



*Education and Training about  
Standardization*

*Different needs for different roles*



# Education and training about standardization

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## Importance of standards and standardization

A Standard is a reference document approved by a recognized standardization organization (ISO, IEC, CEN, CENELEC ...). It is developed by consensus between all stakeholders in a market or a business sector, bringing together for example producers, users and consumers.

In particular, a standard makes it possible to clarify and harmonize practices as well as to determine the level of quality, safety, compatibility, performance, environmental impact for products, services, methods and processes.

Other types of reference documents are also developed by recognized standardization organizations and consortia or joint-ventures. Other organizations such as professional and trade associations may also develop informal standards which may be used where formal standards do not exist.

Knowing about, understanding and being able to apply the standards is a requirement for all professions. These are often tools which enable compliance with mandatory regulations, but can also represent established good practice and state of the art in a particular sector.

Standards facilitate commercial exchanges and make daily life easier. For companies, standards are therefore strategic tools that can open, develop, regulate or close the access to a market. Users of standards will also recognize numerous benefits in the case of participating in standardization committees. Among them are:

- Influencing the contents of a standard
- Enhancing and protecting companies' activities and products
- Acquiring a better understanding of the stakeholders of the market (competitors, partners, customers, product or process users, authorities, laboratories, ...)
- Anticipating and developing future requirements of the market
- Encouraging innovation

## The need for education and training

Standardization is a strategic tool for companies, industry, countries and regions. To excel in standardization, proper education and training are needed. The International Federation of Standard Users, **IFAN**, observes that while standards are becoming more and more important, many companies and other stakeholders take insufficient advantage of them.

All levels of decision-makers in public administration and private business need to understand the economic benefits of standardization. Standardization should be perceived as a strategic tool to underpin innovation, strengthen the professional performance and competitive advantage of an organization as well as drive the economy in which it operates.

These opportunities are sometimes not fully exploited due of a lack of awareness of the importance of standards, as well as insufficient ability to translate awareness into relevant actions.

Education of employees of private and public organizations is the solution; this applies to:

- formal education at different levels (from secondary schools up to universities),
- individual continuing professional development and
- in-service training (life-long learning).

IFAN has identified a growing awareness of the need for standardization education and training but recognizes that there is a huge gap between the education and training activities currently needed and those being delivered.

Therefore, IFAN encourages stakeholders at the national, and regional and international levels to promote and develop more standardization education and training activities.

### **IFAN's role**

IFAN, being an organization of standards users, itself contributes via its Working Group **WG16 - Education and Training** by identifying needs as perceived by standards users. Such needs should form the starting point for developing education and training activities.

#### **Tasks under the scope of WG16 - Education and Training:**

- To specify the knowledge about standardization needed in different organizations and their divisions;
- To support and promote initiatives in Education and Training in the standardization field at international, regional and national levels;
- To observe initiatives and inform the communities concerned by standardization (stakeholders, users, education professionals, experts,...) on Education and Training in the standardisation field at international, regional and national levels;
- To support, facilitate and encourage networking in this field.

# 1- Objectives

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To identify the different standardization education and training needs, it is important for each member of an organization to understand how standards relate to their activities.

This guide identifies the main areas of an organization and the degrees of standardization knowledge necessary for those roles.

This document is intended for:

- Teachers and lecturers, for designing their lectures and courses
- Trainers inside and outside organizations and companies for designing their courses
- Managers for the definition of their goals that are linked to standardization
- Human Resources managers responsible for recruitment purposes and training programs inside organizations and companies
- People involved in organizations and projects linked to education and training about standardization

## 2- Details of needs

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### CEO and Senior management

Responsibilities related to standardization	Necessary knowledge	Skills
<ul style="list-style-type: none"> <li>● Formulating policy and making management decisions taking into account the strategic importance of standardization to the core business</li> <li>● Providing evidence of its commitment to the implementation of management systems (Sustainability and social responsibility, quality, energy,...) and continually improving their effectiveness</li> </ul>	<p><b>Substantial knowledge of:</b></p> <ul style="list-style-type: none"> <li>● the need to comply with standards and regulation for the different marketplaces</li> <li>● the strategic importance of standardization committee work</li> <li>● the role trade associations can play in the development of standards at the international level</li> <li>● the role of standards in management systems and policies</li> </ul> <p><b>Good knowledge of:</b></p> <ul style="list-style-type: none"> <li>● why and how standardization can help sustainable development, taking into account the strategy of a company, in a changing world with limited resources</li> </ul> <p><b>Some knowledge of:</b></p> <ul style="list-style-type: none"> <li>● how to influence the content of the standards from the company strategy perspective</li> <li>● how to identify and apply regulations, standards (normative), specifications and other relevant documents for products, systems or services</li> </ul>	<ul style="list-style-type: none"> <li>● Identification of risks and opportunities</li> <li>● Global implementation process</li> <li>● External influence via lobbying</li> </ul>

## Management Systems Compliance and Auditing [quality, environment, health and safety, risk, social responsibility, etc.]

Responsibilities related to standardization	Knowledge necessary	Skills
<ul style="list-style-type: none"> <li>● Identifying the role of standards (including management systems standards) and regulations in the development of products, services, processes</li> <li>● Understanding the requirements of conformity assessment systems and regulations</li> <li>● Understanding the operation and evolution of management systems</li> <li>● Facilitating the implementation of any other relevant management systems standards and continuously improving their effectiveness</li> </ul>	<p><b>Substantial knowledge of:</b></p> <ul style="list-style-type: none"> <li>● all relevant management systems.</li> <li>● the content of relevant standards</li> <li>● the need and the value of compliance with standards in a competitive world marketplace</li> </ul> <p><b>Some knowledge of:</b></p> <ul style="list-style-type: none"> <li>● the value and methods of obtaining business knowledge about the development and use of standards and regulations</li> </ul>	<ul style="list-style-type: none"> <li>● Determining the quality, environment, safety, energy, sustainability and social responsibility requirements of the process</li> <li>● Incorporating these requirements into the organization's management system</li> <li>● Determining how to organize new projects while taking into account existing management systems</li> <li>● Determining auditing process to ensure compliance</li> </ul>

## Human resources

Responsibilities related to standardization	Necessary Knowledge	Skills
<ul style="list-style-type: none"> <li>● Ensuring that employees have appropriate competencies and skills in relation to standards and technical regulations</li> <li>● Management of internal and external training process</li> </ul>	<p><b>Good knowledge of :</b></p> <ul style="list-style-type: none"> <li>● the different formal qualifications specified in standards and regulations (e.g. safety requirements linked to chemical, electrical, mechanical and explosion risks)</li> </ul> <p><b>Some knowledge of:</b></p> <ul style="list-style-type: none"> <li>● the role that standards and regulations played in the activities of the personnel they recruit</li> </ul>	<ul style="list-style-type: none"> <li>● Identification of required competencies</li> </ul>

## Information Technology [IT]

Responsibilities related to standardization	Knowledge necessary	Skills
<ul style="list-style-type: none"> <li>● Determining the standards required for the selection of hardware and software</li> <li>● Identifying the role of IT standards and regulations in the development of the organization's products, services and processes</li> <li>● Understanding the IT standards requirements of the organization's management system</li> <li>● <b>Standards related to cyber security, [BA1]data protection</b></li> </ul>	<p><b>Substantial knowledge of:</b></p> <ul style="list-style-type: none"> <li>● the variety and content of IT standards</li> </ul> <p><b>Some knowledge of:</b></p> <ul style="list-style-type: none"> <li>● the value and methods of obtaining business knowledge about the development and the [BA2] use of IT standards and regulations</li> </ul>	<ul style="list-style-type: none"> <li>● Identifying and applying IT standards</li> <li>● Incorporating IT requirements into the organization's management system</li> <li>● Determining IT auditing process to ensure compliance</li> </ul>



## Marketing

Responsibilities related to standardization	Necessary knowledge	Skills
<ul style="list-style-type: none"> <li>● Specify the standards and regulations needed by the market for products, services, processes, etc.</li> <li>● Contribute to a strategy that takes into account the importance of standardization to the core business</li> <li>● <b>In some cases influencing the contents of standards and technical regulations</b></li> <li>● Contribute to business intelligence in standardization</li> <li>● Understand the importance of implementing management systems (<b>Sustainability</b> and social responsibility, quality, energy,...) and continually improving their effectiveness</li> <li>● <b>Support other departments (for instance sales) on standardization matters</b></li> </ul>	<p><b>Substantial knowledge of:</b></p> <ul style="list-style-type: none"> <li>● the role of standards in management systems and policies</li> <li>● the strategic importance of regulation and standardization committee work</li> </ul> <p><b>Good knowledge of:</b></p> <ul style="list-style-type: none"> <li>● the need to comply with standards and regulations for the different marketplaces</li> <li>● the value of compliance with standards in a competitive world marketplace</li> <li>● how to influence regulation, standards (normative), specifications and other relevant documents for products, systems and services<sub>[BA3]</sub></li> <li>● the value and methods of obtaining business knowledge about the development and use of standards and regulations</li> <li>● why and how standardization can help sustainable development, taking into account in the strategy of a company in a changing world with limited resources</li> </ul> <p><b>Some knowledge of:</b></p> <ul style="list-style-type: none"> <li>● methods to identify and to apply regulations, standards(normative), specifications and other relevant documents for products, systems and services<sub>[BA4]</sub></li> </ul>	<ul style="list-style-type: none"> <li>● Identification of relevant standards and technical regulation</li> <li>● Monitoring standards and technical regulation in order to understand their impact on the organization</li> <li>● Mapping the general standardization developments to the strategies of the organization in order to define actions</li> <li>● Understanding how their organization could participate in the standardization process</li> <li>● Ability to apply sustainability and social responsibility to the marketing of products or services</li> </ul>

## Sales

Responsibilities related to standardization	Necessary knowledge	Skills
<ul style="list-style-type: none"> <li>● Explaining to customers the regulations and standards applicable to the market</li> <li>● Convincing customers that the products or services meet the latest standards and regulations</li> <li>● Communicating to the <b>marketing team in the field, information[BA5]</b> about standards and regulations</li> </ul>	<p><b>Substantial knowledge of:</b></p> <ul style="list-style-type: none"> <li>● key standards and regulations relevant to the market and product range</li> <li>● the need to comply with standards and regulations for different marketplaces.</li> <li>● the value of compliance with standards in a competitive world marketplace</li> <li>● the value and methods of obtaining business knowledge about the development and use of standards and regulations</li> <li>● why sustainable development should be taken into account in the strategy of a company in a changing world and with limited resources</li> </ul>	<ul style="list-style-type: none"> <li>● Identification of the relevant standards and technical regulations for each area</li> <li>● Ability to apply sustainability and social responsibility standards to the marketing of products or services</li> </ul>

## Technical departments [Research and Development, Innovation, Design, etc.]

Responsibilities related to standardization	Necessary knowledge	Skills
<ul style="list-style-type: none"> <li>● Applying in the development process the regulations and standards required by the sector</li> <li>● Influencing the contents of standards &amp; technical regulations</li> <li>● <b>Contributing to business intelligence in standardization</b></li> <li>● <b>Supporting other departments on standardization matters</b></li> </ul>	<p><b>Substantial knowledge of:</b></p> <ul style="list-style-type: none"> <li>● the content of relevant standards</li> <li>● the need to comply with standards and regulations for different marketplaces</li> <li>● the interplay between innovation, intellectual property, and standards</li> </ul> <p><b>Good knowledge of:</b></p> <ul style="list-style-type: none"> <li>● the value of compliance with standards in a competitive world marketplace</li> <li>● why sustainable development should be taking into account in the strategy of a company in a changing world and with limited <span style="border: 1px solid red; padding: 0 2px;">resources</span><sup>[AB6]</sup></li> </ul> <p><b>Some knowledge of:</b></p> <ul style="list-style-type: none"> <li>● the value and methods of obtaining business knowledge about regulation standards development and their use</li> <li>● how to identify and apply regulations, standards (normative), specifications and other relevant documents for products, systems or services</li> </ul>	<ul style="list-style-type: none"> <li>● Identifying and implementing relevant standards and technical regulations</li> <li>● Identifying conflicts with patents and standards or gaps in existing standards</li> <li>● Understanding how to participate in the standardization process</li> </ul>

## Testing and laboratories

Responsibilities related to standardization	Knowledge Necessary knowledge	Skills
<ul style="list-style-type: none"> <li>● Ensuring the conformity of the products</li> <li>● <b>Applying, in the testing processes and procedures, the relevant standards and regulations for products, services, processes, etc</b><sup>[BA7]</sup>.</li> <li>● Identifying and ensuring conformity assessment systems and regulatory requirements are fulfilled</li> <li>● Facilitating the implementation of management systems and continually improving their effectiveness</li> </ul>	<p><b>Substantial knowledge of:</b></p> <ul style="list-style-type: none"> <li>● the content of relevant standards</li> <li>● the value of compliance with standards in a competitive world marketplace</li> <li>● compliance with standards and regulations for the different marketplaces</li> </ul> <p><b>Some knowledge of:</b></p> <ul style="list-style-type: none"> <li>● the value and methods of obtaining business knowledge about the development and use of standards and regulations</li> </ul>	<ul style="list-style-type: none"> <li>● Identifying and implementing relevant standards and technical regulations</li> <li>● Understanding how to participate in the standardization process</li> </ul>

## Purchasing

Responsibilities related to standardization	Necessary knowledge	Skills
<ul style="list-style-type: none"> <li>● <b>Identifying regulations and standards needed for supplier selection, procurement, chain of custody and</b> contracting processes</li> <li>● Integrating the strategic importance of standards when formulating policy and making management decisions</li> <li>● Facilitating the implementation of management systems and continually improving their effectiveness</li> </ul>	<p><b>A substantial knowledge of:</b></p> <ul style="list-style-type: none"> <li>● why sustainable development should be taken into account in the strategy of a company</li> <li>● contract law and the processes and systems that underpin contracting (ex: quality assurance, conformity assessment, chain of custody ...)</li> </ul> <p><b>Some knowledge of:</b></p> <ul style="list-style-type: none"> <li>● how to identify and apply regulations, standards (normative), specifications and other relevant documents for products, systems or services</li> </ul>	<ul style="list-style-type: none"> <li>● Identifying standards and regulatory requirements for suppliers</li> </ul>

## Production

Responsibilities related to standardization	Necessary knowledge	Skills
<ul style="list-style-type: none"> <li>● Applying the regulations and standards needed to support supplier selection</li> <li>● Applying the regulations and standards needed for fulfilling the client requirements</li> <li>● Taking account of the strategic importance of standards when deciding production process methods.</li> <li>● Facilitating the implementation of management systems and continually improving their effectiveness</li> </ul>	<p><b>Substantial knowledge of :</b></p> <ul style="list-style-type: none"> <li>● the content of relevant standards</li> </ul> <p><b>Good knowledge of :</b></p> <ul style="list-style-type: none"> <li>● the role of production staff in management systems and organizational policies</li> <li>● why sustainable development should be taken into account in the strategy of an organization in a changing world and with limited resources</li> </ul>	<ul style="list-style-type: none"> <li>● How to apply process and management system standards during production</li> </ul>

## Standardization Department

Responsibilities related to standardization	Knowledge necessary	Skills
<ul style="list-style-type: none"> <li>● <b>All responsibilities related to standardization</b></li> <li>● Defining the standardization strategy in accordance with the organization strategy</li> <li>● Supporting the standardization process and writing standards</li> <li>● Interpreting and Informing all other departments about relevant standards and regulations impacting the organization's products/markets</li> </ul>	<p>All knowledge listed for all other departments of the organization</p>	<ul style="list-style-type: none"> <li>● Identifying risks and opportunities of the relevant products, services and processes regarding standardization matters</li> <li>● Identifying relevant standards and technical regulations</li> <li>● Influencing the evolution of relevant standards</li> <li>● Monitoring standardization and technical regulations in order to understand their impact on the organization and to define actions</li> <li>● Developing and maintaining knowledge transfer systems</li> <li>● In some cases, teaching skills in standardization and standards</li> </ul>

# Summary of needs

This IFAN guide describes for each generic function in an organization, the responsibilities and the relevant knowledge and skills needed to carry out their role.

This table gives an indication of possible priorities of typical functions as an example within a medium sized enterprise and should be interpreted depending on the type and size of the organization and the type of product or service.

Account should also be taken of the particular requirements of the organization (e.g. different department segmentation, responsibilities).

In a small organization, some or many functions may be merged or may not apply.

Functions	Responsibilities									
	Role of standardization	Standards identification process (1)	Take into account the content of standards	Take into account sustainable development	Integration of management systems	Product compliance		Active involvement in standardization		Business intelligence and risk assessment in standardization
						Issues	Methods	Issues	Methods	
CEO and Senior management	***			**	***	***		***	**	***
Management Systems	**	***	***	**	***	***	**	.	.	**
Human resources	.		.	.						.
Information Technology	.	**	***	.	**	.		.	.	**
Marketing	**	**	**	**	***	**	.	**	**	**
Sales	.	.	.	.	.	**		.	.	**
Technical departments	***	**	***	**	**	***	***	**	**	**
Testing and laboratories	***	***	***	**	**	***	***	**	**	**
Purchasing	.	**	.	**	**	**				**
Production	.	**	**	**	**	**	.			.
Standardization	***	***	***	***	**	***	***	***	***	***

Legend :

- \*\*\* Substantial knowledge
- \*\* Good knowledge
- . Some understanding

(1) Standards identification process concerns the capability to identify relevant standards



## Possible methods to apply training/education

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Education and training about standardization cannot be implemented in the same way for all functions of an organization.

The multiple needs and constraints call for the application of different degrees and different forms of training.

There are a large range of different training tools and methods for standardization.

The table below is an example of possible methods of training inside an organization:

Functions	Methods				
	General information module	Information/training about existing requirements	Case studies, benchmark	Practical studies	Specific courses
CEO and senior management	✓	✓	✓		
Management Systems	✓	✓	✓	✓	✓
Human Resources	✓	✓			
Information Technology	✓	✓			✓
Marketing	✓	✓	✓		✓
Sales	✓	✓			
Technical departments	✓	✓		✓	✓
Testing and laboratories	✓	✓		✓	✓
Purchasing	✓		✓		
Production	✓	✓		✓	✓
Standardization	✓	✓	✓	✓	✓

## Contact

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For more information or any contributions related to education about standardization, do not hesitate to contact the working group **WG16 – Education and training**:

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