



STRATEGIC BUSINESS PLAN – ISO/TC 59 BUILDINGS AND CIVIL ENGINEERING WORKS

Executive summary

The scope of ISO/TC 59 is the standardization of terminology, organization of information in building and civil engineering processes, geometric requirements for building, building elements and components including modular coordination, general rules for joints, tolerances and fits; performance requirements of buildings and building elements.

The need for common terminology, rules of information exchanges, measurement techniques and material descriptors increases as globalization and international trade expands.

Established standards from ISO/TC 59 have little direct impact upon production, but greater impact on the overall conditions for the industry.

The Technical Committee has

- one subcommittee related to terminology (SC 2),
- one subcommittee related to materials (sealants) (SC 8),
- one subcommittee related to organization and digitization of information, including building information modelling (BIM) (SC 13),
- four subcommittees related to functional/user requirements and performance (SC 14, SC 15, SC 16, and SC 17),
- one subcommittee related to procurement (SC 18), and
- one subcommittee related to prefabricated building (SC 19).

In addition, ISO/TC 59 may occasionally establish ad hoc groups between plenary meetings to work on specific tasks.

As appropriate, liaison activities exist with other standards development committees and organizations to help facilitate the efficient and effective development of globally relevant standards.

The TC has an advisory group consisting of all its SC chairs and committee managers as well as the leadership of any WG directly under the TC. The advisory group has the same leadership as the TC and has annual face-to-face meetings and a virtual meeting between its physical meetings. The meeting practice is adjusted as needed, based on the committee's workload and current circumstances.

By resolution, ISO/TC 59 holds a plenary meeting every second year at which the subcommittees and active working groups are represented.

1 Introduction

1.1 ISO technical committees and business planning

The extension of formal business planning to ISO Technical Committees (ISO/TCs) is an important measure which forms part of a major review of business. The aim is to align the ISO work programme with expressed business environment needs and trends and to allow ISO/TCs to prioritize among different projects, to identify the benefits expected from the availability of International Standards, and to ensure adequate resources for projects throughout their development.

1.2 International standardization and the role of ISO

The foremost aim of international standardization is to facilitate the exchange of goods and services through the elimination of technical barriers to trade.

Three bodies are responsible for the planning, development and adoption of International Standards: ISO (International Organization for Standardization) is responsible for all sectors excluding Electrotechnical, which is the responsibility of IEC (International Electrotechnical Committee), and most of the Telecommunications Technologies, which are largely the responsibility of ITU (International Telecommunication Union).

ISO is a legal association, the members of which are the National Standards Bodies (NSBs) of some 167 countries (organizations representing social and economic interests at the international level), supported by a Central Secretariat based in Geneva, Switzerland.

The principal deliverable of ISO is the International Standard.

An International Standard embodies the essential principles of global openness and transparency, consensus and technical coherence. These are safeguarded through its development in an ISO Technical Committee (ISO/TC), representative of all interested parties, supported by a public comment phase (the ISO Technical Enquiry). ISO and its Technical Committees are also able to offer the ISO Technical Specification (ISO/TS), the ISO Public Available Specification (ISO/PAS) and the ISO Technical Report (ISO/TR) as solutions to market needs. These ISO products represent lower levels of consensus and have therefore not the same status as an International Standard.

ISO offers also the International Workshop Agreement (IWA) as a deliverable which aims to bridge the gap between the activities of consortia and the formal process of standardization represented by ISO and its national members. An important distinction is that the IWA is developed by ISO workshops and fora, comprising only participants with direct interest, and so it is not accorded the status of an International Standard.

2 Business Environment of the ISO/TC

2.1 Description of the Business Environment

The following political, economic, technical, regulatory, legal and social dynamics describe the business environment of the industry sector, products, materials, disciplines or practices related to the scope of this ISO/TC, and they may significantly influence how the relevant standards development processes are conducted and the content of the resulting standards:

2.1.1 *General*

The construction industry is well known as one of the largest industrial employers, and one of its particular characteristics is its function as a generator of employment. The so-called “multiplier effect” is such that 1 person working in the construction industry gives rise to 2 further jobs in other sectors. In Europe, this means almost 2 million firms directly employing a work force of 11 million. In other regions with less automation, construction industry employs even more people and is usually a local activity.

Infrastructure is at the core of climate adaptation and mitigation. According to the Global Alliance for Buildings and Construction, the construction and operations of buildings sector is responsible for 37 percent of global energy related emissions. Sixty-three percent of Nationally Determined Contributions (NDCs) include energy efficiency measures in buildings as part of their mitigation strategies—second only to deployment of renewable energy. Additionally, society looks to buildings and infrastructure to protect us from disaster events.

Prefabricated buildings are expanding as a tool to address societal and industry needs. Its growth reflects the expanding technology and global nature of the industry.

The industry is known for having a low technology level and low profitability. The construction industry has a great potential for change, higher effectiveness, better profitability and increased international trade. A paradigm shift is currently taking place in the construction industry as far as the use of building information models and the associated support software and procurement and delivery management practices is concerned. Significant reductions in building costs can be achieved by improving the data handling and information flows between actors and within the process of planning, designing and construction as well as the adopting of certain procurement and delivery management practices.

Established standards from ISO/TC 59 have little direct impact upon production, but greater impact on the overall conditions for the industry. These facts have traditionally made the development of the construction industry more dependent on the initiatives of governments, industry organizations, research establishments etc., than standardization in other fields, where the industry has more direct benefit from standardization.

ISO/TC 59 “Buildings and civil engineering works” is a horizontal committee and attempts to develop standards that will benefit the entire industry, particularly for terminology, basic performance standards, etc. Most of the topics have such a general character that it makes it difficult to quantify them in such terms as market segments and trading. Other ISO technical committees are responsible for other

horizontal areas such as acoustics and fire tests; standards related to individual components and materials are developed by other ISO technical committees. The standards developed by ISO/TC 59 will frequently be required by other ISO technical committees as basic reference documents. The dispersal of general issues within some subcommittees demands attention from the secretariats to set limits and avoid overlapping issues with other technical committees.

This broad scope of ISO/TC 59 means that there is no defined area of industry to support the work, except in certain areas such as sealants (ISO/TC 59/SC 8). The major participants tend to be academic, research, professional bodies, and government departments, rather than large sectors of industry. The standards benefit the entire industrial sector, but the broad nature of the work limits active participation in the development phase in some areas.

The scope of ISO/TC 59 is as follows:

Standardization in the field of buildings and civil engineering works, of:

- general terminology;
- organization of information in the processes of design, manufacture and construction;
- general geometric requirements for buildings, building elements and components including modular coordination and its basic principles, general rules for joints, tolerances and fits, performance and test standards for sealants;
- general rules for other performance requirements, including functional and user requirements related to service life, sustainability, accessibility and usability;
- general rules and guidelines for addressing the economic, environmental and social impacts and aspects related to sustainable development;
- geometric and performance requirements for components that are not in the scope of separate ISO technical committees;
- procurement processes, methods and procedures.

Excluded:

- standardization and coordination of technical product documentation (ISO/TC 10);
- acoustic requirements (ISO/TC 43);
- bases for design of concrete structures (ISO/TC 71/SC 4);
- fire tests and fire safety engineering related to building materials, components and structures (ISO/TC 92);
- bases for design of structures (ISO/TC 98);
- construction machinery (ISO/TC 127 and ISO/TC 195);
- performance requirements for glass in buildings (ISO/TC 160);
- performance requirements for doors, doorsets and windows (ISO/TC 162);
- calculation of thermal properties (ISO/TC 163);
- bases for design of timber structures (ISO/TC 165);
- bases for design of steel and aluminium structures (ISO/TC 167);
- geotechnical aspects and soil quality (ISO/TC 182 and ISO/TC 190);
- standardization in the design and retrofit buildings regarding acceptable indoor environment and practicable energy use (ISO/TC 205).

The activities take place in a market where:

- rapid changes in the global market demand proactive management in meeting requirements for new standards,
- specifications for design and manufacturing in all disciplines are of major importance,
- there is a need for common technical terminology in a wide range of topics,
- documentation of performance criteria, energy consumption, environmental declaration of products, durability and sustainability is becoming increasingly imperative,
- technical product documentation may be regarded as essential for contractual interpretation,
- quality management systems according to the ISO standards are of high priority,
- a paradigm shift is currently taking place in the construction industry as far as the use of building information models, supporting software and prefabrication are concerned.
- infrastructure is at the core of climate mitigation and adaptation.

NOTE 1: Buildings and civil engineering works collectively constitute all types of construction works envisioned, while building and other types of construction work involves the activities and related processes resulting in their formation.

NOTE 2: Sustainability is the goal of sustainable development and, in buildings and civil engineering works, relates to how the attributes of the activities, products or services used in the construction work, or the use of the construction works, contribute to sustainable development.

2.1.2 Performance standards, design life, environmental declarations, building information modelling, accessibility, sustainability and procurement

ISO/TC 59 “Buildings and civil engineering works” strives to provide comprehensive solutions and complete sets of standards created by international consensus to ensure globally accepted basic standards. It is essential to make building authorities aware of the importance of standardization and the possibilities of using standards as an extension of building codes. Projects that are carried out for the purposes of improving the environment often requires incentives or investment by the public sector or others with responsibilities. Standards help assure their goals and requirements are being met consistently.

In brief, ISO/TC 59 currently gives special attention to the following areas:

- review and maintenance of standards,
- design life / durability / service life planning,
- life cycle analysis and costing
- organization of information / building information modeling and information delivery manuals,
- accessibility and usability,
- sustainability in buildings and civil engineering works / environmental declaration / environmental performance,
- resilience in the built environment, especially in crisis situations (e.g. floods, earthquakes, etc.),
- security in the built environment,

- procurement, and
- prefabricated buildings as a tool to address industry and societal challenges

2.1.2.1 General

The construction industry provides services and products to customers that primarily have to plan in the long term. The products being used are often delivered worldwide. It is therefore of great importance to review and maintain standards on a global scale.

This is to prevent changes in the global market from becoming obstacles to coordination and the maintenance of quality in buildings and civil engineering works.

The standards developed under ISO/TC 59 on modular and dimensional coordination have been of vital importance to make the construction industry more efficient and cost effective. They have also been important for the development of industrial building products in both national and international markets. In ISO/TC 59/SC 15 this topic has been developed to concern the whole building (family houses).

It is important that the TC and its subcommittees continuously assess the need to revise their published standards so as to keep them up to date.

2.1.2.2 Design life, durability, service life planning

Standardization in this area covers a range of subjects, such as terminology, life cycle costing, durability, maintenance, performance audits, data requirements and procedures. Efforts to make buildings live for a planned time and continue to achieve performance requirements, without extraordinary economic and environmental costs, are essential.

Sealed exterior joints are often the most critical link in ensuring a weatherproof building exterior or civil engineering structure by providing the continuity between similar or dissimilar building materials or components. The weather-tightness of face-sealed walls certainly depends exclusively on the effectiveness and durability of the sealant. Performance and durability test standards for sealants are contributing to the performance and longevity of the building as well as the comfort of its occupants.

2.1.2.3 Organization and digitization of information / IT

In building construction, the standardization of products (goods and services) requires the standardization of the digital exchange of documentation and data. The standardization of digital basics to allow progress in this field is now taking place. Building information modeling, in particular, is about exchange of information of all types, along the project timeline, and between participants and applications. Information types include geometrical data, functional and technical data, cost data and maintenance data.

An important task of ISO/TC 59 has been to establish a common grammar and terminology, making it possible to understand construction information across borders. Standards under ISO/TC 59/SC 13, like ISO 12006-3, which specifies a language-independent information model that can be used for the development of dictionaries used to store or provide information about construction works, have to be based on a common grammar to enable classification systems, information

models, object models and process models to be referenced from within a common framework.

2.1.2.4 Accessibility and usability

The focus on accessibility and usability has traditionally been on people with disabilities. As people become more aged, they experience difficulties to navigate in the built environment, and quite often they give up going out in the end. Previously, the problem was assumed to be only for people with special needs, but more and more seniors are suffering the same problem. As a result, there is a further need for universal design to cater for the needs of all of these populations.

ISO/TC 59 (and SC 16)'s objective is to deliver standards that are rooted in basic human rights which take into account the UN's Universal Declaration on Human Rights, which states that everyone has the right to equal access to public services in his or her country. Furthermore, such standards also need to embrace the imperatives for universal design following the adoption of the UN Convention on the Rights of Persons with Disabilities.

2.1.2.5 Sustainable environment

The construction industry, together with the materials industries which support it, has the potential to impact negatively on the depletion of natural resources and the generation of waste and pollution. The importance of the construction industry for the three elements of sustainable development, namely economic growth, social progress and effective protection of the environment, cannot be disregarded. This industry can make a significant contribution to the attainment of the goals of the United Nations Framework Convention on Climate Change (UNFCCC).

The work of ISO/TC 59/SC 17 contributes to this end by addressing sustainability in the context of buildings and civil engineering works. Example areas are the environmental performance of buildings and construction works, the development of sustainability indicators and environmental declaration of building products.

The work of SC19 also has the potential to reduce material usage and enhance operational performance.

2.1.2.6 Construction procurement

Procurement is the process that creates, manages and fulfils contracts. Procurement can be documented as a succession of logically related actions occurring or performed in a definite manner, which culminates in the completion of a major deliverable or the attainment of a milestone. Construction procurement covers various aspects of procurement within the construction industry.

The objective of the procurement standards is to provide a generic and standard set of processes, procedures and methods for a procurement system that is fair, equitable, transparent, competitive and cost effective.

Procurement standards are especially relevant for developing countries that lack experience and instruments in this field and may be used to improve international trade. The purpose of standardization in this subject field is to provide a framework around which public, private and international organizations may develop their

procurement systems to achieve fair competition, to reduce the possibilities for abuse and to improve predictability in procurement outcomes.

2.1.2.7 Advancing Processes and Performance

Across the world governments and the building industry are faced with multiple challenges including the affordability and availability of housing; reducing operational energy use and embodied carbon in the built environment to meet climate mitigation goals; protecting residents from the growing impacts of natural hazards and supporting rapid recovery following such events; and the availability of a skilled workforce. Prefabricated buildings, also called off-site construction or modular buildings, have the potential to provide solutions to many of these challenges. Prefabricated solutions can also be developed in multiple markets for shipping across the globe.

Standards for prefabricated buildings can help assure receiving jurisdictions that the components and the finished building deliver the same or higher level of safety, efficiency and resilience provided by site-built structures. Multi-national designers and developers can more effectively design and procure project components through standardization.

2.1.3 Important topics for ISO/TC 59 in the near future

The standards under ISO/TC 59 are mainly framework standards or standards dealing with important societal issues (i.e., sustainability, accessibility, service life).

In the years to come, the following topics are considered to be important:

- standards aimed at reducing the use and expenditure of resources and further streamlining of processes in buildings and civil engineering projects,
- standards with further guidance on the information management requirements associated with projects delivered using building information modeling, from design and procurement to maintenance and demolition,
- standards providing essential methodologies and interfaces to coordinate with relevant technologies for extending value of construction data
- standards providing frameworks for specification, analysis and assessment of performance in buildings,
- standards covering various aspects of resilience in the context of buildings and civil engineering works,
- standards providing indicators for assessment of sustainability and functionality,
- standards providing vocabularies and taxonomies allowing for further use in object libraries, product catalogues and classification systems related to buildings and civil engineering works,
- standards providing environmental declarations of building products, leveraging building information modeling and other tools
- standards covering script language and functions, methodologies and information exchange formats,
- standards providing ontologies and requirements for products,
- standards establishing the standard conditions for design competitions,
- standards establishing the procurement and delivery management system comprising processes, procedures and methods for the implementation of construction works projects,
- standards related to security in the built environment.

- leveraging data and information to drive whole-life carbon decisions

2.2 Quantitative Indicators of the Business Environment

The following list of quantitative indicators describes the business environment in order to provide adequate information to support actions of the ISO/TC:

International statistics are hard to find, because traditions for making estimations within this sector vary from nation to nation. The Business Plan therefore does not contain numbers or figures on international basis concerning the items in this TC.

It is complex to estimate to what extent ISO/TC 59 standards are in use, but adoption of ISO standards on a national level is increasing. This becomes clearly visible in the close cooperation with CEN (Vienna Agreement).

3 Benefits expected from the work of the ISO/TC

The review and implementation of standards will be of great importance in the building construction sector when it comes to

- terminology,
- dimensional coordination,
- performance criteria,
- digital frameworks and classification systems which will give a common approach to building construction information for the open market,
- lifecycle cost analyses,
- accessible and usable built environment design based on a Universal Design approach,
- sustainable and resilient buildings and civil engineering works,
- processes, procedures and methods for construction procurement systems.
- Prefabricated solutions

The continuing focus on sustainable development issues has particularly highlighted topics such as

- environmental declarations of building products,
- design life of buildings,
- durability,
- general principles and responsibilities independent of private and public authorities,
- guidelines in designing accessibility for all,
- prefabricated solutions,
- efficient use of materials
- principles of and a framework for resilient design

Available International Standards or Technical Reports from this TC include among others:

- modular coordination for building construction,
- tolerances for building construction,
- joints in building construction,
- sealants in building construction
- measurement methods for buildings,
- performance standards in buildings,

- general design criteria for people with special needs,
- classification of information in the construction industry,
- resilience in the built environment,
- efficient use of materials
- interoperability of BIM and GIS.

4 Representation and participation in the ISO/TC

4.1 Membership

Countries/ISO member bodies that are P and O members of the ISO committee

4.2 Analysis of the participation

The Asian and the European countries form the majority of the ISO/TC 59 membership, both as P and O-Members (60–70% of the countries represented). Generally, this also reflects the situation in the various subcommittees.

North and South America have significant business and economic interests in the fields addressed by the scope. The reasons for lack of participation are unknown, but they are often assumed to be financial. US has formed a Technical Advisory Group (TAG) coordinated by the International Code Council which has increased engagement, particularly in SC19 and WG4.

The participation from developing countries is also relatively smaller than that from developed countries. This may also be due to financial reasons.

5 Objectives of the ISO/TC and strategies for their achievement

5.1 Defined objectives of the ISO/TC

ISO/TC 59 shall provide an open forum for all member bodies for the processing, implementation and maintenance of ISO standards under the scope of this TC. ISO/TC 59 covers a broad variety of topics.

The following objectives are those that ISO/TC 59 has selected as most important:

- to optimise coordination and collaboration between all subcommittees under ISO/TC 59,
- to assess, identify and meet the market demands for standards,
- to perform continuous quality assurance to ensure standards of high quality,
- to develop standards within the time schedule as laid down in the ISO Directives,
- to improve the worldwide representation of experts in the committees,
- to increase the number of participating countries in the committees.

5.2 Identified strategies to achieve the ISO/TC's defined objectives

Implement ISO strategies

- Adhere to the current ISO Strategic Plan.

- Monitor and adhere to directives and resolutions from ISO/TMB.

Optimise coordination and collaboration between all subcommittees under ISO/TC 59

- Ensure open and active communication with chairs/committee managers from subcommittees with new work items or high activity in order to avoid unnecessary fragmentation or overlap of topics.
- Optimise the utilisation of available expertise.
- Ensure that the work is in accordance with strategic objectives.
- Actively use the ISO/TC 59 Advisory Group to provide strategic direction and operational support as well as for the coordination of and collaboration between the subcommittees.

Assess, identify and meet market demands for standards

- Maintain and develop the strategy of ISO/TC 59.
- Review the structure of ISO/TC 59 in relation to objectives.

Perform continuous quality assurance to ensure standards of high quality

- Standards shall be coordinated and have an overall high degree of mutual consistency and conformity, especially when it comes to terminology, quality requirements, test methods, tolerances, deviations and performances.
- Adhere to and make active use of the *SC 2 Procedural Guidelines on Language and Terminology* to ensure consistency in terminology and language across ISO/TC 59 projects.

Develop standards within the time schedule as laid down in the ISO Directives

- New work items should be evaluated by ISO/TC 59.
- No new work items should be started unless necessary resources are available.

Improve the worldwide representation of experts in the committees

- New work items should be evaluated to make sure they have a potential of broad interest.
- Seek opportunities for inviting experts from participating and non-participating countries (respectively) to attend the TC or SC meetings.
- Contribute to ongoing marketing work, such as the ISO/TC 59 Newsletter and the ISO/TC 59 website.
- Collaboration with relevant CEN committees to allow for European adoption of ISO/TC 59 standards where applicable, and also taking into account the Vienna Agreement.

Increase the number of participating members in the committees

- Participation from new P-Members is important for wider implementation of standards.
- Seek opportunities for inviting experts from participating and non-participating countries (respectively) to attend the TC or SC meetings.
- Contribute to ongoing marketing work, such as the ISO/TC 59 Newsletter and the ISO/TC 59 website.
- Collaboration with relevant CEN committees to allow for European adoption of ISO/TC 59 standards where applicable, and also taking into account the Vienna Agreement.

6 Factors affecting completion and implementation of the ISO/TC work programme

It is assumed that the major risks for timely completion of the work programme consist of (in non-prioritized order):

- lack of financial resources
- lack of commercial pressure from major stakeholders to complete the standards
- lack of expert resources

7 Structure, current projects and publications of the ISO/TC

Information on ISO online

The link below is to the TC's page on ISO's website:

[ISO/TC 59 Buildings and civil engineering works on ISO Online](#)

Click on the tabs and links on this page to find the following information:

- About (Secretariat, Committee Manager, Chair, Date of creation, Scope, etc.)
- Contact details
- Structure (Subcommittees and working groups)
- Liaisons
- Meetings
- Tools
- Work programme (published standards and standards under development)

Reference information

[Glossary of terms and abbreviations used in ISO/TC Business Plans](#)

[General information on the principles of ISO's technical work](#)