Business Plan 2018
CEN/TC 428
ICT Professionalism and Digital Competences

THE FOUR BUILDING-BLOCKS

1. Competences
2. Body of knowledge
3. Education and training
4. Professional ethics

Final version 10 December 2018
Executive Summary

The purpose of this Business Plan 2018 is to provide a medium term vision of the way ahead for the CEN/TC 428, with its expanded workload and the new context of IT Professionalism. It provides an overview of the business and political environments that make this TC relevant and useful, and outline its objectives and priorities. The structure and membership of the TC is outlined, as well as a strategy to expand the participation among the European standards bodies and international observers.

Establishing standards to guide the maturing of the IT profession will be of enormous benefit to the IT professional stakeholder community across all sectors of business and economics: mainly and first of all related to the four agreed pillars or building blocks of IT professionalism, but also in a wider sense related to any other aspect of the IT profession aligned with European Union strategy, policies, social needs, or innovation trends.

1. Business and Political Environment of the CEN/TC 428

1.1. Background

CEN/TC 428 was set up in 2014, initially as a Project Committee, with the initial task of establishing the European e-Competence Framework (e-CF) CWA 16234-1 as a formal European standard. This objective was achieved in April 2016, as EN 16234-1:2016.

Subsequently, in 2016 the remit of CEN/TC 428 was defined as responsibility for the standardisation of a common language of professional digital and IT competences, skills and knowledge applied in all domains. And finally, in 2018, the mission of CEN/TC 428 has been established as responsible for all aspects of standardization related to maturing the IT Profession in all sectors, public and private.

The TC builds on the work of a predecessor body, the CEN Workshop on ICT Skills, which had developed the e-CF as a CEN Workshop Agreement (CWA), together with a suite of many other CWAs. That Workshop closed earlier in 2018, and in order to fill the gap thus created for a community of IT professionals, industry and academic representatives, the Council of Professional Informatics Societies (CEPIS) has established an expert group IT Professionalism Europe (ITPE), in part to take forward the wider consultative role.

The title of our TC, and that of ITPE, both use the word “professionalism”. This is a significant departure from and broadening of the ICT skills scene, moving on from the earlier emphasis on competences and related matters, to the full range of knowledge, education, training, certification, and ethics.

The use of this word also emphasises the focus of the TC on the skills of ICT professionals, rather than the digital skills of citizens generally, important though those are.

The recognition of the ICT profession as a mature, self-confident profession, requires the standardisation of the key pillars that characterise a profession: competences, a body of knowledge, education and training, and professional ethics.

Within the work programme of the TC, the competence pillar is being addressed with a project currently underway to update the e-CF to Version 4. The European Commission is promoting in 2018 a standardisation request to develop standards for a comprehensive European framework for the ICT
profession by 2025\(^1\). In summer 2018, CEN has endorsed a batch of five projects, consistent with this new direction, aiming to standardise the other pillars. This provides a substantial and comprehensive baseload to reenergise the TC, building on previous work.

1.2 Description of the Business and Economic Environment

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

Digital, Information and Communication Technologies are critical components of the continued progress and welfare of business and social aspects of Europe. Europe is strongly challenged to develop sufficient appropriate skills and competences of its citizens and employees in all sectors and levels, from beginner to ICT professional, to boost the digital economy and society as a whole.

Looking at ICT professional skills and competences in particular, demand continues to exceed supply of the skilled professionals who design, build, implement and manage new digital technologies.

It is estimated that there will be up to 500,000\(^2\) unfilled core ICT vacancies in Europe by 2020. At the same time, there is high unemployment in some parts of Europe, particularly in southern and eastern Europe, and especially among young people.

As always, it is the newer skills at senior professional level that are most in demand, currently cyber security, data analytics (cloud), robotics and artificial intelligence.

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\(^1\) Rolling Plan for ICT Standardization 2018. European Commission DGGROW.

Closing the gap between the number of job seekers and the number of vacant digital jobs has been among the main priorities of the European economy this century.

1.3. Quantitative Indicators of the Business Environment

The ICT sector in Europe represents an important share of the economy, with about 4% of GDP and employing more than 6 million people\(^3\). The value added of this sector in the EU, spanning from components to software products and services, is above €580 bn, and represents close to 10% of the added value of industrial activity overall.

Even more important is the contribution of ICT to all other sectors. Firstly, in employment alone, the total number of ICT jobs in all other sectors (eg banking, telecoms, government) is typically about the same as the number of jobs in the ICT sector itself, drawing from the same labour catchment pool.

Furthermore, ICT contributes technology, efficiency, productivity, energy conservation, speed of response and much else to all sectors. Finally, ICT contributes to education, social interactions, (and maybe to democracy).

Recent studies estimate that digitisation of products and services will add more than €110 bn revenue per year in Europe in the next 5 years. Just in Germany, further digitisation of industry is expected to bring up to 8% of productivity growth over ten years and a revenue growth of about €30 bn per year. It will also lead to a 6% increase in employment. Close to a third of the growth of the overall industrial output in Europe is already due to the uptake of digital technologies.

With regard to ICT skills, in summary it can be said that\(^4\):

- The demand for ICT professionals is on a solid growth track.
- It is estimated that the number of ICT Professionals in the EU should grow from 8 million in 2015 to 9.5 million in 2020.
- Almost 240,000 ICT graduates enter the labour market each year, and more than 100,000 new ICT Professionals enter without a formal degree (‘lateral entries’).
- It is estimated that the gap between demand and supply will reach 500,000 in 2020, down from the 756,000 estimated in December 2015. This reflects an increased supply from education, vocational training and immigration but much more efforts are needed.

1.4. Political Environment

The business and economic environment clearly generates the political environment. The following developments in particular should be mentioned, though this is a non-exhaustive list:

1) The EU Digital Single Market Strategy\(^5\) adopted in May 2015, announced a set of targeted actions, built on three pillars:
   a) Better access for consumers and businesses to digital goods and services
   b) Creating the right conditions and a level playing field for digital networks and innovative services to flourish

\(^3\) The European Commission’s Joint Research Centre Prospective Insights on R&D in ICT (PREDICT) Key Facts report.
\(^4\) European Commission services based on Eurostat data
c) Maximising the growth potential of the digital economy.

2) In 2016, the European Commission released the comprehensive Skills Agenda for Europe, including for long term digital skills. This built on the earlier Grand Coalition for Digital Jobs and Education and Training 2020 whereby Member States were invited to develop comprehensive national digital skills strategies for implementation up to 2020.

3) This was followed by the Digital Skills and Jobs Coalition in December 2016.

4) In April 2016, CEN published EN 16234: 2016, the first formal international standard in the scope of ICT professional competences.

5) The e-Skills Manifesto 2016 focused on regulatory challenges faced by ICT profession and the impact of digitisation (now called Digital Transformation) (digital economy, services, privacy, cybersecurity, enterprise, professional responsibility, compliance, labour market etc), and the role of a mature ICT profession to manage this in the long term.


7) The European Commission is promoting in 2018 a standardisation request to develop standards for a comprehensive European framework for the ICT profession by 2025.

2. Benefits Expected from the Work of the CEN/TC 428

Information Technologies have increasing importance in any economic and social activity. Consequently the standardization related to maturing the IT Profession in all sectors should be a mandatory activity to achieve the key benefit to develop a comprehensive European IT professionalism framework by 2025.

The success of the EN 16234 “e-Competence Framework (e-CF) - A common European Framework for ICT Professionals in all industry sectors - Part 1: Framework” standard proves that sharing a common language of ICT professional knowledge, skills and competences can significantly contribute to increasing transparency and efficiency in professional development. This needs to be maintained and further expanded, especially with the regard to the four main building blocks of the ICT profession.

- Providing a common language to describe digital competences
- Providing a classification scheme to collect and better understand the ICT labour market
- Establishing a firm foundation for the maturing of the ICT profession
- Assist the creation of more ICT professionals to meet the existing skills gap
- Developing suitable learning programmes, including for the existing workforce
- Ensuring the creation of a trustworthy ICT profession by delivering a Code of Ethics

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8 Rolling Plan for ICT Standardization 2018. European Commission DGGROW.
Underpinning education, training and certification of ICT professionals
Underpinning of trust in the ICT profession/professionals
Underpinning liaisons with other sectors regarding digital competences
Enabling comparability of different educational programmes

Professionalism embraces a strong understanding of the link between business and ICT, and the work of the TC will reinforce and extend that link. The benefits will include a direct and constructive impact on market players and stakeholders, across countries and stakeholder perspectives (e.g. employers, qualification providers), and will also have a positive influence on internal organisational interactions, (e.g. between HR and ICT departments).

Besides that, the development of a mature IT profession will provide the best tool to manage effective solutions to the social, business and political concern about regulatory challenges by the impact of digitization.

3. Scope

The formal definition of the scope of the TC is provided in Technical Board decision C027/2018.

Essentially, CEN/TC 428 is responsible for all aspects of standardization related to digital competences and maturing the ICT profession in all sectors, public and private. This includes, at a minimum, activity related to four major building blocks of ICT Professionalism:

1. Competences (standardisation of a common language of ICT skills and knowledge)
2. Education, training and certification
3. Code of Ethics
4. Body of Knowledge (BoK)

The main areas of standardization where CEN TC 428 will develop its activity are:

- Maintenance of the e-CF, the core standard EN 16234-1, developed by and underpinning the work of the TC, along with its supporting Technical Reports, User Guide, Methodology, and Case Studies.
- ICT Professional Role Profiles
- Interaction with different frameworks (including EQF, ESCO, SFIA)
- Body of Knowledge (BoK) for ICT
- Development of curriculum guidance, education, training and certification, related to e-CF
- Developing a sustainable code of ethics in the ever-changing ICT world
- Guidance for assessing attainment against the published standards
- Definition, maintenance and evolution of digital professional competences in all sectors, always looking at current business adoption and new emerging technologies and trends as they become relevant to the ICT profession as a whole

All conceptual developments shall be consistent and interrelated.

As stated, the main focus is on professional rather than user skills.
4. Objectives of CEN/TC 428 and Strategies to Achieve Them

4.1. Defined objectives of CEN/TC 428

CEN/TC 428 is responsible for all aspects of standardisation related to ICT professionalism, contributing to the development of a solid basis for ICT professionalism.

Further standardisation of relevant defining pillars of IT Professionalism involves, at a minimum, the activity related to the agreed four building blocks of ICT Professionalism:

1. Competences
2. Education, training and certification
3. A professional code of ethics
4. A Foundational Body of Knowledge (BOK)

4.2. Areas of Work

A non-exhaustive list of areas where CEN TC 428 will be active is as follows:

1. Maintenance, evolution and updating EN 16234:2016 (e-CF), and its related documents, with due consideration to alternative frameworks.
2. Remain cognisant of other competence frameworks and schemes (e.g. SFIA and Japanese IT Competence Dictionary), engaging with their advocates and creators to avoid duplication and where possible to work towards interoperability, a single framework, and a common language to describe the ICT competence landscape.
3. Advance the development of standards, technical specifications and technical reports as appropriate for the three additional agreed “pillars” of ICT Professionalism: education and certification (including e-curriculum guidelines and the development of an education model), a foundational body of knowledge, and a professional code of ethics.
4. Advance the development of standards, technical specifications and technical reports as appropriate, for e-leadership competences, assessment of competence against published standards (common metrics), irrespective of how acquired, by certification, prior learning or experience.
5. Maintenance and updating of CWAs relevant to the area of digital competences and ICT professionalism eg CWA 16266 Curriculum for training ICT Professionals in Universal Design.
6. Explore and define required competences in existing and emerging ICT domains, in the context of business adoption, e.g. security, healthcare, fintech, cloud, blockchain etc., and consider strategies to align them with the core content of EN-16234-1.
7. In due course, consider the plethora of current frameworks and schemes concerned with organisational capabilities.

4.3. Strategies to achieve the CEN/TC428 defined objectives

CEN/TC 428 will produce clear definitions and sound orientation materials to support selection and recruitment of ICT professionals, as well guidance regarding qualification, training, assessment and continuous professional development. New outputs and deliverables will facilitate the widespread adoption of the ICT Standards by companies and organisations, increasing the transparency, mobility and efficiency of human resources in the ICT sector.
CEN/TC 428 will adopt a proactive coordination attitude, firstly related to other CEN initiatives affecting IT professionalism, and in general related to other European initiatives. The TC will aim to catalyse and promote coordination among parties and initiatives with impact on IT professionalism. The TC should consider a leadership or coordination role as appropriate, as umbrella body of the European ICT professionalism standards definition and maturity, promoting the coordination and coherence of the European ICT professionalism evolution.

As this work progresses, additional topics of interest will be proposed and addressed by the TC. In particular, the TC could contribute to other aspects of IT professionalism, for example in response to new European Union strategies, social needs or innovation trends.

The TC will seek to broaden its membership, as discussed below.

5. Participation in CEN/TC 428

All CEN national members are entitled to nominate delegates to CEN Technical Committees and experts to Working Groups, ensuring a balance of all interested parties. Participation as observers of recognised European or international organisations is also possible under certain conditions. To participate in the activities of this CEN/TC, stakeholders are advised to contact the national standards body in their country. It is normal that those bodies operate a “mirror” or “shadow” committee to match the work of the TC.

It is desirable that the participation in TC 428 is representative of as many national bodies and ICT multi-stakeholder perspectives as possible in order to meet the objective of maturing the ICT profession throughout Europe. To this end it will be part of the role of the members of TC 428 to raise awareness of the work of the Technical Committee leading to the enhancement of its work.

Specifically, the TC is currently well supported by the major countries in Western Europe. We are weaker in representation from Eastern Europe, despite the strong history of IT in some of those countries. An attempt will be made to address this by considering specific actions related to TC activities, for example, perhaps holding one meeting per year in Eastern Europe.

The CEN structure, based on national standards bodies, may inhibit the participation of the major international vendors (who typically have international or European leadership teams) despite their involvement in the early development of the previous CWAs. Therefore, the TC will devise mechanisms to overcome this, leveraging good practice and experience to engage with relevant related organisations, and has already established liaisons with a number of related bodies, such as CEPIS, EeSA, SBS etc.

Finally, noting that the ICT sector is essentially international, the TC will seek every opportunity to collaborate with the other large ICT markets in the world, namely USA, Japan, China and India.

In order to pursue these objectives, the TC will consider some form of informal occasional communication from CEN TC to national bodies, to facilitate additions to its membership and to the national mirror committees.

6. Factors affecting completion and implementation of the CEN/TC 428 work programme

The main success factors for the TC are the effort and enthusiasm of the National Body members and their employers, and the Secretary, with project financing coming from a number of sources, notably the European Commission.
The ambitious work programme proposed for CEN/TC 428 will rely heavily on this continued interest, contribution, funding and high-level expertise of participants, to deliver quality outputs, as well as the European Commission priorities in the domain of the TC, i.e. digital competences and IT professionalism. There is also a dividend to be gained by productive liaisons as described below, with, for example, national standards bodies, CEN Workshops (e.g. Big Data), other TCs, and relevant ISO groups, like ISO JTC 1/SC7 and JTC1/SC27.

7. CEN system information

7.1. Structure of the TC

The structure of the TC aims to reflect the range of stakeholders and best practice in terms of governance. It was set up by the CEN Technical Board (BT). Membership comprises the Chairperson, Secretary and CEN national members, as well as a number of approved observers, e.g. the European Commission and other organisations granted observer status from time to time.

**The Chair** - The Chair provides overall leadership and conducts meetings in an impartial manner, guiding the meeting in order to reach balanced and prompt decisions while ensuring that all points of view are heard and considered. At the November 2018 meeting of the TC, it was agreed to appoint a Vice-Chair to support the Chair.

**The Secretary** – The secretary provides professional management support, in the form of administrative, operational and technical services, and particularly to the Chair to ensure that the TC functions efficiently in accordance with CEN rules.

**Technical Committee** – The Technical Committee acts as the decision-making body. It decides on starting new work items, comments and votes on draft deliverables and decides on final standards. It is the responsibility of the TC to build consensus amongst all its members. The degree of consensus is evaluated and measured amongst the national delegations (vote in meeting) or amongst the CEN Members (vote by correspondence).

**Working Groups** – The drafting of standards is usually carried out in Working Groups. Each of these groups is dedicated to a more specific aspect of the overall subject. A new project can be delegated to an existing working group or a new working group can be established to accomplish the project.

**Ad Hoc Groups** – A TC can decide to establish an 'ad hoc group' to perform a specific task that is not directly related to an existing WG (e.g. perform a feasibility study).
7.2. Types of Products of the TCs

The TC will deliver a variety of documents as specified by CEN, appropriate to the work in hand.

European Standards (EN) are technical documents designed to be used as a rule, guideline or definition. They will be consensus-built, repeatable ways of doing something. Standards are created by bringing together all interested parties such as manufacturers, consumers and regulators of a particular material, product, process or service. All parties benefit from standardisation through increased efficiency and quality as well as lower development costs.

Besides European Standards (EN), CEN/TC 428 may also develop Technical Specifications (TS) and Technical Reports (TR). These deliverables are developed more easily and quickly than European standards.

A Technical Specification can be produced when there is no immediate need for a European Standard or when the technology is not yet mature enough. Technical Specifications require less time to be developed and do not have to be adopted by the national members. A Technical Specification can be converted into a European Standard when deemed ready.

Technical Reports contain information on the technical content of standardization work. This information is not suitable to be published as an EN or TS. A Technical Report may include, for example, data obtained from a survey, data on work in other organizations, or any other data that might be useful to a CEN member.