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Osnovni nabor znanj za poklic IKT (ICT BoK) - 2. del: Uporabniški priročnik in metodologija

Foundational Body of Knowledge for the ICT Profession (ICT BoK) - Part 2: User Guide and Methodology

Europäischer Grundwissensbestand für den IKT-Beruf - Teil 2: Methodik und Benutzerhandbuch

Socle de connaissances pour les professionnels des TIC - Partie 2 : Guide de l'utilisateur et méthodologie

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CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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Contents

Page

European foreword

This document (CEN/TR 17748-2:2022) has been prepared by the Technical Committee CEN/TC 428 "ICT professionalism and digital competences", the secretariat of which is held by UNI.

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This document is part of a series that consists of two parts:

— EN 17748-1,[1] *Foundational Body of Knowledge for the ICT Profession (ICT BoK) - Part 1: Body of Knowledge*;

— CEN/TR 17748-2, *Foundational Body of Knowledge for the ICT Profession (ICT BoK) - Part 2: User Guide and Methodology.*

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

[1] Under preparation. Stage at the time of publication: prEN 17748-1.

Introduction

EN 17748-1 Foundational Body of Knowledge for the ICT Profession (ICT BoK) was established as a tool to support mutual understanding and provide transparency of language through the articulation of **knowledge** required and deployed by Information and Communication Technology (ICT) professionals.

Similar to and complementary to the EN 16234-1:2019 (e-CF), that provides a common European language for ICT professional competence, the European ICT Foundational Body of Knowledge (ICT BoK) makes a substantial contribution to increasing transparency and maturity of the ICT Profession across Europe.

EN 17748-1 (ICT BoK) identifies knowledge and sub divides each knowledge unit into three elements:

a) **common knowledge** applicable to all ICT professionals regardless of speciality;

b) **base knowledge** that provides a foundation and underpins each of a range of different disciplines/specialisms;

c) **specialized knowledge** normally, only applicable to in-depth, very specific expert knowledge.

For c) specialist knowledge, where applicable, sources of further specialist knowledge are signposted as examples to relevant in-depth complementary sources.

This document offers direction on how to adopt the EN 17748-1 (ICT BoK) approach from multiple user perspectives. Clause 4 provides the executive overview of EN 17748-1 (ICT BoK) scope, target groups, underlying principles, concepts and structure, including entry points for using the ICT BoK (4.5).

Clause 5 provides practical guidance for multiple applications of the standard by target groups and from different stakeholder perspectives. Learning Programme Provider guidance for applying the BoK is offered in 5.2, whilst users from an ICT operational environment are also provided with application guidance including real-world examples in 5.3.

Clause 6 explains the methodology adopted to develop EN 17748-1 (ICT BoK).

To support users of EN 17748-1 (ICT BoK), the following narrative provides an overview of the design philosophy and principles adopted during the standard's construction. In addition, these underpinning principles will provide guidance for future standard updates.

The EN 17748-1 (ICT BoK) Guiding Principles:

EN 17748-1 (ICT BoK) is an enabler; it is designed to be a tool to empower users, not to restrict them. The document provides a structure and content for application by many types of users from organizations in the private and public sector, educational institutions, learning program and certification providers of all types including Vocational and Educational Training (VET), Higher education (HE) and Continuous Professional Development (CPD), and ICT organizations from demand and supply side, social partners, professional associations and individuals. In this broad application context, the document is designed to support common understanding, it is not intended not to mandate the use of each and every word used in the document.

EN 17748-1 (ICT BoK) is an integrated component of the four building blocks of ICT professionalism for Europe and offers the identification of essential knowledge elements common to the ICT profession.

EN 17748-1 (ICT BoK) is neutral and intrinsically linked to the EN 16234-1 (e-CF). It does not follow the specific interests of a few major influencers; it has been developed and will be maintained through the CEN standards process.

EN 17748-1 (ICT BoK) expresses common, base and specialized knowledge of relevance to the ICT profession in the following context; knowledge, alongside skill and attitude, is an integrated component of competence as defined in the EN 16234-1 (e-CF).

Knowledge units are the core structure of EN 17748-1 (ICT BoK); they are labelled to enable easy access from viewpoints relevant to the user. Flexibility of application is provided by tagging from four perspectives; the EN 16234-1 (e-CF) areas and competences, CWA 16458 (ICT Professional Role Profiles), and from traditional knowledge domains.

Knowledge units are articulated at a general level of granularity and each is further detailed by the provision of knowledge elements presented in a common template. Knowledge elements are accompanied by examples of the application of each.

1 Scope

This document supports understanding, adoption and use of EN 17748-1 (ICT BoK) that provides a reference of 42 knowledge units as required and applied in the Information and Communication Technology (ICT) professional work environment that can be understood across Europe.

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

— educational institutions, learning programmes and certification providers of all types including:

  — Vocational and Educational Training (VET);

  — Higher education (HE);

  — Continuous Professional Development (CPD);

— ICT service, user and supply organizations;

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

— 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 across Europe

to adopt, apply and use the Foundational Body of Knowledge in their environment as one fundamental building block of ICT Professionalism for Europe.

See Figure 1 for illustration of document scope and target groups.

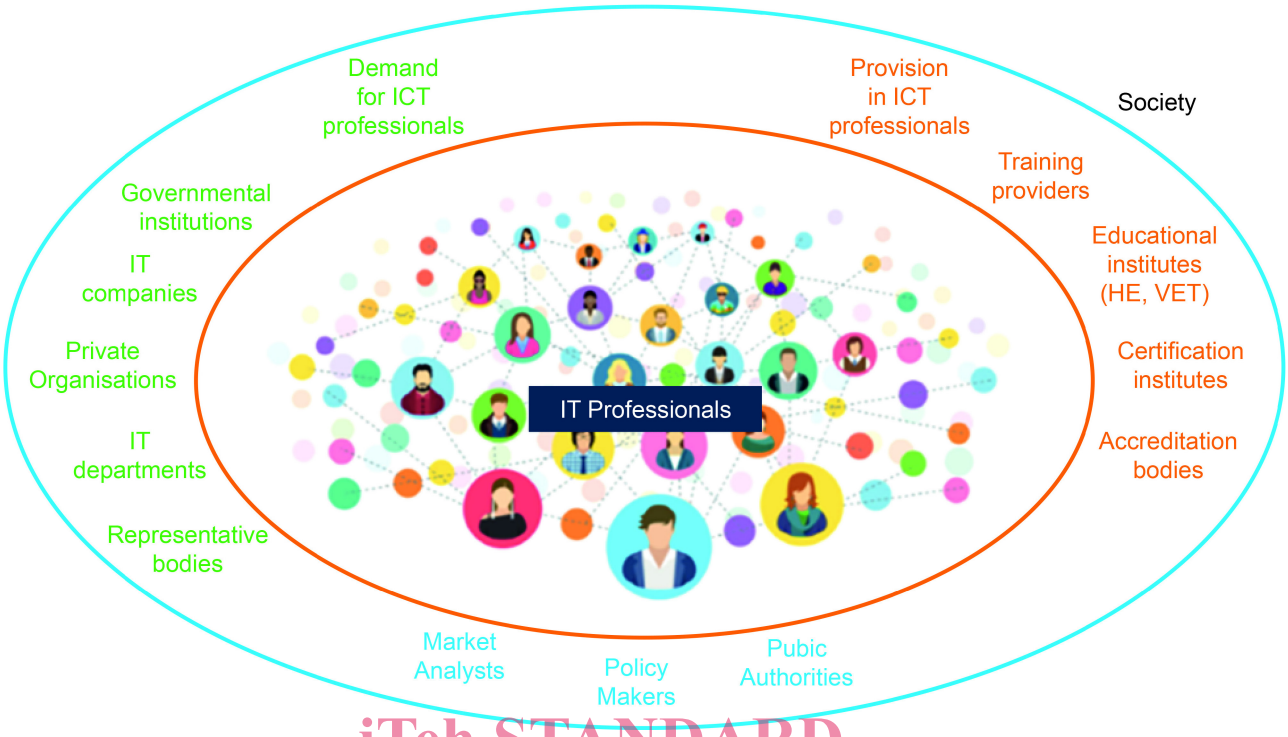

Figure 1 — ICT BoK EN and TR target groups: All stakeholders involved in the ICT Professionalism eco-system

A close connection with EN 16234-1 (e-CF) and CWA 16458 (ICT Profiles) are a design element of EN 17748-1 (ICT BoK). This application support document details how to approach the complementary application of each structure by varied stakeholders of the European ICT Professionalism eco-system. It supports the use of a shared neutral reference for ICT professional development. This interconnected application is illustrated in Figure 2. Nevertheless, the ICT BoK can also be used as a stand-alone tool.

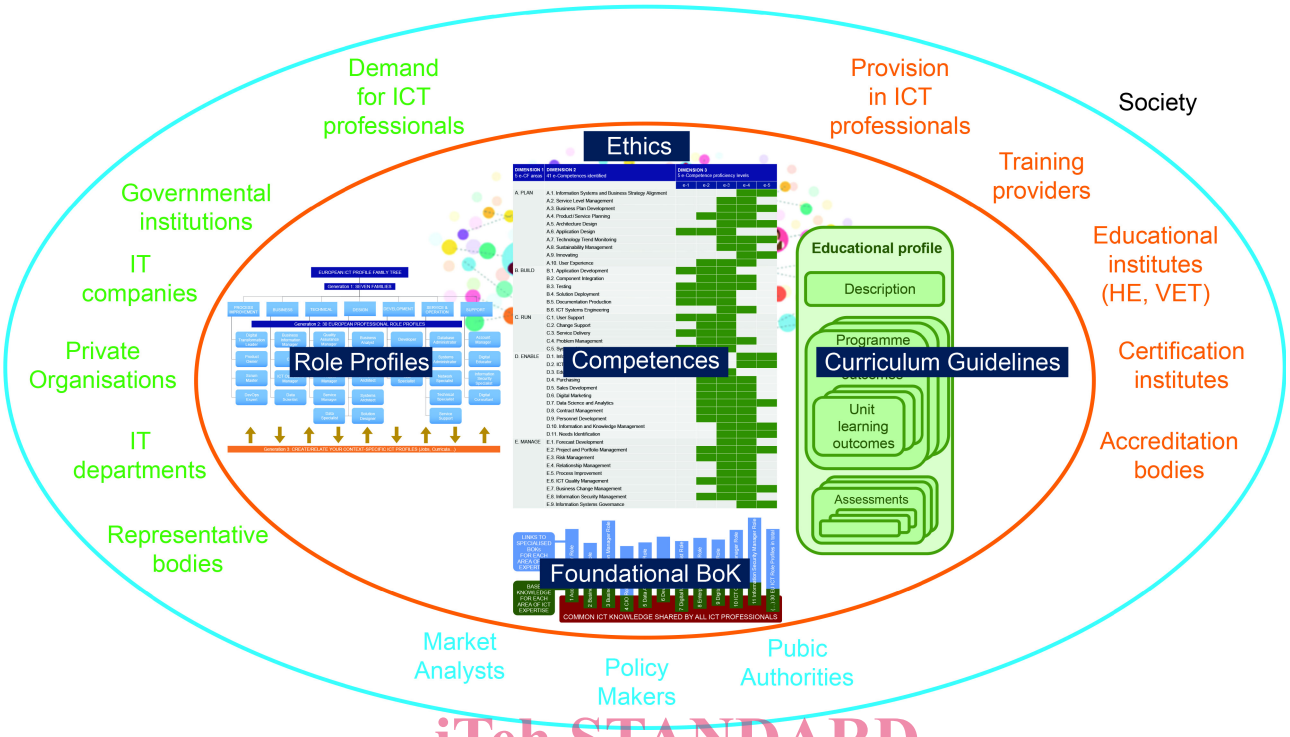

Figure 2 — ICT BoK an integrated component of a shared and neutral European reference language for ICT professional development

This document provides:

— An ICT BoK EXECUTIVE OVERVIEW of the scope, target groups, underlying principles and main characteristics is provided in Clause 4.

— The ICT BoK USER GUIDE in Clause 5: guidance on how to apply the Foundational Body of Knowledge for the ICT Profession from multiple ICT stakeholder perspectives. It addresses the need to further enhance the flexibility and applicability of the competences described within the e-CF as it offers further delineation and articulation of the knowledge components of competences. EN 17748-1 (ICT BoK) is intended for guidance and is designed to provide a common shared reference tool which can be implemented, adapted and used in accordance with ICT stakeholder requirements. The following implementation guidance is structured by target groups and complemented by two ICT BoK application cases. During the course of the EN 17748-1 (ICT BoK) development, real world experience was a necessary contribution to ensuring future application of the structure. Dissemination of the ICT BoK development progress enabled testing of the structure as it developed. One outcome of this open approach was that some examples of practical application, despite that at the time, not published, could be tested and made available as two application cases.

— The ICT BoK METHODOLOGY DOCUMENTATION in Clause 6: here the ICT BoK creation process is explained as well as important aspects of its development. This section supports the methodology grounding for the development, implementation and future maintenance of the ICT BoK.

— A series of ANNEXES, allowing user-targeted ICT BoK navigation according to particular viewpoints.

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 17748-1,[2] *Foundational Body of Knowledge for the ICT Profession (ICT BoK) - Part 1: Body of Knowledge*

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

CWA 16458:2018 (all parts), *European ICT Professional Role Profiles*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 17748-1 (ICT BoK) apply.

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

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

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

4 Executive overview

4.1 ICT BoK scope and target groups

The ICT BoK provides a reference of 42 knowledge units as required and applied in the Information and Communication Technology (ICT) professional work environment, using a shared language for common, base and specialized knowledge that can be understood across Europe.

EN 17748-1 (ICT BoK) is created for application by:

— Educational institutions, learning program and certification providers of all types including:

  — Vocational and Educational Training (VET);

  — Higher education (HE);

  — Continuous Professional Development (CPD);

— ICT service, user and supply organizations;

— ICT professionals;

— ICT managers and human resource (HR) departments;

— Social partners (trade unions and employer associations);

— Professional associations, accreditation, validation and assessment bodies;

— Market analysts and policy makers.

See Clause 1 and 4.3 for further illustration.

[2] Under preparation. Stage at the time of publication: prEN 17748-1.

4.2 ICT BoK a fundamental building block of ICT Professionalism for Europe

The Foundational Body of Knowledge for the ICT Profession is an integrated component of the four ICT professionalism building blocks for Europe. Figure 3 positions EN 17748-1 (ICT BoK) with regard to the foundations required for a European ICT Profession. It illustrates the connectivity between the four key elements; e-Competences from the EN 16234-1 (e-CF), professional Ethics and EN 17748-1 (ICT BoK), and education, training, assessment and recognition processes.

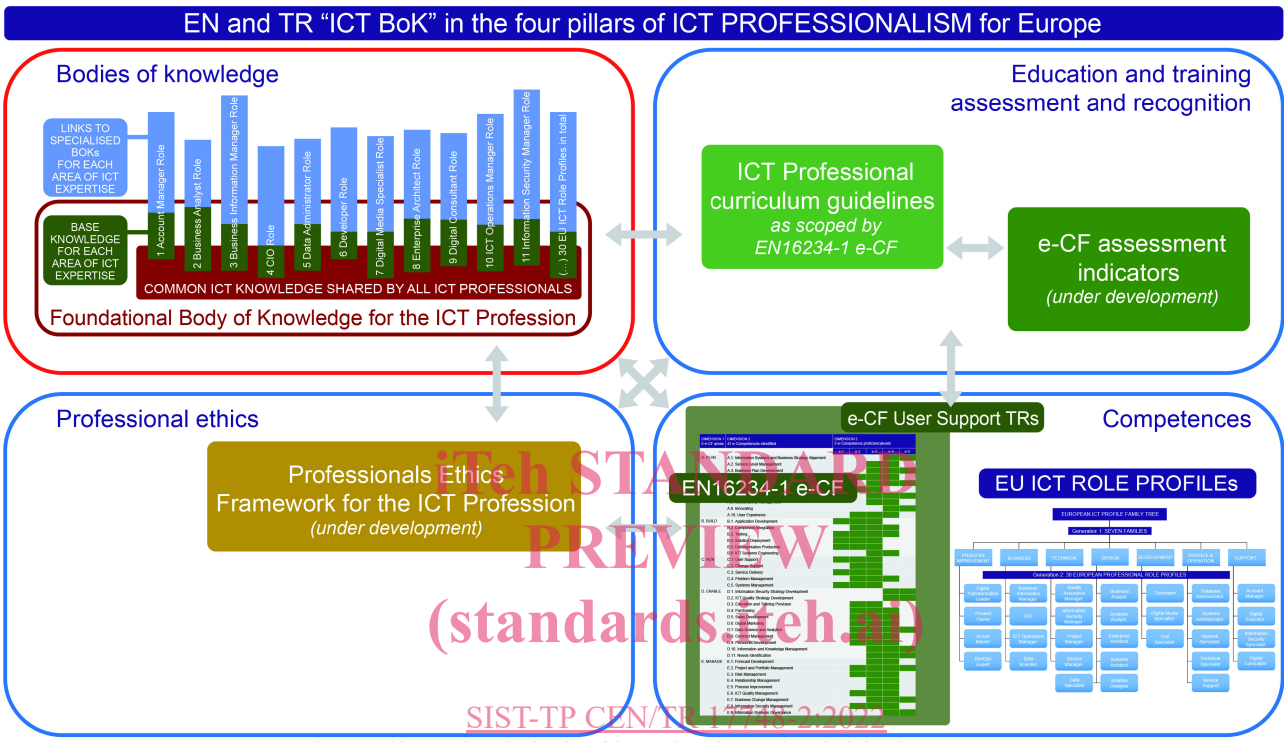

Figure 3 — ICT BoK an essential building block of ICT Professionalism for Europe

4.3 ICT BoK structure, content and application opportunities

4.3.1 ICT BoK structure and content

The European Foundational Body of Knowledge for the ICT Profession has a flat, non-hierarchical structure. The EN 17748-1 (ICT BoK) contains 42 knowledge units which can be accessed from various navigational perspectives.

There is no hierarchy of views and each knowledge unit can be accessed through the perspective most meaningful and valuable to the ICT BoK user.

Each knowledge unit is 'tagged' with different labels. These labels provide four different entry points, through which the BoK can be accessed:

— ICT domains (7 in total) – see 4.5.1 and Annex A;

— EN 16234-1 "e-CF" competence areas/ICT processes (5 in total) – see 4.5.2 and Annex B;

— EN 16234-1 (e-CF) competences (41 in total) – see 4.5.2 and Annex C;

— European ICT Professional Role Profiles (30 in total) – see 4.5.3 and Annex D.

The four access points are illustrated in Figure 4. In support of EN 17748-1 (ICT BoK) user orientated navigation, these viewpoints are also incorporated within the knowledge unit template that follows in Table 1.

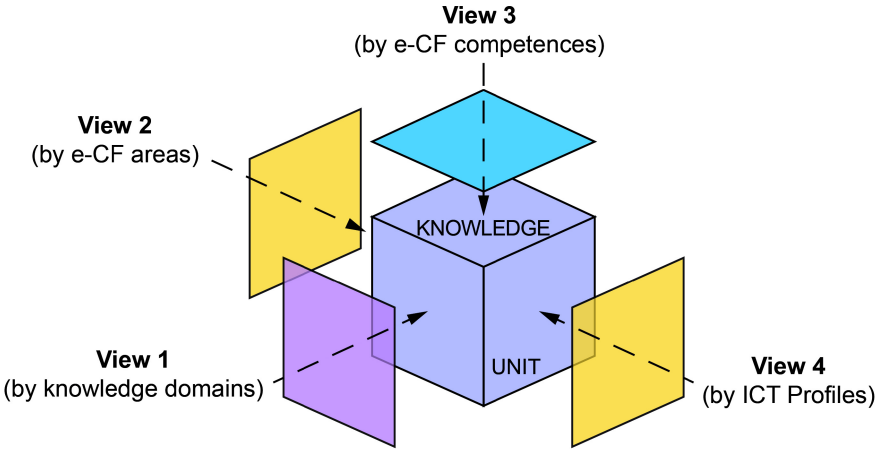

Figure 4 — The Foundational Body of Knowledge index: access to each knowledge unit by four different entry points

Each Knowledge unit is formed using an identical structure, the main components of which are described as follows:

a) **common knowledge** shared by all ICT professionals regardless of speciality;

b) **base knowledge** that provides a foundation and underpins each of a range of different disciplines/specialisms;

c) **specialized knowledge** normally, only applicable to in-depth, very specific expert knowledge. Where applicable, sources of further specialist knowledge are signposted to relevant in-depth complementary sources.

Figure 5 illustrates the EN 17748-1 (ICT BoK) design principles of common, base and specialized knowledge assigned to areas of ICT expertise as represented by the ICT Professional Role Profiles.

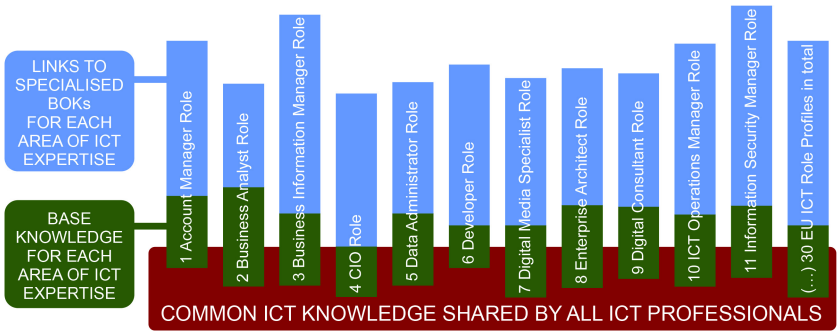

Figure 5 — EU ICT BoK design principles of common, base and specialized knowledge and areas of ICT expertise as represented by the ICT Professional Role Profiles

By categorizing knowledge in this way, EN 17748-1 (ICT BoK) users are able to identify content appropriate to their needs.

Furthermore, the natural progression of the depth and intensity of knowledge, from common through base to specialized, provides a potential learning pathway to support curriculum development.

Each knowledge unit is described in a uniform way, using a multi-stakeholder agreed knowledge unit template as shown in Table 1.

Table 1 — The multi-stakeholder agreed ICT BoK knowledge unit template

<table>
<tr><th>UNIT NAME</th><th colspan="4">CLEAR UNIQUE NAME TO IDENTIFY THE KNOWLEDGE UNIT + ACRONYM</th></tr>
<tr><td>Unit description</td><td colspan="4">A general description of the knowledge unit formulated in terms that can stand the test of time as best as possible (so no reference to specific terms like specific trends or specific programming languages). Also formulated in a way that the level of detail is still open (to be defined in the level descriptions).</td></tr>
<tr><td rowspan="2">Common Knowledge
shall apply</td><td colspan="4">The knowledge in general terms that every ICT professional should have about this knowledge unit. Provide the essential elements every ICT professional should know and an indication of the level of detail of this knowledge.</td></tr>
<tr><td>Example</td><td colspan="3">One or more short examples of what somebody should know on this level. These are more specific (e.g. specific trends or programming languages).
To each knowledge example a unique identifier is assigned [ACC.C.a] – [UID.C.f]</td></tr>
<tr><td>Tags for views
may apply</td><td>Knowledge Domain
A unit relates to one knowledge domain:
1. Transversal knowledge
2. Behavioural knowledge
3.Architecture
4.Networks
5.Software
6.Data
7.Business</td><td>EN 16234-1 e-CF area(s)
A unit can be related to one or more of the five e-competence areas (depending on the competences listed):
A.PLAN
B.BUILD
C.RUN
D.ENABLE
E.MANAGE</td><td>EN 16234-1 e-CF Competence(s)
The competences this unit is essential to (on base and specialized level). The competence cannot be achieved without the knowledge from this Knowledge Unit.</td><td>ICT Professional Role Profile(s) CWA 16458-1
The ICT role profiles this unit is relevant to on base level (and specialized level) – (1 to 4 or 5 profiles max.).
The job cannot be performed without the knowledge from this Knowledge Unit.</td></tr>
<tr><td rowspan="2">Base Knowledge
may apply</td><td colspan="4">The knowledge in general terms that is base knowledge for the aforementioned ICT role profiles. Provide the essential elements of the base knowledge for the ICT role profiles in the tags of this knowledge unit and an indication of the level of detail of this knowledge.</td></tr>
<tr><td>Example</td><td colspan="3">One or more short examples of what somebody should know on this level. These are more specific (e.g. specific trends or programming languages).
To each knowledge example a unique identifying acronym is assigned [ACC.C.a] – [UID.B.f].</td></tr>
<tr><td>Specialized Knowledge</td><td colspan="4">Specialized knowledge is not a part of this BoK, but to show the connection to specialized knowledge it can be mentioned here.</td></tr>
<tr><td>References
may apply</td><td colspan="4">References are provided to specialized sources to facilitate further reading as necessary. These are indicative rather than exhaustive.</td></tr>
</table>

4.3.2 ICT BoK application opportunities across all stakeholder perspectives

There are boundless ways in which a Body of Knowledge may applied by multiple stakeholders and across a variety of purposes. EN 17748-1 (ICT BoK) complements the knowledge requirements expressed in EN 16234-1 (e-CF), the European ICT professional competence standard, and therefore addresses the same wide-ranging multi-stakeholder community. Education providers will, in particular, benefit from the provision of the detailed knowledge content in the EN 17748-1 (ICT BoK), alongside the variety of stakeholders who currently benefit from the application of EN 16234-1 (e-CF).

As previously stated, knowledge in the ICT BoK encompasses the knowledge examples in the EN 16234-1 (e-CF) and embeds and complements these within a broader structure. In practice, the EN 17748-1 (ICT BoK) can be used either with e-CF competences and/or ICT Professional Role Profiles or as a stand-alone instrument.

Furthermore, in addition to the integrated applications illustrated above, the EN 17748-1 (ICT BoK) may be used to complement any ICT related structure or framework. See 5.1 for further detail.

Examples of potential broad applications either related to the e-CF ecosystem or otherwise are listed below:

— Learning programme and curricula design and redesign;

— Assessment/Evaluation;

— Hiring personnel;

— Upskilling, reskilling, CPD- lifelong learning;

— Certification;

— Exam design and redesign;

— Accreditation;

— Communication and promotion;

— Support of ICT organizational change;

— Continuous ICT organizational improvement;

— Workforce transformation;

— Talent Management;

— Workforce development motivation;

— Capacity Management;

— Managing complex technologies in the ICT organization;

— Learning and Development in the ICT organization.

Clause 5 of this document offers further guidance and detailed coverage of how the EN 17748-1 (ICT BoK) may and has been applied.