e-Skills for the 21st Century

European e-Competence Framework

**European
e-Competence Framework** 2.0

A common European framework for ICT Professionals in all industry sectors

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Introduction

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

The framework has been developed by a large number of European ICT and HR experts in the context of the CEN Workshop on ICT Skills. The workshop provides a discussion and working platform for both national and international representatives from the ICT industry, public and private vocational training organisations, social partners and other institutions. It aims to create long-term human resources (HR) and competence development solutions for the European Information and Communication Technology (ICT) community.

In 2005, further to the recommendations of the European e-Skills Forum, the ICT Skills workshop members agreed that national ICT framework stakeholders as well as European ICT industry representatives - both human resources and ICT experts – should consider developing a European e-Competence Framework. With the encouragement of the European Commission, ICT framework stakeholders, representatives from several European larger companies and an applied research foundation met for a kick-off early 2006 in order to put this intention into practice. During an intensive follow-up, they designed a programme for the work towards a European e-Competence Framework under the umbrella of the CEN Workshop on ICT Skills. These efforts were welcomed and recognised in the Communication of the European Commission on "e-Skills for the 21st Century: Fostering Competitiveness, Growth and Jobs" of September 2007 and the Competitiveness Council Conclusions of November 2007.

In order to achieve a European agreement and useful results at an international and national level, the Europe-wide involvement of further ICT sector players and stakeholders from business, politics and education has been crucial to the framework development philosophy and strategy. Whilst at the political level it was important to get the larger multistakeholder public of the European ICT sector engaged; at the expert working level focus was placed upon HR and IT management know-how from the European ICT industry.

The European e-Competence Framework version 1.0 was published in 2008 from the outcome of two-years e-Skills multistakeholder, ICT and human resources experts' work from multiple organisation levels (CWA 15893-1 and CWA 15893-2).

The European e-Competence Framework 2.0 and the user guidelines presented in this CWA build upon the e-CF version 1.0, and take into account the first e-CF application experience and feedback from ICT stakeholders across Europe.

In addition to competence description updates across the entire framework, four new competences have been added. Furthermore, dimension 4 has been fully populated: samples of knowledge and skills relate to each e-Competence in dimension 2. These knowledge and skills samples are provided to add value and context and are not intended to be exhaustive.

However, care has been taken to ensure that existing users of version 1 are able to adopt version 2 without excessive effort. For instance no competences have been deleted and wording changes have been made to add clarity without changing the original meaning.

The European e-Competence Framework 2.0 presented here (CWA Part I), the user guidelines for e-CF 2.0 application (CWA Part II) and a documentation describing the methodological grounding for the e-CF development (CWA Part III) are the outcome of the "European e-Competence Framework in action" project which took place from 2009 to 2010 in the European ICT multistakeholder context of the CEN Workshop ICT Skills.

European e-Competence Framework (e-CF) structure and look

The European e-Competence Framework is structured from four dimensions. These dimensions reflect different levels of business and human resource planning requirements in addition to job/ work proficiency guidelines and are specified as follows:

Dimension 1: 5 e-Competence areas, derived from the ICT business processes
PLAN – BUILD – RUN – ENABLE – MANAGE

Dimension 2: A set of reference e-Competences for each area, with a generic description for each competence. 32 competences identified in total provide the European generic reference definitions of the e-CF 2.0.

Dimension 3: Proficiency levels of each e-Competence provide European reference level specifications on e-Competence levels e-1 to e-5, which are related to the EQF levels 3 to 8.

Dimension 4: Samples of knowledge and skills relate to e-Competences in dimension 2. They are provided to add value and context and are not intended to be exhaustive.

Whilst competence definitions are explicitly assigned to dimension 2 and 3 and knowledge and skills samples appear in dimension 4 of the framework, attitude is embedded in all three dimensions.

e-CF user guidelines, methodology documentation and e-CF profile enabling tool online

To support understanding, adoption and use of the European e-Competence Framework (e-CF), two complementary CWA documents are provided.

- User guidelines for the application of the European e-Competence Framework 2.0 (CWA Part II)
- Building the e-CF – a combination of sound methodology and expert contribution (CWA Part III)

To support users of the European e-Competence Framework online, a simple tool has been developed which enables the creation of e-CF profiles.

This user friendly tool is accessible, using any common browser, via the European e-Competence Framework website at www.ecompetences.eu

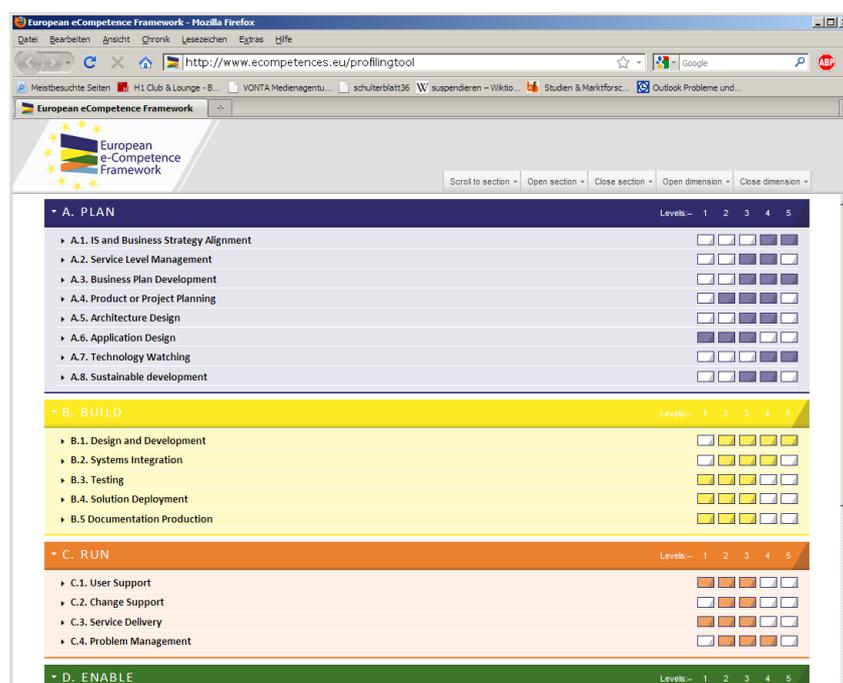*Figure 1 – The e-CF profile enabling tool – screenshot (Source: www.ecompetences.eu)*

European e-Competence Framework 2.0 overview

Dimension 1	Dimension 2	Dimension 3				
5 e-Comp. areas (A – E)	36 e-Competences identified	e-Competence proficiency levels e-1 to e-5, related to EQF levels 3-8				
		e-CF levels identified per competence				
		e-1	e-2	e-3	e-4	e-5
A. PLAN	A.1. IS and Business Strategy Alignment				●	●
	A.2. Service Level Management			●	●	
	A.3. Business Plan Development			●	●	●
	A.4. Product or Project Planning		●	●	●	
	A.5. Design Architecture			●	●	
	A.6. Application Design	●	●			
	A.7. Technology Watching				●	●
	A.8. Sustainable Development			●		
B. BUILD	B.1. Design and Development		●	●	●	●
	B.2. Systems Integration		●	●	●	
	B.3. Testing	●	●	●		
	B.4. Solution Deployment	●	●	●		
	B.5. Documentation Production	●	●	●		
C. RUN	C.1. User Support	●	●	●		
	C.2. Change Support		●	●		
	C.3. Service Delivery	●	●	●		
	C.4. Problem Management		●	●	●	
D. ENABLE	D.1. Information Security Strategy Development				●	●
	D.2. ICT Quality Strategy Development				●	●
	D.3. Education and Training Provision		●	●		
	D.4. Purchasing		●	●	●	
	D.5. Sales Proposal Development		●	●		
	D.6. Channel Management			●	●	
	D.7. Sales Management			●	●	●
	D.8. Contract Management		●	●	●	
	D.9. Personnel Development		●	●	●	
	D.10. Information and Knowledge Management			●	●	●
E. MANAGE	E.1. Forecast Development			●	●	
	E.2. Project and Portfolio Management		●	●	●	
	E.3. Risk Management		●	●	●	
	E.4. Relationship Management			●	●	
	E.5. Process Improvement			●	●	
	E.6. ICT Quality Management		●	●	●	
	E.7. Business Change Management			●	●	●
	E.8. Information Security Management		●	●	●	
	E.9. IT Governance				●	●

European e-Competence Framework 2.0 full version

Dimension 1 e-Competence area	A. PLAN				

Dimension 2

e-Competence: Title + generic description

A.1. IS and Business Strategy Alignment

Anticipates long term business requirements and determines the IS model in line with organisation policy. Makes strategic IS policy decisions for the enterprise, including sourcing strategies

Dimension 3 e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)	Level 1	Level 2	Level 3	Level 4	Level 5
	—	—	—	Provides leadership for the construction and implementation of long term innovative IS solutions.	Provides IS strategic leadership to reach consensus and commitment from the management team of the enterprise.

Dimension 4

Knowledge examples

Knows/ Aware of/ Familiar with:
K1 business strategy concepts
K2 trends and implications of ICT internal or external developments for typical organisations
K3 the potential and opportunities of relevant business models
K4 the business aims and organisational objectives
K5 the issues and implications of sourcing models

Skills examples

Able to:
S1 analyse future developments in business process and technology application
S2 determine requirements for processes related to ICT services
S3 identify and analyse long term user/ customer needs
S4 contribute to the development of ICT strategy and policy
S5 contribute to the development of the business strategy

Dimension 1 e-Competence area	**A. PLAN**				

Dimension 2 e-Competence: Title + generic description	**A.2. Service Level Management** Defines, validates and makes applicable service level agreements (SLA) and underpinning contracts for services offered. Negotiates service performance levels taking into account the needs and capacity of customers and business.				

Dimension 3 e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)	**Level 1**	**Level 2**	**Level 3**	**Level 4**	**Level 5**
	—	—	Influences and prepares the final Service Level Agreement (SLA) and accounts for the final content.	Provides leadership to amend the enterprise strategy with respect to Service Level Agreements (SLA) in order to achieve forecasted results.	—

Dimension 4	
Knowledge examples	Knows/ Aware of/ Familiar with: K1 service level agreement documentation K2 how to compare and interpret management data K3 the elements forming the metrics of service level agreements K4 how service delivery infrastructures work K5 impact of service level non-compliance on business performance
Skills examples	Able to: S1 analyse service provision records S2 evaluate service provision against service level agreement S3 negotiate realistic service level targets S4 use relevant quality management techniques S5 anticipate and mitigate against potential service disruptions

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Dimension 1 e-Competence area	A. PLAN				

Dimension 2 e-Competence: Title + generic description	**A.3. Business Plan Development** Addresses the design and structure of a business or product plan including the identification of alternative approaches as well as return on investment propositions. Considers the possible and applicable sourcing models. Presents cost benefit analysis and reasoned arguments in support of the selected strategy. Ensures compliance with business and technology strategies. Communicates and sells business plan to relevant stakeholders and addresses political, financial, and organisational interests, including SWOT analysis.				
Dimension 3 e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)	**Level 1**	**Level 2**	**Level 3**	**Level 4**	**Level 5**
	—	—	Exploits specialist knowledge to provide analysis of market environment etc.	Provides leadership for the creation of an information system strategy that meets the requirements of the business.	Applies strategic thinking and organisational leadership to exploit the capability of Information Technology to improve the business.

Dimension 4	
Knowledge examples	Knows/ Aware of/ Familiar with: K1 business plan elements and milestones K2 the present and future market size and needs K3 competition and SWOT analysis techniques (for product features and also the external environment) K4 value creation channels K5 profitability elements K6 the issues and implications of sourcing models K7 financial planning and dynamics
Skills examples	Able to: S1 address and identify essential elements of product or solution value propositions S2 define the appropriate value creation channels S3 build a detailed SWOT analysis S4 generate short and long term performance reports (e.g. financial, profitability, usage and value creation) S5 identify main milestones of the plan

Dimension 1 e-Competence area	**A. PLAN**				

Dimension 2 e-Competence: Title + generic description	**A.4. Product or Project Planning** Analyses and defines current and target status. Estimates cost effectiveness, points of risk, opportunities, strengths and weaknesses, with a critical approach. Creates structure plans; establishes time scales and milestones. Manages change requests. Defines delivery quantity and provides an overview of additional documentation requirements. Specifies correct handling of products.				

Dimension 3 e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)	**Level 1**	**Level 2**	**Level 3**	**Level 4**	**Level 5**
	—	Acts systematically to document standard and simple elements of product or project.	Exploits specialist knowledge to create and maintain complex documents of the project or product.	Acts with wide ranging accountability to take responsibility for complete project or product plan.	—

Dimension 4	
Knowledge examples	Knows/ Aware of/ Familiar with: K1 effective frameworks for project governance K2 typical KPI (key performance indicators) K3 basic decision-making methods
Skills examples	Able to: S1 identify all potential targets for the product or project S2 define the communication plan; identify key users and create related documentation S3 produce project and quality plans including milestones S4 ensure and manage adequate information for decision makers S5 manage the change request process

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Dimension 1 e-Competence area	A. PLAN				

| Dimension 2

e-Competence: Title
+ generic description | **A.5. Architecture Design**

Specifies, refines, updates and makes available a formal approach to implement solutions, necessary to develop and operate the IS architecture. Manages the relationship with the business stakeholders to ensure that the architecture is in line with business requirements. Identifies the need for change and the components involved; hardware, software, applications, processes, information and technology platform. Ensures that all aspects take account of interoperability, scalability, usability and security. | | | | |

Dimension 3	Level 1	Level 2	Level 3	Level 4	Level 5
e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)	—	—	Exploits specialist knowledge to define relevant ICT technology and specifications to be deployed in the construction of multiple ICT projects, applications or infrastructure improvements.	Acts with wide ranging accountability to define the strategy to implement ICT technology compliant with business need. Takes account of the current technology platform, obsolescent equipment and latest technological innovations.	—

Dimension 4

Knowledge examples

Knows/ Aware of/ Familiar with:
K1 architecture frameworks and systems design tools
K2 systems architecture requirements: performance, maintainability, extendibility, scalability, availability, security and accessibility
K3 costs, benefits and risks of a system architecture
K4 the company's enterprise architecture and internal standards

Skills examples

Able to:
S1 provide expertise to help solve complex technical problems and ensure best architecture solutions are implemented
S2 use knowledge in various technology areas to build and deliver the enterprise architecture
S3 understand the business objectives/ drivers that impact the architecture component (data, application, security, development etc.)
S4 assist in communication of the enterprise architecture and standards, principles and objectives to the application teams
S5 develop design patterns and models to assist system analysts in designing consistent applications

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Dimension 1 e-Competence area	**A. PLAN**

Dimension 2 e-Competence: Title + generic description	**A.6. Application Design** Defines the most suitable ICT solutions in accordance with ICT policy and user/ customer needs. Accurately estimates development, installation and maintenance of application costs. Selects appropriate technical options for solution design, optimising the balance between cost and quality. Identifies a common reference framework to validate the models with representative users.

Dimension 3 e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)	Level 1	Level 2	Level 3	Level 4	Level 5
	Contributes to the design and general functional specification and interfaces.	Organises the overall planning of the design of the application.	Accounts for own and others actions in ensuring that the application is correctly integrated within a complex environment and complies with user/ customer needs.	—	—

Dimension 4

Knowledge examples

Knows/ Aware of/ Familiar with:
K1 requirements modelling and need analysis techniques
K2 software developments methods and their rationale (e.g. prototyping, agile methods, reverse engineering, etc.)
K3 metrics related to application development
K4 user interface design principles
K5 languages for formalising functional specification
K6 existing applications and related architecture
K7 DBMS, Data Warehouse, DSS … etc.

Skills examples

Able to:
S1 identify customers, users & stakeholders
S2 collect, formalise and validate functional and no-functional requirements
S3 apply estimation models and data to evaluate costs of different software lifecycle phases
S4 evaluate the use of prototypes to support requirements validation
S5 design, organise and monitor the overall plan for the design of application
S6 design functional specification starting from defined requirements
S7 evaluate the suitability of different application development methods for the current scenario

Dimension 1 e-Competence area	**A. PLAN**				

Dimension 2 e-Competence: Title + generic description	**A.7. Technology Watching** Explores latest ICT technological developments to establish understanding of evolving technologies. Devises innovative solutions for integration of new technology into existing products, applications or services or for the creation of new solutions.				

Dimension 3	**Level 1**	**Level 2**	**Level 3**	**Level 4**	**Level 5**
e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)	—	—	—	Exploits wide ranging specialist knowledge of new and emerging technologies, coupled with a deep understanding of the business, to envision and articulate the solutions of the future. Provides expert guidance and advice, to the leadership teams in business and in technology, about potential innovations to support strategic decision-making.	Provides strategic leadership. Envisions and articulates future solutions and directs the organisation to build and exploit them.

Dimension 4

Knowledge examples

Knows/ Aware of/ Familiar with:
K1 emerging technologies and the relevant market applications
K2 market needs
K3 relevant sources of information (e.g. magazines, conferences and events, news letters, opinion leaders, etc.)
K4 the rules of discussions in web communities

Skills examples

Able to:
S1 monitor sources of information and continuously follow the most promising
S2 identify vendors and providers of the most promising solutions; evaluate, justify and propose the most appropriate
S3 identify business advantages and improvements of adopting emerging technologies
S4 create a proof of concept

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Dimension 1 e-Competence area	**A. PLAN**				

Dimension 2 e-Competence: Title + generic description	**A.8. Sustainable Development** Estimates the impact of ICT solutions in terms of eco responsibilities including energy consumption. Advises business and ICT stakeholders on sustainable alternatives that are consistent with the business strategy. Applies an ICT purchasing and sales policy which fulfils eco-responsibilities.				
Dimension 3 e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)	**Level 1**	**Level 2**	**Level 3**	**Level 4**	**Level 5**
	—	—	Promotes awareness, training and commitment for the deployment of sustainable development and applies the necessary tools for piloting this approach.	Defines objective and strategy of sustainable IS development in accordance with the organisation's sustainability policy.	—

Dimension 4	
Knowledge examples	Knows/ Aware of/ Familiar with: K1 metrics and indicators related to sustainable development K2 corporate social responsibility (CSR) of stakeholders within the IT infrastructure
Skills examples	Able to: S1 monitor and measures the IT energy consumption S2 apply recommendations in projects to support latest sustainable development strategies S3 master regulatory constraints and international standards related to IT sustainability

Dimension 1 e-Competence area	**B. BUILD**				
Dimension 2 e-Competence: Title + generic description	**B.1. Design and Development** Designs and engineers software and/ or hardware components to meet required specifications, including energy efficiency issues. Follows a systematic methodology to analyse and build the required components and interfaces. Performs unit and system testing to ensure requirements are met.				
Dimension 3 e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)	**Level 1** —	**Level 2** Systematically develops small components.	**Level 3** Acts creatively to develop and integrate components into a larger product.	**Level 4** Handles complexity by developing standard procedures and architectures in support of cohesive product development.	**Level 5** Has ultimate responsibility for strategic direction of product, technical architecture or technology development.

Dimension 4	
Knowledge examples	Knows/ Aware of/ Familiar with: K1 appropriate software programs/ modules, DBMS and programming languages K2 hardware components, tools and hardware architectures K3 functional & technical designing K4 state of the art technologies K5 programming languages K6 power consumption models of software and/ or hardware
Skills examples	Able to: S1 explain and communicate the design/ development to the customer S2 perform and evaluate test results against product specifications S3 apply appropriate software and/ or hardware architectures S4 design and develop hardware architecture, user interfaces, business software components and embedded software components S5 manage and guarantee high levels of cohesion and quality in complex software developments S6 use data models

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Dimension 1 e-Competence area	**B. BUILD**				

Dimension 2 e-Competence: Title + generic description	**B.2. Systems Integration** Installs additional hardware, software or sub system components into an existing or proposed system. Complies with established processes and procedures (e.g. configuration management), taking into account the specification, capacity and compatibility of existing and new modules to ensure integrity and interoperability. Verifies system performance and ensures formal sign off and documentation of successful integration.				

Dimension 3	Level 1	Level 2	Level 3	Level 4	Level 5
e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)	—	Acts systematically to identify compatibility of software and hardware specifications. Documents all activities during installation and records deviations and remedial activities.	Accounts for own and others actions in the integration process. Complies with appropriate standards and change control procedures to maintain integrity of the overall system functionality and reliability.	Exploits wide ranging specialist knowledge to create a process for the entire integration cycle, including the establishment of internal standards of practice. Provides leadership to marshal and assign resources for programmes of integration.	—

Dimension 4	
Knowledge examples	Knows/ Aware of/ Familiar with: K1 old, existing and new hardware components/ software programs/ modules K2 the impact that system integration has on existing system/ organisation K3 interfacing techniques between modules, systems and components K4 integration testing techniques
Skills examples	Able to: S1 measure system performance before, during and after system integration S2 document and record activities, problems and related repair activities S3 match customers' needs with existing products S4 verify that integrated systems capabilities and efficiency match specifications S5 secure/ back-up data to ensure integrity during system integration

Dimension 1 e-Competence area	B. BUILD				
Dimension 2 e-Competence: Title + generic description	**B.3. Testing** Constructs and executes systematic test procedures for IT systems or customer usability requirements to establish compliance with design specifications. Ensures that new or revised components or systems perform to expectation. Ensures meeting of internal, external, national and international standards; including health and safety, usability, performance, reliability or compatibility. Produces documents and reports to evidence certification requirements.				

Dimension 3	Level 1	Level 2	Level 3	Level 4	Level 5
e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)	Performs simple tests in strict compliance with detailed instructions.	Organises test programmes and builds scripts to stress test potential vulnerabilities. Records and reports outcomes providing analysis of results.	Exploits specialist knowledge to supervise complex testing programmes. Ensures tests and results are documented to provide input to subsequent process owners such as designers, users or maintainers. Accountable for compliance with testing procedures including a documented audit trail.	—	—

Dimension 4

Knowledge examples

Knows/ Aware of/ Familiar with:
K1 techniques, infrastructure and tools to be used in the testing process
K2 the lifecycle of a testing process
K3 the different sorts of tests (functional, integration, performance, usability, stress etc.)
K4 national and international standards defining quality criteria for testing

Skills examples

Able to:
S1 create and manage a test plan
S2 manage and evaluate the test process
S3 design tests of ICT systems
S4 prepare and conduct tests of ICT systems
S5 report and document tests and results

Dimension 1 e-Competence area	**B. BUILD**				

Dimension 2

e-Competence: Title + generic description

B.4. Solution Deployment

Following predefined general standards of practice carries out planned necessary interventions to implement solution, including installing, upgrading or decommissioning. Configures hardware, software or network to ensure interoperability of system components and debugs any resultant faults or incompatibilities. Engages additional specialist resources if required, such as third party network providers. Formally hands over fully operational solution to user and completes documentation recording all relevant information, including equipment addressees, configuration and performance data.

Dimension 3

e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)

Level 1	Level 2	Level 3	Level 4	Level 5
Performs under guidance and in accordance with detailed instructions, the removal or installation of individual components.	Acts systematically to build or deconstruct system elements. Identifies non performing components and establishes root cause of failure within the overall solution. Provides support to less experienced colleagues.	Accounts for own and others actions within solution provision activities including comprehensive communications with client. Exploits specialist knowledge to influence solution construction. Gives advice on aligning work processes and procedures with software upgrades.	—	—

Dimension 4

Knowledge examples

Knows/ Aware of/ Familiar with:
K1 performance analysis techniques
K2 techniques related to problem management (operation, performance, compatibility)
K3 software packaging and distribution methods and techniques
K4 the impacts of deployment on the current architecture
K5 the technologies and standards to be used during the deployment

Skills examples

Able to:
S1 organise deployment workflow and product roll-out activities
S2 organise and plan beta-test activities, testing solution in its final operational environment
S3 configure components at any level to guarantee correct overall interoperability
S4 identify and engage expertise needed to solve interoperability problems
S5 organise and control initial support service provision including user training during system start-up
S6 organise population of data bases and manage data migration

Dimension 1 e-Competence area	**B. BUILD**				

Dimension 2 e-Competence: Title + generic description	**B.5. Documentation Production** Produces documents describing products, services, components or applications to establish compliance with relevant documentation requirements. Selects appropriate style and media for presentation materials. Creates templates for document-management systems. Ensures that functions and features are documented in an appropriate way. Ensures that existing documents are valid and up to date.				
Dimension 3 e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)	**Level 1** Uses and applies standards to define document structure.	**Level 2** Determines documentation requirements taking into account the purpose and environment to which it applies.	**Level 3** Adapts the level of detail according to the objective of the documentation and the targeted population.	**Level 4** —	**Level 5** —

Dimension 4					
Knowledge examples	Knows/ Aware of/ Familiar with: K1 tools for production, editing and distribution of professional documents K2 tools for multimedia presentation creation K3 different technical documents required for designing, developing and deploying products, applications and services				
Skills examples	Able to: S1 observe and deploy effective use of corporate standards for publications S2 prepare templates for shared publications S3 organise and control content management workflow S4 keep publications aligned to the solution during the entire lifecycle				

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Dimension 1 e-Competence area	C. RUN				
Dimension 2 e-Competence: Title + generic description	**C.1. User Support** Responds to user requests and issues; records relevant information. Resolves or escalates incidents and optimises system performance. Monitors solution outcome and resultant customer satisfaction.				
Dimension 3 e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)	**Level 1**	**Level 2**	**Level 3**	**Level 4**	**Level 5**
	Routinely interacts with users, applies ICT-product, basic knowledge and skill to respond to user requests. Solves simple incidents, following prescribed procedures.	Systematically interprets user problems identifying the solutions and possible side effects. Uses experience to identifying user problems and interrogates database for potential solutions. Escalates complex or unresolved incidents to senior experts. Records and tracks user support procedures from outset to conclusion.	Manages the support process and is accountable for ensuring that agreed service levels are met. Plans resource allocation to ensure that the support is available with respect to the defined service level. Acts creatively, and seeks opportunities for continuous service improvement by analysing root causes. Manages the budget of the support function.	—	—

Dimension 4

Knowledge examples

Knows/ Aware of/ Familiar with:
K1 relevant ICT user applications
K2 database structures and content organisation
K3 corporate escalation procedures
K4 software distribution methods and procedures for fix application and file transmission methodologies applicable to software fixes
K5 sources of information for potential solutions

Skills examples

Able to:
S1 effectively interrogate users to establish symptoms
S2 analyse symptoms to identify broad area of user error or technical failure
S3 deploy support tools to systematically trace source of error or technical failure
S4 clearly communicate with end users and provide instructions on how to progress issues
S5 record and code issues to support growth and integrity of online support tools

Dimension 1 e-Competence area	**C. RUN**

Dimension 2 e-Competence: Title + generic description	**C.2. Change Support** Implements and provides guidance for the evolution of an IT solution. Efficiently controls and schedules software or hardware modifications to prevent multiple upgrades creating unpredictable outcomes. Minimises service disruption as a consequence of changes and adheres to defined service level agreement (SLA).

Dimension 3	Level 1	Level 2	Level 3	Level 4	Level 5
e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)	—	During change, acts systematically to respond to day by day operational needs and react to them, avoiding service disruptions and maintaining coherence to service level agreement (SLA).	Ensures the integrity of the system by controlling the application of functional updates, software or hardware additions and maintenance activities. Complies with budget requirements.	—	—

Dimension 4	
Knowledge examples	Knows/ Aware of/ Familiar with: K1 functional specifications of the information system K2 the existing ICT application technical architecture K3 how business processes are integrated and their dependency upon ICT applications K4 change management tools and techniques
Skills examples	Able to: S1 share functional and technical specifications with ICT teams in charge of the maintenance and evolution of ICT solutions S2 manage communications with ICT teams in charge of the maintenance and the evolution of information systems solutions S3 analyse the impact of functional/ technical changes on users S4 anticipate all actions required to mitigate the impact of changes (training, documentation, new processes…)

Dimension 1 e-Competence area	**C. RUN**				

Dimension 2 e-Competence: Title + generic description	**C.3. Service Delivery** Takes proactive steps to ensure a stable and secure application and ICT infrastructure. Updates operational document library and logs all operational events. Maintains monitoring and management tools (i.e. Scripts, Procedures...).				
Dimension 3 e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)	**Level 1** Acts under guidance to record and track reliability data.	**Level 2** Systematically analyses performance data and communicates findings to senior experts. Escalates potential service level failures and recommends actions to improve service reliability. Tracks reliability data against service level agreement.	**Level 3** Programmes the schedule of operational tasks. Manages costs and budget according to the internal procedures and external constraints. Identifies people requirements to resource the operational management of the ICT infrastructure.	**Level 4** —	**Level 5** —

Dimension 4	
Knowledge examples	Knows/ Aware of/ Familiar with: K1 how to interpret IT service delivery requirements K2 best practices and standards in IT service delivery. K3 how to monitor service delivery K4 how to record service delivery actions and to identify failures
Skills examples	Able to: S1 apply the processes which comprise the organisations IT service delivery strategy S2 fill in and complete documentation used in IT service delivery S3 analyse service delivery provision and report outcomes to senior colleagues

Dimension 1 e-Competence area	**C. RUN**				

Dimension 2

e-Competence: Title + generic description

C.4. Problem Management

Identifies and resolves the root cause of incidents. Takes a proactive approach to the root cause of ICT problems. Deploys a knowledge system based on recurrence of common errors.

Dimension 3	Level 1	Level 2	Level 3	Level 4	Level 5
e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)	—	Identifies and classifies incident types and service interruptions. Records incidents cataloguing them by symptom and resolution.	Exploits specialist knowledge and in-depth understanding of the ICT infrastructure and problem management process to identify failures and resolve with minimum outage. Makes sound decisions in emotionally charged environments on appropriate action required to minimise business impact. Rapidly identifies failing component, selects alternatives such as repair, replace or reconfigure.	Provides leadership and is accountable for the entire problem management process. Schedules and ensures well trained human resources, tools, and diagnostic equipment are available to meet emergency incidents. Has depth of expertise to anticipate critical component failure and make provision for recovery with minimum downtime. Constructs escalation processes to ensure that appropriate resources can be applied to each incident.	—

Dimension 4

Knowledge examples

Knows/ Aware of/ Familiar with:
K1 the organisations overall ICT infrastructure and key components
K2 the organisations reporting procedures
K3 the organisations critical situation escalation procedures
K4 the application and availability of diagnostic tools
K5 the link between system infrastructure elements and impact of failure on related business processes.

Skills examples

Able to:
S1 monitor progress of issues throughout lifecycle and communicate effectively
S2 identify potential critical component failures and take action to mitigate effects of failure
S3 conduct risk management audits and act to minimise exposures
S4 allocate appropriate resources to maintenance activities, balancing cost and risk
S5 communicate at all levels to ensure appropriate resources are deployed internally or externally to minimise outages

Dimension 1 e-Competence area	**D. ENABLE**				

Dimension 2

e-Competence: Title + generic description

D.1. Information Security Strategy Development

Defines and makes applicable a formal organisational strategy, scope and culture to maintain safety and security of information. Provides the foundation for Information Security Management, including role identification and accountability (ref D.2). Uses defined standards to create objectives for information integrity, availability, and data privacy.

Dimension 3	Level 1	Level 2	Level 3	Level 4	Level 5
e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)	—	—	—	Exploits depth of expertise and leverages external standards and best practices.	Provides strategic leadership to embed information security into the culture of the organisation.

Dimension 4

Knowledge examples

Knows/ Aware of/ Familiar with:
K1 the potential and opportunities of relevant standards and best practices
K2 the impact of legal requirements on information security
K3 the information strategy of the organisation
K4 possible security threats

Skills examples

Able to:
S1 develop and critically analyse the company strategy for information security
S2 define, present and promote an information security policy for approval by the senior management of the organisation
S3 apply relevant standards, best practices and legal requirements for information security
S4 anticipate required changes to the organisations information security strategy and formulate new plans
S5 propose effective contingency measures

| Dimension 1
e-Competence area	**D. ENABLE**

| Dimension 2

e-Competence: Title + generic description | **D.2. ICT Quality Strategy Development**

Defines, improves and refines a formal strategy to satisfy customer expectations and improve business performance (balance between cost and risks). Identifies critical processes influencing service delivery and product performance for definition in the ICT quality management system (ref D.4). Uses defined standards to formulate objectives for service management, product and process quality. Identifies ICT quality management accountability. |
|---|---|

| Dimension 3

e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)	Level 1	Level 2	Level 3	Level 4	Level 5
	—	—	—	Exploits wide ranging specialist knowledge to leverage and authorise the application of external standards and best practices.	Provides strategic leadership to embed ICT quality (i.e. metrics and continuous improvement) into the culture of the organisation.

Dimension 4	
Knowledge examples	Knows/ Aware of/ Familiar with:
K1 the major information technology industry frameworks - COBIT, ITIL, CMMI, ISO - and their implications for corporate ICT governance
K2 the information strategy of the organisation
Skills examples	Able to:
S1 define an ICT quality policy to meet the organisations standards of performance and customer satisfaction objectives
S2 identify quality metrics to be used
S3 apply relevant standards and best practices to maintain information quality

Dimension 1 e-Competence area	**D. ENABLE**

Dimension 2 e-Competence: Title + generic description	**D.3. Education and Training Provision** Defines and implements ICT training policy to address organisational skill needs and gaps. Structures, organises and schedules training programmes and evaluates training quality through a feedback process and implements continuous improvement. Adapts training plans to address changing demand.

Dimension 3 e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)	Level 1	Level 2	Level 3	Level 4	Level 5
	—	Organises the identification of training needs; collates organisation requirements, identifies, selects and prepares schedule of training interventions.	Acts creatively to analyse skills gaps; elaborates specific requirements and identifies potential sources for training provision. Has specialist knowledge of the training market and establishes a feedback mechanism to assess the added value of alternative training programmes.	—	—

Dimension 4	
Knowledge examples	Knows/ Aware of/ Familiar with: K1 appropriate pedagogical approaches and education delivery methods e.g. classroom, online, text, dvd.. K2 the competitive market for educational offering K3 training needs analysis methodologies
Skills examples	Able to: S1 organise training and education schedules to meet market needs S2 identify and maximise use of resources required to deliver a cost effective schedule S3 promote and market education and training provision S4 analyse feedback data and use it to drive continuous improvement of education and training delivery S5 design curricula and training programmes to meet client ICT education needs

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Dimension 1 e-Competence area	**D. ENABLE**				

Dimension 2 e-Competence: Title + generic description	**D.4. Purchasing** Applies a consistent procurement procedure, including deployment of the following sub processes: specification requirements, supplier identification, proposal analysis, evaluation of the energy efficiency and environmental compliance of products, suppliers and their processes, contract negotiation, supplier selection and contract placement. Ensures that the entire purchasing process is fit for purpose and adds business value to the organisation.				

Dimension 3	Level 1	Level 2	Level 3	Level 4	Level 5
e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)	—	Understands and applies the principles of the procurement process; places orders based on existing supplier contracts. Ensures the correct execution of orders, including validation of deliverables and correlation with subsequent payments.	Exploits specialist knowledge to deploy the purchasing process, ensuring positive commercial relationships with suppliers. Selects suppliers, products and services by evaluating performance, cost, timeliness and quality. Decides contract placement and complies with organisational policies.	Provides leadership for the application of the organisations procurement policies and makes recommendations for process enhancement. Applies experience and procurement practice expertise to make ultimate purchasing decisions.	—

Dimension 4

Knowledge examples

Knows/ Aware of/ Familiar with:
K1 typical purchase contract terms and conditions
K2 own organisation purchasing policies
K3 financial models e.g. discount structures
K4 the current market for relevant products or services
K5 the issues and implications of outsourcing services

Skills examples

Able to:
S1 interpret product/ service specifications
S2 negotiate terms, conditions and pricing
S3 analyse received proposals/ offers
S4 manage the purchasing budget
S5 lead purchase process improvement
S6 analyse the energy efficiency and environmental-related aspects of a proposal

Dimension 1 e-Competence area	**D. ENABLE**

Dimension 2 e-Competence: Title + generic description	**D.5. Sales Proposal Development** Develops technical proposals to meet customer solution requirements and provide sales personnel with a competitive bid. Underlines the energy efficiency and environmental impact related to a proposal. Collaborates with colleagues to align the service or product solution with the organisations capacity to deliver.

Dimension 3	Level 1	Level 2	Level 3	Level 4	Level 5
e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)	—	Organises collaboration between relevant internal departments, for example, technical, sales and legal. Facilitates comparison between customer requirement and available 'off the shelf' solutions.	Acts creatively to develop proposal incorporating a complex solution. Customises solution in a complex technical environment and ensures feasibility and technical validity of customer offer.	Interprets and influences customer needs and the reference business contexts, proposes consultancy projects, in order to provide the ideal customer solutions, i.e. behaves as a "consultative seller".	—

Dimension 4	
Knowledge examples	Knows/ Aware of/ Familiar with: K1 customer needs K2 internally adopted sales and marketing techniques K3 legal requirements K4 internal business practices K5 product or service unique selling points
Skills examples	Able to: S1 construct the framework for proposal documentation S2 co-ordinate and facilitate multidiscipline teams contributing to the proposal S3 interpret the terms and conditions of the tender documentation S4 evaluate the strengths and weaknesses of potential competitors S5 ensure that a proposal is of high quality and is submitted on time S6 communicate the energy efficiency and environmental-related aspects of a proposal

Dimension 1 e-Competence area	**D. ENABLE**

Dimension 2 e-Competence: Title + generic description	**D.6. Channel Management** Develops the strategy for managing third party sales outlets. Ensures optimum commercial performance of the value-added resellers (VAR) channel through the provision of a coherent business and marketing strategy. Defines the targets for volume, geographic coverage and the industry sector for VAR engagements and structures incentive programmes to achieve complimentary sales results.

Dimension 3	Level 1	Level 2	Level 3	Level 4	Level 5
e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)	—	—	Acts creatively to influence the establishment of a VAR network. Manages the identification and assessment of potential VAR members and sets up support procedures. VARs managed to maximise business performance.	Exploits wide ranging skills in marketing and sales to create the organisations VAR strategy. Establishes the processes by which VARs will be managed to maximise business performance.	—

Dimension 4	
Knowledge examples	Knows/ Aware of/ Familiar with: K1 the competition (what and where) K2 the market distribution across the field K3 sales channel typologies (e.g. direct sales, VAR, web marketing) K4 incentive policies K5 user experience of each channel type
Skills examples	Able to: S1 choose the best sales channel according to the product or solution being delivered S2 define discounts according to the competitive environment S3 select value added retailers based on thorough analyses, plan and make contacts S4 monitor and supervise channel performances in line with sales forecast and able to define corrective actions if necessary S5 apply web marketing methods

Dimension 1 e-Competence area	**D. ENABLE**				

Dimension 2

e-Competence: Title + generic description

D.7. Sales Management

Drives the achievement of sales results through the establishment of a sales strategy. Demonstrates the added value of the organisations products and services to new or existing customers and prospects. Establishes a sales support procedure providing efficient response to sales enquiries, consistent with company strategy and policy. Establishes a systematic approach to the entire sales process, including understanding client needs, forecasting, prospect evaluation, negotiation tactics and sales closure.

Dimension 3

e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)

Level 1	Level 2	Level 3	Level 4	Level 5
—	—	Contributes to the sales process by effectively presenting products or services to clients.	Assesses and estimates appropriate sales strategies to deliver company results. Decides and allocates annual sales targets and adjusts incentives to meet market conditions.	Assumes ultimate responsibility for the sales performance of the organisation. Authorises resource allocation, prioritises product and service promotions, advises board directors of sales performance.

Dimension 4

Knowledge examples

Knows/ Aware of/ Familiar with:
K1 customer organisation (needs, budget allocation and decision makers)
K2 company specific processes (sales, ITIL, etc.)
K3 market trends and own service offering portfolio
K4 legal, financial and contractual rules
K5 project management procedures
K6 current market imperatives e.g. risks, changes, innovation

Skills examples

Able to:
S1 develop strong co-operation between customers and own organisation
S2 keep abreast of market news e.g. risks, changes, innovations and communicate to internal business units, to improve service and product portfolio
S3 react proactively to customer business changes and communicate them internally
S4 generate sustainable customer relationships
S5 analyse sales performance to build forecasts and develop a tactical sales plan

Dimension 1 e-Competence area	**D. ENABLE**

Dimension 2	**D.8. Contract Management**
e-Competence: Title + generic description	Provides and negotiates contract in accordance with organisational processes. Ensures that supplier deliverables are provided on time, meet quality standards and comply with agreed service levels. Addresses non-compliance escalates significant issues, drives recovery plans and if necessary amends contracts. Maintains budget integrity. Assesses and addresses supplier compliance to legal, health and safety and security standards. Actively pursues regular supplier communication.

Dimension 3	Level 1	Level 2	Level 3	Level 4	Level 5
e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)	—	Acts systematically to monitor contract compliance and promptly escalate defaults.	Evaluates supplier contract performance by monitoring performance indicators. Assures performance of the complete supply chain. Influences the terms of contract renewal.	Provides Leadership for supplier contract compliance and is the final escalation point for issue resolution.	—

Dimension 4

Knowledge examples

Knows/ Aware of/ Familiar with:
K1 applicable service level agreements
K2 company policy for contract management
K3 legal regulations applicable to ICT contracts

Skills examples

Able to:
S1 foster positive relationships with suppliers and customers
S2 negotiate contract terms and conditions
S3 apply judgement and flexibility in contract negotiations compliant with internal rules and policies

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Dimension 1 e-Competence area	**D. ENABLE**

Dimension 2 e-Competence: Title + generic description	**D.9. Personnel Development** Diagnoses individual and group competence, identifying skill needs and skill gaps. Reviews training and development options and selects appropriate methodology taking into account the needs of the individual and the business. Coaches and/ or mentors individuals and teams to address learning needs.

Dimension 3 e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)	Level 1	Level 2	Level 3	Level 4	Level 5
	—	Briefs/ trains individuals and groups, holds courses of instruction.	Monitors and addressees the development needs of individuals and teams.	Takes proactive action and develops organisational processes to address the development needs of individuals, teams and the entire workforce.	—

Dimension 4	
Knowledge examples	Knows/ Aware of/ Familiar with: K1 competence development methods K2 competence and skill needs analysis methodologies K3 learning and development support methods (e.g. coaching, teaching) K4 ICT technologies and processes with an overview perspective
Skills examples	Able to: S1 identify competence and skill gaps S2 identify and recommend work based development opportunities S3 incorporate within routine work processes, opportunities for skills development S4 coach on learning processes

Dimension 1 e-Competence area	**D. ENABLE**				

Dimension 2 e-Competence: Title + generic description	**D.10. Information and Knowledge Management** Identifies and manages structured and unstructured information and considers information distribution policies. Creates information structure to enable exploitation and optimisation of information for business benefit. Understands appropriate tools to be deployed to create, extract, maintain, renew and propagate business knowledge in order to capitalise from the information asset.				
Dimension 3 e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)	**Level 1** —	**Level 2**	**Level 3** Analyses Business processes and associated information requirements and provides the most appropriate information structure.	**Level 4** Integrates the appropriate information structure into the corporate environment.	**Level 5** Correlates information and knowledge to create value for the business. Applies innovative solutions based on information retrieved.

Dimension 4	
Knowledge examples	Knows/ Aware of/ Familiar with: K1 methods to analyse unstructured information and business processes K2 IT devices and tools applicable for the storage and retrieval of data
Skills examples	Able to: S1 gather internal and external knowledge and information needs S2 formalise customer requirements S3 translate/ reflect business behaviour into structured information S4 make information available

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Dimension 1 e-Competence area	**E. MANAGE**

Dimension 2 e-Competence: Title + generic description	**E.1. Forecast Development** Interprets market needs and evaluates market acceptance of products or services. Assesses the organisations potential to meet future production and quality requirements. Applies relevant metrics to enable accurate decision making in support of production, marketing, sales and distribution functions.

Dimension 3	Level 1	Level 2	Level 3	Level 4	Level 5
e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)	—	—	Exploits skills to provide short-term forecast using market inputs and assessing the organisations production and selling capabilities	Acts with wide ranging accountability for the production of a long-term forecast. Understands the global marketplace, identifying and evaluating relevant inputs from the broader business, political and social context.	—

Dimension 4

Knowledge examples

Knows/ Aware of/ Familiar with:
K1 market size and relevant fluctuations
K2 accessibility of the market according to current conditions (e.g. government policies, emerging technologies, social and cultural trends, etc.)
K3 the extended supply chain operation
K4 large scale data analysis techniques (data mining)

Skills examples

Able to:
S1 apply *what-if* techniques to produce realistic outlooks
S2 generate sales forecasts in relation to current market share
S3 generate production forecasts taking into account manufacturing capacity
S4 compare sales and production forecasts and analyse potential mismatches
S5 interpret external research data and analyse information

Dimension 1 e-Competence area	**E. MANAGE**

Dimension 2

E.2. Project and Portfolio Management

e-Competence: Title + generic description

Implements plans for a programme of change. Plans and directs a single or portfolio of ICT projects to ensure co-ordination and management of interdependencies. Orchestrates projects to develop or implement new, internal or externally defined processes to meet identified business needs. Defines activities, responsibilities, critical milestones, resources, skills needs, interfaces and budget. Develops contingency plans to address potential implementation issues. Delivers project on time, on budget and in accordance with original requirements. Creates and maintains documents to facilitate monitoring of project progress.

Dimension 3

e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)

Level 1	Level 2	Level 3	Level 4	Level 5
—	Understands and applies the principles of project management and applies methodologies, tools and processes to manage simple projects.	Accounts for own and others activities, working within the project boundary, making choices and giving instructions; manages and supervises relationships within the team; plans and establishes team objectives and outputs and documents results.	Exploits wide ranging skills in project management to work beyond project boundary. Manages complex projects or programmes, including interaction with others. Influences project strategy by proposing new or alternative solutions. Takes overall responsibility for project outcomes, including finance and resource management. Is empowered to revise rules and choose standards.	Provides strategic leadership for extensive interrelated programmes of work to ensure that Information Technology is a change enabling agent and delivers benefit in line with overall business strategic aims. Applies extensive business and technological mastery to conceive and bring innovative ideas to fruition.

Dimension 4

Knowledge examples

Knows/ Aware of/ Familiar with:
K1 a project methodology, including approaches to define project steps and tools to set up action plans
K2 technologies to be implemented within the project
K3 company business strategy and business processes
K4 development and compliance to financial plans and budgets

Skills examples

Able to:
S1 identify project risks and define action plans to mitigate
S2 define a project plan by breaking it down into individual project tasks
S3 communicate project progress to all relevant parties reporting on topics such as cost control, schedule achievements, quality control, risk avoidance and changes to project specifications
S4 delegate tasks and manage team member contributions appropriately
S5 manage external, contracted resources to achieve project objectives
S6 optimise project portfolio timelines and delivery objectives by achieving consensus on stakeholder priorities

Dimension 1 e-Competence area	**E. MANAGE**				

Dimension 2 e-Competence: Title + generic description	**E.3. Risk Management** Implements the management of risk across information systems through the application of the enterprise defined risk management policy and procedure. Assesses risk to the organisations business, and documents potential risk and containment plans.				

Dimension 3 e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)	**Level 1**	**Level 2**	**Level 3**	**Level 4**	**Level 5**
	—	Understands and applies the principles of risk management and investigates ICT solutions to mitigate identified risks	Decides on appropriate actions required to adapt security and address risk exposure. Evaluates, manages and ensures validation of exceptions; audits ICT processes and environment.	Provides leadership to define and make applicable a policy for risk management by considering all the possible constraints, including technical, economic and political issues. Delegates assignments.	—

Dimension 4	
Knowledge examples	Knows/ Aware of/ Familiar with: K1 corporate values and interests to apply risk analysis to K2 the return on investment compared to risk avoidance K3 good practices (methodologies) and standards in risk analysis
Skills examples	Able to: S1 develop risk management plan to identify required preventative actions S2 communicate and promote the organisations risk analysis outcomes and risk management processes S3 design and document the processes for risk analysis and management S4 apply mitigation and contingency actions

Dimension 1 e-Competence area	**E. MANAGE**				

Dimension 2

e-Competence: Title
+ generic description

E.4. Relationship Management

Establishes and maintains positive business relationships between the client and provider (internal or external) deploying and complying with organisational processes. Maintains regular communication with client/ partner/ supplier, and addresses needs through empathy with their environment and managing supply chain communications. Ensures that client/ partner/ supplier needs, concerns or complaints are understood and addressed in accordance with organisational policy.

Dimension 3

e-Competence proficiency levels
(on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)

Level 1	Level 2	Level 3	Level 4	Level 5
—	Positively interacts with clients.	Accounts for own and others actions in managing a limited client base.	Provides leadership for large or many client relationships. Authorises investment in new and existing relationships. Leads the design of a workable procedure for maintaining positive business relationships.	—

Dimension 4

Knowledge examples

Knows/ Aware of/ Familiar with:
K1 client or internal organisation processes including, decision making, budgets and management structure
K2 client business objectives
K3 own organisation business objectives
K4 how to measure and apply resources to meet customer requirements
K5 customer business challenges and risks

Skills examples

Able to:
S1 deploy empathy to customer needs
S2 identify potential win win opportunities for client and own organisation
S3 establish realistic expectations to support development of mutual trust
S4 monitor ongoing commitments to ensure fulfilment
S5 communicate good and bad news to avoid surprises

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| Dimension 1
e-Competence area	**E. MANAGE**

| Dimension 2

e-Competence: Title
+ generic description | **E.5. Process Improvement**

Measures effectiveness of existing ICT processes. Researches and benchmarks ICT process design from a variety of sources. Follows a systematic methodology to evaluate, design and implement process or technology changes for measurable business benefit. Assesses potential adverse consequences of process change. |
|---|---|

Dimension 3	Level 1	Level 2	Level 3	Level 4	Level 5
e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)	—	—	Exploits specialist knowledge to research existing ICT processes and solutions in order to define possible innovations. Makes recommendations based on reasoned arguments.	Provides leadership and authorises implementation of innovations and improvements that will enhance competitiveness or efficiency. Demonstrates to senior management the business advantage of potential changes.	—

Dimension 4

Knowledge examples

Knows/ Aware of/ Familiar with:
K1 research methods, benchmarks and measurements methods
K2 evaluation, design and implementation methodologies
K3 existing internal processes
K4 relevant developments in ICT and the potential impact on processes

Skills examples

Able to:
S1 compose, document and catalogue essential processes and procedures
S2 propose process changes to facilitate and rationalise improvements

Dimension 1 e-Competence area	**E. MANAGE**				
Dimension 2 e-Competence: Title + generic description	**E.6. ICT Quality Management** Implements ICT quality policy to maintain and enhance service and product provision. Plans and defines indicators to manage quality with respect to ICT strategy. Reviews quality performance indicators and recommends enhancements to influence continuous quality improvement.				
Dimension 3	**Level 1**	**Level 2**	**Level 3**	**Level 4**	**Level 5**
e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)	—	Communicates and monitors application of the organisations quality policy.	Evaluates quality management indicators and processes based on ICT quality policy and proposes remedial action.	Assesses and estimates the degree to which quality requirements have been met and provides leadership for quality policy implementation. Provides cross functional leadership for setting and exceeding quality standards.	—

Dimension 4	
Knowledge examples	Knows/ Aware of/ Familiar with: K1 which methods, tools and procedure are applied within the organisation and where they should be applied K2 the IS internal quality audit approach K3 regulations and standards in energy efficiency and e-waste
Skills examples	Able to: S1 illustrate how methods, tools and procedures can be applied to implement the organisations quality policy S2 evaluate and analyse process steps to identify strengths and weaknesses S3 assist process owners in the choice and use of measures to evaluate effectiveness and efficiency of the overall process S4 monitor, understand and act upon quality indicators S5 perform quality audits

Dimension 1 e-Competence area	**E. MANAGE**

Dimension 2 e-Competence: Title + generic description	**E.7. Business Change Management** Assesses the implications of new IT solutions. Defines the requirements and quantifies the business benefits. Manages the deployment of change taking into account structural and cultural issues. Maintains business and process continuity throughout change, monitoring the impact, taking any required remedial action and refining approach.

Dimension 3 e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)	Level 1	Level 2	Level 3	Level 4	Level 5
	—	—	Evaluates change requirements and exploits specialist skills to identify possible methods and standards that can be deployed.	Provides leadership to plan, manage and implement significant IT led business change.	Applies pervasive influence to imbed organisational change.

Dimension 4	
Knowledge examples	Knows/ Aware of/ Familiar with: K1 the implications on business of new ICT solutions K2 the implications on organisation and human resources issues of new ICT solutions K3 the impact of new ICT solutions on legal issues
Skills examples	Able to: S1 analyse costs and benefits of implementing new ICT solutions S2 select appropriate ICT solutions based upon benefit, risks and overall impact S3 construct and document a plan for implementation of process enhancements S4 apply project management standards and tools

Dimension 1 e-Competence area	**E. MANAGE**				

Dimension 2 e-Competence: Title + generic description	**E.8. Information Security Management** Implements information security policy. Monitors and takes action against intrusion, fraud and security breaches or leaks. Ensures that security risks are analysed and managed with respect to enterprise data and information. Reviews security incidents and makes recommendations for continuous security enhancement.				
Dimension 3 e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)	**Level 1** —	**Level 2** Systematically scans the environment to identify and define vulnerabilities and threats. Records and escalates non-compliance.	**Level 3** Evaluates security management measures and indicators and decides if compliant to information security policy. Investigates and instigates remedial measures to address any security breaches.	**Level 4** Provides leadership for the integrity, confidentiality and availability of data stored on information systems and complies with all legal requirements.	**Level 5** —

Dimension 4	
Knowledge examples	Knows/ Aware of/ Familiar with: K1 the organisations security management policy and its implications for engagement with customers, suppliers and subcontractors K2 the best practices and standards in information security management K3 the critical risks for information security management K4 the IS internal audit approach
Skills examples	Able to: S1 document the information security management policy, linking it to business strategy S2 analyse the company critical assets and identify weaknesses and vulnerability to intrusion or attack S3 establish a risk management plan to feed and produce preventative action plans S4 perform security audits

| Dimension 1
e-Competence area	**E. MANAGE**

| Dimension 2

e-Competence: Title
+ generic description | **E.9. IT Governance**

Defines, deploys and controls the management of information systems in line with business imperatives. Takes into account all internal and external parameters such as legislation and industry standard compliance to influence risk management and resource deployment to achieve balanced business benefit. |
|---|---|

Dimension 3	Level 1	Level 2	Level 3	Level 4	Level 5
e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)	—	—	—	Provides leadership for IT governance strategy by communicating, propagating and controlling relevant processes across the entire IT infrastructure.	Defines and aligns the IT governance strategy incorporating it into the organisations corporate governance strategy. Adapts the IT governance strategy to take into account new significant events arising from legal, economic, political, business or environmental issues.

Dimension 4	
Knowledge examples	Knows/ Aware of/ Familiar with:
K1 the IT infrastructure and the business organisation
K2 the business strategy of the company
K3 the business values
K4 the legal requirements
Skills examples	Able to:
S1 manage applicable governance models
S2 analyse the business context of the company and its evolution
S3 define and implement appropriate key performance indicators (KPI's)
S4 communicate the value, risks and opportunities derived from the IS strategy

Annex
European e-CF level table: The 5 e-Competence levels and their relationship to EQF levels 3-8

EQF levels	EQF Levels descriptions	e-CF Levels	e-CF Levels descriptions	Typical Tasks	Complexity	Autonomy	Behaviour
8	Knowledge at the most advanced frontier, the most advanced and specialised skills and techniques to solve critical problems in research and/or innovation, demonstrating substantial authority, innovation, autonomy, scholarly or professional integrity.	e-5	**Principal** Overall accountability and responsibility; recognised inside and outside the organisation for innovative solutions and for shaping the future using outstanding leading edge thinking and knowledge.	IS strategy or programme management		Demonstrates substantial leadership and independence in context which are novel requiring the solving of issues that involve many interacting factors.	
7	Highly specialised knowledge, some of which is at the forefront of knowledge in a field of work or study, as the basis for original thinking, critical awareness of knowledge issues in a field and at the interface between different fields, specialised problem-solving skills in research and/or innovation to develop new knowledge and procedures and to integrate knowledge from different fields, managing and transforming work or study contexts that are complex, unpredictable and require new strategic approaches, taking responsibility for contributing to professional knowledge and practice and/or for reviewing the strategic performance of teams.	e-4	**Lead Professional / Senior Manager** Extensive scope of responsibilities deploying specialised integration capability in complex environments; full responsibility for strategic development of staff working in unfamiliar and unpredictable situations.	IS strategy/holistic solutions	Unpredictable - unstructured	Demonstrates leadership and innovation in unfamiliar, complex and unpredictable environments. Addresses issues involving many interacting factors.	Conceiving, transforming, innovating, finding creative solutions by application of a wide range of technical and / or management principles
6	Advanced knowledge of a field of work or study, involving a critical understanding of theories and principles, advanced skills, demonstrating mastery and innovation in solving complex and unpredictable problems in a specialised field of work or study, management of complex technical or professional activities or projects, taking responsibility for decision-making in unpredictable work or study contexts, for continuing personal and group professional development.	e-3	**Senior Professional / Manager** Respected for innovative methods and use of initiative in specific technical or business areas; providing leadership and taking responsibility for team performances and development in unpredictable environments.	Consulting	Structured - unpredictable	Works independently to resolve interactive problems and addresses complex issues. Has a positive effect on team performance.	Planning, making decisions, supervising, building teams, forming people, reviewing performances, finding creative solutions by application of specific technical or business knowledge/skills
5	Comprehensive, specialised, factual and theoretical knowledge within a field of work or study and an awareness of the boundaries of that knowledge, expertise in a comprehensive range of cognitive and practical skills in developing creative solutions to abstract problems, management and supervision in contexts where there is unpredictable change, reviewing and developing performance of self and others.	e-2	**Professional** Operates with capability and independence in specified boundaries and may supervise others in this environment; conceptual and abstract model building using creative thinking; uses theoretical knowledge and practical skills to solve complex problems within a predictable and sometimes unpredictable context.	Concepts/Basic principles		Works under general guidance in an environment where unpredictable change occurs. Independently resolves interactive issues which arise from project activities.	Designing, managing, surveying, monitoring, evaluating, improving, finding non standard solutions
4	Factual and theoretical knowledge in broad contexts within a field of work or study, expertise in a range of cognitive and practical skills in generating solutions to specific problems in a field of work or study, self-management within the guidelines of work or study contexts that are usually predictable, but are subject to change, supervising the routine work of others, taking some responsibility for the evaluation and improvement of work or study activities.				Structured - predictable		Scheduling, organising, integrating, finding standard solutions, interacting, communicating, working in team
3	Knowledge of facts, principles, processes and general concepts, in a field of work or study, a range of cognitive and practical skills in accomplishing tasks. Problem solving with basic methods, tools, materials and information, responsibility for completion of tasks in work or study, adapting own behaviour to circumstances in solving problems.	e-1	**Associate** Able to apply knowledge and skills to solve straight forward problems; responsible for own actions; operating in a stable environment.	Support/Service		Demonstrates limited independence where contexts are generally stable with few variable factors.	Applying, adapting, developing, deploying, maintaining, repairing, finding basic-simple solutions

Beside of concepts explicitly elaborated for the European e-Competence Framework, the table contains description elements of The European Qualifications Framework for Lifelong Learning (EQF), April 2008, and The PROCOM Framework, of which generic job titles have been reproduced by kind permission of e-Skills UK.

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