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**e-Competence Framework (e-CF) - A common European
Framework for ICT Professionals in all sectors - Part 4:
Case Studies**

Référentiel des e-Compétences - Référentiel européen
commun pour les professionnels des technologies de
l'information et de la communication dans tous les
secteurs d'activité - Partie 4 : Études de cas

e-Kompetenz Rahmenwerk (e-CF) - Ein gemeinsamer
europäischer Rahmen für IKT-Fach- und
Führungskräfte in allen Branchen - Teil 4: Fallstudien

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European foreword

This document (CEN/TR 16234-4:2021) has been prepared by Technical Committee CEN/TC 428 “ICT Professionalism and digital competences”, the secretariat of which is held by UNI.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes CWA 16234-4:2014.

In comparison with the previous edition, the following technical modifications have been made:

- Development of new case studies in the light of the EN 16234-1 revision and benefitting from multiple e-CF user experiences gathered and application feedback received.

The EN 16234-1 (e-CF) for ICT professional competence being the main reference of this document outlines the minimum requirements of competence (i.e. a threshold) in the work context. It includes typical knowledge and skills examples that are not standardized but provided to support orientation and understanding. When applying the EN 16234-1 (e-CF), this approach must be recognized to clearly distinguish between which elements are mandatory and which are merely examples (represented by, shall versus should/may/can etc.).

This European standard is made up of four parts:

- EN 16234-1 e-Competence Framework (e-CF) - A common European Framework for ICT Professionals in all sectors - Part 1: Framework. It provides the e-Competence Framework (e-CF) published as a European Norm - EN.
- CEN/TR 16234-2 e-Competence Framework (e-CF) - A common European Framework for ICT Professionals in all sectors - Part 2: User Guide. It provides the e-CF User guide published as a CEN Technical Report (TR).
- CEN/TR 16234-3 e-Competence Framework (e-CF) - A common European Framework for ICT Professionals in all sectors - Part 3: Methodology. It provides the e-CF Methodology published as a CEN Technical Report (TR).
- CEN/TR 16234-4 e-Competence Framework (e-CF) - A common European Framework for ICT Professionals in all sectors - Part 4: Case Studies. It provides a series of Case Studies illustrating e-CF practical use from multiple ICT sector perspectives published as a CEN Technical Report (TR).

Part 1 is fully standalone, and part 2, 3 and 4 rely on part 1.

Introduction

EN 16234-1 e-Competence Framework (e-CF) - A common European Framework for ICT Professionals in all sectors Part 1: Framework was established as a tool to support mutual understanding and provide transparency of language through the articulation of competences required and deployed by Information and Communication Technology (ICT) professionals.

To support users and guide developers of applications to EN 16234-1 (e-CF), the following narrative provides an overview of the underpinning philosophy and principles adopted during the standard's construction and maintenance. Understanding these guiding principles is equally vital for applying the standard in multiple environments concerned with ICT professionalism.

EN 16234-1 (e-CF) Guiding Principles:

EN 16234-1 (e-CF) is an enabler; it is designed to be a tool to empower users, not to restrict them.

It provides structure and content for application by many users from organisations in the private and public sector, ICT user or ICT supply organisations, educational institutions including higher education and private certification providers, social partners and individuals. Across this broad application context, EN 16234-1 (e-CF) is designed to support common understanding, not to mandate the use of each and every word used within it.

EN 16234-1 (e-CF) expresses ICT competence using the following definition: 'Competence is a demonstrated ability to apply knowledge, skills and attitudes for achieving observable results'. This holistic concept directly relates to workplace activities and incorporates complex human attitudes and resultant behaviours. Behaviour and attitude are important influences that facilitate successful knowledge and skills application. Within each competence, embedded attitudes are reflected in behaviour and enable the successful integration of knowledge and skills.

Competence is a durable concept and although technology, jobs, marketing terminology and promotional concepts within the ICT environment change rapidly, EN 16234-1 (e-CF) remains durable requiring maintenance approximately every three years to maintain relevance.

A competence can be a component of a job role, but it cannot be used as a substitute for similarly named job titles, for example; the competence, E.2. 'Project and Portfolio Management' does not represent the complete content of a 'Project Manager's' job role. Competences can be aggregated, as required, to represent the essential content of a job role or profile. On the other hand, one single competence may be assigned to a number of different job profiles.

Competence is not to be confused with process or technology concepts such as, 'Cloud Computing' or 'Big Data'. These descriptions represent evolving technologies and in the context of EN 16234-1 (e-CF), they may be integrated as knowledge and skills examples in Dimension 4.

EN 16234-1 (e-CF) does not attempt to cover every possible competence deployed by an ICT professional nor are the included competences necessarily unique to ICT. EN 16234-1 (e-CF) articulates competences associated with ICT professional roles including some that may be found in other professions but are very important in an ICT context; examples include, C.4. 'Problem Management' or E.3. 'Risk Management'. However, to maintain an ICT focus, EN 16234-1 (e-CF) avoids generic competences such as 'Communications' or 'General Management'. Although very applicable these generic competences are comprehensively articulated in other structures. Selecting competences for inclusion within EN 16234-1 (e-CF) is therefore a pragmatic rather than an exhaustive process. The selection was based on engagement with a broad cross-section of stakeholders who prioritize competence inclusion based upon industry knowledge and experience.

EN 16234-1 (e-CF) is structured across four dimensions. e-Competences in Dimensions 1 and 2 are presented from the organisational perspective as opposed to an individual's perspective. Dimension 3 defines e-Competence levels and relates to the European Qualifications Framework (EQF), it provides a bridge between organisational and individual competences. Dimension 4 provides examples of knowledge and skills in the e-Competences of Dimension 2; they are not intended to be exhaustive but included for inspiration and orientation.

This latest version of the standard incorporates a new element, transversal aspects; these recognize the relevance of a number of important cross-cutting aspects and provide additional generic ICT related descriptors for successful application of e-CF competences in the workplace. Accessibility, Ethics and Security are examples of transversal aspects that may be applied flexibly to match the application context.

EN 16234-1 (e-CF) has a sector specific relationship to the EQF; competence levels within EN 16234-1 (e-CF) provide a consistent and rational relationship to levels defined within the EQF. The relativity between EQF learning levels and the e-competence work proficiency levels of EN 16234-1 (e-CF) has been systematically established to enable consistent interpretation of the EQF in the ICT workplace environment. It should be noted that an exact equivalency is not possible due to the different purposes and contexts of the EQF and the e-CF, but relevant relationship information is provided.

Continuity of EN 16234-1 (e-CF) is imperative; following maintenance updates, it is essential that users are provided with a simple upgrade path. Users of EN 16234-1 (e-CF) invest considerable time and resources to align processes or procedures to it. Organisations deploying these downstream activities are reliant upon EN 16234-1 (e-CF) and need to be confident of the continued sustainability of their processes. Updates EN 16234-1 (e-CF) must respect this requirement and ensure continuity by enabling continued use of the existing standard until convenient to upgrade to the latest version.

EN 16234-1 (e-CF) is neutral; it does not follow the specific interests of a few major influencers, it is developed and maintained through an EU-wide balanced multi-stakeholder agreement process, under the umbrella of the European Committee for Standardization. EN 16234-1 is a key component of the European Digital Agenda for ICT professionalism; it is designed for use by any organization or individual engaged in ICT Human Resource planning and competence development.

1 Scope

This document provides a series of practical case studies supporting understanding, adoption and use of EN 16234 (all parts) e-Competence Framework (e-CF) - A common European Framework for ICT Professionals in all sectors which provides a common reference of 41 ICT professional competences as required and applied at the Information and Communication Technology (ICT) professional work environment, using a common language for competences, skills, knowledge and proficiency levels that can be understood across Europe.

This document supports Information and Communication Technology (ICT) stakeholders dealing with ICT Professional competences from multiple perspectives, in particular:

- ICT service, demand and supply organisations;
- ICT professionals, managers and human resource (HR) departments;
- educational institutions, learning program and certification providers of all types including Vocational and Educational Training (VET), Higher Education (HE) and Continuous Professional Development (CPD);
- social partners (trade unions and employer associations);
- professional associations, accreditation, validation and assessment bodies;
- market analysts and policy makers;
- other organizations and stakeholders in public and private sectors across Europe;

to adopt, apply and use the framework in their environment.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 16234-1:2019, *e-Competence Framework (e-CF) — A common European Framework for ICT Professionals in all sectors — Part 1: Framework*

CEN/TR 16234-2:2021, *e-Competence Framework (e-CF) — A common European Framework for ICT Professionals in all sectors — Part 2: User Guide*

CEN/TR 16234-3:2021, *e-Competence Framework (e-CF) — A common European Framework for ICT Professionals in all sectors — Part 3: Methodology*

CWA 16458-1:2018, *European ICT Professional Role Profiles — Part 1: 30 ICT profiles*

CWA 16458-2:2018, *European ICT Professional Role Profiles — Part 2: User Guide*

CWA 16458-3:2018, *European ICT Professional Role Profiles — Part 3: Methodology documentation*

CWA 16458-4:2018, *European ICT Professional Role Profiles — Part 4: Case studies*