

Management Summary

of the final report on the INS-project

Effectiveness and efficiency of European standardization processes and structures

Scenarios for the future landscape of European standardization



Federal Ministry
of Economics
and Technology

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In the context of its policy of promoting innovation, the Federal Ministry of Economics and Technology is providing long-term support for the projects in the »Innovation with Norms and Standards« (INS) programme. The aim is to exploit the positive impulses that a timely development of technical norms and standards can give to the transfer of know-how to the market and hence create for future innovations the best possible conditions for their implementation and market performance.

Coordination and management of the projects initiated under the INS programme are the responsibility of the R&D Phase Standardization Section in DIN.

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The Research Institute for Operations Management (Forschungsinstitut für Rationalisierung – FIR) was commissioned by DIN to carry out the survey and evaluate the results



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Contents

1 Summary	04
2 Background	05
3 Aim	05
4 Procedure	06
5 Results	07
6 Recommendations for action	10

1 | Summary

Rapid technological developments, technological convergence, global competition and a need for greater marketability are the challenges facing European standards organizations today. In conjunction with rapid technological change, the convergence of technologies leads not only to greater market opportunities but also to greater challenges to standardization structures, making a timely and well-coordinated development of norms and standards of prime importance.



At present European standards work is divided into three sectors: CENELEC is responsible for electrotechnical standardization, ETSI for standards in the telecommunications sector, and CEN for standardization in all other areas. The steering and working committees of these three organizations make all organizational and standards policy decisions in their respective areas, and each body has its own infrastructures for the administration, monitoring and initiation of standardization activities. At present recommendations for intra-organizational cooperation are made by the Joint Presidents Group on a case-by-case basis.

A survey was carried out by means of a questionnaire with the aim of clarifying the extent to which close cooperation can help these European standards organizations overcome the above-mentioned challenges.

As CEN and CENELEC, as opposed to ETSI, have comparable structures, the focus of the study was placed on these two organizations.

Participants in the survey included persons who are directly or indirectly involved in standards work and apply the results of this work, and who are also affected by the effectiveness and efficiency of standardization processes. With 1,774 participants from German industry, research and politics, a representative number of participants was ensured.

The questionnaire asked participants how satisfied they are with the standards organizations CEN and CENELEC and the extent to which they feel the aims of these organizations are achieved and how efficiently they function. Furthermore, the participants were asked to rate significant factors such as effectiveness, competence, timeliness, redundancy and cost. A major section of the questionnaire asked for an assessment of characteristics of standards organizations which should play an important part in new standardization structures and future forms of cooperation.

An analysis of the survey results showed that there is considerable room for improvement both as regards goal achievement and efficiency. In a regression analysis, effectiveness, competence and timeliness were identified as being the three most significant factors influencing standards work.

Under »effectiveness« was understood the ability of standards organizations to effectively represent the interests of German industry and business on the European and global markets. »Competence« covered the competence of the standards bodies and their role as partners in the development of standards. »Timeliness« was an indicator of the ability of the organizations both to quickly respond to stakeholders' needs and to develop standards in a timely manner.

Participants' responses to the questions regarding eight characteristics of future structures for cooperation showed that they feel the European standards organizations should work closer together. As a whole, the five following recommendations for CEN and CENELEC can be made on the basis of the survey results:

- **Set up a common infrastructure** to ensure efficient support for all value-added activities and processes.
- **Establish an exchange of information and experience** between working groups and teams to establish a long-term common knowledge base.

- **Develop a coordinated »foreign policy«** for dealing with external entities such as the European Commission, international standards institutions, and economic regions competing with Europe.
- **Form joint bodies of experts** that will consolidate know-how and bring experts together on a project-by-project basis in areas for horizontal (cross-disciplinary) standardization.
- **Develop a corporate identity** which is also reflected in uniform values and standards.

These recommendations are based on the survey participants' image of a new standardization landscape. When realizing these recommendations, the major factors influencing satisfaction, efficiency and goal achievement identified in the survey – namely, effectiveness, competence and timeliness – should be taken into consideration and any measures taken should be weighed against these factors. Formulating a concrete plan of action based on the results of this survey is the next step towards more effective and more efficient European standardization processes and structures.

2 | Background

Current economic trends such as the globalization of markets and the resulting international division of labour, the emergence of new economic sectors, shorter development times and product life cycles, and the growing convergence of technological disciplines are presenting new challenges for national, European and international standardization. In this context, complex systems involving different technologies – such as in the automotive industry, mechatronics or nanotechnology – are gaining significance. This meshing of diverse technologies is referred to as »technological convergence« and such technologies are termed »converging technologies«.

The above-mentioned trends lead not only to greater market opportunities but also to greater challenges to standardization structures at European level. Growing technological convergence and dynamics, increasing global competition and a need for greater marketability are forcing European standards organizations to take action. As a result, the overlapping of standards work in the electrotechnical and non-electrotechnical sectors is increasing, traditional product standardization is taking place at system level, and timely, cost-efficient and flexible standardization structures are required. Under these conditions a timely and well-coordinated development of norms and standards will continue to be of prime importance.

3 | Aim

The primary aim of this study – which was sponsored by the German Federal Ministry for Economics and Technology and coordinated by the German Institute for Standardization (DIN) – was to analyze the interests of decision-makers from German industry, research and politics as regards a future close cooperation between the European standards institutes CEN and CENELEC. This implied the identification of any possible need for organizational and structural improvements to CEN/CENELEC cooperation.

A further aim of the study was to recommend a course of action as well as to formulate scenarios for the future landscape of European standardization. These recommendations were to encompass a means of developing more effective and more efficient standardization structures by adapting them to the above-mentioned economic trends, and to establish measures for developing more time- and cost-efficient standardization processes.

4 | Procedure

An empirical survey was carried out in the form of an online questionnaire to achieve the study's first aim, an analysis of the interests of German decision-makers. Invitations to participate were sent to some 12,000 persons through DIN and DKE, as well as through various industry associations in Germany, such as the VDMA, VDE and ZVEI. A representative cross-section of industrial sectors and company sizes is here ensured provided the number of respondents is at least 300.

The questionnaire contained 30 questions divided into five sections: The first section asked for general information both about the individual and about the organization with which he/she is associated, for the purposes of substantiating representativeness and to allow an evaluation of specific groups. The second section asked the respondent to describe his/her participation in and familiarity with standards work to establish the significance of the responses – answers from respondents who have little or no experience/familiarity with standards work could then be filtered out. The motivations for participating in standards work, and the significance attributed to standards organizations and bodies were addressed in the third section of the questionnaire. Answers to the questions in this section provided a general picture of the relevance of standards work. The fourth section dealt with the efficiency of European standardization, the extent to which goals are achieved in European standards work, and the respondents' satisfaction with them; results from this section were used to identify areas for improvement. In the fifth and final section, survey participants were asked to describe the optimal organization of European standards work from their point of view; recommendations for the cooperation between CEN and CENELEC were drawn up on the basis of answers to this section.

The results of the online questionnaire were statistically evaluated using descriptive statistics, factor analysis and regression analysis, primarily to answer the following questions:

- **How significant is technological convergence?**
- **Do the answers from individual sectors vary significantly from the answers as a whole?**
- **How high is the satisfaction with standards organizations?**
- **Which factors have the greatest influence on this satisfaction?**
- **Where is there the most room for improvement, in terms of respondent satisfaction?**
- **How should the future standardization landscape be organized and structured?**

An assessment of the shape of future organizational possibilities, together with the identification of the most significant factors influencing standards work provide a solid basis for drawing up a recommended course of action for designing the future landscape of European standardization as regards cooperation between CEN and CENELEC. Any measures to be taken on the basis of these recommendations are to take into consideration the most significant influencing factors.

5 | Results

Altogether 1,774 representatives from German industry, research and politics participated in the survey. With an estimated 12,000 potential respondents, this figure corresponds to a rate of return of around 15%. The prerequisite of n=300 responses was thus fulfilled and the survey may be deemed to be representative. Respondents came from a broad cross-section of sectors, with mechanical engineering and plant engineering, the electrotechnical industry, medical technology, and science, research, and education having the highest representation of a combined 50%. Twenty-three percent of the participants came from small and medium-sized enterprises, while 77% were members of large organizations (classed according to the EU Commission's recommendations), with 75% of the enterprises being active on the European and/or international markets. Over 76% of the respondents actively participate in standards work on a regular basis: Only these latter were included in the further analysis, as regular participation in standardization is a fundamental prerequisite for providing statistically significant answers.

The reasons given by respondents for participating in standardization were subsumed under three main aspects. The highest ranking motivation was product and system compatibility, with the most respondents giving »compatibility of my products with legal requirements«, »interaction of products and systems in application-oriented solutions« and »active participation in the development of new technologies« as »very strong« motivations. The second most important motivational aspect was enhancing market presence, which implies that an organization can assert its interests on the market. In third place, the efficiency of the value-added chain was deemed of average importance as a motivating factor.

One interesting aspect of this ranking is that product and system compatibility was by far the most popular motivating factor. Traditional motives for becoming active in standardization such as reducing informational asymmetries or facilitating market access were relegated to the background. Thus there is evidence that the increasing technological convergence – which, as mentioned earlier, is presenting new challenges to national, European and international standardization – is indeed making itself felt. The stakeholders in standardization have only recently become aware of this new technological trend.

The need for structural improvements to the European standardization landscape is shown in the respondents' assessment of the current status. Only 28% of those who regularly participate in standardization are satisfied with the work of the standards organizations at European level. And only 22% see the processing of standardization tasks by the European standards organizations as being efficient, while only 28% believe that these organizations achieve their declared goals. The evaluation of individual statements in the questionnaire gives an even clearer picture: The majority of respondents stated that ...

... they have to adjust to the different rules of procedure at CEN and CENELEC.

... there is not sufficient cooperation among technical committees at CEN and CENELEC as regards subjects affected by technological convergence.

... the cooperation among technical committees at CEN and CENELEC as regards subjects affected by technological convergence is not ensured.

... the interests of European businesses are not effectively represented on the global market by CEN and CENELEC.

... results of work at CEN and CENELEC often have to be corrected and harmonized after the fact.

... standards work is often carried out in parallel by the different bodies at CEN and CENELEC.

Particularly notable is the fact that a separate evaluation for respondents from the electrotechnical sector comes up with the same results, with the relevant medians and percentages varying only slightly from the total results.

Keeping in mind that the identification of any possible need for organizational and structural improvements to CEN/CENELEC cooperation is a major aim of this study, the statistical analysis of results focused on identifying the factors which most influence the effectiveness and efficiency of CEN and CENELEC as well as the survey participants' satisfaction with these European organizations (see Section 4 of the survey).

The regression analysis showed that the significant factors influencing the above-mentioned characteristics are »effectiveness«, »competence« and »timeliness«. Under »effectiveness« was understood the ability of standards organizations to effectively represent the interests of German industry and business on the European and global markets. »Competence« covered the competence of the standards bodies and their role as partners in the development of standards. »Timeliness« was an indicator of the ability of the organizations both to quickly respond to stakeholders' needs and to develop standards in a timely manner.

A measurable, albeit lesser, significance was attributed to the factors »cost of standards work« and »redundancy of standards work«. »Cost« encompassed all financial, human and time resources required of industry to participate in standards work. »Redundancy« was an indicator of parallel and overlapping work carried out in CEN and CENELEC bodies.

In order to determine which factors have the greatest influence on the above-mentioned characteristics of CEN and CENELEC, each factor was evaluated in terms of the magnitude of its influence in relation to the need for improvement.

Figures 1 to 3 illustrate the evaluation of these two quantities in terms of each characteristic. In each case two factors were identified as being the most significant for that characteristic.

Each diagram presents the relationship between the influence factors and each characteristic schematically. The horizontal axis is divided into factors indicating a »high« and those showing a »low« need for improvement. The statistical levers shown in the upper right quadrant of each diagram are significant in that they not only have a great direct influence on the characteristic under consideration but also indicate a high need for improvement.

FIGURE 1 shows that the factors which have the most influence on respondents' satisfaction are the competence of the standards organizations and their ability to effectively represent the respondents' interests on the market («effectiveness»), while according to **FIGURE 2** the significant factors for achieving goals are effectiveness and timeliness.

FIGURE 1:
Factors influencing **satisfaction**

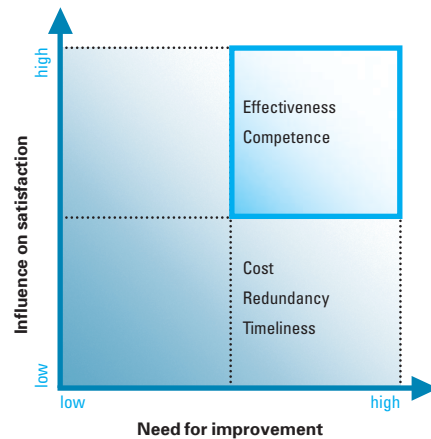
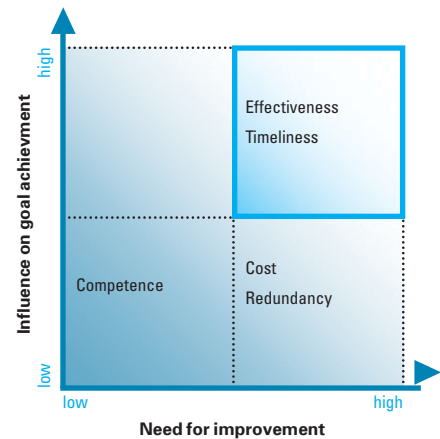
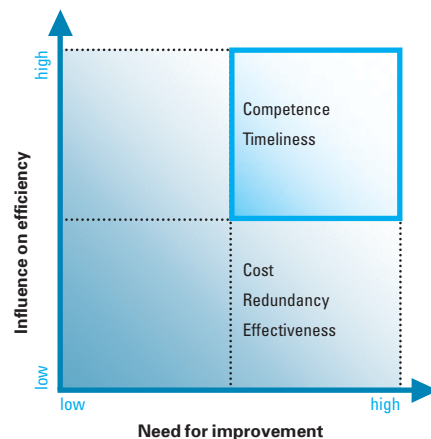


FIGURE 2:
Factors influencing **achievement of goals**



Finally, **FIGURE 3** shows that competence and timeliness are the strongest factors influencing efficiency.

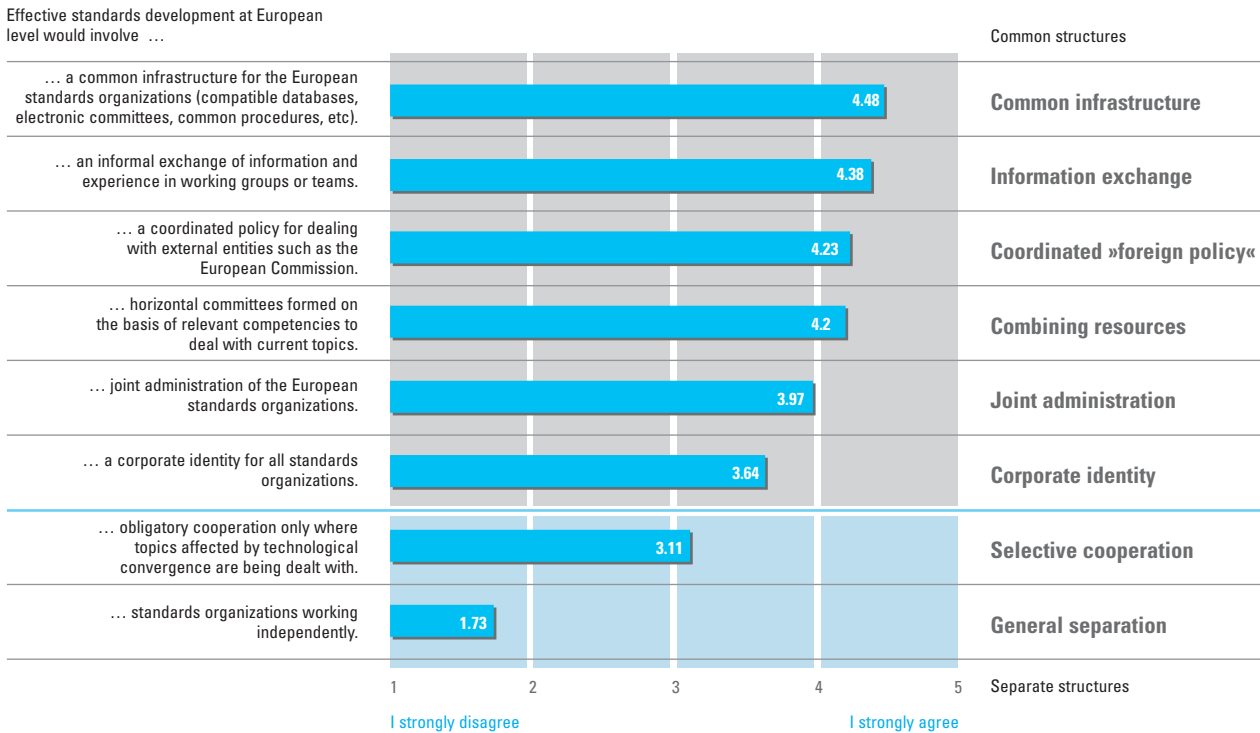
FIGURE 3:
Factors influencing **efficiency**



Respondents were asked to express their opinion not only on the significant influencing factors and characteristics discussed above, but also on the shape of the future European standardization landscape. The results were unequivocal: The majority of respondents see a closer cooperation among European standards organizations as being necessary to ensure the most efficient standards development possible. Obligatory cooperation was also seen as being expedient when dealing with subjects which are not affected by technological convergence. Most respondents rejected the idea of the standards organizations working independently

(→ FIGURE 4). Thus, the characteristics »common infrastructure«, »information exchange«, »coordinated foreign policy«, »combined knowledge resources«, »joint administration« and »corporate identity« which describe common standardization structures were rated higher than the characteristics indicating separate structures, »selective cooperation« and »general separation«.

FIGURE 4:
Assessment of characteristics of future standardization structures



6 Recommendations for action

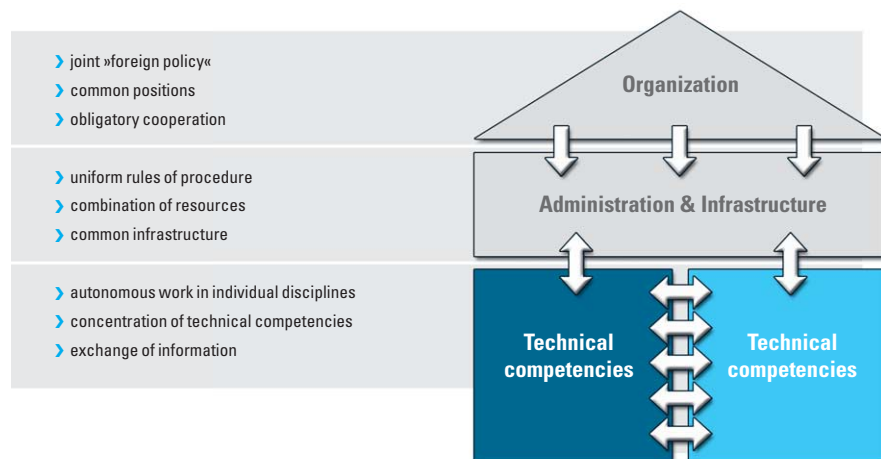
The most significant factors influencing European standards work as identified in the survey indicate where there is room for improvement. For instance, in order to raise satisfaction with European standardization and the degree to which its goals are reached, the European standards organizations should increase their ability to effectively represent stakeholders' interests on the market. One way of achieving this is for the standards organizations to adopt a united stance in external relations and to follow a common policy. Altogether, the responses to the questionnaire describe a future landscape of European standardization and identify major influential factors, thus providing a solid basis for making recommendations for action; these are listed below according to the importance attributed to them by survey participants.

- **Recommendation 1:** Set up a common infrastructure to ensure efficient support for value-added activities and processes.
- **Recommendation 2:** Establish an exchange of information and experience between working groups and teams to establish a long-term common knowledge base.
- **Recommendation 3:** Develop a coordinated »foreign policy« for dealing with external entities such as the European Commission, international standards institutions, and economic regions competing with Europe.

- **Recommendation 4:** Form joint bodies of experts that will consolidate know-how and bring experts together on a project-by-project basis in areas for horizontal (cross-disciplinary) standardization.
- **Recommendation 5:** Develop a corporate identity which is also reflected in uniform values and principles.

FIGURE 5 illustrates schematically the recommendations for a future organizational structure for the European standards organizations.

FIGURE 5:
Schematic presentation of recommendations



These recommendations are based on the respondents' image of a new standardization landscape. When implementing these recommendations, the major factors influencing satisfaction and goal achievement identified in the survey – namely, effectiveness, competence and timeliness – should be taken into consideration and any measures taken should be weighed against these factors. Formulating a concrete plan of action based on the results of this survey is the next step towards more effective and more efficient European standardization processes and structures.



An English translation of the questionnaire on which this survey was based is available on request from:

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