

**CEN/TC 250 Position paper on enhancing ease of use of the
Structural Eurocodes**

Draft for 'Committee Internal Ballot'

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1. Purpose of this document

This document presents the overall CEN/TC 250 vision, approach and specific aspects of guidance for enhancing the ease of use of the Structural Eurocodes. Its purpose is to support decision making of CEN/TC 250 Sub-Committees (SCs), Working Groups (WGs), Horizontal Groups (HGs) and Project Teams (PTs) engaged in drafting a more user-orientated second generation of Structural Eurocodes.

The guidelines presented in this paper are not intended to provide contractual requirements to SCs, WGs, HGs and PTs. Given the complexity of the objective and the inevitable tensions that can arise between competing demands, balanced judgements need to be made about the application of the guidelines. Thus, the obligation on SCs, WGs, HGs and PTs is that the guidelines should be understood and taken into consideration, informed judgements made and that decisions taken can be justified. This document needs to be read as a whole.

2. Background

Improving the ease of use of the Eurocodes is an important issue discussed at some length by CEN/TC 250 and its subcommittees over recent years. It has also been of significant interest and concern in many CEN member countries. Enhancing the ease of use of the Eurocodes is a priority for CEN/TC 250 and a specific requirement of the European Commission Mandate M/515 issued to CEN in December 2012 [1]. CEN/TC 250 committed to improving the ease of use of the Eurocodes through Resolution 280 made in Helsinki in June 2010 and reproduced below.

To assist with this, in November 2013 CEN/TC 250 agreed to create a 'Chairman's Advisory Panel on ease of use' [2] (hereinafter called CAP) to develop recommendations for the approach to be taken to enhance the ease of use of the Eurocodes. The 15 members selected provided a balance between the Eurocodes stakeholders, with an emphasis on practitioners and individuals experienced in the development of the Eurocodes. Detailed information on the thorough and open process followed by the CAP to establish their recommendations on how the ease of use of the Structural Eurocodes can be enhanced is provided in the full CAP report [3].

CEN/TC 250 has considered the CAP recommendations, as well as comments and suggestions from CEN/TC 250 members [4], and has produced the guidelines presented in this paper.

RESOLUTION 280 (CEN/TC 250, Helsinki, 18th June 2010)

Subject: CEN/TC 250 – simplification of Eurocodes

CEN/TC 250 acknowledges the challenge established in the Programming Mandate M/466 addressed to CEN in the field of the Structural Eurocodes to examine the potential for simplification of rules in the further development of the Eurocodes. CEN/TC 250 agrees to work towards achieving such simplification in the further development of the Eurocodes to support the ease of their use by designers through:

- (i) improving the clarity;*
- (ii) simplifying routes through the Eurocodes;*
- (iii) limiting, where possible, the inclusion of alternative application rules;*
- (iv) avoiding or removing rules of little practical use in design;*

CEN/TC 250 agrees that such simplification should be limited to the extent that it is technically justified and should seek to avoid additional and/or empirical rules for particular structure or structural-element types.

The resolution was agreed by unanimity.

3. Vision: delivering long term confidence

At the time of its publication, the first generation of Structural Eurocodes was the most comprehensive and advanced suite of design standards in the world and an outstanding example of harmonisation across countries, structural materials and types of structure.

CEN/TC 250's ambition is to build upon this accomplishment. Whilst respecting the achievements of the past, our vision for the second generation of Structural Eurocodes is to create a more user-orientated suite of design standards that are recognised as the most trusted and preferred in the world.

Attaining this vision is a complex challenge. Nevertheless, long-term confidence in the Eurocodes is based on their ability to evolve. Enhancing the ease of use of the Eurocodes is an essential component of the process of evolution.

More than 500 000 practitioners and thousands of other users across Europe and other countries outside Europe will be affected by the evolution of the Eurocodes. CEN/TC 250 is committed to having their needs at the forefront of our minds throughout our work.

4. Approach: five pillars to enhance ease of use

The CEN/TC 250 approach to guide decision making of SCs, WGs, HGs and PTs involved in developing the second generation of Eurocodes is based on the five pillars presented in Fig. 1. They provide the overall framework and a transparent approach for enhancing the ease of use of the Eurocodes.

These pillars are connected. The statements of intent to meet users' needs have been translated into a series of governing principles. The application of these principles will be illustrated through relevant examples. Performance measures can be used, where appropriate, to assure that the intended objectives are being achieved. Finally, central management, governance and support will ensure that a focus on ease of use is sustained, interdependencies are recognised and responded to, and that emergent issues are addressed.

The five pillars have been derived from Recommendation 1 of the CAP [3] and the comments and suggestions from CEN/TC 250 members [4]. Guidelines on each pillar are presented in the next section.

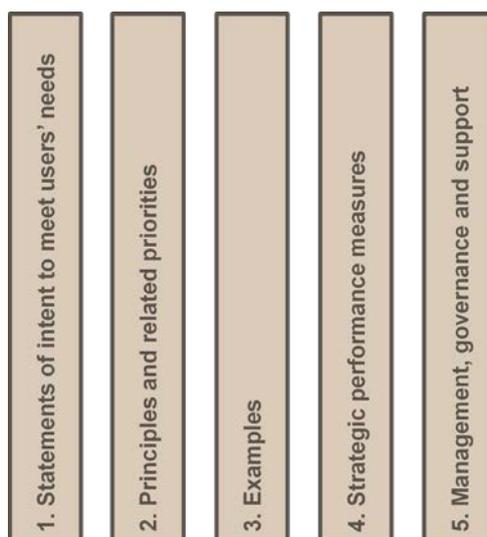


Figure 1: Five pillars to enhance ease of use of the Eurocodes

5. Guidelines: realising our ambitions

Five guidelines are given below to guide decision making in drafting a more user-orientated second generation of Eurocodes. These guidelines relate to each of the five pillars in Fig 1.

5.1 Statements of intent to meet users' needs

The development of the second generation of Structural Eurocodes will be undertaken focussing on users' needs. Ten categories of users have been identified. However, whilst all users of the Eurocodes are important, it is not possible to fulfil all their aspirations simultaneously. Therefore, a primary target audience has been identified to focus drafting efforts. The primary target audience will take precedence if conflicts with needs of other audiences arise.

The primary target audience for the Eurocodes evolution is "Practitioners – Competent engineers" as defined in Fig. 2. For all categories of users statements of intent setting out the aims of CEN/TC 250 are presented in Fig. 3.

PRIMARY TARGET AUDIENCE	DEFINITION
Practitioners – Competent engineers	Competent civil, structural and geotechnical engineers, typically qualified professionals able to work independently in relevant fields

Figure 2: Primary target audience for the Eurocodes evolution

CATEGORIES OF EUROCODES' USERS	CEN/TC 250 STATEMENTS OF INTENT
Practitioners – Competent engineers [Primary target audience]	We will aim to produce Standards that are suitable and clear for all common design cases without demanding disproportionate levels of effort to apply them
Practitioners – Graduates	We will aim to produce Eurocodes that can be used by Graduates where necessary supplemented by suitable guidance documents and textbooks and under the supervision of an experienced practitioner when appropriate
Expert specialists	We will aim not to restrict innovation by providing freedom to experts to apply their specialist knowledge and expertise
Product Manufacturers	Working with other CEN/TCs we will aim to eliminate incompatibilities or ambiguities between the Eurocodes and Product Standards
Software developers	We will aim to provide unambiguous and complete design procedures. Accompanying formulae will be provided for charts and tables where possible
Educators	We will aim to use consistent underlying technical principles irrespective of the intended use of a structure (e.g. bridge, building, etc.) and that facilitate the linkage between physical behaviour and design rules
National regulator	We will endeavour to produce standards that can be referenced or quoted by National Regulations
Private sectors businesses	We will continue to promote technical harmonization across European markets in order to reduce barriers to trade
Clients	We will produce Eurocodes that enable the design of safe, serviceable, robust and durable structures, aiming to promoting cost effectiveness throughout their whole life cycle, including design, construction and maintenance
Other CEN/TCs	We will engage proactively to promote effective collaboration with those other CEN/TCs that have shared interests

Figure 3: Statements of intent to meet users' needs

5.2 Principles and related priorities

Governing principles to guide the drafting of a more user-orientated generation of Eurocodes are given in Table 1. These governing principles have been classified into primary general principles and secondary specific principles. If conflicts arise, primary general principles shall take precedence over secondary specific ones. Within the two classifications, the principles are not ordered. Balanced judgements will therefore need to be exercised if conflicts arise between principles within the primary or secondary classifications. These principles reflect best practice in the development of Standards, satisfy CEN/TC 250 Resolution 280, are consistent with CEN's Internal Regulations and focus on those decisions that are under the control of CEN/TC 250.

Table 1: Principles and related priorities

General principles (primary)	
1	Improving clarity and understandability of technical provisions of the Eurocodes
2	Improving accessibility to technical provisions and ease of navigation between them
3	Improving consistency within and between the Eurocodes
4	Including state-of-the-art material the use of which is based on commonly accepted results of research and has been validated through sufficient practical experience
5	Considering the second generation of the Eurocodes as an "evolution" avoiding fundamental changes to the approach to design and to the structure of the Eurocodes unless adequately justified
Specific principles (secondary)	
6	Providing clear guidance for all common design cases encountered by typical competent practitioners in the relevant field
7	Omitting or providing only general and basic technical provisions for special cases that will be very rarely encountered by typical competent practitioners in the relevant field
8	Not inhibiting the freedom of experts to work from first principles and providing adequate freedom for innovation
9	Limiting the inclusion of alternative application rules
10	Including simplified methods only where they are of general application, address commonly encountered situations, are technically justified and give more conservative results than the rigorous methods they are intended to simplify
11	Improving consistency with product standards and standards for execution
12	Providing technical provisions that are not excessive sensitive to execution tolerances beyond what can be practically achieved on site

The CAP has suggested targets and possible actions for each principle: they are illustrated in the final CAP report [3].

5.3 Examples

It will be valuable to illustrate the application of the governing principles through relevant examples to promote shared understanding and convergence of approach (e.g. through a better organisation of contents, better harmonisation, etc.).

In support of this effort, early in the evolution work, SCs, WGs and HGs will identify areas in their standards that present opportunities for enhancing ease of use following the principles in Table 1 and present tentative illustrations of how such improvement can be achieved. These examples will be developed through collaboration between SCs, WGs and HGs using the CEN/TC 250 CG as a forum for discussion.

Furthermore, under the coordination of WG1 early action will be taken on improving consistency between different Eurocode parts by using common structure and text.

5.4 Strategic performance measures

Understanding and assessing progress in applying the recommendations contained in this paper is important to provide confidence that CEN/TC 250's ambitions for enhancing the ease of use of the Eurocodes are being achieved.

Therefore, strategic performance measures may be used where merited and in collaboration with SCs, WGs and HGs to examine how the governing principles are being applied and to assess CEN/TC 250's progress towards our objective.

Suggestions for possible performance measures are provided in the final CAP report [3].

5.5 Management, governance and support

The CEN/TC 250 management group will be responsible for monitoring the overall application of the guidelines in this report. It will establish arrangements to assure that the recommendations of this report are implemented appropriately by SCs, WGs, HGs and PTs.

In support of this, issues of ease of use will be included in the SC/WG/HG report template and agenda for CG meetings to enable good practices and lessons learned to be shared and to promote consistency of implementation of the ease of use recommendations.

References

- [1] CEN/TC 250 Mandate M/515 EN "Mandate for amending existing Eurocodes and extending the scope of Structural Eurocodes", December 2012
- [2] CEN/TC 250 Chairman's briefing note 2013/4. "Chairman's Advisory Panel on Ease of Use", November 2013
- [3] CEN/TC 250 Chairman's Advisory Panel. "Final report on enhancing ease of use of the Structural Eurocodes and reducing NDPs", December 2014
- [4] CEN/TC 250 "Summary of comments on the CAP short report and actions taken", January 2015