



# Training guidelines for VET providers / employers / employees in the field of AAL jobs

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## 1. About this document

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### 1.1 Background

Demographic change, the increasing demand for geriatric care, as well as the progressive individualization of society are facts that have influenced the development of the concept of Ambient Assisted Living (AAL) in Europe. AAL initiatives have the primary objective of extending the time people can live in their preferred environment by increasing their autonomy, self-confidence and mobility. AAL also helps in maintaining health and functional capability of elderly individuals, providing a better and healthier lifestyle for individuals at risk, through enhancing security, preventing social isolation and maintaining the multifunctional network around the individuals, including support caregivers, families and care organizations. This increases the efficiency and productivity of resources necessary in ageing societies.<sup>1</sup>

However, AAL is not only a matter of technological research and development but also a rapidly growing economic sector creating new jobs; the complexity of all the useful innovations in the field of AAL demands professionals who know how to incorporate, install, service, and use those devices and systems; currently, there are no specific further vocational training programmes available in Europe related to the use and development of AAL systems and tools.

With this in mind, the CompAAL project was brought to life and has been funded by the Leonardo da Vinci Programme of the European Commission. It has been carried out by eleven organizations from nine European countries (Germany, the United Kingdom, Hungary, France, Spain, Greece, Bulgaria, Switzerland and Austria), all of them stakeholders in the field of training for ICT jobs and vocational education in the AAL field. In the framework of the project, the partnership has conducted extensive research in order to define the key *knowledge, skills and competences* that will be demanded in the near future in the AAL job market.

The consortium closely collaborated with training institutions as well as policy makers and experts in the field of AAL to determine a consensus on the training needs in this field at the European level. On this basis, a compendium of five AAL European Specialist Profiles has been defined (*AAL Community Manager, AAL Consultant, AAL Maintenance Specialist, AAL Solutions and System Developer* and *AAL System Architect*), which are included and described in the present training guidelines.

The CompAAL Training Guidelines offer guidance for European training institutions and for all people involved in drafting curricula in this area, as it describes, in detail, which knowledge, skills and competences need to be acquired in order to qualify for job positions in the AAL field. It also describes the success factors for training AAL professions and provides suggestions for learning units in which relevant learning outcomes could be trained and acquired. Moreover, these guidelines make reference to the main European frameworks that facilitate the transparent and comparable description of qualifications: the European

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<sup>1</sup> Ambient Assisted Living Joint Programme. <http://www.aal-europe.eu>



Qualification Framework (EQF), the IT-specific- e-Competences Framework (e-CF), and the European Credit System for Vocational Education and Training (ECVET).

## **1.2 The chapters**

With the aim of providing a comprehensive set of learning units that should be developed by vocational education and training (VET) organizations in the AAL field, and which are based on learning outcomes, the CompAAL training guidelines are structured as outlined in this section. The chapter headings have been chosen to provide a first orientation to using the document. It is not necessary to work through the document from beginning to end, rather, different target groups will have different interests and will be more interested in some chapters than in others. This is further described in the section 1.3. Here, however, is a brief overview of the individual chapters in the guidelines:

### **1.2.1 The AAL job sector**

This chapter describes the state-of-the-art of the AAL field in Europe, based on the results of the desk and field research conducted in the participating countries. This section also contains a description of the main AAL needs in terms of knowledge, skills and competencies, derived from this research. Moreover, this chapter explains the importance of VET systems in promoting AAL knowledge, which is insufficiently addressed within the framework of currently existing, related qualification programs.

### **1.2.2 European reference frameworks**

This chapter explains the need and benefits of common reference tools for transparency, recognition of learning outcomes and the mobility of learners in Europe. In particular, EQF, and the e-CF frameworks as well as the ECVET system are described, and it is shown how these tools relate to the AAL European Specialist Profiles identified and described by the project. Attention will also be paid to how these systems relate and interact with one another to achieve their goals..

### **1.2.3 Success factors for training AAL Professions**

This chapter elaborates the key factors and core skills for AAL jobs that should be taken into account at the moment when developing training and qualification programmes designed to prepare people for job roles in the AAL field. These key factors were determined as a result of the national desk and field research conducted in the countries represented in this project.

### **1.2.4 The Job Role Profiles in the field of AAL**

This part presents the five job role profiles for the AAL industry, i.e. AAL Community Manager, AAL Consultant, AAL Maintenance Specialist, AAL Solutions and System Developer and AAL System Architect. For each AAL profile, a description of the specific role in an organization context is provided. It describes when it is needed, why, which functions and activities are critical for success, and other characteristics. In addition, an explanation of the relations between soft and technical skills in the implementation of the job is given. A description of the suggested learning units structured from an output-oriented perspective are presented, which means a definition of learning outcomes as related to the EQF; thus, each learning unit suggests the learning outcomes that should be achieved by a person in order to qualify for these AAL job roles in the European labour market.



### 1.2.5 List of abbreviations

**AAL** : Ambient Assisted Living

**e-CF** : e-Competence Framework issued by CEN (European Committee for Standardization)

**CEN** : European Committee for Standardization

**EC** : European Commission

**ECVET** : European Credit system for Vocational Education and Training

**EQF** : European Qualification Framework

**EU** : European Union

**HE** : Higher Education

**ICT** : Information and Communication Technologies

**OECD** : Organization for Economic Co-operation and Development

**R&D** : Research and Development

**SME** : Small and Medium Enterprise

**VET** : Vocational Education and Training

**VDI** : Association of German Engineers

## 1.3 The target groups

The main target groups for the present training guidelines are:

**VET organizations** which are interested in adapting their training offering to the emerging market needs for new fields at European level and which, at the same time, desire to be more competitive in the market. As the document reflects the training needs of the job market in the AAL field, the key factors that training organizations currently have to consider when designing training modules and the main learning outcomes that students should achieve in order to be able to join the labour market. This document will support VET institutions in tailoring their training courses accordingly. Chapter 2, The AAL job sector; chapter 3, European reference frameworks; chapter 4, Success factors for training AAL professions; and Chapter 5, The job role profiles in the AAL field are all of particular importance for VET institutions.



**Employers or human resources managers who are** in charge of developing in-house training modules or recruiting personnel will also find valuable information here. These training guidelines for the AAL sector will enable these professionals to determine whether job applicants and employees with the identified sets of knowledge, skills and competences are sufficiently qualified for job positions in the sector. The document provides practical descriptions of the core skills needed for AAL jobs and also a proposal on how to train professionals in this area. This group can benefit mostly from the content of chapter 2, The AAL job sector; chapter 4, Success factors for training AAL professions; and Chapter 5, The job role profiles in the AAL field.

**(Potential) employees, in particular in SMEs,** seeking information about the skills sets required for the AAL sector and identifying personal training needs can also profit from these guidelines. The present guidelines support (potential) employees in gaining insight into knowledge, skills and competencies required at the European level in the field, enabling them to determine whether they are sufficiently qualified for relevant positions. Professionals in the AAL field can find information on their specific interests in chapter 2, The AAL job sector; chapter 4, Success factors for training AAL professions; and chapter 5, The job role profiles in the AAL field.

In general, the Training Guidelines present relevant information for all the stakeholders interested in finding out which knowledge, skills and competences are required to succeed in the labour market in the field of ambient assisted living across the European Union (EU).



## 2. The AAL job sector

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### 2.1 State-of-the-art

Aiming at determining the state of the art in the field of AAL across Europe, the CompAAL consortium conducted extensive desk research in regard to AAL-related European projects and followed this up with in-depth desk and field research in eight participating countries (Greece, Germany, France, Austria, Switzerland, Hungary, Bulgaria, and Spain). Along with exploring the development of the field of AAL in each country, the research aimed at specifying the existing, as well as the future knowledge, skills and competence needs in the area of AAL. It is worth noting here that for most of the participating countries there are no current studies available describing the status quo of AAL professions and the competence needs in this still very new sector; therefore, in the context of the field research conducted, the consortium gathered data directly from professionals working in the field of AAL, either in research and development (R&D) or as existing practitioners. The data was collected by means of a standardised questionnaire and interviews. Despite the importance and the novelty of the research conducted, it is important, however, to take into account its limitations that are mainly stemming from its broad coverage and the need for a harmonised research approach that allowed a comparative perspective.

Recent advances in information and communication technologies (ICT) have greatly increased the potential to address the needs of elderly persons and to assist them in their effort to retain their independence and mobility, and to stay healthier and remain active and socially involved longer. In response to these opportunities and challenges, a vast number of technology-based R&D activities have focused on the ageing population. In the context of these activities, AAL constitutes a fundamental research domain in which Europe has invested heavily. AAL refers to intelligent systems of assistance for a better, healthier and safer life in one's preferred living environment and covers concepts, products and services that interlink and improve new technologies and the social environment [cf. van den Broek, Cavallo, & Wehrmann, 2010].

AAL integrates a wide range of technologies and has been implemented in several application domains [van den Broek, Cavallo, & Wehrmann, 2010], such as home and mobile support (focusing on rehabilitation and care, personal and home safety and security, etc.), the community (addressing social inclusion, entertainment and mobility), and the workplace (aiming at work-related needs). However, the demands determining its characteristics can vary significantly between different countries and can be market-driven, customer/society-driven, or technology-driven. As a result, European countries do not share a common status in the AAL field in terms of understanding, prioritizing and implementation.

Germany is the leading expert having associations such as The Association of German Engineers<sup>2</sup> (VDI), institutes such as VDI|VDE|IT<sup>3</sup>, as well as a strong national agenda focusing on the AAL field. Several AAL-

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<sup>2</sup> <http://www.vdi.eu/>

<sup>3</sup> <http://www.vdivde-it.de/>



related projects have taken place at a national level, while many German research centres and companies have participated in various EU R&D projects. These research efforts focus both on technological and social aspects. On the other hand, Austria is an emerging player in the AAL field having a national research agenda that focuses mainly on social issues and the acceptance of innovative AAL products. Along the same lines, studies and reports in both France and Switzerland indicate a strong national policy for AAL, yet they lack in relevant national funding programmes.

Greece and Spain have shown increased activity in the AAL field, however due to the lack of respective national policies, the research efforts are either performed independently or solely under EU funding schemes. A sound difference between these two countries is that Greece focuses more on technology, while Spain is interested more in the social aspect of AAL. Likewise, Hungary and Bulgaria do not have any national policy initiatives, nor is there any notable developments at the EU (or national) project level.

In general, the research efforts across European countries are currently mainly driven by European programmes, and more specifically by a dedicated action in the 7th Framework Programme and the AAL Joint Programme<sup>4</sup> (AAL JP). These programmes fund a large number of projects establishing a favourable environment for the emergence of relevant innovative ICT-based products, services and systems. Some examples of these projects are AALUIS<sup>5</sup>, which focuses on user interfaces; SOCIALIZE<sup>6</sup>, which aims at promoting elderly social interaction; and ENTRANCE,<sup>7</sup> which is developing a serious game to assist navigation and way-finding.

Apart from the enormous attention AAL has received at a research level, it is becoming increasingly commercialized, emerging as a rapidly growing economic sector and creating new jobs. Various market products, which are mainly the results of research projects and rising expectations for more sophisticated systems and services that will be available in the near future, are available. This market, which will grow bigger as people live longer, poses special requirements for new qualifications that will lead to experienced and competent personnel able to support all aspects of the AAL value chain.

Trying to draw the picture of a potential AAL labour market, the existing AAL literature indicates several job sectors along the AAL value chain. The core job sectors are considered to be *AAL Caregiving*, that is, addressing medical issues; *AAL solutions/service developing/providing*, that is, developing AAL products and supplying these to the market; and *AAL Network providing* which concerns itself with and maintains the communication infrastructure. In addition, there are some secondary job sectors, include *AAL usability*, *AAL architecture*, *AAL financial management*, *AAL ethics*, *AAL social networking*, *AAL assisting/consulting* and *AAL maintenance engineering*.

It should be noted that the identified AAL job sectors may differ significantly in various aspects from country to country. This happens due to existing differences in cultural and educational backgrounds as

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<sup>4</sup> <http://www.aal-europe.eu/>

<sup>5</sup> <http://www.aaluis.eu/>

<sup>6</sup> <http://www.aal-europe.eu/projects/socialize/>

<sup>7</sup> <http://www.aal-europe.eu/projects/entrance/>



well as different needs driving the AAL market in the different countries. For instance, the terminology used to describe the AAL job sectors is not common across European countries, as their nature may be either more theoretical or more applied. Another interesting observation is that there is a general trend towards hybrid job sectors that combine high-level technical skills and so-called soft skills in relatively equal proportions. A representative example is the *AAL coaching* job sector found in Switzerland and Austria, which includes responsibilities from *AAL solutions/service developing/providing*, *AAL usability* and *AAL assisting/consulting*.

Nevertheless, since AAL is a relatively young research domain, its commercial diffusion is still very limited, which is verified by the AAL products available in the market which are, for the most part, rather simple and possessing only basic functionality compared to those developed in lab environments and used for R&D purposes. Therefore, the AAL job sectors identified by the present study only constitute a first attempt to determine the most important AAL-related job sectors at a pan-European level. Various modifications of those job sectors that aim either at making them less or more hybrid and specialized, or even more simplified, have already been detected and may be more developed according to the specific characteristics and the market trends in each country.

## 2.2 The market needs

Although the R&D community has produced a large number of innovative products, these can only be used and implemented successfully if the relative market players have well-qualified personnel. The AAL field needs professionals from various fields who are aware of AAL technologies and AAL products' functionalities and capabilities, and, in some cases, who are able to promote, setup, maintain and use AAL products.

The job sectors presented in the previous section provide an ideal picture of the overall AAL value chain and can act as a roadmap to determine the qualifications required to establish AAL specialists. A more detailed view of the actual AAL market needs can be drawn by connecting the AAL job sectors which are expected to appear and the existing, real-life professions/qualifications that will possibly develop the AAL field in the near future. Such a connection makes sense due to the fact that AAL is still at an early stage in regard to its commercialization and exclusive AAL professions do not exist at the moment. Therefore, the existing professions are called to cover most AAL market needs at this stage. The following table (Table 1), shows indicative examples of professions mapped to each AAL job sector.

Job sector	Professions
AAL Assisting/ Consulting	Consultant, Computer engineer
AAL solutions/ service developing/ providing	Software Engineer
AAL Usability	Ergonomics designer



Job sector	Professions
AAL Social networking	Social worker
AAL Caregiving	Medical expert, Physician, Nurse
AAL Ethics	Lawyer
AAL Architecture	Civil Engineer, Architect
AAL Network Providing	Network Engineer, Telecommunications technician
AAL Financial Managing	Accountant
AAL Maintenance engineering	Electrical Engineer

**Table 1. Existing professions mapped to the AAL job sectors**

### 2.3 The role of VET

In view of the growing skills shortages in a number of technical disciplines and considering the articulated needs and requirements of the industry itself, the role of VET is becoming ever more important. A recent working paper in the OECD Employment Outlook 2011, 'Right for the Job: overqualified or underskilled?'<sup>8</sup> reports that there is a growing mismatch in both, skills and qualifications, which affect not only wages and job satisfaction, but also the willingness to look for work while still employed. This is supported by a report produced by the European Commission Expert Group, 'New Skills for New Jobs: Action Now'<sup>9</sup>. The skills gap could reach more than 700,000 positions by the year 2015, according to the 'Digital Agenda for Europe'.

Finding suitable personnel is part of the equation, but it is equally, if not more, important that those who wish to pursue jobs in these newer technical areas are adequately and appropriately trained. This responsibility, of course, falls to VET providers; that is, those organizations (or perhaps departments of larger corporate entities) that prepare individuals for entering specific job fields. The training offered must reflect actual industry needs and requirements, but it must go further as well.

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<sup>8</sup> <http://www.oecd.org/dataoecd/47/15/48650012.pdf>

<sup>9</sup> [http://e-jobs-observatory.eu/sites/e-jobs-observatory.eu/files/New\\_Skills%20for%20New%20Jobs.pdf](http://e-jobs-observatory.eu/sites/e-jobs-observatory.eu/files/New_Skills%20for%20New%20Jobs.pdf)



Research<sup>10</sup> has shown that in addition to technical skills, other skills and competences, primarily so-called "soft" or behavioural skills are also needed and should be included in the training. The profiles developed for the CompAAL project take these requirements into consideration. The training of these skills and competences should not be undertaken as a separate subject-matter field; rather, it is recommended that these be, at least in part, addressed through the use of alternative teaching and learning approaches.

In addition to the specific suggestions made in relation to the behavioural skills and competences to be acquired in relation to the CompAAL profiles, there are some general suggestions regarding teaching and learning methodologies that are included here. It should be clear by now that the CompAAL project subscribes to a holistic view of education and training, but one that derives from the rigid application of a learning-outcome approach that includes "soft" as well as "hard" skills in the training. The shift from an instructor- or content-centric view of curriculum to a learner-centred view requires a different context for learning, one that is more closely associated to real-life, one that is closer to the actual work environment than traditional classroom learning.

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<sup>10</sup> Cf. ProInterNet "Status Quo Report" (online at [http://www.e-jobs-observatory.eu/sites/e-jobs-observatory.eu/files/Synthesis%20Report%20-%20Draft\\_V2.pdf](http://www.e-jobs-observatory.eu/sites/e-jobs-observatory.eu/files/Synthesis%20Report%20-%20Draft_V2.pdf)) and the EQF-iServe Training Guidelines (online at <http://www.adam-europe.eu/prj/7254/prj/Training%20Guidelines%20iServe%20final%20-%20UK.pdf>)



### 3. European reference frameworks

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#### 3.1 The need of common reference tools

In order to ensure more transparency and comparability of qualifications among the EU member states, and to enhance mobility of professionals and students, the EU, and other working groups committed to the harmonisation of qualifications, have developed different tools. These tools are generic reference frameworks such as the EQF, to which qualifications can be referred and mapped or more sector-specific reference frameworks, the e-CF, for qualifications in the field of ICT, and ECVET, for enabling mobility and the recognition of previously acquired knowledge, skills and competences.. These tools are being implemented in the national vocational training systems of more and more European countries every year. This is why the present document and training guidelines were based on and are related to these instruments, which are further described in the following sub-chapters.

The three frameworks considered here are closely related to one another. In this way, they provide a comprehensive approach to developing quality training that will meet specified industry requirements. Additionally, each of these frameworks, in its own way, supports the shift to learning outcomes, which has been the central focus of EU-level efforts to improve the quality of VET (as well as HE) in Europe. Traditionally, education, training and instruction have been input-driven and teacher/instructor-centric. This is to say that education and training units were developed from the perspective of the provider of that instruction or training. The teacher was seen as the subject-matter expert whose primary task was to transfer specified parts of his or her knowledge to the students/learners.

In particular, in VET, it has been recognized that this is a rather restricted and somewhat limited approach, especially in terms of real labour-market needs. Digital technology and its applications change at an exceptionally rapid rate. What is more, this same technology and related applications have become the basis of many, if not most aspects of our lives, but particularly our working lives. Everyone, at some level, must be capable of dealing with and using these technologies, so if they are in a dynamic state of flux, a different type of worker, an employ who knows how to adjust, adapt and update his or her knowledge is required. In addition, there is an increasing need to identify and describe roles and role profiles rather than producing specific, generally static, job descriptions. It no longer suffices to simply *know* something. What is important is what one can *do* with that knowledge in one or a variety of working contexts. What is more, the rapid change experienced in the workplace requires quite often that employees be able to make business relevant decisions, independent of management "authority", at every point along a company's value chain. In other words, one of the most important aspects of training and instruction is providing the learner with the opportunity to develop his or her own competences as well; that is, to what degree they are ready, willing, and able to apply their acquired knowledge in task-relevant ways.

These three components – knowledge, skills, and competences – are what drive a learning-outcome approach to VET. These three components are also the dimensions, if you will, of education and training; that is, preparing individuals to become effective and efficient employees. It is these three components as well that link the three central frameworks, which are presented in this chapter, together. At the same time, each of these frameworks was developed independently of the others, and originally to fulfil perhaps very different objectives. Nevertheless, as we have been trying to make clear in these guidelines, these



three frameworks, together, provide a sound foundation for describing, developing, and implementing training and education which in turn aimed at providing highly qualified workers to the primary labour market.

### 3.1.1 European Qualification Framework

The European Qualification Framework for lifelong learning (EQF) provides a common reference framework, which assists in comparing different national qualifications systems, frameworks and their levels. It serves as a translation device to make qualifications more readable and understandable across different countries and systems in Europe, and thus promotes lifelong and lifelong learning and the mobility of European citizens whether for studying or working abroad.

In order to make the EQF work, European countries participating in "Education and Training 2020" are invited to relate their national qualifications levels to the appropriate levels of the EQF and to indicate in all new qualification certificates, diplomas and Europass documents the relevant EQF level. The EQF applies to all types of education, training and qualifications, from school education to academic, professional and vocational. The EQF recognizes that Europe's education and training systems are so diverse that a shift to learning outcomes is necessary to make comparison and cooperation between countries and institutions possible. The EQF will relate different countries' national qualifications systems and frameworks together around a common European reference – its eight reference levels. Each of these levels from 1 (the lowest) to 8 (the highest) describes, in general terms, to what degree a learner should know, be able to do, and to which degree of independence (in terms of responsibility and autonomy) s/he should be able to perform in the workplace. In other words, the higher the level, the more knowledgeable, skilful and autonomous the individual should be.

The eight reference levels are described in terms of learning outcomes. That is to say, in the EQF, a learning outcome is defined as a statement of what a learner knows, understands and is able to do on completion of a learning process. The EQF therefore emphasizes the results of learning rather than focusing on inputs such as length of study, specific subject-matter topics, or the like. Learning outcomes are specified in three categories – as knowledge, skills and competence<sup>11</sup>. In several European countries, in the wake of the Bologna process, a certain misapplication of the EQF has occurred. In these instances, bachelor, master and doctoral programmes; that is, higher-education programmes, have been designated as being at EQF levels 6, 7, and 8. While this is understandable to a degree, until HE programmes have actually been translated into terms of learning outcomes and appropriate assessment and validation procedures have been put into place, we will not be able to know for sure. A consequence of this logic has been that many VET programmes have been "defaulted" to EQF levels 5 (or as is more often the case, level 4) or below. In June 2013, however, the German National Qualification Working Group issued a set of guidelines for describing the EQF levels of various vocational-education programmes, and was the first country to set parts of their vocational programmes as high as EQF level 7<sup>12</sup>.

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<sup>11</sup> [http://ec.europa.eu/eqf/home\\_en.htm](http://ec.europa.eu/eqf/home_en.htm)

<sup>12</sup> Cf. German EQF Referencing Report, dated 13 June 2013



Nevertheless, this framework plays an important role when thinking about the level of a qualification programme, course, or training module. Identifying this target level of capability is the first step in designing such training. What should be the focus of that training, however, is better described by the e-CF, to which we will now turn our attention.

### 3.1.2 e-Competence Framework

The e-Competence Framework (eCF) is a tool to describe the skills of professionals in ICT-related job roles. Thus, the eCF is an ICT sector-specific reference for job role descriptions, skill development, training and education. It has been developed in the context of the CEN workshop on ICT skills by a large number of European ICT and HR experts. The eCF consists of a set of 36 ICT competences that can be used and understood by ICT user and supply companies, the public sector, educational and social partners across Europe. As of this writing, eCF version 2.0 is the official release. In December 2013, however, version 3.0 is to be released. The differences between the two versions, however, has little impact on the specific job role profiles described in this document.

All of the CompAAL role profiles have been developed in strong adherence to the eCF, which is structured in four dimensions. These dimensions reflect different levels of detail of business and human resource planning requirements in addition to job and work proficiency guidelines. A brief explanation of these dimensions will be helpful in understanding the role profiles described later, in chapter 5.

The four dimensions of the eCF are specified as follows:

**Dimension 1:** 5 e-competence areas, derived from the ICT business processes:

#### **PLAN – BUILD – RUN – ENABLE – MANAGE**

These represent the phases through which a typical ICT development would pass from conception to real-time implementation; that is, over the lifecycle of a product or service. Each phase, in turn, is further described in terms of appropriate competences for that phase, which brings us to dimension 2.

**Dimension 2:** This is the most visible component of the eCF and it is composed of a set of competences for each area, along with a generic description for each competence. Thirty-six competences have been identified in total and provide the European generic reference definitions comprising the eCF 2.0. These competences are very general in nature, such as A.5 Architecture Design, B.3 Testing, or E.5 Process Improvement. In other words, this dimension addresses the general types of tasks that are relevant to the given phase of development. As such, not all of these competences will be relevant for every type of role profile, rather only those which help define the profile and types of activities to be performed are included.

**Dimension 3:** In this dimension, proficiency levels for each competence are provided. The idea here is to attempt to specify the degree to which a particular competence should be exercised. In this regard, these levels remind us of the EQF levels discussed earlier. In the eCF, five such levels (e-1 to e-5) have been identified. By design, these five levels correspond to the EQF levels 3 to 8. This provides for a direct link between the EQF and eCF. While the eCF provides suggested proficiency levels for the various competences, these are only suggestions. In designing a specific role profile for a job requiring a different

level of proficiency (cf. EQF levels), it is clear that the proficiency level of the eCF competence must be in line with the one that will be required on-the-job after training.

**Dimension 4:** This dimension is optional. In the eCF, this dimension simply includes samples of knowledge and skills related to the competences described in dimensions 2 and 3. They are provided to add value and context and are not intended to be exhaustive, nor definitive. This dimension has not been considered in defining the CompAAL role profiles.

Figure 1 provides an example of a description of one of the competences.

Dimension 1 e-Competence area					
<b>B. BUILD</b>					
Dimension 2 B.1. Design and Development					
e-Competence: Title + generic description 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	Level 3	Level 4	Level 5
	—	Systematically develops small components.	Acts creatively to develop and integrate components into a larger product.	Handles complexity by developing standard procedures and architectures in support of cohesive product development.	Has ultimate responsibility for strategic direction of product, technical architecture or technology development.
	Knowledge examples				
	Skills examples				
	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					

Figure 1: Example eCF Competence Description

The five AAL job role profiles, developed in the CompAAL project and upon which the present guidelines are based, follow mainly Dimension 1 - competence areas, as specifically delivered from the ICT business process proposed by the eCF and Dimension 2 for descriptions of the basic competences. The main purpose of the eCF is to provide a common language to describe the competences of ICT professionals and meet the needs for businesses and other organizations. It is intended to support decision-making in relation to the selection and recruitment of candidates, as well as the training and assessment of ICT professionals<sup>13</sup>.

<sup>13</sup> <http://www.ecompetences.eu/>



It should be noted, however, that the eCF is not without its critics. The primary criticism leveled at the framework is that it is not ICT-specific. Other than the phases described in Dimension 1, which, after the appropriate modifications have been made, could apply to any development (or production) process, not just ICT development processes, there is nothing about the framework that ties it specifically to the ICT sector. Where ICT or IS (information systems) is noted, this could in fact be exchanged for another sector, such as transportation, logistics, or others. In spite of this and in light of the fact that the eCF has become the defacto standard for describing ICT role and functional profiles, it is fitting that this framework was chosen as the basis for the development of the CompAAL profiles.

### 3.1.3 European Credit System for Vocational Education and Training

The European Credit system for Vocational Education and Training (ECVET) is the new European instrument to promote mutual trust and mobility in vocational education and training. Developed by Member States in cooperation with the European Commission (EC), ECVET was adopted by the European Parliament and the Council in 2009. The adoption and implementation of ECVET in the participating countries is voluntary. ECVET is based on concepts and processes which are used in a systematic way to establish a common and user-friendly language for transparency, transfer and recognition of learning outcomes. Some of these concepts and processes are already embedded in many qualifications systems across Europe.

ECVET is based on:

- Learning outcomes, which are statements of knowledge, skills and competence that can be achieved in a variety of learning contexts.
- Units of learning outcomes that are components of qualifications.
- Units that can be assessed validated and recognised.
- ECVET points, which provide additional information about units and qualifications in a numerical form. Credit that is given for assessed and documented learning outcomes of a learner.
- Credit can be transferred to other contexts and accumulated to achieve a qualification on the basis of the qualifications standards and regulations existing in the participating countries Mutual trust and partnership among participating organisations. These are expressed in Memoranda of Understanding and Learning Agreements<sup>14</sup>.

Since its adoption in 2009 countries and the Commission are putting important emphasis on testing and further developing of this instrument. In 2014 (five years after the adoption of the ECVET Recommendation) the Commission will report to the European Parliament and the Council on the results of the testing and the assessment of actions taken at Member State level.

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<sup>14</sup> <http://www.ecvet-projects.eu/About/Default.aspx>



The link to the other frameworks, of course, is through the specification of knowledge, skills, and competences in terms of learning outcomes. The combination of these three tools makes the detailed description of a given role profile possible, which is why this approach has been followed in developing the CompAAL role profiles.

## 4. Success factors for training AAL Professions

What makes the CompAAL profiles different is their linking of core competences to the competences described by the eCF. A total of 22 such competences have been identified in three competence areas, namely technical, behavioural, and management. In this chapter, these additional competences will be described and suggestions made for how such competences could be trained. In this way, additional assistance is provided to training developers when designing their training modules according to these guidelines.

### 4.1 How soft skills relate to technical skills

In addition to the core competences listed and described in the profiles themselves, the CompAAL Project has identified five technical competences that relate to the role profiles as well. These are listed in Table 2.

ID	Description
T01	Can measure and report on AAL
T02	Has knowledge about existing best practice frameworks in IT and AAL
T03	Can explain how (technical) AAL measures add value to the business
T04	Has knowledge about compliance with healthcare laws and policies
T05	Has knowledge about latest AAL developments

**Table 2: Technical Skills for AAL Professions**

These are general competence areas that deal specifically with current practice, future developments, and the meaning and legitimacy of AAL issues. As was pointed out in chapter 2, AAL practitioners straddle two very different worlds: information technology and healthcare. It cannot be said that either of these fields is more important than the other, rather a sound understanding of how the technical aspects of the job fit into the area of caregiving is just as important as knowing that proper care can be, and often is, enhanced by the targeted, reasoned, and knowledgeable inclusion of the right technologies.

#### 4.1.1 Specific profile descriptions

The CompAAL consortium focused primarily on the 22 core competences (five technical, 12 behavioural, five management), which were identified. For each eCF competence, further consideration was given to which core competences relate or are essential to the optimal exercising of the given eCF competence. This added dimension reflects the findings of the desk and field research conducted in conjunction with previous research, displayed in the *National AAL qualification profiles document*. These findings were



further supported by research done in other projects, such as ProInterNet (504025-LLP-1-ES-LEONARDO-LNW, 2009-2204/001-001) and EQF-iServe (2010-1-FR1-LEO05-14477).

It is these core competences that "round out" the individual and allow him/her to perform his/her job more effectively. The hybrid nature of the CompAAL role profiles emphasizes this. Technical savvy is only part of the formula for success. A broad knowledge base related to the AAL field, well-developed personal and interpersonal skills, and the ability to work with and lead others are more important than ever. As these core competences span the entire range of the specific eCF competences, it is felt that these would be best addressed in a training programme via instructional techniques and teaching/learning methods. These are competence areas that are best attained through "learning by doing".

#### 4.1.2 Alternate methodologies and assessment

For this reason, role-playing, project work, and simulations appear to be particularly effective tools for developing them. First, simulations can be an effective tool. Since vocational education and training should occur as close to the job as possible, yet many learners may not have a job or be between jobs while they are going through training, simulated environments can be effective for any number of learning activities. For example, one learns presentation skills best by presenting. These activities can be handed over to the learners for their production and delivery, whereby the instructor takes on more of a facilitating rather than instructional role. Ethical behaviour can be covered in part by lectures, of course, but there are any numbers of role-playing scenarios that could be developed, which require a decision on the part of the participants. Given that the EQF highlights the importance of problem-solving skills at various levels of responsibility and autonomy, it is reasonable to deduce that one cannot learn to solve problems without being confronted with problems to solve. Simulations – which include role-playing, certain games, as well as scenario-based situations – can be an effective vehicle for presenting problems with varying degrees of difficulty and requiring the use of various resources for their solution. Simulations go beyond simple working in pairs or in small groups, as each participant must both work with others in the group to identify and analyse the problem to be solved, but also contribute to identifying and acquiring the necessary resources to affect a reasonable solution.

Second, as all modern-technology-influenced positions, such as those identified here, will require a great deal of time online, it makes sense that some portion of the training also occurs online, that is in a virtual learning environment. Collaborative working at a distance is becoming an increasingly common form of work, so online exercises of this type (which could also include simpler, intranet-based exercises) would be helpful. Stated differently, problem-solving scenarios can be developed for face-to-face or for online participation. Furthermore, access to the Internet and the wide variety of resources available there provide an excellent opportunity for addressing essential topics such as the validity and reliability of information, the quality of websites, and much more. These could be reviewed and discussed in either real or virtual classrooms.

Third, in light of the breadth of the behavioural and business skills and competences that underlie the successful performance of these kinds of jobs, it is highly recommended that a project methodology be adopted wherever feasible. Ideally, the training provider will have close relationships with relevant companies in the area. Many training providers have clients where learners can be placed upon the completion of their training and who would be able to benefit from getting a closer look at the candidates



in a quasi-professional environment. It might be possible, as well, to work with a cluster of such companies to facilitate the identification of a type of "real-world" project that can then serve as the basis for structuring the instruction and facilitation of learning.

Lastly, the notion of assessment needs to be addressed. A learning-outcome-based approach, especially one that incorporates alternative learning and teaching methodologies, requires, by its very nature, a different approach to assessment than traditionally employed. Multiple-choice, short-answer, and essay answers are not well suited to determining the actual achievement of a particular outcome. Further, cooperative and collaborative forms of learning, such as in simulations or project-based approaches, do not lend themselves well to traditional methods of individual-directed assessment. This is a very new area of interest and not yet well developed. Here some creativity and innovation will be required to find efficient and effective methods for the future.

The knowledge, skills and competences to be developed in the training of any AAL role profile are both far-reaching and comprehensive. Given the variability of the duration and mode of such training, it will most often not be possible to address each and every area specified. There are, nevertheless, a variety of approaches and techniques, based on a thorough analysis of the requirements described above, that could be helpful for the training provider when it comes to developing specialized training for a particular job profile<sup>15</sup>.

## **4.2 Core skills for AAL jobs**

### **4.2.1 Behavioural skills**

The research conducted during the CompAAL project identified that when recruiting a new employee, managers and recruiters perform a first selection based on technical skills, that is by eliminating candidates who do not demonstrate the appropriate technical competences. Then, in a second step, a positive choice is made to select the one which will be engaged and the decision for this final selection is made mostly on the basis of behavioural skills. This demonstrates the importance of soft and transversal skills on the labour market.

Training and developing those soft and transversal skills is often missing in training organizations as they mainly focus on technical skills. This is why these training guidelines also take those skills into account and propose solutions and approaches to training organizations in order to develop those abilities for the students.

Soft skills or behavioural skills refer to the collection of personal, positive attributes and competencies that enhance relationships, job performance and provide value to the market. When we think of soft skills, abilities come to our minds such as being able to listen, communicate effectively, be positive, handle conflicts, be trustful, be a team player, etc.

Twelve behavioural and soft skills were identified by the CompAAL research as decisive in the AAL field. In these guidelines, we refer to "Behavioural Skills" that are known in general as "soft skills", which are

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<sup>15</sup> <http://aec.ifas.ufl.edu/abrams/step/explanation.pdf>



interrelated to technical and business skills. A selection or combination of the three categories of skills will define a specific role profile for an AAL Profession (Table 3).

ID	Description
B01	Is creative, imaginative,
B02	Is ethical
B03	Is precise and aware of details
B04	Is customer oriented
B05	Is committed to corporate strategy and aware of corporate culture
B06	Has good interpersonal skills
B07	Has presentation/moderation skills
B08	Can communicate (including in foreign languages if useful)
B09	Can work in a team
B10	Can seek, organize and synthesize
B11	Can analyse (assess, evaluate, critique, test)
B12	Can explain (defend, argue, justify)

**Table 3: Behavioural Skills for AAL Professions**

#### 4.2.2 How to train behavioural skills for AAL professions

Soft skills were identified as being decisive in the recruitment process, and they are often not sufficiently trained or taught in training organizations. Thus, this chapter is intended as a support for training organizations to integrate the training of these skills into their current/future curricula.

It is quite easy to evaluate technical skills with numeric values, the soft skills are less tangible and so more difficult to assess, and thus also in risk of being biased by the personal relationship between trainer and student. Nevertheless, awareness of the importance of these skills is the first aim that trainers should achieve and develop with trainees. To evaluate those skills the EQF and eCF descriptors are fully appropriate. Discussion and exchange between trainer and trainee about the descriptor and how the



trainee implements it in his approach is a valuable way to accomplish this. In the following sub-sections, though, the individual behavioural skills are addressed in terms of suggested suitable approaches to training in these areas.

### **B01: Is creative, imaginative**

Many studies have shown that the efficient usage of both brain hemispheres significantly improves working processes. In other words, the right (creative) and the left (linear) sides of our brain need to be fully activated to produce the maximum productivity. Some considerations for the trainer:

In the creative process we find four roles, which the trainer can include in an exercise:

**The Explorer:** seeks materials to build an idea. Unusual patterns, unknown areas and a variety of viewpoints are an Explorer's favourite circumstances. You act as an Explorer when you:

- Participate in a scavenger hunt game
- Go to a speaker outside your area of study

**The Artist:** takes the material gathered and adds a special twist to it. Intuition, rearranging things, looking at things backward or upside down may be the Artist's tools. You act as an artist when you:

- Cook a gourmet meal
- Design an unusual costume for a Halloween party

**The Judge:** evaluates an idea's potential. Looking for drawbacks, deciding if the time is right and questioning your assumptions are tasks for the Judge. You act as Judge when you:

- Go comparison shopping
- Make an investment

**The Warrior:** fights for the implementation of the newly created idea. Warriors overcome excuses, clear obstacles; fight it out in the trenches. You are a Warrior when you:

- Actively support a political cause
- Are involved in competitive sports

The trainer has to show the learners where the mental blocks to the creative thinking are, to help them to overcome them, and to develop willingness to be risky, playful, and innovative, for example by:

- Not being too cautious, logical, or fearful.
- Not judging ideas before they have a chance to develop.
- Letting your mind explore options which seem absurd.



- Making your thinking as funny and playful as possible.
- Breaking out of conventional thinking.
- Awareness of your own internal censor.

In each working situation, true professionals try to reuse solutions they already developed in another context. In the AAL field, one of the most important issues is to design solutions taking into account the context and the users. AAL solutions must be tailored to the very individual needs of the individual AAL user, the social framework, the health status and need of healthcare or any other support in the user's daily life and thus require flexible and creative thinking in order to determine the best individual solution possible. During training, exercises in designing different solutions to reach a goal is a valuable way to imagine other solutions, then at the end to choose the best adapted to the context.

### **B02: Is ethical**

Ethics in the field of AAL involves what the affected stakeholders 'should' do as the right thing, for the good of the users and for those who may be collaterally affected, as well as for the common benefit. The ethical responsibility of businesses can be considered in terms (for example) of discounting prices and therefore make the service available for a wider group of elderly people.

Employees often face difficulties in which they are forced to take complex decisions; some of those decisions will have to be taken according to ethical standards. Research has shown that the best way of training "ethics" is to present difficult social situations to the learners, which have to be solved in either in groups or individually. The trainer is free to decide on the type of exercise according to the audience.

An example for such an exercises is:

How to define a price for a service or a product? Do we set up the price to the maximum acceptable in the market or do we lower the price to make it more affordable by users?

Each trainee has to defend and argue one of the two positions then debriefing is done with questions raised by trainer regarding the implications for the company's business<sup>16</sup>.

### **B03: Is precise and aware of details**

Thinking of a person who is precise, we describe them as detail oriented, accurate, definite, and exact. A precise person should work with great attention to details.

This type of skill has to be defined according to the area of training, considering that individuals can be very accurate and aware of details in some areas but not in others. We should keep in mind that precision needs a lot of concentration, so the working environment can influence it strongly. In order to be precise, the employees have to know what the goals are, to what extent precision has to be achieved.

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<sup>16</sup> University of Budapest: Report on ethical considerations of the design and implementation of care



In the AAL sector, the best solutions or devices are often spoiled by simple details that have not been taken into consideration. Raising awareness of details and how to check them is essential during training.

#### **B04: Is customer-oriented**

In the ICT sector, systems and devices are often designed from the technical point of view, also called “machine-orientated”, and users have to adapt themselves to the system or device.

The AAL sector is special in the sense that users or customers have particular needs or disabilities due to age, illness, etc. which make it difficult for them to adapt to any system or device. Accordingly, from the design and development to the implementation, AAL professionals have to put themselves into the position of the users and ensure the easy adaptation of the system or device to the individual AAL user's needs with the minimum effort on their part.

Implementing a new system or device can lead to many changes in the habits of the users/customers. When change is too drastic (for the users), it may lead to a non-use of the system or more often to a misuse. Checking the impact of the implementation and reducing the risks is a duty for AAL professionals.

Trainers have to enhance the awareness of future professionals to invent solutions requiring less adaptation from future users. They have to learn to start with an analysis on the user's side and not from a technology-focused perspective. The machine has to be adapted to users and not in the other way around.

Training of customer orientation should include the following steps:

1. Learning to easily determine a customer's profile, needs and expectations from the device or system.
2. Definition of the different modes and situations of interacting with customers: face-to-face, telephone contact, emailing, sales, etc.
3. Exercising how to determine customers' needs: Different role plays, where customer roles are described and have to be played by some learners, while other play the part of the employee. The situations have to be described realistically in order to be easy for the participants to enter into the parts.

#### **B05: Is committed to corporate strategy and aware of corporate culture**

All employees need to know and understand the corporate culture of their organization and how this is related to the business environment and the customers/users. Communication in the organization also reflects the corporate culture. Customers get a certain impression of the company culture and habits and base their decision on the picture they form of the organization. Any change in the company's image, either generated by the organization or its employees, has an impact on the business and its performance. Training in the AAL field, more than in other sectors, should investigate which impact on the image of the corporate culture each change generates, inside and outside the organization. Here, examples of good practice (or even bad practice) could be helpful.

Some key factors in the corporate culture that influence organizational commitment:



1. **Teamwork:** it is important to develop the feeling of oneness and the ability of employees to work together in completing a task by bringing added value. The total value is higher than the sum of individual values.
2. **Training and development:** it motivates employees, shows them they are important to the company, provides the necessary new knowledge in order to be prepared for the new trends, strategies and tasks;
3. **Communication:** internal communication – between management and employees – represents an important factor in improving employees' commitment to the company, as does external communication – between employees and customers.
4. **Rewards and recognition:** very important elements of the motivation of the employees.

We can understand that the management of the company plays an important role in developing the commitment of its employees to its corporate strategy and culture; nevertheless, future employees should also be aware of the importance of their engagement to the organisation's culture and strategy, because the successful operation of the company depends on their performance.

### **B06: Has good interpersonal skills**

Interpersonal skills are the skills that a person uses to communicate and interact with people at a personal or professional level. These skills also include emotional intelligence, confidence, ability to listen and understand, and a willingness to interact. Other interpersonal skills are problem-solving, decision-making as well as time and stress management. People who have a high level of interpersonal skills have a high probability of success in the labour market. Trainees have to be aware of the impact that their behaviour will have on other people (customers and colleagues). In order to increase the interpersonal skills of the students, training should include the following topics: verbal and non-verbal communication, listening skills, stress management, assertiveness, decision-making, problem-solving, conflict resolution or better prevention of conflicts.

A good method to improve problem-solving is working on providing solutions to riddles. Why riddles? Riddles motivate people to put their best efforts into finding solutions. Thus, they exercise their problem-solving skills, and, at the same time, if riddles are solved in groups, people can practice other skills, such as interpersonal communication, decision-making, and stress management (if they have to work under time pressure).

An example of a riddle:

Your group comes to a bridge in the middle of the night. The bridge has maximum capacity of 2 people to walk on it at the same time. You have only one torch and need it, because it is too dangerous to cross the bridge in the night without it. The torch gives light for 17 minutes. You have to find out how to bring four people in 17 minutes from A to B, considering that the first passenger needs ten minutes to cross the bridge, the second five minutes, the third two minutes and the fourth one minute. When two of them cross the bridge, one of them has to bring the torch back to the rest.



### **B07: Has presentation/moderation skills**

Presentation and moderations skills are of eminent importance in the business world. Employees, should be able to communicate to different audiences, convince others of their ideas and conduct different kinds of negotiations for the company and at different levels, (company-customer, company-suppliers, or within the same company). Often they also have to present their projects to others; this is why this subject is so important.

Presentation and moderation skills can be learned very easily in different workshops. These workshops should provide the main steps in the preparation of a presentation, help trainees to set goals for the presentation, to plan the visual aids and, above all, to deliver the presentation, overcoming stage fright and hopefully convincing the audience. This knowledge will also help the trainees to master everyday negotiations and problems with customers.

There are two target audiences for which presentation and moderation skills are needed in AAL jobs:

- Organization members, partners and prescribers
- Customers and users.

### **B08: Can communicate (including in foreign languages if useful)**

Regardless of type of organisation or job position, communication skills are crucial for good performance in the workplace. Communication skills include the way in which a person interacts with others using verbal and body language, gestures, facial expressions, tone of voice, or in writing. It is clear that business success depends on communication; therefore, it is of the utmost importance that employees are good communicators, which means, being convincing speakers and patient listeners, too. Besides the importance of individuals having good communication skills in their native language, it is of high added value if they are



able to communicate in foreign languages as well, which will allow them to negotiate at international level or work abroad without any difficulty.

Training communication skills should start with an effective assessment of the students through questionnaires or oral presentations in order to determine their strengths and weaknesses with regard to these skills. Trainers should provide guidelines on how to improve weak areas and enhance strengths, in which the importance of body language should be particularly stressed. More than 50% of communication comes from body posture, eye contact and arm movements. Students can practice by keeping eye contact and mirroring the body language of the person with whom they are communicating. This training unit can end with a new oral presentation from the students to evaluate their progress.

Students should know that weak communication skills sometimes come from the lack of things to say or not having the ability to gather thoughts properly to provide quick and effective answers. Therefore, it is also important to have good knowledge of the topic that is being discussed.

### **B09: Can work in a team**

The ability to work in teams is crucial for success. There are different teams, with their own stories, myths, problems, roles and rules. We can define two main types of teams. First, there are those in which the work is done in the team, as for example, plane crews, construction teams, etc. Second, those in which the team performs only the management and coordination of the work but the work itself is done separately, perhaps by team members, as for example software developers. Regardless of the type of team they belong to, employees have to develop abilities like trust, active listening, giving and receiving feedback, and sharing information and ideas.

There are many ways to train teamwork skills. One good example showing the advantages of the teamwork are the so called NASA games (Lost at sea, Lost in the desert, On the Moon). These exercises are appropriate also for the previous subjects such as precision, analytical thinking and organizing and synthesizing.

### **B10: Can seek, organize and synthesize**

Information technologies are giving access to a broad range of information for users. This situation unquestionably brings about great advantages for our daily work and life in general. Nevertheless, the information available is so vast that it becomes important to know how to seek for specific information, how to define criteria for structuring and organising this information according to one's own needs, and, most importantly, to draw coherent conclusions. People working in the field of AAL need these three skills to be efficient in their jobs.

Training in this area should target the achievement of the following learning outcomes:

- to identify possible sources of information with regard to specific information needs (physical or digital)
- to assess and determine the sources that provide accurate and valid information and to prioritise them



- to select relevant information from the selected sources (read, hear, view).
- to evaluate the selected information and organize it.
- to consider ethical and legal issues for the use of the selected information.
- to draw conclusions from the selected information in order to provide specific information for specific purposes.
- to evaluate the quality and the reliability of the source of the information.

When presenting information, students must be able to qualify from which source they got it and evaluate, for example through group discussion, if the source is reliable or not.

### **B11: Can analyse (assess, evaluate, critique, and test)**

We are now living in the early decades of the information revolution. Never before has so much information been available, so easily and inexpensively and in so many different subjects. After the selection and synthesis of certain information, we have to use it in a proper way, which means we have to find out specifically what this information is telling us. Information by itself will not lead us to take decisions. It is the knowledge drawn from it that will be used to make informed decisions in different situations. Information is the raw material of decision-making and that is why it is so important to analyze it properly.

The following structure suggests a method for developing these analytic skills:

- Clarify the objectives of the research; this will help in organising the information and keeping the analysis focussed
- Analyse quantitative information, e.g., rankings, ratings, and statistics. Separate, tabulate, and categorize the information
- Analyse qualitative information: at this phase, results have to be compared in light of the research objectives, and information has to be sorted according to the set standards
- Draft conclusions and recommendations in a report
- Report results: the reporting of the results can take different forms, as required by the research objectives. For example, it can be a written or oral report, a public presentation, etc.

### **B12: Can explain (defend, argue, justify)**

The ability to explain, defend, argue and justify a certain perspective or position is a key skill. An explanation has the purpose of having others understand a certain idea. It leads from the known to the unknown and it assists the learner in assimilating and accommodating new information or experiences. Explanations fulfil two objectives: (1) to introduce new topics by giving some background about their



usefulness and application: and (2) to describe the subject in a simple, complete and understandable way. A good command of this skill will result in a better communication within on's own team or company and with customers. A professional able to give appropriate explanations regarding certain topics has to be sure that their explanations are clear and have continuity. In order to give relevance to the content of the explanation it must have proper beginning and concluding statements, covering essential points in a simple manner, geared particularly to the intended audience.

In the AAL field, it can be noticed that some people react instinctively; that is to say, feeling is more important than logic. To train students to have the good reactions to situations, some exercise with role playing can be invaluable. One plays the user's role and responds as a user would. The “professional», then, has to defend, argue and justify his position but taking into account the user’s reaction. The trainer supports the user in having the appropriate attitude and debriefs the “professional”.

In the AAL sector, the environment (support team, or family) is often decisive for the successful implementation of a device or system. The way to discuss, defends, argue, and justify with the support team or family differs greatly from the discussion with the dependent or elderly person. Appropriate adaptation to the right audience is essential. Role-playing is a helpful means to train empathy for the different audiences and to sensitise a person to an appropriate way of communicating.

### 4.3 Management skills

Finally, project research has shown that there are at least five additional management skills that are important for inclusion in AAL training. An overview of these is provided in Table 4.

ID	Description
M01	Can measure and report on AAL
M02	Has knowledge about existing best practice in IT and AAL
M03	Can explain how (technical) AAL measures add value to the business
M04	Has knowledge about compliance with healthcare laws and policies
M05	Has knowledge about latest AAL developments

**Table 4: Management Skills for AAL Professions**

In the following subsections, some suggested approaches for how one might approach these skills in a training context are presented.



## M01: Has knowledge of project management principles

Every project must be managed. Following are the seven key principles, designed to improve the likelihood of a project's success. In short, these project management principles can be applied universally, irrespective of language, geography or culture. These principles have been proven in practice over many years<sup>17</sup>.

1. **Business justification:** every project should lead to a worthwhile return on investment. In other words, we need to understand the benefits that a particular project will bring before committing to any significant expenditure. During the life cycle of a project, however, circumstances can change quickly. If at any point it becomes clear that a return on investment is no longer feasible, then the project should be scrapped and no more money wasted.
2. **Defined roles and responsibilities:** everybody working on the project needs to understand the nature of their involvement: for what they are responsible, and to whom are they accountable? Without clear roles and responsibilities, nobody will know precisely what he or she is supposed to be doing (and everybody will pass the buck at the first sign of trouble). In such a chaotic environment, the progress of the project will be seriously jeopardised.
3. **Manage by exception:** project sponsors should avoid getting too bogged down in the day-to-day running of projects and instead allow the project manager to concentrate on this area. Micro-management by a sponsor is a hindrance, not a help. Project sponsors should set clear boundaries for cost and time, with which the manager should work. If he/she cannot provide the agreed deliverables within these constraints, concerns must be escalated to the sponsor for a decision.
4. **Manage by stages:** break the project up into smaller chunks, or stages. Each stage marks a point at which the project sponsor will make key decisions. For example, is the project still worthwhile? Are the risks still acceptable? Dividing a project into stages, and only committing to one stage at a time, is a low risk approach that enables the sponsor to manage by exception.
5. **Focus on products:** it is vital that clients and customers think carefully about the products, or deliverables, they require, before the project begins. The clearer they can be about their requirements, the more realistic and achievable the plans that can be produced. This makes managing the project much easier and less risky.
6. **Learn from experience:** don't risk making the same mistakes in every project; consider why certain aspects went well or badly, then incorporate the lessons learned into your approach to your next project. Humans have an amazing capacity to learn, but when it comes to repeating errors made during previous projects, we all too often fail to learn the lessons.
7. **Tailor to suit the environment:** whatever project management methodology or framework you favour, it must be tailored to suit the needs of your project. Rather than blindly following a

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<sup>17</sup> <http://www.prince-officialsite.com/AboutPRINCE2/AboutPRINCE2.aspx>, by Simon Buehring



methodology, the project manager must be able to adapt procedures to meet the demands of the work in hand. How you plan on a two-week project is likely to be very different from how you plan on a two-year project<sup>18</sup>.

## **M02: Has knowledge of budgeting / estimating issues and practices**

### ***What is a budget?***

A budget is a document that translates plans into money - money that will need to be spent to get planned activities done (expenditure) and money that will need to be generated to cover the costs of getting the work done (income). It is an estimate, or informed guess, about what is needed in monetary terms to do your work.

### ***Why budget?***

Why is it important for an organization, project or department to have a budget? The budget is an essential management tool. Without a budget, you are like a pilot navigating in the dark without instruments. The budget tells you how much money you need to carry out your activities. The budget forces you to be rigorous in thinking through the implications of your activity planning. There are times when the realities of the budgeting process force you to rethink your action plans. Used properly, the budget tells you when you will need certain amounts of money to carry out your activities. The budget enables you to monitor your income and expenditures and to identify any problems. The budget is a basis for financial accountability and transparency. When everyone can see how much should have been spent and received, they can ask informed questions about discrepancies.

### ***Who should be involved in budgeting?***

Budgeting is a difficult and responsible job. Your organization's ability to do what it has planned to do and to survive financially depends on the budgeting process. Whoever does the budgeting must:

- Understand the values, strategy and plans of the organization or project;
- Understand what it means to be cost effective and cost efficient;
- Understand what is involved in generating and raising funds.

Where staff is competent to take full responsibility for the financial side of the organization or project, the following individuals would normally be involved in the budgeting process:

- The Finance Manager and/or Bookkeeper;
- The Project Manager and/or Director of the organization or department.

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<sup>18</sup> <http://www.prince-officialsite.com/AboutPRINCE2/AboutPRINCE2.aspx>, by Simon Buehring



### ***Estimating costs - categories***

The cost estimate is what helps you determine realistically what it will cost to implement your operational plan. When you carry out your plans you will probably need to make use of a wide range of inputs, including people, information, equipment, and skills. Most of these inputs will have a cost attached to them. These are the costs you need to estimate in order to develop a budget. The costs you need to estimate fall into the following categories:

- Operational costs – the direct costs of doing the work, e.g., the cost of hiring a venue, or of printing a publication, or of travelling to the sites where fieldwork needs to take place. Here you would include materials, equipment, transport and services.
- Organizational costs (also called core costs) – the costs of your organizational base, including management, administration, and governance. For example, if you hire premises for four projects but only manage to carry out two, you will still have to pay rent for the extra space. If you have hired a full-time receptionist on the same assumption, you will still have to pay her salary, even if she is underutilized.
- Staffing costs – these are the costs for your core staff – the people involved in management, and the people doing work that cuts across projects. These costs include their salaries and any benefits such as medical aid or pension fund payments for which the organization is responsible. You can “charge staff costs out” to the various projects on which the staff members work. So, for example, if your Publications Officer is going to spend half her time working on publications for a particular project, then you can include half her salary and benefits in your costing for the project. If your Director is going to spend 15% of her time providing management support to the head of the same project, then 15% of her time and benefits can also be charged to the project.
- Capital costs – these are costs for large investments which, while they may be necessary because of a project or projects, will remain organizational assets even after the projects are over. Vehicles and equipment such as computers and photocopiers fit here.

### ***Budget monitoring***

Budget monitoring is used to measure how closely an organization is meeting its objectives in terms of its finances. Comparisons of actual income and expenditures against the budgeted income and expenditures need to be done regularly. To do this, you need to be able to prepare a variance report which shows you, month by month, where you are over-spending, under-spending or on target. In order to be able to do a variance report and in order to be able to do cash flow projections, you need to break your overall budget up into monthly budgets.

## **M03: Has knowledge of legal, healthcare, social and standard issues**



Knowledge in medical law, healthcare issues and standards plays an important role in medical facility procedures and the way different kinds of specialists care for patients. We live in a litigious society, where patients, relatives, and others are inclined to sue healthcare practitioners, healthcare facilities, manufacturers of medical equipment and products, and others when medical outcomes are not acceptable. It is important for the professionals to understand medical law, ethics, and protected health information. There are two main reasons for AAL professionals to have knowledge (healthcare, social and standard) of legal issues. The first is to help them function at the highest professional level by providing competent, compassionate healthcare to patients, and the second is to help them to avoid legal problems that can threaten their ability to earn a living. Knowledge of medical law and ethics can help gain perspective in the following three areas:

1. The rights, responsibilities, and concerns of healthcare consumers. Not only do healthcare professionals need to be concerned about how law and ethics impact their respective professions, they must also understand how legal and ethical issues affect patients. As medical technology advances and the use of computers increases, patients want to know more about their options and rights as well as more about the responsibilities of healthcare practitioners. Patients want to know who and how their information is used and the options they have regarding healthcare treatments. Patients have come to expect favourable outcomes from medical treatment, and when these expectations are not met, lawsuits may result.
2. The legal and ethical issues facing society, patients, and healthcare professionals as the world changes. Every day new technologies emerge with solutions to biological and medical issues. These solutions often involve social issues, and all are faced with decisions, for example, regarding stem cell research and confidentiality with sensitive medical records.
3. The impact of rising costs on the laws and ethics of healthcare delivery. Rising costs, both of healthcare insurance and of medical treatment in general, can lead to questions concerning access to healthcare services and the allocation of medical treatment. For example, should everyone, regardless of age or lifestyle, have the same access to scarce medical commodities such as transplant organs or highly expensive drugs? In today's society, medical treatment and decisions surrounding healthcare have become complex. It is therefore important to be knowledgeable and aware of the issues and the laws that govern patient care.

#### **M04: Has marketing knowledge**

Marketing is the business discipline concerned with developing brands, informing the public about products and services, convincing consumers to buy specific products, facilitating transactions and providing after-sales service. Marketing provides the business a face to the outside world, and it is the only part of a business that most consumers ever come into contact with. Although marketing encompasses a broad set of concepts and techniques, there are a number of basic elements that tie all marketing concepts together.



Understanding the underlying fundamentals of marketing can boost your effectiveness as a marketer, deliverer of customised services, or a small business owner<sup>19</sup>.

1. The Marketing Concept: Marketing 101 courses familiarize students with the difference between what is called the manufacturing concept and what is termed the marketing concept. The manufacturing concept defines how business was generally conducted in times gone by: first a company develops a product, and then it sets about marketing that product to consumers. The marketing concept introduces new fundamentals to the product development equation. With the marketing concept, businesses begin with market research, looking for unmet needs in the marketplace and speaking with consumers about what new products they would like to see before even thinking about developing a product. Products or services developed in this way have a much higher chance of success, and this concept underlies virtually every element of marketing in the 21st century.
2. Consumer Psychology: all elements of marketing are driven by consumer psychology and behaviour. Marketers have learned that consumers can be influenced in a number of ways to make specific purchase decisions, and a desire for a product or service can actually be kindled in a consumer who would otherwise have no such desire. Every marketing tactic has its roots in this concept. Every minute detail of advertisements, for example, is carefully constructed to have a psychological impact, whether it is a specific colour, image, celebrity, words or phrasing.
3. Ethics: the psychological influence marketers exert on the public introduces a world of ethical challenges and legal guidelines. Marketers must be very careful, when dealing with any component of the marketing mix, to be honest and straightforward with consumers. Marketers should also be wary of stimulating consumer demand that can turn into destructive habits, as can be the case with things like alcohol and junk food.
4. The Marketing Mix: the marketing mix encompasses all of the various elements of marketing, each of which is influenced by the basic concepts described above. Advertising and sales are the facets of marketing that most customers are familiar with. The marketing mix includes public relations, promotions, product packaging, pricing and a bit of product development, as well. The key elements of any successful marketing plan include the concepts of product, price, place and promotion, also known as the four Ps of marketing. The marketing mix of the four Ps functions as a guide to help the marketing manager successfully develop a strategy for promoting products and services to customers. More specifically, these can be seen as follows:
  - a. Product: The concept of product in a marketing plan deals with finding the right product for your target market. The product must be something desired by the intended customer. A target market can be a certain age group of people, such as young adults; people of a certain geographic area, the Midwest or Southeast, for example; or people of a certain income level, incomes greater than €50,000 per year. The target market for your product

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<sup>19</sup> <http://smallbusiness.chron.com> by David Ingram & Janet Hunt, Demand Media



could also be a very specific combination of these criteria. For instance, an electronic game manufacturer can target young adults with an income more than €50,000 per year living in metropolitan areas. Companies often conduct surveys to determine products desired by specific target markets.

- b. Price:** Price is a very important element of the marketing mix. The company must create something of value for the consumer. The product must be one that the consumer is willing to pay a predetermined price for. Analysis is necessary to determine the price customers are willing to pay for a specific product. If your price is too low, you will not realize a profit. However, pricing higher than the other market suppliers of the product leads to decreased sales, also resulting in a loss for the company.
- c. Place:** Selling your product in the correct place is another important aspect of the marketing mix. No matter how good your product or service is, if the customer cannot find it, no purchases will be made. To determine the proper place to market your product, you must determine where the target audience is shopping for similar purchases. This might be in a brick-and-mortar storefront location or through an Internet store.
- d. Promotion:** Once you have determined what product you will sell, the price you will charge and the place you will sell it, you must tell people about it. This is where promotion comes in. There are multiple mediums available to promote a product or service to your target consumers, including word of mouth, newspapers and other print publications, television, radio ads and Internet advertising. The money you have available to spend for promotion can determine which means you use. A small business with a limited advertising budget can print and distribute low-cost fliers rather than spending money on expensive radio or television ads.

### **M05: Can lead a team**

It is impossible to be successful without the right people in the right position who are motivated and well guided. Globalization, fluctuation, cost pressure and ever-faster change make the task of leadership very difficult. Newly assigned managers are often overwhelmed and left alone with their new challenge. Experienced leaders have to adopt their leadership patterns as the environment changes.

- 1. Leadership:** Leadership means influencing the attitude and behaviour of individual people as well as the interaction in and between groups with the purpose of achieving certain goals. Due to the dynamism and complexity seen in the course of a project, leading project teams differs from leadership in a hierarchical company in as much as one's leadership style must be adapted to the given requirements in the different phases of the project. An effective team leader has a variety of traits and characteristics that encourage team members to follow him. Team leaders naturally possess certain qualities, such as compassion and integrity, or learn leadership skills through formal training and experience. The qualities of an effective team leader inspire the trust and respect of the team and stimulate production within the workplace.



2. **Communication:** Effective team leaders communicate clearly. Quality verbal and written communication skills allow leaders to present expectations to team members in a way workers can understand. Effective communication skills also allow team leaders to listen to the input of others.
3. **Organization:** Effective team leaders possess exceptional organizational skills. Organizational skills help team leaders plan objectives and strategies, which allow team members to perform optimally. Organized team leaders put systems in place that maintain order and guide team members toward meeting company goals and objectives.
4. **Confidence:** An effective team leader is confident in his abilities, as well as confident in the abilities of his team members. A confident leader is secure in the decisions he makes that affect his team. A self-confident team leader also reassures team members of his authority within the organization.
5. **Respectful:** A quality team leader is respectful of his team members. A respectful leader empowers employees by encouraging them to offer ideas about decisions that affect them. This lets team members know that the leader respects their input and opinions.
6. **Fair:** A quality team leader treats team members fairly. He is consistent with rewards and recognition, as well as disciplinary action. A fair leader ensures all employees receive the same treatment.
7. **Integrity:** An effective team leader is honest and open with his team members. Leaders who possess integrity gain the trust of team members because he does what he says he will do and treats others the same way he wants to be treated.
8. **Influential:** Influential leaders help inspire the commitment of team members to meet company goals and objectives. Influential leaders also help manage change in the workplace by gaining the confidence of workers through effective decision making and communication.
9. **Delegation:** Effective team leaders know how to share leadership through delegation. Delegating certain tasks to trustworthy team members allows the leader to focus on improving workplace functions and production.
10. **Facilitator:** Effective team leaders are powerful facilitators. As a facilitator, team leaders help workers understand their goals. They also help organize an action plan to ensure team members meet their goals and objectives more efficiently.
11. **Negotiation:** Team leaders utilize negotiation skills to achieve results and reach an understanding in the event of a workplace conflict. Team leaders who negotiate effectively streamline the decision-making process, as well as solve problems for the best interest of everyone involved. Team leaders inspire the members of their team to meet and exceed goals and objectives. An individual with team leadership qualities readily identifies the strengths and weaknesses of each team member and inspires them to do their best work in an effective manner. Just as tasks performed by teams vary, team leader qualifications may vary from job to job; however, certain characteristics are necessary no matter what the task.



This last management skill, in many ways, closes the loop in interpersonal and behavioural skills. Many of the skills needed to lead have been talked about in previous subsections. Even though these skillsets have been broken down into three different groups, it should be clear that this is solely for analytical and presentation purposes. Anyone developing training to include these elements would do well to think about combining and adapting them for a more effective fit.

#### **4.4 Standards**

It is very important that VET organizations offering training for AAL jobs follow certain quality standards at European level. These standards help to ensure a high quality of the training that is provided and support its acceptance by the target people on the market. Given the increasing internationalisation of the job market, it further makes sense to refer to European standards, as these facilitate transparency and comparability of qualifications across borders.

The present document is based on the training principles and quality standards recommended by the e-Jobs-Observatory network. e-Jobs Observatory is the international clearinghouse for e-Jobs at European level. It is an initiative driven by stakeholders, such as SME Associations and VET institutions in the ICT sector. In addition, public universities, intermediary organisations supporting employment and certifying bodies actively take part in the e-Jobs-Observatory as well providing it links to more than 15 European countries. It aims to reduce the gap between ICT job market competence needs and available training offers on the market, by targeted surveys to analyse current and future job market needs, by designing job roles profiles in accordance with the eCF, the EQF and the other European tools for transparency and comparability of qualifications at European level, such as ECVET, Europass, EQAVET, etc.

Training quality criteria are proposed to training organisations for adapting training to bring it more in line with actual labour market needs. Training organisations which comply with these criteria and follow the European principles of transparency, modularity, comparability of training and qualifications, can apply for a Label of Excellence. The e-Jobs Observatory is member of the CEN/ISSS and participates to the updating of the e-Competence Framework. The CompAAL project, in which framework the present document has been developed, is one of the actions initiated and promoted by the e-Jobs Observatory stakeholder network, and contributes to the network's main goal of establishing Europe-wide training standards in a broad variety of e-jobs.



## 5. The Job Role Profiles in the field of AAL

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### 5.1 Hybrid job roles - skills, learning units and outcomes

The five profiles that are the focus of this section are not mere descriptions of technical jobs. As was implied earlier, two important sectors are represented in AAL, namely healthcare and information technology. The fact that the general population in Europe is both declining and aging has led to the realization that either more individuals will have to enter managed-care institutions or alternative approaches must be found. The desire on the part of many people to stay at home longer, to be more independent and less reliant on outside help is also becoming stronger. It is becoming ever more possible for people to remain in their accustomed environments, but some sort of assistance will be necessary. This is where modern, primarily digital, technologies come into play. The ideal AAL employee or practitioner would be a healthcare-motivated IT specialist or alternately a healthcare professional who is technologically savvy.

Given the nature of the CompAAL project consortium and its stronger background in information technologies, the profiles reflect this technological bias. This allows these profiles to be described in a familiar way, namely that which can be found at the e-Jobs Observatory ([www.e-jobs-observatory.eu](http://www.e-jobs-observatory.eu)).

For these reasons, the AAL Profiles to be described in the following sub-sections are described in two ways. First, a general summary description of the profile will be provided. This role description addresses the primary areas of responsibilities and tasks to be performed, the types of deliverables and contributions the individual will produce, how his/her performance will be measured, along with a brief description of the mission of the job and the environment in which it will be carried out.

The profiles are based on the eCF, as described in Section 3, above, and a panel of subject-matter, professional, and training experts have identified those eCF competences that they believe are relevant for each individual role profile. They have also provided a level of importance (high, medium, low) to each of these to help guide the assessments of ECVET points for each learning unit or module. The eCF further specifies more detailed capabilities and these were used to identify the specific learning units for consideration. Each of these competence areas must be addressed and trained, in conjunction with the core competences described above and which are listed for each profile. As noted earlier, the determination of these additional core competences was based on research and expert opinions.

Each profile was considered as a complete qualification; that is, each qualification is considered to be 100% of the outcomes to be achieved. The quantity, intensity, and influence of the overall competences have been taken into consideration and the allocation of ECVET weightings for the individual units/modules have been calculated therefore as percentages of the whole. The idea was to express the relative relationship of the part to the whole. These weightings should be considered when developing and planning the actual training unit or module.

How competences may be grouped for training purposes is a matter that has been left up to the individual developer. Given the range of possibilities that could be applicable to any of the profiles, the size of the current document would have become impossible to handle reasonably. Between the suggestions provided above and the specific competence areas to be addressed, a competent developer should be in a position



to creatively and meaningfully combine areas in such a way that the delivery of the unit/module can be optimized for both efficiency and effectively.

In the following sub-sections, the five AAL role profiles – AAL System Architect, AAL Solutions and System Developer, AAL Community Manager, AAL Maintenance Specialist and AAL Consultant – are described in detail and include ECVET weightings as described above.

## 5.2 AAL System Architect

### 5.2.1 Role description and summary

<b>Role title</b>	<b>AAL System Architect</b>
<b>Also known as</b>	
<b>Relevant professions</b>	
Summary statement	Determines the structure and management of a programme or computing system (software, hardware, interfaces).
Mission	To design, implement and integrate complex ICT solutions from a technical point of view, taking into account the needs and requirements of the customers. Calls for a set of modules and components that will populate the architecture. Ensures that technical solutions, procedures and models for development are up-to-date and comply with standards. Observes technical developments and integrate them into new solutions. Acts as a team leader for developers and technical experts.
Responsibility	Design and implementation of an adequate technological proposal.
Deliverables/Contributions	<ul style="list-style-type: none"><li>• Solution specification</li><li>• Design and integration of software and hardware components into the system</li><li>• Development process</li></ul>
Main task/s	<ul style="list-style-type: none"><li>• Analyses and identifies complexity of the requirements</li><li>• Designs the IT-architecture</li><li>• Identifies required processes</li></ul>



	<ul style="list-style-type: none"><li>• Defines the technical and human interfaces</li><li>• Identifies the technological and functional risks</li><li>• Specifies and designing complex ICT solutions</li><li>• Plans time, cost and quality of the designed and specified solution</li><li>• Leads development and integration of components</li><li>• Leads or conducting system integration</li><li>• Defines business goals</li><li>• Documents draft architectural views</li></ul>
Environment	Usually works with the component developers to whom he provides guidelines and monitors their progress. Also works with the AAL Consultant and the AAL Community Manager.
KPI's	<ul style="list-style-type: none"><li>• Projects on time, on budget and according to specifications</li><li>• Net profit ratio</li><li>• Effectiveness and efficiency of solution implementation</li></ul>



AAL System Architect			Technical					Behavioural												Business												
Area	No.	Competence	Importance	T01	T02	T03	T04	T05	B01	B02	B03	B04	B05	B05b	B06	B07	B08	B09	B10	B11	B12	M01	M02	M03a	M03b	M03c	M03d	M03e	M03f	M03g	M04	M05
Plan	A.1	IS and Business Strategy Alignment																														
	A.2	Service Level Management																														
	A.3	Business Plan Development																														
	A.4	Product or Project Planning																														
	A.5	Architecture Design	high		x	x	x	x																								
	A.6	Application Design	medium																													
	A.7	Technology and Market Watching	high																													
	A.8	Sustainable Development	high																													
Build	B.1	Design and Development	high		x	x																										
	B.2	Systems Integration	medium		x	x																										
	B.3	Testing	low		x																											
	B.4	Solution Deployment	medium		x	x																										
	B.5	Documentation Production	high		x																											
Run	C.1	User Support																														
	C.2	Change Support	medium		x																											
	C.3	Service Delivery	low		x																											
	C.4	Problem Management			x																											
Enable	D.1	Information Security Strat. Development																														
	D.2	ICT Quality Strategy Development	high		x	x	x	x																								
	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																														
Manage	E.1	Forecast Development	high		x	x	x	x																								
	E.2	Project and Portfolio Management	high																													
	E.3	Risk Management	medium																													
	E.4	Relationship Management	medium																													
	E.5	Process Improvement	high		x																											
	E.6	ICT Quality Management	low		x	x	x	x	x																							
	E.7	Business Change Management	low		x																											
	E.8	Information Security Management																														
	E.9	IT Governance	medium																													

### 5.2.2 Specific learning units and learning outcomes

An AAL Systems Architect should be trained in accordance to the work processes in which s/he is involved in his/her job. In the following learning outcomes are described and training/learning fields are suggested:

#### PLAN [ECVET Weighting 20% / EQF Level 5]

##### a. Core competences

Upon completion of training, the learner should

- have knowledge about existing best practice in IT and AAL
- be able to explain how (technical) AAL measures add value to the business



- have knowledge about compliance with healthcare laws and policies
- have knowledge about latest AAL developments
- be creative, imaginative
- be precise and aware of details
- be user/customer oriented
- be committed to corporate strategy and aware of corporate culture
- be able to seek, organize and synthesize
- be able to analyse (assess, evaluate, critique, test)
- be able to explain (defend, argue, justify)
- understanding the processes of healthcare/ elderly care
- have knowledge of healthcare/medical standards
- be able to lead a team

b. Learning units

**A.5 Architecture Design** [ECVET Weighting 6% / EQF Level 6]

Specifies, refines, updates and makes available a formal approach to implement solutions, necessary to develop and operate the IS architecture. Manages the relationships with the AAL stakeholders to ensure that the architecture is in line with AAL 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.

Exploits specialist knowledge to define relevant AAL technology and specifications to be deployed in the construction of multiple AAL projects, applications or infrastructure improvements. Defines the strategy to implement ICT technology compliant with AAL market needs, while taking account the current technology platform, obsolescent equipment and latest technological innovations.

**A.6 Application Design** [ECVET Weighting 2% / EQF Level 4]

Defines the most suitable AAL ICT solutions, in accordance with AAL policy and user/customer needs. 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.



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.

**A.7 Technology and Market Watching** [ECVET Weighting 6% / EQF Level 5]

Explores latest AAL technological developments to establish understanding of evolving technologies. Devises innovative solutions for integration of new technology into existing AAL products, applications or services or for the creation of new solutions.

Is aware of technology improvements in his field of competence and is able to integrate them, if necessary, in his planning in accordance with specifications. Is actively looking out for new technology improvements in his field of competence. Can identify the articulations between emerging technologies in the field of AAL and user requirements in accordance with overall communication plans.

**A.8 Sustainable Development** [ECVET Weighting 6% / EQF Level 6]

Estimates the impact of AAL solutions. Advises AAL stakeholders on sustainable solutions that are consistent with the AAL strategy.

Promotes awareness, training and commitment for the deployment of sustainable AAL solutions and applies the necessary tools for piloting this approach.

**BUILD** [ECVET Weighting 25% / EQF Level 5]

a. Core competences

Upon completion of training, the learner should

- be able to measure and report on AAL
- have knowledge about existing best practice in IT and AAL
- have knowledge about compliance with healthcare laws and policies
- have knowledge about latest AAL developments
- be precise and aware of details
- be user/customer oriented
- have presentation and moderation skills
- be able to communicate (including in foreign languages, if useful)
- be able to seek, organize and synthesize
- be able to analyse (assess, evaluate, critique, test)



- be able to explain (defend, argue, justify)

b. Learning units

**B.1 Design and Development** [ECVET Weighting 5% / EQF Level 4]

Designs and engineers software and/ or hardware components to meet required specifications. Follows a systematic methodology to analyse and build the required components and interfaces. Performs unit and system testing to ensure requirements are met.

**B.2 Systems Integration** [ECVET Weighting 5% / EQF Level 4]

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.

**B.3 Testing** [ECVET Weighting 5% / EQF Level 4]

Constructs and executes systematic test procedures for IT systems or customer usability requirements to establish compliance with AAL 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.

**B.4 Solution Development** [ECVET Weighting 5% / EQF Level 4]

Following predefined general standards of practice, carries out planned necessary interventions to implement AAL solutions, 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 AAL solution to user and completes documentation, recording all relevant information, including equipment addressees, configuration and performance data.

**B.5 Documentation Production** [ECVET Weighting 5% / EQF Level 4]

Produces documents describing AAL 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.

**RUN** [ECVET Weighting 10% / EQF Level 4]

a. Core competences



Upon completion of training, the learner should

- be able to measure and report on AAL
- be precise and aware of details
- be able to analyse (assess, evaluate, critique, test)

b. Learning units

### **C.2 Change Support** [ECVET Weighting 5% / EQF Level 4]

Implements and provides guidance for the evolution of AAL solutions. 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).

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.

### **C.3 Service Delivery** [ECVET Weighting 5% / EQF Level 6]

Takes proactive steps to ensure a stable and secure application and AAL infrastructure. Updates operational document library and logs all operational events. Maintains monitoring and management tools (i.e. Scripts, Procedures...).

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. Programmes the schedule of operational tasks. Identifies people requirements to resource the operational management of the AAL infrastructure.

## **ENABLE** [ECVET Weighting 5% / EQF Level 6]

a. Core competences

Upon completion of training, the learner should

- have knowledge about existing best practice in IT and AAL
- be able to explain how (technical) AAL measures add value to the business
- have knowledge about compliance with healthcare laws and policies
- have knowledge about latest AAL developments
- be able to seek, organize and synthesize



b. Learning units

**D.2 ICT Quality Strategy Development** [ECVET Weighting 5% / EQF Level 6]

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. Uses defined standards to formulate objectives for service management, product and process quality. Identifies ICT quality management accountability. Provides strategic advice to embed ICT quality (i.e. metrics and continuous improvement) into the culture of the organisation.

**MANAGE** [ECVET Weighting 40% / EQF Level 5]

a. Core competences

Upon completion of training, the learner should

- be able to measure and report on AAL
- have knowledge about existing best practice in IT and AAL
- be able to explain how (technical) AAL measures add value to the business
- have knowledge about compliance with healthcare laws and policies
- have knowledge about latest AAL developments
- be precise and aware of details
- be able to work in a team
- be able to seek, organize and synthesize
- be able to analyse (assess, evaluate, critique, test)
- have knowledge of legal issues.

b. Learning units

**E.1 Forecast Development** [ECVET Weighting 5% / EQF Level 6]

Interprets market needs and evaluates market acceptance of AAL 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.



Provides short-term forecast using market inputs and assessing the organisations production and selling capabilities. Provides long-term forecast by understanding the global marketplace and identifying and evaluating relevant inputs from the broader business, political and social context.

### **E.2 Project and Portfolio Management** [ECVET Weighting 5% / EQF Level 6]

Understands and applies the principles of project management. That means that s/he defines activities, responsibilities, critical milestones, resources, skills needs, interfaces and budget. S/he is able to apply methodologies, tools and processes. S/he able to meet identified needs by implementing new, internal or external processes. S/he makes choices, gives instructions and bears responsibility for a team (i.e. relationship within the team, team objectives). Understands and applies the principles of project management and applies methodologies, tools and processes to manage simple projects; plans and establishes objectives, quality, cost and time criteria.

### **E.3 Risk Management** [ECVET Weighting 5% / EQF Level 5]

Implements the risk management with regard to online communication and the application of the enterprise defined risk management policy and procedure. S/he understands and applies the principles of risk management (i.e. assesses risk, documents potential risk and containment plans) and is able to investigate solutions to mitigate identified risks. S/he evaluates, manages and ensures the validation of exceptions and audits online communication processes and environment.

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 online communication processes and environment.

### **E.5 Process Improvement** [ECVET Weighting 5% / EQF Level 5]

Measures effectiveness of existing AAL 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 in the field of AAL for measurable business benefit. Assesses potential adverse consequences of process change.

Researches existing ICT processes and solutions in order to define possible innovations. Makes recommendations based on reasoned arguments. Provides advice on innovations and improvements that will enhance competitiveness or efficiency.

### **E.6 ICT Quality Management** [ECVET Weighting 5% / EQF Level 4]

Implements AAL quality policy to maintain and enhance service and product provision. Plans and defines indicators to manage quality with respect to AAL strategy. Reviews quality performance indicators and recommends enhancements to influence continuous quality improvement.

Communicates and monitors application of the organisations quality policy. Evaluates quality management indicators and processes based on AAL quality policy and proposes remedial action.



Assesses and estimates the degree to which quality requirements have been met and provides advice for quality policy implementation. Provides cross functional advice for setting and exceeding quality standards.

### **E.7 Business Change Management** [ECVET Weighting 5% / EQF Level 6]

Assesses the implications of new AAL 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.

Provides advice to plan, manage and implement significant AAL change. Applies pervasive influence to imbed organisational change.

### **E.9 IT Governance** [ECVET Weighting 5% / EQF Level 6]

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.

Provides advice 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.

## **5.3 AAL Solutions and System Developer**

### **5.3.1 Role description and summary**

<b>Role title</b>	<b>AAL Solutions and System Developer</b>
<b>Also known as</b>	<b>AAL Component Developer, AAL Applications Developer</b>
<b>Relevant professions</b>	
Summary statement	Develops, implements and tests AAL components and systems according to customer needs



Mission	To create AAL components and systems incl. devices (software, hardware, interfaces). Ensures building and implementing of ICT applications. Contributes to planning and low level design. Compiles diagnostic programmes; designs and writes code for operating systems and software to ensure optimum efficiency and functionality. Produces components that implement specific functionality, within the context of a software architecture.	
Responsibility	Employ technologies for the creation of AAL products that best meet customers' expectations. Produces solution documentation.	
Deliverables/Contributions	<ul style="list-style-type: none"><li>• AAL-related technology product specifications</li><li>• Product evaluation</li><li>• User requirements</li><li>• AAL systems architectures implementation scenarios</li><li>• AAL systems deployment</li><li>• AAL tools and applications</li><li>• User manuals/ training materials</li><li>• Engineering components</li><li>• Relevant documentation</li></ul>	<ul style="list-style-type: none"><li>• Potential risks and contingency plans</li><li>• Usability evaluation</li><li>• Interaction-interfaces design</li><li>• Ergonomics design</li><li>• Usability issues analysis</li><li>• Suggestions for usability improvements</li><li>• Remote monitoring procedures and emergency actions</li><li>• Communication infrastructure</li><li>• Suggestions for privacy rules</li></ul>



Main task/s	<ul style="list-style-type: none"><li>• Analyses the requirements of the application</li><li>• Translates the requirements into IT solutions</li><li>• Chooses and plans implementation of required technology</li><li>• Identifies the use cases and translates these into IT-structures</li><li>• Implements required functions in software modules</li><li>• Designs relevant test cases</li><li>• Implements test systems</li><li>• Evaluates hardware and software solutions under test</li><li>• Documents the hardware, software and interface components</li><li>• Incorporates feasibility and risk of implemented solutions</li></ul>
Environment	Usually works in tandem with several internal teams (evaluation, development, technical support teams etc.) and reports to a section manager. Close cooperation with research institutions and caregivers is an asset in an early stage of market development. Usually works with his peer component developers and hardware/software technicians. Receives guidelines / orders and reports to the AAL System Architect.
KPI's	<ul style="list-style-type: none"><li>• Product effectiveness</li><li>• Stable, easy-to-use, high quality products at affordable prices</li><li>• Fully functional ICT components.</li></ul>





- have knowledge about existing best practice in IT and AAL
- be able to explain how (technical) AAL measures add value to the business
- have knowledge about latest AAL developments
- be creative, imaginative
- be precise and aware of details
- be user/customer oriented
- be committed to corporate strategy and aware of corporate culture
- be able to work in a team
- have knowledge of healthcare/medical standards
- have marketing knowledge

b. Learning units

**A.1 IS and Business Strategy Alignment** [ECVET Weighting 6% / EQF Level 6]

The AAL Solutions and System Developer is aware of the long term business requirements and determines the IS model in line with the organisation's AAL policy. Provides advice for the construction and implementation of long term innovative IS solutions.

**A.4 Product or project planning** [ECVET Weighting 10% / EQF Level 6]

In analysing and defining the current and target status of a ICT structure and the architecture of AAL components and system, s/he plans the development, implementation and test of the components and system. Acts systematically to document standard and simple elements of project. Exploits specialist knowledge in specification development to create and maintain complex documents of the project.

**A.6 Application Design** [ECVET Weighting 10% / EQF Level 6]

Defines the most suitable AAL ICT solutions, in accordance with ICT policy and user/customer needs. 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. 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.



### **A.7 Technology and Market Watching** [ECVET Weighting 7% / EQF Level 6]

Explores latest AAL 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. Is aware of technology improvements in his field of competence and is able to integrate them, if necessary, in his planning in accordance with specifications. Is actively looking out for new technology improvements in his field of competence. Can identify the articulations between emerging technologies in the field of AAL and user requirements in accordance with overall communication plans.

### **BUILD** [ECVET Weighting 40% / EQF Level 5]

#### a. Core competences

Upon completion of training, the learner should

- be able to measure and report on AAL
- have knowledge about existing best practice in IT and AAL
- have knowledge about latest AAL developments
- be creative, imaginative
- be ethical
- be precise and aware of details
- be user/customer oriented
- be committed to corporate strategy and aware of corporate culture
- be able to work in a team
- be able to seek, organize and synthesize
- be able to analyse (assess, evaluate, critique, test)
- be able to explain (defend, argue, justify)
- have knowledge of relevant social issues.

#### b. Learning units

### **B.1 Design and Development** [ECVET Weighting 8% / EQF Level 6]

Designs and engineers software and/ or hardware components to meet required specifications. Follows a systematic methodology to analyse and build the required components and interfaces. Performs unit



and system testing to ensure requirements are met. Systematically develops small animation components or modules. Acts creatively to develop and integrate animation components into a larger project.

### **B.2 Systems Integration** [ECVET Weighting 8% / EQF Level 6]

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. 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.

### **B.3 Testing** [ECVET Weighting 8% / EQF Level 6]

Has specialist knowledge to organise complex testing programmes for AAL communication modules and customer usability requirements. These tests ensure that all internal, external, national and international standards are met and that the performance of the new or revised components conforms to the expectation. By documenting and reporting the tests and results he provides an important input to all involved persons like designers, users, maintainers. Organises test programmes, 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.

### **B.4 Solutions Development** [ECVET Weighting 8% / EQF Level 6]

Following predefined general standards of practice, carries out planned necessary interventions to implement AAL solutions, 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 AAL solution to user and completes documentation, recording all relevant information, including equipment addressees, configuration and performance data. Acts systematically to build or deconstruct animation elements in a complex AAL environment. Identifies non performing components and establishes root cause of failure within the overall solution. Provides support to less experienced colleagues. Exploits specialist knowledge to influence solution construction. Gives advice on aligning work processes and procedures with software upgrades.

### **B.5 Documentation Production** [ECVET Weighting 8% / EQF Level 6]

He takes input from technical authors to organise the production of different documents according to the requirement of the project or application. He prepares the presentation by selecting the appropriate style and media and by describing the different function and features. The AAL online



community manager is also responsible for the document-management system and the update and validation of the existing documentation relative to communicating with online communities. Organises the production of documents taking input from technical authors.

**RUN** [ECVET Weighting 27% / EQF Level 5]

a. Core competences

Upon completion of training, the learner should

- be creative, imaginative
- be precise and aware of details
- be able to communicate (including in foreign languages, if useful)
- be able to seek, organize and synthesize
- be able to analyse (assess, evaluate, critique, test)
- be able to explain (defend, argue, justify).

b. Learning units

**C.2 Change Support** [ECVET Weighting 9% / EQF Level 6]

Implements and provides guidance for the evolution of an AAL 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). 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.

**C.3 Service Delivery** [ECVET Weighting 9% / EQF Level 6]

Acts systematically to analyse performance data and communicates these findings to his senior colleagues. He handles monitoring and management tools such as Scripts and Procedures. He updates the operational document library and logs all operational events. He ensures a stable and secure AAL communication application and infrastructure by escalating potential service level failures and recommending actions for service improvement. Acts systematically to analyse performance data and communicate findings to senior colleagues. Escalates potential service level failures and recommends actions to improve service performance.

**C.4 Problem Management** [ECVET Weighting 9% / EQF Level 6]



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. Exploits specialist AAL communication related knowledge and in depth understanding of the underlying AAL IT infrastructure and problem management process to identify failures and resolve them with minimum outage. Makes sound decisions in emotionally charged environments on appropriate action required to minimise user impact. Rapidly identifies failing component, selects alternatives such as repair, replace or reconfigure.

**ENABLE** [ECVET Weighting 0% / EQF Level N/A]

**MANAGE** [ECVET Weighting 0% / EQF Level N/A]

## 5.4 AAL Maintenance Specialist

### 5.4.1 Role description and summary

<b>Role title</b>	<b>AAL Maintenance Specialist</b>
<b>Also known as</b>	
<b>Relevant professions</b>	
Summary statement	Installs, configures and maintains AAL products, components and systems; provides technical assistance (online support or on-site).
Mission	To "keep things going" from the technical point of view. Supports, installs, configures and repairs the system including technical components
Responsibility	Gives technical support, installs updates and upgrades. Installs hardware, network, components of the system, repairs or delivers parts, if they are defect.
Deliverables/Contributions	<ul style="list-style-type: none"><li>• Software and hardware components</li><li>• System and network components</li><li>• Failure and change reports</li><li>• Solution instructions</li></ul>
Main task/s	<ul style="list-style-type: none"><li>• Performs technical monitoring and support</li><li>• Analyses and identifies software and hardware problems</li></ul>



	<ul style="list-style-type: none"><li>• Discusses and solves problems in the development team</li><li>• Manages and explain the solutions related to time, quality and cost</li><li>• Changes or repairs components or parts of the system</li><li>• Estimates the risk of repairing and changing a faulty system</li><li>• Explains the changes and an modified functions</li><li>• Calculates the complexity and cost of maintenance</li><li>• Uses the newest and best solution of components, functions and systems</li><li>• Installs the system and network incl. internet connection</li><li>• Installs updates and upgrades</li><li>• Supports and instructs the customers</li></ul>
Environment	Usually works independently but in close collaboration with the IT facilities, AAL Community Manager and CSR departments. Can work as an external or internal supplier of services.
KPI's	<ul style="list-style-type: none"><li>• Customer satisfaction</li><li>• Reliability of systems and components</li><li>• Trouble-free running system</li></ul>





b. Learning units

**A.1 IS and Business Strategy Alignment** [ECVET Weighting 5% / EQF Level 5]

The AAL Maintenance Specialist is aware of the long term business requirements and determines the IS model in line with the organisation's AAL policy. He provides advice for the implementation and maintenance of long term innovative IS solutions.

**A.7 Technology and Market Watching** [ECVET Weighting 10% / EQF Level 6]

Explores latest AAL 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. Is aware of technology improvements in his field of competence and is able to integrate them, if necessary, in his planning in accordance with specifications. Is actively looking out for new technology improvements in his field of competence. Can identify the articulations between emerging technologies in the field of AAL and user requirements in accordance with overall communication plans.

**BUILD** [ECVET Weighting 35% / EQF Level 5]

a. Core competences

Upon completion of training, the learner should

- have knowledge about existing best practice in IT and AAL
- have knowledge about latest AAL developments
- be precise and aware of details
- be able to seek, organize and synthesize
- be able to analyse (assess, evaluate, critique, test)
- be able to explain (defend, argue, justify).

b. Learning units

**B.1 Design and Development** [ECVET Weighting 10% / EQF Level 6]

Designs and engineers software and/ or hardware components to meet required specifications. Follows a systematic methodology to analyse and build the required components and interfaces. Performs unit and system testing to ensure requirements are met. Systematically develops small animation components or modules. Acts creatively to develop and integrate animation components into a larger project.

**B.2 Systems Integration** [ECVET Weighting 10% / EQF Level 6]



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. 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.

### **B.3 Testing** [ECVET Weighting 8% / EQF Level 6]

Has specialist knowledge to organise complex testing programmes for AAL communication modules and customer usability requirements. These tests ensure that all internal, external, national and international standards are met and that the performance of the new or revised components conforms to the expectation. By documenting and reporting the tests and results he provides an important input to all involved persons like designers, users, maintainers. Organises test programmes, 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.

### **B.4 Solution Deployment** [ECVET Weighting 7% / EQF Level 6]

Following predefined general standards of practice, carries out planned necessary interventions to implement AAL solutions, 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 AAL solution to user and completes documentation, recording all relevant information, including equipment addressees, configuration and performance data. Acts systematically to build or deconstruct animation elements in a complex AAL environment. Identifies non performing components and establishes root cause of failure within the overall solution. Provides support to less experienced colleagues. Exploits specialist knowledge to influence solution construction. Gives advice on aligning work processes and procedures with software upgrades.

## **RUN** [ECVET Weighting 15% / EQF Level 5]

### a. Core competences

Upon completion of training, the learner should

- be creative, imaginative
- be precise and aware of details
- have good interpersonal skills



- be able to seek, organize and synthesize
- be able to analyse (assess, evaluate, critique, test)
- be able to explain (defend, argue, justify).

b. Learning units

### **C.2 Change Support** [ECVET Weighting 8% / EQF Level 6]

Implements and provides guidance for the evolution of an AAL 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). 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.

### **C.4 Problem Management** [ECVET Weighting 7% / EQF Level 6]

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. Exploits specialist AAL communication related knowledge and in depth understanding of the underlying AAL IT infrastructure and problem management process to identify failures and resolve them with minimum outage. Makes sound decisions in emotionally charged environments on appropriate action required to minimise user impact. Rapidly identifies failing component, selects alternatives such as repair, replace or reconfigure.

**ENABLE** [ECVET Weighting 0% / EQF Level N/A]

**MANAGE** [ECVET Weighting 35% / EQF Level 5]

a. Core competences

Upon completion of training, the learner should

- have knowledge about existing best practice in IT and AAL
- be able to explain how (technical) AAL measures add value to the business
- have knowledge about latest AAL developments
- be able to communicate (including in foreign languages if useful).

b. Learning units

### **E.2 Project and Portfolio Management** [ECVET Weighting 10% / EQF Level 6]



Understands and applies the principles of project management. That means that s/he defines activities, responsibilities, critical milestones, resources, skills needs, interfaces and budget. S/he is able to apply methodologies, tools and processes. S/he able to meet identified needs by implementing new, internal or external processes. S/he makes choices, gives instructions and bears responsibility for a team (i.e. relationship within the team, team objectives). Understands and applies the principles of project management and applies methodologies, tools and processes to manage simple projects; plans and establishes objectives, quality, cost and time criteria..

### **E.3 Risk Management** [ECVET Weighting 10% / EQF Level 6]

Implements the risk management with regard to online communication and the application of the enterprise defined risk management policy and procedure. S/he understands and applies the principles of risk management (i.e. assesses risk, documents potential risk and containment plans) and is able to investigate solutions to mitigate identified risks. S/he evaluates, manages and ensures the validation of exceptions and audits online communication processes and environment.

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 online communication processes and environment.

### **E.4 Relationship Management** [ECVET Weighting 8% / EQF Level 6]

Is responsible for a positive relationship between the community manager, user and the supplier. He maintains a regular communication with them and he is familiar with their problems and environment. He ensures that all the needs, concerns and also complaints of the user are understood and addressed in accordance with technical solutions and employment. Positively interacts with users, suppliers and community manager.

### **E.6 ICT Quality Management** [ECVET Weighting 7% / EQF Level 6]

Implements AAL quality policy to maintain and enhance service and product provision. Plans and defines indicators to manage quality with respect to AAL strategy. Reviews quality performance indicators and recommends enhancements to influence continuous quality improvement.

Communicates and monitors application of the organisations quality policy. Evaluates quality management indicators and processes based on AAL quality policy and proposes remedial action. Assesses and estimates the degree to which quality requirements have been met and provides advice for quality policy implementation. Provides cross functional advice for setting and exceeding quality standards.

## **5.5 AAL Community Manager**



### 5.5.1 Role description and summary

<b>Role title</b>	<b>AAL Community Manager</b>	
<b>Also known as</b>	<b>AAL Assistant, Social Net worker, Social Care Facilitator, Social Inclusion Facilitator</b>	
<b>Relevant professions</b>		
Summary statement	Provides an interactive environment in which persons benefiting from assistance are connected with care providers and with their broader environment. As partner of the customer: trains, attends and supports customers, co-ordinates care services and social interactions which are facilitated by AAL technologies, ensuring the well-being and social inclusion of the customer.	
Mission	<p>To support customers and coordinates care services:</p> <ul style="list-style-type: none"><li>• Help customer benefiting of assistance to remain socially included and connected through ICT-based monitoring and assistance tools</li><li>• Create and maintain such socially inclusive and collaborative ICT applications in order to foster a sense of being socially included and taken care of.</li></ul> <p>Works in tandem with care providers, consultants and maintenance specialists to provide support and promote knowledge sharing. Also "keeps things going" from the customer application point-of-view. Instructs, trains and attends the customer using the AAL systems and components.</p>	
Responsibility	Connects with care providers and service providers for the preservation and maintenance of participation in social life and the supply of all goods and services required. Instructs maintenance providers to ensure quick repair of the system whenever problems arise.	
Deliverables/Contributions	<ul style="list-style-type: none"><li>• Specific AAL monitoring and assistance systems</li><li>• Forum</li><li>• Wiki</li><li>• Internet Chat</li></ul>	<ul style="list-style-type: none"><li>• Support for hotline operators and care providers</li><li>• Ethical issues report</li><li>• Application functional analysis</li><li>• User requirements</li></ul>



	<ul style="list-style-type: none"><li>• External email accounts (user support, questions, etc.)</li><li>• Social networks</li><li>• Telephone</li></ul>	<ul style="list-style-type: none"><li>• Usability evaluation</li></ul>
Main task/s	<ul style="list-style-type: none"><li>• Responds to incoming requests and questions</li><li>• Follows up customer requests</li><li>• Moderates social networks</li><li>• Moderates forums</li><li>• Encourages customers social participation</li><li>• Personally mentors customers</li><li>• Animates collaborative applications, such as social networking spaces and forums</li><li>• Guides users while using social networking environments</li><li>• Suggests alternative ways of entertainment and various social activities towards improving users' quality of life</li><li>• Evaluates the impact of social participation and implement additional/different approaches if necessary</li><li>• Understands the personality and expectations of consumers and other potential stakeholders</li><li>• Trains consumers in use of the system which should be personalised to their needs, requirements and capabilities</li><li>• Observes the customers in their use and handling the systems and components</li><li>• Identifies necessary changes, if the abilities and needs of the customers have changed</li><li>• Evaluates customer satisfaction against their expectations and proposes responses</li><li>• Interfaces between technology, client needs and caregiving services</li></ul>	



	<ul style="list-style-type: none"><li>• Observes the standards and embrace them in new AAL-solutions</li></ul>
Environment	Usually works in tandem with the AAL/ICT infrastructure and internal development teams (maintenance, system architect, solution and system developers). Spends much of the time online, validating the effectiveness of the social networking tools. Promotes a positive spirit. Often a "solution" assistant embedded in either the provider organisation or working as an independent agent.
KPI's	<ul style="list-style-type: none"><li>• Customer satisfaction</li><li>• Level of social network activity</li><li>• Number of outstanding help tickets</li></ul>





- be able to explain how (technical) AAL measures add value to the business
- have knowledge about compliance with healthcare laws and policies
- have knowledge about latest AAL developments
- be user/customer oriented
- be able to communicate (including in foreign languages if useful)
- be able to seek, organize and synthesize.

b. Learning units

**A.3 Business Plan Development** [ECVET Weighting 5% / EQF Level 6]

Is responsible for the design and structure of an AAL community communication plan. He is able to understand the specific AAL environment in which he operates. He uses web technology for social inclusion by deploying information and communication processes. He communicates with all relevant AAL stakeholders. Exploits specialist knowledge to provide understanding of specific AAL environment etc.

**A.4 Product or project planning** [ECVET Weighting 5% / EQF Level 6]

In analysing and defining the current and target status of a ICT structure and the architecture of AAL components and system, s/he plans the development, implementation and test of the components and system. Acts systematically to document standard and simple elements of project. Exploits specialist knowledge in specification development to create and maintain complex documents of the project.

**A.7 Technology and Market Watching** [ECVET Weighting 5% / EQF Level 6]

Explores latest AAL 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. Is aware of technology improvements in his field of competence and is able to integrate them, if necessary, in his planning in accordance with specifications. Is actively looking out for new technology improvements in his field of competence. Can identify the articulations between emerging technologies in the field of AAL and user requirements in accordance with overall communication plans.

**BUILD** [ECVET Weighting 20% / EQF Level 5]

a. Core competences

Upon completion of training, the learner should

- be creative, imaginative



- be precise and aware of details
- be user/customer oriented
- have presentation and moderation skills
- be able to communicate (including in foreign languages if useful)
- be able to work in a team
- be able to seek, organize and synthesize
- be able to analyse (assess, evaluate, critique, test)
- be able to explain (defend, argue, justify).

b. Learning units

**B.1 Design and Development** [ECVET Weighting 5% / EQF Level 6]

Designs and engineers software and/ or hardware components to meet required specifications. Follows a systematic methodology to analyse and build the required components and interfaces. Performs unit and system testing to ensure requirements are met. Systematically develops small animation components or modules. Acts creatively to develop and integrate animation components into a larger project.

**B.2 Systems Integration** [ECVET Weighting 5% / EQF Level 6]

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. 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.

**B.3 Testing** [ECVET Weighting 5% / EQF Level 6]

Has specialist knowledge to organise complex testing programmes for AAL communication modules and customer usability requirements. These tests ensure that all internal, external, national and international standards are met and that the performance of the new or revised components conforms to the expectation. By documenting and reporting the tests and results he provides an important input to all involved persons like designers, users, maintainers. Organises test programmes, 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.

### **B.5 Documentation Production** [ECVET Weighting 5% / EQF Level 6]

He takes input from technical authors to organise the production of different documents according to the requirement of the project or application. He prepares the presentation by selecting the appropriate style and media and by describing the different function and features. The AAL online community manager is also responsible for the document-management system and the update and validation of the existing documentation relative to communicating with online communities. Organises the production of documents taking input from technical authors.

### **RUN** [ECVET Weighting 15% / EQF Level 5]

#### a. Core competences

Upon completion of training, the learner should

- be creative, imaginative
- be ethical
- be precise and aware of details
- be user/customer oriented
- be committed to corporate strategy and aware of corporate culture
- be able to communicate (including in foreign languages if useful)
- be able to analyse (assess, evaluate, critique, test)
- be able to explain (defend, argue, justify).

#### b. Learning units

### **C.1 User Support** [ECVET Weighting 5% / EQF Level 6]

Responds to user requests and issues; records relevant information. Monitors solution outcome and resultant user satisfaction. 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.

### **C.3 Service Delivery** [ECVET Weighting 5% / EQF Level 6]

Acts systematically to analyse performance data and communicates these findings to his senior colleagues. He handles monitoring and management tools such as Scripts and Procedures. He updates



the operational document library and logs all operational events. He ensures a stable and secure AAL communication application and infrastructure by escalating potential service level failures and recommending actions for service improvement. Acts systematically to analyse performance data and communicate findings to senior colleagues. Escalates potential service level failures and recommends actions to improve service performance.

#### **C.4 Problem Management** [ECVET Weighting 5% / EQF Level 6]

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. Exploits specialist AAL communication related knowledge and in depth understanding of the underlying AAL IT infrastructure and problem management process to identify failures and resolve them with minimum outage. Makes sound decisions in emotionally charged environments on appropriate action required to minimise user impact. Rapidly identifies failing component, selects alternatives such as repair, replace or reconfigure.

#### **ENABLE** [ECVET Weighting 5% / EQF Level 6]

##### a. Core competences

Upon completion of training, the learner should

- be creative, imaginative
- be able to communicate (including in foreign languages if useful).

##### b. Learning units

#### **D.6 Channel Management** [ECVET Weighting 5% / EQF Level 6]

Manages online communication campaigns directed at AAL communities. He ensures optimum performance of the AAL communication channels in coherence with the AAL support and monitoring strategy. Acts creatively to influence the establishment of AAL online communities. Manages AAL online communication channels to maximise performance of the AAL support and monitoring system.

#### **MANAGE** [ECVET Weighting 45% / EQF Level 5]

##### a. Core competences

Upon completion of training, the learner should

- be able to explain how (technical) AAL measures add value to the business
- be ethical
- be precise and aware of details
- be committed to corporate strategy and aware of corporate culture



- have good interpersonal skills
- have presentation and moderation skills
- be able to work in a team
- be able to seek, organize and synthesize
- be able to analyse (assess, evaluate, critique, test)
- have knowledge of project management principles
- have knowledge of budgeting / estimating issues and practices
- have knowledge of social issues
- have marketing knowledge
- be able to lead a team.

b. Learning units

**E.1 Forecast Development** [ECVET Weighting 5% / EQF Level 6]

Interprets market needs and evaluates market acceptance of AAL 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.

Provides short-term forecast using market inputs and assessing the organisations production and selling capabilities. Provides long-term forecast by understanding the global marketplace and identifying and evaluating relevant inputs from the broader business, political and social context.

**E.2 Project and Portfolio Management** [ECVET Weighting 10% / EQF Level 6]

Understands and applies the principles of project management. That means that s/he defines activities, responsibilities, critical milestones, resources, skills needs, interfaces and budget. S/he is able to apply methodologies, tools and processes. S/he able to meet identified needs by implementing new, internal or external processes. S/he makes choices, gives instructions and bears responsibility for a team (i.e. relationship within the team, team objectives). Understands and applies the principles of project management and applies methodologies, tools and processes to manage simple projects; plans and establishes objectives, quality, cost and time criteria..

**E.3 Risk Management** [ECVET Weighting 5% / EQF Level 6]

Implements the risk management with regard to online communication and the application of the enterprise defined risk management policy and procedure. S/he understands and applies the principles



of risk management (i.e. assesses risk, documents potential risk and containment plans) and is able to investigate solutions to mitigate identified risks. S/he evaluates, manages and ensures the validation of exceptions and audits online communication processes and environment.

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 online communication processes and environment.

#### **E.4 Relationship Management** [ECVET Weighting 10% / EQF Level 6]

Is responsible for a positive relationship between the community manager, user and the supplier. He maintains a regular communication with them and he is familiar with their problems and environment. He ensures that all the needs, concerns and also complaints of the user are understood and addressed in accordance with technical solutions and employment. Positively interacts with users, suppliers and community manager.

#### **E.5 Process Improvement** [ECVET Weighting 5% / EQF Level 5]

Measures effectiveness of existing AAL 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 in the field of AAL for measurable business benefit. Assesses potential adverse consequences of process change.

Researches existing ICT processes and solutions in order to define possible innovations. Makes recommendations based on reasoned arguments. Provides advice on innovations and improvements that will enhance competitiveness or efficiency.

#### **E.6 ICT Quality Management** [ECVET Weighting 5% / EQF Level 6]

Implements AAL quality policy to maintain and enhance service and product provision. Plans and defines indicators to manage quality with respect to AAL strategy. Reviews quality performance indicators and recommends enhancements to influence continuous quality improvement.

Communicates and monitors application of the organisations quality policy. Evaluates quality management indicators and processes based on AAL quality policy and proposes remedial action. Assesses and estimates the degree to which quality requirements have been met and provides advice for quality policy implementation. Provides cross functional advice for setting and exceeding quality standards.

#### **E.7 Business Change Management** [ECVET Weighting 5% / EQF Level 6]

Assesses the implications of new AAL 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.



Provides advice to plan, manage and implement significant AAL change. Applies pervasive influence to imbed organisational change.

## 5.6 AAL Consultant

### 5.6.1 Role description and summary

<b>Role title</b>	<b>AAL Consultant</b>	
<b>Also known as</b>		
<b>Relevant professions</b>		
Summary statement	Owns product and market knowledge; analyses customers needs and necessities, defines and specifies solution requirements, evaluates installed AAL solutions.	
Mission	To identify the best-suited AAL product/solution according to the consumer's needs, requirements and financial resources.	
Responsibility	Bridge the gap between technology and consumers by proposing the development/purchase of AAL-friendly products/devices and guiding the customers to select the ones that suit their needs.	
Deliverables/Contributions	<ul style="list-style-type: none"><li>• Evaluation of customers' needs</li><li>• Consulting strategies</li><li>• Evaluation of consulting services</li><li>• Selection of adequate products and services</li></ul>	<ul style="list-style-type: none"><li>• Ethical issues' report</li><li>• Market analysis</li><li>• User requirements</li><li>• Suggestion of AAL products/devices related to ICT</li><li>• Usability evaluation</li></ul>
Main task/s	<ul style="list-style-type: none"><li>• Remains informed of new and emerging AAL technologies and systems</li><li>• Analyses market, identifies market trends and user requirements</li><li>• Understands the expectations of consumers and other potential stakeholders</li><li>• Selects and approve appropriate products and solutions</li></ul>	



	<ul style="list-style-type: none"><li>• Provides consumers with the most suitable solution tailored to their needs, requirements and capabilities</li><li>• Evaluates customer needs and formulate consulting strategies</li><li>• Interfaces technology, client needs and caregiving services</li><li>• Prepares and negotiates contracts with suppliers</li><li>• Monitors compliance with standards and regulations on ICT and AAL;</li><li>• Provides advice on how to optimize the use of existing tools and systems;</li><li>• Raises awareness of information technology innovations and potential value to a business</li></ul>
Environment	Usually works independently in close collaboration with the AAL System Architect and the Communication Manager. The AAL Consultant can work as an external consultant or internally within the company.
KPI's	<ul style="list-style-type: none"><li>• Number of new customers</li><li>• Customer satisfaction</li></ul>





- be able to explain how (technical) AAL measures add value to the business
- have knowledge about compliance with healthcare laws and policies
- have knowledge about latest AAL developments
- be user/customer oriented
- have knowledge of project management principles.

b. Learning units

**A.1 IS and Business Strategy Alignment** [ECVET Weighting 6% / EQF Level 6]

The AAL Solutions and System Developer is aware of the long term business requirements and determines the IS model in line with the organisation's AAL policy. Provides advice for the construction and implementation of long term innovative IS solutions.

**A.3 Business Plan Development** [ECVET Weighting 5% / EQF Level 6]

Is responsible for the design and structure of an AAL community communication plan. He is able to understand the specific AAL environment in which he operates. He uses web technology for social inclusion by deploying information and communication processes. He communicates with all relevant AAL stakeholders. Exploits specialist knowledge to provide understanding of specific AAL environment etc.

**A.4 Product or project planning** [ECVET Weighting 5% / EQF Level 6]

In analysing and defining the current and target status of a ICT structure and the architecture of AAL components and system, s/he plans the development, implementation and test of the components and system. Acts systematically to document standard and simple elements of project. Exploits specialist knowledge in specification development to create and maintain complex documents of the project.

**A.5 Architecture Design** [ECVET Weighting 6% / EQF Level 6]

Specifies, refines, updates and makes available a formal approach to implement solutions, necessary to develop and operate the IS architecture. Manages the relationships with the AAL stakeholders to ensure that the architecture is in line with AAL 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.

Exploits specialist knowledge to define relevant AAL technology and specifications to be deployed in the construction of multiple AAL projects, applications or infrastructure improvements. Defines the strategy to implement ICT technology compliant with AAL market needs, while taking account the current technology platform, obsolescent equipment and latest technological innovations.



#### **A.6 Application Design** [ECVET Weighting 10% / EQF Level 6]

Defines the most suitable AAL ICT solutions, in accordance with ICT policy and user/customer needs. 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. 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.

#### **A.7 Technology and Market Watching** [ECVET Weighting 5% / EQF Level 6]

Explores latest AAL 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. Is aware of technology improvements in his field of competence and is able to integrate them, if necessary, in his planning in accordance with specifications. Is actively looking out for new technology improvements in his field of competence. Can identify the articulations between emerging technologies in the field of AAL and user requirements in accordance with overall communication plans.

#### **A.8 Sustainable Development** [ECVET Weighting 5% / EQF Level 6]

Estimates the impact of AAL solutions. Advises AAL stakeholders on sustainable alternatives that are consistent with the AAL strategy. Provides advice on the definition of objectives and strategy of sustainable IS development in accordance with the organisation's sustainability policy.

#### **BUILD** [ECVET Weighting 0% / EQF Level N/A]

#### **RUN** [ECVET Weighting 15% / EQF Level 5]

##### a. Core competences

Upon completion of training, the learner should

- have knowledge about existing best practice in IT and AAL
- be creative, imaginative
- have good interpersonal skills
- be able to explain (defend, argue, justify).

##### b. Learning units

#### **C.2 Change Support** [ECVET Weighting 8% / EQF Level 6]



Implements and provides guidance for the evolution of an AAL 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). 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.

**ENABLE** [ECVET Weighting 5% / EQF Level 6]

a. Core competences

Upon completion of training, the learner should

- be able to measure and report on AAL
- be able to explain how (technical) AAL measures add value to the business
- have knowledge about compliance with healthcare laws and policies
- have knowledge about latest AAL developments
- be committed to corporate strategy and aware of corporate culture
- have good interpersonal skills
- be able to work in a team
- be able to seek, organize and synthesize
- be able to analyse (assess, evaluate, critique, test)
- have knowledge of project management principles
- have knowledge of legal issues
- be able to lead a team.

b. Learning units

**D.3 Education and Training Provision** [ECVET Weighting 5% / EQF Level 6]

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. 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.

**D.8 Contract Management** [ECVET Weighting 5% / EQF Level 6]

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. Prepares and negotiates contracts with suppliers.

**D.10 Knowledge Management** [ECVET Weighting 5% / EQF Level 6]

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. Correlates information and knowledge to create value for the business. Applies innovative solutions based on information retrieved.

**MANAGE** [ECVET Weighting 45% / EQF Level 5]

a. Core competences

Upon completion of training, the learner should

- be able to measure and report on AAL
- have knowledge about existing best practice in IT and AAL
- be able to explain how (technical) AAL measures add value to the business
- have knowledge about compliance with healthcare laws and policies
- have knowledge about latest AAL developments
- be ethical
- be user/customer oriented
- be committed to corporate strategy and aware of corporate culture
- have presentation and moderation skills
- have knowledge of project management principles
- have knowledge of budgeting / estimating issues and practices
- be able to lead a team.



b. Learning units

**E.1 Forecast Development** [ECVET Weighting 5% / EQF Level 6]

Interprets market needs and evaluates market acceptance of AAL 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.

Provides short-term forecast using market inputs and assessing the organisations production and selling capabilities. Provides long-term forecast by understanding the global marketplace and identifying and evaluating relevant inputs from the broader business, political and social context.

**E.2 Project and Portfolio Management** [ECVET Weighting 10% / EQF Level 6]

Understands and applies the principles of project management. That means that s/he defines activities, responsibilities, critical milestones, resources, skills needs, interfaces and budget. S/he is able to apply methodologies, tools and processes. S/he able to meet identified needs by implementing new, internal or external processes. S/he makes choices, gives instructions and bears responsibility for a team (i.e. relationship within the team, team objectives). Understands and applies the principles of project management and applies methodologies, tools and processes to manage simple projects; plans and establishes objectives, quality, cost and time criteria..

**E.4 Relationship Management** [ECVET Weighting 10% / EQF Level 6]

Is responsible for a positive relationship between the community manager, user and the supplier. He maintains a regular communication with them and he is familiar with their problems and environment. He ensures that all the needs, concerns and also complaints of the user are understood and addressed in accordance with technical solutions and employment. Positively interacts with users, suppliers and community manager.

**E.7 Business Change Management** [ECVET Weighting 5% / EQF Level 6]

Assesses the implications of new AAL 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.

Provides advice to plan, manage and implement significant AAL change. Applies pervasive influence to imbed organisational change.



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## 7. Glossary

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The use of the following terms in this document is based on the following definitions:

**AAL community manager**

Provide an interactive environment in which persons benefiting from assistance are connected with care providers and with their broader environment.

**Activities**

A very generic term, similar to operations or workings.

**AAL consultant**

Owns product and market knowledge; analyses customers needs and necessities, defines and specifies solution requirements, evaluates installed AAL solutions.

**AAL maintenance specialist**

Installs, configures and maintains AAL products, components and systems; provides technical assistance (online support or on-site).

**AAL solutions and system developer**

Develops, implements and tests AAL components and systems according to customer needs.

**AAL system architect**

Determines the structure and management of a programme or computing system (software, hardware, interfaces).

**Competence**

Proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development.

**e-Content development**

Process of researching, writing, gathering, organizing, structuring and editing information for e-publication. Such content may consist of prose, graphics, pictures, recordings, movies or other media assets that could be distributed through e-media.

**Contribute**

Contributors provide input before work can be completed and signed-off on. They are “in the loop” and active participants. Several people can be contributors to one deliverable.

**Deliverable**

A predefined result of a task in a working context. Deliverables are observable results, that may be tangible or intangible.



### **e-Jobs Observatory**

The e-Jobs Observatory is a stakeholders' network fostering collaboration and information-sharing about e-jobs, e-skills and e-competences.

### **ICT**

Information and Communication Technology is an all embracing term covering computing, information storage and telecommunications concepts and applications. The term ICT is commonly used by policy makers.

### **Job**

Jobs provide a bridge between enterprises and individuals. Jobs reflect employment conditions in the labour market in addition jobs may indicate requirements, results, tasks, competences and required qualifications. Jobs bring together a number of perspectives and are defined by organizations. Jobs are identified or labelled by a single or few word descriptions, for example, Programmer, Service Manager or Chief Information Officer.

### **Job description**

a list that a person might use for general tasks, or functions, and responsibilities of a position.

### **Job profile**

Employer definition of a given job, describing that by required qualification, tasks, skills and competences.

### **Knowledge**

The outcome of the assimilation of information through learning. Knowledge is the body of facts, principles, theories and practices that is related to a field of work or study. In the context of the European Qualifications Framework, knowledge is described as theoretical and/or factual;

### **Learning content**

Subjects taught in a training context. In contrast to learning outcomes, which represent the output of certain training, the learning contents represent the input of certain training.

### **Learning outcomes**

Statements of what a learner knows, understands and is able to do on completion of a learning process, which are defined in terms of knowledge, skills and competence.

### **Profession**

A specialist role, supported by in-depth training and education, culminating in a license or authority to operate. Sometimes used generically but ambiguously as a non-management job role.

### **Profile**

Job profiles add to job descriptions by including additional job related components such as mission, main tasks, accountability, requested deliverables, KPI's etc. In this context, a job profile provides a comprehensive description written and formal of a job.

**Role**

A specialized combination of skills or competences with specific responsibilities to fulfil a specific type of task and to produce pre-defined deliverables, mostly used in engineering, especially SW-engineering models.

**Qualification**

A formal outcome of an assessment and validation process, which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards.

**Sector**

A grouping of professional activities on the basis of their main economic function, product, service or technology.

**Skills**

The ability to apply knowledge and use know-how to complete tasks and solve problems. In the context of the European Qualifications Framework, skills are described as cognitive (involving the use of logical, intuitive and creative thinking) or practical (involving manual dexterity and the use of methods, materials, tools and instruments);

**Task**

A distinct work activity (normally partially predefined), which has an identifiable beginning and end and observable results.



## The e-Jobs Observatory is the collaborative platform for the promotion of excellence in e-Jobs, e-Skills and e-Competences

<http://www.e-jobs-observatory.eu>  
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The **CompAAL** project is co-funded by the Leonardo da Vinci programme of the LLP of the European Commission.

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*The CompAAL project has been co-funded with support from the European Commission. This publication reflects the views only from the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein .*