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e-CF

The European e-Competence Framework

A Pocket Guide



E-CF
THE EUROPEAN E-COMPETENCE FRAMEWORK
A POCKET GUIDE

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e-CF

The European e-Competence Framework

A P O C K E T G U I D E



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- www.ecompetences.eu

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- Part 1: A common European framework for ICT Professionals in all industry sectors
 - Part 2: User guidelines for the application of the European e-Competence Framework 2.0
 - Part 3: Building the e-CF – a combination of sound methodology and expert contribution
- and
- “European e-Competence Framework 2.0 – Executive overview”

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Foreword

Organizations are changing rapidly particularly because of the role technology plays in how they are run. Over the last few years there has been a shift from ICT as a support function in organizations towards ICT as an integral part of the product and service mix. Trends such as Mobile, Cyber Security, Big Data and Cloud services are driving substantial changes in the way organizations need to operate. ICT has become critical to unlocking additional value in both public service and private enterprise.

This changing world requires ICT-professionals fit for the job. Not only should they have the right competences, but also be able to prove their competences. EXIN believes that the e-Competence Framework (e-CF) can provide a very valuable reference for validating ICT-professionals. Initiated by the European Commission, e-CF is an internationally recognized framework of 36 ICT competences, now ready to be used by both the business and professionals as a common language for developing and validating competence.

As an independent accreditation and certification body, EXIN supports the e-CF. Based on the e-CF, EXIN has developed the e-Competence Assessment. This Assessment offers ICT-professionals the possibility to validate their skills. This is not only of great value for them, but also for CIOs, ICT, HR and business managers who want to deploy them. The e-Competence Assessment includes a knowledge test, a soft skill assessment and expert reviews. The results of the assessment will be an objective recognition of the competencies of the ICT-professional. For more information please visit: www.ecfassessment.org

This booklet explores the e-Competence Framework. I sincerely hope that it will be helpful for you in making steps in adopting the e-CF in your business as well.

Bernd Taselaar
CEO EXIN Holding BV

Introduction

About the European e-Competence Framework

The European e-Competence Framework (**e-CF**) is a reference framework of ICT competences that can be used and understood by ICT user and supply companies, ICT practitioners, managers and HR departments, the public sector, educational and social partners across Europe.

The framework has been developed by a large number of European ICT and HR experts in the context of the CEN Workshop on ICT Skills. It aims to create long-term human resources (HR) and competence development solutions for the European Information and Communication Technology (ICT) community.

The European e-CF version 1.0 was published in 2008. The European e-CF 2.0 (approved 2010) and the user guidelines presented in this Pocket Guide build upon the e-CF version 1.0, and take into account the first e-CF application experience and feedback from ICT stakeholders across Europe.

European e-Competence Framework focus and purposes

The e-Competence Framework purpose is to provide general and comprehensive e-Competences that can then be adapted and customised into different business contexts such as e-commerce, e-health, e-banking, etc.

The European e-Competence Framework 2.0 provides a basic, clear and sound orientation for companies needing to take decisions about recruitment, career paths, training, assessment, etc. The e-CF is also useful for promoting clearer understanding of company competence needs.

Figure 0.1 summarises the e-CF and its four dimensions in relation to individual employees, company needs and training plans.

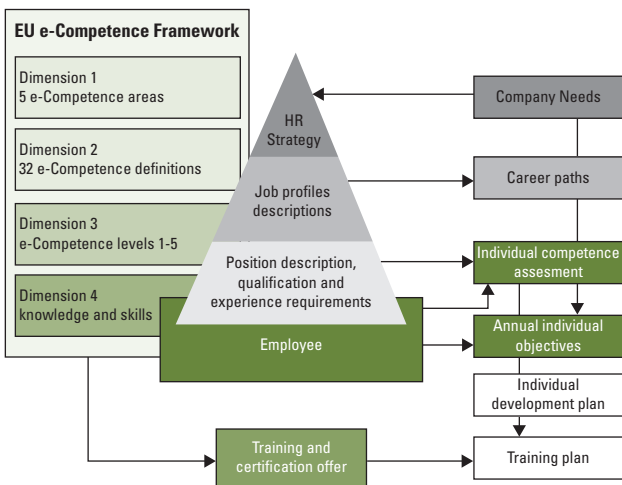


Figure 0.1 How the European e-CF is used within ICT organisations

The framework provides an international tool for:

- **ICT practitioners and managers**, with clear guidelines for their competence development
- **HR managers**, enabling the anticipation and planning of competence requirements
- **Education and training**, enabling effective planning and design of ICT curricula
- **Market researchers and policy makers**, providing a clear and Europe-wide agreed reference for evaluating and anticipating ICT skills and competence needs in a long-term perspective.

The European e-Competence Framework focuses on competences needed:

- to develop, operate and manage ICT projects and processes
- to exploit and use ICT
- to make decisions, develop strategies
- to foresee new scenarios.

Three key outcomes of the e-CF methodological approach are highlighted below.

- The e-CF although pragmatic in application is designed and based upon current ‘state of the art’ business management thinking.
- e-competences in Dimension 1 and 2 are presented from the organisational perspective as opposed to from an individual’s perspective. Dimension 3, which defines e-competence levels related to the EQF, is a bridge between organisational and individual competences.
- The relativity between EQF learning levels and e-CF competence levels has been systematically developed to enable consistent interpretation of the EQF in the ICT workplace environment.

Added value for existing national frameworks

For existing frameworks the European e-Competence Framework provides added value. The European dimension allows transparency, comparability and the creation of European knowledge areas. The EQF document (2008) states that it will “facilitate trans-national mobility for workers and learners and contribute to meeting the requirements of supply and demand in the European labour market”.

Main principles of the European e-Competence Framework

The European e-Competence Framework has been produced from an employer viewpoint to serve the needs of the European ICT practitioner

and manager community. It is a Competence Framework based on the following definition.

Competence is a demonstrated ability to apply knowledge, skills and attitudes to achieving observable results.

The e-CF addresses the need for ICT competence translation across European national borders by:

- providing a structure which can be used by nations without an existing ICT competence model.
- providing a structure which can be linked to existing national ICT competence models to support common European translation.

The primary focus of the European e-Competence Framework is to relate to employer career path structures. As a direct consequence it reflects ‘flatter’ organisational structures now commonly deployed by industry. This trend towards simplification of career paths is reflected in the European e-Competence Framework by the adoption of a two-dimensional framework comprising of five proficiency levels, the e-Competence levels e-1 to e-5.

Framework benefits for small and medium sized enterprises (SMEs)

There are differences between SMEs and larger organisations when considering the application of competence. However, the principles of competence identification and application within the workplace apply regardless of organisation size. It may be that some competences are too difficult to develop or acquire in an SME environment and in this case the e-Competence Framework can support articulation of bought-in service requirements.

Typically, SME staff carry out many different roles. However, the e-CF can still be used for:

- constructing job descriptions by picking elements from different areas
- checking for skills gaps, and creating training plans
- encouraging skills development
- encouraging professional approach to ICT work
- identifying areas for applying external expertise.

Structure of this Pocket Guide

Part One describes the e-CF:

- Chapter 1 explains the purpose and principles of the e-CF
- Chapter 2 provides a brief overview of the 36 e-Competences
- Chapter 3 outlines the alignment between the e-CF and EQF
- Chapter 4 provides user guidelines for adopting the e-CF, including migrating national e-competence frameworks to the European framework
- Chapter 5 summarises the e-CF profile enabling tool

Part Two presents the detailed e-competences:

- Chapter 6 describes e-competences for A: Plan
- Chapter 7 describes e-competences for B: Build
- Chapter 8 describes e-competences for C: Run
- Chapter 9 describes e-competences for D: Enable
- Chapter 10 describes e-competences for E: Manage

Appendices provide further information on mapping the European e-CF to the EQF, a glossary of key terms and references for further reading.

PART ONE

The e-Competence Framework

1 The European e-Competence Framework purpose and principles

1.1 Framework purposes

The European e-Competence Framework (e-CF) establishes a European common language for ICT competences. It supports the definition of jobs, training courses, qualifications, career paths, formal and non-formal learning paths, certifications etc. in the ICT sector. In this way, local, national, European and global ICT vendor and user companies, together with qualification and certification providers, have access to a shared reference.

The application of the European e-Competence Framework is centred upon workplace competence articulation, profiling, assessment and measurement. Although the e-CF can be related to other types of framework such as qualification, certification or knowledge structures its core purpose is to provide a ‘European ICT Competence Reference’.

Within this context, level linkage can be provided between the European e-CF and the EQF. Although the frameworks are designed for different purposes they share some characteristics; linkage between the European e-CF and the EQF are outlined in Chapter 3.

The primary purposes of the European e-CF are highlighted below:

- The European e-CF **describes competence and can be used in a variety of applications where consistency of competence language**

is required. These include job descriptions, role profiles, competence specifications and articulation of professional development needs.

- It **identifies proficiency at five e-competence levels and can be used to provide detailed profiling** where various competence combinations are involved. Career path association supports workforce development for roles with defined competences.
- Assessment of competence from a job role perspective **enables targeted and efficient recruitment, contracting, sourcing and hiring.**
- Measurement of competence gaps at the individual, team or organisational level **enables short and long term planning by HR management** or by individuals to assess and budget for education and training needs.

Further applications can be envisaged as the framework becomes more widely adopted. These include curriculum and ICT qualifications and certification development. The European e-CF is a tool that will facilitate new national and especially European offers of education/qualification. It will provide a link between jobs, competences and qualifications. In addition it may support the development of employer-focused certification.

The opportunities for improving the efficiency and effectiveness of recruitment processes by adopting the European e-CF are significant. The Framework is also an enabler, making it possible for national and European students to better understand the possibilities offered by the ICT jobs and to identify future career opportunities.

1.2 The competence focus of the framework

The European e-CF is not based on job profiles but rather on *competences*, as this approach is more flexible. Between companies

it is common to find identical job titles that correspond to different job descriptions and vice-versa. Moreover, both job titles and job descriptions are often inadequate when expressing capabilities required in the workplace. ICT business environments are complex and change continuously; complexity and constant change make job-related structures too fixed and rigid and therefore ineffective for describing tasks and activities within an international environment.

Competences are generic, yet sufficiently comprehensive to represent complexity and to fit variable organisation structures. Competence identification helps to fine-tune changes and to plan for the future. Moreover, disparate competence combinations can produce various job profiles to meet organisation needs, providing flexibility.

The European e-CF's purpose is to provide generic and comprehensive e-Competences that can be adapted and customised into different ICT business contexts.

1.3 A framework structured from four dimensions

The European e-CF is structured from four dimensions. These dimensions reflect different levels of business and human resource planning and are specified as follows:

Dimension 1: five e-competence areas derived from the ICT business processes PLAN – BUILD – RUN – ENABLE – MANAGE. This area is instrumental in HR assessment and the allocation of training programmes as well as the identification of e-competences. It helps HR managers to communicate with business managers and make joint decisions, in addition it is a first guide to organise and list e-competences.

Dimension 2: A set of reference e-competences with a generic description for each competence. It is the core of the framework. 36 competences have been included in e-CF 2.0. These competences are not business sector-specific – that is, they do not address specific applications such as banks, health, transport etc. They are general e-competences customisable and applicable to any industry or business sector. In Dimension 2, e-competences refer to and represent organisation needs.

Dimension 3: For each e-competence, suitable proficiency level specifications ranging between e-competence levels e-1 and e-5 have been constructed. They relate to EQF levels 3 to 8. This dimension involves “behaviours” and levels of autonomy; a bridge from “organisational” to “individual” competences is created. Note that organisational competences are generic and broad whilst individual competences are specific and customised.

Dimension 4: Knowledge and skills embedded within e-competences are listed. They are not intended to be exhaustive but are examples of e-competence content. These examples can be useful, in defining specific and precise outcomes to be assessed within an organisation’s competence assessment programmes. In addition, they provide inputs for training institutions to help define learning outcomes and design training initiatives.

Dimension 4 components refer to Dimension 2 but are not related to specific competence levels in dimension 3. However, Dimension 3 has been used to verify the applicability of knowledge and skills identified.

- Organisations may use Dimension 2 – the generic e-competence descriptions – to build job profiles.
- Dimension 2 competences can be combined with Dimension 3 proficiency levels to describe career paths.

- Knowledge and skills from Dimension 4 provide an opportunity to link competence and training programmes.

As the schematic in the Introduction demonstrates (Figure 0.1), the e-CF has a multidimensional structure. The e-CF is competence-based and is flexible in application. The alternative, job-profile approaches, are less flexible, making local adaptation difficult. However, combining competences from different competence areas and using them as building blocks can create flexible job-profiles. This enables the derived job-profiles to be easily updated by substituting or deleting competences without the need to restructure the entire profile. Competence definitions are explicitly assigned to Dimensions 2 and 3 and the references about knowledge and skills appear in Dimension 4 of the framework; attitude is embedded in all three dimensions. Attitudes bind skills, knowledge and experience together to form competence. They provide the motivation for effective and competent performance.

1.4 36 ICT (e-) related competences in five e-Competence areas

The 36 e-Competences described in Dimension 2 and Dimension 3 of the European e-CF are:

- A: PLAN
- B: BUILD
- C: RUN
- D: ENABLE
- E: MANAGE

These e-competences are summarised in Chapter 2; detailed descriptions of each e-competence are presented in Part Two of this Pocket Guide.

1.5 The five e-competence levels e-1 to e-5 and their relationship to EQF levels 3 to 8

The European e-CF aligns to EQF (European Qualifications Framework) categories for reference purposes. However, as an industry-addressed competence framework the e-CF uses descriptors for ICT professional competence and not for qualifications, so the level descriptors differ between the EQF and European e-CF. See Chapter 3 for more information.

1.6 Role of Dimension 4 (knowledge and skills) and relation to e-skills qualifications

Dimension 4 provides samples of knowledge and skills included in each e-competence identified and defined in Dimensions 2 and 3. Dimension 4 details examples of core elements / components related to the contents of the e-competences. From this perspective, the depth of analysis in this dimension could be considered too detailed for company needs. However, such in-depth descriptions can be useful (for example) to define specific and precise outcomes to be assessed within companies' competence assessment sessions.

Dimension 4 is critical for training and certification institutions because they need to specify qualifications in terms of learning outcomes. In this context, skills and knowledge can represent both e-competences and the learning outcomes to be reached through learning / training paths. Skills and knowledge represent a bridge between organisation competences and vocational training and qualifications, as shown in Figure 1.1.

In general, ways of detailing e-competences and making them applicable to specific environments are choices based upon an organisation's vision and strategy. The same can be said for training institutions. The choices made in delineating qualifications into skills and knowledge and thus into learning outcomes establishes differentiation between one education

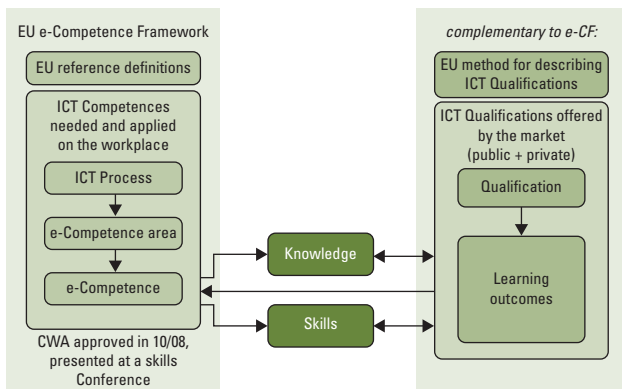


Figure 1 .1 Links between e-CF competences and ICT qualification offers

(Source: www.ict-lane.eu)

and training programme and another. Organisational choices related to skills and knowledge developments provide a competitive key to address business success. Thus the European e-CF cannot (and should not) replace an organisation's decision-making process but can provide a foundation to work from.

2 The e-Competences overview

2.1 About the e-Competences

Dimension 2 of the European e-CF identifies and describes a set of key e-competences for each defined e-competence area: Plan, Build, Run, Enable and Manage. These e-competence sets are not exhaustive; nonetheless they provide a basic, clear and sound orientation for companies who need to take decisions about recruitment, career paths, training, assessment, etc.; and also for people to understand companies' competence needs.

Descriptions in Dimension 2 also provide general and comprehensive explanations of the reference e-competences. These explanations are detailed in Dimension 3 through e-competence proficiency level specifications. E-competence level specifications cover only relevant proficiency levels for each competence descriptor in Dimension 2. For example, e-competence level specifications within the areas PLAN and ENABLE are positioned on higher levels than those inside the other e-competence areas.

PLAN, BUILD and RUN are core areas while ENABLE and MANAGE are cross-cutting issues referred and related to these core areas.

PLAN and ENABLE represent strategic areas within companies that initiate, decide, design and set up products, services, actions and policies. BUILD and RUN provide operative sub-processes where companies act and do things. Finally, MANAGE represents companies' daily business administration and improvement. Figure 2.1 shows how these competences fit together.

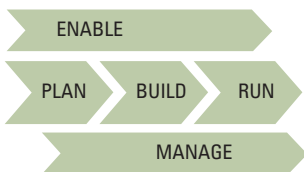


Figure 2.1 The five e-competence sets

The table below provides an overview of the e-competences within the European e-CF. Detailed descriptions of each of the e-competences are presented in Part Two of this Pocket Guide.

= e-CF levels identified per competence

Dimension 1 5 e-CF areas (A – E)	Dimension 2 36 e-Competences identified	Dimension 3 – e-Competence proficiency levels e-1 to e-5, related to EQF levels 3-8				
		e-1	e-2	e-3	e-4	e-5
A. PLAN						
	A.1. IS and Business Strategy Alignment					
	A.2. Service Level Management					
	A.3. Business Plan Development					
	A.4. Product or Project Planning					
	A.5. Architecture Design					
	A.6. Application Design					
	A.7. Technology Watching					
	A.8. Sustainable Development					
B. BUILD						
	B.1. Design and Development					
	B.2. Systems Integration					
	B.3. Testing					
	B.4. Solution Deployment					
	B.5. Documentation Production					

Dimension 1 5 e-CF areas (A – E)	Dimension 2 36 e-Competences identified	Dimension 3 – e-Competence proficiency levels e-1 to e-5, related to EQF levels 3-8				
		e-1	e-2	e-3	e-4	e-5
C. RUN						
	C.1. User Support					
	C.2. Change Support					
	C.3. Service Delivery					
	C.4. Problem Management					
D. ENABLE						
	D.1. Information Security Strategy Development					
	D.2. ICT Quality Strategy Development					
	D.3. Education and Training Provision					
	D.4. Purchasing					
	D.5. Sales Proposal Development					
	D.6. Channel Management					
	D.7. Sales Management					
	D.8. Contract Management					
	D.9. Personnel Development					
	D.10. Information and Knowledge Management					
E. MANAGE						
	E.1. Forecast Development					
	E.2. Project and Portfolio Management					
	E.3. Risk Management					
	E.4. Relationship Management					
	E.5. Process Improvement					
	E.6. ICT Quality Management					
	E.7. Business Change Management					
	E.8. Information Security Management					
	E.9. IT Governance					

Table 2.1 The e-competences in the European e-CF

3 Aligning the European e-CF with the EQF

3.1 Overview

The European e-CF relates to competences as needed and applied in the workplace. Its five e-competence proficiency levels e-1 to e-5 are related to the EQF qualification levels 3 to 8; EQF Level 1 and 2 are not relevant in this context. The EQF and e-CF levels are not identical, as their perspectives are different. While the EQF reflects a qualifications perspective, the e-CF adopts a workplace competence perspective. However, both perspectives are interrelated, as qualifications contribute to competence development. Table 3.1 provides a level relationship between the two frameworks.

e-CF Level	related to EQF Level
e-5	8
e-4	7
e-3	6
e-2	4 and 5
e-1	3

Table 3.1 The five e-competence levels of the European e-CF and their relationship to EQF levels 3-8

3.2 The EQF perspective on ‘competence’

The difference between the two types of levels can be illustrated by using an example of a person with a PhD; this would be EQF level 8. However, this person is not automatically able to apply knowledge, skills and attitudes in a working situation at e-competence level 5. The competence for a particular job implies more than having achieved a qualification; it also requires experience and aproven level of ability to act in complex situations.

According to the EQF, competence levels depend on context complexity (e.g. routine, predictable, unpredictable, subject to changes contexts) and competence typologies (e.g. practical, cognitive, social, functional competences): the more dynamic and unpredictable the contexts are, the higher the competences must be. Competence levels also depend upon competence typology: e.g. “analysing” requires higher skills than “using tools”.

3.3 Defining e-competence levels in the European e-CF

In order to define e-competence levels within the e-CF and assign consistent rules, context categories must be identified.

A set of characteristics which determine levels is applied to the e-CF; they reflect a typical company workplace perspective and are structured as follows.

e-CF Levels	Complexity	Autonomy	Typical Tasks	Behaviour	e-CF Levels descriptions
e-5 ↑ e-1	Unpredictable – unstructured ↑ Structured - predictable	Demonstrates substantial leadership and independence in context... ↑ Demonstrates limited independence where contexts are generally stable...	IS strategy or programme management ↑ Support Service	Conceiving, transforming, innovating, ... ↑ Applying, adapting, ...	Principal ↑ Associate

Figure 3.1 Criteria for competence level graduation in the European e-CF

For a detailed table mapping the European e-CF to EQF, see Appendix A1.