Illustrative Case Study (I)

European e-Competence Framework (e-CF)

for linking e-curricula supply and demand

ABOUT THE e-CF. The European e-Competence Framework (e-CF) provides a reference of 36 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 designed and developed for application by ICT service, user and supply companies, for managers and human resource (HR) departments, and for education institutions and training bodies, and other organizations in public and private sectors.

The framework was developed under the umbrella of the CEN ICT Skills Workshop through a process of close cooperation between ICT business and human resource (HR) experts, stakeholders and policy institutions from many different countries and at the EU level. Published by CEN for the first time in 2008 and followed by a further enhanced version 2.0 in 2010, the framework brings benefits to a growing community of users throughout Europe and overseas.

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 strategie*s*.

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 was created as an answer to the stakeholders' request for a shared European framework of competences in the ICT business areas. Accordingly, the e-CF provides the reference content for vocational training in the ICT sector.

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

References

- 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, follow this link, http://www.ecompetences.eu/2165,ICT+Professional+Profiles.html