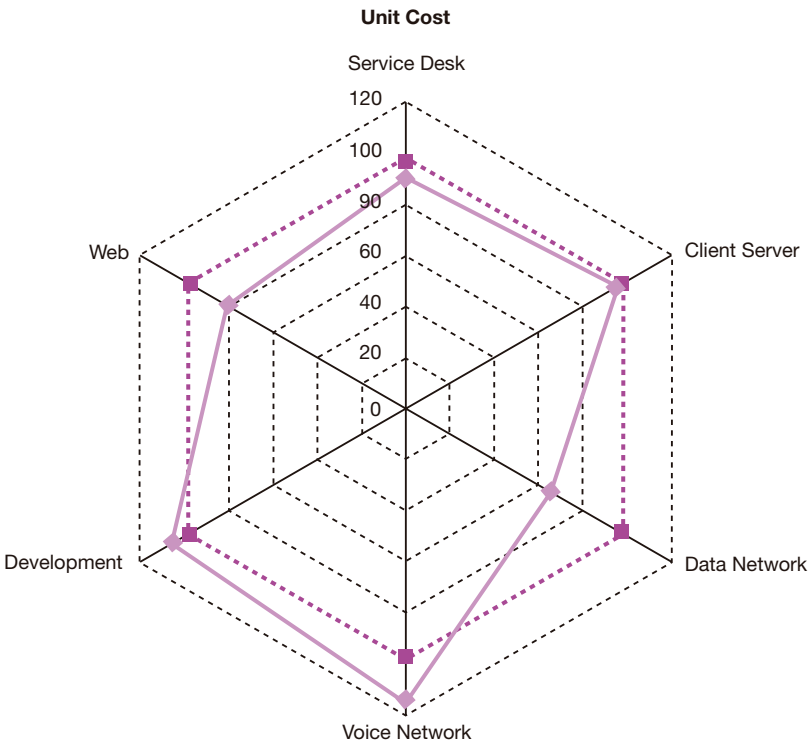


Figure 4 Reference group value (dotted line) against an organization's value (black line)

management will be identified and shared across the itSMF community. The itSMF benchmark offers a service that is designed to benchmark projects based on size and type (hardware migration, software migration, sourcing, process improvement, re-organization).

Tools

Tools play a critical role in providing day-to-day IT service management. For this reason the itSMF benchmark will collect information on which tools are in use at different kinds of organizations. This will be used to underpin process and TCO information. And in the (near) future partners will be able to offer an interface between the itSMF benchmark and the database of their tools so data can be collected continuously and easily.

THE BENCHMARKING PROJECT

When undertaking an itSMF benchmark, an organization selects an appropriately accredited consultancy to support them through the study. If their current preferred supplier is not accredited they can contact the shared service centre to become a partner. The lead consultant receives the itSMF benchmark questionnaire and is the single point of contact with the shared service center, in the Netherlands. The consultant ensures the correct answers are reported and provides local support for questions and answers. Once the questionnaires are completed and checked on-site, the lead consultant sends the information to the shared service center for processing. The results from the center will include the organization's data, plus processed information such as key performance indicators. This information is cross checked at a validation session, at which final data corrections are made.

The final version of the data will be processed again and the lead consultant will use the final itSMF benchmarking report to create the organization's report and presentation.

Quality assurance

The itSMF benchmark model has proven its quality and value for many organizations. The itSMF NL is keen to keep the model up-to-date and relevant. To do this, there is an established program for quality assurance. The benchmarking committee consists of leading consultancies in The Netherlands in the area of ISO/IEC 20000, ITIL, CMMI, TCO, tooling, project management and (international) benchmarking.

We now seek to increase the number of international members in the committee, not only consultancies but also IT service management organizations. We are specifically looking for operational process owners with an ITIL service management certificate and ISO 20000 experience.

The board of itSMF Netherlands currently acts as an advisory board ensuring that focus is maintained on the best strategy for the itSMF benchmarking service. They can invite the international board to join this board as well. The benchmarking committee aims to have periodic independent audits to highlight strengths and areas where we need to improve further. Auditors should have no links to benchmarking models now or in the future, as this would possibly violate their non-disclosure agreements.

At an operational level, two months after a benchmark has been completed we will send all organizations a client evaluation form. In this evaluation we invite feedback on the results of the itSMF benchmark, the model, the consultants and the process. A formal audit and complaint procedure is in place to understand and address any issues of conduct and duty. This will link with itSMF NL, which will provide adjudication as necessary. Over time, an itSMF benchmarking user group is envisaged as a community to share best practice and metrics-based innovation. In addition, a consultancy user group is also envisaged to provide colleague support for studies. All activities under the banner of itSMF benchmarking seek to serve one greater goal: to create the best possible IT service management measuring environment.

PITFALLS IN BENCHMARKING

In benchmarking, try to avoid the following pitfalls:

- **Garbage in, garbage out** - Try to get the best possible answers so the results and recommendations will reflect reality.
- **Do nothing** - A solid set of recommendations may be presented in a well defined report or presentation. If management decides not to take action, however, this will certainly demotivate staff and result in unsatisfied users.
- **Underestimating the impact** - Senior management understands the true value of benchmarking and will certainly look at the study results. It is important that the results reflect the actual situation and that appropriate action is taken to address issues that have been identified. If this is not the case, an organization will be doing the wrong things. Please note that the use of external consultants for quality assurance should minimize this.
- **Difference in scope** - If the benchmark study is looking at one part of the organization, ensure all people involved are clear about the specific scope of the study when answering the questionnaires.

- **Comparing against average performance** - This hardly ever leads to best practice.
- **Unavailable root-cause analysis** - You need to be able to track your recommendations to key performance indicators and the underlying data provided, in order to adjust the situation on the floor.
- **Weak project management** - Good data collection and validation are key to a successful benchmarking project. The project manager in charge needs to motivate the participants continually and manage the project within a short period of time in order to ensure that people stay focused. This, in turn, reduces the overall effort.

FINALLY

There is no better peer than yourself. Benchmarking your own performance over time shows the positive results of your service improvement plan and charts your route to becoming a best practice organization. This is particularly useful when you are audited and you can demonstrate sound management of your performance and unit costs over time.

As the database grows, we can share the results with the itSMF community in terms of industry trends and more reference groups. This is an itSMF initiative designed by itSMF members for itSMF members. It enables IT service organizations of all sizes to improve service provision at an affordable cost. This levels the playing field with the largest organizations that have used benchmarking for many years to improve their performance.

The initiative is about one year old and the amount of interest has astonished even ourselves. More and more organizations are joining the initiative. For more information please refer to www.itsmf-benchmarking.com.

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Leo van Selm *(The Netherlands) is director of Vaseom and a specialist in IT service management, especially ITIL, ISO/IEC 20000 and training/certification.*
Maarten Verstralen *(The Netherlands) is senior consultant for CORED and a specialist in IT service management, TCO and metrics.*
Simon Bos *(The Netherlands) is Tactical Partner at Bos+Cohen and specializes in IT service management, ITIL, ISO/IEC 20000 and tooling.*
Ton Alofs *(The Netherlands) is director of Steenbok Adviesgroep and a specialist in IT service management, ITIL and maturity.*

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9.4 Selecting business-relevant metrics

It is no longer simply good enough to capture IT key performance indicators to measure service quality. Organizations must be able to showcase the business value of IT; but how? Selecting the most appropriate business metrics is the key. In this article, Linh C. Ho and Bryce Dunn give practical advice on how to work together with business stakeholders to select the most relevant business metrics that will enable better decision making by both business and IT staff.

INTRODUCTION

Businesses embrace technology for their own competitive advantage - to reduce costs, improve service, increase output or address market needs that would not be possible without that technology. They often experience difficulties in understanding how that technology supports their business objective and what the ramifications will be if that technology behaves in an unexpected manner. In order to take advantage of new technologies, businesses hire experts in utilizing that technology - enabling them to harness it to achieve their desired objective. The challenge is that these experts are experts in their particular technology and are unlikely to have a deep understanding of that particular business. Conversely, the business leaders understand the outcomes they desire, but do not fully understand how the technology works, and other potential benefits they could realize by harnessing it in different ways.

This lack of understanding or disconnect between business and IT means that the business often doesn't know all that is possible from the technology (what they can get and what they can't get). It may also mean that unrealistic demands are placed on it, or that the eventual solution is not exactly what is required. This disconnect between business and IT is exacerbated by decision makers having too much raw data and not enough real information presented in context to facilitate decision making.

This article focuses on the ways in which IT departments are able to help their business counterparts understand how IT supports their business outcomes, by selecting and presenting metrics that facilitate business decision making, and promoting dialog between the business and IT.

THE CHALLENGES - DISCONNECT BETWEEN BUSINESS AND IT

While selecting and displaying business-relevant metrics does not integrate the business and IT overnight, it does help address one of the major issues causing this disconnect: poor communications.

Focusing on the information that business people need to make informed decisions that are related to technology produces a much better foundation for dialogue. If the metrics are

selected correctly, they are something that can be understood by both parties and are an objective measure rather than a subjective perception of service.

Some of the major challenges that can be either addressed or improved by selecting and presenting business-relevant metrics are:

- **No foundation for dialogue** - Business and IT people speak a different "language". Business-relevant metrics provide an objective measure of how the IT service is supporting (or not) business outcomes, allowing both sides to have a meaningful discussion.
- **Mismatched expectations** - Business people care about particular business services and require business processes to work correctly, while IT practitioners focus on infrastructure availability. If both sides agree on what should be measured and what is really important in business terms, this ensures that both sides have the right expectations.
- **Confusion around terminology** - A lack of common terminology is often a hindrance to good communication between IT and the business. For example, it is common for business people to talk about availability, but typically they are not talking about infrastructure availability, rather that fact that a business service or business process is available to its users or customers. Conversely, IT operators often refer to internal performance indicators as SLAs, even if they are not agreed measurements for IT service delivery.
- **Business stakeholders do not know what is possible** - Technology can be an important enabler for businesses, that's why business people need to understand what is possible in a cost effective way. While metrics are not the answer to this problem, the process described in this article does go a long way to improving communication between business and IT. This can lead to a much better understanding on the side of the business of what it possible. In addition, metrics based around capacity can be displayed to help the business understand their limitations - for example not scheduling a marketing campaign that is expected to increase orders by 25% if the underlying IT systems cannot yet support this.
- **IT is in the dark as to what the business objectives really are** - The poor communication between the business and IT is not one sided. It is important for business stakeholders to take the time to make sure that IT understands what the business objectives really are. This information allows them to ensure that they support these objectives. It's more likely that they will come up with alternate solutions that can meet the objectives more efficiently, or with reduced cost, if they understand them.
- **IT is reactive to internal issues rather than proactive** - It is common for IT departments to be in a reactive "fire-fighting" mode where they react to internal issues as and when they happen. While addressing this issue is more one of process than metrics, having the right metrics available to indicate what is important to the business helps IT plan proactive improvement projects based on measures that are actually relevant to the business.

THE GOALS - BETTER DECISION MAKING

The overall goal in selecting and presenting metrics is to facilitate decision making. In this context, decision making is not restricted to senior management. Decision makers exist at all levels of the organization. Every employee, as well as suppliers, partners and customers, makes decisions which impact the business every day. If the right information is displayed in the most appropriate way, then each type of decision maker can be "armed" to make the most informed decisions.

For each organization, the different types of decision makers can be identified and prioritized. Then, the types of decisions that they make can be examined to ensure that they have all the information they need to make an informed decision.
For example, an IT operator makes decisions around prioritizing IT issues and how best to address them. This means he needs real-time information about the current and potential impact of those issues, followed by detailed technical information about the problem symptoms, previous actions and system design.

Conversely, a business unit owner may be making decisions around spending priorities, product mix and business unit costs. This would require financial data about the business unit's profit and loss, sales figures, efficiency information and competitor information, in real-time and historical trends.

Service Level Agreements (SLAs) are a way to measure the quality of service delivered in business-relevant terms. They are used to ensure that the customer gets the appropriate level of service from their service provider (which could be internal or external) and, if not, some kind of penalty may be applied to make up for poor service.

The problem with SLAs is that they are rarely business-relevant. Because of the lack of business-relevant IT metrics, SLAs have been primarily constructed from an infrastructure perspective.

The analogy here would be if instead of an airline providing metrics about on-time arrivals and departures and lost baggage, they provided metrics to passengers on the oil temperature of the engines during flight, the number of baggage handlers that called in sick that day and their simulator usage rates for the month. Now there may be some link between these metrics and overall customer satisfaction, but the customer doesn't care about that. All they want to do is arrive at their destination safely and on-time, and with their baggage. IT is still, however, stuck in the mindset of measuring and reporting on these internal metrics and then supplying them to their customer.

This is why it is important that IT focuses on selecting good metrics that are relevant to the business. They should start measuring these metrics themselves, instead of measuring inward-focused metrics like server availability, CPU utilization and incident resolution rates.

In addition, the correct metrics can be used to set the right expectations with the business. By going through the process of selecting business-relevant metrics instead of internal technical metrics that the business does not understand, expectations about the level of service can be set and the cost of that level of service discussed. If expectations about the service levels are set in terms that business people understand, then it is much less likely that we will have a situation where IT believe they are providing a good service as the servers are all up and available, whilst the business people are all unhappy because they are unable to do their job.

Not all business services are created equally. Measuring those services from a business perspective and quantifying the cost of providing different levels of service enables a meaningful discussion about the business value of each service and what is an adequate service from a cost/benefit analysis, rather than business demanding a top level for each service.

THE PROCESS - HOW DO WE GET THERE?

While there are many ways to successfully select and display business relevant metrics, this section outlines a process that has been successfully used by multiple IT organizations working in conjunction with their business counterparts. Examples of its use can be found later in this article.

Successful projects commence by first prioritizing and focusing on which business service to start with. Selecting this service is normally done in conjunction with the business sponsors and is likely to be either the one that is most critical to the business, or one that has been most troublesome lately (i.e. the biggest area of pain). It should also be very technology-dependent. This focus is extremely important as enterprise-wide projects are not often successful.

For the selection step, and indeed for subsequent steps, having the right people in the room is important. The titles of people will differ in each organization, but in general we are looking for people who have responsibility for a service on the business side, whilst on the IT side there should be people who are responsible for interaction with the business, such as relationship managers, product managers or, if they do not exist, senior IT management.

Setting the right expectations is also an important step, once all the right people are involved in the project. Expectations are not just for the finished product, but also the project, for example the duration, costs and amount of time the business people will need to commit to it. Setting the right expectations up-front is crucial for success. The time expectations also ensure that the business people are suitably committed to the project. The project is unlikely to be successful if the business simply tells IT to get on with it and they will check back in a few months. In some organizations executive management sponsorship may be required to get the level of commitment needed. This is also useful to make sure that the team's time is being well spent. For example, there may be no need for the stakeholders to attend every meeting, but their presence is needed at least for regular review meetings to ensure that the project is on track.

Identifying the key decision makers to be targeted should now take place. While every employee in a company makes decisions and needs data to make good decisions, it's about priorities and focusing on the people whose decisions are having the biggest impact to the business, or are being made with the least amount of solid data. In most cases people start with business executives and IT management.

Now we have the target and the team, the next step is to actually select the metrics. In this step it is important to realize that less is more. For each business process we want the business people to help us understand what their key measures are for the success of that particular process, and how they can use that data to make better decisions. This is often in the form of comparisons to previous history, but may also involve comparisons with industry benchmarks. In this instance the metrics are not infrastructure availability or CPU utilization, but business metrics such as:

- **financial metrics** – revenue, cost
- **business volume** – number of orders, transactions, customers
- **customer satisfaction** – repeat business, surveys
- **end user response time** – how well the IT systems are responding to user requests

These metrics may be sensitive, so security requirements are often part of this step. The metrics should also be displayed in a way that makes the decisions easy. For example, metrics for monthly orders might be shown in a table or bar chart rather than a pie chart. The display mechanism is also part of facilitating the decision as visual correlation is a useful technique here. Once the metrics have been selected, they should be reviewed for priority and focus. Only the most important metrics that clearly drive decision making should be shown. If there is not a clear decision that can be driven from the metric, it should be removed. A review is a good way of ensuring that less important metrics are not included.

The next step is to identify some supporting IT metrics. For example, if specific metrics around orders have been selected, IT metrics that show the quality of the systems responsible for processing those orders can be considered. Again, in this case it is not about internal metrics such as infrastructure availability or CPU utilization, but metrics that can be clearly linked to the business metric. End user experience-type metrics are a great example of business-relevant IT metrics as they show the end-to-end picture as well as the performance of the service. These metrics are used by the IT people to help correlate how their systems are supporting the business. A good example is showing that poor performance on an online ordering system has caused a 20% decrease of orders. Further metrics that help isolate the root cause of key systems can also be considered.

Once the metrics have been selected and presented, it is not enough to simply end the project. The whole process is interactive and other business processes can be examined. Moreover, the selected metrics should be regularly reviewed to make sure they remain relevant within changing business needs.

The right metrics can then be used not only for active decision making, but also for selecting longer term improvement projects. In addition, the metrics selected are good candidates to be used for SLA measures, since they are business-relevant.

Ultimately, this process should help eliminate those “secret meetings” between business and IT, which are frequently more about assigning blame than understanding what is going on and proactively improving service.

We can summarize this process as follows:

- Select which service is going to be measured ("prioritize and focus").
- Get the right people in the room—from both IT and the business.
- Set the right expectations. Make sure both business and IT know how much time they will have to spend.
- Identify the key decision makers and their information needs. Ensure that you focus on business people here.
- Select the metrics, while focusing on business-relevant metrics. Refer to the business' information needs from the former step.
- Select supporting IT metrics. These should be metrics that can be clearly linked to the business metric.
- Present the metrics in a way that is useful to the business.
- Keep reviewing the selected metrics and their presentation to ensure their relevance to the business.
- Use the displayed metrics to select longer term improvement projects and as business-relevant SLA measures.
- Check what other processes might need appropriate metrics and start the cycle again.

The process described above focuses on engaging with the business and communicating, not selecting a set of generic metrics and showing them in a screen. There are no shortcuts to providing the right information for decision making. Whilst other companies' experiences or vendor suggestions can form a useful input, each company has its own decisions and own business priorities, and will want to examine a different set of metrics to enable them to make the best decisions possible.

THE LESSONS - WHAT HAS BEEN DONE BEFORE?

Selecting the right metrics for decision making is an age old problem which has existed long before information technology. This provides many lessons learned—both successes and failures. Table 1 displays some of these "do's and don'ts".

Do	Don't
Engage the business – Engaging the business is critical to the success of a metrics projects. After all, the objective of selecting and presenting metrics is to understand and measure how IT is supporting the business. If the business are not engaged in the project then the metrics selected are unlikely to represent what is important to the business.	**Focus only on technical metrics** – It is common for projects that are led by the IT department to slip back into their comfort zone and focus only on internal technical metrics. Gathering and presenting these metrics merely exacerbates any problem It is virtually impossible to have a meaningful dialogue with the business around how IT can support their initiatives if the only information that can be provided is infrastructure availability and CPU utilization.
Set expectations – It is important to set the correct expectations with the business and stakeholders before the start of the project. Without expectation setting, the business may have unrealistic hopes of what is possible. This also allows for a re-check of the information that was gathered when working with the business sponsors to ensure that it is correct and that the metrics selected will provide business value.	**Assume the CMDB will provide the metrics** – The CMDB is useful to facilitate integration of products between IT management products by allowing them to talk a common language. But it does not provide business relevant metrics for decision making. Those companies that have embraced the CMDB could use it as a place to record the selected metrics.
Get management buy-in – Management buy-in is important because such a project requires support from multiple different departments/functions in the company. In addition, since business support is needed, management buy-in is often essential to obtaining this ongoing support.	**Focus only on graphics and flashy presentation layers** – In order to facilitate the metrics, they must be presented correctly and in context. However instead of examining how the metric should be displayed to make it meaningful, it is common for projects to be undertaken that utilize flashy "dashboards" (Figure 1) that detract from the decision making properties of a metric. For example, using dials and other flashy display widgets to show things that should be visually correlated. Information architecture experts could be consulted here, or for smaller projects there are a number of good publications on the subject.

Do	Don't
Focus on relevant information, not data – The focus should be on the decisions not on providing data. It is easy to overwhelm decision makers with more data than they need, and data that is not relevant to their decision. What they need is targeted information that they can use to make the decision.	**Focus on quantity** – It is very easy when selecting metrics for display to select too many. The overall goal here is decision making, so every metric needs to be considered in the context of how it can support appropriate decisions for the target audience. The focus should therefore be on *quality* instead of *quantity*. If a metric does not significantly add to the information that the target audience needs, then it should not be displayed. In this context "less is more" as it is important not to overload people with information that is not completely relevant to their decision. Metrics could also be classified as primary and secondary. This helps individuals who need more detail, without swamping the main user base with information.
Present the metrics correctly – It is not enough to simply display the metrics on a screen or report. They need to be put into context and with the necessary supporting information that facilitates decision making. For example, information about recent history, any thresholds, what the metric represents and any supporting or related metrics. In addition, information architecture should be considered, selecting the most appropriate display types—displays that help make decisions such as using tables and graphs to help visually correlate like metrics—instead of flashy displays.	
Learn from others – Industry articles and itSMF conferences and other such events are a great way to learn from the successes and failures of others with similar projects. itSMF local chapters are also a good way to talk to industry peers about their current projects and what has worked well for them.	
Always keep the priorities in mind – There are many projects that can be done and will undoubtedly provide benefit. That is why it is extremely important to be constantly focusing on the highest priorities to make sure that the money is well spent.	
Measure and report – When the right metrics are selected, do measure and report on them to the appropriate stake-holders. By communicating this to the business, it will help the business understand the value IT delivers. Ongoing measurement and reporting also helps IT keep track of those key metrics and improve on them.	

Table 1 Selecting metrics—"do's and don'ts"

Home | Health matrix | Business processes | Applications | Map view | SLA report | Help | Logout

Big Bank Corporation

Critical Business Processes

Process	Current status	Value	Unit	Value description	Process sigma	Failure / impact / notes	Users affected
Mortgage loan origination	◆	0.00	percent	Availability	3.12	• Unable to retrieve FICO scores / Loan processing suspended	
Web online storefront	◆	9.23	seconds	Response time	3.05	• Credit card validation failed / Customers unable to enter credit card information	347
Call center	▢	8.70	seconds	Avg hold time	6.00		

Branches

Region	Apps	CM	Net	Systems	Voice	PM	Failure / impact / notes
Atlanta	▢	▢	▢	▢	▢	▢	
Boston	▢	▢	▢	▢	▢	▢	
Chicago	▢	▢	▢	▢	▢	▢	
Dallas	▢	▢	▢	▢	▢	▢	
Denver	▢	▢	▢	▢	▢	▢	
Kansas City	▢	▢	◆	▢	▢	◆	• Network outage at Branch 27 / Branch 27 is unreachable
New York	▢	▢	▢	▢	▢	▢	
San Francisco	▢	▢	▢	▢	▢	▢	
Washington DC	▢	▢	▢	▢	▢	▢	

ATMs

Region	Status
Atlanta	▢
Boston	▢
Chicago	▢
Dallas	▢
Denver	▢
Kansas City	▢
New York	▢
San Francisco	▢
Washington DC	▢

Figure 1 Example metrics dashboard

THE SUCCESS - WHAT ARE SOME SUCCESSFUL STRATEGIES?

A number of organizations have successfully implemented business metrics systems. This section discusses two examples, one a European bank and the other a telecommunications provider.

Example 1: Financial metrics

The financial industry is one of the most reliant upon information technology for its daily operations. A European bank undertook a project to not only show how the IT systems supported the business processes, but also to illustrate how business metrics could help the business to understand IT's contribution to business success and prioritize issues when they occurred.

In this case, the most important business processes were identified first, with assistance from the business representatives on the project. This was one of the factors in the success of the project as it kept the scope of the project manageable and allowed early success to be shown, justifying the resources allocated.

After those processes were identified, the next task was to identify from the business perspective what the key metrics were. For example, one of the processes was centered around bank transfers, so metrics were selected about the number of transfers, the total amount of money and the average amount per transfer. These metrics were useful for both business and IT, and could be compared against baselines to see if operations were proceeding normally for that day. They were also very useful for IT to prioritize problem resolution during a fault.

During this process, each of the key stakeholders was identified and displays constructed that helped them put the metrics into context. The business people were more interested in seeing trends arising out of the business metrics, whereas the IT people were more interested in correlating the business metrics back to the IT metrics so they could see the true business impact of any IT failure.

The project was considered a success because it provided demonstratable benefits for both business and IT. IT can now prioritize and understand the impact of their efforts, and the business are now provided with real time information about how the business process is performing and how that compares to normal behaviour.

Example 2: Telecommunications provider

A major mobile telecommunications project already had an IT metrics dashboard that was used to understand the availability of key applications. This was a step in the right direction as it focused on applications rather than on infrastructure. The IT department, however, was keen to provide more relevant information to their business stakeholders to prove the success of some of their recent improvement projects.

In speaking with the business stakeholders, one of the current issues they were facing was compliance with an industry SLA around mobile number portability. This SLA dictated times to port-in and port-out new and old customers and was chosen as the focus of this particular project.

So, the key business metrics identified here were around ports-in and ports-out and how long each was taking. Additionally, they also tracked which competitor the customer came from or was going to. This allowed the business to measure the success of their current marketing campaigns, as well as the impact of their competitor's campaigns on them.

SLAs were also calculated based on the time taken for individual requests and metrics were calculated showing how many requests had met or failed SLAs for each reporting period. This allowed root cause analysis to take place since the application level metrics were available as well. If the SLA failure was caused by an IT failure it was easy to see exactly why that was the case.

The phased approach again paid off for this company, who have since expanded their system with other key business processes and their important metrics. Like the other example, business participation was key, as well as the way they displayed the metrics to show the SLA impact, and provided different views for IT and business people.

THE FUTURE - WHAT IS NEXT?

In the short term, focusing on business-relevant metrics provides good input to service improvement projects. The right metrics help to select projects that are likely to provide the biggest business benefit, but also enable the success of the project to be measured together with the overall return on investment. Doing improvement projects based on internal technical metrics is like shooting in the dark: the benefit and success of these projects is hard to quantify from a business perspective. For example, suppose a project to improve overall availability of Windows servers is undertaken and this project is successful from a technical perspective: the server uptime is reduced 75%. While this improvement sounds great, it may actually provide insignificant business benefit if the downtime was not causing significant impact.

One of the new additions to ITIL® V3 is the recognition that IT organizations should not just be seeking to align themselves with the business but rather be fully integrated with the business. This may seem like an insignificant change; however it is actually an important one. IT is one of many new "game changing" technologies that have emerged to provide competitive advantage to businesses. As IT continues to mature, as with previous revolutions in technology, so it becomes more of a standard way of doing business instead of something that must be kept separate as is often the case today. Focusing on measuring how IT supports the business is an important step in this evolution.

Business-relevant metrics are also an enabler for organizations attempting to embrace the utility model. In a model where business requirements drive IT activities in near real time, the ability to relate IT operations with the business becomes crucial. In order to respond to business needs in real time, IT organizations will need to understand much more than IT metrics. They'll need to know the current demands of their business and what will be expected from them in the future.

Bryce Dunn *(USA), Senior Product Manager at Compuware, has been working in IT Service Management for over 10 years and has published articles and white papers on IT Service Management industry trends and best practices.*
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9.5 The power of Six Sigma for ITIL Continual Service Improvement

As IT organizations mature, they are realizing that it is no longer adequate to just deliver IT services. They must transform and become a true business partner, effectively supporting business objectives in a cost competitive way. To this aim, ITIL version 3 (V3) has incorporated continual service improvement (CSI). In this article Linh C. Ho and Bryce Dunn explain how Six Sigma techniques can complement CSI, adding a case study as an example.

WHAT IS SIX SIGMA

Six Sigma is a business-driven quality method that brings focus to customer and business priorities while eliminating defects. A defect is defined as a failure to meet the specified requirements of a product or services delivered to the customer. In Six Sigma terms, the corresponding defects should be no more than 3.4 defects per million opportunities (DPMO). This means that 99.9997% of the product or service delivered to the customer is satisfactorily. See table 1 for the corresponding sigma values to the DPMO and yield percentage.

Yield	DPMO	Sigma value
30.9%	690,000	1
69.2%	308,000	2
93.3%	66,800	3
99.4%	6,210	4
99.98%	320	5
99.9997%	3.4	6

Table 1 Sigma values and their different results

Motorola in the 1980s conceptualized Six Sigma, and General Electric evangelized the method with much proven success. In 2006, Motorola has reported savings of seventeen billion dollars. This way, Six Sigma became a proven quality method. Though it has its roots in manufacturing, many industries are now adopting the method with considerable success, among them finance, banking, healthcare, government and, indeed, IT service management. Companies such as Getronics, Sun Microsystems, American Express, Bank of America, Lockheed Martin and Siemens have achieved and published significant returns from the use of Six Sigma in IT.

Like many quality management processes, Six Sigma uses statistical techniques to continuously measure, analyze and improve service quality. These techniques can be applied to any discipline, including service management processes based on ITIL®.

Tools from IT management vendors now automate Six Sigma techniques to analyze the volume of IT management data available. Leading service management vendors with this capability offer techniques such as the Pareto chart, control charts, and failure modes and effects analysis to help organizations improve IT service quality.

Today, Six Sigma is a recognized pragmatic approach for continual service improvement in IT service management. This topic is frequently covered by analysts, journalists, vendors and technology users who have seen success in combining the power of Six Sigma and ITIL.

Six Sigma differs from most quality management processes in that it does not focus on quality for quality's sake. It focuses quality improvement activities on those business processes that really matter to the business, pursuing quality where it matters. Improvement should provide a proven benefit to the business bottom line. Its concept of "CTQ" (Critical to Quality), brings priority to "what's critical" to the customer and the business.

This more pragmatic approach is one of the key reasons for Six Sigma's popularity. The combination of Six Sigma and ITIL provides the most comprehensive quality and service management solution, with a focus on delivering value to the business and customers.

Six Sigma enables organizations to streamline processes by eliminating variation. And variation causes costs. According to an article published in Quality America, companies traditionally accepted three to four sigma, meaning between 25% and 15% of their revenue is spent on fixing problems. At six sigma level, organizations are spending less than 5% of their revenue fixing problems (see figure 1). This difference is known as the Cost of Poor Quality (COPQ), and the dollar cost of this gap is colossal. The article points out that General Electric estimates that the gap between three or four sigma and six sigma was costing them between eight billion and twelve billion dollars per year.

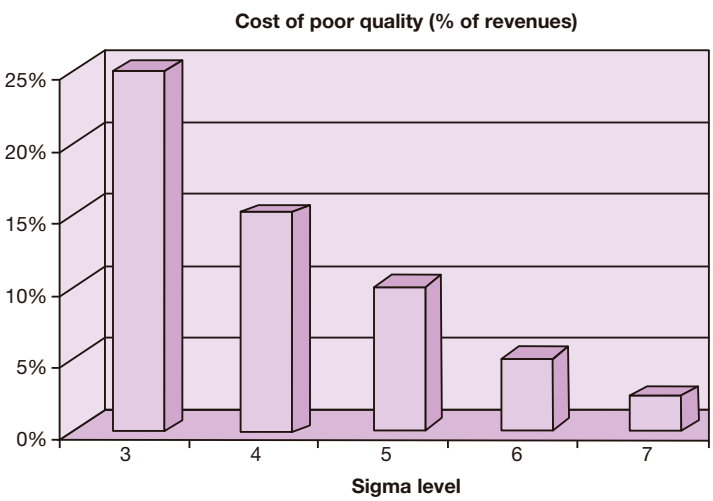

Figure 1 Cost of poor quality at different sigma levels

At the core of Six Sigma is its quality improvement model, called DMAIC, which stands for the key stages of Six Sigma: Define, Measure, Analyze, Improve and Control (although

other models exist for different circumstances such as DMAICV - Verify). Each of the DMAIC phases has clear objectives, tasks and proven techniques:

- **Define** - The key objective in the define phase is to scope a project in terms of the CTQ processes to be investigated and the current COPQ resulting from defects in a process. The tasks in this phase ensure that everyone involved understands the problem, the impact, and goals.
- **Measure** - Relevant data is collected in this phase on existing process quality. Tasks include identifying the CTQ measures and evaluating the availability of measures and the accuracy, integrity, capability and dependability of the measurement system.
- **Analyze** - Root causes of the problem are identified using the data collected in the previous phase. This enables the team to assess the impact, mitigate risks and provide the necessary information to design a solution.
- **Improve** - During the improve phase, action items are developed, solutions assessed and the best solution(s) are recommended and implemented.
- **Control** - The control phase ensures the stability and predictability of the improved process and, more importantly, meeting the customers' requirements. Documenting the new processes, training appropriate staff and undertaking continuous measurement and reporting to avoid slippage are all necessary.

This continual loop provides a quality improvement cycle for products and services, starting with defining key measurable objectives, and resulting in implementing solutions and sustaining improvement.

HOW SIX SIGMA COMPLEMENTS ITIL

Six Sigma is a widely accepted practical approach for service quality improvement that lends itself naturally to ITIL. ITIL highlights the need for service measurement and reporting through service management products. Moreover, ITIL acknowledges that other industry-accepted practices such as Six Sigma and Total Quality Management are complementary to further enhancing the best practice.

While ITIL establishes consistent processes, Six Sigma improves process quality. The two approaches are a powerful combination for continual IT service improvement. ITIL's service management lifecycle focuses on integrating IT with the business—in recognition that IT plays an important part in the business of today. It has five core books supporting this lifecycle:

- service strategy
- service design
- service transition
- service operation
- continual service improvement

Underpinning these five ITIL phases, there are twenty four processes, each with its own objectives and best practice guidelines for process efficiency and for delivering business value of IT services.

If we look at Six Sigma, each of the DMAIC phases has clear objectives, tasks and techniques. The techniques relevant for IT management will be discussed later in the chapter, but in short, Six Sigma brings business-focus to IT by giving priority to what's CTQ.

Moreover, Six Sigma provides IT with a way to baseline service quality levels, prioritize and focus on what's important to the business and customers, quantify improvement for return on investments, and control the improvement achieved.

Finally, Six Sigma comes from the business world with great success, whilst ITIL comes from the world of IT. Combining the two approaches helps IT to be more aligned with the needs of the business. Since Six Sigma is already widely accepted in the business community, it is far more likely to be accepted as a quality methodology by business stakeholders than an IT-specific framework. In addition to that, it also means that Six Sigma skills and consultants are widely available.

Table 2 provides an overview of how Six Sigma complements ITIL. ITIL answers "what?" and Six Sigma answers "how?" ITIL has the mindshare of IT and Six Sigma of the business; together the two industry practices help IT further integrate with the business.

ITIL	Six Sigma
Establishes consistent processes Focus on integration of IT and the business • service strategy • service design • service transition • service operation • continual service improvement	Improves process/service quality Focus on CTQ Reduce variation / costs • define • measure • analyze • improve • control
Guidelines (what?) 5 books 24 processes supporting the lifecycle	**Techniques (how?)** baseline service quality prioritize and focus on CTQ quantify improvement for ROI sustain improvement
Comes from IT	Comes from the business

Table 2 How Six Sigma complements ITIL

SIX SIGMA AND ITIL CONTINUAL SERVICE IMPROVEMENT (CSI)

Continual service improvement (CSI) is an important phase in the IT service management life cycle. Since business demands evolve and change over time, the ability to continually meet and exceed the business requirements becomes critical. ITIL V3 introduces the *seven step improvement process*:

1. Define what you *should* measure.
2. Define what you *can* measure.
3. Gather the data.
4. Process the data.
5. Analyze the data.
6. Present and assess the data.
7. Implement corrective actions.

This process goes hand-in-hand with Six Sigma's DMAIC model, as shown by figure 2.

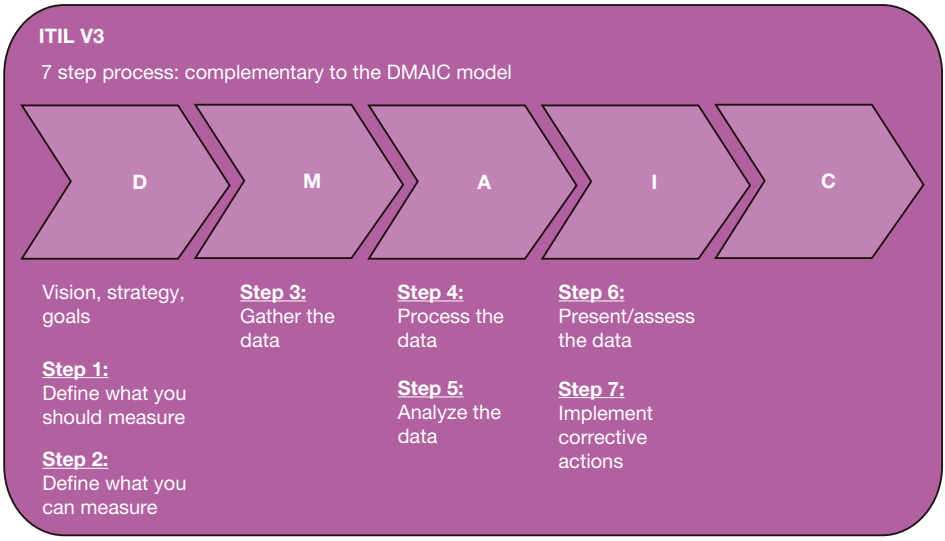

Figure 2 How the CSI improvement process complements the DMAIC model

Each of the seven steps fit under the DMAIC phases very well. As described above in the DMAIC section, each phase has its goals, tasks and tools. We can take a look at each one of these below:

- **Define** - ITIL advises in steps 1 and 2 to define what you should measure and to define what you can measure. This means that, in this stage of the cycle, it is important for the business and IT to come together, as the business drives what should be measured and IT is there to help the business understand what can be measured. If it cannot be measured, then further analysis could be done to see if it is possible to add this measurement capability, and the cost of doing so.
- **Measure** - ITIL suggests that once the definition of what should be measured and its availability are clear, step 3 is collecting the data. Essentially, this is the natural next action item that Six Sigma recommends under the measure phase.
- **Analyze** - In ITIL, steps 4 and 5 are to process the data collected and analyze it so that IT can the make decisions during the next steps.
- **Improve** - Steps 6 and 7 include presenting the data analyzed, and then assess and draw recommendations for improvement from the analyzed data. Step 7 ensures that corrective actions or the selected solutions are actually implemented.
- **Control** - Although ITIL does not provide an eighth step to sustain improvement, Six Sigma does complement it by adding the control phase to the seven step improvement process. Six Sigma provides the tools, such as control charts for ongoing measurement and reporting, to sustain improvement until further enhancements are required. This provides a true continual cycle for service quality improvement.

KEY SIX SIGMA TECHNIQUES

This section provides a sample list of Six Sigma techniques based on the Six Sigma for IT Management book (Den Boer et. al., 2006) and pocket guide (Van Bon, 2007). These are techniques that have been proved useful and are easily applicable to IT.

Pareto charts

The Pareto chart indicates which improvement initiatives result in the greatest return to the business. This is based on the famous “80/20 rule”, first coined by Vilfredo Pareto, an Italian economist. This means that 20% of the causes create 80% of the problems. In IT terms, this helps identify key components of the IT infrastructure that are causing the majority of the problems (see figure below).

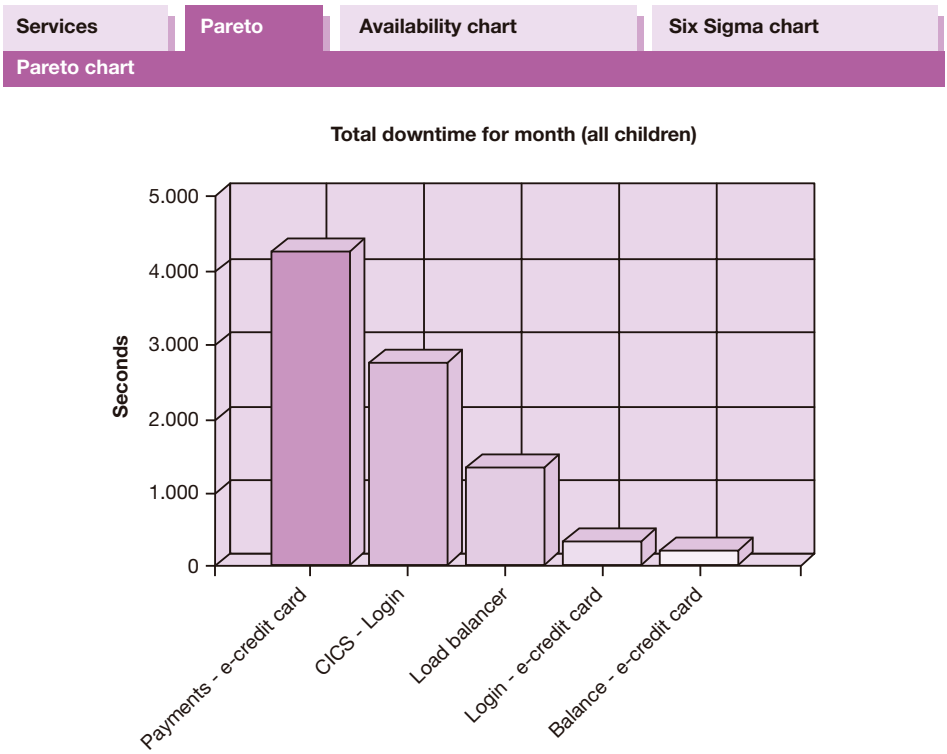

Figure 3 Pareto chart highlighting the most significant issues

Failure modes and effects analysis (FMEA)

FMEA helps mitigate risks by identifying potential failures and the effects of these failures on a process. It also prioritizes the problems using a risk rating system. The rating system consists of three components of failure:

- severity
- probability
- detectability

It uses a score of one to ten for each of these components to find the total Risk Priority Number (RPN) for the potential problem. The RPN is found by multiplying the three numbers together. This technique can easily be applied for risk management and compliance projects, to help identify and mitigate the risks of non-compliance. Specifically, the RPN helps to understand the current IT operational risks and alleviate those that underpin critical business services. Applying the FMEA lowers the risk of exposure to failures and disastrous consequences.

Control charts

Control charts ensure that a process or service performance is within an acceptable range, bound by an upper and lower limit. Should performance criteria act abnormally, the user can take immediate action. For example, a trend-line might deviate from the mean—known as centreline—or cross over specified limits.

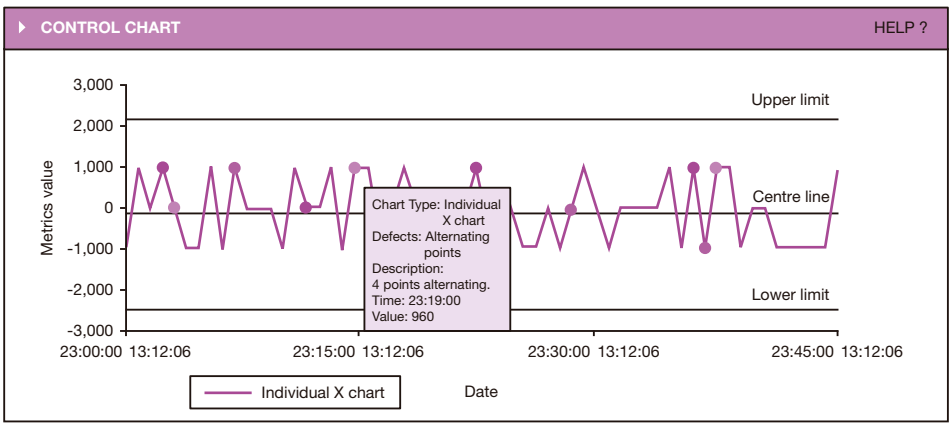

Figure 4 Control chart example

Process sigma value

This metric measures the number of defects per million opportunities (DPMO), providing a key measure of IT service availability and performance. The objective is to achieve the sigma level that is most appropriate to the organization's business needs. For example, an airline company should have a very low DPMO level, possibly even higher than six sigma. Other companies might be satisfied with a lower sigma level, especially for less critical services.

Process map

Process mapping helps to understand the people, processes, technology and their relationships. This provides an overview of how the IT service supports the process and what infrastructure is used by the IT service. It helps to collect data on how the process works and to identify data that is not currently available but needs to be located. The process map can also be used to map the critical to quality business processes and their underlying IT services and components. This information can then be used to create service models for business service management and service level management products or vice versa.

Figure 5 shows an example of a service model highlighting some of the key business services based on process map information.

Cause and Effect (C&E, Fishbone or Ishikawa) diagram

This helps to get a clear understanding of the causes and effects of problems in the define phase. It is used to find all the factors that influence an outcome. Potential problem areas are being mapped onto this diagram, for example during a brainstorming session. These results can be used as input for the FMEA.

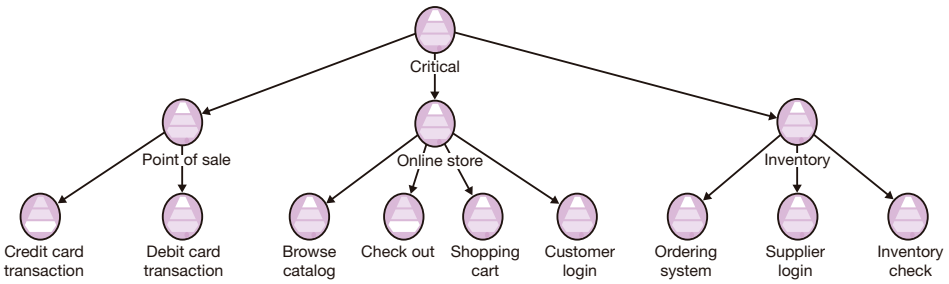

Figure 5 Service model with key business services based on process map information

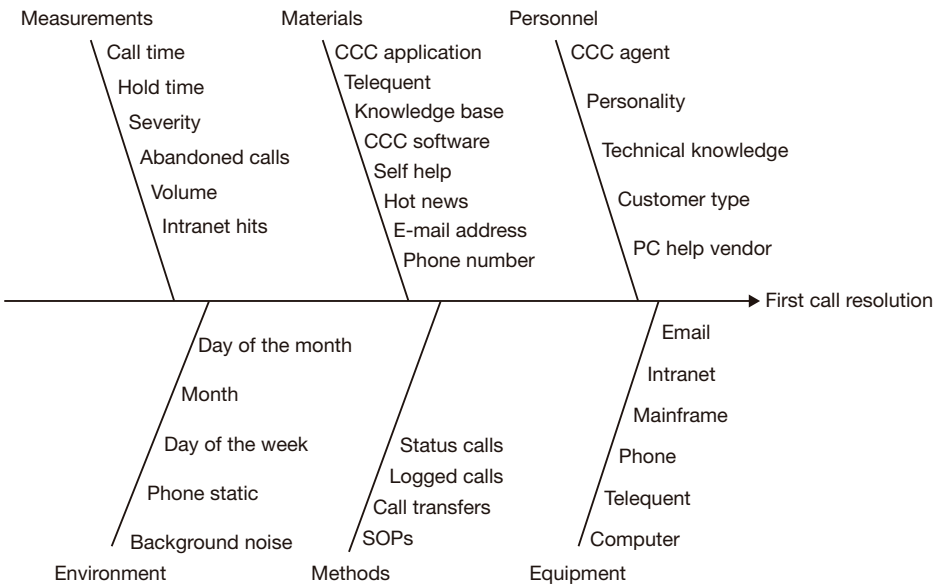

Figure 6 Cause and effect diagram service desk

The C&E Diagram helps focus on the causes of the issues that need to be resolved. Inputs include:

- the CTQs from the early "voice of the customer" surveys
- the CTQ components in the CTQ tree
- the controllable and non-controllable Key Process Input Variables (KPIVs) from the process map
- the metrics from the process assessments

Voice of the customer (VOC)

Both ITIL and Six Sigma strongly advocate listening to your customers. Voice of the customer assists in identifying appropriate service improvement programs (SIPs) to gather customer requirements and quantify the cost of poor quality, helping initiate the right SIP supporting CTQ processes.

This is an important survey in both the define ("what should be improved?") and the control phase ("does the improvement affect customer satisfaction as expected?"). It helps to capture ideas, opinions, and feedback, eventually resulting into CTQ requirements.

Also, participants with intimate knowledge of their respective processes might participate. Furthermore, supervisor participation is critical. After all, it is this group that will be tapped for resources and budget if the results of the exercise establish the direction for an improvement initiative. Taking part in the VOC enables participants to gain an understanding of the exercise and allows them to contribute.

Voice of the customer can be executed through:

- email
- websites
- phone calls
- conference calls
- face-to-face interviews
- group meetings or workshops

Correlation diagrams

Correlation calculations help indicate the relationships and dependencies between variables. This helps determine the degree of correlation between them. An example might be a high traffic and transaction volume for retail websites during holidays. Correlation charts help IT analyze the data points and its dependencies.

CASE STUDY

This case study is based on a leading financial institution in Europe, where the DMAIC model was used to improve service quality. To simplify things, the study focuses on only one business service: its online banking and, more specifically, the bank's e-credit card payment system. The case study also reflects the following ITIL disciplines: availability, capacity, incident and problem management.

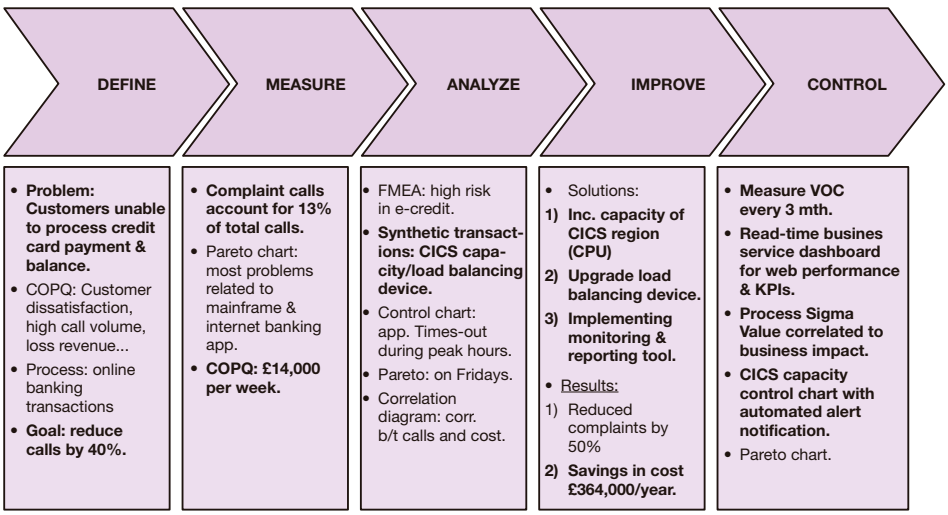

Figure 7 Case study overview

Define

The key objectives in the define phase are to identify the problem, client requirements, process, and measurable objectives (end results). The tasks include brainstorming to ensure that everyone involved understands the problem, impact, and end goal.

Problem: *Availability of the bank's online credit-card system. The bank's customers were unable to make credit-card payments over the internet.*

In order to define the problem, there were a number of different analyses undertaken. Incident and problem records were examined to determine which problems were causing the highest business impact at the bank. The service level manager was consulted and service level reports inspected to verify this target and assess the impact on the customer.

Impact on the organization:

- **customer dissatisfaction** - complaints flooding the call centre
- **cost of problem investigation** - £70 per complaint
- **revenue lost** and late payment interest fees waived

Process identified: e-credit card payment

Objective: *Reduce complaints associated with e-credit card process by 40%. This measurable objective came from a consensus by the project team that it was realistic and achievable, while it would have enough positive impact on the business.*

Measure

The measure phase is where information is collected on current process performance. Tasks include identifying and baselining the CTQ measures.

Metrics collected:

- e-credit card payment problems accounted for 13% of all customer complaints
- the number of incidents recorded against the e-credit card application in the period
- an average of 200 investigations per week

The cost of complaints was estimated at £14,000 per week.

The technique used was the Pareto chart, which identified that the areas needing investigation were the mainframe and the internet banking application.

Analyze

In the analyze phase, the root cause of the problems is identified using the data collected in the previous phase. To analyze the problem, the error control process is undertaken to identify the error, assess the impact and cost of error, and provide the necessary information to design a solution. The overall goal is to identify the root cause of the errors and provide justification for fixing them. The intended outcome is to reduce incident volume as the most common problems are solved.

Techniques used to process and analyze data (steps 4 and 5 of the CSI improvement process):

- **Failure mode and effects analysis (FMEA)** showed a high risk priority number (RPN) in the e-credit card business process.

- **Control charts** - Application timed-out during peak hours.
- **Pareto chart** showed high volume, particularly on Friday.
- **Correlation diagram** showed the higher the number of complaints (calls), the higher the cost (and the higher the impact on the business).

Improve

The improve phase involves instigating a service improvement program (SIP). This involves determining the areas of improvement, implementing the improvement, tracking it over time, and then performing a post implementation review to confirm the results. During this phase, action items are developed, solutions are assessed and the best solution(s) are recommended and implemented.

Recommended solutions:

- Increase CPU capacity in the mainframe Customer Information Control System (CICS) region.
- Upgrade load balancing device.
- Implement adequate monitoring and reporting tools, in particular a business service management solution to understand the impact of IT issues on the business users. One of the key metrics that was collected by this solution was end user experience to show the response time of the e-credit card system.

Results (measured over four weeks):

- 50% reduction in complaints related to e-credit card process
- £364,000 cost-avoidance in investigation per year, for e-credit card area only

Control

To control the improvement of the process, steps are taken to ensure the DMAIC cycle is a continuous closed-loop system. This ensures the stability and predictability of the newly improved process.

New control systems:

- **Voice of the customer (VOC)** - Measure client and internal call centre staff for “real world” feedback every month.
- Deploy a real-time business service dashboard for web performance and related key performance metrics.
- Implement a CICS capacity control chart with automated alert notification, also as part of capacity management.

The example dashboard reports in real time to the service managers on the average response time for each critical business service. This provides IT with an ongoing mechanism for measurement and reporting, helping it to control what’s important to the business.

Case study summary

The bank improved client satisfaction, as measured through positive feedback in the next VOC survey, and reduced client complaints from 13% to 6.5% (a reduction of l 50%). Moreover, by decreasing the number of investigations related to e-credit card, the costs avoided were estimated at *364,000 per year. From an IT perspective, communication between IT and the client service call centre improved by sharing real time business service dashboards.

SIX SIGMA KEY METRICS

Since Six Sigma emphasizes the need for a focus on business objectives and business outcomes, one of the key metrics for Six Sigma is not the statistical metrics mentioned in Six Sigma books. It is actually the need to start to measure what is important for that particular business process and evaluate the results of the improvement by examining changes in these metrics over time. The most important metric is the one that a successful Six Sigma project should be improving. For example, if the most important issue is customer loss, and it is possible to measure the loss of customers, it is through this metric that the success and failure of each iteration of the DMIAC model can be measured.

Six Sigma helps drive better metrics because it brings business context into IT. Six Sigma quantifies benefits and quality improvements that can help IT increase their credibility to the business. Examples of metrics that can be used are:

- **process sigma value for quality of service** - including yield percentage, DPMO and defect/opportunity counts
- **cost of poor quality** - in monetary value tied to CTQ service degradation or failure (to show business impact):
  - lost revenue
  - penalty fees
  - other costs associated with fixing service issues.
- **specification limits and control limits** - based on CTQ customer requirements to ensure client needs are met
- **risk metrics** - such as FMEA RPN to prioritize improvement targets
- **process capability indices** - to gage how close a process or service performance is to the specified limits
- **customer perception of service** - through VOC to measure client satisfaction
- **employee productivity** - number of users, business units and locations impacted due to IT outage (to show business impact)

ITIL also advocates a number of metrics ranging from service desk availability and capacity to service level management metrics. The question is which ones apply to your environment and why? Adopting a “less is more” approach, and carefully selecting the appropriate metrics is highly recommended. Not all metrics apply, what’s important is selecting CTQ metrics that show business value to the customers and the business. Many will recommend using monetary units whenever possible as they are easy to understand and widely valued.

SUMMARY

Improving the quality of service delivery will continue to be on the agenda for many IT executives. Six Sigma has already gained significant mindshare in the ITSM world, with global and fortune organizations embracing it for ITSM and proving its value. Even service management vendors (e.g. Compuware, IBM) are automating key Six Sigma techniques in their technologies to meet their customers’ needs. Currently, many tools are available to automate Six Sigma techniques and ITIL disciplines.

It is a step forward that ITIL V3 recognizes and emphasizes the need for continual service improvement, rather than a one off improvement project. Moreover, CSI also points out the need for other quality practices such as Six Sigma, Total Quality Management, Lean and ISO 9000 to complement ITIL.

Arguably, ITIL V3's CSI could have adopted Six Sigma as an industry practice for quality improvement that can easily be related to ITSM. This would have also addressed the lacking "control" step in the CSI seven step process to sustain momentum and improvement.

Six Sigma continues to be complementary to ITIL and its new CSI phase. However, Six Sigma can also be independent of ITIL, because ITIL provides a set of guidelines to manage and improve every facet of the IT organization, while Six Sigma provides the techniques to measure and improve IT service quality.

Combining both methods provides a powerful quality and service management solution, but they clearly do not need to be implemented in tandem. The power of Six Sigma for IT service management is a strong discipline for quality improvement with customer focus, as well as eliminating errors that impact critical business processes. While IT service providers (internal or external) continue to work hard towards aligning themselves with the business needs, Six Sigma is a business-driven approach to help IT do that. Together, they improve communication, drive better metric selection and prove the business value of IT services.

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Indexes

Chapter 10

10.1 Titles

Rapidly designing detailed IT processes - Business process management concepts applied to IT service management (Volume 1, Jeroen Bronkhorst, Jeroen Wiebolt & Ruud Ligtenberg - Hewlett-Packard, The Netherlands)

Request fulfillment - Ten best practices for managing IT service requests (Volume 1, Rodrigo Fernando Flores - newScale Inc., USA)

Selecting business relevant metrics (Volume 1, Linh C. Ho & Bryce Dunn - Compuware, USA)

Service catalog management - Best practices and practical advice (Volume 1, Bill Fine & Nick Schneider - newScale Inc., USA)

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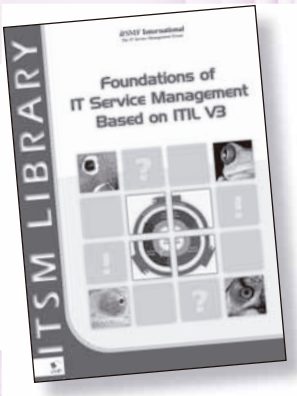

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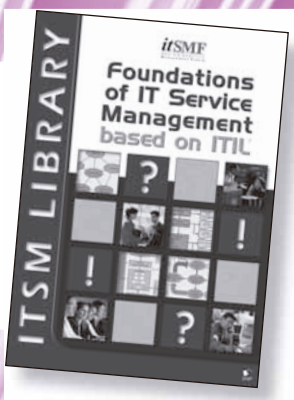

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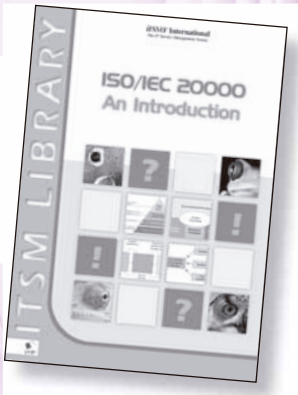

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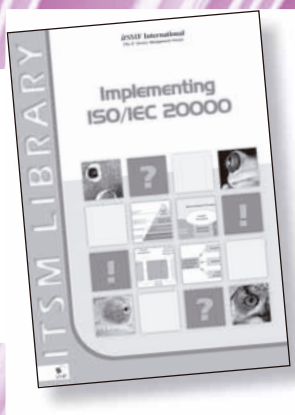

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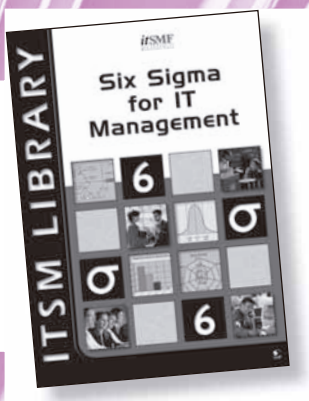

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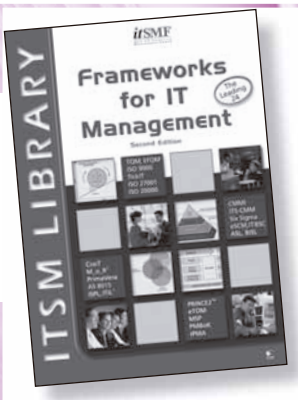

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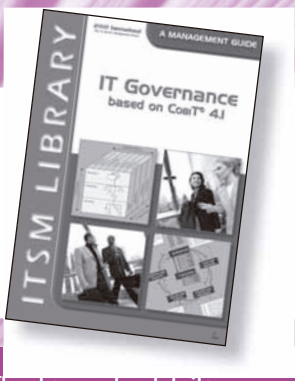

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