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ICT accessibility competences — Guidelines for a more inclusive ICT development

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ICT accessibility competences - Guidelines for a more inclusive ICT development

IKT-Zugänglichkeitskompetenzen - Leitlinien für eine umfassendere IKT-Entwicklung

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European foreword

This document (CEN/TR 17884:2022) 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

Information and Communication Technologies (ICT) allows the removal of many of the remaining barriers faced by persons with disabilities. With ICT increasingly integrated into every aspect of the modern world, these ubiquitous technologies have become a positive force of transformation and a crucial element of any personal development/empowerment and institutional framework for inclusive development. ICT is already providing access to key public services, with widespread implications for social progress and economic growth aimed at eradicating poverty and promoting inclusive societies and sustainable development. Accessible ICT developments have the potential to provide persons with disabilities unprecedented levels of access to education, skills training and employment, as well as the opportunity to participate in the economic, cultural and social life of their communities.

Currently accessibility is not always considered in the design process and this leads to an exclusion of persons with disabilities from access to ICT technologies which generates a digital discrimination.

Accessibility has become necessary due to the rapid growth of online information and interactive services provided by web and mobile applications. Even if people with disabilities want to be independent and carry out their activities independently, unfortunately, most Information and Communication Technologies (ICT) applications and systems are not fully accessible today.

Nowadays everything interacts with technologies and for this reason technologies and digital communication should be available for all.

The inclusion of persons with disabilities in all aspects of society is one of the remaining challenges of the global development agenda. The widespread adoption of the United Nations Convention on the Rights of the Persons with Disabilities (UNCRPD) in 2006 heralded a major step forward in advancing the inclusion of persons with disabilities, turning their socio-economic exclusion into a human rights issue. The UNCRPD places significant obligations on all state officials responsible for equal access to education and employment opportunities.

In April 2019, the European Union published the DIRECTIVE (EU) 2019/882 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the accessibility requirements for products and services.

The “European Accessibility Act” (EAA) will become national law in the member states by 2022.

The EEA will have implications for different actors in the ICT field:

— Service providers offering ICT (especially Web) services for their customers;

— Device manufacturers;

— Software and ICT hardware manufacturers;

— Procurers and procurement of ICT products.

Standardization bodies as an organization offering services to its members and the public may be affected by the EAA.

Europe is currently developing and defining the requirements for accessible devices and services. EN 301549 (published under Mandate M 376) specifies functional accessibility requirements applicable to ICT products and services, together with a description of the test procedures and evaluation methodology for each accessibility requirement in a form that is suitable for use in procurement. The minimum requirements of the European Web Accessibility Directive (Directive 2016/2102) are explicitly detailed in Annex A of EN 301549:2021.

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In this scenario, there is a need to set the basic ground of ICT competences related to Accessibility. EN 16234-1:2019, *e-Competence Framework (e-CF) - A common European Framework for ICT Professionals in all sectors - Part 1: Framework* refers to accessibility competences, but different actors in the ICT market (e.g. education institutes, professional certifications) still need to be supported with specific requirement knowledge, skills, responsibility and autonomy related to different ICT professional profiles.

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1 Scope

This document specifies the knowledges, skills, responsibility and autonomy of ICT experts involved in the development of products and services (including digital contents) to increase the accessibility knowledge in different fields, for different competences and responsibilities.

This document:

— considers accessibility as "base line" (accessibility has been also recognized in EN 16234-1:2019 as a Transversal aspect);

— recognizes accessibility as the requirement in procurement for both public and private sectors;

— provides an overview of useful CEN, ISO and ESCO publications in the field;

— defines a set of knowledges, skills, responsibility and autonomy for different ICT areas to improve accessibility in the current professional roles and job positions (hardware, software, web);

— refers to ESCO ICT profiles, that can be adapted for the three main areas: hardware, software, web;

— refers to W3C activities for define knowledges, skills, responsibility and autonomy in web accessibility role profiles;

— supports activities for educational providers and exam/certification institutes.

This document should help, for example, to:

— avoid issues on the definition of third level profiles derived from European ICT Professional Role Profiles without missing accessibility requirements;

— enable easy application of accessibility related EU-level standards and references from CEN, ISO and ESCO;

— allow the market to adapt their current job profiles and/or training courses adding the accessibility skills.

This document supports the definition of knowledge and skills for each ICT professional role without creating new ICT role profiles which includes accessibility competences.

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*

EN 301549:2021, *Accessibility requirements for ICT products and services*

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 Guides*

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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*

CWA 16266:2011, *Curriculum for training ICT Professionals in Universal Design*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 16234-1:2019, EN 301549:2021, CWA 16458:2018 series and CWA 16266:2011 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

4 ICT competences and accessibility

4.1 State of art

e-Competence in accessibility field is a core topic that can be found in different frameworks and documents produced by standardization bodies and third parties.

EN 16234-1:2019, ESCO, CWA 16458-1:2018 and CWA 16266:2011 described in the following clauses, set the state of art regarding accessibility aspects without addressing the specific competences required by ICT professionals that have basic and/or advanced accessibility principles knowledge.

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

EN 16234-1:2019 provides a reference of 41 competences as required and applied at the Information and Communication Technology (ICT) professional work environment, using a common language for competences, skills and proficiency levels that can be understood across Europe.

EN 16234-1:2019 can be used by:

— ICT service, user and supply organizations,

— ICT professionals, managers and human resource (HR) departments,

— vocational education institutions and training bodies including higher education,

— social partners (trade unions and employer associations), professional associations, accreditation, validation and assessment bodies,

— market analysts and policy makers, and other organizations and stakeholders in public and private sectors.

It recognizes the relevance of several cross-cutting aspects that are important and provide additional generic ICT related descriptors for successful application of e-CF competences in a workplace context. They are complementary to competence descriptions and provide additional descriptors that vary in their relevance to each competence ranging from the need for awareness to proactive engagement.

One of transversal aspects identified for context-specific and flexible application within this document is T1, Accessibility, described as follow:

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— T1 Accessibility

Accessibility is applicable to the design of products, devices, services or environments to ensure that they are usable by all, irrespective of their personal capacities. It is relevant to the extent to which products, systems, services, environments and facilities can be used by people from a population with the widest range of characteristics and capabilities to achieve a specified goal. For example, web accessibility allows people with visual impairment to gain access to online content such as webpages, electronic documents, and multimedia. Accessibility is also relevant, for example, when working in adverse conditions (such as noisy or badly illuminated environments) or stressful situations.

This transversal aspect affects many e-competences. For example, "A.6. Application Design", dimension 4, it quotes "K5 principles, standards, methods and frameworks related to ergonomics and accessibility".

4.3 European ICT Professional Role Profiles, CWA 16458:2018 series

4.3.1 Develop and manage ICT Professional needs

The CWA 16458:2018 series increases transparency and convergence of the European ICT Skills landscape and mature the ICT Profession overall. In addition to focusing upon individual ICT professional competence and performance, the overall aim is to influence the ability of organizations to leverage ICT for better performance.

CWA 16458:2018 series complements EN 16234-1:2019 and contributes to a shared European reference language for developing, planning and managing ICT Professionals needs in a long-term perspective.

Benefitting from collaboration and exchange on multiple levels across Europe, the European ICT Professional Role Profiles and the underpinning concepts provide a means of summarizing and organizing the insights of experts and stakeholders into a reference tool.

4.3.2 How to make best use of the Role Profiles

There are many ways to apply the 30 typical ICT Profiles as described in the CWA 16458:2018 series.

CWA 16548-2:2018 "User Guide" and CWA 16458-4:2018 "Case studies" provide pragmatic explanations and user experiences on how to apply CWA 16458-1:2018 from multiple stakeholder perspectives and for a broad range of application purposes, such as, for example:

— HR planning,

— recruitment,

— digital transformation process support,

— curriculum design and qualifications promotion, including transfer of the concept to other sectors.

4.3.3 Generations for role profiles

The profiles may be used for reference or alternatively as a base to develop further profile generations. Structured in seven main ICT Profile families, the 30 profiles reflect the top of a European ICT Profile Family Tree (see Figure 1). The concept is broadly analogous to a human family where characteristics from one generation pass from one generation to the next but are also combined with new characteristics.

In a similar way it is envisaged that the core components of the 30 'generation 2' profiles may be passed down and adapted as needed to user generated profiles with higher granularity.

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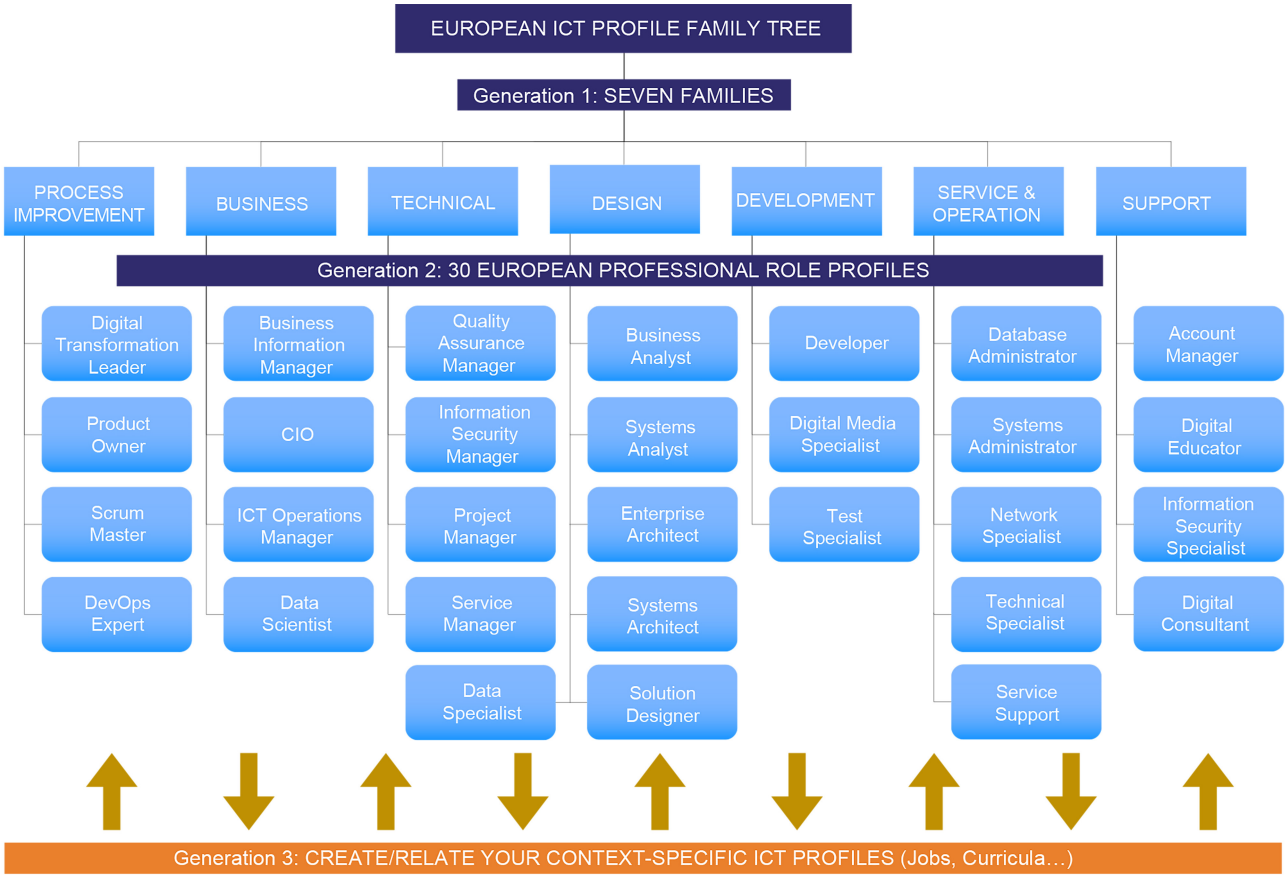

Figure 1 — 30 European ICT Professional Role Profiles (generation 2) in seven families (generation 1) at the top of the European ICT Profile Family Tree (from CWA 16458-1:2018)

It is possible to form new profiles with greater granularity (generation 3) associated and derived from the 30 profiles of generation 2. An example for a full third generation ICT professional role profile, regarding "Web Accessibility Expert" role, is available in Annex A, A.2.

4.3.4 The European ICT Professional Role Profile template

A standard template facilitates users to compare different profiles and also provide a fast start to develop new role profiles or contribute to design new job descriptions.

Profile elements are described in CWA 16458-2:2018, Table 3.

The template was designed to respond to assist users in communicating the purpose and potential application of the profiles within their organization.

The main principle applied to constructing the profiles was to focus on the most essential characteristics that accurately represent the profile and effectively differentiate one profile from another.

The European ICT Professional Role Profiles have therefore been created in a generic and simple way, in order to enable reference and use by all types of ICT organisations, whatever their size and their structure. In consequence, the ICT Profiles provide high level outlines of typical ICT Professional Roles; easy to apply to the next context specific application level, for instance job descriptions.

The European ICT Profiles provide a consistent structure and offer a base to facilitate the creation of further and more detailed Profiles.

In this context the Italian document UNI 11621-3:2017 "Unregulated professional activities – ICT professional profiles - Part 3: Web profession professional profiles" defines 12 web related professional

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