EXIN IT Service Management Foundation based on ISO/IEC20000

Workbook

Victoriano Gómez

Edition 2014

FOUNDATION IN
IT SERVICE MANAGEMENT
based on ISO/IEC 20000

Van Haren PUBLISHING

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Colophon

Title	EXIN IT Service Management Foundation based on ISO/IEC 20000 – Workbook
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Editor	Victoriano Gómez, Garrido (ITeratum)
Publisher	Van Haren Publishing
ISBN Hardcopy	978 94 018 0253 6
ISBN eBook	978 90 8753 762 3
Edition	2014

Prologue

Since its emergence in 2005, the international standard ISO/IEC 20000 has certainly become a compulsory reference for professionals and companies related to IT Service Management (ITSM). So much so that a great number of private companies and public institutions, such as the US Department of Defense has adopted this standard.

EXIN, world leader in the field of *Information Management* for the certification of professionals, was a pioneer in developing a qualification scheme for people based on ISO/IEC 20000, providing the professional not only with the knowledge of the first part of the standard (the requirements), but also with the experience of all our expert contributors in traditional frameworks of IT Service Management best practice, making the ITSM scheme based on ISO/IEC 20000 the appropriate scheme for organizations and professionals that want to get the most out of the standard, without obsessing about the requirements to fulfill.

As IT professionals, we are obliged to be in a continuous process of learning and adaptation to new technologies and trends, and it is certainly necessary to know the ISO/IEC 20000 standard, even if you are on the *"customer side"* or on the *"supplier side"*. Both sides must understand each other and speak the same language, in the context in which "services" have an increasing preponderance.

The aim of this workbook is to be a helpful support for students of ITSM Foundation based on ISO/IEC 20000. Although the book itself could serve to prepare for the certification of the exam based on ITSM Foundation of ISO/IEC 20000, it is highly recommended, as far as possible, to attend official training that any accredited EXIN partner may offer in a large number of countries. Furthermore, sharing experiences with colleagues and trainers will certainly enrich the reading of this text.

Ricardo Santiago
Area Manager of Spain, Portugal and Latin America
EXIN

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Introduction

IT Service Management (ITSM) quality is one of the most important requirements to provide valuable services that add value to the business. The ISO/IEC 20000 standard for the IT Service Management has been able to join together the principles of ISO quality management and the standard ITSM processes in the market.

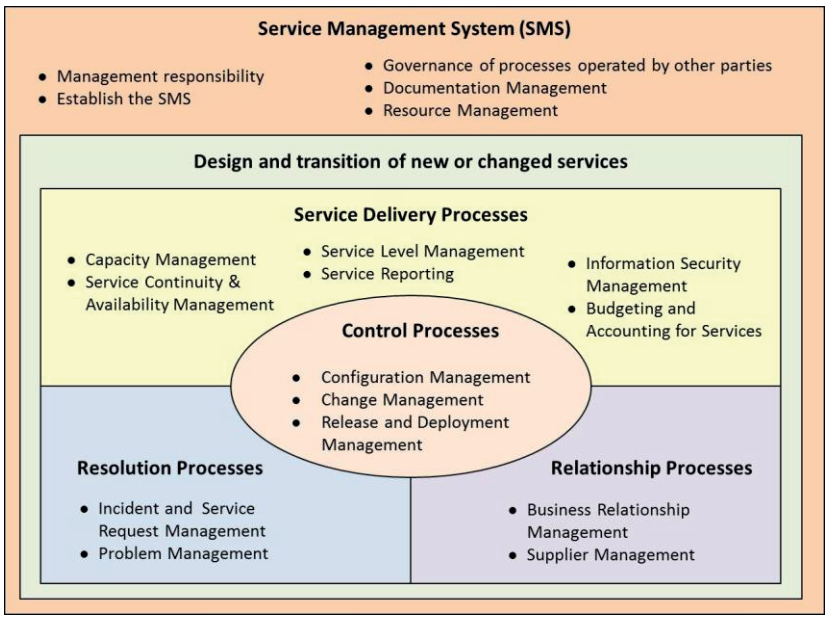

Figure 1.1: Processes in ISO/IEC 20000 (Source: ISO/IEC 20000-2)

The purpose of this book is to help in the preparation of EXIN ITSM Foundation based on ISO/IEC 20000 exam, providing an overview of IT Service Management from the perspective of ISO/IEC 20000. It addresses fundamental concepts, such as the quality, the frameworks, the services provided to the business and the processes that support, control and facilitate those services.

The exam consists of 40 multiple-choice questions. Throughout the chapters of this book you will find examples of these exam questions, along with others focused on the understanding of concepts that will help fix the ideas, which can be found at the end of each chapter. The exam specifications are given at the beginning of each chapter, and the weight of each of the topics is shown as a percentage of the total.

Target Audience

The book is aimed at those who wish to prepare for the exam to obtain EXIN ITSM Foundation based on ISO/IEC 20000 Certification, those interested in IT Service Management or those who play a role in this field. This includes staff from internal and external service providers, their customers and their managers.

Introduction to IT Service Management: Exam specifications (15%)

After reading chapter 1, you will be able to understand the basic concepts in which IT Management is based on and the standards and frameworks related to it. Thereby you will then achieve the following objectives:

1.1 Understand the core concepts to IT Service Management (10%)

You will be able to:

1.1.1 Describe what quality is and why it is important

1.1.2 Describe what an IT service is

1.1.3 Describe the factors needed to provide an IT service

1.1.4 Describe the benefits and characteristics of a process-based approach

1.1.5 Describe the concept of IT service management

1.1.6 Describe the benefits and risks of IT service management

1.1.7 Describe the role of tools used within IT service management

1.1.8 Describe the principles of continual improvement and the applications of the PDCA cycle

1.2 Understand the core concepts surrounding quality frameworks (5%)

You will be able to:

1.2.1 Identify the purpose and benefits of ISO/IEC 20000

1.2.2 Identify the purpose and application/audience of ISO 9001, ISO/IEC 27000 family, ITIL®, COBIT®, Six Sigma®, CMMI® for Services, GreenIT, Cloud, TMap NEXT®

1.2.3 Describe the complementary nature of the quality frameworks

1 Introduction to IT Service Management

1.1 The importance of quality in IT services

The concept of quality is commonly used in our language. We talk about “good quality” or “bad quality” when referring to a product or a service acquired, to express if we are satisfied with it or not. But, what makes the quality be “good” or “bad”? Regarding to what are we comparing this service or product for making this assessment?

1.1.1 What is quality?

To avoid misunderstandings we should define first what quality is. The ISO 9001 standard, which defines how a quality management system should be (and in which the ISO/IEC 20000 standard is based on), says that:

We can talk about quality when the customer obtains every single characteristic expected from a product or service.

The customer has the last word on whether the service or product acquired fulfills his or hers expectations. Therefore, any product or service that meets the customer requirements, in the terms previously agreed, is a quality product or a quality service.

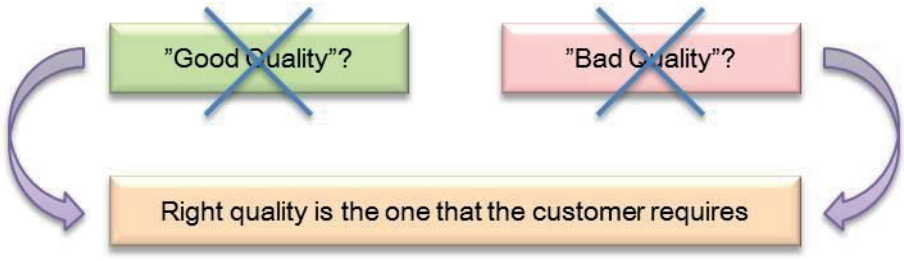

Figure 1.2: The quality concept (Source: ITeratum)

1.1.2 The importance of quality

Quality has not always been a strategic concept on business. At the beginning of XX century, quality on production chains was restricted to the inspection of the final product, before customer delivery. This prevented the delivery of wrong products, but neither products nor processes were improved, what implied and additional cost for the customer, meaning that quality was expensive.

This was a valid method while the demand was higher than the offer. However, when the situation turned around, the customer expectations increased not only in quality terms but also in the product cost. As a result, quality wasn't limited to the final product anymore, as it extended to the complete manufacturing process (*"…it has to be well done from the very first time…"*)

During the 80´s, quality became a strategic element in business, a differentiating factor that could help position the offer of the company ahead of their competitors. The concept of Total Quality Management (TQM) appeared. This is a management strategy developed by several American consultants, W. E. Deming and Joseph Duran among them. Kaoru Ishikawa, a well-known expert in quality management, defined TQM as *"Philosophy, culture, strategy or management style of a company according to which all persons in the same, study, practice, participate and promote continuous quality improvement."*

In 1987, International Organization for Standardization (ISO) adopted a set of quality standards known as ISO 9000, which has been developed at any kind of Organization. ISO 9000 certification guarantees that an organization is ruled by TQM principles.

In 1987 the International Organization for Standardization (ISO) adopted a set of quality standards known as ISO 9000 that were developed to be applied to any kind of organization. The ISO 9001 certification ensures that an organization is governed by the principles of TQM.

Figure 1.3: The quality evolution (Source: ITeratum)

1.1.3 Quality Management

As we saw in the previous section, through the evolution of quality, over time it has grown from a simple check of a finished product to quality management in which what is sought is customer satisfaction. Therefore we can say that:

Quality management includes everything the organization does to ensure that its products or services meet customers' quality requirements and to comply with all the applicable norms to those products or services.

In the case of an IT service provider, such as the IT department of an organization, quality management will be the understanding of what the perspective of the organization is (what we usually call "the business") referred to quality and service issues and ensuring that the services provided are aligned to this perspective.

When the ISO 9000 family of standards (international standard for quality management) was drawn up, eight basic principles were established to underpin the whole system of quality management. These principles, according to what is stated in ISO 9001, are as follows:

1.	**Customer focus**	An organization depends on its customers, therefore, you need to understand what their needs are and try to meet them.
2.	**Leadership**	Leaders are responsible for guiding the organization, and motivate and involve the staff in its objectives.
3.	**Involvement of people**	It is essential that all staff, whatever their level is, gets involved putting their skills at the disposal of the organization.
4.	**Process approach**	Activities and related resources are much more efficient when they are managed as a process.
5.	**System approach to management**	It is important to identify and to manage interrelated processes as a system in order to achieve the organization objectives effectively and efficiently.

6. **Continual improvement** — Once the organization has reached a certain level of quality, it cannot get stuck, because this would mean the loss of its market position, as well as the loss of its quality level. It is necessary that the organization has the continual improvement of the overall performance as a target.

7. **Factual approach to decision making** — Only an analysis of existing data and information enables effective decision-making.

8. **Mutually beneficial supplier relationships** — The organizations depend on their suppliers in order to meet its commitments with their customers. Therefore, a mutually beneficial relationship enhances the ability of both parts to add value to their work.

Figure 1.4: Quality Management Principles (Source: ITeratum, based on ISO 9001)

1.1.4 IT Services

During the last decades, the relationship between IT and the rest of the business has evolved. It was usually considered that Information Technology used to generate products: computers, systems, applications, etc. However, at the same time that the quality concept was being reinforced, the relationship between business and IT was changing and increasingly moving towards a relationship in which the business demands to IT were not just products but services.

1.1.4.1 What is a Service?

ITIL® gives the following definition of a service that has been adopted by ISO/IEC 20000:2011:

Service is a means of delivering value for the customer by facilitating results the customer wants to achieve without having to assume ownership and responsibility for the costs and risks involved.

Let's look at a simple example. Let's suppose one day we decide to eat pizza. One possibility is to move to a pizzeria, buy the one we like and take it home for dinner. In this case, we are buying a product.

Another possibility would be to make a call to the pizzeria to order the pizza. In this case, an operator would receive the order, someone else would elaborate it and a third person would take it to its vehicle to bring us the pizza home for dinner. We could even make a claim in the event that the pizza does not arrive in the proper conditions. In this case, we are making use of a service (home delivery service).

Consequently, we may say that an **IT Service** is any service provided by the IT organization to the business. Although information technology uses products for the provision of IT services, nowadays it is being increasingly accepted that IT activities are within the domain of services.

As a result, we can establish some features of the services:

- **They are intangible**: they have tangible components but they are much more than the simple combination of these components.
- **They are produced and consumed at the same time:** they cannot be stored.
- **They are highly variable**: not only machines are involved in the services, but also people.
- **The user gets involved in the service production:** it is common that the user has to perform certain actions so that the service can be used.
- **Satisfaction is a subjective concept:** products can be valued before purchase, but you cannot judge a service that has not been received yet.

1.1.4.2 IT Service Components

From a technical point of view, we can say that a service consists of an information system that is linked with a particular support and that is delivered to the customer with certain quality levels that have been previously agreed.

Information Systems: An information system is a bundle of elements intended to perform the management and administration of data used in the business processes information control or support. Basically it consists of **people, products, processes and associated suppliers.**

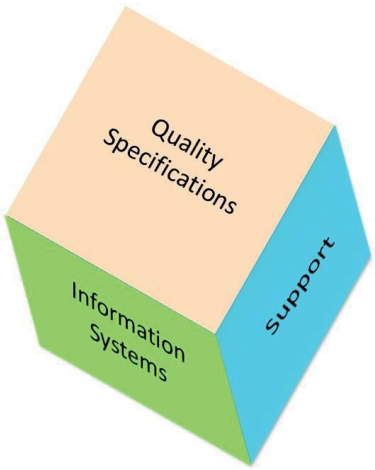

Figure 1.5: IT Service Components (Source: ITeratum)

Support: It is necessary to enable a support to provide maintenance in order to guarantee that services will be active and that the performance will be aligned with the specified requirements.

Quality specifications: Since services have to be provided according to the customers' requirements, some quality parameters have to be met in the form of capacity, availability, security and service levels.

1.1.4.3 Differences between services provided and quality perceived

One of the main challenges of providing services is to achieve that the quality perceived by customers and/or users is aligned with their expectations and that this quality is maintained over time. To this end it is necessary that the service provider fully understands the customer expectations, has the knowledge to convert them into real services and carries out continuous monitoring in order to avoid disparities between what the customer expected and his or her perception of the service received.

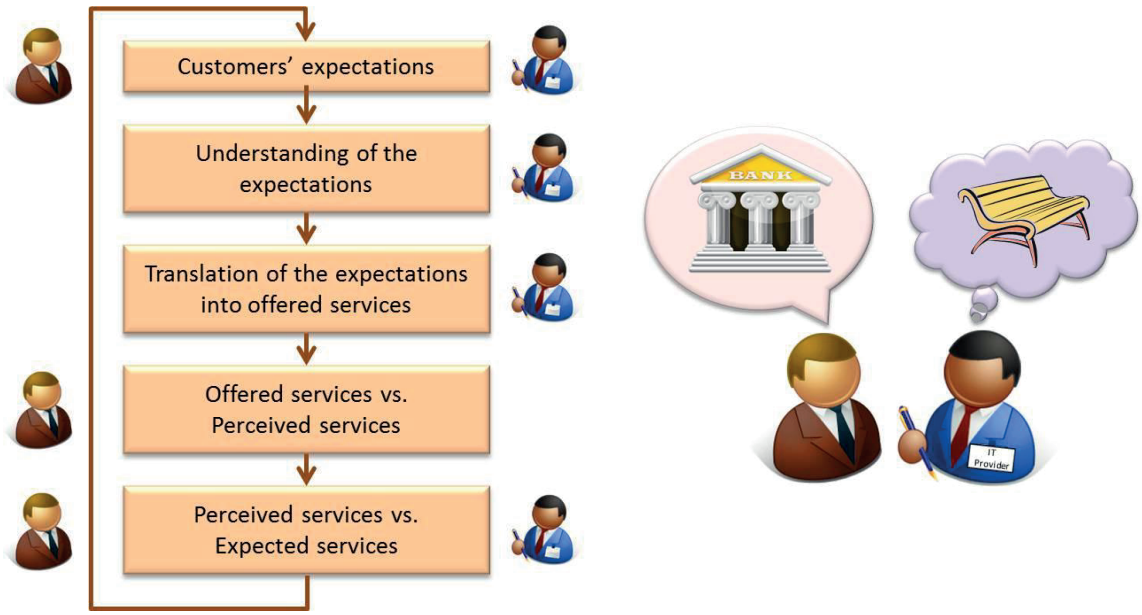

Figure 1.6: The quality perception (Source: ITeratum)

To avoid these disparities (*"gaps"*) it is important that both, the customer and the provider, speak the same language (COBIT®, ITIL®, etc.), that the customer clearly specifies which his or her expectations are, and the provider adaptability in order to face the common changing situation of services.

A continuous review and evaluation of services between the customer and the provider will allow an increasing alignment between what the business demands and what IT provides, as well as an adjustment in costs more effective and efficient.

1.1.5 Process Orientation

To get an organization to work effectively it is necessary to carry out a large number of interrelated activities. It is important that these activities can be controlled and managed from beginning to end, so that the organization is able to achieve its objectives. To this end the process-oriented approach is used. But, what does process mean? ISO 9001:2005 defines it as:

A process is an activity or a group of activities that uses resources and that is managed in order to get the input elements transformed into outcomes.

To have a process structure clearly described it must be established:

- What has to be done.
- Which are the inputs and the outputs (outcomes).
- How to measure the processes outcomes.
- How other processes are affected by the outcomes of the process.

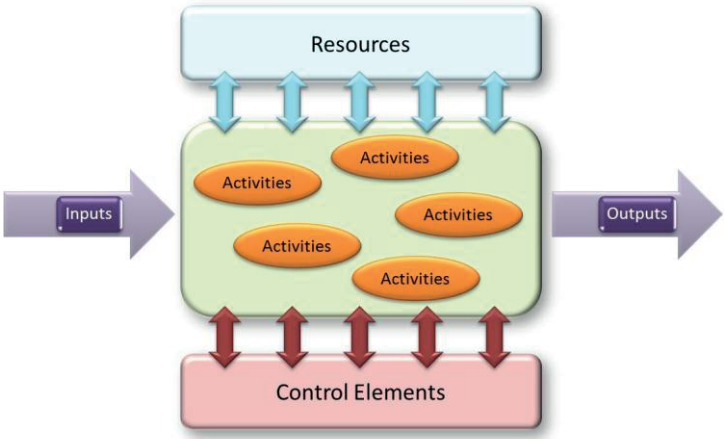

Figure 1.7: Process components (Source: ITeratum)

Usually, the outputs of one or more processes are the inputs of other processes. The implementation of a process system in the organization, along with the system management, aimed to meet the expected results is called **process-oriented approach.**

The implementation of a process-oriented approach in the organization provides a number of important benefits, including:

- Improved and predictable results.
- More effective use of resources, resulting in cost savings and shorter life cycles.
- Identification and prioritization of improvement opportunities.

1.1.5.1 Process evaluation

As we have seen in the previous section, an important point of process orientation is that it allows identifying improvement opportunities. However, to find out if we do something in the process that is likely to be improved, we should be able to perform measurements of what is happening in the process, that is, we need to be able to evaluate the process.

To this end Critical Success Factors (**CSF**) and Key Performance Indicators (**KPI**) are used. A CSF is something that must happen for a service, process or activity to be successful, while the KPIs are used to measure the achievement or not of each CSF. CSFs are qualitative while KPIs are quantitative elements.

For example, a CSF could be "avoiding IT services being affected when changes are made". That can be measured by KPIs as "reduction percentage of failed changes", "reduction percentage of incidents due to changes", etc.

1.1.5.2 Processes roles

A role is a set of responsibilities, activities and authority levels defined in a process and assigned to a person or group of people.

According to ISO/IEC 20000-2, the main roles in the process are:

- **Process Owner:** responsible for describing the process and its results.
- **Process Manager:** responsible for the operation of the process, the day-to-day control and management.
- **Process Personnel (teams or professionals)**: responsible for certain activities.

It is important to highlight that a person or a team may be able to perform multiple roles.

1.1.6 IT Service Management

According to ISO/IEC 20000:2011, Service Management is defined as:

Set of capabilities and processes to direct and control the service provider's activities and resources for the design, transition, delivery and improvement of services to fulfill the service requirements

Regarding to IT services, the 2011 edition of ITIL® specifies that IT Service Management (ITSM) is *"the implementation and management of IT quality services that meet business needs by service providers, through a combination of people, processes and technology"*.

There are basic relationships in ITSM between each of its components: customers, business processes, IT services and service providers:

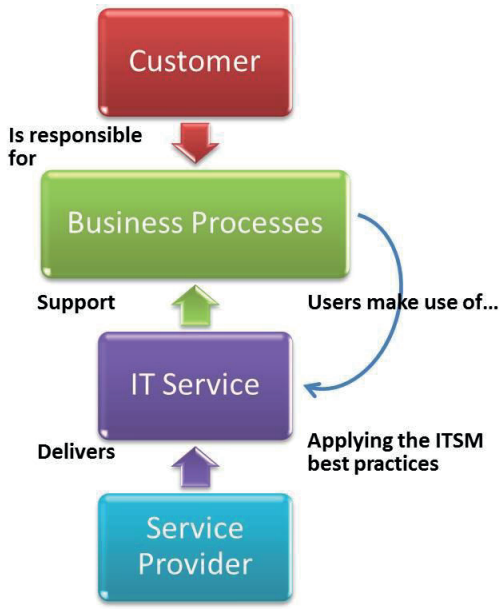

Figure 1.8: ITSM relationships (Source: EXIN materials)

- Business processes are supported by IT services.
- The main activity of an IT provider is the delivery of IT services.
- IT provider customers are basically organizations involved in business processes.
- Users make use of IT services to carry out day-to-day activities.
- ITSM frameworks describe best management practices for IT Services.

1.1.7 Benefits and Risks of IT Service Management

Implementing IT Service Management in the organization brings a number of important benefits, but if it is not done in a planned, controlled and supported manner by both, the staff and the business management, can result in negative situations that should be avoided.

The benefits and potential risks or difficulties of IT Service Management are shown in the following comparison chart:

Benefits	Risks and Difficulties

• Understanding and implementation of requirements to achieve customer satisfaction.
• Service delivery driven by the policies and objectives.
• Services designed and delivered following a defined management system.
• Continuous monitoring, measurement, review of systems management and service performance.
• Continuous improvement of services and management system based on objectives measures.
• Increase in effectiveness and efficiency of workflows
• Improvement of communications and knowledge management.
• Decrease in errors that result in failures.
• Risk Management Improvement.
	• Bureaucratic procedures, more paperwork.
	• Less efficiency and effectiveness if:
	  ○ Staff is not aware of processes and measures.
	  ○ The staff does not accept the system.
	  ○ The management hardly supports the system without a firm commitment.
	  ○ An important part of the work is done outside the system.
	  ○ Processes are not fulfilled.

1.1.8 The tools in the IT Service Management

To carry out the usual tasks of the IT Service Management it is normal to make use of number of elements (applications, systems, customized developments, etc.) which facilitates the automation of processes in our daily work. These elements are those generally known as “tools”.

The use of tools is very important because it allows increasing efficiency, with the subsequent cost reduction, while providing evidence of the processes carried out. ISO/IEC 20000-1:2011 mentions tools stating *“appropriate tools may be used to enable the service management processes to be effective and efficient”.*

Over the last decades ITSM tools, with different complexity, expensiveness, scoping and functional features, have arisen in the market. Some of the most typical tools that can be found are:

- Monitoring tools
- Distribution / software discovery / hardware tools
- Integrated sets of tools for Service Management
- Design and control of workflow tools
- Infrastructure remote management tools

In any case, the fact that a company has an ITSM tool does not mean that the Service Management is implemented by itself, in the same way that the fact of having a piano does not mean you know how to play it.

We should not make the mistake of confusing the implementation of the Service Management with the implementation of a provider’s tool, even though it is very powerful and famous. In Service Management it is necessary to take into account other factors linked to technology: people, processes and providers/suppliers.

1.1.9 Principles of the Continual Improvement and PDCA Cycle applications

When we discussed about Quality, one of the eight principles of the Quality Management was the continual improvement. To simplify, we can say that continual improvement consists of providing the necessary means in order to make things increasingly better.

This could seem easy at first, but implies an effort and a significant involvement by all the staff in the organization, from top management to the lowest level employees, so that gradual improvement becomes a reality.

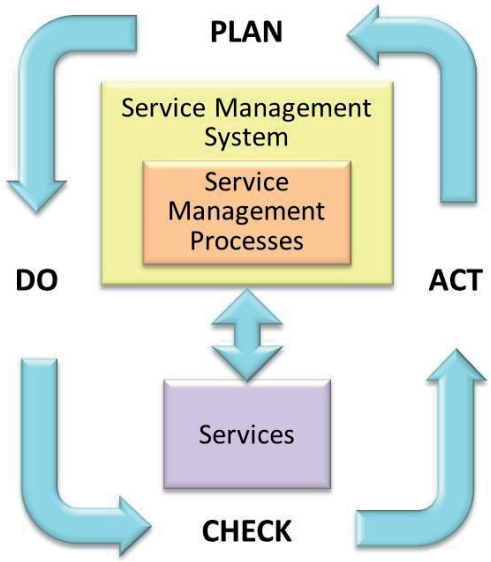

Figure 1.9: The Deming Cycle (Source: ISO/IEC 20000-2)

William Edwards Deming (1900-1993) was an American statistician known for his contribution to the improvement of productivity and the achieving of higher levels of quality in products and services. Deming proposed a four-step strategy for continual improvement, which is known today, in honor of his name, as the Deming Cycle, or PDCA methodology.

Steps of PDCA methodology ("Plan-Do-Check-Act") can be briefly described as follows:

- **Plan**: To establish, document and agree on Service Management System (SMS), including the policies, objectives, plans and processes necessary to design and deliver services aligned to business needs, customer requirements and service provider's policies.
- **Do:** To implement and operate the SMS for the design, transition, delivery and improvement of services, assigning roles and responsibilities.
- **Check:** To monitor, measure and review the SMS and the services against the plans, policies, objectives and requirements and to report on the results.
- **Act**: To take actions to continually improve SMS performance. This includes the service management processes and the services themselves.

1.2 Basic concepts of quality frameworks

1.2.1 The ISO/IEC 20000 standard

The International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC) define a specialized system for worldwide standardization. Their technical committees (JTC Joint Technical Committees) collaborate in areas of mutual interest, being an example the ISO/IEC JTC 1, which is responsible for the preparation of the ISO/IEC 20000 standard.

ISO/IEC 20000 is an international standard which aims to ensure the provision of managed services according to an acceptable level of quality for customers negotiated with them.

It was released for the first time on December 15, 2005 (this standard is known as ISO/IEC 20000:2005). It was reviewed later on (all standards must be reviewed every five years) in order to align with other existing standards, practices and technologies, releasing the ISO/IEC 20000:2011 on April 15, 2011.

The ISO/IEC 20000 promotes the use of the PDCA methodology. It is a process-based standard that does not consider a life cycle for services. However, stages of Design, Transition, Operation and Improvement of such services can be identified. This standard consists of several parts:

Part	Designation	Type	Content
Part 1	ISO/IEC 20000-1:2011	IS	Service Management System Requirements
Part 2	ISO/IEC 20000-2:2012	IS	Guidance on the application of SMS
Part 3	ISO/IEC 20000-3:2009	TR	Guidance on scope definition and applicability
Part 4	ISO/IEC 20000-4:2010	TR	Process reference model
Part 5	ISO/IEC 20000-5:2010	TR	Exemplar implementation plan for ISO/IEC 20000-1
Part 7	ISO/IEC 20000-7 (*)	---	Guidance on cloud deployment

Part	Designation	Type	Content
Part 8	ISO/IEC 20000-8 (**)	---	Service Management processes assessment model
Part 10	ISO/IEC 20000-10 (*)	---	Concepts and terminology
Part 11	ISO/IEC 20000-11 (*)	---	Guidance on the relationship between ISO/IEC 20000-1:2011 and related frameworks
---	ISO/IEC 27013 (***)	---	Guidance on the integrated implementation of ISO/IEC 27001 and ISO/IEC 20000-1

Comments to the chart:

(*) Standards to be published on future dates

(**) Based on the ISO/IEC 15504 standard

(***) Family of standards (ISO/IEC 27000) related to Security Management Information System (SMIS)

IS: International Standard

TR: Technical Report, Information document that contains information other than the usual published in a normative document (IS)

As shown in the chart, neither all parties are published nor are in the same evolution state. In this book, the two parts we will focus on will be Part 1 (ISO/IEC 20000-1:2011) and Part 2 (ISO/IEC 20000-2:2012).

Part 1 considers what the standard calls the *"shalls"*, that is, "what to do" in an SMS, while Part 2 considers the *"shoulds"*, or "what should be done". In other words, while Part 1 provides information about what is mandatory according to the standard, Part 2 provides recommendations to be followed.

When an audit mentions breaches or non-conformities with the standard, it is referring to those points of the SMS that do not adhere to the requirements of ISO/IEC 20000 Part 1.

1.2.2 Scope of the ISO/IEC 20000 standard

Depending on the approach with regards to this international standard, different groups may find it helpful:

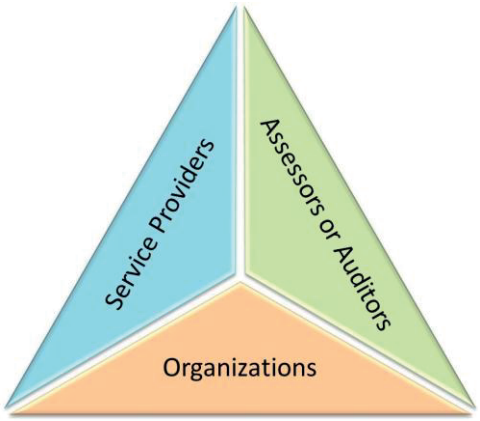

Figure 1.9: Scope of the standard (Source: ITeratum, based on ISO/IEC 20000-2)

- **Organizations:**
  - For any organization seeking services from service providers and requiring assurance that their service requirements will be fulfilled.
  - For any organization that requires a consistent approach by all its service providers, including those in a supply chain.

- **Service Providers:**
  - For a service provider that intends to demonstrate its capability for the design, transition, delivery and improvement of services that fulfill service requirements.
  - For a service provider to monitor, measure and review its service management processes and services.
  - For a service provider to improve the design, transition and delivery of services through effective implementation and operation of an SMS.

- **Assessors or Auditors:**
  - For an assessor or auditor as the criteria for a conformity assessment of a service provider's SMS to the requirements of the standard.