

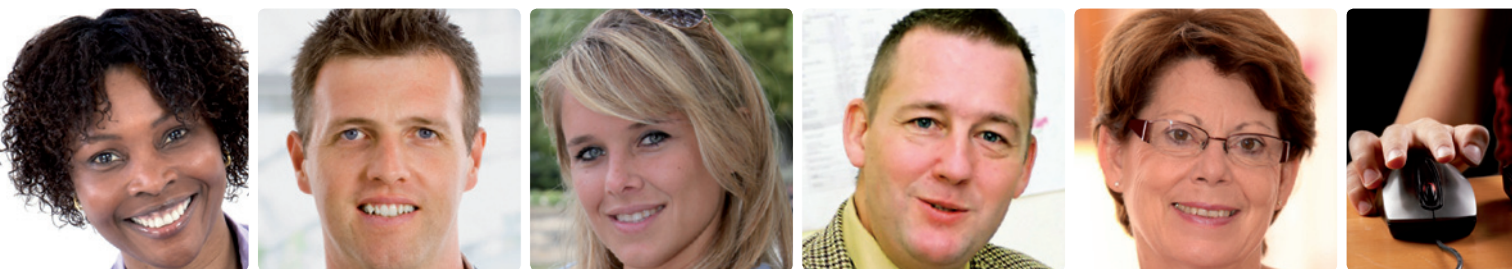


Case Studies for the application of the e-CF

3.0



A common European Framework for ICT Professionals in all industry sectors



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The European e-Competence Framework (e-CF) version 3.0 provides a reference of 40 competences as required and applied at the Information and Communication Technology (ICT) workplace, using a common language for competences, skills and capability levels that can be understood across Europe.

As the first sector-specific implementation of the European Qualifications Framework (EQF), the e-CF was created for application by ICT service, user and supply companies, for managers and human resource (HR) departments, for education institutions and training bodies including higher education, for market watchers and policy makers, and other organisations in public and private sectors.

To support e-CF application within multiple environments, 15 illustrative case studies provide examples, benefits and hints of how to make best use of the e-CF. They relate to practical e-CF application experiences and have been elaborated together with e-CF applying organizations Europe-wide.

Further complementary materials available:

- European e-Competence Framework (e-CF) version 3.0 – a shared European framework for ICT Professionals in all industry sectors (CWA Part 1)
- User guidelines for the application of the European e-Competence Framework (CWA Part 2)
- Building the e-CF – a combination of sound methodology and expert contribution. Methodology documentation (CWA Part 3)

A multilingual e-CF profiling tool enables easy navigating through the European e-Competence Framework and related European ICT Professional Profiles together with customized profile construction and content export.

<http://profiletool.ecompetences.eu/>

Case studies overview

Case study	Title	Key perspectives
A	e-CF in large ICT demand organizations	<ul style="list-style-type: none"> ■ Job profile creation ■ Internal ICT staff development ■ Cross company and cross border common language
B	e-CF in a corporate/ICT supplier environment	<ul style="list-style-type: none"> ■ e-CF for consultants ■ Identifying training needs ■ Training development ■ Competence gap identification
C	e-CF for SME's – competence need analysis and managerial dashboard	<ul style="list-style-type: none"> ■ Application in a micro enterprise environment ■ e-CF as a marketing aid ■ e-CF as a business development tool ■ Competence need analysis ■ Linking business strategy and competence development ■ Develop or buy new competences ■ e-CF for SME consultants
D	SME competence assessment and business card creation based upon the e-CF	<ul style="list-style-type: none"> ■ SME competence self-assessment ■ Business card creation ■ Business capability ■ e-CF for SME consultants
E	e-CF to build SME job descriptions	<ul style="list-style-type: none"> ■ Job description development ■ Intercompany communication ■ Recruitment aid
F	e-CF for qualification providers	<ul style="list-style-type: none"> ■ Matching education supply to market needs ■ The difference between competence development and traditional learning ■ Student motivation from a competence approach ■ EQF and e-CF compliance
G	e-CF in a certification environment	<ul style="list-style-type: none"> ■ Matching certification supply to market needs ■ Increasing transparency in the European e-Skills landscape
H	e-CF for ICT professional self-assessment	<ul style="list-style-type: none"> ■ Self-assessment ■ CV/Self promotion
I	e-CF for linking e-curricula supply and demand	<ul style="list-style-type: none"> ■ Competence connected to learning outcomes ■ e-CF and EQF compliance ■ Personal career development ■ Competence based e-curriculum

K	e-CF for ICT professional associations	<ul style="list-style-type: none"> ■ Assessment ■ Benchmark criteria ■ Community building
L	e-CF for ICT training quality improvement	<ul style="list-style-type: none"> ■ Specialised competences ■ Specialist role development ■ Matching education supply and demand
M	e-CF for assessment and career tools	<ul style="list-style-type: none"> ■ Assessing an ICT professional's capability ■ Recognition of formal and informal learning
N	e-CF for National and EU policy makers	<ul style="list-style-type: none"> ■ Ensuring qualified ICT workforce in a long-term ■ Communication between policy makers and ICT business ■ e-Curricula building ■ Cross-European common language
O	e-CF to relate or integrate to other frameworks	<ul style="list-style-type: none"> ■ e-CF use in an established structure ■ Relating the e-CF to other frameworks ■ Relating workplace and qualification perspective by EQF and e-CF
P	e-CF for European ICT professional Profiles creation	<ul style="list-style-type: none"> ■ Including competence into a job Profile ■ Communication between HR, management and ICT professionals ■ Building and linking local profiles to a recognised European structure

European e-Competence Framework (e-CF) in large ICT demand organizations

About the e-CF. The European e-Competence Framework (e-CF) version 3.0 provides a reference of 40 competences as required and applied at the Information and Communication Technology (ICT) workplace, using a common language for competences, skills and capability levels that can be understood across Europe. As the first sector-specific implementation of the European Qualifications Framework (EQF), the e-CF was created for application by ICT service, user and supply companies, for managers and human resource (HR) departments, for education institutions and training bodies including higher education, for market watchers and policy makers, and other organisations in public and private sectors.

The e-CF was developed through a process of collaboration between experts and stakeholders from many different countries under the umbrella of the CEN Workshop on ICT Skills. The e-CF is a component of the European Union's strategy for e-Skills in the 21st Century. The framework supports key policy objectives of the Grand Coalition for digital Jobs and benefits an ever growing user community from the EU and across the world.

To support e-CF application within multiple environments, a series of illustrative case studies provide examples, benefits and hints of how to make best use of the e-CF.

This case study illuminates the e-CF application from the perspective of Enterprise ICT demand organizations.



Key perspectives



- Job Profile creation
- Internal ICT staff development
- Cross company common language
- Training portfolio development

Summary

Approximately half of the ICT professional workforce across Europe is employed by ICT demand organizations spread across multiple industry sectors. The following four companies provide examples of how the ICT professional community can benefit from deployment of the e-CF.

MAPFRE is a leading insurance company in Spain and the first Non Life Insurance Company in Latin America, it has a presence in more than 45 countries and employs 35,586 people. In order to assess and enhance current job descriptions and streamline

investment in training and education of ICT staff, MAPFRE adopted the e-CF.

EDF the multinational energy supplier, responded to constraints imposed by European energy market directives by restructuring and forming several new divisions and two new company subsidiaries, RTE and ERDF.

In 2010 Euro Disney instigated an extensive program for competence predictive management as a key component of its future corporate strategy.

Pôle Emploi, a French public national institution addressing employment was formed from the merger of ANPE, responsible for job placement and Unedic, responsible for job seekers compensation.

Each of these four organizations had compelling reasons for change. MAPFRE's goal was to focus on establishing a solid model that could expand to the company's worldwide workforce. EDF needed to rationalize the roles of ICT professionals working on

two different customer support systems and an overarching information system integrating functions such as accounting, finance and marketing for the entire group. To realize their vision of predictive competence management, Euro Disney needed to create a comprehensive set of revised job profiles. For different reasons Pôle Emploi were also motivated to establish a revised set of profiles to meet the needs of its newly merged predecessor companies and to provide an operational and strategic vision.

In each scenario the need was to employ a tool that enabled multiple internal functions and players to share a common understanding of the competences required and endemic within the professional ICT workforce. Independently, the three CIGREF members, EDF, Euro Disney and Pôle Emploi (CIGREF is a French association of large ICT user companies) elected to deploy the e-CF as the common ICT reference for the development of job profiles. MAPFRE directed its focus towards rationalization of worldwide training portfolios.

e-CF Value

A tangible added value from e-CF deployment is its accessibility and ability to enable common understanding across different populations. Importantly, the e-CF is supported by an active maintenance regime that ensures its continuing relevance.

ICT staff has a variety of focused specialist skills and staff turnover creates the need for targeted recruitment. The e-CF is a valuable asset in articulating the role and competence needs of IT departments.

The Europe-wide shared vocabulary used by the e-CF can be recognized internally and outside of the company, independently from country borders and also across continents. This common language facilitates management of resource acquisition according to the IT market availability. It also allows clear differentiation between job profiles and focuses on the essential issue; the required competences.

Furthermore, scalable models can be easily built which allow the incorporation of new roles and/or positions, or evolution of existing ones. New competences can also be incorporated into such models and aligned to market trends.

Challenges encountered

For many the e-CF is a new concept taking time to fully understand and the challenge is to convince internal management that the e-CF is a valid option and worthy of the investment of time and resources necessary for company wide implementation.

When implementing the e-CF, identifying the competences required for each job and the associated level of competences for each seniority role requires a structured and considered approach.

In one of the sample companies the e-CF was seen as a contributor to annual performance reviews. For this to be successful it is necessary to identify and evaluate

the major competences associated with an employee, to be able to offer constructive career advice.

Training plans and portfolios may require adaption to meet the bidirectional relationship required between professional development models and career strategy.

Benefits highlighted

The provision of the e-CF maintains a consistent perspective across all personnel, for instance, across employees to managers and the human resources department. It facilitates exchange of views, and promotes consensus. This enables rationalization of job descriptions that tend to proliferate over time, adding confusion rather than clarity.

The International dimension of the e-CF and its consistency with other frameworks such as CIGREF nomenclature also strengthen its value.

The foundation for a competence based human capital management model can be established. Furthermore, training portfolios can be consolidated and rationalised based upon optimisation of a company's training needs bringing greater added value from the education and training budget.

The method adopted

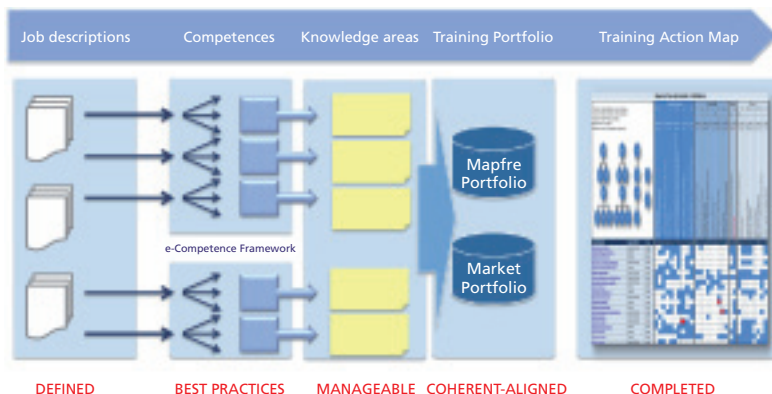
Each of the four exemplar companies adopted a different implementation strategy. For EDF it was to build upon previous work and up date the existing structured job roles.

Pôle Emploi conducted analysis of jobs and of the structure of the e-CF. A particular requirement was to

integrate more detailed, cross organizational soft skills and the company HR group were consulted and engaged to support this need. A set of working groups was established to create the new job profiles. In parallel an internal communication strategy was prepared. Implementation included adding a behavior dimension, this included connections to an internally created soft skills framework.

Euro Disney started by analyzing their existing job profiles and made decisions on which to retain, delete or renew. The resultant new set of profiles was created with special attention to competences that were extracted from the e-CF.

MAPFRE focused upon distilling competences from existing job descriptions and identifying competences not currently addressed. The approach is described in the following schematic.



Expansion to other examples

The creation of job roles using competence, as a significant component, is a common application of the e-CF. Further examples of this can be found as follows:

- Illustrative Case study E
- A family of 23 Typical European ICT Professional Profiles has been established and details are available on the e-CF website:

www.ecompetences.eu / see section "ICT Profiles"



European e-Competence Framework (e-CF) in a Corporate /ICT supplier environment

About the e-CF. The European e-Competence Framework (e-CF) version 3.0 provides a reference of 40 competences as required and applied at the Information and Communication Technology (ICT) workplace, using a common language for competences, skills and capability levels that can be understood across Europe. As the first sector-specific implementation of the European Qualifications Framework (EQF), the e-CF was created for application by ICT service, user and supply companies, for managers and human resource (HR) departments, for education institutions and training bodies including higher education, for market watchers and policy makers, and other organisations in public and private sectors.

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To support e-CF application within multiple environments, a series of illustrative case studies provide examples, benefits and hints of how to make best use of the e-CF.

The following case study illuminates the e-CF application from the perspective of an ICT supplier.



Key perspectives → → →

- e-CF for consultants
- Identifying training needs
- Training development
- Competence gap identification

Summary

To develop technological solutions and support clients, it is imperative that ICT supply companies attract, retain and develop high caliber staff. Innovation and product quality are inextricably linked to the capabilities of the managers and professionals employed by ICT supply companies. Given this need KPN, a Dutch telecommunications supplier, decided to enhance the education and training of its workforce by engaging Capgemini to advise and implement a program to enable structured access to relevant education and training opportunities.

KPN had a well-developed human resources management system that provided the basis for job evaluation, pay scales and performance management, but this did not include linkage to education and training opportunities. Some education programs were developed and delivered in-house and others sourced from external training providers. Capgemini were engaged to recommend a structured education and training solution that would enable staff access to approved and relevant training opportunities from internal or external sources.

Capgemini recommended that education and training should be based upon competence requirements and proposed the development of an online tool to manage the process of education and training identification and booking. The structure selected to underpin this online facility was the e-CF. The e-CF provided a methodological approach to the identification of competence, knowledge and skills required by ICT professionals and managers within the

organization. By deploying the e-CF, a consistent benchmark of competences was available to reference education and training programs addressing individual

or organizational, competence development requirements.

e-CF Value

The e-CF enabled Capgemini, and their client KPN, to better understand the competence development requirements of the organization and of individual employees within the organization. By focusing upon these competence needs, as clearly articulated within the competence descriptors of the e-CF, the relevance and capability of relevant training opportunities became much clearer.

Challenges encountered

Relating existing training and education programs to the e-CF is not a perfect science. It is rare that existing training materials provide an exact match to competences articulated within the e-CF, in consequence some flexibility has to be deployed in the process of mapping education to competence. Overlaps and under laps of training program matches to the e-CF are inevitable and these must be catered for and evaluated by knowledgeable mapping staff. However this exercise brings clarity to the opportunities and possible deficiencies of existing training options and can lead to a more targeted approach for future course developments.

Benefits highlighted

By deploying the e-CF, a better common understanding of training options and opportunities has been highlighted for KPN. An online training reference manual and booking facility has been developed based upon the metrics of the e-CF. The e-CF cell and level structure readily lends itself to being systemized and provides a consistent matrix for deployment within online tools.

Furthermore, future training programs are being developed to meet the identified competence requirements of the workforce. These new programs will closely follow the competences articulated by the e-CF and provide targeted training opportunities.

The method adopted

KPN initially adopted a focused approach by concentrating upon four categories of job roles:

- Business Architects
- Project Management
- Configuration Management
- Test Professionals

An online competence assessment tool was developed to address these ICT professional specialisms that was directly linked to a training catalogue containing related training options.

The underlying principle adopted within this case sample, is the identification of competence gaps. Using the e-CF, ICT professionals are able to identify their competence needs and compare them to a directory of education and training programs also expressed in competence terminology. In this way differences between competence needs and competence attainment can be closed.

Expansion to other examples

Identifying competence gaps for future requirements is a significant application of the e-CF; the following are further examples of how this capability is used in practice.

- Individuals can compare their competence profile with potential new roles to support future career progression – they may also use typical European ICT Professional Profiles, found at www.ecompetences.eu / see section “ICT Profiles”



e-CF for SMEs – competence need analysis and a managerial dashboard

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To support e-CF application within multiple environments, a series of illustrative case studies provide examples, benefits and hints of how to make best use of the e-CF.

The following case study illuminates the e-CF application from the perspective of a micro ICT supplier and SMEs in general.



Key perspectives → → →

- Application in a micro enterprise environment
- e-CF as a marketing aid
- e-CF as a business development tool
- Competence need analysis
- Linking business strategy and competence development
- Develop or buy new competences

Summary

itSECURITY¹ is a small, seven person, Italian enterprise specializing in information security, systems engineering and customized software development. The company needed to understand and promote its capabilities now and in the future.

On one hand, the company needed to clarify which competences were required to sell ICT services more effectively and on the other they needed to analyse

competence requirements to support new service offerings. With this information business decisions about whether to develop or buy in new skills were made. The e-CF has supported this decision-making and supported the alignment between the company's competence development and its business strategy.

The e-CF helped clarify ideas and to shift emphasis within its sales capability from that of an entrepreneur to that of a collaborator. Within the e-CF, D7 and E4 competences are articulated at different proficiency levels and suggest some key knowledge and skills. Technical and commercial competences are described and by examining the descriptors, staff development needs were exposed and decisions taken on whether to grow a technicians capability towards sales or to grow a sales manager towards more technical capabilities. It is also likely that a decision will be made to recruit an additional ICT professional with many of the required competence attributes.

¹ itSECURITY is a pseudonym representing an enterprise interviewed in the "e-CF into SME" CEN project

itSECURITY investigated the 36 e-CF e-competences and highlighted links between the e-competences and business objectives and purposes. The e-CF Dimension 2 connects e-competences and the business explicitly, especially if using the four business entry points identified in the CEN project “e-CF into SMEs”, CWA 16367:

1. Company overview
2. Markets and Customers
3. Innovation and research
4. Business

These entry points, link the reference business areas to the e-competences required to manage them. (See Annex 1)

Dimension 2 of the e-CF helped itSECURITY understand which e-competences needed to be developed to expand their offer for consulting services. They discovered that the e-competence D.7. Sales Management and E.4. Relationship Management required further development to reinforce their commercial activity.

In other examples, where SMEs have 20 or above personnel, the principles are similar but decisions more complex. In large companies, such approaches may be applied to departments and units.

e-CF Value

The e-CF has enabled itSECURITY to better understand their competence requirements in relation to their business strategy, namely reinforce the quality of their communication to clients and enlarge their client network. The competence need analysis was relatively straightforward and fast using the e-CF as a reference.

Dimension 2 of the e-CF can support SMEs in identifying e-competences that describe their core activities and their business. The e-CF provides the structure and appropriate articulation by which management can analyse current competence capability, future requirements and support the development of business strategy.

Challenges encountered

Competence management is not universally adopted and therefore some ICT users are not familiar with the concept and language of competence. It was therefore necessary to provide an awareness of the e-CF and its structure to clients unfamiliar with competence concepts. However the principles of the e-CF are easily understood and the framework quickly becomes a reference point for establishing a common language for an effective mutual communication.

Benefits highlighted

In this example, the e-CF helped itSECURITY:

- Identify the proper e-competences for their current business;

- Realize which growing/innovating opportunities for the future according to their current e-competences;
- Plan which e-competences to be developed, in order to get future business results.

The method adopted

The approach adopted to navigate the e-CF for a competence need analysis is described below.

Step 1. The entrepreneur and staff go through the four entry points, (see Annex table 2).

1. Company overview;
2. Markets and Customers;
3. Innovation and research;
4. Business;

looking into the e-competences linked to and clustered under the entry points. (They may even use e-CF Dimension 1 as entry point). For each e-competence, the company analyses the meaning against their own enterprise mission and strategy, and place a comment. Some guiding questions can make the task easier, such as the following:

- Is this competence coherent with my business?
- Have I ever fully practiced this competence?
- If I haven't, for what business aims would it be useful?

Step 2. After answering the above questions, a further analysis is required, to identify which e-competences are needed for the current or future planned business.

Step 3. At this step, the enterprise can identify the best strategy to be undertaken to meet the identified short or mid-term needs.

The following Table 1 containing some practical analysis results from itSECURITY* can support the three steps.

	STEP 1		STEP 2	STEP 3
e-CF e-competences	e-competence never practiced in my company; e-competence seen as not needed in company for my current business <i>Please select competences from the e-CF full list</i>	<ul style="list-style-type: none"> – Is this competence coherent with my business? – May it be relevant for my improving my business? – When may it be relevant? – For what different business? 	Competences seen as needed / useful for my current / future business but not fully / still practiced <i>Please select competences from the e-CF full list with "X"</i>	Actions to be undertaken in my company <ul style="list-style-type: none"> – Make (e.g. internal training) – Buy (e.g. recruitment) – I am not ready to make decisions now
C.4. Problem management				
D.2. ICT quality strategy development;	X	Needed if we intend to expand the business in consultancy	X	
D.7. Sales Management			X	Under discussion whether to train an internal ICT professional or to recruit a sales expert with experience in the ICT context
D.9. Personnel development			X	
E.4. Relationship management			X	
E.5. Process improvement;	X	Within our enterprise is not required at such a level of formalization. It may be a consultancy expertise		

E.6. ICT quality management;	X	There is not a formalized procedure, it is needed within larger enterprises		
E.9. IT governance	X	It's not something you can hire. It has to be done internally in each company by the ICT manager. It is something for large companies		

Table 1: Table for e-Competence need analysis (example)

Expansion to other examples

The above case illustrated how the e-CF has been used as a dashboard, a compass, for competence need analysis. Within this context, the e-CF can also support:

- SMEs self-assessment (see case study D)
- Communication of ICT supply's competences to customers, as a business card



Reference

- CEN Workshop Agreement (CWA) 16367: "e-CF into SME's"
<http://www.cen.eu/cen/Sectors/Sectors/ISSS/CWAdownload/Pages/ICT-Skills.aspx>

Annex

Table 2: Business areas entry point for e-competences

1 Company Overview	Competence to be checked
1.1 Description of company management	A.1. IS and Business Strategy Alignment A.4. Product/Service Planning D.1. Information Security Strategy Development D.2. ICT Quality Strategy Development D.10. Information and Knowledge Management E.2. Project and Portfolio Management E.3. Risk Management E.6. ICT Quality Management E.9. IT Governance
1.2 Description of company organisation/departments	D.4. Purchasing D.5. Sales Proposal Development D.7. Sales Management D.8. Contract Management E.8. Information Security Management D.12. Digital Marketing
2 Markets and Customers	Competence to be checked
2.1 Main products & services offered – also if the product(s)/ service(s) are standard and/or customised	A.2. Service Level Management B.5. Documentation Production C.1. User Support C.2. Change Support C.3. Service Delivery C.4. Problem Management
2.2 Target market sectors – describe also if the market is horizontal, vertical and/or both	D.6. Channel Management
2.3 Market differentiators (<i>what differentiates their offering within the marketplace?</i>): includes factors such as: <i>technology; product range; customer service; aftersales support; user focus (i.e. in design/application); skills; price.</i>	A.5. Architecture Design A.6. Application Design B.1. Design and Development B.2. Component Integration B.3. Testing B.4. Solution Deployment B.6. Systems Engineering D.11. Needs Identification

2.4 Future positioning: Market trends and how they will change their strategy or approach to the market as a result.	E.1. Forecast development E.5. Process improvement E.7. Business change management
2.5 Description of main marketing channels: (e.g. advertising, web, exhibitions & fairs, business networks, etc)	E.4. Relationship management
3 Innovation and Research	Competence to be checked
1 Company Overview	Competence to be checked
3.1. Nature of 'technology watch' activities. (Potential sources include: conferences & seminars; vendor partner programmes; in-house seminars; one-to-one client interactions; technical user forums & focus groups; feedback from distributors)	A.7. Technology Trend Monitoring A.9. Innovating
4 Business Environment and Business Competences	Competence to be checked
4.1 Business model and Business processes	A.3. Business Plan Development A.8. Sustainable development
4.2 Human resources: In context of the above include discussion of aspects such as:	D.9. Personnel development
4.3 Approach to training and personal development (inc. job rotation, percentage of HR turnover)	D.3. Education and Training Provision

SME competence assessment and business card creation based upon the e-CF

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To support e-CF application within multiple environments, a series of illustrative case studies provide examples, benefits and hints of how to make best use of the e-CF.

The following case study illuminates the e-CF application from the perspective of SME Gazelles and innovative, agile and lean, enterprises.



Key perspectives → → →

- SME competence self-assessment
- Business card creation
- Business capability
- e-CF for SME consultants

Initially supported by a consultant, they investigated the e-CF, selected relevant e-competences to be presented to their clients, identified related evidence that proved them and then listed and described each item systematically. The company also intended to obtain formal recognition of their core competences from an external assessment; they are still reflecting on this action.

Summary

IT SMEs find value in the e-CF as a support for assessing their core competences and for providing evidence of 'know-how' to their clients.

iTRACK¹, a small enterprise of 5 graduate employees, developing software and RFID technology for the international Automotive, Fashion and Frozen Food markets, used the e-CF to build a company business card.

¹ ServiTRACK is a pseudonym for an SME interviewed in the "e-CF into SME" CEN project interviewed in the "e-CF into SME" CEN project

e-CF Value

Mapping skills and competences with the e-CF is straightforward. Enterprises are able to access standard e-CF vocabulary and definitions and if doubts arise, they can consult the e-CF user-guidelines or check with the official e-CF website where FAQs and answers are to be found.

For small IT enterprises, it is very useful to be able to demonstrate that they have the competences required to fulfill client demands. Customers no longer look for technical skills only, they seek business partners able to work in teams, manage projects and processes, and able to communicate. The e-CF describes such skills, providing full competence descriptions. Therefore the e-CF is an effective tool to help SMEs identify, articulate and communicate their complex 'know-how'.

Challenges encountered

Competence management is not universally adopted and therefore some ICT users are not familiar with the concept and language of competence. It is therefore necessary to provide an awareness of the e-CF and its structure to organizations unfamiliar with competence concepts. However the principles of the e-CF are easily understood and the framework quickly becomes a reference point for establishing a common language and for effective mutual communication.

Nonetheless, the assessment approach necessarily requires objective and shared criteria to evaluate the same e-competence items and dimensions. Currently there are no universal indicators available to support self-assessment and therefore it is based upon personal perceptions and impressions.

Benefits highlighted

Using the e-CF, enterprises have found a way to describe the technical and soft competences inclusively, which is a key ability when managing relationships with foreign companies.

The method adopted

iTRACK elected to use a consultant to support enterprise assessment and provide moderation to internal perceptions and impressions. The method adopted was based on face-to-face interviews with staff, lasting about 3 hours each. iTRACK had no previous awareness of the e-CF, and it was therefore necessary for them to be appraised of the structure

and its principles. Then iTRACK described its core business, projects, services and products; strengths (and weaknesses), what clients usually ask for and their business strategy. iTRACK considers internationalization and networking of high importance. Moreover, the ability to relate with their clients, listen to them and meet their requirements is crucial; being able to working together is a core competence.

After the company overview, the employer went through the e-CF, guided by the consultant. The details of the approach are briefly described as follows:

Step 1. The entrepreneur supported by one member of his staff and the consultant, used the four entry points illustrated in Annex (but they also used Dimension 1 of the e-CF), to look for e-competences linked to and clustered under those entry points. For each e-competence, iTRACK analyzed the relevance to its mission and strategy, writing down whether they are currently prevalent within the company or not and at which "intensity"; high, medium, low.

Step 2. After recognizing the main competences that describe the company, the entrepreneur and staff listed specific evidence proving those e-competences. These evidence examples were, products/services; developed projects; examples of clients, etc.

Step 3. The entrepreneur and staff were then able to identify assessment criteria to evaluate their e-competences.

The following Table 1 can support the three steps.

	STEP 1		STEP 2	STEP 3
e-CF competences	e-competence practiced in my company <i>Please select competences from the e-CF full list with "X"</i>	At which level High Medium Low	<i>Pieces of evidence</i>	<i>Assessment criteria</i>
A.1.				
A.2.				
A.n.				
B.1. Design and Development Designs and engineers software and/or hardware components to meet required specifications, including energy efficiency issues. Follows a systematic methodology to analyse and build required components and interfaces. Performs unit and system testing to ensure requirements are met.	X	High	Examples of: <ul style="list-style-type: none"> ■ enterprise approach to meet customer specifications, e.g. the use of agile methods ■ components ■ integrated systems ■ elaborated testing procedures ■ 	Standard procedures Compliance with the quality standards Getting through the testing phase
B.2. Systems Integration				
C.n.				
D.n.				
E.4. Relationship Management Establishes and maintains positive business relationships between the client and provider (internal or external) deploying and complying with organisational processes. Maintains regular communication with client/partner/supplier, and addresses needs through empathy with their environment and managing supply chain communications. Ensures that client/partner/supplier needs, concerns or complaints are understood and addressed in accordance with organisational policy.	X	Medium	Long-term relationships with clients Examples of partnerships The company CRM Awards, prizes, own patents in use by clients	Duration of relationships with clients Number of partnerships Number of successful projects and outcomes
E.n.				

Table 1 for company assessment (example)

Expansion to other examples

The above illustrates how the e-CF can be used as an assessment tool for SMEs. Within this context, the e-CF can also support:

- SME e-competence need analysis as a compass and dashboard for the company development (see case study C)
- Communication of ICT supply's competences to customers, as a business card



Reference

- CEN Workshop Agreement (CWA) 16367: „e-CF into SME's“
<http://www.cen.eu/cen/Sectors/Sectors/ISSS/CWAdownload/Pages/ICT-Skills.aspx>

Annex

Table 2: Business areas entry point for e-competences

1 Company Overview	Competence to be checked
1.1 Description of company management	A.1. IS and Business Strategy Alignment
	A.4. Product/Service Planning
	D.1. Information Security Strategy Development
	D.2. ICT Quality Strategy Development
	D.10. Information and Knowledge Management
	E.2. Project and Portfolio Management
	E.3. Risk Management
	E.6. ICT Quality Management
	E.9. IT Governance
1.2 Description of company organisation/departments	D.4. Purchasing
	D.5. Sales Proposal Development
	D.7. Sales Management
	D.8. Contract Management
	E.8. Information Security Management
	D.12. Digital Marketing

2 Markets and Customers	Competence to be checked
2.1 Main products & services offered – also if the product(s)/ service(s) are standard and/or customised	A.2. Service Level Management B.5. Documentation Production C.1. User Support C.2. Change Support C.3. Service Delivery C.4. Problem Management
2.2 Target market sectors – describe also if the market is horizontal, vertical and/or both	D.6. Channel Management
2.3 Market differentiators (<i>what differentiates their offering within the marketplace?</i>): includes factors such as: <i>technology; product range; customer service; aftersales support; user focus (i.e. in design/application); skills; price.</i>	A.5. Architecture Design A.6. Application Design B.1. Design and Development B.2. Component Integration B.3. Testing B.4. Solution Deployment B.6. Systems Engineering D.11. Needs Identification
2.4 Future positioning: Market trends and how they will change their strategy or approach to the market as a result.	E.1. Forecast development E.5. Process improvement E.7. Business change management
2.5 Description of main marketing channels: (<i>e.g. advertising, web, exhibitions & fairs, business networks, etc</i>)	E.4. Relationship management
3 Innovation and Research	Competence to be checked
1 Company Overview	Competence to be checked
3.1. Nature of 'technology watch' activities. (Potential sources include: conferences & seminars; vendor partner programmes; in-house seminars; one-to-one client interactions; technical user forums & focus groups; feedback from distributors)	A.7. Technology Trend Monitoring A.9. Innovating
4 Business Environment and Business Competences	Competence to be checked
4.1 Business model and Business processes	A.3. Business Plan Development A.8. Sustainable development
4.2 Human resources: In context of the above include discussion of aspects such as:	D.9. Personnel development
4.3 Approach to training and personal development (inc. job rotation, percentage of HR turnover)	D.3. Education and Training Provision

European e-Competence Framework (e-CF) to build SME job descriptions

About the e-CF. The European e-Competence Framework (e-CF) version 3.0 provides a reference of 40 competences as required and applied at the Information and Communication Technology (ICT) workplace, using a common language for competences, skills and capability levels that can be understood across Europe. As the first sector-specific implementation of the European Qualifications Framework (EQF), the e-CF was created for application by ICT service, user and supply companies, for managers and human resource (HR) departments, for education institutions and training bodies including higher education, for market watchers and policy makers, and other organisations in public and private sectors.

The e-CF was developed through a process of collaboration between experts and stakeholders from many different countries under the umbrella of the CEN Workshop on ICT Skills. The e-CF is a component of the European Union's strategy for e-Skills in the 21st Century. The framework supports key policy objectives of the Grand Coalition for digital Jobs and benefits an ever growing user community from the EU and across the world.

To support e-CF application within multiple environments, a series of illustrative case studies provide examples, benefits and hints of how to make best use of the e-CF.

The following case study illuminates the e-CF application from the perspective of a medium sized ICT supply company.



Key perspectives → → →

- Job description development
- Intercompany communication
- Recruitment aid

Summary

A German medium sized enterprise (approx. 300 employees at headquarters) provides enterprises

solutions for administration and operation of complete ICT-infrastructures. It has used the e-CF for re-structuring and harmonization of internal job descriptions, articulating competencies in a common and understandable way. This work has also supported recruitment requirements and aided better descriptions for service offerings. The end result was that all participants were very comfortable with the outcomes and with the enhancement of collaboration between ICT and HR.

e-CF Value

The e-CF provided the engine to describe requirements and competences in a consistent and commonly understandable way. The framework facilitated communication and collaboration between the internal functions of HR and ICT operations. Prior to using the e-CF staff from ICT and HR talked at cross-purposes, typically ICT people spoke about special technical issues and HR people about training issues. Deploying the e-CF ICT executives and HR representatives collectively described;

- Requirements of existing and future workplaces and work processes
- Existing and needed competences.

Challenges encountered

ICT executives and HR representatives, within the company, in principle, pursued one common objective: to support the growth of the enterprise. Furthermore, they were familiar with each other and motivated to work together. However when in engaging in dialogue they had many differences of opinion. It became clear that the reason was owing to a lack of understanding of basic terminology of the e-CF.

Using the following definitions, collaboration and mutual understanding was restored.

- Competence is ability [German meaning: “Können” is broader than “Fähigkeit”]
- Competences include knowledge, skills, also soft skills, and attitudes
- Competences are not the same as performance or requirements
- Soft skills are integrated in competence and level descriptions, the e-CF doesn’t differ competences in the popular categories “functional”, “methodical”, “social” and “individual”
- Competence development is more than education or qualification. Competence cannot be determined by examination alone; the best confirmation of competence is to do, to document and to consider real work at different levels of complexity

Benefits highlighted

The main aim of the German enterprise was to harmonize internal job descriptions for better support to enterprise growth. For this purpose, it was necessary to describe requirements and competences in a common and understandable way. The e-CF was used to make collaboration between ICT and HR department easier, and optionally, an external e-CF expert was deployed to support this aim.

The method adopted

A series of workshops were held between HR and the ICT operations teams, facilitated by an e-CF expert. The implementation steps were as follows;

1. The collaborative team re-structured and harmonized the internal job descriptions.
2. In a further step new job descriptions were related to qualifications (from the German Advanced IT Training System – AITTS) or Training Options (ITIL, network administration etc.). Using the e-CF the ICT executives expressed their requirements in a way, that the HR department were able to recruit people with suitable qualifications and improve internal competence development.

The most important paper used in this workshop was the e-CF overview scheme. This scheme provides an outline of the technical basis and the process structure of the e-CF. See Table 1 below.

The schematic acted as a catalyst for mutual understanding between HR and ICT functions by use of a common language enabling agreements on job description creation.

The results were:

- A specific new job description expressed with e-CF competencies
- A generic schema for re-structuring and harmonizing all job descriptions
- A consolidated method enabling staff from ICT and HR to translate existing job profiles and to describe new jobs by using the e-CF competencies and levels in a common and understandable way

Table 1: e-CF 3.0 overview as workshop supporting tool

Dimension 1 5 e-CF areas (A – E)	Dimension 2 40 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/Service Planning					
	A.5. Architecture Design					
	A.6. Application Design					
	A.7. Technology Trend Monitoring					
	A.8. Sustainable Development					
	A.9. Innovating					
B. BUILD	B.1. Application Development					
	B.2. Component Integration					
	B.3. Testing					
	B.4. Solution Deployment					
	B.5. Documentation Production					
	B.6. Systems Engineering					
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					
	D.11. Needs Identification					
	D.12. Digital Marketing					
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. IS Governance					

Expansion to other examples

The above case illustrates how the e-CF has been used for enhancing communication between HR and ICT for harmonizing job descriptions and more targeted recruitment. The e-CF can also support communication of ICT supply competence to customers or for internal profile structuring and assessment.



References

- Further information can be found by accessing the user guide at the e-CF website.
www.ecompetences.eu
- Also see CEN Workshop Agreement (CWA) 16367:
„e-CF into SME's“
<http://www.cen.eu/cen/Sectors/Sectors/ISSS/CWAdownload/Pages/ICT-Skills.aspx>
- A simple online tool for building profiles can be accessed at
<http://profiletool.ecompetences.eu/>

European e-Competence Framework (e-CF) for qualification providers

About the e-CF. The European e-Competence Framework (e-CF) version 3.0 provides a reference of 40 competences as required and applied at the Information and Communication Technology (ICT) workplace, using a common language for competences, skills and capability levels that can be understood across Europe. As the first sector-specific implementation of the European Qualifications Framework (EQF), the e-CF was created for application by ICT service, user and supply companies, for managers and human resource (HR) departments, for education institutions and training bodies including higher education, for market watchers and policy makers, and other organisations in public and private sectors.

The e-CF was developed through a process of collaboration between experts and stakeholders from many different countries under the umbrella of the CEN Workshop on ICT Skills. The e-CF is a component of the European Union's strategy for e-Skills in the 21st Century. The framework supports key policy objectives of the Grand Coalition for digital Jobs and benefits an ever growing user community from the EU and across the world.

To support e-CF application within multiple environments, a series of illustrative case studies provide examples, benefits and hints of how to make best use of the e-CF.

The following case study illuminates the e-CF application from the perspective of qualification providers.



Key perspectives → → →

- Matching education supply to market needs
- The difference between competence development and traditional learning
- Student motivation from a competence approach
- EQF and e-CF compliance

Summary

Some qualification providers, like vocational education trainers or professional development providers, universities and others, offer programs for the development of competences or for professional roles. The e-CF and the European ICT Professional Profiles serve as guidelines for sustainable competence development in line with the requirements of the market and European standards. Qualification providers may use the e-CF or the European ICT Professional Profiles in different ways. For example an

advanced thinking IT training provider completely changed their curriculum and qualification methodology to offer competence and work-process-orientated training. Other providers have improved their programs to match the program outcomes with the e-CF and to achieve corresponding certification requirements. Universities usually create degree programs to comply with higher education accreditation rules and frameworks. Lately more and more have matched their programs to the e-CF, particularly the outcomes, to enhance communication with industry and to meet labour market needs.

e-CF Value

The e-CF describes competences for the ICT sector in a very comprehensible and consistent way. Furthermore, the e-CF and its inherent principles allow qualification providers to follow an outcome and competence orientated approach. Key benefits of such an approach are:

- Promotion of employability: The use of the e-CF supports the learning outcome approach prevalent in the EQF. It is therefore easier to implement programs, which not only develop skills or procure knowledge, but offers the possibility for continuous professional development in the workplaces.
- Quality enhancement: The e-CF facilitates the communication and comparability of learning outcomes as it provides a common language for communication about competence in the ICT sector. Consequently, it is easier for qualification providers to match the requirements of employers and the labour market. Vice versa it's also easier for organizations to articulate their needs.
- Furthermore the e-CF makes it easier to identify levels of experience and competence in ICT. Due to the relationship between the e-CF and the EQF, it's easy to align the identified levels of competence to qualification levels of the EQF, or national or higher education frameworks.
- The e-CF also makes it easier for qualification providers to achieve external certification requirements, whether from a learning outcomes and examination perspective or from a capability level viewpoint.
- Better promotion and marketing for the qualification providers: qualification providers show by using the e-CF, that they are in line with European guidelines, ICT standards and market needs. Furthermore, that they support sustainable competence development and enhance their market position.

Challenges encountered

The biggest challenge for qualification providers, especially for traditional educational institutions, is the competence-based, outcome-orientated approach of the e-CF:

- In the e-CF competences are described as abilities, "to apply knowledge, skills and attitudes to achieving observable results." As an example: B.1 "Design and Development": Designs and engineers software and/or hardware components to meet required specifications. [...]". Of course, this competence needs knowledge (e.g. about technology) and skills (e.g. performing tests), but it is also crucial to be able to demonstrate and verify ability to design and develop in real projects and workplace environments.
- Competences are closely associated with learning outcomes: to be able to "design and develop", for example, requires a previous competence development process. Instead of an input-orientated curriculum, ability is a crucial aim of the

learning process. This requires redesign of programs and curricula to focus on competence outcomes.

Accordingly instead of traditional education some qualification providers offer competence development. The challenge here is that competence is a holistic concept and cannot easily be divided into discreet subject matter. To overcome this some teachers are being converted to become competence development coaches.

Benefits highlighted

In some countries, Germany is a good example; there is a growing awareness of the advantages of approaching education and training from a competence viewpoint. In these circumstances, the e-CF is an invaluable tool, supporting the identification, articulation and definition requirements of program developers.

Mr Volker Falch, the head of the it Akademie Bayem, stated that one of the key benefits of a competence based approach is the ability provided for students to

reflect and grow self confidence by understanding that they already possess competences gained in the workplace and that they can grow more in a similar environment. Many students have enhanced their career opportunities by engaging in work process related experiential learning.

The method adopted

The IT Akademie Bayern offer support so that ICT employees are able to become certified ICT professionals. This support is called “work-process-oriented training”. The first step before training is a discussion about personnel development aims. Here, the individual’s and the company’s objectives are coordinated and documented in a qualification agreement. The appropriate ICT Professional Profile and/or the most important competencies are identified.

For a competence development process the following key elements are necessary:

- The appropriate ICT Professional Profile, with the competencies, levels and the main tasks as reference.
- One or more qualification projects, which are current and sufficiently complex real work assignments that corresponds in size and depth to the Professional Profile.
- A systematic accompaniment by learning advisors: a coach for the support and reflection of the general learning process and at least one technical expert as a “sparring partner”.
- An infrastructure, which facilitate knowledge, special courses and training etc. In order to achieve lasting results, a basis of workable knowledge over longer periods is necessary; i.e. not only application-related knowledge must be acquired, but also knowledge of basic theory and technology. In order to support these processes, a coach, technical experts, other participants and a media infrastructure must continually support the participant.
- A structured documentation of the qualification project(s) and the learning steps involved in its completion.

The advanced training process begins with the description of the qualification projects and of the problems to be solved or the products and services to be developed. This includes a description of the associated content and personnel requirements. This representation is evaluated against the ICT Professional Profile to determine whether it has the necessary complexity and professional depth required.

The required individual, technical, personal and social learning requirements must be identified and agreed in an objective agreement between the employee and the coach for the competence development process. Coaching is a support to those who wish to develop increased capability leading to extra responsibility and self-management.

The coach plays an important role in:

- Helping to gain knowledge and insights into the technical, personal and social challenges.
- Helping the employee to organize and reflect the qualification process.
- Giving support for personal development.
- Enabling the trainee to learn from mistakes.

Meetings are scheduled to evaluate the work and learning experiences corresponding to milestones in the project are agreed in order to ensure meaningful reflection.

The participant works out the processes of the qualification project, obtains the necessary background information and knowledge, contacts experts, and documents work. Working and learning are equally important and linked to each other. The technical and procedural steps of the project, the communication processes and challenging situations, e.g. decisions, conflicting aims, and difficult customer conversations etc. are described in the documentation.

The duration of the advanced training depends on the ICT Professional Profile, and on the work routine in the organization and is not fixed, from a few month up to one or two years is typical.

Expansion to other examples

The above case illustrates how a qualification provider may use the e-CF for developing ICT competences. It can also support curricula development and building relationships between the educational and the market perspective, see illustrative case study I.



References

- A family of 23 Typical European ICT Professional Profiles has been established and details are available on the e-CF website, www.ecompetences.eu / see section "ICT Profiles"
- Also see CEN Workshop Agreement (CWA) 16367: „e-CF into SME's" <http://www.cen.eu/cen/Sectors/Sectors/ISSS/CWAdownload/Pages/ICT-Skills.aspx>

European e-Competence Framework (e-CF) in a certification environment

About the e-CF. The European e-Competence Framework (e-CF) version 3.0 provides a reference of 40 competences as required and applied at the Information and Communication Technology (ICT) workplace, using a common language for competences, skills and capability levels that can be understood across Europe. As the first sector-specific implementation of the European Qualifications Framework (EQF), the e-CF was created for application by ICT service, user and supply companies, for managers and human resource (HR) departments, for education institutions and training bodies including higher education, for market watchers and policy makers, and other organisations in public and private sectors.

The e-CF was developed through a process of collaboration between experts and stakeholders from many different countries under the umbrella of the CEN Workshop on ICT Skills. The e-CF is a component of the European Union's strategy for e-Skills in the 21st Century. The framework supports key policy objectives of the Grand Coalition for digital Jobs and benefits an ever growing user community from the EU and across the world.

To support e-CF application within multiple environments, a series of illustrative case studies provide examples, benefits and hints of how to make best use of the e-CF.

The following case study illuminates the e-CF application from the perspective of an ICT certification supplier.



Key perspectives → → →

- Matching certification supply to market needs
- Increasing transparency in the European e-skills certification landscape

As an example, EXIN have created a self-assessment tool that computes and displays optimal training paths to achieve certification based upon current qualification and competence. This on-line tool enables ICT Professionals or students to identify certifications that support their future competence development requirements.

Summary

There are many complexities to be faced by ICT professionals or their managers when identifying appropriate training, education and certification programs. To address this challenge and to support professionals in making informed decisions, online tools have been developed, using the e-CF as the core interpreter. The objective of such tools is to enable users to determine certifications or training programs that support personal continuous professional development.

e-CF Value

Tools that provide education and training guidance require a suitable underpinning structure on which to anchor certifications and training programs and support navigation through the plethora of training opportunities that exist. The e-CF has become the framework of choice for recent tools as it represents a European recognized competence structure incorporating the skills and knowledge components inherently incorporated within certification programs supplied by a range of certification suppliers such as APMG, Cisco, Microsoft, The Open Group etc.

Challenges encountered

In a sample case, from EXIN, it was recognized from commencement that relating certification-learning outcomes to the e-CF would require a detailed mapping exercise. Furthermore, it was appreciated that it is too simplistic to assume that the components of a certification program will always completely match the competences articulated within the e-CF. A unique methodology was developed to address this issue – see below for the solution under ‘method adopted’.

Benefits highlighted

By deploying the e-CF as an engine to drive appropriate certification identification, on-line tool developers are able to provide a consistent perspective of e-skills industry based training and certification supply across Europe. By relating e-skills certifications to the e-CF, a new competence transparency can be created that informs students, professionals, managers and training providers.

The method adopted

To address the challenge of potentially unreliable mapping between the e-CF and certification programs, EXIN chose a three layer mapping criteria. Congruence between the e-CF and certification elements is identified using three labels; 1) Generally, 2) Partially, or 3) Superficially. By using these refined criteria a more accurate picture is created of the relationship between competence elements and certification program content. The schematic below provides an example of the mapping process in action.

Title	TOGAF9
Provider	Open Group http://www3.opengroup.org/certifications/togaf9-program
Description	The TOGAF certificate provides validation that in addition to knowledge and comprehension, the candidate is able to analyze and apply knowledge of TOGAF
Target Group	Enterprise architects
Corresponding ICT profiles	ENTERPRISE ARCHITECT SYSTEMS ARCHITECT
Prerequisites	Accredited training
Main subject(s)	<ul style="list-style-type: none"> ■ apply Architecture Development Method (ADM) phases for an enterprise architecture ■ apply Architecture Governance in development of an enterprise architecture ■ apply the TOGAF Architecture Content Framework apply the concept of building blocks ■ apply the Stakeholder Management Technique apply the TOGAF Content Metamodel ■ apply TOGAF recommended techniques when developing an enterprise architecture ■ apply the Technical Reference Model ■ the Integrated Infrastructure Reference Model ■ the content of the key deliverables of the ADM Cycle partitioning of an enterprise architecture ■ purpose of the Architecture Repository ■ apply iteration and different levels of architecture adapt the ADM for security ■ SOA as a style of architecture ■ the role of architecture maturity models ■ purpose of the Architecture Skills Framework and how to apply within an organization

Competence covered with this certificate			Competence from the ICT Profiles	
e-CF competence	Level	G/P/S	ENTERPRISE ARCHITECT	SYSTEMS ARCHITECT
A.1 IS and Business Strategy Alignment	4	P	4	
A.3 Business Plan Development			3	
A.5 Architecture Design	3	G	4	4
A.7 Technology Trend Monitoring	4	S	5	4
B.1 Design and Development	4	P		4
B.2 Systems Integration				4
D.10 Information and Knowledge Management	3	P		
E.2 Project and Portfolio Management	3	P		
E.7 Business Change Management	3	P	4	

Expansion to other examples

The above demonstrates how the e-CF can be deployed to reflect multiple ICT certification content in a shared European language and thus to increase transparency in the ICT certification landscape.

In this case a prototype of an online tool exists, the e-Skills Landscape Service <http://www.eskillslandscape.eu>.

The tool maps approximately 50 current e-Skills certifications from ICT vendor industry systematically against the e-CF. This was one of the results of the European project Quality labels for training fostering e-skills for competitiveness and innovation, which was carried out by Empirica and EXIN on behalf of the European Commission, DG Enterprise and Industry. Relevant European market stakeholders are currently exploring together how to ensure the tool's operational availability in a long-term.



References

- A family of 23 Typical European ICT Professional Profiles has been established and details are available on the e-CF website, www.ecompetences.eu / see section "ICT Profiles"

European e-Competence Framework (e-CF) for ICT professional self-assessment

About the e-CF. The European e-Competence Framework (e-CF) version 3.0 provides a reference of 40 competences as required and applied at the Information and Communication Technology (ICT) workplace, using a common language for competences, skills and capability levels that can be understood across Europe. As the first sector-specific implementation of the European Qualifications Framework (EQF), the e-CF was created for application by ICT service, user and supply companies, for managers and human resource (HR) departments, for education institutions and training bodies including higher education, for market watchers and policy makers, and other organisations in public and private sectors.

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To support e-CF application within multiple environments, a series of illustrative case studies provide examples, benefits and hints of how to make best use of the e-CF.

The following case study illuminates the e-CF application from the perspective of an ICT professional.



Key perspectives → → →

- Self-assessment
- CV/Self promotion

The professional has considerable knowledge, skills and experience but has few formal certificates or qualifications.

Summary

An ICT consultant wanting to prove his/her worth and experience and needing to advise employers or clients about his/her professional capabilities, normally supplies a curriculum vitae, and a list of national certificates or qualifications.

In this example, the professional has an educational qualification, has worked for some years as an employee of a large multinational. In addition the professional has many years of experience as an ICT interim manager in many companies where she was an operational manager of information systems and she also project managed software development.

e-CF Value

Across national boundaries many certificates are not understood and industry certificates provide limited information. An ICT professional has few tools to demonstrate his/her competence. The e-CF can be used as an aid to assess and promote personal competences. Furthermore, employers are ultimately interested in the competences of potential employees and the e-CF provides a common language that can be understood by both parties.

Challenges encountered

The granularity level of the e-CF needs to be taken into account. e-CF is a high level description of competences but the individual will be aware of the details of their career to date and there may be a need to bridge these different granularity levels.

To support this activity it is possible to combine the use of the e-CF with other frameworks or educational achievements many of which have been mapped to the e-CF.

To demonstrate competence, the professional has two primary options; firstly he/she may use the e-CF and incorporate its language and nomenclature within a CV or alternatively seek membership of a professional association using the language of the e-CF to support membership. Both ways use the e-CF as a translation tool that enables the constructor and reader of a CV to gain mutual understanding. As previously stated, IT professionals can supplement and support the use of the e-CF with certificates or qualifications or references to support proof of capability.

Benefits highlighted

In the context of competence identification the e-CF provides a consistent language that articulates competences and enables a holistic description of competence independent but complimentary to formal certifications or qualifications. ICT professionals are readily able to understand the competences of the e-CF and can be confident that they are using a standard supported by many market stakeholders and the European Commission.

The method adopted

The competences articulated within the e-CF can be used by an ICT professional as a dictionary to describe his/her capabilities. The e-CF can be linked to job roles or job profiles to provide an illustration of past experience and successful assignment completion. To achieve a comprehensive overview of their capabilities, the ICT professionals must critically self-assess their competences, including levels, against those described across the entire e-CF. They are then in a position to decide how to present these to a client or potential employers.

Expansion to other examples

Self-assessment, as described above, is a significant application of the e-CF it enables self-awareness and the identification of personal continuous professional development needs. Further assessment and career development applications are described in case studies D, K and M.



Reference

- To support self-assessment a simple tool is available at the e-CF website home page, <http://www.ecompetences.eu> click on 'create an e-CF profile'.

European e-Competence Framework (e-CF) for linking e-curricula supply and demand

About the e-CF. The European e-Competence Framework (e-CF) version 3.0 provides a reference of 40 competences as required and applied at the Information and Communication Technology (ICT) workplace, using a common language for competences, skills and capability levels that can be understood across Europe. As the first sector-specific implementation of the European Qualifications Framework (EQF), the e-CF was created for application by ICT service, user and supply companies, for managers and human resource (HR) departments, for education institutions and training bodies including higher education, for market watchers and policy makers, and other organisations in public and private sectors.

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To support e-CF application within multiple environments, a series of illustrative case studies provide examples, benefits and hints of how to make best use of the e-CF.

The following case study illuminates the e-CF application from a career development perspective.



Key perspectives → → →

- Competence connected to learning outcomes
- e-CF and EQF compliance
- Personal career development
- Competence based e-curriculum

Summary

This case study illustrates how the supply of competence development education can be aligned to the demands of an ICT professional seeking career progression.

From the ICT Professional's view

Petra is a young ICT professional with 7 years experience in an underwear manufacturing company of about 20 people who work on the product design, supply chain, marketing & sales, administration offices, and operate with a network of about 10

production sites across the world. Four years ago Petra developed the IS architecture in support of work process integration and management along the supply chain and for 3 years she has had ultimate responsibility for the strategic direction of technology choices. She is now regarded as the IT manager, making decisions about IT solutions and coordinating a team of two people administrating the IT system. About 9 years ago, Petra took a degree in software engineering, she started to work in a software house developing business applications and meanwhile she attended a two years executive master course in business administration. After that, she found a job in the company where she still works. She was asked to cooperate in redesign of the IS together with the then IT manager responsible and to develop it. When he retired, she assumed sole responsibility for this activity.

Now, the company has just taken over another enterprise producing sportswear with a different network of production sites and clients.

Within a year, a new information system must be deployed, integrating the new requirements from the changing organization, based on a long-term strategic perspective for the business.

Petra is required to take responsibility for conceiving and designing the new IS architecture, together with the owner and the marketing & sales office, committing its development and implementation to an agile external software house.

She will need to anticipate long-term business requirements and determine the IS model in line with organisation policy. Make strategic IS policy decisions for the enterprise, including sourcing strategies.

Petra has a short time to boost her competence that she has started to develop on the job, it needs to be enhanced, consolidated and systematically developed through a training course. As an additional challenge she will have to cope with a new market and the IS will have to align to new business needs and WEB paradigms.

From the Vocational Training Provider's view

The recently established Vocational Training School of ICT Competences intends to deliver competence-based training programmes, aiming for learning outcomes that integrate both technical and behavioural e-skills.

The e-CF meets their requirements as it is structured upon e-competences, intended as "*demonstrated abilities to apply knowledge, skills and attitudes for achieving observable results*", and building blocks to develop ICT job profiles.

Accordingly, the provider has elaborated 36 learning modules, one for each of the 36 e-competences included in the e-CF. The learning modules can be the elements used to build up new further and more complex learning modules and outcomes.

Learning modules have a value *per sé*, and they can be followed one by one, apart, or as subsets of more complex learning modules.

Matching offer and demand

Searching the internet for possible matching learning initiatives, Petra searched with some key words such as, "Information System, architecture design, business strategy....". The first outcome in the search engine was the European e-Competence Framework. Petra became curious and opened the reference page. The list of the 36 e-competences appeared and just the first one was: **A.1. IS and Business Strategy Alignment**. She became more and more inquisitive. She clicked on, and a description of that competence, with its levels and examples of knowledge and skills, was shown. Nearby, the indication of the vocational school providing the related learning module was publicized. It was the only one. So Petra learnt more about that institution, got information about their training offer, and attended the course. Now she feels ready to start the challenging task proposed by her company.

e-CF Value

The e-CF is EQF compliant, it is a suitable reference framework for competences to be dealt with as learning outcomes. Moreover, each e-competence is constructed and described with its components and levels. Accordingly, the e-CF can be a good input for developing learning modules. Its modular structure allows us to combine different e-competences and their elements to build learning units and modules.

Challenges encountered

There are no standard guidelines on how to use e-competences as learning outcomes and how to use the set of e-competences and their components to build up learning modules. Moreover, e-competences are not based on hierarchical relationships; consequently, there is no implicit progression to be followed to combine the building blocks. Furthermore, guidelines on learning module duration and the balance between theory and practice are not available, they would be useful to harmonize the different programmes and for construction of a transparent rationale. Additionally specifications of teaching staff as well as entry requirements to attend the learning modules, pathways and credits, have not been established.

Benefits highlighted

The e-CF has adopted the European Qualifications Framework grammar and it is built upon the principle of “operational descriptions”, namely observable and measurable descriptions, as learning outcomes themselves are. Through analysis of Dimension 3, the e-CF is able to suggest both *the content*, namely the learning outcomes to be developed within learning modules, and the learning units included in the learning modules; and *the method* as well. The closer the e-competences are to complex behaviours, including soft-contextual-managerial skills, the more valuable experiences become.

The method adopted

This paragraph focuses on the method adopted to identify the content to be included in a learning module and possible entry e-competences. It won't deal with its development in terms of length, academic staff specifications or didactic approach. It uses e-competence A.1. IS and Business Strategy Alignment, as an example.

Step 1. Analysing the meaning of the target e-competence (A1)

The analysis starts from descriptions at Dimensions 2 and 3 and can be supported by examples at

Dimension 4 and the deliverables identified in the ICT Professional Profiles CWA 16458.

Dimension 2:

Anticipates long term business requirements and determines the IS model in line with organisation policy.

Makes strategic IS policy decisions for the enterprise, including sourcing strategies

Dimension 3:

Level 4: Provides leadership for the construction and implementation of long term innovative IS solutions.

Level 5: Provides IS strategic leadership to reach consensus and commitment from the management team of the enterprise.

Dimension 4 (Only as examples): Knows/Aware of/
Familiar with:

K1 business strategy concepts

K2 trends and implications of ICT internal or external developments for typical organisations
K3 the potential and opportunities of relevant business models

K4 the business aims and organisational objectives

K5 the issues and implications of sourcing models
Able to:

S1 analyse future developments in business process and technology application
S2 determine requirements for processes related to ICT services

S3 identify and analyse long term user/customer needs

S4 contribute to the development of ICT strategy and policy

S5 contribute to the development of the business strategy

At this step, the ICT Professional Profiles report (CWA 16458) can help identifying the main deliverables expected from the reference e-competences.

In this case, Deliverables are: ICT model, ICT Strategy Implementation, IS Department and Budget, Business Requirements.

Step 2. Checking the bonds with other e-Competences and the learning path

Most e-competences have mutual relationships. Highlighting such relationships and the tightest correspondences facilitates the identification of the set of possible content to be included in the learning module and likewise, the learning path to be undertaken.

With respect to A.1., the main bonds are with A.5. on the one hand, and with E.5., E.7., on the other hand. Namely, A.5. levels 3-4; E.5., E.7., levels 3.

In E.9. Dimension 4, we can find some components useful for A.1., too.

A.3. and B.1. can be entry e-competences for LM A.1.

Step 3. Identifying the content areas / the learning units

The macro-content areas can be identified together with the related learning units and learning outcomes, composing the learning module LM A.1. IS and Business Strategy Alignment, e-4, e-5. They will come out of the e-competence descriptions at Dimension 2 and 3 with the related deliverables (Step 1), and the tightest relations with other competences (Step 2).

LM. A.1. IS and Business Strategy Alignment, e-4, e-5
EXAMPLE Unit A.1.1: Technology Applications and Innovation

Unit A.1.2: Business strategies and Market trends

Unit A.1.3: The business context and the business organisation

Unit A.1.4: The IT infrastructure, new ICT solutions and their impacts on the business

Unit A.1.5: Architecture frameworks, architecture requirements: performance, maintainability, extendibility, scalability, availability, security and accessibility

Unit A.1.6: Cost and Risk analysis

Unit.A.1.7: Budgeting

Unit A.1.8: Leadership and Communication

.....

Step 4. Building the learning outcomes: a possible example

Each Learning Unit composing the learning module is to be developed with a set of learning outcomes.

Hereafter, as an example, one of the 8 learning units is broken down into learning outcomes.

Unit A.1.3: The business context and the business organisation
EXAMPLE

- Understanding the business context
- Understanding organisational models
- Case study: Defining the business context of my company
- Analysing business processes and designing organisational systems
- Case study: Designing the organisational model of my company (.....)

Expansion to other examples

The above-mentioned case illustrated how the e-CF has been used as a reference to develop learning modules based on e-competences.

Within this context, the e-CF can also support:

- ICT professionals to show them what to be learnt and possible learning paths
- Enterprises to investigate possible learning paths for competence growth



Reference

- A useful reference can be found in CEN–CWA 15983 “e-CF int SME’s”
See <http://www.cen.eu/cen/Products/CWA/Pages/default.aspx> for CWA access
- A family of 23 Typical European ICT Professional Profiles has been established based on e-Competences and work deliverables. Details are available on the e-CF website,
www.ecompetences.eu / see section “ICT Profiles”

European e-Competence Framework (e-CF) for ICT professional associations

About the e-CF. The European e-Competence Framework (e-CF) version 3.0 provides a reference of 40 competences as required and applied at the Information and Communication Technology (ICT) workplace, using a common language for competences, skills and capability levels that can be understood across Europe. As the first sector-specific implementation of the European Qualifications Framework (EQF), the e-CF was created for application by ICT service, user and supply companies, for managers and human resource (HR) departments, for education institutions and training bodies including higher education, for market watchers and policy makers, and other organisations in public and private sectors.

The e-CF was developed through a process of collaboration between experts and stakeholders from many different countries under the umbrella of the CEN Workshop on ICT Skills. The e-CF is a component of the European Union's strategy for e-Skills in the 21st Century. The framework supports key policy objectives of the Grand Coalition for digital Jobs and benefits an ever growing user community from the EU and across the world.

To support e-CF application within multiple environments, a series of illustrative case studies provide examples, benefits and hints of how to make best use of the e-CF.

The following case study illuminates the e-CF application from the perspective of ICT professional associations.



Key perspectives → → →

- Assessment
- Benchmark criteria
- Community building

Summary

In this example, it is shown how the e-CF can be used to support the assessment of entry criteria for members of professional associations and to assist in the evaluation of member's skills and competence.

AIP-ITCS (Associazione Informatici Professionisti – Italian Computer Society) is an Italian organisation grouping computer professionals, from all backgrounds, whether employees, entrepreneurs or self-employed. To become members they must prove that they have specialist skills in Information Technology, based upon their qualifications and/or experience. Established in December 1991, AIP-ITCS is a non-profit-making association active throughout Italy and a member of

CEPIS (Council of European Professional Informatics Societies), since 1998. The association provides political representation, professional qualification, training courses and general services for members. Before acceptance into the association, ICT professionals must demonstrate their competences by means of a CV, certifications and an interview. With the advent of the e-CF, the association has established a sense of belonging as all members undergo the same assessment procedure based upon the e-CF. To succeed and become a member is seen as prestigious as successful applicants gain a sense of common recognition and mutual understanding of each other's achievements.

IWA ITALY (International Webmasters Association Italia) is the Italian organization grouping web professionals, from all backgrounds, whether employees, entrepreneurs or self-employed. To gain membership applicants must endorse and follow a code of ethics and, via a CV, map their personal competences to Web skill profiles, a Generation 3 (G3) ICT profile framework, entirely based upon e-CF 2.0 and following the approach of the European ICT Professional Profiles (see

case study P). The association provides political representation, professional qualification, training courses and general services to members. With the

advent of the European e-Competence Framework, the association has created a working group to generate web skills profiles strongly based on the e-CF.

e-CF Value

Across national boundaries many certificates are not understood and industry certificates provide limited information. An ICT professional has few tools to demonstrate his/her competence. The e-CF can be used as an aid to assess and promote personal competences. Furthermore, employers are ultimately interested in the competences of potential employees and the e-CF provides a common language that can be understood by both parties.

Challenges encountered

The e-CF is focused upon competences but the associations previously provided job profile based qualifications, therefore implementation steps have been taken to rationalise the two perspectives.

ICT changes very quickly and the associations are aware of the need to also modify job profile definitions and to include new profiles every one or two years, to maintain currency. This cycle will be coordinated with that of e-CF updates.

Benefits highlighted

As a single point of competence reference, the e-CF provides a stable, consistent and multi-stakeholder supported structure that is sustainable. Associations need to be confident that the underpinning structure of a selected framework has credibility with its membership and this is demonstrated by AIP-ITCSs choice of the e-CF and IWAs creation of Generation 3 Web skills profiles based upon the e-CF. IWA/HWG

International, the international chapter of IWA/HWG is also recognized by CEN as a standardization consortium and therefore the G3 Web Skills Profiles will be promoted within and also outside of Europe in over 100 countries.

The method adopted

AIP-ITCS is developing an online software tool to provide the self-assessment and validation to be used by ICT professionals seeking association membership. Using this software, any professional will be able to test his/her competences and compare them with requirements of the association. In turn, the association will offer an instant, automatic assessment of suitability.

IWA have provided a reference document for self-assessment and validation which can be applied to membership or used universally by professionals or organizations for comparison and identification of market requirements.

Expansion to other examples

This study is an early example of ICT Professionals Associations using the e-CF to assess people or enterprises and to strengthen the sense of community. Other similar organisations may follow and use the e-CF as a benchmark for membership criteria.

Further case studies such as D, H and I, also demonstrate how the e-CF can be deployed and used as an assessment or benchmarking tool.



European e-Competence Framework (e-CF) for ICT training quality improvement

About the e-CF. The European e-Competence Framework (e-CF) version 3.0 provides a reference of 40 competences as required and applied at the Information and Communication Technology (ICT) workplace, using a common language for competences, skills and capability levels that can be understood across Europe. As the first sector-specific implementation of the European Qualifications Framework (EQF), the e-CF was created for application by ICT service, user and supply companies, for managers and human resource (HR) departments, for education institutions and training bodies including higher education, for market watchers and policy makers, and other organisations in public and private sectors.

The e-CF was developed through a process of collaboration between experts and stakeholders from many different countries under the umbrella of the CEN Workshop on ICT Skills. The e-CF is a component of the European Union's strategy for e-Skills in the 21st Century. The framework supports key policy objectives of the Grand Coalition for digital Jobs and benefits an ever growing user community from the EU and across the world.

To support e-CF application within multiple environments, a series of illustrative case studies provide examples, benefits and hints of how to make best use of the e-CF.

The following case study illuminates the e-CF application from the perspective of an internet focused stakeholder network.



Key perspectives → → →

- Specialised competences
- Specialist role development
- Matching education supply to demand

Summary

The Internet has established itself as a crucial engine of innovation and wealth creation, which enables companies to supercharge their performance and competitive advantage. As more small firms exploit the Internet they can gain unprecedented access to global markets previously enjoyed by only the largest corporations. To exploit this opportunity, companies require highly qualified specialized personnel that they must develop or recruit. Competent and capable Internet professional staff is key to achieving innovation and profit optimization pursued by SME companies.

Currently there is a wide range of offerings of internet-relevant training courses across the EU

member states. However, these are structured according to national qualification frameworks and local market needs, which inhibits their comparison and recognition at EU level, subsequently hindering mobility across the EU.

In recognition of this situation, in 2010 various stakeholders in the field of internet-related jobs, such as ICT associations, training providers, chambers of commerce, universities, consultancies, etc. joined forces to form a European stakeholder network to foster collaboration and information exchange about e-Jobs, e-Skills and e-Competences. Access to further details can be found at the e-Jobs Observatory (<http://www.e-jobs-observatory.eu/>). By closely working with ICT SMEs, the e-Jobs Observatory identifies and specifies the skills, knowledge and competences required for the new Job Role Profiles of the digital economy, based on identified market needs, and formulated from the e-CF. The initiative is supported by the European Commission.

e-CF Value

The e-CF enabled the e-Jobs Observatory consortium to better comprehend the characteristics of Internet relevant e-competences and their interrelationships. By specifically identifying the necessary competences to specific Internet Job Role Profiles, based on a transparent and consistent methodology, a standard framework for the development of training modules has been established that simultaneously targets the education requirements of the market.

Challenges encountered

The skills differences between labour-market supply and demand are the result of isolated initiatives by many organizations within their specific countries. Developing training solutions based on a European standard requires successful collaboration among all workforce stakeholders, i.e. companies and training institutions. The e-Jobs Observatory create synergies between key players by deploying a successful application of the e-CF to Internet related Role Profiles. These are being developed from a number of perspectives of IT-related sectors, such as Green-IT, and computer-assisted ambient living.

Benefits highlighted

By using the e-CF, training institutions gain a deeper insight and develop a better understanding of how training offerings should be shaped to match market needs. In parallel, employers are able to define specific competences that are necessary to meet their organisational needs.

The method adopted

The e-Jobs Observatory have developed a methodology that allows for the application of the e-CF to various sectors. So far skills and competences have been identified for the following Role Profiles:

- Internet Hotline Operator
- On-line Community Manager
- Usability Specialist
- Web Marketer
- Web Seller
- Digital Animator/2D-3D Specialist
- Web master
- Web Content Manager
- Web Content/Multimedia Developer
- Web Seller

Following the identification of skills and competences and their inclusion into a specific profile definition; the next step was the development of Training Guidelines, focused heavily on clearly defining learning outcomes and the assignment of appropriate ECVET weightings and credit points. This paved the way for a smooth transition from theory to practice; thus enhancing comparability and subsequent recognition and understanding throughout the EU.

Expansion to other examples

Following the successful application of e-CF in internet-related Role Profiles, the e-Jobs Observatory is currently enlarging its portfolio of Role Profiles in the following emerging fields:

- Green IT
- Ambient Assisted Living (AAL)
- e-Tourism
- On-line Commerce



European e-Competence Framework (e-CF) for assessment and career tools

About the e-CF. The European e-Competence Framework (e-CF) version 3.0 provides a reference of 40 competences as required and applied at the Information and Communication Technology (ICT) workplace, using a common language for competences, skills and capability levels that can be understood across Europe. As the first sector-specific implementation of the European Qualifications Framework (EQF), the e-CF was created for application by ICT service, user and supply companies, for managers and human resource (HR) departments, for education institutions and training bodies including higher education, for market watchers and policy makers, and other organisations in public and private sectors.

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To support e-CF application within multiple environments, a series of illustrative case studies provide examples, benefits and hints of how to make best use of the e-CF.

The following case study illuminates the e-CF application from the perspective of a provider of independent information management certification and accreditation.



Key perspectives → → →

- Assessing an ICT Professional's capability
- Recognition of formal and informal learning

Summary

The e-CF is a valuable framework for assessing an ICT professional's capability. This is exemplified by an ICT application and professional assessment developed by EXIN.

EXIN recognized the need to create an international ICT professional assessment based upon the need to promote 'Professionalism' within the information technology industry. All too often, large IT projects run over budget and over time resulting in a negative perception of the industry and loss of productivity and profitability. Transparency of expertise deployed within major IT projects would support the continuous professional development of ICT staff engaged in critical activities. The solution was to create an assessment of validated ICT professionals recording and accrediting their competence.

A sound methodology was required to underpin the online assessment including consistent measurement of an ICT professional's capability. The chosen method was to use competence as the basis for the assessment. The availability of the e-CF made this a practicable proposition as it provides a consistent structure and articulates ICT professional competence from a European perspective.

The internal plumbing of the professional assessment is provided by the e-CF with the ability to recognize several levels of competence. ICT professionals are able to record their accomplishments, certifications, qualifications and experience in the language of competence and if they wish, pursue competence submission for verification. Dependent upon results, the ICT professional is registered as having achieved the equivalent of e-CF levels 1-5. The assessment application also provides additional functionality by highlighting any competence gaps identified through the assessment process. This insight leads the way to further improvement of the professional.

e-CF Value

The European scope of the e-CF makes it a valuable framework for identifying and benchmarking ICT professional capabilities across the continent. Competence is the commodity sought by employers and customers; the e-CF provides a tangible structure to assess and demonstrate competence. Competence articulated within the e-CF is a holistic concept incorporating, skills and knowledge. The structure of the e-CF provides a simple shorthand identifier (i.e. B1 represents Design and Development) and can be expressed from levels 2–5 so for example B.1. level e-5 demonstrates the highest level of competence in Design and Development. Consequently the e-CF is an ideally structured framework for incorporation within software tools as it provides a simple notation for complex concepts.

Challenges encountered

An issue to be faced was how to combine competences in a formula that reliably indicated the overall capability of a registration candidate. A table of rules was devised that identified a minimum number of competences at specified levels to qualify for registration at a certain level. A further challenge was how to verify the competences claimed by an ICT professional. This is not an easy issue to resolve, as a tick box exercise will not suffice.

Benefits highlighted

The e-CF has provided a quantitative and qualitative framework that identifies and enables the recording of an ICT professional's capability. It does not depend solely upon certification and qualifications but takes into account history, experience and on the job training to provide an understanding of capability.

Competence is based upon the outcome of an individual's education and development rather than the input of education and certification only. It is a combination of knowledge, skills and attitude.

The method adopted

Competence cannot be easily determined by a short test, it is a broad concept requiring comprehensive assessment. Expert and peer reviews, of submitted claims of competence, were the method adopted. In practice, the ICT professional, using the registration tool, self-assesses against the e-CF and then submits evidence of compliance to specific competences and levels. The evidence types, for instance, project reports, appraisals and qualifications; are scrutinized by experienced and knowledgeable auditors.

The outcomes, following audited verification, are then awarded with an overall e-CF level and the candidate's capability is registered.

Expansion to other examples

The above case study demonstrates how the e-CF can be deployed to assess competence by use of an assessment tool. There are other generic examples, based upon using e-CF as a benchmark, they include:

- Simple self-assessment by an individual comparing personal competences to e-CF defined competence, see <http://profiletool.ecompetences.eu/>
- Simple self-assessment by an individual comparing personal competences to pre-defined European typical ICT Professional Profiles, see <http://profiletool.ecompetences.eu/>
- Audit by an ICT Department to assess balance of skills across the organization
- Audit by an ICT Department to understand current competences compared to future requirements.



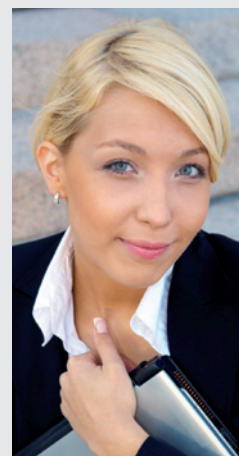
e-CF for European and National policy makers

About the e-CF. The European e-Competence Framework (e-CF) version 3.0 provides a reference of 40 competences as required and applied at the Information and Communication Technology (ICT) workplace, using a common language for competences, skills and capability levels that can be understood across Europe. As the first sector-specific implementation of the European Qualifications Framework (EQF), the e-CF was created for application by ICT service, user and supply companies, for managers and human resource (HR) departments, for education institutions and training bodies including higher education, for market watchers and policy makers, and other organisations in public and private sectors.

The e-CF was developed through a process of collaboration between experts and stakeholders from many different countries under the umbrella of the CEN Workshop on ICT Skills. The e-CF is a component of the European Union's strategy for e-Skills in the 21st Century. The framework supports key policy objectives of the Grand Coalition for digital Jobs and benefits an ever growing user community from the EU and across the world.

To support e-CF application within multiple environments, a series of illustrative case studies provide examples, benefits and hints of how to make best use of the e-CF.

The following case study illuminates the e-CF application from the perspective of European and National policy makers.



Key perspectives →→→

- Ensuring qualified ICT workforce in a long-term
- Communication between policy makers and ICT business
- ICT Curricula (e-Curricula) building
- Cross European common language

Summary

From inception, the European e-Competence Framework initiative featured close cooperation between market stakeholders and experts from ICT industry, ICT qualification and HR development, and policy-making institutions. Thanks to this collaborative process, the e-CF was developed as a component of the European Commission's e-Skills Strategy for the 21st century. This established important political support and provided the e-CF, from commencement, with the necessary political credibility for acceptance from a broad variety of stakeholders.

In consequence, using the e-CF for policy making at different levels across the European Union is straight forward. The e-CF has served as a key reference for several studies and activities carried out by the European Commission, DG Enterprise and Industry, for example, "European Quality labels for training fostering e-skills for competitiveness and innovation" and "European ICT Professionalism", and it has become a key element of the recently launched European Commission Initiative "Grand Coalition for ICT Jobs – filling the gap by 2020".

At national levels, Estonia, The Netherlands and Ireland provide excellent examples of how to apply the e-CF for country-specific ICT workforce development and policy generation. In Estonia, the Qualifications Authority has used the e-CF as a basis for dialogue with ICT employers to gain an understanding of market needs for new qualifications. Founded on the e-CF, Estonia created new occupational qualification standards to feed ICT curricula development for both, vocational and higher education and training. In the

Netherlands, the e-CF is established as the key reference for development of a National e-Skills strategy through multi-stakeholder dialogue led by the Dutch Ministry of Economic Affairs, Agriculture and

Innovation. In both cases the e-CF was translated into national language. Ireland included the e-CF in a 2013 Action Plan for Jobs, launched on 22nd February 2013 by the Irish Taoiseach (Prime Minister).

e-CF Value

The multi-stakeholder collaboration between public institutions, business and education, upon which the e-CF is founded, provides a framework of good technical quality embedded in real-life practicality. Political trust is affirmed from the development umbrella provided by the European Committee for Standardization (CEN) and backed by the European Commission.

The European dimension, achieved by exchanging and engaging many national perspectives, makes the framework a valuable tool for multiple applications in a wide variety of environments.

Challenges encountered

For many the e-CF with its focus on competence is a new concept and it takes time to fully understand. This can mean that it is a challenge to convince some stakeholders that the e-CF is a valid option and worthy of the investment of time and resources necessary for implementation.

For instance, in Estonia, when the Qualification Authority presented the e-CF to the ICT employers, the dialogue at the beginning did not succeed as well as hoped. It was only when an expert from the Estonian Association of Information Technology and Telecommunications was identified to explain all perspectives; the business, the qualification environment and the bridging concept of competence, that communication became easier. Employers feared significant bureaucracy, when hearing the framework came from Europe, they thought it might take years to implement, be complicated and not efficient. The expert, who supported the framework communication, helped his national colleagues to understand the benefits to different stakeholders; that the e-CF could quickly identify priorities for ICT curricula development and improve the quality of ICT education. Looking more closely at the e-CF it was understood that it could be applied efficiently and it was then quickly adopted.

Native speaking expert interaction achieves national translation of the e-CF; ideally, the translations are officially recognized by the National Standardization body. The technical development process of translation needs moderating and therefore takes time and this collaboration with official Standardization bodies was perceived in some cases as time consuming and slow. However, the fact that at the end there is only one, officially recognized high quality translation justifies the investment.

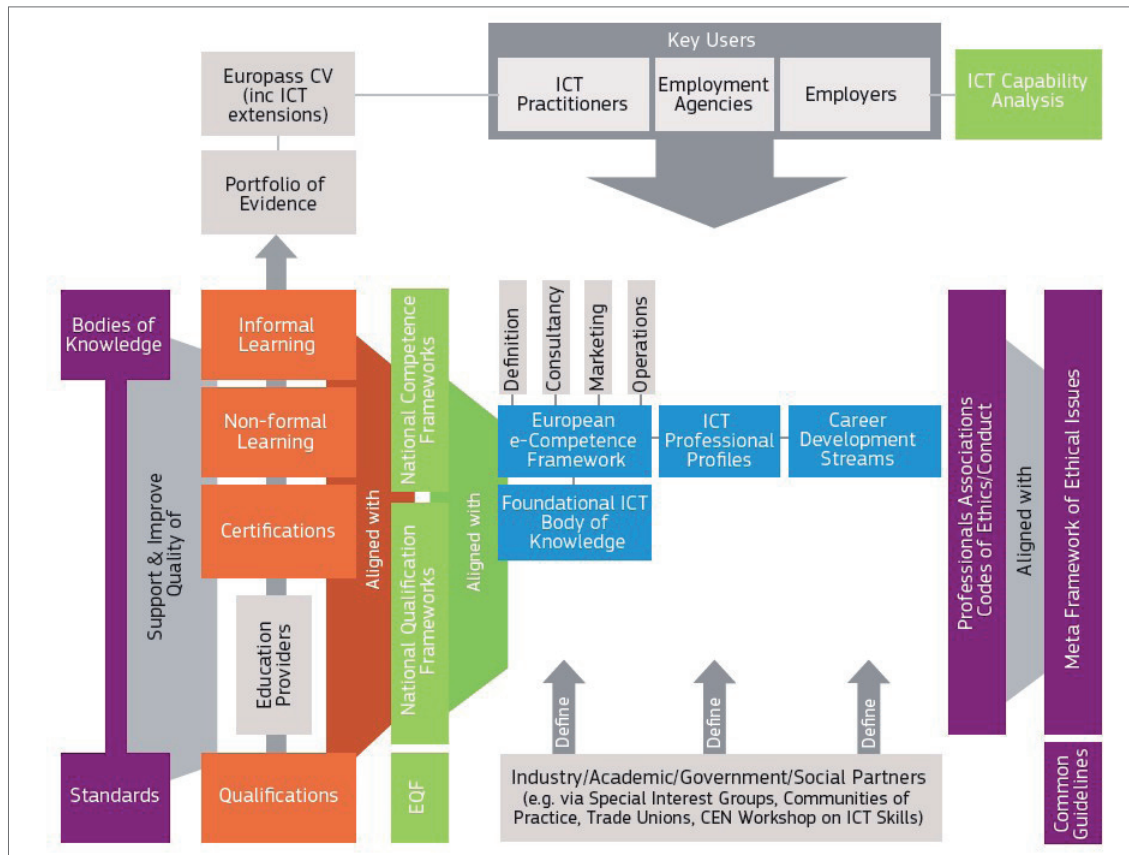
Benefits highlighted

The provision of the e-CF maintains a consistent perspective across all stakeholder environments, and facilitates, for instance, dialogue between ministries and national authorities, ICT employers and qualification providers. The e-CF facilitates exchange of views, unifies language, and promotes consensus. The framework is the fruit of multiple expert input across the EU and can therefore be seen as a technical “quintessence” of current ICT HR know-how. The International dimension of the e-CF and its ease in application within a local environment also strengthens its value. A special benefit lies in the compliance between the e-CF and the European Qualifications framework (EQF), which provides the e-CF with another compelling argument for implementation in European and National environments.

The method adopted

At a European level, case study G explains in more detail how the e-CF served as a key reference for the EC initiated project “European Quality labels for training fostering e-skills for competitiveness and

innovation”. The project “Towards a European framework for ICT Professionalism” identified four key pillars (e-Competences, ICT Profiles, Ethics and Body of knowledge), with the e-CF at the heart of a EU-wide shared professionalism concept.



The European perspective: Towards a common framework of ICT Professionalism

At national levels, each of the three e-CF exemplar countries adopted a different implementation strategy. Estonia started quickly with a practical implementation, once the first communication barrier was overcome, and it was clear that both the Estonian Qualifications Authority and the Estonian Association of Information Technology and Telecommunications approved the e-CF as an excellent basis for their dialogue and for developing new qualifications. Based on the e-CF, they jointly created occupational qualification standards and

used them as the basis for developing new ICT curricula. The e-CF applied as a shared reference facilitated the creation of new occupational qualification standards in short time, approximately 3 months per Profile.

The Netherlands started at a higher level of policy making, by taking the e-CF as a key reference for aligning their national e-Skills strategy. At the outset many different stakeholders were involved with the aim of achieving a sustainable long-term strategy.

In Ireland, the 2013 action plan promotes professionalism through use of the e-CF at an EU and national level; to raise awareness of the e-CF through industry events and to align national standards and certification work with the program of the Grand Coalition for ICT Jobs launched by the European Commission in March. This is a good example of European and national policies become more connected for mutual benefit.

How to get your National translation

The European e-Competence Framework document (CEN Workshop agreement – CWA 16234) exists in the three official languages of CEN, namely English, German and French. Other language versions in Italian, Dutch, Estonian and Russian have been added thanks to specific national initiatives.

The document translation into national languages makes e-CF implementation process easier. CEN is the copyright owner of the CWA 16234 on behalf of its members, which are the national Standardization Bodies. CEN grants exclusively to its members the assigned exploitation rights for the purpose of publishing, reproducing and distributing by any means the CEN publications in accordance with appropriate agreements.

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Once a national translation is available, it may be easily published via www.ecompetences.eu and also appear in the e-CF profiling online tool:

<http://profiletool.ecompetences.eu/>

Expansion to other examples

The examples from European level, Estonia, The Netherlands and Ireland show how the e-CF can serve as a useful basis for policy making for the ICT workforce in different environments. The e-CF also serves as a shared resource in other countries, including in France (see case study O), Germany (see case study O), Italy, Poland and Russia.



References

- “European Quality labels for training fostering e-skills for competitiveness and innovation” – See case study G
- European Framework for ICT Professionalism: www.ict-prof.eu
- Grand Coalition for ICT Jobs

see, <http://ec.europa.eu/digital-agenda/en/grand-coalition-digital-jobs-0>

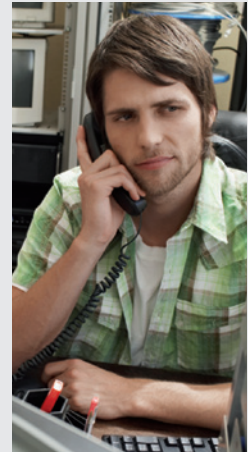
Using e-CF to integrate or relate to other frameworks

About the e-CF. The European e-Competence Framework (e-CF) version 3.0 provides a reference of 40 competences as required and applied at the Information and Communication Technology (ICT) workplace, using a common language for competences, skills and capability levels that can be understood across Europe. As the first sector-specific implementation of the European Qualifications Framework (EQF), the e-CF was created for application by ICT service, user and supply companies, for managers and human resource (HR) departments, for education institutions and training bodies including higher education, for market watchers and policy makers, and other organisations in public and private sectors.

The e-CF was developed through a process of collaboration between experts and stakeholders from many different countries under the umbrella of the CEN Workshop on ICT Skills. The e-CF is a component of the European Union's strategy for e-Skills in the 21st Century. The framework supports key policy objectives of the Grand Coalition for digital Jobs and benefits an ever growing user community from the EU and across the world.

To support e-CF application within multiple environments, a series of illustrative case studies provide examples, benefits and hints of how to make best use of the e-CF.

The following case study illuminates the e-CF application from the perspective of owners and creators of new frameworks.



Key perspectives → → →

- Use of the e-CF in an established structure
- Relating the e-CF to other frameworks
- Relating workplace and qualification perspective by e-CF and EQF

Summary

Many ICT competence, skills, qualification and profile frameworks exist around Europe and it is often difficult to relate and compare them to each other for mutual benefit. The European e-Competence Framework establishes a European standard for ICT competences and skills description as needed and applied at the Professionals' workplace. It is sufficiently generic to be adaptable to the requirements of different countries, different companies and organisations and to technological evolutions and ICT service developments over the next few years.

The French Association of large enterprise ICT demand companies, CIGREF, has used the e-CF to benefit its

membership. CIGREF membership is formed from approximately 60 French major companies using Information Systems (IS), as an example from energy, finances, automotive and administration sectors.

CIGREF have established an IT job profile framework, which has existed for the past 20 years, named "CIGREF's nomenclature of IT job profiles". This framework describes a set of ICT job roles with their mission, activities and competences. The CIGREF job profile framework is regularly reviewed and maintained by a group of HR Managers. The latest version was published in 2011, and it now uses the e-CF as a basic reference for describing competences relevant to each job profile. Around 50-60% of CIGREF members use the CIGREF framework.

In Germany, the e-CF was used to express the content of the National ICT Professional Profiles that are the basis of a sophisticated qualification system consisting of Advanced IT Training system (AITTS) and Profiles from "Duale Ausbildung" (dual education).

e-CF Value

The e-CF brings the required solution to standardize and provide a common language describing ICT competences. By using the e-CF, CIGREF's nomenclature has achieved competence coherence to facilitate assessment and definition of activities in role and job positions.

By adding stable and complete descriptions of competences to their framework, CIGREF's membership, training organisations, recruitment agency, etc. now possess a tool to share descriptions across all aspects of job roles, from mission to competences and in a consistent way.

The parallel applications of the e-CF in France and Germany facilitated direct comparison between French and German Profiles for mutual understanding and learning. This task would have been almost impossible prior to existence of the e-CF.

Challenges encountered

For each job profile, the CIGREF HR members identified the e-competences that are used in the context of their enterprise and the levels required and when a majority agreed, the e-competences were accepted in the description of the job profile. This work was necessarily long, with extensive discussion as there were various perspectives to consider and some enterprises needed to amend their viewpoints and accept that some poor choices had been made in the past. The end result showed that the investment was worthwhile; the CIGREF framework is now a broadly accepted reference tool usable by many disparate organisations.

In Germany the competence identification process for each profile was relatively easy, as profile content had been established by multi-stakeholder consensus, additionally, the profile descriptions are work process oriented and very close to the concept of the e-CF.

A challenging task in general, is the identification or comparison of competence levels between different frameworks. The strongest disparities are found between educational and enterprise structures. From the educational perspective, levels are very important, because they represent eligibility. From the enterprise perspective, levels of competence are mostly proficiency levels. Consequently the e-CF levels are different from levels from educational frameworks and also from the European Qualification Framework

(EQF). Nevertheless, it is possible to establish a consistent relationship between the e-CF and educational frameworks that can be used to establish linkage or support interpretation between different structures.

Benefits highlighted

Benefitting from an existing single European solution, instead of investing further work in definition of competences, was clearly seen as a big benefit by CIGREF and its members. The e-CF enabled communication within the HR group and it encouraged and supported the increasing trend which can be observed within French companies changing perspective from profiles towards, competences. The e-CF was seen as a key driver for discussing and growing understanding of the competence concept. Early skepticism of European and large company involvement in the e-CF development initiative was overcome by a convincing methodology. The definition of capability levels independent from the concept of "seniority levels" was also seen as a compelling added value component.

By using the e-CF, an International dimension was added to both frameworks the French CIGREF and the German Advanced IT Training system.

The method adopted

The aim of the CIGREF framework is to support enterprises in building their own internal HR frameworks.

The most important rule of framework development and regular maintenance is "the consensus"; only input and that content is agreed by a majority of CIGREF's members.. To fill and to complete the CIGREF nomenclature, many enterprises agreed to share their capability and experience and opened their own frameworks. This approach meant that the tool consisted of descriptions that are prevalent in a majority of CIGREF companies.

Before the European e-Competence Framework, the competences were a list "à la prévert"; without standardisation in definitions and containing much redundancy and not very useful as interpretation varied considerably across member companies.

The approach to relating the e-CF to other frameworks depends on the basic principles of the framework selected, its function, its structure and its content.

The German System of job profiles in vocational and advanced IT training (AITTS), has been the subject of similar experience where similarly constructed profiles were systematically related to competences and levels of the e-CF.

Expansion to other examples

The above demonstrates how the French association, CIGREF, enriched their existing job profile framework by using the e-CF as a consistent and Internationally understandable reference for competence. The German professional training system used e-CF to express existing national profiles in a Europe-wide shared language.

Connecting the e-CF to any other type of ICT work related frameworks is possible, examples are available from, SFIA (Skills for the information age), Eucip, Intel, EURO-INF Framework and others.

Conversely, when there is the intention to create a new framework, the e-CF can be used as a shared reference and starting point. This was the case in Estonia (see case study N).



Reference

- User guide for the application of the e-CF, chapter 4
http://www.ecompetences.eu/site/objects/download/5999_EUeCF2.0userguide.pdf
- Die deutschen Aus- und Weiterbildungsberufe im europäischen e-Competence Framework (IG Metall, Frankfurt am Main, 2010)

e-CF for European ICT Professional Profiles creation

About the e-CF. The European e-Competence Framework (e-CF) version 3.0 provides a reference of 40 competences as required and applied at the Information and Communication Technology (ICT) workplace, using a common language for competences, skills and capability levels that can be understood across Europe. As the first sector-specific implementation of the European Qualifications Framework (EQF), the e-CF was created for application by ICT service, user and supply companies, for managers and human resource (HR) departments, for education institutions and training bodies including higher education, for market watchers and policy makers, and other organisations in public and private sectors.

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To support e-CF application within multiple environments, a series of illustrative case studies provide examples, benefits and hints of how to make best use of the e-CF.

The following case study illuminates the e-CF application from the viewpoint of European ICT Professional Profile creation, as a shared EU reference for all type of stakeholders interested in ICT Profile descriptions.



Key perspectives →→→

- Including competence into a job profile
- Communication between HR, management and ICT professionals
- Building and linking local profiles to a recognised European structure

Summary

From a start point of several hundred, profile titles and thousands of descriptions of jobs and role profiles across Europe; the aim of creating European ICT Professional Profiles was to provide a high level reference to facilitate, connect to or provide inspiration for any ICT related profile build.

There are two significantly different approaches taken by management when developing constructs to establish clear understanding of a job or role requirements to be performed by ICT professional staff. The first alternative is a structured job

description, developed either locally, regionally, or nationally to reflect the content of a job and its key components including tasks, performance criteria and qualifications required. The second is less detailed but more flexible and depends upon defining the competence requirements of a specific job or role. Choices about which approach to take are influenced by culture of the organization or maybe the country and also the national education system. As, in general, most decisions have merits and disadvantages, the approach to job definitions involves the same dilemmas. It is, however, possible to merge these two options and benefit by mitigating the disadvantages of both through deploying the e-CF as a key component of a job role.

A combination of these concepts may be addressed at many levels local, regional levels or national. To facilitate a broader understanding of how this can be achieved and to provide a framework structure for job profile creation, a family of European ICT Professional Profiles has been developed under the stewardship of

the CEN ICT Skills Workshop community. The 23 ICT Professional Profiles are constructed at a European level and its principles have been established based on

ability to relate and use the same structure for more granular approaches required such as workplace applications.

e-CF Value

Incorporating the content of the e-CF within a job/role profile provides a substantial component of any profile and ensures that the profile has a European wide connection. Furthermore the currency of the e-CF will ensure the profile will benefit from the common language contained within each competence. Of significant benefit to any profile builder, is the availability of the pre prepared descriptors from the e-CF and avoid starting from a 'blank canvas'. The modular construction of the e-CF readily supports mix and match of competence components and provides clearly articulated statements for inclusion across a broad range of specialist ICT roles.

Challenges encountered

Job or role profiles contain a number of elements and the decision about which to include within the European ICT Professional Profiles family required a consensus approach from many contributors across Europe. The elements chosen were based upon the need to make them relevant to a broad ICT population and for long-term sustainability. There are thousands of job/role profile titles in existence across Europe and in order to relate to each the granularity of the constructed profiles needed to be very high. A subjective decision was taken to create around twenty profiles and this determined the level of detail encompassed in each profile.

Benefits highlighted

The availability of the e-CF made it possible to anchor each profile in a real world environment, firmly connected to the knowledge, skills and capabilities required. The competences articulated within the e-CF provided clear pointers to the tasks that needed to be identified. The e-CF provided a commonly recognized EU competence language and a bridge between the two differing viewpoints of competence and job profiling, facilitating the application of competence management within the traditional approach of job profiling or structuring. This leads to better understanding by management of the roles within their organizational environment and provides an

interpretation that is useful to educational institutions for guiding curriculum development matching industry needs.

The method adopted

The European ICT Profiles were structured and based upon cross European input and feedback under the governance of the CEN plenary workshop. A standard format was developed and used as a template for each profile. The template is reproduced below.

Profile title	Gives a commonly used name to a profile. Identification exercise and multi-stakeholder agreement as described in chapter 2.1.		
Summary statement	Indicates the main purpose of the profile. The purpose is to present to stakeholders and users a brief, concise understanding of the specified ICT Profile. It should be understandable by ICT professionals, ICT managers and Human Resource personnel. The structure should consist of a short sentence (up to approximately 15 words). It should not repeat the entire ICT Profile name. It should provide a statement of the job's main activity.		
Mission	Describes the rationale of the profile. The purpose is to specify the designated job role defined in the ICT Profile. It should provide the performance context of the job within an organizational structure. The following verbs may be used within the description or at least for structuring the thinking about how to express the mission: <i>Guarantees, Ensures, Contributes</i> .		
Deliverables	Accountable (A)	Responsible (R)	Contributor (C)
	Specifies the Profile by key deliverables. The purpose is to illuminate the ICT Profiles and to explain relevance including the perspective from a non-ICT point of view. Also add the dimension of responsible following the RACI model Select only the most important deliverables, which help to illustrate the ICT Profile, not more than 5 in total (A,R,C together). Mention the level of responsibility – A accountable, R responsible, C contributor – to be carried out by the profile.		
Main task/s	Provides a list of typical tasks to be performed by the profile. A task is an action taken to achieve a result within a broadly defined context. Tasks may be associated with deadlines, resources, goals, specifications and/or the expected results. These elements depend upon the context of the task and may be omitted, however the action must always be described. A task is defined by a short description using a verb and the objective or goal of the action. List no more than 10. SELECTION CRITERIA: A task contributes to define a Profile.		
e-CF competences assigned	Provides a list of necessary competences (from the e-CF) to carry out the mission. Must include 1 up to 5 competences. Level assignment is important. Can be (usually) 1 or (maximum) 2 levels. SELECTION CRITERIA: A competence is a consequence of the previously derived Profile definition and helps to separate profiles one from another.		
KPI Area	Based upon KPIs (Key Performance Indicators) a KPI area is a more generic indicator, congruent with the overall profile granularity level. It is provided to add depth to the mission. Not prescriptive. Non-specific measurements. Use general examples. The principle is to provide KPI areas (which are stable, general and long lasting) providing users with an inspiration to enable development of specific KPI's for specific roles (such KPI measurements can be more short-term oriented). Must be related to the key deliverables in order to measure them. Focus on long-term deliverables (Profile), not short term (Job position). The KPI area should always be translatable into detailed measurable KPI examples. Be described in a single sentence.		

The European ICT Profile descriptions are based on two fundamental concepts:

- **European e-Competence Framework:** for defining ICT Profiles a list of e-competences can be identified, to provide differentiation between profiles;
- **Outcomes / Deliverables**
 - An ICT Profile is defined by a list of Deliverables, either in terms of accountable, responsible or in terms of contribution;
 - A Deliverable is a predefined result of a task in a working context;
 - One Deliverable can have only one associated accountable job but may have many contributors;
 - A deliverable may or may not be seen by users, may be intermediate or final, but must always be observable.

The deliverables concept adds a second innovative element to the European ICT Profiles description.

In general terms a 'Deliverable' is the outcome of an activity. Profiles can contribute in different ways towards the production of a 'Deliverable'. Deliverables are an important attribute in profile definitions; using them we can direct mission, tasks and competences to illustrate observable results. Choices were made to identify relevant deliverables which added value to ICT Profiles in order to better characterize the mission.

Applied at the same level of granularity as the e-CF, the European ICT Profiles provide generic skeletons of the most representative profile prototypes currently used in ICT Business structures. To add value, the European ICT Profiles need to be adaptable to the employment environment. They are not useful if, on the contrary, the employer has to change practices to meet profile descriptions.

The European ICT Profile descriptions are therefore reduced to core components and constructed to clearly differentiate one from each other. Further context-specific elements can be added to the profiles according to the specific environments in which the profiles are to be integrated.

The tiles for profiles were selected to fulfill the following criteria:

- i) easy to understand (plain English),
- ii) generic and
- iii) of similar granularity.

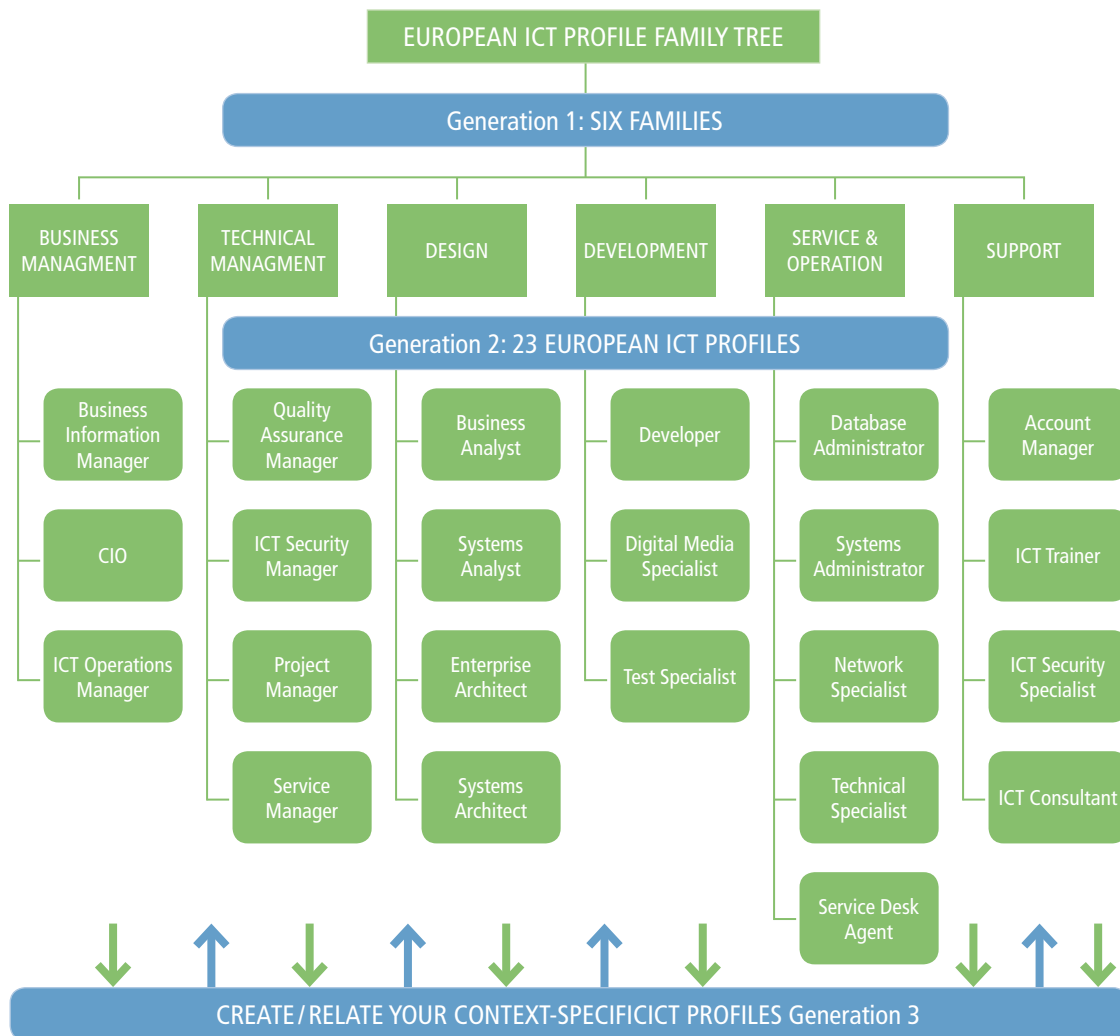
Over 140 job titles/roles were identified from European stakeholders. The twenty-three titles selected were tested against this non-exhaustive list to ensure that they could be represented by the selected role title profiles; all be it at a more generic level. This provided the basis for the profile titles.

An example of the final 23 ICT Professional Profiles, described according to the standard template developed, is displayed below.

Profile title	BUSINESS ANALYST (2)		
Summary statement	Analyses Information System for improving business performance.		
Mission	Identifies areas where information system changes are needed to support business plans and monitors the impact in terms of change management. Contributes to the general functional requirements of the business organization in the area of ICT solutions. Analyses business needs and translates them into ICT solutions.		
Deliverables	Accountable	Responsible	Contributor
	<ul style="list-style-type: none"> ■ Business requirements 	<ul style="list-style-type: none"> ■ Business case ■ Business relationship 	<ul style="list-style-type: none"> ■ Business plan ■ ICT Strategy & implementation
Main task/s	<ul style="list-style-type: none"> ■ Contribute to the preparation of the business plan of the organization ■ Identify areas for improvement in business processes providing possible ICT solutions compliant with the ICT strategy ■ Build requirements, specifications, business processes and the business case related to the proposed solutions ■ Analyze required information and documents 		
e-competences <i>(from e-CF)</i>	A.1. IS and Business Strategy Alignment		Level 4
	A.3. Business Plan Development		Level 4
	E.5. Process Improvement		Level 4
KPI area	Adequacy of the business requirements in response to the business plan		

As discussed above, the intention of the European ICT Professional Profile development was to demonstrate the value of incorporating competence within profiles. The creation of, a final total of, twenty-three profiles was never expected to replace or provide coverage of all profiles required by managers and employees in all situations across Europe. To support the development of local profiles the European job profiles have been clustered into families. Furthermore, a detailed explanation is provided that helps profile builders to create their unique structures but connected to and structured in a similar manner to the European ICT Professional Profiles. Now, for the first time, local profiles can be linked to European profiles and a standard structure adopted readily understandable by a broad range of stakeholders. The principles of job profile construction and alignment with the European ICT Profile family are shown in the schematic below. As discussed above, the intention of the European ICT

Professional Profile development was to demonstrate the value of incorporating competence within profiles. The creation of, a final total of, twenty-three profiles was never expected to replace or provide coverage of all profiles required by managers and employees in all situations across Europe. To support the development of local profiles the European job profiles have been clustered into families. Furthermore, a detailed explanation is provided that helps profile builders to create their unique structures but connected to and structured in a similar manner to the European ICT Professional Profiles. Now, for the first time, local profiles can be linked to European profiles and a standard structure adopted readily understandable by a broad range of stakeholders. The principles of job profile construction and alignment with the European ICT Profile family are shown in the schematic below.



Expansion to other examples

Feedback from stakeholders shows that this scheme has significant application potential that could be applied in other sectors. If at a European level, profile developers agree to make use of the above scheme, convergence, transparency, mutual understanding and mobility could be enhanced for roles that are increasingly interdisciplinary across industry sectors.

For further detailed explanation of how to construct a job profile please following the following link:

- European ICT Professional Profiles www.ecompetences.eu / see section "ICT Profiles"

Also for further examples of profile construction please see case studies A, D, and O.



European e-Competence Framework version 3.0

The European e-Competence Framework 3.0 has been published by CEN as CWA 16234 Part 1, 2, 3 and 4 in 2014; the CWA is available from the CEN Members and can also be downloaded from the CEN website: www.cen.eu

The European e-Competence Framework is a component of the European Union's strategy on «e-Skills for the 21st Century». It is also supporting key policy objectives of the «Grand Coalition for Digital Jobs» launched in March 2013. It is promoted as a very useful tool to boost digital skills and the recognition of competences and qualifications across countries and to foster ICT professionalism in Europe.

Visit the European e-Competence Framework website: www.ecompetences.eu
Create an e-CF Profile: <http://profiletool.ecompetences.eu/>

CEN Workshop on ICT Skills

The CEN Workshop on ICT Skills is a network of experts representing the ICT industry, academic institutions, vocational training organisations, ICT professional associations, social partners and research institutions.

The workshop aims to promote excellence in the ICT sector and strengthen the ICT profession through the creation of relevant supporting standards that can be applied throughout Europe and around the world.

All CEN Workshop Agreements (CWAs) in the field of ICT Skills can be found on the CEN website (under Sectors > ICT).

About CEN



CEN (European Committee for Standardization) is one of the three officially recognised organisations responsible for developing and defining standards at European level – together with CENELEC (European Committee for Electrotechnical Standardization) and ETSI (European Telecommunications Standards Institute). CEN develops European Standards setting out specifications and procedures in relation to a wide range of products and services.

The members of CEN are the National Standards Bodies of 33 European countries including all of the European Union member states, three countries of the European Free Trade Association (Iceland, Norway and Switzerland) and two EU candidate countries (Turkey and the former Yugoslav Republic of Macedonia). European Standards (ENs) approved by CEN are accepted and recognised in all of these countries.

For more information, please see www.cen.eu and www.cencenelec.eu

The European e-Competence Framework version 3.0 work was supported by the European Commission, Directorate General Enterprise and Industry, and the European Free Trade Association.



About The Grand Coalition

The Grand Coalition will help accelerate and intensify efforts initiated by European policies, such as the Digital Agenda for Europe, the e-Skills Strategy, the Employment Package, the Opening up Education Initiative, the Rethinking Education Strategy, the Youth Opportunities Initiative, and the EU Skills Panorama. For more information about the Grand Coalition, priorities please see:

<https://ec.europa.eu/digital-agenda/en/grand-coalition-digital-jobs-0>

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www.ecompetences.eu

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