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End User e-Skills Framework Requirements

Final Report – CWA _____

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It is supported by the input and views of the CEN / ISSS Workshop Community

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Forward

The formal decision to start work on this CEN Workshop Agreement "End User e-Skills Framework Requirements" was taken at the CEN ICT Skills Workshop meeting of December 2008 in Brussels.

The development of this CEN Workshop Agreement took place in the CEN ICT-Skills Workshop between April 2009 and May 2010. The draft CWA is now being made available for a 60 days commenting period.

DRAFT

Executive Summary

The End User e-Skills Framework Requirements project was commissioned by the CEN/ISSS Workshop on ICT Skills to identify the requirements for an end user e-skills framework for use by industry, certifying organisations, regulatory authorities and individuals. The aims of the project were to assist in having an effective understanding of end user e-skills, to make proposals for developing such a reference framework and to outline the associated tools that could benefit framework users.

The initial research produced a view of the European activities around existing implementations of end user e-skills frameworks. This has demonstrated that there is activity and interest in this area, with example of frameworks from six countries highlighted.

The main element of the primary research was carried out with individuals and organisations representing four identified target groups of the framework, namely:

- Human resource recruitment
- Training and/or certification organisations
- Individuals
- Government and regulatory authorities

The outcomes of the survey conducted with respondents from 25 countries, along with supporting semi-structured interviews provide a clear indication that there is support for a European end user e-skills framework. Another outcome was that such a framework would have a variety of benefits for the key target groups identified by the project team. The outcomes of the survey also assist in providing a specification for the framework. It is clear that the future framework will need to be able to be presented with a range of depth in terms of the level of detail (low to high) and the number of proficiency levels to suit the various target groups' needs.

The research also points to a preference for the framework to be constructed with a competence approach, which could be supported by examples of associated knowledge and skills. Although there seems to be limited support for explicit links to the European e-Competence Framework, it appears that an end user e-skills framework that has the potential to link to existing national qualifications frameworks and national level end user e-skills frameworks would be welcomed. In addition, the research outcomes suggest that supporting guidelines to assist framework users would greatly enhance the ability to disseminate future framework.

The output of this project paves the way for the development on an end user e-skills framework which can meet the needs of key framework users. The desire for the framework to have a competence focus also suggests that the future framework may need to be renamed as the "European End user e-Competence Framework". Such a framework will have a variety of benefits and applications, including contributing to raising awareness of the key end user e-competences required to maximise ICT inclusion and further promote effective use of ICT in the workplace and among all members of society.

1. Introduction

1.1 Background and rationale

Much of the activity around the creation of frameworks relating to ICT knowledge, skills and competence¹ has focused on the practitioner (e.g. SFIA, European e-Competence Framework²). This work has been important for the ICT sector, but by necessity has excluded end users, who constitute a much larger and more heterogeneous group. Due to the scale and complexity of the group involved, the development of a complete framework, containing the key skills and competence relating to ICT in the workplace, is a considerable task. A previous proposal – the Digital End-User Skills Framework – proposed engaging in such an activity. On reflection, it may be better to first explore more thoroughly the key drivers for the development of such a framework. For that reason, this project describes a user requirements definition activity that would quantify the type of framework that would be of practical benefit to the key framework target groups. These requirements would both directly and indirectly point to the tools, derived from the framework that could be used by these target groups.

1.2 Policy relevance

The project is relevant to EU legislation, policies and actions relating to ICT standardisation, as set out in the 2008 ICT Standardization Work Programme, including the following:

- **European e-Skills Summit Declaration:** October 2002.
- **Decision 2318/2003/EC:** Adoption of a multi-annual programme for the effective integration of information and communication technologies (ICT) in education and training systems in Europe (e-Learning Programme).
- **e-Skills in Europe: Towards 2010 and Beyond:** Synthesis report of the European e-Skills Forum presented at the European e-Skills Conference on 20-21 September 2004 in Thessalonica. **A Declaration** was adopted recognizing that the way forward is through multi-stakeholder partnerships.
- Communication of the European Commission of 7 September 2007 on “**e-Skills for the 21st Century: Fostering Competitiveness, Growth and Jobs**” Com 496 final and Competitiveness Council Conclusions of 23 November 2007 on a long-term e-skills strategy.

In addition, the project supports Commission service priorities set out in the 2009 ICT Standardisation Work Programme: namely, that work should support conceptual and technical frameworks with relevance to e-learning and life-long competence development and that there should be a focus on developing standards relating to advanced ICT users, and not solely ICT practitioners. The project, in its efforts to define the user requirements for an end user e-skills framework³, will support the creation of a broad framework that services a variety of target groups through the

¹ See Glossary for definitions (Annex 6)

² See Glossary for definition (Annex 6)

³ See Glossary for definitions (Annex 6)

provision of a common reference system that allows practical solutions to real-world challenges.

In summary, the project aims to support the actions of the European Commission in strengthening the process of convergence of ICT Skills Frameworks within the EU by:

- Providing a validation from a broad range of stakeholders, including industry, of the structure of an end user e-skills framework.
- Providing an explicit indication from potential users of the practical relevance of such a framework and of the types of tool sets that would support their use of the framework.

1.3 Project objectives and deliverables

1.3.1 Project Aim

The *End User e-Skills Framework Requirements* project aims to survey the requirements for a proposed end user e-skills framework for use by industry, certifying organisations, regulatory authorities, and individuals. The project aims to assist in having an effective understanding of end user e-skills and to propose practical tools from such a reference framework.

The project, which is funded by the European Commission, is part of the CEN / ISSS Workshop on ICT Skills, a European work group consisting of both national and international representatives from the ICT industry, vocational training organisations, social partners and other institutions. The workshop aims to create long-term human resources (HR) and competence development solutions for the European Information and Communication Technology (ICT) sector⁴.

1.3.2 Project Scope

It is important to note from the outset that this project is firmly focused on gathering details on end user e-skills framework requirements. The project is a requirements research activity and is not a framework development project. The following definitions aim to give clarity to the key terms used in the project, and the scope of “end user e-skills”. These terms are explored in greater detail in section 3 of the report. A glossary of terms used in this CWA are also included in Annex 6.

End User e-Skills:

The capabilities required for effective application of ICT systems and devices by the individual in either a work or personal⁵ environment. Individuals apply systems as tools in support of their own activities, which is, in most cases, not ICT. End user e-skills cover the utilisation of common generic software tools and the use of specialised tools supporting business functions. End user e-skills vary in complexity from introductory up to an advanced usage level.

⁴ See Glossary for definition (Annex 6)

⁵ Includes recreational home usage.

End user e-Skills Framework:

An end user e-skills framework is a simplified conceptual structure used to categorise and express end user e-skills, to various degrees of granularity, across proficiency level(s).

Examples of applications that would fall within the domain defined above include: office applications (such as word processing, spreadsheets, desktop database, presentation, e-mail, Internet), desktop publishing, project management, image editing, website creation. Many of these applications are now used for recreational / home use as much as they are for office / work use.

In addition, applications often used in specific sectors such as drawing / modelling applications (2-D / 3-D), health informatics applications as well as skills to use applications to support business activities (e.g. customer relationship management systems, enterprise resource planning systems, book keeping) would be included within the domain. This highlights the breadth of applications and skills that could potentially fall within an end user e-skills framework.

To enhance the clarity around the *end user e-skills* domain, it is also useful to provide some examples of what is outside the scope of the defined group. The following are examples of skills that are outside scope:

- Systems Development skills (e.g. programming, testing, deployment)
 - These skills are suited to the e-CF “Build” area.
- IT Administrator skills (e.g. setting up users, network security, user support / troubleshooting)
 - These skills are suited to the e-CF “Run” / “Manage” areas.
- Database Administration
- Business Analysis

1.3.3 Target Groups

To facilitate the project aim, the project team focused the research on individuals and organisations representing four identified potential target groups of the framework:

- Human resource and training functions within medium to large scale organisations
- Training and/or certification organisations
- Individuals
- Regulatory authorities

The project research aimed to validate the relevance of an end user e-Skills framework for these target groups and to further explore the potential benefits they could yield from the development on such a framework.

1.3.4 Benefits

The future development of an end user e-skills framework should be able to assist these groups by:

- Contributing to activities in human resource planning and career / competence development in both large and small and medium sized enterprises.

- Assisting enterprises and individuals to enhance employability and support their efforts in competence and career development.
- Encouraging education and certification providers to improve quality and deliver relevant education and training opportunities.
- Assisting regulatory authorities in mapping end user e-skills certifications and qualifications to framework at a national and European level.

1.3.5 Methodology

To facilitate the project aim, the project team have combined a number of research methods:

- Survey - circulation of a survey to individuals and organisations representing the four identified potential target groups of the framework.
- Interviews – conducted interviews with a subset of respondents to supplement the data gathered in the survey.
- Case Study – prepared a mini case study of the UK experience of developing, using and interacting with an end user e-Skills framework.

This multi-faceted research method allowed the project team to explore framework requirements and the potential benefits that could be derived from an end user e-skills framework.

1.3.6 Activities and Deliverables

The key elements of the project are:

- An examination of existing end user e-skills frameworks in operation.
- Creation of a survey and research instrument/s that would identify framework/tool requirements for the different user groups.
- Carrying out the survey and a limited number of targeted interviews.
- Reviewing sector specific framework requirements for a limited number of sectors.
- Synthesis of survey and interview findings.
- Specific recommendations regarding the key components of an end user e-skills framework and an associated tool set.
- Communication with the key stakeholders concerning the findings to facilitate for the development of focused projects that would deliver specific and needed tools.

1.3.7 Output

The results and recommendations of the end user e-skills framework requirements project are planned to be published as a CWA (CEN Workshop Agreement) by June 2010.

The CWA will consist of:

- An overview of the existing landscape of end user e-skills frameworks
- The outcomes of the surveys of relevant target groups
- Specific recommendations regarding the construction of an end user e-skills framework and associated tool set.

2 Surveying different implementations of end user e-Skills frameworks

2.1 Introduction

The initial activity of the project aimed to gather information on the existence of end user e-skills frameworks, with a primary focus on Europe.

The activity was primarily desk based research, supplemented by input from individuals and organisations who are involved in the end user e-skills domain in the selected countries. The output gives a snapshot of the current landscape and helps to inform on the existing solutions being used across Europe to meet the needs of target groups such as certifying organisations, human resource functions, regulatory authorities and individuals.

The focus of the task was initially delimited to the EU-27. The status of National Qualifications Frameworks⁶ in each of these countries was also noted. Recent research from the Education, Audiovisual and Culture Executive Agency⁷ and a CEDEFOP report on the development of national qualifications frameworks in Europe⁸ was also used as a source for this particular part of the research.

It should be noted that when asked about end user e-skills frameworks, many of the respondents made reference to the prevalence of ECDL in their country. The ECDL certification programmes are widely adopted across Europe and beyond (as ICDL), and as a result of 9 million registrations to date⁹, ECDL has become the *de facto* standard in this domain.

Note: While all countries in the EU-27 were surveyed as part of this preliminary research, countries who had no current end user e-skills framework area (i.e. not listed in Figure 1) have not been included in this report.

2.2 Summary of existing end user e-skills frameworks

A summary of the data gathered highlighting existing end user e-skills frameworks can be seen in Figure 1 on the following page.

⁶ See Glossary for definition (Annex 6)

⁷ http://ec.europa.eu/education/higher-education/doc/eurydice09_en.pdf (Accessed 27 May 2009)

⁸ http://www.cedefop.europa.eu/en/Files/6104_EN.PDF (Accessed 23 February 2009)

⁹ <http://www.ECDL.org/publisher/index.jsp?1nID=93&2nID=94&pID=781&nID=830> (Accessed 09 June 2009)

Existing End User e-Skills Frameworks	
Country	Framework Details
France	1) CIGREF (IT Professionals) 2) Ministry of Higher Education and Research - a) Job Profiles Portal for IT Professions (contains end user e-skills) b) C2i – IT Certification for students in higher education
Greece	Common Ministers Decision (Labour & Education) - known in Greece as "KYA-A/25081/2005" - Minimum Syllabus Requirements ¹⁰ which determines the whole procedures, regulations and requirements from private certification bodies in IT field. The "Minimum Syllabus Requirements" part of K.Y.A. contains six (6) modules which are disaggregated in 3 Levels (Units - Knowledge/Skills - Actions/Procedures). The structure is identical to modules 2 to 7 of ECDL Syllabus V4.0, which is well recognised in Greece.
Romania	The National Education Pact, named "Education and Research for a Knowledge Society" Strategy, focuses on 8 key competences ¹¹ , which includes one referring to digital competences. These categories make up a framework focused on the development and modernisation of curricula for secondary school and college institutions.
United Kingdom	In the UK the National Occupational Standards and the ITQ ¹² framework is to the Qualifications Credit Framework (QCF). The ITQ framework covers Entry Level, level 1, 2 and 3 at present. It is a unitised framework with each discipline (e.g. word processing, spreadsheets etc) defined as a standard. Most disciplines have a standard at each level. e-skills UK have defined the framework and resulting standards.
Norway	The Norwegian Ministry of Education and Research assigned Vox (www.vox.no) to develop a Framework for Basic Skills for Adults i.e. descriptions of levels of competence for each of the basic skills that the programme comprises, i.e. for literacy, numeracy, ICT skills and oral communication.
The Netherlands	End user e-skills areas are covered within the Loket MBO ICT. Vendor certifications are linked to relevant vocational training for roles such as Employee ICT Management, ICT Manager and Network Administrator.

Figure 1 - Summary of end user e-skills frameworks in Europe

¹⁰ http://www.oEEK.gr/documents/oEEK_kya_pistopoiisis_foreon.pdf (Accessed 27 May 2009)

¹¹ http://www.presidency.ro/static/ordine/COMISIA_EDUCATIE/EDUCATION_AND_RESEARCH_FOR_A_KNOWLEDGE_SOCIETY.pdf page 9 (Accessed 29 May 2009)

¹² <http://www.e-skills.com/nvg/2541> (Accessed 23 Feb 2009)

2.3 Other framework developments

The research also makes reference to two important European level framework developments:

- European Qualifications Framework (EQF)
- e-Competence Framework (e-CF)

2.3.1 European Qualifications Framework¹³

The EQF is a common European reference framework which links countries' qualifications systems together, acting as a translation device to make qualifications more readable and understandable across different countries and systems in Europe.

The EQF aims to relate different countries' national qualifications systems and frameworks together around a common European reference, using eight reference levels. The levels span the full scale of qualifications, from basic (Level 1, for example school leaving certificates) to advanced (Level 8, for example Doctorates) levels. As an instrument for the promotion of lifelong learning, the EQF encompasses all levels of qualifications acquired in general, vocational as well as academic education and training. Additionally, the framework addresses qualifications acquired in initial and continuing education and training.

2.3.2 e-Competence Framework¹⁴

The European e-Competence Framework (e-CF) is a reference framework of 32 ICT competences that can be used and understood by ICT user and supply companies, the public sector, educational and social partners across Europe.

The framework provides an international tool for:

ICT practitioners and managers, with clear guidelines for their competence development

Human resources managers, enabling the anticipation and planning of competence requirements

Education and training, enabling effective planning and design of ICT curricula

Policy makers and market researchers, providing a clear and Europe-wide agreed reference for ICT skills and competences in a long-term perspective.

The European e-Competence Framework v.1.0 has been developed in the context of the CEN/ISSS workshop on ICT Skills. Work continues in developing the e-CF, through the current e-CF in Action project¹⁵.

Aside from the European level frameworks, some national respondents referred to frameworks which were outside the scope of this research. Frameworks such as SFIA (UK), AITTS (Germany) and CIGREF (France) were referenced by respondents from these countries. However, as this frameworks focus on the IT Professional domain, they have not been given substantial attention for the purpose of this report.

¹³ http://ec.europa.eu/education/lifelong-learning-policy/doc44_en.htm (Accessed 22 July 2009)

¹⁴ <http://www.ecompetences.eu/> (Accessed 29 May 2009)

¹⁵ <http://www.ecompetences.eu/1980,Framework+maintenance.html> (Accessed 25 Sept 2009)

2.4 Details of existing end user e-skills frameworks:

2.4.1 France

2.4.1.1 CIGREF – “Les emplois-métiers du système d’information dans les grandes entreprises utilisatrices”

The CIGREF nomenclature presents a set of IT occupations grouped into families that are used in most information system departments of major French companies. It is a tool that was built by consensus among HR professionals, led by CIGREF, an association of 128 French companies and organisations from various sectors. Companies use it as template to build their own repository by adding their own specificities.

The CIGREF nomenclature is focused on the skills and competence association with IT Professionals and for this reason is considered to be outside the scope of our research focus.

2.4.1.2 Ministère de l’enseignement supérieur et de la recherche (Ministry of Higher Education and Research)

Job Profiles Portal:

The Ministry of Higher Education and Research have developed a Job Profiles Portal for IT Professions¹⁶. While the profiles are largely focused on IT Professional level skills and competence more relevant to the e-Competence Framework, some of the skills requirements are at the end user level (e.g. Internet search techniques for “Online Journalist”, or creating databases for “e-Marketer”). These elements of the profiles could potentially link to or reference a European end user e-skills framework.

Certificate Computer and Internet (C2i):

The Ministry of Higher Education and Research (sub-directorate of ICT for education) have developed the Certificate Computer and Internet (C2i)¹⁷, a certification issued by the French universities as proof of competence in managing information systems and networks. It is established with the aim of developing, strengthening and validating mastery of information technologies and communication by training students in institutions of higher education. C2i is preceded by B2i (Patent Computer and Internet), whose target audience is students in elementary schools and colleges. The C2i is a certification programme that is certainly within the scope of end user e-skills. This programme could potentially benefit from being informed by, or referencing a European end user e-skills framework.

2.4.2 Greece

In Greece, the main developments in the area of end user e-skills relate to an element of the Common Ministers Decision (Labour & Education) - known in Greece as “KYA-A/25081/2005” - Minimum Syllabus Requirements which determines the whole

¹⁶ <http://www.metiers.internet.gouv.fr/> (Accessed 29 May 2009)

¹⁷ <http://www2.c2i.education.fr/> (Accessed 29 March 2010)



procedures, regulations and requirements from private certification bodies in IT field, in order for their certificates to be accepted from the Civil Service Staffing Council (ASEP).

The requirements were developed by government under the supervision of the Organization of Vocational Education & Training (O.E.E.K.) which also supervises the implementation of K.Y.A. The "Minimum Syllabus Requirements" part of K.Y.A. contains six (6) modules: 1. Using Computer & Managing Files, 2. Word processing, 3. Spreadsheets 4. Internet Services, 5. Databases, 6. Presentations which are disaggregated in 3 Levels (Units - Knowledge/Skills - Actions/Procedures). The structure is identical to modules 2 to 7 of ECDL Syllabus V4.0, which is well recognised in Greece, and covers about 85% of it. There is no similar module for IT Concepts of ECDL.

The K.Y.A does not currently have any links to a NQF, and it is primarily used by Public Sector and Public Organizations Employees in almost any administrative positions.

A table of all approved Certification Bodies/Organizations and their Certificates which are accepted by ASEP is the only known services associated with the framework.

2.4.3 Romania

The National Education Pact, named "Education and Research for a Knowledge Society" Strategy, focuses on 8 key competences, which includes one referring to digital competences (using information technology for knowledge and problem solving). These categories make up a framework focused on the development and modernisation of curricula for secondary school and college institutions. The strategy is linked to the Romanian NQF and has been developed by government.

It should be noted that the pact adopted by the Romanian government appears to be an acceptance of the European Parliament Recommendation on key competences for lifelong learning.¹⁸

2.4.4 United Kingdom

In the UK the National Occupational Standards and the ITQ framework are aligned to the Qualifications Credit Framework (QCF). The ITQ framework covers Entry Level, level 1, 2 and 3 at present. It is a unitised framework with each discipline (e.g. word processing, spreadsheets etc) defined as a standard. Most disciplines have a standard at each level.

The levels of the ITQ framework are aligned to the NQF/QCF levels that cover England, Wales and Northern Ireland. The ITQ framework is also aligned to levels 4, 5 and 6 of the Scottish Credit and Qualifications Framework (SCQF). The SCQF is a non-regulatory framework.

e-skills UK have defined the framework and resulting standards. e-skills UK are a Government licensed Sector Skills Council (SSC) for the IT and Telecoms sector in the UK. Their remit is to represent the skills needs of employers within their given sector.

¹⁸ http://ec.europa.eu/dgs/education_culture/publ/pdf/ll-learning/keycomp_en.pdf (Accessed 23 Feb 2009)

There is no evidence of an alignment with other IT user skills frameworks. However, the BCS, the Chartered Institute for IT has mapped ECDL into the ITQ framework.

e-skills UK's remit is to represent the skills needs of employers. However, the influence of the framework covers the provision of IT user skills across the whole of the UK. As an SSC, e-skills UK are also responsible for a UK-wide Sector Qualification and Learning Strategy (SQLS) which defines how the skills needs of employers will be addressed. This SQLS informs policy on which qualifications the regulatory authorities will approve for placing on the NQF/QCF and which priorities for Government funding are.

e-skills UK have produced an e-skills Passport which is essentially a diagnostic tool for the ITQ framework. The Passport enables specific profiles (ITQ unit options) to be set for people and they can then perform a simple diagnostic assessment against the relevant standards. The Passport can then track progress against this in the form of ITQ unit achievements. e-skills UK currently sell Passport licences to anyone who wants them. The Passport is not a necessary requirement for involvement in the ITQ framework.

2.4.5 Norway

The Norwegian Ministry of Education and Research assigned to Vox the responsibility to develop a Framework for Basic Skills for Adults¹⁹ i.e. descriptions of levels of competence for each of the basic skills that the programme comprises. All the sets of competence goals, i.e. for literacy, numeracy, ICT skills and oral communication, have now been approved by the Ministry of Education and Research.

The Framework for Basic Skills for Adults establishes national standards for reading and writing, mathematics, ICT skills and oral communication. The descriptions of levels of competence for each of the basic skills are divided into three levels. The template is identical for all skills and all levels. Each level is described in detail in the form of intended learning outcomes²⁰.

ICT skills / digital competence

ICT skills / digital competence is about using various ICT systems, finding and exchanging relevant information and producing and presenting information to others.

- Level 1 comprises the minimum competence needed to be able to utilize public and private services to one's own ends.
- Level 2 describes the competence needed to use various web-based services independently and actively.

Level 3 comprises the competence needed to be able to exploit the potential of new technology independently and actively.

¹⁹ <http://www.vox.no/templates/CommonPage.aspx?id=2613>, (Accessed 23 Feb 2009)

²⁰ See Glossary for definition (Annex 6)

2.4.6 The Netherlands

Loket MBO ICT:

The end user e-skills areas within the Loket MBO ICT relate to the Microsoft Office certifications, such as the Microsoft Office Specialist (MOS) and the Microsoft Certified Application Specialist (MCAS).

These certifications are deemed to be relevant for vocational training for Employee ICT Management, ICT Manager and Network Administrator roles.

Dutch Qualifications Framework for Vocational Education:

All courses in secondary vocational education (MBO) are offered under the new competency based qualification structure. On January 30, 2009, all 240 vocational qualification files for the vocational and business knowledge (Colo – Association of National Centres of Expertise on Vocational Education, Training and the Labour Market) were presented to the Ministry of Education, Culture and Science and the Ministry of Agriculture, Nature and Food Quality.

The qualification files are made up of key tasks, processes and competencies. Key tasks include work and each work process identifies competences needed to implement them.

This competency-based qualification structure provides the link between the labour market and the programmes for vocational education and training in senior secondary vocational education.

3 Definition of an end user

To ensure that the focus of the project could be maintained, one of the initial activities of the project team involved reaching agreement on a definition for end user e-skills.

The Synthesis Report of the 2004 European e-Skills Forum²¹ highlighted three main categories within e-Skills, namely:

- ICT practitioner skills
- ICT user skills
- e-Business skills

A common European framework for ICT Professionals to cover both *ICT practitioner skills* and *e-Business skills* has been developed by the work of the e-Competence framework (e-CF). The work of the current end user e-skills framework requirements project is focused on meeting the needs of the other key category, *ICT user skills*.

It is important to note that there may be scope for cross references and linkages between any future end user e-skills framework and the e-CF. As we will describe later, the type of skills within the end user e-skills framework are used by IT professionals who have competences as described in the e-CF, but also have relevance for individuals in non-IT roles and even personal / recreational users.

The definition proposed in the Synthesis Report of the 2004 European e-Skills Forum is a useful starting point to delimit the scope of the term:

ICT user skills: the capabilities required for effective application of ICT systems and devices by the individual. ICT users apply systems as tools in support of their own work, which is, in most cases, not ICT. User skills cover the utilisation of common generic software tools and the use of specialised tools supporting business functions within industries other than the ICT industry.

Within this definition e-Skills can be made up of several capabilities: knowledge, skills and competence. The relevant definitions used for the purpose of the project are available in the report Glossary (Annex Section 6). Europass, who have developed the Europass CV²² to allow people to make their skills and qualifications understood across Europe, make reference to “Computer skills and competence” with the CV structure. These sections include skills such as word processing, database searching, acquaintance with Internet, graphics design, and advanced skills (programming etc.). These skills and competence are covered within the e-Skills Forum definition above.

²¹ http://www.e-skills-ilb.org/docs/eSkills_forum_sep_2004.pdf (accessed 11 May 2010)

²² <http://europass.cedefop.europa.eu/europass/home/vernave/Europass+Documents/Europass+CV.csp>
(Accessed 23 Feb 2009)

Digital Competence is included as one of the key competences for lifelong learning, as part of a recommendation of the European Parliament and Council. This particular definition suggests that:

Digital competence involves the confident and critical use of Information Society Technology (IST) for work, leisure and communication. It is underpinned by basic skills in ICT: the use of computers to retrieve, assess, store, produce, present and exchange information, and to communicate and participate in collaborative networks via the Internet.

This particular definition stresses the communication and collaborative aspects of ICT and the fact that these competences are applicable for work, leisure and communication.

Depending on the required level of granularity and structure of an end user framework, it may require some form of descriptors to differentiate between these capabilities, although there will be overlaps that may hinder this possibility.

In addition, each end user e-skills category will require a number of proficiency levels. Within the e-CF, the levels of the framework can be mapped onto the EQF. This approach may be less satisfactory if applied to the end user e-skills domain, as end user skills such as creating a mail merge, or creating a chart in a spreadsheet would most likely be too granular to map to an EQF level.

This granularity issue and the need to create levels that are both understandable and practical should be addressed in the research. The construction of the levels can be based on “difficulty”, “cognitive complexity”, or “specialisation”. One previous example was highlighted in the ICT-Skills Certification in Europe²³ report, where a possible categorisation consisting of four levels was proposed: (A) Basic, (B) Core, (C) Advanced, and (D) Expert. A variation of this type of approach was used during the survey to gather responses based on a proposed framework architecture.

It is also important to consider the fact that the end user can either be someone who requires the skills for personal / recreational use, or an individual / organisation that requires the skills as part of their occupation, or as part of a qualification / certification. The context and motivation associated with these users differs considerably. Furthermore, the way these users will interact with ICT will vary based on their ICT use requirements.

Based on the requirements and information above, it is possible to create a revision of the European e-Skills Forum definition as follows:

²³ http://www.cedefop.europa.eu/etv/Upload/Information_resources/Bookshop/431/6013_en.pdf
(Accessed 23 Feb 2009)

The capabilities required for effective application of ICT systems and devices by the individual in either a work or personal²⁴ environment. Individuals apply systems as tools in support of their own activities, which is, in most cases, not ICT. End user e-skills cover the utilisation of common generic software tools and the use of specialised tools supporting business functions. End user e-skills vary in complexity from introductory up to an advanced usage level.

This revised definition²⁵ is used to provide the background to the research and to ensure that respondents to the research are clear on the domain that they are being questioned on.

Examples of applications that would fall within the domain defined above include: office applications (such as word processing, spreadsheets, desktop database, presentation, e-mail, Internet), desktop publishing, project management, image editing, website creation. Many of these applications are now used for recreational / home use as much as they are for office / work use.

In addition, applications used by specific sectors such as drawing / modelling applications (2-D / 3-D), health informatics applications, skills to use applications to support business activities (e.g. customer relationship management systems, enterprise resource planning systems, book keeping) would also be included within the domain. This highlights the breadth of applications and skills that could potentially fall within an end user e-skills framework.

To enhance the clarity around the *end user ICT skills* domain, it is useful to provide some examples of what is outside the scope of the defined group. IT Practitioner skills²⁶, defined by the European e-Skills Forum as “the capabilities required for researching, developing, designing, strategic planning, managing, producing, consulting, marketing, selling, integrating, installing, administering, maintaining, supporting and servicing ICT systems” are outside scope.

The following are some examples of such skills that are outside scope:

- Systems Development skills (e.g. programming, testing, deployment)
 - These skills are suited to the e-CF “Build” area.
- IT Administrator skills (e.g. setting up users, network security, user support / troubleshooting)
 - These skills are suited to the e-CF “Run” / “Manage” areas.
- Database Administration
- Business Analysis

While these IT professional skills and competences are outside the scope of this project, it is important to recognise and appreciate that IT professionals and e-business

²⁴ Includes recreational home usage.

²⁵ The revision of the definition was assisted by the input of experts who attended the project open meeting in Dublin, 24 July 2009.

²⁶ See Glossary for definition (Annex 6)



professionals also require end user e-skills to carry out their duties. So while a senior manager may not necessarily become an end user of all new packages they implement, they will be charged with sponsoring / managing their implementation, and may use many end user e-skills to achieve this (e.g. using project management software, e-mail, word processing).

To supplement the definition of end user ICT skills, the project team also defined the term end user e-skills framework:

An end user e-skills framework is a simplified conceptual structure used to categorise and express end user e-skills, to various degrees of granularity, across proficiency level(s).

4 Target groups of an end user e-skills framework

The following have been identified as key target groups for an end user e-skills framework. The groups have been agreed during the proposal phase of the project, and were validated by the project proposal process, where the project was reviewed and revised based on input of the CEN workshop.

The choice of groups was largely informed by knowledge of the domain, and supplemented by some initial desk-based research of frameworks during the proposal phase (such as the e-Competence Framework, UK NOS, and Norwegian framework for basic skills for adults). This research pointed to the target groups we have identified, which will form the main focus of the research activity.

4.1 Human resource and training functions within medium to large scale organisations

These functions require a way of describing ICT skills and competence that relates logically to job roles and that can be used to identify skills gaps²⁷. Human resource managers could use an end user e-skills framework to build job specifications and profiles and to identify appropriate candidates. Training managers could use it to build focused training plans, purchase training in a structured way, and reuse content. In addition the availability of an e-skills framework could help organisations to identify clearly where there are skill gaps and assist in finding suitable course content to fill the gaps identified. Integration of the end user e-skills framework as the reference framework for computer skills in the Europass CV could also offer consistency and clarity for HR managers to evaluate candidates' computer skills and enhance mobility prospects for jobseekers.

4.2 Training and/or certification organisations

This target group could benefit from being able to create flexible training and certification solutions that relate to a common framework. Syllabus development would be supported by an agreed knowledge and skills domain. Certification could be built around logical and required groupings of knowledge, skills, and competence (KSC). Content providers would have a clear definition of the skills required to meet specific needs. The availability of a framework should help the content industry both for hard copy and for eLearning solutions. The framework could help to define the learning environment and offer development paths for lifelong learning both in end user e-skills, and through the benefits that enhanced end user e-skills can offer for other educational options (e.g. further and higher education).

In addition the potential for mapping to the EQF will add credibility to training and certification offerings.

²⁷ See Glossary for definitions for skills shortage, skills gap and skills mismatch. (Annex 6)

4.3 Individuals

Access to appropriate and recognisable descriptions of their skills sets would facilitate individual mobility. A commonly accepted “language” for expressing end user e-skills would allow people to reflect their specific KSCs on documents such as CVs and would allow employers to compare the relative merits of prospective employees.

The e-skills framework could link with the Europass CV in order to make it more recognisable and relevant. In addition the potential links to the EQF could add credibility to any qualifications obtained which adhere to the e-skills framework.

4.4 Regulatory authorities

These organisations need tools to assist in tasks such as mapping qualifications. National qualification frameworks are engaged in formalising and structuring the certification space to allow certifications to map to each other. This process would be assisted by a standard expression of the e-skills domain, particularly as the framework could potentially be mapped to national qualifications framework, and in turn to the EQF.

5 Sector specific approach to defining end user e-skills

In addition to carrying out research with the four target groups referred to in the previous section, the project team have identified four sectors to consider for possible sector specific approaches to defining end user e-skills. During the research phase the project team will aim to gather requirements from those experienced in these particular sectors and use this data to gauge any sector specific requirements for an end user e-skills framework. Given the ubiquity of end user e-skills in almost every sector, the actual sector choices are inconsequential, but the purpose is to ascertain if they are any particular “sector specific” needs, which could assist the project team in elaborating on flexibility that may need to be built into the framework. For the purpose of the project, the four chosen target groups are those with which the project team members are most familiar, to assist in the identification of research subjects.

The ICT-Skills Certification in Europe report and the Synthesis Report of the 2004 European e-Skills Forum both noted that end user e-skills includes the utilisation of common “generic” software tools in an office environment, and the use of specialised tools supporting major business functions with a large number of “user sectors”. The relationships between these 2 skills categories are illustrated in Figure 1.

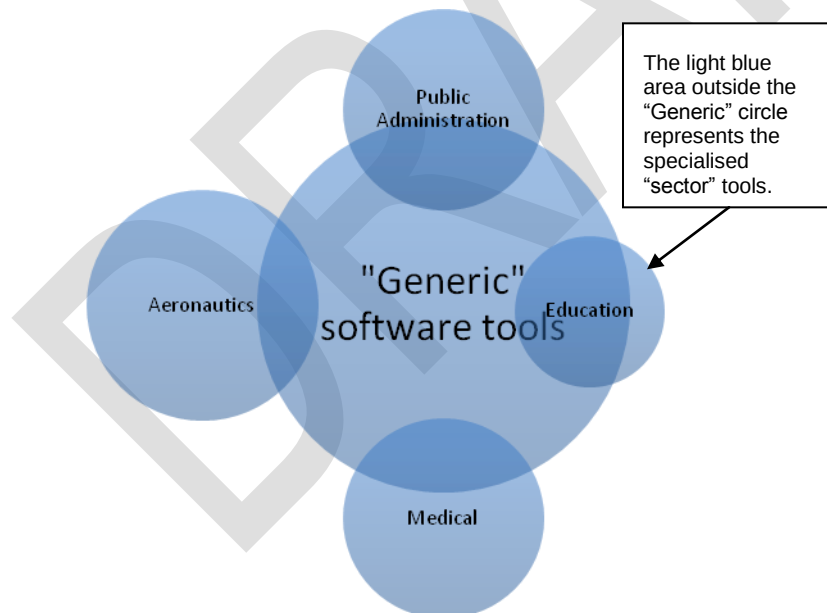


Figure 2 - Relationships between Generic and Sectoral Software tools

The level of overlap between these two skills categories will vary between sectors. The primary research explores the requirements of the sectors and gains a better insight into the sectoral needs for a framework.

Initial thoughts on the possible benefits and uses of the framework for the chosen sectors include:

Public Administration

Within the public administration sector a variety of standard office applications are used in daily work routines. These applications are often supplemented by sectoral applications to carry out a variety of specialised tasks. However, the underlying end user e-skills required to interact with these applications are often common.

An end user e-skills framework could be beneficial to support HR planning (training plans, job specifications). The framework could be adapted to support diagnostic testing either at entry stage, or to assist in assessment skills gaps. In addition, the framework would have the potential to host the skills requirements of staff that use specific applications for their role, as well as standard desktop office applications. The framework could make a contribution to organisational development and change processes and assist in a better understanding of competences for other valuable related areas such as knowledge and information management.

Education

Within the education sector, end user engagement with ICT can take many forms. Students can interact with ICT to learn (e-learning, computer based training) or to complete reports and assignments, as well as completing IT elements of the curriculum. For schools and teachers, ICT can involve interaction with virtual learning environments, or for the maintenance of student records in spreadsheets and databases.

An end user e-skills framework has the potential to integrate with curriculum development for programme elements relating to the ICT end user level in education. The framework can also benefit teachers, by containing framework content specific to the application of ICT in a teaching context, or as a support tool for developing teaching plans for a course. The end user e-skills framework could also provide options to track and assess the development of candidates, through skills gap assessments.

Medical Sector

Medical professionals use ICT to benefit the health and human services industry. They use ICT to keep records, making essential medical information as accessible as possible. ICT provides new ways for hospitals and research centres to communicate with one another, while streamlining the interpersonal communication between staff members and patients.

ICT skills are particularly important in the medical field. The speed and accuracy with which medical information is conveyed can be the difference between life and death. For instance, if a doctor prescribes a common medication that the patient is allergic to, the effects could be devastating. But if the doctor has access to detailed medical records, indicating allergies and medical history, this sort of situation can be avoided.

ICT is at the top of the agenda for modernising our health care systems. Just as surely as it has made a world of difference to commerce and industry, ICT will change the practice of every doctor, nurse, health visitor, midwife and health care assistant.



An end user e-skills framework will offer the potential for medical sector training staff to devise training plans to cover the skills required for using both standard office applications and sectoral application such as health informatics systems.

Aeronautics / Automotive

The aeronautics and automotive sectors contains a high degree of professional level knowledge, skills and competence. The value chain of the sector contains elements such as procurement, manufacturing, quality assurance, engineering, customer solutions, finance and human resources. Despite all the professional aspects to the work of organisations within this sector there is still a need to ensure that staff have the necessary end user e-skills to work efficiently and effectively in their roles.

Some specific examples of applications of an end user e-skills framework for the sector include identifying and addressing skills gaps resulting from a company-wide upgrade of an in-house IT application, to ensuring that staff job specifications make reference to the underlying generic end user e-skills that will be a necessary pre-requisite to perform the task/duties of the role.

6 Project research outcomes

6.1 Introduction

The following section of the report outlines the outcomes of the project research. This section will focus on the outcomes of the end user e-skills framework requirements survey, the associated interviews and a mini case study based on the UK National Occupational Standards. This section of the report is purely a presentation of the research. Analysis of the outcomes as well as recommendations and conclusions are presented in later sections of the report (see section 7 and 8).

6.2 Survey results

The survey carried out over the latter stages of 2009 is a key element of the project. This section of the report will concentrate on outlining the results of the survey.

6.2.1 Response and geographical spread

The survey was circulated to a listing of 230 representatives of the four target groups for the framework (see section 6). In addition, the survey was circulated to various related mailing lists (e.g. European e-Skills Association (formally the e-Skills Industry Leadership Board), CIGREF members, ECDL Foundation Licensees). At the time of closing the survey, the project team had received 118 responses to the survey (a response rate of 51% excluding the additional mailing list circulations).

The respondents came from 25 different countries, 22 of which were European. The breakdown of the surveys respondents among the target groups is highlighted in Figure 3 below:

	Training / Certification	Human Resources / Recruitment	Government / Regulatory	Individuals	Total
No. of Respondents	61	17	18	22	118
No. of Countries	22	7	15	12	
European	19	6	14	12	
Non-European	3	1	1	0	

Figure 3 Number and location of respondents

The countries represented by respondents to the survey are highlighted in Figure 4 below:

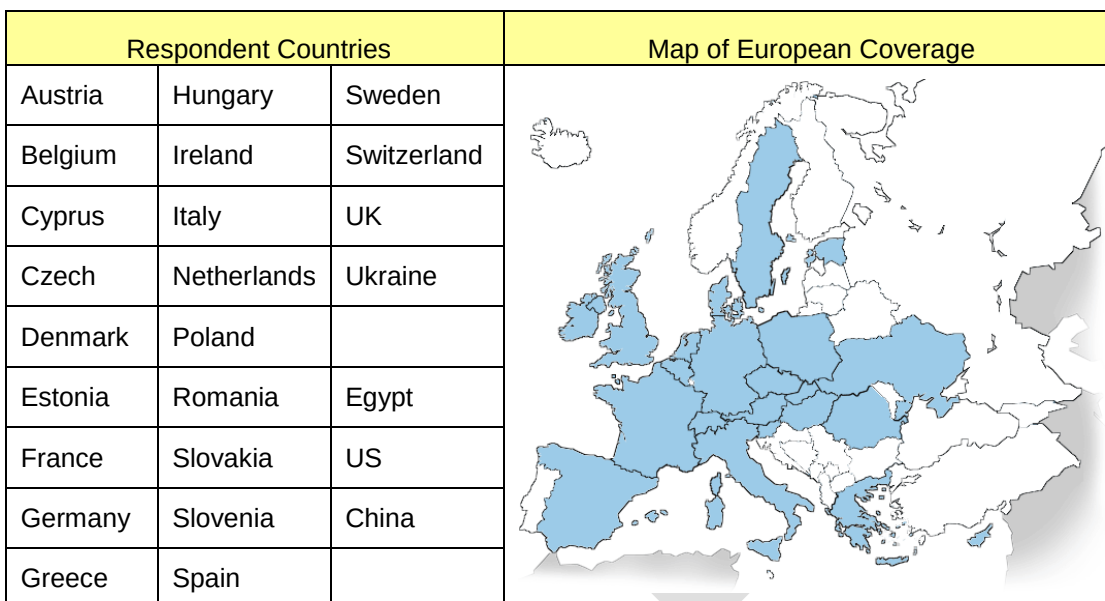


Figure 4 Respondent Countries

6.2.2 Framework – Level of detail required

This question posed to the respondents, related to the level of detail that they would require of an end user e-skills framework. The options available ranged from a high level of detail (containing a category, skill set and skill item level), to a low level of detail (containing a category level only). The results were as follows:

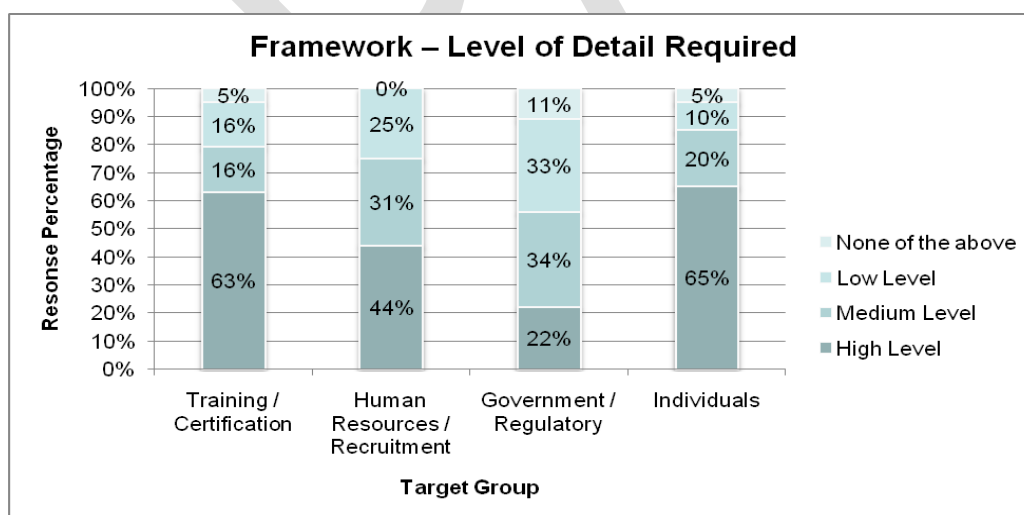


Figure 5 Framework - Level of detail required

6.2.3 Framework – Number of proficiency levels required

This question posed to the respondents, related to the number of proficiency levels that they would require of an end user e-skills framework. The options available ranged from

three proficiency levels to a single (yes / no) proficiency level option. The individuals target group were not asked this question, as survey piloting deemed it to be too technical for most average ICT end users. The results were as follows:

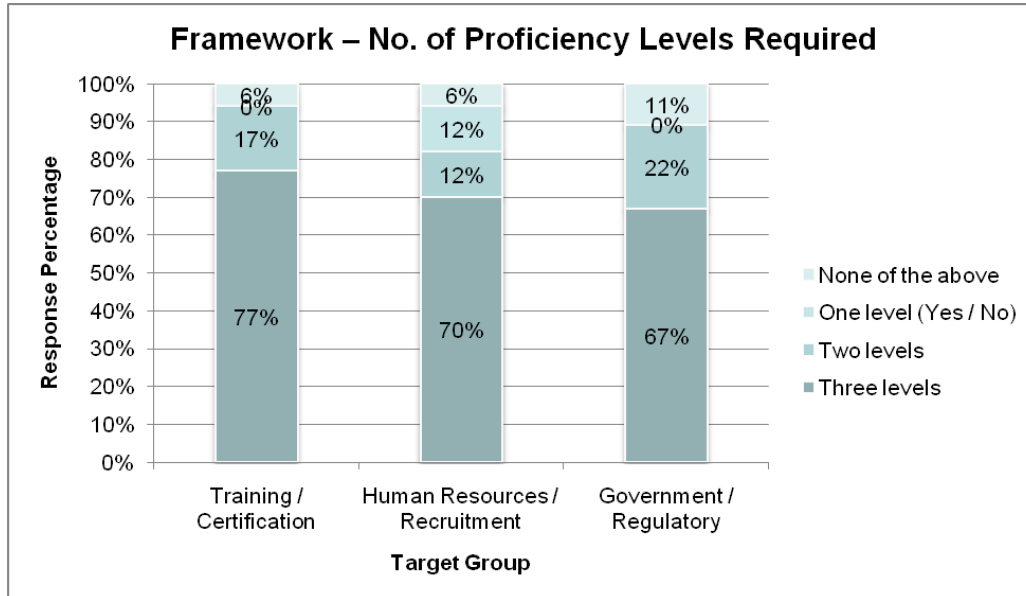


Figure 6 Framework - Number of proficiency levels required

6.2.4 Framework – Linking proficiency levels to other frameworks

This question posed to the respondents, related to the need for end user e-skills framework proficiency levels to link to appropriate levels of other frameworks, such as National Qualifications Frameworks (NQFs), the European Qualifications Framework (EQF), or the e-Competence Framework (e-CF). Once again, the individuals target group were not asked this question, based on feedback during the survey pilot. The results were as follows:

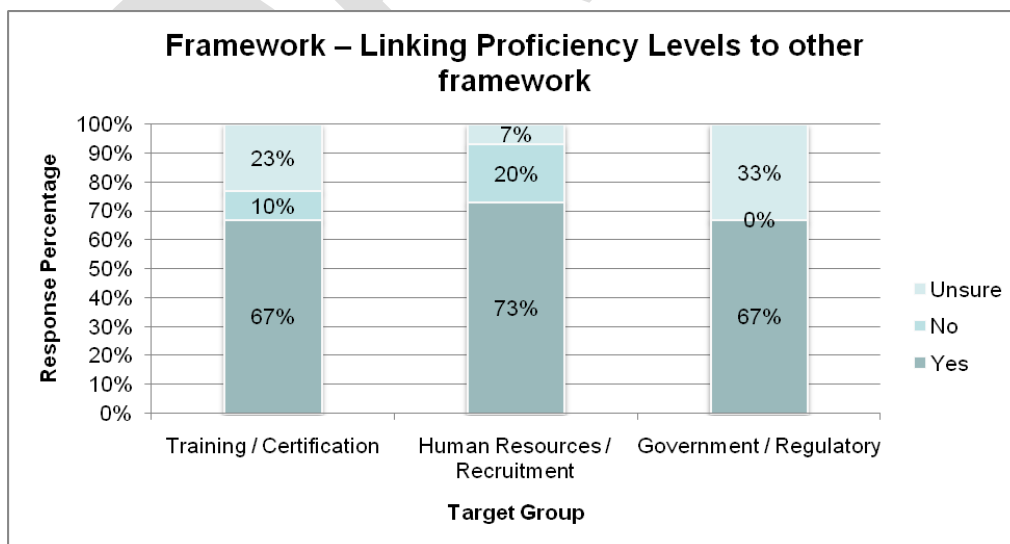


Figure 7 Framework – Linking proficiency levels to other frameworks

Some of the additional comments to the above question suggested that the respondents were positive to links to National Qualifications Frameworks, but that links to the e-CF were not deemed to be appropriate, as the e-CF was deemed to represent a different set of competences, at a much higher level (as represented by the suggested links to EQF levels 3 -8).

6.2.5 Framework descriptors

The next section of the survey aimed to get an indication of the suitability of the terminology used in the framework examples. In this section, the respondents were asked to comment on the Category Descriptors, Skill Set Descriptors, Skill Item Descriptors and Proficiency Level Descriptors. Once again, the individuals target group were not asked this question, based on feedback during the survey pilot.

Category descriptors

The wording of the category descriptors (e.g. Word Processing, Spreadsheets...) was well received by the target groups, with 94% of the government and regulatory group stating that the descriptors were “very suitable” or “suitable”, followed by 90% of the training and certification group and 73% of the human resources and recruitment group.

Skill set

The wording of the skill set descriptors (e.g. Document Creation, Formatting a document, Preparing Outputs...) was well received by two of the target groups, with 93% of the human resources and recruitment group stating that the descriptors were “very suitable” or “suitable”, followed by 82% of the training and certification group. The government and regulatory group had a lower percentage of 47%, with 41% of this group choosing a neutral answer to the question.

Skill item

The wording of the skill item descriptors (e.g. Create a document, Edit a document, Insert tables in a document...) was well received by the target groups, with 80% of the human resources and recruitment group stating that the descriptors were “very suitable” or “suitable”, followed by 76% of the training and certification group and 65% of the government and regulatory group.

Proficiency level

The wording of the proficiency level descriptors (e.g. Ranging from Beginner “Level 1” up to Advanced “Level 3”) was also well received by the target groups, with 87% of the human resources and recruitment group stating that the descriptors were “very suitable” or “suitable”, followed by 83% of the government and regulatory group and 74% of the training and certification group.

Any future end user e-skills framework would have to provide supporting definitions to these terms, to provide clarity to assist in populating the framework. For example, Beginner “*Level 1*” could be defined as “*Knowledge and skills to allow a user to make the first steps using a computer and communications technology and complete very elementary tasks.*” The development of such definitions would be a task for a future project, and is outside the scope of the current project.

6.2.6 Skills or competence based approach

The next section of the survey aimed to get feedback on the respondent's preference for skills based or competence based framework. In this section, the respondents were provided with illustrative examples of both options (within in a mock up framework) and were asked to choose their preferred approach. Once again, the individuals target group were not asked this question, based on feedback during the survey pilot. The results were as follows:

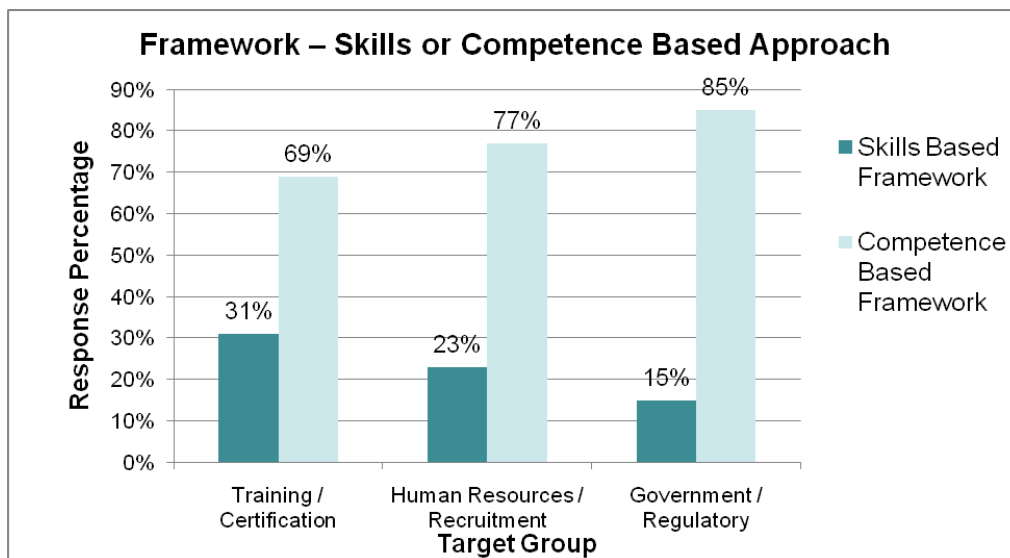


Figure 8 Framework - Skills based or competence based approach

6.2.7 Framework contents - Applications and associated skills / competence

All target groups were asked to choose the applications and associated skills / competence which they would require to be included within an end user e-skills framework. The results of the question showed that a wide range of applications would be worthy of inclusion, but the main office applications such as Word Processing, Spreadsheets, Presentations, Internet and e-mail consistently returned the highest responses. These applications could prove to be the best starting point for any future development of an end user e-skills framework, based on the level of demand from the survey respondents.

6.2.8 Priority of “having an end user e-skills framework”

The next section of the survey aimed to get an indication of the priority of the need to have an end user e-skills framework. Once again, the individuals target group were not asked this question, based on feedback during the survey pilot. The responses suggested that while the need for such a framework was not deemed to be “extremely important” by many, there was a sufficient level of demand to suggest that the development of such a framework would be welcomed.

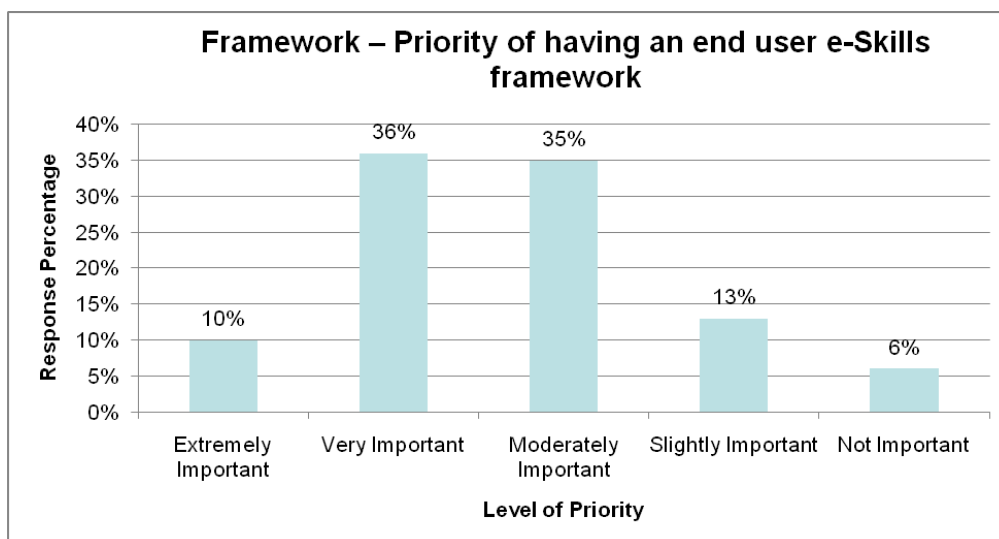


Figure 9 Priority for having an end user e-skills framework

Further analysis of the data by target groups suggests that the Training and Certification and Government and Regulatory respondents made up the 10% overall who felt the framework was extremely important, suggesting a high priority for the framework among some respondents in that group. However, when the “extremely important” and “very important” responses are put together by group we find that Human Resources (50%) has the highest return, followed by Training and Certification (47%) and Government and Regulatory (40%). Overall, this suggests that there is a suitable spread of demand from these three target groups.

Target Group	Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
Training / Certification	14%	33%	37%	6%	10%
Government & Regulatory	7%	33%	33%	27%	0%
Human Resources	0%	50%	29%	21%	0%

Figure 10 - Priority of having an end user e-skills framework (by target group)

6.2.9 Other tools or methods to express end user e-skills

The next survey question asked the target groups if they were currently using any other tools to address the needs an end user e-skills framework could address. It should be noted that it may often be difficult for respondents to judge the tools they are using against a framework concept that they may not yet be fully familiar with; however, the question being posed did provide an opportunity to get an indication of tools that respondents were currently using for expression of end user e-skills.

76% of the respondents stated that they do not currently use any other tools to address these needs. Of the 24% who stated they currently used an existing tool, the main tools

quoted were ECDL and the UK National Occupational Standards. In addition, internal assessment tools were referenced, as well as certification exams, and in one case a syllabus approved by the International Telecommunications Union (a specialised UN agency).

The individuals target group were asked how they currently express their end user e-skills, with responses suggesting that referring to previously attained certifications, by referring to training courses attended and by using the Europass CV guidelines describing computer skills were the most common approaches used.

6.2.10 Benefits of an end user e-skills framework

The next survey question asked the target groups to assess the uses and benefits of an end user e-skills framework and rank their importance. The various target groups had the following preferences:

Training and Certification

- To provide a reference to National or European Qualifications Frameworks.
- To assist individuals in completing a curriculum vitae (e.g. Europass CV).
- To support Human Resource decision making and planning.

Human Resources and Recruitment

- To assist individuals in completing a curriculum vitae (e.g. Europass CV).
- To act as a benchmarking tool to give a snapshot of employee e-Skills and highlight targets to improve e-Skills.
- To support cross referencing of certifications and qualifications.
- To assist in identifying appropriate candidates.

Government and regulatory bodies

- To enhance individual mobility through use of a recognisable description of skills.
- To assist individuals in completing a curriculum vitae (e.g. Europass CV).
- To use as a reference framework for computer skills.

Individuals

- To support cross referencing of certifications and qualifications.
- To allow individuals to enhance mobility prospects through use of a recognisable description of skills.
- To assist individuals in identifying required skills to participate in the Information Society.
- To evaluate training options or purchase training.

6.2.11 Additional benefits of an end user e-skills framework

For the human resources and recruitment respondents, additional benefits included the potential to integrate the framework into the organisation's employee reward

programme, to assist in comparing competences of potential candidates, and to assist in building training plans.

For training and certification organisations, additional benefits included having a common framework for competence and skills planning and training, and having a framework to use to assess incoming and outgoing students e-skills. In addition, it was suggested that the framework could be used to link to employee reward systems, for certification mapping and for assisting in the hiring and career development processes.

6.2.12 Reservations or doubts about an end user e-skills framework

Human resources and recruitment respondents suggest that it may be difficult to explain the framework to local work councils and unions, as there may be a feeling that the framework may impact compensation and benefits of employees. Clear framework guidelines will be required to help to “sell” the framework and allay these fears. In addition, this target group suggested that it is important to keep the framework short and simple, and to clearly differentiate the framework from certifications.

For training and certification organisations there were reservations about the ability to strike a balance between having a framework that is either too light and generic or too detailed and complicated. Additional concerns related to ensuring that the framework is flexible, that the content remains current and valid, and that the framework can be effectively positioned alongside existing national level frameworks.

6.3 Interview results

The following provides an overview of some of the main points that have been raised during the interviews. Interviewees were drawn from the sectors mentioned in section 5 of the report.

The role and position of a European end user e-skills framework in comparison with national frameworks

The interviews suggested that the framework could have a key role in contributing to harmonisation across Europe for training, education and qualification recognition.

The need for coordinated initiatives between national and European frameworks was highlighted. One public administration interviewee also pointed to the current UK framework as a well developed framework that could be used as a starting point to merge other existing frameworks.

Interviewees from the aeronautics sector suggested that the framework would be used for multinational organisations and for job mobility, through the consistency of skills descriptions on CVs.

Training and certification interviewees suggest that it seems to make sense to have a process for developing a single set of skills, given the existence of European-wide coordination such as the ECDL certification offerings.

Problems that could be solved by a framework in your organisation

For the public administration and training and certification interviewees, the framework was seen as a way to unify stand alone solutions and set out clearly the skills and competence required in a common, shared e-skills language. Development of these

competences could help improve workforce productivity and contribute to e-skills development of individuals, organisations, and governments. The potential for the framework to highlight skills required for using electronic services was also highlighted as a problem that the framework could solve.

For interviewees from the aeronautics industry, the framework had the potential to harmonise descriptions across company divisions and countries and assist in facilitating the selection of the most adequate person for a position based on a known and easily comparative skill description.

Key components and framework tools that could assist your organisation

For both the public administration and aeronautics interviewees, the ability to identify skills gaps using gap analysis, build job specifications and linking to appropriate training / certification programmes were the major components and tools referenced. The skills related to information management were also noted as key components. The ability to generate user profiles for use by individuals and HR staff was also mentioned. The aeronautics interviewees also highlighted the need for diagnostic tools for self assessment as useful tools.

For training and certification organisations the existence of a shared approach to defining e-Skills learning objectives would assist in the development of certification programmes and the ability to cross reference qualifications would also be highly desirable.

A competence based or skills/knowledge based framework approach

The interviewees were presented with examples of a framework mock up taking a competence based approach, and a skills/knowledge based approach. In some cases (i.e. where the respondent had engaged with an existing framework), the interviewee referred to the framework as being either competence based or skills/knowledge based and enquired on the suitability of this approach for the interviewees needs.

The interviews closely reflected the survey output, with some interviewees preferring a skills/knowledge based approach, but a majority preferring a competence based framework approach.

The role of an end user e-skills framework in helping to manage changes in work practices and business processes in your organisation

For the public administration interviewees the framework could use diagnostics and requirements definitions to discover the missing skills and competences of people and to define requirements for positions. The framework was also seen as a tool to assist in supporting the implementation and development of knowledge management.

For the aeronautics interviewees the framework could ensure skills are more related to work processes, and thus assist in moves to a more processed focussed structure. The framework could also help to clarify training needs and provide a benchmark for internal standards. If staff have to change and face new tasks, the framework supports this by providing a concrete view of the available/required end user e-skills.

Facilitating the development of high end power users to (entry level) IT professionals using the framework

There were some reservations from interviewees about the potential for this form of upskilling, with it being seen as too demanding for most employees. However, it was noted by one public administration interviewee that the framework could assist in identifying the high end power users.

Aeronautics interviewees also suggested that the framework could help provide the gap analysis between the levels and contribute to outlining the required training path.

Potential benefit for individuals

Potential benefits of the framework for individuals were closely related to those noted in the survey, including:

- Skills assessment to assist in the allocation of tasks to an individual.
- Performance management instrument for HR development.
- Training and career planning tool for individuals and organisations.
- Supporting career development and providing transparency for the “next step” for an employee.
- Standardise employer requirements and assist with European mobility.
- Contribute to increased job satisfaction.
- Individuals benefit from a clear consistent definition of their skills.

Accessibility design considerations

The key point on accessibility related to the ease of accessing the framework (online and in print) and to the fact that it should be simple to use, and be short, concise and to the point. It was suggested that the contents should be constructed in terms of outcomes / abilities and not tools. Usability was also mentioned by a number of the interviewees as being an important accessibility consideration.

The main measurable impacts of an end user e-skills framework

Several measurable impacts of the framework were raised by the interviewees.

Public administration pointed to enhanced employability, efficiency gains and the ability to provide more targeted training and enhance knowledge management.

Aeronautics interviewees felt that the framework would enhance mobility and promotion prospects, reduce resource rotation due to inadequate skills, and ensure training is more effective.

For the medical sector the framework could provide a basis for digital literacy training for staff such as nurses.

The main end user e-skills requirements to participate in the information society

Health sector employees pointed to the need to have a working knowledge of the content covered in certification such as ECDL. It was also noted that knowledge and skills of sector specific applications, such as those used for general practice are important. Public administration interviewees highlighted basic computer and internet skills, basic word processing and skills associated with information and knowledge management.



Long-term benefits of an end user e-skills framework

For the public administration interviewees the main long term benefits were seen as being enhanced clarity on skills requirements and the ability to measure competence levels and work to enhance them.

For the aeronautics interviewees, the framework would enhance mobility prospects and increase employability. In addition, the framework would contribute to helping to secure European advantage as a knowledge based economy.

For training and certification interviewees the key long term benefit was the potential for the framework to assist in the cross referencing of qualifications and to help in the development of training programs.

Joint actions at EU level around framework development

Interviewees from the public administration sector felt that a 'refreshed' framework should be created taking into account the existing national frameworks. This should be done through EU working groups to prepare descriptions of end user e-skills and competences.

Aeronautics interviewees suggested that the EU should support the deployment of a future framework in companies and in the education system and that frameworks should also be enlarged to areas other than ICT.

One interviewee from the training and certification sector suggested that a multi-stakeholder initiative based on the ILB and CEN/ISSS activities could promote the adoption of a framework structure and establish a basis for developing and maintaining it.

Promotion of standardised application software packages for the medical profession in Europe would greatly enhance mobility prospects. In addition, sectoral skills requirements should also be addressed within the framework.

6.4 Framework Case Study Example – UK

Section 2 of the report highlighted the UK National Occupational Standards (NOS) as an advanced example of an end user e-skills framework. To get a better understanding of that framework, including its development history, maintenance, uses and benefits, the project team conducted interviews and had communication with some of the key stakeholders and users of the framework. The resulting case study provides an overview of some of the views of key framework stakeholders who have experienced an end user e-skills framework firsthand. The resulting views and opinions were combined with the interview and survey results to feed into the final project recommendations.

The following is a summary of interviews carried out with representatives of the BCS, the Chartered Institute for IT and e-skills UK Sector Skills Council Ltd. (hereafter referred to as e-skills UK) on their experiences of the end user e-skills framework in the UK. In addition, some views expressed by the Office of the Government CIO (Cabinet Office) and Government Skills (the Sector Skills Council (SSC) for the Civil Service) are included to provide a government perspective.

Framework development and maintenance

The original inspiration for development of the framework came from within e-skills UK and was part of their remit as a Sector Skills Council. With 1 million IT Professionals but 22m IT users in the UK workforce it was clear that something was needed for the latter group. At the time, the concept of the digital divide was also very apparent, and featured as another contributing factor to the need for a framework that could be used to develop appropriate skills training. There was universal recognition of the need for learning opportunities and skills development at every level ranging from school children, to the workforce and even to senior citizens (all of whom need to interact with Government).

Industry, education and government, including the English Civil Service (as an employer), all took part in the development and/or consultation process. The stakeholders all had some knowledge of the topic, but the process involved giving the stakeholders ideas of content and structure so that they could comment on and improve.

The framework revision process involves a long consultation process to develop new versions. The process involves meetings with many stakeholders and many revisions based upon feedback to be incorporated in the final version. Finally agreement has to be reached with national regulatory and awarding bodies prior to embedding within national occupational standards.

Mapping to the framework

NOS standards are available for specific occupational groups. The Federation of Awarding Bodies (FAB) group inputs into the discipline competences, with BCS inputting into the e-skills area.

For BCS, certifications such as ECDL are mapped against the NOS to ensure the qualification meet the UK standards; these are all mapped onto the Qualifications Credit Framework (QCF), formerly the National Qualifications Framework.

The NOS structure and wording offers high level groupings, but the framework also provides specific examples of what they can be. These finer details are flexible, so that

the NOS can maintain its currency well and it is easier to map certifications and qualifications to this structure.

For example, the NOS area of competence Spreadsheet Software includes the following statement of competence at level 2: B1.3 **'Store and retrieve** spreadsheet files effectively, in line with local guidelines and conventions where available'. 'Store and retrieve' is the skills component which drills down to further detail: Files (e.g. create, name, open, save, save as, print, close, find, *share*); *version control*; *import/export*; *file size*; *folders (e.g. create, name)*. It is this final detail based on the skills components that can be updated.

It was relatively easy to draw links between the key words in both the syllabus and the NOS structure, which greatly assisted in mapping tasks. Higher level "knowledge and understanding" items were harder to map, but as there were 3 levels of competence complexity in the framework (foundation, intermediate, advanced), it was relatively simple for BCS to map the skills.

Working with a competence based framework

e-skills UK represents employers and has an employer's perspective. Inputs that e-skills received from industry pointed to a preference for a competence approach i.e. industry needs people who can do a task or job. Training and certification bodies (like BCS) were a little less interested in a competence approach, because they need more granular and concrete items on which to base courses and qualifications.

For BCS there was a requirement to see the details (to support training providers). Some modules were more challenging than others to map to the framework, for example ECDL required some additional content to achieve the necessary mapping.

As funding is important to drive certification of end user e-skills, it was important to find mapping solutions for all potential users.

Potential role for a European framework

For BCS, the existing national level framework (NOS) is paramount to get funding, so it is key. BCS customers can have a pan-European workforce which is a reason why BCS feel there is a need for compatibility across Europe to help to support workforce mobility.

Being able to map qualifications in the UK to European ones would also be good for UK training providers who teach foreign students.

Mapping qualifications to one another would allow people to compare qualifications from various countries, however the number and complexity of national qualifications suggest that the task may be expensive at an EU level.

The Office of the Government CIO (OGCIO) supports the move by the EU to define IT User skills. OGCIO believe that in countries where there is no existing framework this may be very useful to employers, in recruitment and performance management, and also to individuals seeking to understand their skills needs. OGCIO feel that the NOS framework is suitable to be used as the exemplar for an EU-wide framework and it may be possible to discuss referencing e-skills UK content (which is copyright) with e-skills UK. Government Skills, the organisation with the task of developing the skills of civil servants, and the OGCIO believe that the European framework should align as closely as possible with existing national frameworks.



e-skills UK also suggested that there may be scope for the NOS content to be used to contribute to the development of a European end user framework, pending some formal agreement on usage.

Framework components and tools

The e-skills passport was developed by e-skills UK, in order to enable competence based skills analysis for employers and employees resulting in more job specific training such as ITQ. The passport allows for a diagnostic to be carried out to assess the current level of a person, and this can be updated as they progress. The e-skills passport tracks progress and shows achievement and it is possible to export to a spreadsheet or pdf to use in a CV.

Originally the e-skills passport and the NOS were presented as a single entity. The passport became a graphical representation of the framework. The passport has been widely applied, with a potential for use by many employees. BCS incorporated the e-skills passport into their IT qualification, however many training providers had their own diagnostics and assessment methods and wanted to keep these in place. As a result there were a limited number of users from Higher Education /Further Education /schools. Some corporate bodies that have large groups who need training were keen on it. The BCS qualification administration system links to the passport system, and this allows people passports to be updated after completion of certifications / qualifications offered by BCS.

Facilitating the move from power user to entry level IT Professional

e-skills UK felt that IT user skills and IT professional skills need to be treated separately. There is no need for the end user e-skills framework to explicitly link to the e-CF as a progression option. People who drive cars aren't going to design cars. There are a few people who drive and want to play around with the engine, but they are only a small group.

However, many IT professionals on the other hand are not good IT users. Some just don't need to be, but some may need to improve and perhaps look at qualifications to improve those skills.

BCS felt that the subject areas between end user level e-skills and IT professional level are quite different. IT *users* would often feel the IT *professional* space is not relevant to them. In the UK, BCS students of ECDL Advanced get pointed in the direction of ISEB (foundation level) qualifications (offered by BCS) when they complete their ECDL Advanced modules, but there is limited interest from using this approach. Overall, it is difficult to see a potential for widespread movement from the higher end of end user e-skills to entry level IT Professional roles.

Benefits

The end user IT Skills framework offers several benefits including

- i) A clear articulation of skills necessary for work in the modern world. The framework can be used in at least three ways: by education establishments to develop learning products; a means for individuals to carry out self assessment of skills; and, as a means for employers to assess the skills of their workforce.

- ii) Qualifications are another measurement method, however not everyone completes their chosen qualification route.

The e-skills passport is one available tool in the UK market that can assist in applying the framework in a work or education context. The e-skills passport is generally paid for by employing organisations rather than by individuals and is a good way to provide an initial audit of the IT competence of staff and help employers plan to improve skills and competence. The use of the passport brought a measurement dynamic that government/education found useful for assessing e-skills. Frameworks can provide that sort of information although the ROI from the use of skills frameworks is not yet known.

The e-skills passport methodology can be applied at a detailed level and can be used to measure across a workforce; it is meaningful data for organisations needing to develop staff. Frameworks themselves aren't very interesting to most people, but it is their application that is useful.

Design considerations

1. The original framework was intended to be generic and worded to suit all, but some groups were found to have specific needs.
2. In addition, there was a wish to keep the framework very simple for instance by having as few levels as possible. However, in practice level one was considered too high for some institutions with people with a low educational background so some sub-levels were developed to create lower entry points.
3. It is also important to keep the framework content simple for translation reasons.

7 Implications for future framework development

Based on the results of the research, it is possible to make some observations on the possible structure and use of an end user e-skills framework.

7.1 Summary of impact of research results

The results of the survey provide a good outline of the views and opinions of the various target groups in relation to an end user e-skills framework. Key points that can be drawn from these results include:

Response and geographical spread

The responses provided represented 20 of the EU-27, with 25 countries participating in total. The high level of respondents from the training and certification target groups suggests a particularly high level of interest from this community.

Framework – Level of detail required

The results in this section suggest that there is some need for flexibility in the design of a future framework to ensure that the varied needs of the target groups can be met. It appears that training and certification bodies will require a higher level of detail in the framework than those representing government or regulatory bodies.

Framework – Number of proficiency levels required

The strong support across all target groups for a three proficiency level approach is a useful input for the framework design.

Framework – Linking proficiency levels to other frameworks

Good support for linking the framework to national qualifications framework was evident in the survey results. A development of this nature would benefit all target groups e.g. assisting certification bodies with certification mapping or providing increased skills transparency for human resources staff.

For example, in the UK several certifications and qualifications of *ICT for Users* have been mapped to the UK Qualifications Credit Framework (QCF). The UK framework is a 9 level framework, including an entry level followed by levels 1 to 8.

A search of the UK national Database of Accredited Qualifications²⁸ “ICT for Users” category reveals that 203 qualifications are accredited against the QCF in this category. The associated levels of these qualifications range from the entry level, up to level 3 of the QCF (equivalent to levels 1 – 4 of the EQF)²⁹.

Specific examples include ECDL modules (at level 1 and level 2) and ECDL Advanced (at level 3). In addition, qualifications of *ICT for Users* offered by City & Guilds³⁰ and Oxford, Cambridge & RSA Exams (OCR)³¹ also map to these levels. This suggests that the main end user e-skills required to move from a foundation/beginner level up to being

²⁸ <http://www.accreditedqualifications.org.uk/index.aspx> (Accessed 17 May 2010)

²⁹ http://www.qcda.gov.uk/docs/QCF_EQF.pdf (Accessed 17 May 2010)

³⁰ www.cityandguilds.com (Accessed 17 May 2010)

³¹ www.ocr.org.uk (Accessed 17 May 2010)

considered an advanced/power user of end user ICT (the proposed scope on an End User e-Skills Framework) all fall within the entry level to level 3 of the UK system.

A future end user e-skills framework could look to how end user e-skills are currently mapped to national qualifications frameworks across Europe as a way of gauging where end user e-skills fit into qualifications frameworks. In the UK example, it may be a case that there would be a direct mapping between knowledge, skills and competence at “Level One” of the end user e-skills framework and the associated “Level One” of the QCF. Obviously there would be some crossover between levels, but there is clearly scope for some form of cross referencing to add clarity to the framework in the context of national systems.

While the prospect of links to national qualifications frameworks were positively received, there was reluctance from some respondents for a link to the e-CF. The current e-CF clearly meets the needs of a different target audience and while it may be possible to have an end user e-skills framework structure that is informed by the e-CF, it may be more advisable for a future end user framework to sit separately from the e-CF.

Framework descriptors

Overall responses were positive around the approach used for the various framework descriptors. This suggests that a similar approach for a developed end user e-skills framework would be well received by the target groups.

Skills or competence based approach

The strong support for a competence based approach to the framework from both the survey and interviews offers enhanced potential for future integration with existing national frameworks which are “competence focused” e.g. UK NOS.

Framework contents – Software applications and associated skills / competence

The results from the applications respondents would like to see contained in the framework highlight that there is a broad mix of knowledge, skills and competence in the end user e-skills domain. The top ranking applications will provide a useful starting point for future development. Some of the interviewees also highlighted the need for the framework to be able to handle sectoral competences, which should be a design consideration for the future framework.

Priority of “having an end user e-skills framework”

Although having a framework is not considered to be “extremely important” for the majority of respondents, there was sufficient desire from the respondents (81% chose Extremely Important to Moderately Important), with very few (6%) stating that it is “not important”.

Other tools or methods to express end user e-skills

As 76% of the respondents do not currently use a tool that could address the needs an end user e-Skills framework could tackle; there is a clear gap that could be filled with the creation of an end user e-skills framework.

Benefits of an end user e-skills framework

The variety of benefits from the four target groups surveyed, supported by the interviews, highlights that each group can potentially benefit from the framework in different ways. This also gives initial indications of the supporting framework tools that would be required to meet these needs.

7.2 Implications for framework structure

The results of the research strongly support a framework structure that has flexibility regarding the level of detail provided. Groups who require a high level of detail (training and certification providers) should have this option, but groups who prefer a medium or low level of detail (Human Resources and Government) should also be able to get a suitable framework structure for their needs.

When this is combined with the fact that all groups were satisfied with having a three proficiency level approach, we could see a possible structure as follows:

Category	Competence	Knowledge / Skills Items	Proficiency Level		
			Beginner → Advanced		
			1	2	3
Word Processing	Competence 1	Knowledge item example 1			
		Knowledge item example 2			
		Skills item example 1			
		Skills item example 2			
	Competence 2	...			
		...			

Figure 11 - Framework Example High Level of Detail

It will also be possible for the detailed example above to be scaled back to either a medium level of detail, or low level of detail (as outlined below) to suit the needs of the different target groups.

Category	Proficiency Level		
	Beginner → Advanced		
	1	2	3
Word Processing			
Spreadsheets			
Presentations			
Web Browsing			
E-mail			

Figure 12 - Framework Example Low Level of Detail

It is also clear from the research that the language being used within the framework examples was deemed to be appropriate. This suggests that a similar wording approach could be adopted, ensuring that the framework has a competence oriented approach. It was noted in the survey and interviews that the framework should be simple to use and concise. This is an additional useful input to the framework design specification.

The results of the research suggest that there is some grounds for linking the framework to national qualifications frameworks (which in turn could potentially lead to links with the EQF). However, the possibility of explicit links to the e-CF appears unlikely based on the results of our research.

7.4 Implications for the framework content

The research results clearly indicate that a future end user e-skills framework has the potential to be populated by a plethora of knowledge and skills items stemming from the vast array of end user computer applications currently being used in the work and home environment. Our research has been able to show which areas would be a useful starting point for the framework development (see section 6.2.7), and have also highlighted the fact that it may be necessary for guidelines to be created to allow specific sectors to populate the framework with their own specific tools.

7.5 Potential framework benefits and framework tools

The results of the research point to the fact that the various target groups could all potentially receive substantial benefits from the development of an end user e-skills framework. The fact that the benefits vary depending on the group further highlights the need for some degree of flexibility to ensure that the framework can be successful. Benefits such as enhancing mobility, providing additional consistency of skills descriptions, providing the ability to cross reference training and certifications, as well as the ability to carry out skills assessments and assist in human resource planning and decision making will all have great value to the framework target groups.

In addition, we can see that certain sectoral requirements have the potential to be addressed by the framework. For interviewees from the aeronautics sector, requirements included gap analysis to assist in resource selection/training and to ensure

relevant skills for work processes are understood. For public administration, gap analysis was also a requirement, along with the need for a unified solution for e-skills definition to provide clarity on skills requirements and allow for measurement and enhancement of skills. In education, key requirements included the ability to cross reference qualifications and training and the need for a shared definition of e-skills. Finally, in the medical sector requirements were mainly focused on providing a standard for digital literacy training.

It is also clear that some tools will be required in the future to deliver the benefits and requirements of specific sectors. The ability of the framework to offer a tool to define e-skills for use in a curriculum vitae will offer enhanced mobility prospects for individuals and ensure a consistent definition for employers to easily compare candidates. Tools to assist in carrying out skills assessments or gap analysis that can be linked to training needs will greatly assist individuals in plotting a skills development path and also assist employers in upskilling their staff to meet future organisation challenges. Tools stemming from the framework that can cross reference certification and training will assist individuals and employers in making more informed decisions when selecting e-skills development solutions. The potential to map between the end user e-skills framework and national level frameworks will provide greater transparency and contribute to having a pan-European understanding of end user e-skills.

If a framework can be developed, it is clear that it will also have additional benefits such as the ability to further raise awareness of the overall importance of end user e-skills in work, personal life and society in general.

These outputs of the research and are presented as more distinct recommendations in the following section.

8 Recommendations

Based on the research conducted by the project team, it is possible to suggest the following key recommendations relating to an end user e-skills framework.

Framework Structure

- We recommend a framework structure that has flexibility regarding the level of detail provided. The framework should be able to expand from a low level of detail to provide further detail when required, including a list of competences associated with a domain, and a non-exhaustive list of knowledge and skills examples for each competence.
- The framework should not provide too much detail to ensure that it can maintain its relevance to the many target groups it must address.
- We recommend that the framework structure is based around competences stemming from categories (e.g. Word processing). These competences can be further supported by knowledge and skills items across the three proposed proficiency levels.
- We recommend that any future framework developments look to align the framework to existing national qualifications frameworks and the EQF. Alignment may occur through cross referencing of certifications and qualifications to both the end user framework and the national level framework, which in turn would have associated levels on the EQF. The potential for such links should be explored further during any future framework development.
- We recommend the need for some awareness raising of sectoral framework developments, particularly with those developing and maintaining national qualifications frameworks.
- It is not recommended to look to include the end user e-skills framework within the current European e-Competence Framework, although it will be important to have some degree of consistency of approach to maintain the links between *ICT user skills* and *ICT practitioner skills*, within the broader European e-Skills strategy.

Framework Content

- We recommend that the development of an end user e-skills framework begin with competence associated with the use of the most commonly used applications, as identified in our report:
 - Word Processing, Spreadsheets, Presentations, Web Browsing and e-mail.
- It should be noted that the framework will also be able to expand beyond these initial applications, following successful development of a process for framework development.

Framework Tools

- We recommend that the framework structure has the necessary degree of flexibility to ensure that the framework can successfully provide the various benefits to the identified target groups.
- We recommend that a future end user e-skills framework is designed to offer the potential for development of supplementary tools to assist the target groups in tasks such as skills gap analysis, assessments, and training planning (See section 6.2.10 / 6.2.11 and section 7.5 for further details). This may involve a third party (based on identified commercial demand), or may be a separate project activity to be addressed following successful completion of an end user e-skills framework development.
- We recommend that the future framework should form the basis for the Computer skills and competences section of the Europass CV.
- We recommend that development of an end user e-skills framework can also be used to contribute to raising awareness of the overall importance of end user e-skills in work, personal life and society in general.

Sector specific recommendations

- We recommend that any future end user e-skills framework provides a structure and guidelines to allow specific sectors to populate the framework with their sector specific knowledge, skills and competence requirements.

Next steps

- We recommend that CEN supports the proposed follow-on “Developing a European End User e-Skills Framework” project to develop these recommendations into a working pan-European framework.
- We recommend that the development of the European end user e-skills Framework is supported by CEN members and participants, especially those engaged with *ICT user skills* (for example, ECDL Foundation and e-Skills UK). Additional support should come from other interested stakeholders highlighted by the report, with a strong emphasis on industry participation in the development.
- We recommend that a future framework may look to rename as the “European End User e-Competence Framework” to reflect the competence focus of the framework.
- We recommend that CEDEFOP monitor the future development of the end user e-skills framework with a view to utilising the framework as a structure/input for the Computer skills and competences section of the Europass CV.
- We recommend that further research could be carried out to assess the impacts of existing national level end user e-skills frameworks.



- We recommend broad dissemination of the report outcomes to the four target groups to allow them to become more familiar with the concept of an end user e-skills framework and its potential benefits.

DRAFT

9 Conclusions

The objectives of the project have been to document the requirements for end user e-skills in Europe and to establish if there is a need for a European end user e-skills framework. The initial research has produced a view of the European activities around existing implementations of end user e-skills frameworks. This has demonstrated that there is activity and interest in this area.

The outcomes of the survey and interviews provide a clear indication that there is support for a European end user e-skills framework and that such a framework would have a variety of benefits for the key target groups identified by the project team. The outcomes of the survey also provide a specification for the framework. It is clear that the future framework will need to be able to be presented with a range of depth in terms of the level of detail (low to high) and the number of proficiency levels to suit the various target groups' needs. The research also points to a preference for the framework to be constructed with a competence approach. Although there seems to be limited support for any links to the European e-Competence Framework, it appears that an end user e-skills framework that has the potential to link to existing national qualifications frameworks and national level end user e-skills frameworks would be welcomed.

The interviews suggest that while there are some sector specific framework requirements, the key is to create a framework that is sufficiently flexible to meet the needs of various sectors. Supporting guidelines to assist framework users will also greatly enhance the ability of disseminating a future framework.

The output of this project paves the way for the development of an end user e-skills framework that can meet the needs of key framework users. Such a framework will have a variety of benefits and applications, including contributing to raising awareness of key end user e-Skills to maximise ICT inclusion and further promote the usage of ICT among all members of society.