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e-Competence performance indicators and common metrics

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European foreword

This document (CEN/TR 17802:2022) has been prepared by Technical Committee CEN/TC 428 “ICT Professionalism and Digital Competences” the secretariat of which is held by UNI.

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Introduction

Recognition of competences is not a new field, many contributions have explored this topic and have developed assessment tools and methods to pursue clarity and precision, trying to be as unambiguous and non-judgmental as possible. There is an urgent need in the ICT field to find practical solutions related to the recognition and assessment of capabilities of ICT professionals whenever/wherever such competences have been acquired or developed.

This document is not intended as a general guideline as many valuable and authoritative papers already exist (e.g. from CEDEFOP and SFIA). This document is focused on providing guidance and a method for applying the EN 16234-1, *e-Competence Framework (e-CF) - A common European Framework for ICT Professionals in all industry sectors — Part 1: Framework and related documents to the process for competence assessment of ICT professionals*.

Therefore, this document provides guidance to e-CF users by supporting the use of indicators, metrics and criteria that support the assessment of an individual's e- competence at a specific level of proficiency as specified in EN 16234-1 (e-CF).

This document provides:

a) Guidelines to derive indicators and metrics from the reference documents.

   Most information, related to e-Competences, is described in EN 16234-1 (e-CF) its user guide and other associated documents such as CWA 16458-1 (ICT Profiles). Complementary to this information, e-CF users may seek the additional guidance and methodology offered in this document to identify indicators and metrics in support of assessment.

   The EN 16234-1 (e-CF) and the CWA 16458-1 (ICT Profiles) are references provided for all stakeholders and users in Europe and worldwide. They are flexible structures and are adaptable to meet requirements across a broad and in-depth ICT Professional environment. Therefore, it is impossible to create a complete and exhaustive catalogue of all possible indicators and metrics that are context specific across for all possible roles and competences. In support of this application flexibility, this document offers a range of examples which may be applied or used as inspiration for specific or unique requirements.

b) Guidelines to generate a customized set of indicators, metrics, criteria and methods to collect pieces of evidence.

   Once a satisfactory catalogue of indicators or metrics have been defined to start the assessment, the next task is to customize them for a specific use case. This customization usually entails the selection of methods for the collection of supporting evidence and indicators as well as the criteria used to determine the ICT professional's proficiency level for each situation. Depending on the use case (see a list of typical use cases in 5.3) the assessor or organization (e.g. an organization planning to recruit or address workforce development) may select and adapt:

   — the method used to collect information;

   — the criteria used to evaluate if an individual is proficient at a specific e-CF competence level.

   This adaptation process is assisted by the guidelines in this document. Furthermore, the document guides the process by highlighting the weaknesses and strengths of each option by providing examples of adaptation to specific situations.

c) Awareness on the typical assessment process to evaluate the level of a candidate's e-Competences.

   When all of the elements for an assessment are ready (indicators, metrics, criteria, methods for collecting pieces of evidence, etc.), the process of assessing e-Competences can start. The process may involve collection of information in the form of documents, samples, etc. or the collection of information through direct interaction with the ICT professional or other informed persons using interviews, forms, tests, exercises, observation, etc. An illustrative catalogue of methods

for collecting information is described in Annex B. This document offers examples of pieces of evidence and the contribution they may provide. The assessor is offered guidelines to manage the assessment process and to generate a set of assessment results and this document shows examples of results to illustrate the process.

Finally, it is important to underline that the aim of deploying the e-CF as a competence assessment tool is to provide objectivity (i.e. unbiased, based on facts and not influenced by personal feelings, interpretations, or prejudice). This is naturally limited by the experience and capability of the individual assessor and this is the reasoning has inspired the development of present document designed to offer pragmatic guidance and inspiration.

This document is structured by six Clauses.

Clauses 1, 2 and 3 describe the scope, the normative references and the relevant terms and definitions used.

Clause 4 analyses the content of EN 16234-1 (e-CF) from the perspective of the identification of elements useful in assessing e-competences and proficiency levels.

Clause 5 illustrates the importance of the context of an assessment and describes the factors that affect the methods, indicators and metrics to be used.

Clause 6 contains a description of a typical process for the assessment and a methodology to identify and consistently map the indicators.

1 Scope

The aim of this document is to enable unbiased and consistent use of indicators and measurements to enable verification of an individual's competence to the EN 16234-1 (e-CF) to facilitate its consistent application.

The document addresses the assessment of competence as articulated within the EN 16234-1 (e-CF), regardless of where, when and how the competence was attained or developed.

The aim is to provide guidance on the use of indicators and measurements to support the assessment and/or verification of an IT professional's competence.

Guidance is confined to possible indicators and how they can be applied to achieve consistency and transparency for the verification of an e-CF competence at a specific level (1-5).

This document guides readers through objective assessment of e-CF competence to avoid possible influence from personal feelings, interpretations or prejudice.

Finally, this document aims to offer, at least, examples of indicators and metrics for each of the e-competences listed in EN 16234-1 (e-CF).

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 (all parts), *e-Competence Framework (e-CF) - A common European Framework for ICT Professionals in all industry sectors*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 16234 (all parts) and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at https://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp

3.1
indicator
observable aspect or characteristic of an e-Competence that indicates its presence in an individual at a particular proficiency level

NOTE The observation or measurement of an indicator results in one or several qualitative or quantitative values.

3.2
metric
total or partial value of an indicator where the measured entity is a person (ICT professional), the attribute is mainly an e-Competence at a competence level and is determined according to well-defined rules

NOTE A metric could be qualitative or quantitative, objective or subjective, and direct or indirect. It may express value in a range of ways from very basic scales like a classification (e.g. classify an entity according to a mere type) to sophisticated quantitative metrics (like number of years).