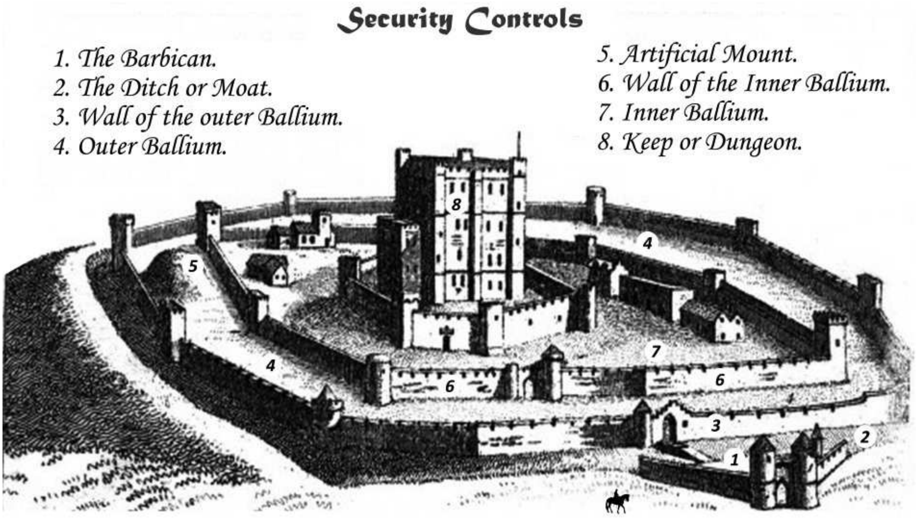
ISO 27001 ISMS Handbook

Implementing and auditing an
Information Security Management System
in small and medium-sized businesses



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Contents

Introduction

About this book

Organizing information security is becoming increasingly complex. A systematic approach to information security has become a necessity.

ISO 27001 ISMS Handbook aims to assist small and medium-sized businesses (SMBs) in establishing, implementing, maintaining and continuously improving an information security management system (ISMS) in accordance with the requirements of the international standard ISO/IEC 27001:2022.

At the same time, this handbook is also intended to provide information to auditors who must investigate whether an information security management system meets all requirements and has been effectively implemented. This book provides the auditor with information on all requirements to be met, alerts the auditor to common nonconformities, and contains specific instructions for performing ISO/IEC 27001:2022 audits.

The reason that this handbook focuses on SMBs is that an information security management system must be set up there in a different way than in large organizations. An SMB must meet the same requirements, but the management system must be suitable for an organization that is smaller and more agile.

ISO 27001 ISMS Handbook focuses on the information security management system (ISMS), and to a lesser extent on the 93 Annex A controls. For a detailed explanation of the 93 Annex A controls, you can use the ISO 27001 Controls Handbook - Implementing and auditing 93 controls to reduce information security risks.

Certification

This handbook assumes that you ultimately want your information security management system to be certified by an accredited certification body.

The moment you invite a certification body to perform a certification audit, you must be ready to demonstrate that your management system meets the requirements of the Standard. In this book, you will find detailed explanations, examples, and common pitfalls. This book also contains information about the rules of the game and the course of a certification audit.

Certification should not be an objective in itself. A non-certified management system can also be an excellent tool for effectively organizing your information security.

Reading guide for this book

When reading chapters 4 to 10 of this book, you will see that the ISO/IEC 27001:2022 standard is followed closely, but the actual text is not provided. The reason for this is that this book is not a substitute for the Standard. To get to know the requirements in detail, you will need to purchase a copy of the Standard (via internet).

When reading this handbook, it is recommended that you keep the ISO/IEC 27001:2022 standard to hand. This way you can check where certain statements, terms and numbers come from.

The numbers and titles of chapters 4 to 10 of this book, correspond to those used in the Standard, enabling you to use the book and the Standard side by side. Chapters 4 to 10 each deal with one or more *clauses* of the Standard. Each clause contains one or more requirements. Requirements are conditions that you must meet to be allowed to claim conformity with the Standard.

In order not to introduce any additional noise, this book keeps the use of words deliberately as close as possible to the Standard. Where necessary, this book explains specific words and concepts. Paragraphs that begin with the symbol ➢ are intended as clarification or addition to the main text.

Chapters 4 to 10 in this book each start with a schematic representation of the Standard. In each picture, the relevant clauses are marked. The pictures are from the author of this book, they are not from the Standard.

Within chapters 4 to 10, the following fixed topics are discussed for each clause:

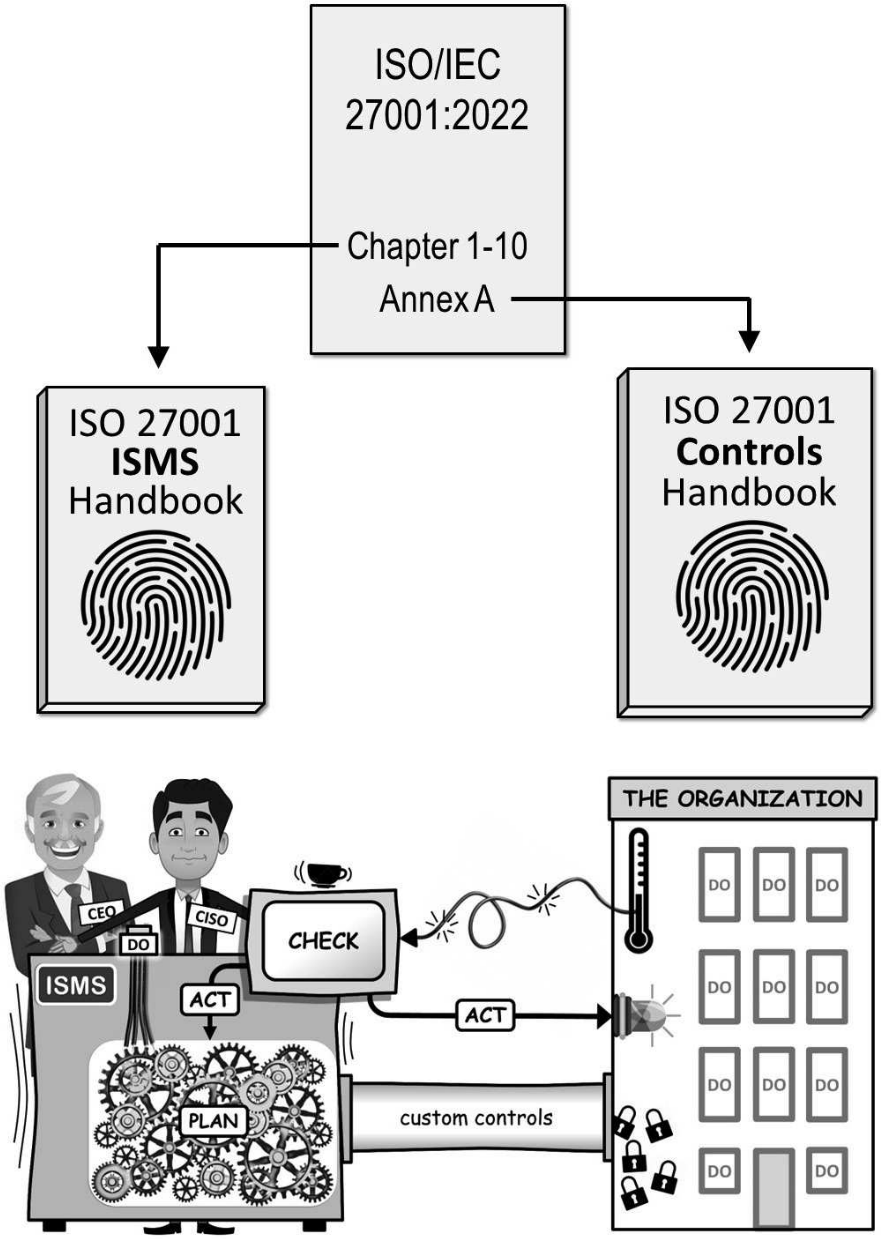
- *Explanation, examples, and pitfalls*
  What requirements are there in this clause? What do they mean? What do you have to do? What should you not do?
- *Mandatory documentation*
  What documented information does this clause require?
- *Instructions for conducting audits*
  What could an auditor investigate concerning the requirements of this clause?

The “instructions for conducting audits” are intended to help you meet the requirements of clause 9.2. This clause requires you to perform internal audits at scheduled intervals to determine whether your information security management system meets all requirements and is effectively implemented and maintained. The instructions at the end of each subject contain specific information for conducting internal audits.

Sometimes you will come across a block with a number, for example: [3]. This number refers to one of the sources used by the author. The Sources chapter at the end of this book provides details for each source.

Disclaimer

The explanations and examples in this book stem from personal opinions and experiences of the author and can be challenged by others. The author cannot be held responsible for any negative consequences that may arise from applying the information in this book.


ISO/IEC
27001:2022
Chapter 1-10
Annex A
ISO 27001 ISMS Handbook
ISO 27001 Controls Handbook
THE ORGANIZATION
CEO
CISO
DO
ISMS
CHECK
ACT
ACT
PLAN
custom controls
DO DO DO
DO DO DO
DO DO DO
DO DO

Control your risks

before they control you

1. The ISO/IEC 27001 Standard

THE STANDARD

The ISO/IEC 27001:2022 standard is a document of around thirty pages that you can buy on the internet. The Standard is international and is, therefore, available in many languages. The English standard contains the source text from which all translations are derived.

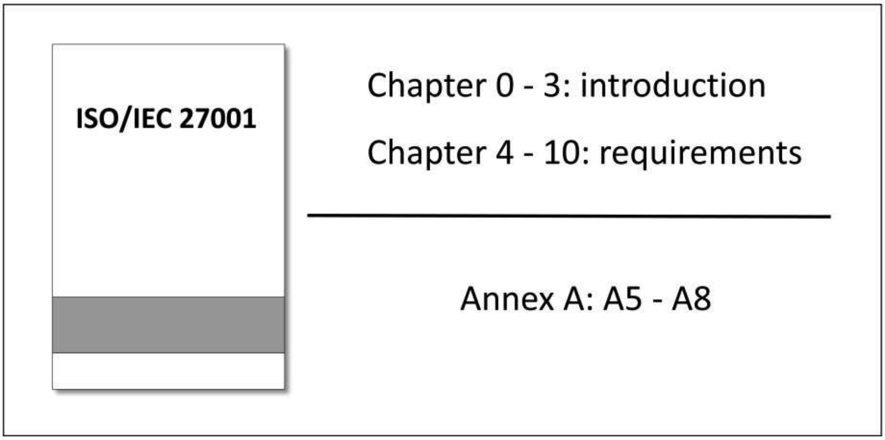
The ISO/IEC 27001 standard is a publication of ISO (International Organization for Standardization) and IEC (International Electrotechnical Commission). ISO/IEC is a system that specializes in worldwide standardization.

The name ISO/IEC 27001 is often shortened to ISO 27001 (see also the title of this book). In this book, the ISO/IEC 27001 standard will be referred to almost throughout as “the Standard.”

The Standard is not easy to understand, especially for beginners. It contains no checklists and hardly gives any explanation as to what you should do. The intention is for you to give meaning to the content of the Standard yourself; one that fits your specific activities, obligations, risks, and objectives. This book is intended to help you with this.

STRUCTURE OF THE STANDARD

In chapters 0 to 3, you will find introductory information. It can be enlightening to read this information.



Chapters 4 to 10 describe the requirements that you must meet to be allowed to claim conformity with it.

The Standard also has an Annex A. The controls listed in this Annex A are directly derived from and aligned with those listed in document ISO/IEC 27002:2022 [3].

WHAT IS MANDATORY? WHAT IS NOT?

Chapter 1 of the Standard tells you that it is not acceptable to exclude any of the requirements specified in clauses 4 to 10. So whatever type of organization you are, all requirements are mandatory.

What about Annex A of the Standard? Do you have to comply with everything in it? It depends. This book explains in detail how to deal with Annex A (see chapter 6 and 11).

Pitfall 1 "We comply with Annex-A, so we comply with the Standard"

Some organizations believe they meet the ISO/IEC 27001 standard because they have implemented the controls listed in Annex A. In reality, an organization does not meet the Standard until an effective *information security management system* has been implemented according to the requirements in chapters 4 to 10.

WHAT DOES THE STANDARD MEAN BY THE WORD "ORGANIZATION?"

Chapter one of the Standard also tells you that the requirements in the Standard are intended to be applicable to all organizations, regardless of type, size or nature. What is meant by the word *organization*?

The term *organization* includes but is not limited to sole trader, company, corporation, firm, enterprise, authority, partnership, charity or institution, or part or combination thereof, whether incorporated or not, public or private [1].

Note that an organization does not have to be a legal entity and that an information security management system is also applicable to a sole trader.

WHY ARE THE REQUIREMENTS IN THE STANDARD SO VAGUE?

Section 0.1 of the Standard tells you that "the order in which the requirements are presented does not reflect their importance or imply the order in which they are to be implemented."

That sounds like a cookbook telling you that the order in which the ingredients are presented in the recipes does not reflect their importance or imply the order in which they are to be used.

What paragraph 0.1 means is that you are going to implement a system of which all basic components are indispensable. Is the steering wheel of a car more important than its wheels? Is a car's engine more important than its brakes? They are all indispensable parts. The order in which they are assembled is determined not by their importance, but by practical considerations. This is also the case when implementing the requirements of the Standard.

The requirements of the Standard are often perceived as “vague”. This vagueness often raises many questions. Why doesn’t the Standard tell me more precisely what to do? Why do I have to figure everything out myself?

The main cause of the “vagueness” is that the Standard is intended for all types of organizations, and that the requirements cannot be too specific. For example, the Standard requires that there must be an information security policy, but not what it must contain. That depends, after all, on what policy is needed within your organization. Nor can the Standard prescribe specific technical and organizational measures because what is necessary depends on your specific information security risks.

This is why you must implement an information security management system that meets the Standard, that fits your activities, obligations, risks, and objectives, and that can be integrated with your business processes and management structure. That is quite a bit, and in practice this is not always easy. This book is intended to help you with it.

Another reason why the Standard sometimes seems somewhat puzzling is that the ISO/IEC organization would rather not explain things that have already been described in other ISO/IEC documents. This book sometimes refers to these documents (see also the chapter *Sources* in this book).

COMPATIBILITY WITH OTHER MANAGEMENT SYSTEM STANDARDS

Section 0.2 of the Standard discusses the *compatibility* of the ISO/IEC 27001 standard with other ISO/IEC management system standards. What’s the meaning of this?

The ISO/IEC 27001 standard is not the only ISO/IEC management system standard. For example, other management system standards are ISO/IEC

9001 (quality), ISO/IEC 14001 (environment) and ISO/IEC 22301 (business continuity).

The ISO/IEC 27001:2022 standard applies the *high-level structure* (HLS) as described in appendix SL of a document called “ISO/IEC Directives” [11]. This means that the ISO/IEC 27001:2022 standard uses the same structure, section titles, sub-clause titles, text, common terms and core definitions as the other ISO/IEC management system standards.

According to the ISO/IEC organization, this can be useful for those organizations that choose to operate a single management system that meets the requirements of two or more management system standards that have adopted the Annex SL.

➢ *Opinions differ about the practical usefulness of the high-level structure of management system standards. This book does not pay special attention to combining multiple management system standards.*

ISO/IEC 27000

Chapters 2 and 3 of the Standard inform you about the existence of the document ISO/IEC 27000 [1]. This document contains definitions that can be used to get more clarity about the meaning of specific terms used in the Standard. This handbook sometimes refers to this document.

BIBLIOGRAPHY

At the end of the Standard, a list of documents is included under the title *Bibliography*. These documents offer additional information on the ISO/IEC 27001 standard.

2. Information Security

The ISO/IEC 27001:2022 standard is about systematically managing the information security of your organization. The concept of *information security* can be broken down into the following three dimensions [1]:

- The preservation of the *confidentiality of* information
- The preservation of the *integrity* of information
- The preservation of the *availability* of information

These three guiding principles behind *information security* are often abbreviated as "CIA".

PRESERVING THE CONFIDENTIALITY OF INFORMATION

When it comes to information security, the term *confidentiality* is usually mentioned first. Confidentiality is the property that information is not made available or disclosed to unauthorized persons, entities or processes [1]. Confidential information may include personal data but also other types of information such as trade secrets or competition-sensitive data.

A loss of confidentiality of information can occur in many ways. Organizations can share their clients' confidential information with others without permission. An e-mail with confidential information can be sent to the wrong person by mistake. People with malicious intent can steal or copy confidential information and take advantage of it. People can consciously or accidentally share confidential information in a conversation. A stolen, lost or carelessly discarded computer can contain a wealth of confidential information.

Pitfall 2 "Information security is about confidentiality"

It is often thought that information security is only about preserving the *confidentiality* of information. However, within the context of the Standard, information security is also about preserving the *integrity* and *availability* of information.

PRESERVING THE INTEGRITY OF INFORMATION

The *integrity* of information refers to the accuracy and completeness of information [1]. The word *integrity* sometimes leads to confusion because it also exists outside the context of information security, namely in the form of personal property (honest, sincere). You could say that “honest” information is accurate and complete.

A loss of integrity of information can occur due to incorrect input, processing or presentation of data (manually or automated). People with malicious intent can deliberately compromise the accuracy and completeness of information to benefit or to cause harm. After restoring information from a backup, certain information may no longer be correct and complete.

PRESERVING THE AVAILABILITY OF INFORMATION

When it comes to information security, the *availability* aspect is often mentioned last. Not because the availability of information is considered unimportant, but because it is not always immediately linked to information security. Preserving availability means making information accessible and usable upon demand by an authorized entity [1] (the organization or person who wants and may have access to the information).

A loss of availability of information can be temporary or permanent. It can be caused by unintended causes such as incorrect actions, technical malfunctions or natural disasters. People with bad intentions can destroy information, make it inaccessible or make it unreadable. Information systems can become overloaded. Someone can set up a DDoS attack to intentionally disrupt information systems. Information carriers such as paper, tapes, hard writing, and USB sticks can lose their information due to aging. Sometimes, information is no longer available because a deceased person was the only person who knew specific passwords.

OTHER ASPECTS

Other properties can also be involved in information security, such as [1]:

- *Non-repudiation*: This refers to the ability to prove that a claimed event or action has occurred. For example, getting a signature on a receipt when delivering a postal package.
- *Authenticity:* This is the property that an entity is what it claims to be. For example, the use of a digital certificate that ensures that someone knows that messages come from a particular sender (source authenticity).
- *Reliability*: This refers to the property of consistent intended behavior and consistent results. For example, information that sometimes appears quickly and sometimes slow on a screen, or information of which the content is continually changing, when this is unintended.

3. Management System

SYSTEM

The Standard starts with chapter zero. In section 0.1 you can read that the Standard contains requirements for establishing, implementing, maintaining and continually improving an *information security management system*.

As you will see step-by-step in this book, an i*nformation security management system* is a powerful tool in getting and maintaining your information security at the right level.

To start slowly with setting up your *information security management system*, this chapter includes some general information.

ISMS

"ISMS" is a frequently used abbreviation for an *information security management system*. The abbreviation ISMS is also used in the title of this handbook.

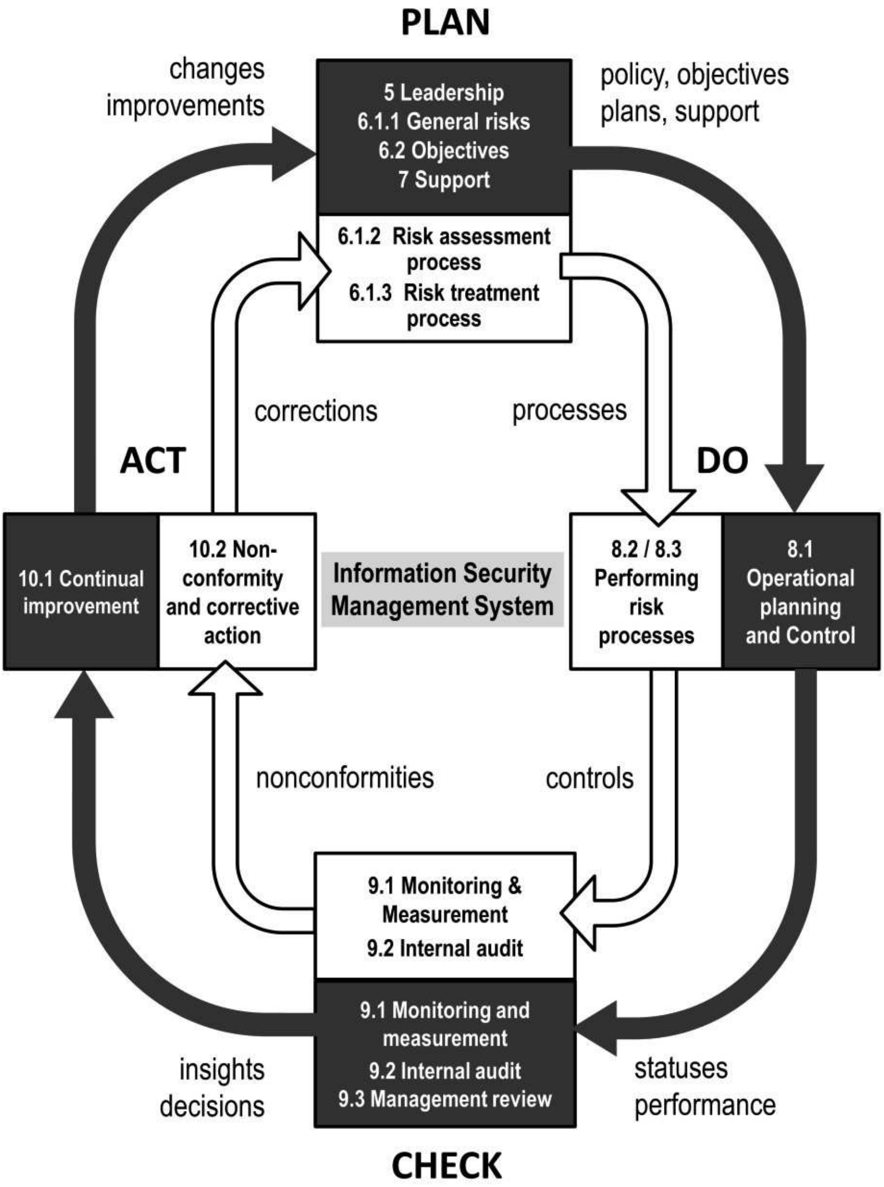
PDCA

ACT
PLAN
CHECK
DO

Although the Standard itself does not refer to the *Deming quality circle*, which is a globally known and widely used improvement method, the chapters of the Standard can easily be linked to the Plan-Do-Check-Act phases of this model.

In the image on the next page, the Standard has been translated into the Deming quality circle. The image shows a model with two PDCA circles: an inner circle (the white one) and an outer circle (the black one). The numbers and titles refer to the chapters and sections of the Standard, and to the chapters and sections of this book.

➢ *The model of the information security management system with the two circles is from the author of this book, it does not come from the Standard.*


PLAN
changes
improvements
5 Leadership
6.1.1 General risks
6.2 Objectives
7 Support
policy, objectives
plans, support
6.1.2 Risk assessment process
6.1.3 Risk treatment process
corrections
processes
ACT
DO
10.1 Continual improvement
10.2 Non-conformity and corrective action
Information Security Management System
8.2 / 8.3 Performing risk processes
8.1 Operational planning and Control
nonconformities
controls
9.1 Monitoring & Measurement
9.2 Internal audit
9.1 Monitoring and measurement
9.2 Internal audit
9.3 Management review
insights
decisions
statuses
performance
CHECK

The inner PDCA circle of the model directly relates to the management of information security risks. This circle is already present in most organizations; there are plans for dealing with information security risks (plan), measures have been implemented to control those risks (do), checks are made as to whether the measures are effective (check), and action is taken if this is not the case (act).

Unfortunately, the inner circle does not always work well enough. As a result of a lack of discipline, and in the absence of a systematic approach, invisible dangers can creep into the organization, which suddenly strike and cause significant damage. The consequences of this can be seen daily in the form of a loss of confidentiality, integrity, and availability of information at numerous organizations.

That is why the Standard uses a second PDCA circle. This outer circle provides support to the inner circle in the form of leadership and support (plan), planning and control (do), a systematic evaluation of performance (check) and continuous improvement of the system as a whole (act). The two PDCA circles can rotate at different speeds, but the outer circle makes regular contact with the inner circle, feeds it and monitors it.

In this way, the implementation of an information security management system offers an improvement on two fronts: the introduction of a formal process for managing information security risks (the inner circle), and the introduction of a supporting process around it (the outer circle). The whole forms a robust system that is used throughout the world and that is still growing in popularity.

Regarding the use of the inner circle, you may need to tighten the strings a bit more tightly: the necessary processes must be defined and executed according to a schedule. The outer circle is usually still insufficiently present, or insufficiently demonstrable.

THE IMPORTANCE OF THE MANAGEMENT SYSTEM

How important is the *management system* within the ISO/IEC 27001 standard? Answer: the entire Standard revolves around the *management system*.

By way of illustration: An official ISO/IEC 27001 certificate never makes a statement about an organization's *information security*, only about an organization's *information security management system*.

Pitfall 3 "Our certification body checks our information security"

A certification body will check at planned intervals whether a certified management system meets the requirements, and whether this system has been effectively implemented and maintained. The way in which the certification body does this (document examination, interviews, observing, physical inspection, system investigation) sometimes gives the impression that a complete information security investigation is being carried out.

This is not the case.

When a certification body carries out an audit, this is not to investigate whether your *information security* is effectively implemented and maintained, but to investigate whether your *information security management system* is effectively implemented and maintained. In other words: whether you yourself, with the help of your management system, are able to ensure that your information security is and remains effective.

A typical question from a certification body that detects a nonconformity is: "did you also discover this nonconformity yourself?" This is a valid question because performing self-checks is a very important part of your management system (see chapter 9).

If you can answer the certification body's question with "yes", this will strengthen the certification body's conviction that your management system works effectively. If the answer is "no", the certification body can, for example, conduct additional research into the way in which you carry out self-checks.

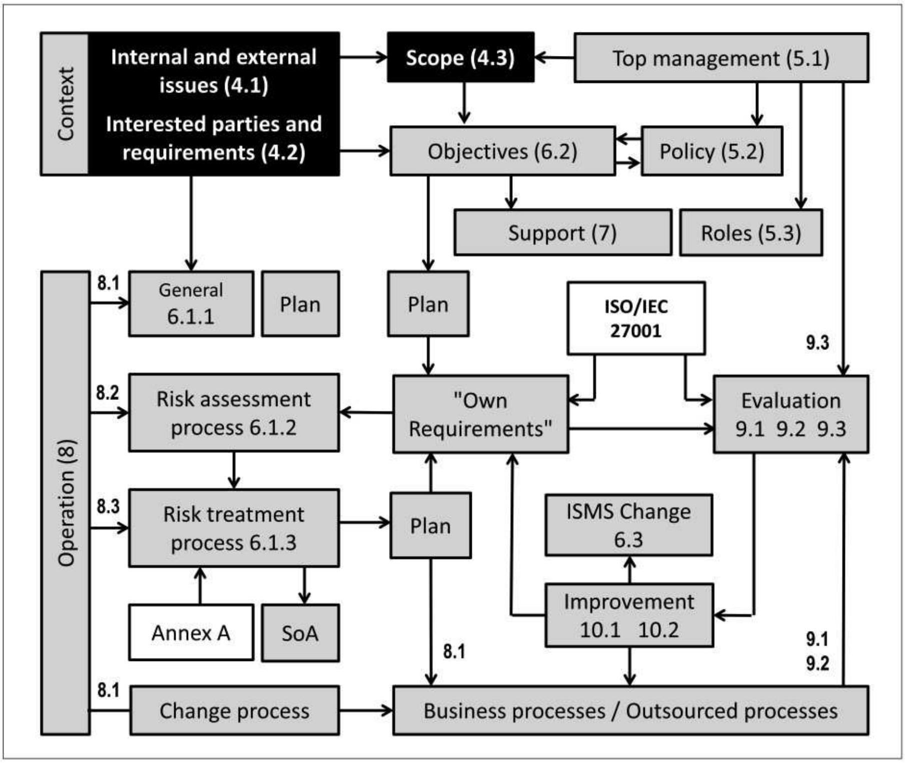
In this way, the certification body can help your organization to improve your management system. Continually improving your management system should lead to continually improving your information security (see chapter 10).

An official ISO/IEC 27001 certificate may not make any statement about an organization's information security. The certificate may only make a statement about the information security management system. Your national accreditation body supervises this (see chapter 13).

4. Context

Chapter four of the Standard deals with the following questions:

1) Which internal and external issues are relevant to your information security management system?
2) What stakeholder requirements are relevant to your information security management system?
3) What stakeholder requirements will you address in your management system?
4) What is a suitable scope for your information security management system?
5) How are you going to establish, implement, maintain and continuously improve an information security management system in accordance with the requirements of the Standard?



4.1 Understanding the organization and its context

INTRODUCTION

Clause 4.1 requires you to identify all *external and internal issues*:

- that are relevant to your *purpose*.
- that affect the ability of your organization to achieve the *intended outcome(s)* of your information security management system.

The *external and internal issues* must be used at a later stage in the implementation of your information security management system. You are expected to do this when:

- Determining the scope of your management system (see 4.3).
- Determining and handling risks that prevent the information security management system from achieving its intended outcome(s) (see 6.1.1).
- Establishing information security objectives [4] (see 6.2).

EXTERNAL AND INTERNAL ISSUES: BUSINESS OBJECTIVE

The word *purpose* mentioned in clause 4.1 refers to your business objective(s) concerning information security. The question that this clause is about is, which positive and negative issues are relevant to achieving your business objective(s)?

Example

An organization's objective is, "providing safe and reliable services and offering our customers confidence that we manage information security risks adequately." During a brainstorming session, the following internal issues emerge that are relevant to this objective:

Strengths
Favorable financial position
Motivated staff
Never had serious incidents
A good level of IT knowledge
Good tools

Weaknesses
Few formal processes and rules
No internal audits
Little insight into risks
Low awareness among some employees

To get a better picture of the context, the organization includes the issues in a broader analysis by using a so-called SWOT analysis (Strength, Weakness, Opportunity, and Threat).

	ISSUES FOR ACHIEVING BUSINESS OBJECTIVES	
	POSITIVE	NEGATIVE
INTERNAL	**Strengths** • Favorable financial position • Motivated staff • Never had serious incidents • A lot of IT knowledge • Good tools	**Weaknesses** • Few formal processes and rules • No internal audits on the effectiveness of measures • Little insight into risks • Low awareness of information security among some employees.
EXTERNAL	**Opportunities** • An ISO/IEC 27001 certificate is an opportunity to offer customers more confidence.	**Threats** • Our problem with supplier X • Shortage in the labor market • Changing legislation • Increasingly new forms of cybercrime

➢ *The Standard does not require you to perform a SWOT analysis. To comply with Clause 4.1, you only have to identify internal and external issues.*

INTERNAL AND EXTERNAL ISSUES: ACHIEVING THE INTENDED OUTCOME

Once the strategic decision has been made to start using an information security management system, the following question arises: which positive and negative issues affect the ability of your organization to achieve the intended outcome(s) of your management system?

Example

The same organization as in the previous example also organizes a brainstorm about the internal issues that affect its ability to achieve the intended outcome of the management system. The results are used in a SWOT analysis.

INTERNAL ISSUES FOR THE MANAGEMENT SYSTEM	
POSITIVE	**NEGATIVE**
Strengths • Commitment of top management • A small organization, quick decisions • Motivated staff • A lot of IT knowledge • Good tools	**Weaknesses** • Limited workforce • Little understanding of ISO/IEC 27001 • Little knowledge of the law • Low awareness of information security among some employees • Documentation is messy
Opportunities • Reduction in the number of incidents • Improvement of existing processes • Better cooperation with customers and suppliers • Better compliance with legal and contractual requirements	**Threats** • Project X is going to require a lot of workforces this year at the expense of the management system • Three experienced employees will retire this year

It is logical that when determining internal and external issues, there is sometimes an overlap between the business objectives and the intended outcomes of the management system. After all, the outcomes of the management system contribute to achieving your business objectives.

DETERMINING INTERNAL ISSUES

When determining internal issues, consider the size of your organization. Think of your corporate culture. Think of the maturity of leadership, policy, processes, and procedures. Think of your obligations, objectives and plans. Think of your available resources such as capital, workforce and time.

With larger organizations, other internal issues can play a role than with smaller ones. Below is an example of internal issues that could play a role in a larger organization:

Example

An organization with 150 employees and three sites sees the following internal issues that are relevant to its objective, and that can influence its ability to achieve the intended outcome of its management system:

- Top management has so far been little involved in the subject of information security.
- The three sites think differently about information security and on how to manage it.
- Decision making can be very slow.
- Activities and culture at the locations are very different.
- Seventeen employees speak a foreign language.

DETERMINING EXTERNAL ISSUES

When determining external issues, think of the influence of economic and political developments. Think of regulatory requirements in the field of information security. Think of technological developments at play outside your organization. Think of your suppliers.

The characteristic of external issues is that you usually have little or no influence on them. You must find a way to deal with them.

Pitfall 4 Issues determined for the intended scope

When determining internal and external problems, ignore the intended scope of your management system (see 4.3). The intention is that you determine this scope later, considering your internal and external issues.

🕮 MANDATORY DOCUMENTATION

Clause 4.1 does not require you to define or document something (words that you will find in some other clauses).

To be able to demonstrate that the requirements of the Standard are met, you can make a documented overview of your external and internal issues.

☑ INSTRUCTIONS FOR CONDUCTING AUDITS

Regarding clause 4.1, an auditor could investigate the following:

- Has the organization identified internal and external issues relevant to its information security objectives?
- Has the organization identified internal and external issues that affect its ability to achieve the intended outcomes of its information security management system?

- Does the organization regularly review whether there are new internal and external issues relevant to its information security objectives and its information security management system?

4.2 Needs and expectations of interested parties

INTRODUCTION

Clause 4.2 requires you to determine which interested parties are relevant to your information security management system, and which requirements of these interested parties are relevant to information security.

The results of this determination must be used at a later stage in the implementation of your information security management system. As with the internal and external issues (see 4.1) you are expected to do this when:

- determining the scope of your management system (see 4.3).
- determining and handling risks that prevent the information security management system from achieving its intended outcome(s) (see 6.1.1).
- establishing information security objectives [4] (see 6.2).

◆ INTERESTED PARTIES (4.2A)

INTERESTED PARTIES: TYPES OF INTERESTED PARTIES

What does the Standard mean by *interested parties*? An interested party is [1]:

- a person or organization that can affect a decision or activity of your organization.
- a person or organization that can be affected by a decision or activity of your organization.
- a person or organization that can perceive itself to be affected (positive or negative) by a decision or activity of your organization.

The following types of interested parties can be distinguished:

- *Internal*: persons or parties within your organization.
- *External*: external persons or organizations such as customers, partners, suppliers, and creditors.
- *Interface*: parties that are not involved in the organization but have a specific (legitimate) interest and exert influence. Think of the government, regulators, chamber of commerce, sector organizations, society, etc.

Below are some examples of interested parties that may influence or are influenced by your organization.