

AAL CONSULTANT

Training Curriculum



Background, guidelines and documents
for the qualification as AAL Consultant





R 5: AAL Consultant Curriculum

Project Title: engAGEnt
Project Type: Transfer of Innovation, Leonardo da Vinci
Programme: LLP - Leonardo da Vinci
Agreement No: 2012-1-DE2-LEO05-11223

Draft Version: 0.9
Date: 2014-07-31

The engAGEnt project has been funded with support from the European Commission.

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Table of contents

1.	Introduction.....	1
1.1	Statement of philosophy	1
1.2	Overview of the curriculum.....	2
2.	Background	3
2.1	Training concept	3
2.1.1	Role profile	5
2.1.2	Target groups	5
2.1.3	Timeframe for the programme.....	6
2.2	ECVET principles	6
3.	Curriculum	8
3.1	Programme outcomes.....	8
3.2	Programme overview	8
3.3	Modules and learning units	9
3.3.1	Business modules	9
3.3.2	Technical modules	17
4.	Delivery	30
4.1	Basic approach	30
4.2	Training methods	32
4.3	Soft skills.....	35
5.	Assessment	48
5.1	Learning unit assessment.....	48
5.2	Final assessment.....	49
5.3	Overall assessment	49
6.	Resources	51
6.1	Learning materials	51
6.2	Learning unit assessment questions.....	51
6.3	Case study.....	55

Annexes..... 56

- 1. AAL Consultant profile 57
- 2. Case Study 68

1. Introduction

Ambient Assisted Living (AAL) is a general concept for the provision of facilities and support that will allow persons with special needs (for example, the elderly), who, for whatever reasons, cannot live in complete independence but for whom 24-hour medical care or supervision is unjustified. It encompasses all those facilities, devices, services and care that promote independence and dignity. The demographic development within Europe is that of shrinking in number but aging rapidly. The desire and needs of in particular elderly persons to live independently is increasing, even for many for whom moving to a retirement home or extensive care facility is inappropriate or out of the question. Consequently, there is a growing need for trained specialists who can plan, develop, provide, manage and support facilities, programmes, and activities that can make this possible.

Advances in information, security, monitoring, and care technologies make it possible for more people to stay in their familiar environments longer. Yet many care and services providers are unfamiliar with those technologies that could make their work easier. By the same token, the providers of technological devices and systems are not often aware of the needs of care providers in this area. As a result, a new area of professional activity is emerging in which healthcare and (primarily) digital technologies are converging. At present, there is a growing need for providing additional vocational and professional training to bridge the gap between these two relevant sectors.

The primary aim of the engAGEnt project is to develop and test a harmonized European curriculum based on ECVET principles of that will qualify people for the job role of an AAL Specialist or Consultant. The AAL consultant should have the knowledge, skills and competences necessary for analyzing the living situation of an elderly person, developing strategies in support thereof, and finally guiding all involved parties (family, relatives, neighbours, etc.) towards transparent and relevant solutions. Those who have completed the curriculum will be able to discuss and implement solutions in order to meet very individualized needs (including technical know-how, healthcare-relevant capabilities, as well as social skills).

The objective of the document at hand is to describe the background to the curriculum, as well as to describe in detail, the objectives, content and methods for conducting this particular programme of study.

1.1 Statement of philosophy

A change of perspective is making itself known in all areas of learning and qualification, in particular in the vocational education and training (VET) sector. Most often, VET has been based on content; that is, what a given person allegedly needs to know in order to do a particular job or to perform a particular task. The pace of change in today's world, however, tends to make knowledge quickly obsolete, leading to a continual need for

changing and updating one's qualification programmes. Consequently, knowing something or even knowing how to do a particular task is no longer sufficient for determining what comprises a qualification. Instead, a realistic assessment of what a given work processes entails and which additional skills and competences are required to successfully perform in an area of activity must be included. This is the reason for reformulating qualification requirements in terms of learning outcomes. In other words, we are moving from an input-based to an output-based conception of VET.

The understanding is that upon the completion of training the student will be required to *do* things. S/he will have to perform rather specific functions, but these will not necessarily be known in advance. Solving an AAL-related problem, for example, covers a wide range of possibilities, and much of what contributes to a particular solution will be dependent upon the particular client involved and that person's individual needs and wishes as well. For this reason, we advocate an approach that provides for flexibility in learning and learning to learn, that is, relevant to real-life situations, and that is comprehensible to a person not necessarily possessing a strong technical background. In other words, there is a need for VET to be as realistic as possible (at least in part) and specifically related to the environment in which the student will be able to function upon the completion of training.

In light of these considerations, we make a case for taking an integrated, scenario-based approach to this programme. That is to say, the knowledge, skills and competences to be achieved as a result of this training programme are to be acquired against a backdrop of a real-life scenario. Through a detailed analysis of the chosen functional-role profile (see Appendix 1), and through consultation with experts in this field, we have developed this curriculum in a way which we believe best serves the needs of actual AAL Consultants.

1.2 Overview of the curriculum

This curriculum consists of a total of six chapters. Following this brief introduction, the background to our curriculum development is described. A review of the training concept is provided, to include the role profile, target groups and programme timeframe, along with a description of the ECVET principles underlying the programme. In Chapter 3, the curriculum itself is presented. This is presented primarily in tabular form for easy reference. Chapter 4 discusses the important topic of programme delivery. Here, suggestions, not prescriptions, are made for implementing the programme. Similarly, Chapter 5 deals with the topic of assessment. Here as well, we present a general discussion of the topic of assessment and provide suggestions of what we found have worked in our pilot training sessions. Finally, in the last chapter, additional tools and materials relevant to the curriculum are included.

2. Background

The AAL consultant qualification will educate professionals to design, plan and implement solutions that meet the individual needs of the elderly. They will be enabled to analyze the living situation of an elderly subject, develop appropriate strategies for the particular needs and finally set up suitable AAL solutions.

This is, of course, an interdisciplinary professional profile: on the one hand, knowledge of new, digital technologies is required in order to identify and manage system components applicable to the solution, but on the other hand, an AAL Consultant must be aware of relevant care and support requirements for AAL candidates. Obviously, comprehensive AAL concepts involve a number of different professional disciplines (e.g. engineers, programmers, nurses, medical staff, facility managers, computer scientists, social workers, etc.). Accordingly, the potential fields of employment of AAL consultants are quite wide, and range from employment in companies which develop AAL systems and solutions, employment in communal AAL consultancy facilities or ambulant care-giving institutions, or as independent advisors and consultancies providing services to communities or individuals.

2.1 Training concept

The goals of the curriculum be expressed in terms of learning outcomes. The document *R 4: Training concept* includes a section providing guidance on writing such outcomes. In order to more specifically identify those competences which are essential for performing as an AAL Consultant, a taxonomy of the relevant specialized areas related to AAL was created.

The following layered taxonomy (Figure 1) of areas that relate to AAL was proposed:

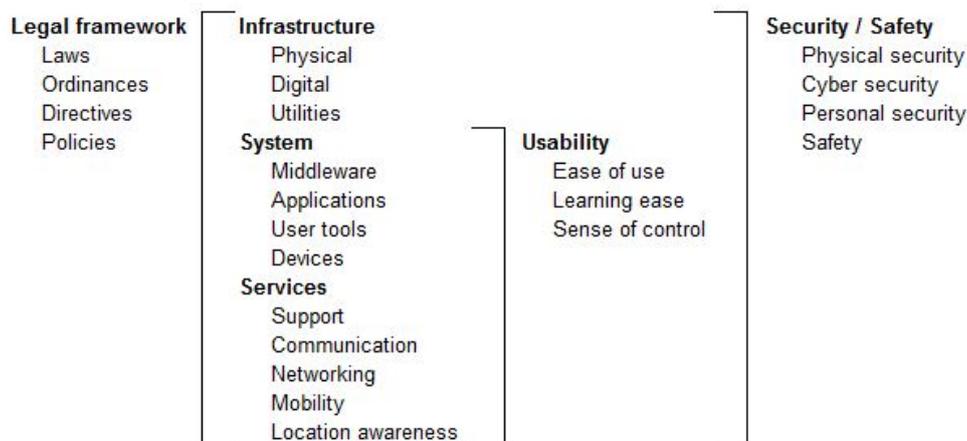


Fig. 1: Layered taxonomy of areas that relate to AAL

This served as a basis for identifying the specific learning outcomes which are listed in the curriculum section below. For each area, learning outcomes were described using the revised Bloom taxonomy for the cognitive domain. For the description of the learning outcomes the following role profile statements were considered:

1. Owns product and market knowledge, including developments and trends
2. Understands the expectations of consumers and other potential stakeholders and analyses and evaluates customers needs and necessities
3. Defines, specifies solution requirements, including identification of the best-suited AAL product/solution according to the consumer's needs, requirements and financial resources
4. Prepares and negotiates contracts with suppliers
5. Monitors compliance with standards and regulations on ICT
6. Provides advice on how to optimize the use of existing tools and systems
7. Interfaces between technology, clients, care-giving services and agencies
8. Evaluates installed AAL solutions.

On this basis, the role profile for the AAL Consultant, originally developed for the CompAAL project, was revised and updated.

2.1.1 Role profile

Table 1 shows the AAL Consultant profile description as described in the CompAAL Project.¹

This profile was constructed by applying the European e-Competence Framework (eCF), version 2.0² and enhancing this by including three areas of "soft", or transverse, skills. These were identified by means of gathering feedback from the industry itself. The three transverse skills areas which have been identified are technical, behavioural, and business.

As seen in Figure 2, the profile is divided into five competence areas: A. Plan, B. Build, C. Run, D. Enable, E. Manage (Dimension 1). Through analysis of relevant professional activities and the gathering of feedback from selected industry representatives, the particular, desired and needed competences (e.g. "IS and Business Strategy/Alignment"; that is Dimension 2) were identified and then analyzed (in terms of required outcomes). Each of the competences consists was considered further in terms of a combination of specific knowledge and skills in technical, behavioural, and business areas (Dimension 3). Aiming at the desired competences as the outcome of the training, learning modules for building up specific knowledge and skills have been developed. The achievement of a combination of several skills will result in the desired competences.

2.1.2 Target groups

Successful completion of the designed curriculum should enable the full competence profile for an AAL Consultant. The main objective of the curriculum is *to complete* the competence profile of individuals who are currently working in at least one of the two disciplines which are related to the AAL field: technology or healthcare.

This implies several consequences:

- The main target groups for training are employed people or people who have professional experience in at least one AAL related field. This can be engineering, nursing, care-giving, IT, social working, etc.
- The target groups in terms of the curriculum itself are higher education providers, other educational institutions, or corporate training departments which wish to address AAL-related training.
- The curriculum should be so constructed that individuals with relevant background and experience (technical, social, care-giving, etc.) can receive credit for this background and experience so that they only need to complete those

¹ CompAAL, Project 518218-LLP-1-2011-DE-LEONARDO-LMP, *5 European Role Profiles for AAL professions* [online], available at http://www.e-jobs-observatory.eu/sites/e-jobs-observatory.eu/files/5%20European%20Role%20Profiles%20AAL_EN_1.pdf.

² More information is available online at <http://www.ecompetences.eu/>.

modules that will round out the complete AAL Consultant profile. The existing knowledge, skills and competences will be assessed and an individualized curriculum will be compiled for each participant.

The curriculum will be modular in structure to enable for variation in previous knowledge and experience and it will be designed to take advantage of different learning approaches, such as distance or blended learning, providing for additional flexibility.

2.1.3 Timeframe for the programme

The complete programme consists of two modules, encompassing a total of 15 learning units and a final exam. The entire programme takes about 15 days to complete. It should be noted, however, that all modules must be completed, either through participation or recognition of prior learning. All 15 learning units should be completed within a 12-month time period.

2.2 ECVET principles

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, ECVET has been 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 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.

Since its adoption in 2009 countries and the Commission are putting important emphasis on testing and further developing 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 testing and assessment of actions taken at Member State level.³

As for the allocation of credit points for the AAL Consultant curriculum, it has been recognized that most credit calculations begin with the assumption that one year of vocational training represents anywhere from 60 to 120 ECVET credits. In these instances, we are also dealing with initial VET, which is not the case here. In such cases, as in Germany, for example, an initial VET qualification may encompass up to three-and-a-half years of training. For these reasons, it does not make sense to base our ECVET credit calculations on these assumptions. The AAL Consultant, however, represents a complete, further qualification; that is, one that is obtained in addition to any previous qualifications the learner might have acquired. Consequently, we believe the training should have a substantial number of credit points assigned to it, without detracting, of course, from the importance of any other vocational qualifications. Therefore, it seems reasonable to allocate 15 ECVET credits to the total AAL Consultant programme.

³ For more information, see <http://www.ecvet-projects.eu/About/Default.aspx>

3. Curriculum

This qualification has been developed as an add-on qualification, primarily for healthcare service workers, who would be interested in expanding their professional qualification to include an ambient-assisted living (AAL) component or who are considering a change of career direction toward self-employment or as an employee of a municipal or regional office addressing AAL issues.

The qualification can be offered as a stand-alone qualification, ending in a certificate encompassing a total of 15 ECVET credits. All modules must be satisfactorily completed to obtain the certificate. It would be possible, in addition, to incorporate this programme as an optional, or compulsory, module in any other AAL-related qualification programme as well.

This chapter contains an overview of the programme outcomes, an overview of the modules involved, as well as some general considerations regarding the qualification approach to be taken.

3.1 Programme outcomes

At the end of this course of study, the candidate will be able to

1. assess a client's needs in a typical AAL scenario;
2. develop a solution to address and fulfil those needs;
3. engage with the client (or his/her representatives) to reach agreement on the proposed solution; and
4. implement the solution to the satisfaction of the client.

The details of the programme are outlined in the following section.

3.2 Programme overview

The program consists of three management, or business-related, learning units, and 12 technical learning units. The modules/learning units are self-contained and may be offered and taken in any order. An overview of the programme modules/learning units and allocation of ECVET points is provided in Figure 2.

Number	Name	Assessment	Dur. (hrs)	Dur. (d)	Wtg.	ECVET
M01	Project management + Team building	Written/oral exam; case study	20	3,5	19%	3,0
M02	Calculation and controlling methods	Written/oral exam/presentation	8	1	8%	1,0
M03a	Legal bases of consulting	Oral exam	4	0,5	4%	1,0
M03b	Country-specific legal issues	Oral exam	4	0,5	4%	1,0
Technical modules subtotal			36	5,5	35%	6
T01	Physical infrastructure for AAL systems and devices	Written/oral exam	4	0,5	4%	0,5
T02	Barrier-free living	Presentation	4	0,5	4%	0,5
T03	AAL systems - Health monitoring I	Oral exam	4	0,5	4%	0,5
T04	AAL systems - Health monitoring II	Oral/practical exam	8	1	8%	1,1
T05	AAL systems - Alarm systems and home monitoring	Oral exam	8	1	8%	1,1
T06	AAL systems - Navigation, locating, position finding	Practical exam	8	1	8%	1,1
T07	Telemedicine systems	Oral exam	4	0,5	4%	0,5
T08	Telemedicine services	Oral/practical exam	4	0,5	4%	0,5
T09	Communication/social interaction systems	Practical exam	8	1	8%	1,1
T10	Usability	Written/oral exam/presentation	8	1	8%	1,1
T11	Security/safety - sensors and systems	Written/oral exam	4	0,5	4%	0,5
T12	Security/safety - technical solutions	Oral/practical exam	4	0,5	4%	0,5
Technical modules subtotal			68	8,5	65%	9
Final comprehensive examination		Case study	4	0,5	--	--
Cumulative totals			108	14,5	100%	15

Fig. 2: Curriculum overview

3.3 Modules and learning units

In the following two sections, the modules/learning units are specified in more detail. For each of these, a table is included encompassing

- the module number
- the specified learning outcomes for that module
- a general statement about the content to be covered
- suggestions for appropriate training methods and tools,
- suggestions for appropriate assessment approaches, and
- the number of instructional units (IUs; that is segments of 45 minutes of instruction) encompassing the module/learning unit.

The business modules/learning units and technical modules/learning units will be handled separately.

3.3.1 Business modules

The overall aim of the part "business skills and knowledge" is to enable the students to analyze the living situation of an elderly person, develop appropriate strategies for the particular needs and finally set up suitable AAL solutions, by knowing how to calculate the costs and considering the legal aspects. The business module also focuses on behavioural skills, in order to increase the supportive procedures.

The module is divided into three chapters : Project Management, Calculation, Legal basis of consulting

1. **Project Management** includes tools to understand the expectations of the client and his/her environment, to analyse the needs of the client, to know the rules of communication in a team, to have possibilities to solve conflicts among stakeholders, and to prepare committed procedures and contracts. The most important aim is to empower the students to interface and "translate" between client, technology and involved stakeholders.
2. **Calculation** introduces the learner into the basis of calculating the costs of a technical investment, of financial planning und controlling.
3. **Legal basis of consulting** gives an overview of essential laws and regulations relevant to the AAL sector and provides information about legal framework of counselling and relevant ethical aspects

Learning unit M01, Project management and team building

Block	Learning outcomes	Content	Training methods & tools	Assessment	IUs
Project planning	The learner knows what constitutes the essentials of a project	Definition of a project; Characteristics of projects; Rules and Circumstances in Projects; Target setting in projects; Development of a practical case which will be used throughout the modules Business Skills	Teaching; group discussion; group work	Written or oral exam; questionnaire; Case study development	4x45Min
	The learner is able to appropriately structure a project in terms of time, money and resources (material and personnel)	Steps of the planning process, considering the resources time, budget and human resources; Methods and Tools for Project planning; Tools: phase plan, work packages, Gant-diagram with milestones, time tables and human resource plans & responsibilities; Methods and tools for controlling and monitoring;	Teaching; group discussion; group work; checklists & diagrams	Presentation and feedback by trainer	7x45min

Block	Learning outcomes	Content	Training methods & tools	Assessment	IUs
Project target group and environment	The learner is capable of dealing with internal and external requirements and stakeholders	Stakeholders, target groups and environment of a project; Environment of the patient by using the tool "project environmental analysis"; Tools to analyse the needs of the patient and his environment; Project marketing and communication tools for different stakeholders, target groups and environment in a practical case	Teaching; group discussion; group work; case study	Presentation and feedback by trainer	5x45min
Project team	The learner can set up a team	Team structure; Roles and tasks in a project; Duties and responsibilities of the project leader and the team members; Tools to set up a successful team structure; communication between project leader and the team members	group discussion; group work; case study	Presentation and feedback by trainer	5x45min

Block	Learning outcomes	Content	Training methods & tools	Assessment	IUs
Leadership & Team communication	The learner can set up team communication	Methods and tools for team leading; Methods and tools for decision making; Communication rules within a team	Group discussion; group work; case study	Presentation and feedback by trainer	4x45min
Conflict management	The learner is capable of solving team conflicts	Characteristics of conflicts and conflict management; Methods for analysing a problem; Conflict situations and appropriate conflict solutions	Group discussion; group work; case study	Presentation and feedback by trainer	3x45min

Learning unit M02, Calculation and controlling methods

Block	Learning outcomes	Content	Training methods & tools	Assessment	IUs
Micro-economics	The learner knows the basics of micro-economics and business relevant to AAL	Micro-economics versus macro-economics; Business basics	Teaching	Oral exam	30min
Calculation	The learner is able to calculate a project	Basics of calculation; Calculation of a project	Teaching; group work; templates	Written exam	3x45min
Financial planning	The learner is able to plan a project financially	Basics of financial planning; Tools for financial planning	Teaching; group work; templates	Presentation and feedback by trainer	2x45min
Controlling	The learner is able to apply controlling tools to a project	Basics of controlling; Tools for controlling a project; Analysing the outcome of controlling results	Teaching; group discussion templates	Oral exam	3x45min

Learning unit M03a, Legal Bases of Consulting

Block	Learning outcomes	Content	Training methods & tools	Assessment	IUs
Basics of legal advice related to AAL	The learner knows the essential laws and regulations relevant for AAL	Relevant laws and regulations for AAL: e.g., social assistance law, patients rights, liability law, regulations and norms for handicapped people, tenancy law	Teaching	Oral exam	1x45Min
Legal requirements	The learner is able to apply appropriate regulations and requirements relevant to a specific case	Relevant regulations and legal requirements; Legal framework for counselling and advice for AAL; Counselling templates and checklist for appropriate counselling	Teaching; templates, checklists	Oral exam	2x45min
Laws, standards and guides	The learner is capable of accessing the relevant laws, standards and guides	Laws, standards and guidelines; Essential information about Social benefits and welfare support	Teaching; group work	Oral exam	1x45min

Learning unit M03b, Country-specific Legal Issues

Block	Learning outcomes	Content	Training methods & tools	Assessment	IUs
M03b – Country-specific legal issues	<p>The learner is familiar with the country-specific legal framework relevant to working as an AAL Consultant.</p> <p>The learner knows where to find necessary and essential additional information on this topic.</p>	<p>Particularities and peculiarities of domestic law in relation to working as an AAL Consultant</p> <p>Information about and links to relevant sources of information (e.g., national and local agencies, websites, etc.) for additional and up-to-date information.</p>	Teaching; group work; case studies	Oral exam	4x45Min

3.3.2 Technical modules

The aim of the technical learning modules is to enable the students to remember, to understand, to analyse and to apply technical AAL solutions. Participants who have completed the modules successfully are able to develop technical solutions for people who need assistance.

The modules enable the students to recommend devices and solutions, accordant to the specific circumstances of the customer. An overview of available AAL devices, services and principles is given separately for the following AAL fields:

- Home environment / infrastructure / barrier free living
- Mobility
- Safety and security
- Communication technology (social interaction)
- Healthcare
- Usability

Learning unit T01, Physical Infrastructure for AAL Systems and Devices

Block	Learning outcomes	Content	Training methods & tools	Assessment	IUs
T01 – Physical infrastructure for AAL systems and devices	<p>The learner remembers the basic components in order to build up an infrastructure for the installation of home monitoring systems. He knows companies that are able to deliver and install modules for the needed chain of components.</p> <p>Furthermore the learner is able to analyze a given apartment in terms of technical infrastructure.</p>	<p>Criteria for alarm systems, control access systems, movement and fall monitoring systems, medical (vital data) home monitoring and room monitoring systems</p>	<p>Webinar or face-to-face teaching, case study</p>	<p>Written/oral exam</p>	<p>4x45Min</p>

Learning unit T02, Barrier-free living

Block	Learning outcomes	Content	Training methods & tools	Assessment	IUs
T02 – Barrier free living (Theoretical part)	The learner remembers at least four criteria of architectural measures for barrier free living	Criteria for the entrance area, corridors, bed- and bathroom, illumination	Webinar, e-learning/moodle, Self organized learning environment (SOLE) approach.	Oral exam	2x45Min
T02 – Barrier free living (Practical part)	The learner is able to develop a concept for barrier free living in a given scenario/description of an apartment, which gives options for improvements in terms of an easy accessible entrance area, easy to realize and cheap measures in the apartment, an optimal long-term solution.	Measures for improvement of the entrance area, corridors, bed- and bathroom, illumination	Case study (example see appendix), project work (also as group work)	Presentation of results	2x45Min

Learning unit T03, AAL Systems – Health Monitoring I

Block	Learning outcomes	Content	Training methods & tools	Assessment	IUs
T03 - AAL systems - Health monitoring I (vital parameters)	The learner remembers at least 5 relevant vital parameters which can be measured by current medical monitoring systems and recalls at least 2 conditions/diseases where each parameter is relevant.	Vital parameters for medical monitoring systems: ECG, heart rate, breathing, sleep parameters, blood pressure, weight	Webinar, e-learning/moodle (SOLE approach) or face-to-face teaching	Oral exam	4x45Min

Learning unit T04, AAL Systems – Health Monitoring II

Block	Learning outcomes	Content	Training methods & tools	Assessment	IUs
T04 - AAL systems - Health monitoring II (smart textiles, 24/7 monitoring) (Theoretical part)	The learner understands at least two potentials and at least two borders of commercially available systems of smart textiles for continuous measurement of vital signals and the functionality of at least one available 24/7 monitoring system for vital parameters.	Measures of ECG, heart rate, pulse, breathing and vital parameters e.g. weight, blood, pressure	Webinar, e-learning/moodle (SOLE approach)	Oral exam	4x45Min
T04 - AAL systems - Health monitoring II (smart textiles, 24/7 monitoring) (Practical part)	The learner is capable of constructing at least one commercially available system of smart textiles for continuous measurement of vital signals and able to apply/install at least one available 24/7 monitoring systems for vital parameters.	Configuration and installation of systems of ECG, heart rate, pulse breathing and vital parameters e.g. weight, blood pressure)	Hands-on training with demo device, group work	Practical exam	4x45Min

Learning unit T05, AAL Systems – Alarm Systems and Home Monitoring

Block	Learning outcomes	Content	Training methods & tools	Assessment	IUs
T05 - AAL systems - Alarm systems and home monitoring	The learner is able to configure at least one commercially available alarm or home monitoring system.	Configuration of at least one alarm and one home monitoring system.	Hands-on training with demo device, practical performance	Case study	8x45Min

Learning unit T06, AAL Systems – Navigation, Location and Position Finding

Block	Learning outcomes	Content	Training methods & tools	Assessment	IUs
T06 - AAL systems - Navigation, Locating, Position finding	The learner is able to install at least one navigation app on a smart phone and knows how to use it. S/he perceives and is able to interpret hints of the device in terms of barrier free access.	Application/Installation of navigation systems containing the features locating and tracking people, position finding, routing and navigation.	Hands-on training with demo device, practical performance	Practical exam (live performance)	8x45Min

Learning unit T07, Telemedicine Systems

Block	Learning outcomes	Content	Training methods & tools	Assessment	IUs
T07 - Tele medicine – systems	The learner understands at least three data transfer principles used for medical monitoring systems and knows at least two advantages and disadvantages of each transfer principle for at least two relevant vital parameters.	Knowledge of three data transfer principles (e.g. near, remote, video, audio) and transfer principles.	Teaching, group discussion, presenting demo system/software	Oral exam	4x45Min

Learning unit T08, Telemedicine Services

Block	Learning outcomes	Content	Training methods & tools	Assessment	IUs
T08 - Tele medicine – services	The learner understands the interaction and information paths of medical monitoring systems, emergency systems linked to services and neighbours or relatives.	Interaction and information of telemedicine systems	Teaching, group discussion, presenting demo system/software	Oral exam Practical exam	4x45Min

Learning unit T09, Communication/Social Interaction Systems

Block	Learning outcomes	Content	Training methods & tools	Assessment	IUs
T09-Communication /Social interaction systems	The learner knows and is able to apply at least two criteria in order to analyze the social needs and possibilities using devices so that he has access to networking platforms.	Applying criteria in order to enable an access to networking platforms	Hands-on training with demo device, practical performance	Practical exam (live performance)	8x45Min

Learning unit T10, Usability

Block	Learning outcomes	Content	Training methods & tools	Assessment	IUs
T10 – Usability	The learner is able to present at least two characteristics of 3 different devices or software applications especially designed for elderly/handicapped people.	Presenting criteria in terms of navigation, position finding, alarm/safety purposes, monitoring, social networking communication platforms	Case study, group work	Presentation of results	8x45Min

Learning unit T11, Security/Safety – Sensors and Systems

Block	Learning outcomes	Content	Training methods & tools	Assessment	IUs
T11 – Security/safety – sensors and systems	The learner is able to implement a safety concept including the use of at least one commercially available system with the aid of sensoric systems.	Implementation of at least one commercially available system in terms actuators, sensoric movement and fall monitoring, monitoring of rooms.	Teaching, project work	Written exam	4x45Min

Learning unit T12, Security/Safety – Technical Solutions

Block	Learning outcomes	Content	Training methods & tools	Assessment	IUs
T12 – Security/safety – technical solutions	The learner understands the basic, technical working principles of security/safety solutions which are available on the market.	Principles concerning alarm systems, access control systems, movement and fall monitoring system, vital parameter monitoring system, emergency call system	Webinar, e-learning/moodle (SOLE approach) or face-to-face teaching	Oral exam	4x45Min

4. Delivery

When it comes to learning practical skills and how to apply theoretical knowledge in actual problem situations, apprenticeship learning is most likely the most preferred method. Apprenticeship engages all the senses and engenders real-to-life work-based situations in which immediate feedback may be given. However, in today's day and age, in an age of accelerated living, the juggling of career and extra-mural activities, and faced with the demands made by the compression of spatial horizons and temporal frames, it is a wonder that we have time to learn anything new at all. We have attempted to take all of these factors into consideration while developing this programme.

As a result, we have collated a number of teaching and learning methods that attempt, at least in a fundamental sense, to incorporate the need for brevity while at the same time offering a degree of comprehensiveness, to take into consideration the wide range of learner's backgrounds, experience and knowledge, and to do justice to the needs of the learner, but, simultaneously, the needs of the labour market as well.

4.1 Basic approach

Two fundamental features characterize our training approach: it is based on learning outcomes and is practically oriented.

For all the talk about formulating education and training in terms of learning outcomes, we are still very much at the beginning of the process. Traditionally, both training and education have been based on content; that is, what a person needs to know to do a particular job. The dynamics of the modern world, however, reveal knowledge itself to be a dynamic matter itself. The rapid pace of development of information and communication technologies obsolesces what we know today very quickly. Consequently, it is important not only to know data or have a reasonably-sized pool of information available, rather, a basic understanding of these technologies is essential as well. It was necessary, in a word, to invert the usual conception of training development and start and the end – at that point at which the trainee has to actually perform certain tasks in a competent way – and work backwards.

As was noted earlier, upon completion of the training, the student will be required to do things; that is, s/he will have to perform rather AAL-specific functions, and these will most probably be very context-specific. In other words, solving an AAL-related problem potentially covers a wide range of possibilities, and what may be considered appropriate solutions will depend upon a number of factors, including, but not limited to, the particular client involved and that person's individual needs and wishes as well. For these reasons, we have developed an approach that can provide for flexibility in learning and learning to learn, that is relevant to real-life situations, and that can be mastered by a person without a strong technical background. Furthermore, there is a need for the training to be as realistic as possible and specifically related to the environment in which the student will function upon the completion of training. In light of these important

factors, we decided upon taking an integrated, scenario-based approach to this programme. Consequently, it would be worthwhile to spend a moment considering just what is involved in this approach.

The knowledge, skills and competences to be achieved as a result of this training programme are to be acquired against a backdrop of a real-life scenario. An AAL Consultant is a person to whom one would turn whenever there is a need to provide technical assistance to an individual who has the need or desire to be able to be more self-sufficient in his/her daily life. As a result, we have developed what might be considered a "typical" scenario, involving an elderly lady, whom we have called Erna P. This scenario is included, of course, as Appendix 2. The training approach based on this scenario, then, can be generally described as follows:

1. At the very beginning of the programme, the student is exposed to this scenario. This could very well take the form of a group session in which everyone works together to establish a comprehensive and detailed understanding of the situation and the "problem" to be solved (that is, the essential issues to be addressed).
2. Optionally, it would be possible to have the students formulate their "answers" to the problem, perhaps in written form, so as to have a documented starting point for their learning experiences, a type of "pre-test" if you will. This has the advantage of allowing the programme tutor to be aware of specific trainee pre-knowledge and potential deficits, and it provides the learner with a baseline for the learning experience to follow.
3. The students then work through the programme, module/learning unit by module/learning unit. As noted earlier, the sequence is left up to the discretion of whoever is providing the training. The tables in Chapter 3 describing the modules/learning units include suggested training methods and tools (to be discussed in the next section), as well as possible assessment methods (to be discussed in the next chapter).
4. After all the modules/learning units have been completed, the comprehensive, final examination, based on the central scenario, will be conducted.

The reasons for maintaining a single scenario throughout are as follows: first, the short duration of the programme discourages the use of multiple problems. There is a lot to learn, but not a lot of time to learn it. It is believed that a thorough understanding of such a typical scenario will enable transfer to other, variable scenarios (in real life) by allowing the student to recognize and work with the underlying principles and theories. Second, the scenario provides a "red thread" of sorts, that is, a clearly defined point of reference to which everyone can refer. No knowledge remains purely theoretical, no skills remain unpracticed, and no competences are reduced to mere discussion points. Finally, as noted earlier, in terms of assessment and personal reflection and evaluation, the

scenario provides both tutor and students with a baseline along which progress and learning may be assessed.

This general approach, of course, does not prescribe how any individual module/learning unit should be handled. That is within the purview of the tutor conducting the training. For this reason, it would be helpful to provide a few notes on a variety of potential learning methods and techniques, which is the subject of the following section.

4.2 Training methods

There are a wide variety of teaching and training methods and tools which can be used in this programme. The underlying educational philosophy is, once again, active learning as close to real-life situations as possible. Some of these methods and tools will be considered self-evident but are included here for completeness' sake. Instruction and training are highly susceptible to trends and fashion and it is easy to simply overlook the obvious at times. As we lay down no specific requirements for the conducting of the modules/learning units, the implementing organization is free to develop their training as they see fit. Nevertheless, a number of these methods and tools are described briefly in the following.

- Simulations

The use of a case study as a backdrop to the programme is already an acknowledgement of the value of simulations. As has been repeatedly stated, Ideally, vocational education and training should occur as close to the job as possible, but many learners will not have a job or be between jobs while they are going through training. What is more, interference in the actual work processes of an organization may not be advisable. It is possible, however, to create simulated environments 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 number of role-playing scenarios that could be developed which require a decision on the part of the participants.

It will be recalled that the EQF, in particular, highlights the importance of problem-solving skills at various levels of responsibility and autonomy. 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.

- Project methodology

Given the breadth of the behavioural and business skills and competences that underlie the successful performance of this role profile, it is highly recommended that a project methodology be adopted wherever feasible, particularly in the business/management modules/learning units. 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.

- Lecture

Though often frowned upon these days, there is nevertheless a good deal of detail information that is necessary to successfully complete this programme. Therefore, it would be appropriate when bringing in such information to do this in lecture (that is, whole group) form. These need not necessarily encompass the entire instructional unit and can be effectively combined with other methods, such as demonstrations and plenum discussions.

- Demonstration

When it comes to the practical application of specific hardware or software solutions, demonstrations can be an effective way to enliven the instruction and to make students aware of potentials and limitations of the given solution. Of course, when possible, hands-on experience is always recommended. In other words, not only the trainer or tutor need lead these. Combining demonstrations with practical, student-led exercises are a sound means of knowledge transfer.

- Plenum discussions

Depending on the phase of instruction and the make-up of the learning group, it can worthwhile to pursue discussions in a larger context. These can result, of course, from lectures, demonstrations, or practical exercises, or they can build the focus of issue clarification, requirements identification, or problem resolution. Discussions of all types in varying sized groups also contribute to the development of behavioural (or soft) skills (as described in the next section).

- Group work

This encompasses all activities from two-person, rapid phase "buzz groups" to more formalized, structured problem-solving activities. As with plenum discussions, group work increases the students' abilities to work with others, to be team-oriented and communicative. Role-playing, of course, also fits into this category. This is particularly effective when combined with practical exercises, demonstrations, and mini-case studies.

- Mini-case studies

These can be informal, practical, ad-hoc scenarios developed by the trainer or tutor, but they can also include review and discussion of relevant reports published in the newspaper or trade press. Especially the latter can serve as good link to real-life activities, allowing the students to obtain a realistic perspective on demands made on the AAL practitioner. Also worth considering is focusing on specific aspects of the background case to consolidate student learning.

- Practical exercises

The technology and devices that can be employed in an AAL environment are quite varied. Compatibility issues can certainly arise, and there may be legal or health issues that need particular attention. As all the technology modules/learning units specify a practical component, every opportunity to provide the students with hands-on experience should be taken, especially when activities such as installation, configuration, or maintenance are involved.

- Learning journal

It is always beneficial to acquire new information and knowledge. It is also to all our advantage to gain new experiences as well. Even more important, however, is to actively record and reflect on this learning and these experiences as well. This is quite often overlooked in many educational and training sessions. It is highly recommended that students be required to maintain such a journal and that it be incorporated into the final assessment and programme debrief.

The list tools and methods described here is not comprehensive. We believe, however, that those addressed can play a significant and important role in effectively conducting the modules in this programme. It will be noted that a number of these, e.g., the simulation, practical exercises, group work and learning journal address not only cognitive components of learning, but address the affective dimension as well. This affective domain builds the backbone of the students' repertoire of behavioural skills, which is the focus of the next section.

4.3 Soft skills

In creating the AAL Consultant role profile, a number of so-called "soft skills", that is, behavioural skills were identified as being necessary for the successful implementation of the profile. (Please refer to the complete functional role profile in Appendix 1.) Eleven of such skills were identified. In summary, there are eleven behavioural skills which have been identified for this role profile, namely:

1. B01 Is creative, imaginative, artistic
2. B02 Is ethical
3. B03 Is precise and aware of details
4. B04 Is user/customer oriented
5. B05a Is committed to corporate strategy and aware of corporate culture
6. B06 Has good interpersonal skills
7. B07 Has presentation/moderation skills
8. B09 Can work in a team
9. B10 Can seek, organize and synthesize
10. B11 Can analyze (assess, evaluate, critique, test)
11. B12 Can explain (defend, argue, justify)

It is clear that these skills cannot, and should not, be trained in isolation. It makes little sense to attempt, as an example, through instruction alone to develop a proclivity for ethical behaviour (Behavioural skill B02). Rather, it is more effective if the trainer can motivate the learners in order to reinforce the message of the course and highlight the points the learner should carry through into their real life, where possible by providing concrete examples of the behaviour trainer is trying to teach. For learners to master a skill, the key is to design opportunities for practice. There is significant research supporting the idea that content that utilizes the brain's affective reasoning system is a better driver of behaviour than abstract analytical information like graphs, charts, and statistics, which goes through the brain's cognitive reasoning system. The training content should be made as affective or personal as possible, for example, by creating character profiles or framing content as a narrative or story. It is necessary to appeal to the learner's experiences or affective reasoning by using definitions, suggested steps, and illustrations of how to use the skill. It is for this reason that a project-based, case-study-oriented approach was selected for the current curriculum. Yet, regardless of which social media are chosen - case sharing or forum, and whatever methods are used - scenario-based learning or an interactive narrative profile - the trainers should always

remember that he/she is trying to change the learner's behaviour. Training should include work ethic, communication skills, a positive attitude, the ability to effectively manage time, problem-solving skills, flexibility, acceptance of criticism, all of which allow the learner to develop assuredness and confidence. All of these traits are extremely valuable to an employer of course. When combined with a strong set of so-called "hard" skills, namely technical training and experience in the IT field, adeptness for soft skills can take the students far. Managers seek out people who will exert effort on the job, communicate effectively with team members and clients, and who are able to approach problems and manage time successfully.

In the table on the following pages we will provide some suggestions on how the development of the specific behavioural skills needed to successfully fulfil the requirements of the AAL Consultant role profile may be trained and promoted in the daily training routine.

No.	Skill description	Content	Methods	Comments
B01	Is creative, imaginative, artistic	<p>Creative, innovative and transferable methods:</p> <ul style="list-style-type: none"> • Training creativity techniques • Indoor and outdoor trainings for using best techniques and transferring results into the profession 	<ul style="list-style-type: none"> • Techniques and methods drawn from business, art, science and design. • Exercises designed to effect shifts in perception, and help people break out of traditional mind-sets and re-frame their world-view • Discovering Creativity and Innovation styles • How to generate, analyze, evaluate and implement ideas • Develop critical thinking and strategic decision making skills. • How to collaborate effectively • How to enrol others in your ideas • Manage Creativity and Innovation processes • Design and conduct problem-solving session 	<p>Analyses conducted to this point indicate that creativity training has tangible effects on divergent thinking, problem solving, performance, and attitudes and behaviour. It's good to be wrong in the beginning so you can be right at the end, Williams says. "Nothing kills a new idea faster than common sense. You need common sense at the other parts of the process, but at the start, it will kill you every time."</p> <p>Creativity is a core competency and a crucial component of the innovation equation. Creativity requires whole-brain thinking; right-brain imagination, artistry and intuition, plus left-brain logic and planning.</p>
B02	Is ethical	<p>Basic understanding of the accuracy of ethical principles:</p> <ul style="list-style-type: none"> • ethics of responsibility • effective measures • sustainability 	<ul style="list-style-type: none"> • developing knowledge and understanding of ethical guidance and theories • moral issues, conflicts and responsibilities • moral values and thresholds • identifying specific moral aspects of a situation • acquiring moral courage • how to handle moral issues and conflicts 	<p>Ethics is more than just knowing the rules around confidentiality, integrity and objectivity. It's about identifying ethical dilemmas, understanding the implications and behaving appropriately. Ethics is integrated as soft skill qualification to develop the ethical capabilities – to could always know how to make the right decisions and justify them.</p> <p>Ethics training programs could be</p>

No.	Skill description	Content	Methods	Comments
			<ul style="list-style-type: none"> • communicate moral understanding • increasing sense of ownership and commitment toward organization's ethical culture and structures 	designed to develop individuals' knowledge of how to resolve the ethical issues faced by the organization and assist in implementing structures that support an ethical culture.
B03	Is precise and aware of details	Basic understanding and consequences of precise and aware of details.	<ul style="list-style-type: none"> • Training control techniques • Analyzing, identifying and defining requirements • Risk analysis / SWOT analysis • Context awareness 	<p>Being precise and aware of details relates to how much the employee really knows about environmental impact, whether this concerns his/her activity or the organization as a whole, including what the organization's policy is and where to find it. In addition to this, the is employee aware of the consequences of what might happen should he/she not be able to conduct his/her activity within the requirements.</p> <p>Thinking of a person who is precise, we describe them as detail oriented, accurate, definite and exact.</p> <p>A precise person shall work with great attention to details.</p> <p>This type of skill has to be delimited 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 the precision needs a lot of concentration, so the working environment can influence it. In order to be precise, the employees have to know what the goals are, to what extent precision has to be achieved.</p>
B04	Is user/customer oriented	Fundamental understanding of user's life-world	Training of improving customer orientation should include the following	Customer orientation can very much be regarded as a long-term and complex

No.	Skill description	Content	Methods	Comments
		<ul style="list-style-type: none"> • Transdisciplinary approach • Analyzing and understanding customers need • Identifying customers problems of life-world 	<p>steps:</p> <ul style="list-style-type: none"> • Developing a customer orientation concept. • Determination of customers profile, their needs and expectations from the company. • Defining measures for improving customer orientation - Definition of the different modes and situations of interacting with customers: interface workshops for improving internal cooperation, telephone contact, emailing, sales, etc. • Exercising how to determine customers' needs: Different role plays, where customers roles are described and have to be played by some learners, while other play the employee. The situations have to be described realistically in order to be easy for the participants to enter into the parts. • Developing and testing instruments for regular reviews on the status of customer orientation 	<p>subject for corporate development. It is very important for the internet industry and can easily influence the development of the company. Being part of the service industries, the internet companies are aware of the fact, that they should constantly improve the competence of their employees in this respect in order to bring value added to the company. When consistently and comprehensively approached it equally covers strategic, cultural and behavioural aspects, as well as operational and methodological factors.</p>
B05a	Is committed to corporate strategy and aware of corporate culture	<p>General concepts of corporate identity, strategy and culture</p> <ul style="list-style-type: none"> • Marketing aspects of CI • Communication the CI • Defining and designing 	<p>Trainers can guide their learners to practice self-assessments regarding their future commitment to a potential job within the internet industry by asking them for responses that includes descriptions like:</p> <ul style="list-style-type: none"> • What you would like to achieve by working in the internet industry. Find out which is your motivation for belonging to this field 	<p>Managers and employees in the companies have control over resources, activities and business processes that are important for getting success and have to have the most knowledge about the corporate identity, strategy and culture.</p> <p>One of the first things a new employee learns is some of the company/organization's legends -</p>

No.	Skill description	Content	Methods	Comments
			<ul style="list-style-type: none"> • What it takes to work in the field of internet-related jobs. Please, ask professionals of this area or similar one • Advantages and disadvantages of belonging to the internet industry regarding another field of work. • Do you think your goals are according to what the internet industry can offer? 	<p>perhaps how the founder worked long hours and despised formal educational and training qualifications. Through tradition, history and structure, companies build up their own culture. Culture therefore gives a company a sense of identity – “who we are”, “what we stand for”, “what we do”. A “high performance culture” exists when everyone in the company shares the same vision and where they trust and value each other's contribution.</p> <p>Corporate culture training could be designed to improve the collective capacity to manage organizational change successfully and has to be tailored to the specific needs and culture of the organization as an interactive session designed to accomplish several key objectives: understanding of what is culture, what is the current reality of the company culture, what must be changed; business change or strategy, with new ways of working - clarity of mission, decision making, engagement of people, organizational learning, fostering collaboration across boundaries; internal communication - between management and employees represents an important factor in improving employees’ commitment to the company; as well as external communication – between employees and customers; rewards and recognition items as very important elements of the motivation of the</p>

No.	Skill description	Content	Methods	Comments
				employees.
B06	Has good interpersonal skills	Training interpersonal skills <ul style="list-style-type: none"> • How to communicate with others • Confidence and our ability to listen and understand • Problem solving, decision making and personal stress management 	<ul style="list-style-type: none"> • Keeping all students involved • Creating and using a learning journal • Project-based work • Small-group work • Role playing • Team work • Games 	<p>Effective Interpersonal skills improve the ways people communicate and deal with clients, suppliers and internal colleagues at all levels.</p> <p>These kinds of skills also include emotional intelligence, confidence, ability to listen and understand, willingness to interact. Other interpersonal skills are problem solving, decision-making and time and stress management. People who have a high level of interpersonal skills have a high probability to succeed in the labour market. Trainees have to be aware of the impact that their behaviour on other people will create (customers and colleagues).</p> <p>In order to increase the interpersonal skills of the students, the training shall include the following topics: ways how to improve the effectiveness of the communication and reduce misunderstandings; the importance of active listening; assertiveness skills; understanding and valuing differences; how to delegate effectively; handling criticism constructively; decision making, problem solving; creating an Action Plan for the future.</p>
B07	Has presentation/moderation skills	Presentation and moderation trainings <ul style="list-style-type: none"> • Target group oriented presentation • Moderation methods and techniques 	<ul style="list-style-type: none"> • Project-based work • Small-group work • Team work • Cooperative exercises 	<p>Speaking and presenting is another way to start conversations and build relationships.</p> <p>Presentation and moderations skills are of inevitable importance in the business</p>

No.	Skill description	Content	Methods	Comments
			<ul style="list-style-type: none"> • Demonstration 	<p>world. The employees, shall be able to communicate to different audiences, convince them in their ideas and conduct different kind of negotiations for his company at different levels, (company-customer, company-suppliers, or within the same company). Often they have to present their projects, that's why this subject is so important.</p> <p>Presentation and moderation skills can be learned very easy in different workshops. These workshops should provide the main steps in the preparation of a presentation, help trainees to set goals of the presentation, to plan the visual aids and above all to deliver the presentation, to overcome the stage fright and to convince the audience. This knowledge will help the trainees to master also the everyday negotiations and problems with customers.</p>
B09	Can work in a team	<p>Main content to be trained:</p> <ul style="list-style-type: none"> • Team training • Co-operation in teams • Roles and tasks in teams • Conflict management 	<ul style="list-style-type: none"> • Team work • Simulations • Role playing • Games 	<p>The role of teams in companies and organizations is now recognized as a vital factor in meeting business goals and objectives. But simply bringing together a group of highly skilled people and then leaving them to deliver will not always generate the expected results. Each member of the team must acknowledge their role in generating team success.</p> <p>Training explores the real characteristics of a team and its infrastructure to enable team members</p>

No.	Skill description	Content	Methods	Comments
				<p>themselves to maximize from the strengths and talents of the team, the aspects of effective team working, and how to work through difficulties as the team develops its competence.</p> <p>Students should know how to identify the key characteristics of the team, catalysts and barriers for synergistic team working, evaluate the environment within which the team must operate, be able to determine their own strengths and talents in the team, describe their own preferred role when working in a team and devise those factors that are critical to the team's success and focusing on planning the task ahead. Students should be able to contribute to high impact team meetings, whether this is as a team member or as a team leader/project manager and positively manage the sources of potential conflict situations.</p> <p>There are many ways to train teamwork skills. One good example showing the advantages of the team work are the so called NASA games (Lost at sea, Lost in the desert, On the Moon). These exercises are proper also for the previous subjects as precision, analytical thinking and organizing and synthesizing.</p>
B10	Can seek, organize and synthesize	<ul style="list-style-type: none"> • Basics in scientific working • Researching AAL attendance methods and systems 	<ul style="list-style-type: none"> • Team work • Simulations • Role playing 	Information technologies are giving access to a broad range of information for users with Internet access. This situation unquestionably brings about

No.	Skill description	Content	Methods	Comments
		<ul style="list-style-type: none"> • Transferring the use of methods • Developing concepts for implementation • Knowing – recalling specific information from memory; • Comprehending – understanding concepts in own words; • Applying - using concepts appropriately in new situations; • Analyzing - understanding the relationships between ideas; • Synthesizing – bringing all the elements into a comprehensive whole; • Evaluating - forming an opinion and justifying it through persuasive argument 	<ul style="list-style-type: none"> • Games 	<p>great advantages for our daily work and life in general. Nevertheless, the offered information is vast so that it becomes important to know how to seek for specific information, be able to define criteria for structuring and organizing this information according to one's own needs and most importantly to draw coherent conclusions. People working in the field of internet-related services need these three skills to be efficient in their jobs.</p> <p>There are several factors that contribute to good skills in this connection. Each one is essential to making the most effective use of the valuable time. Taken together, they will help the students build a solid foundation for improving their performance and achieving their goals.</p> <p>The so called NASA games (Lost at Sea, Lost in the Desert, On the Moon) are proper also for analytical thinking and organizing and synthesizing.</p>
B11	Can analyze (assess, evaluate, critique, test)	<p>Ability of problem analyzing</p> <ul style="list-style-type: none"> • Problem solving methods • SWOT analyzes • evaluation and testing methods 	<p>The following structure suggests a method for developing these analytic skills:</p> <ul style="list-style-type: none"> • Determine the objectives of the research; this will help organizing the information and keeping the analysis focused. • Summarize large amount of data. • Analyze "quantitative" information: e.g. rankings, ratings, and statistics. Separate, tabulate, and categorize 	<p>We are living now in the early decades of the information revolution. Never before has so much information been available, so easily and inexpensively and about so many 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 what this information is telling us.</p> <p>Basically analytical skill is to visualize a given situation, task, project or issue</p>

No.	Skill description	Content	Methods	Comments
			<p>the information.</p> <ul style="list-style-type: none"> • Analyze “qualitative” information: at this phase, results have to be compared in view of the research objectives, and information has to be sorted according to the set standards. • Being assigned a large project. • Purchasing. • Resolving a technical issue. • Handling conflicts. • Draft conclusions and recommendations in a report. • Report results: the reporting of the results can take different forms, as required by the research objectives. So it can be a written or oral report, a public presentation, etc. 	<p>from several angles in order to breakdown it into smaller steps. In our day to day life whether official, personal or social, we have to deal with complications. Some situations are complex which snatch the peace of mind because our brain gets stuck on how best to handle such state of affair. This is where the analytical skills help. Training should clear the prime purpose for the analysis of any given situation - to get to know the root cause(s) of the issue, to forecast the impact and to plan corrective/preventive actions strategy.</p>
B12	Can explain (defend, argue, justify)	<ul style="list-style-type: none"> • Customer oriented communication techniques • Communication training • Argumentation techniques • Convince strategies 	<ul style="list-style-type: none"> • Team work • Simulations • Role playing • Games 	<p>People with a history of not having their thoughts and feelings valued by others tend to be preoccupied with justifying, arguing, defending, and explaining every little thing that they think and feel. 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, it assists the learner to assimilate and accommodate new information or experiences. Explanations fulfil two objectives: (1) to introduce new topics by giving some background about its usefulness and application: and (2) to</p>

engAGEnt: R5 AAL Consultant Curriculum

No.	Skill description	Content	Methods	Comments
				<p>describe the subject in a simple, complete and understandable way. A good command of this skill will result in a better communication within the own team or company and with customers.</p> <p>A professional able to give appropriate explanations regarding certain topics have to be sure that their explanations are clear, 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, according to the audience.</p>

Throughout the programme, the trainer must evaluate the social skills of the learners and give thoughtful feedback on their strengths and weaknesses. On the other hand the trainer should be also prepared to give feedback on the trainees' development, criticize if they have not done an exercise properly, offer alternatives, and give the learner a chance to do the exercise again in order to demonstrate improved skills.

5. Assessment

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.

Different organisations in different cultures approach the topic of assessment in very different ways. The primary criteria to be met, however, is that the *method of assessment adequately reflect the requirements necessary to fulfil a given learning outcome*. Outcomes, in the end, are actions, the demonstration of one's ability to perform specified tasks or to respond to a given situation in an adequate manner. Such actions and responses cannot be seen in a strict, digital, all-or-nothing manner. There are degrees of performance, and these must always be kept in mind. Furthermore, we, as the programme developers cannot say with absolute certainty that a certain proportion of "correctness" (e.g., being able to identify seven devices correctly) is an adequate measure of performance. It is our position that purely quantitative criteria are insufficient to assess whether a student will be able to perform successfully as an AAL Consultant upon completion of the programme. For this reason, we recommend three different levels of assessment: that at the module/learning unit level, a final, specific assessment, and an overall consideration of the student's performance throughout the programme. At all levels, however, we recommend establishing a general pass-fail approach. These levels and the overall approach are discussed in more detail in the following sections.

5.1 Learning unit assessment

As seen in the tables included in Chapter 3, assessment methods are suggested for each individual module/learning unit. Depending on the type of instructional method used, these can be oral, written, or practical in nature. A standardized written exam at the end of each module/learning unit, be it essay, short answer or multiple-choice is discouraged. This may, but it may not, be the most appropriate way of determining performance. It is reasonably safe to assume that the number of students taking any given module will be relatively small. It is imperative, therefore, that the trainer or instructor be fully engaged with each learner and carefully observe each student's behaviour and contribution in each session.

Providing specific and detailed feedback is another way of keeping in touch with students' learning and progress throughout a given module/learning unit. We should keep in mind that it is not just specific, individual performance that is at stake in these modules. Our

discussion of behavioural skills in the previous chapter should help us be aware of the implicit goals that the course is designed to address as well. In other words, our suggestion is a type of assess-as-you-go model.

For this reason, just as we recommend each student developing an individual learning journal, we suggest that each trainer, instructor or tutor keep track of his or her sessions in a teaching journal. This can form the basis of direct, personal engagement with each student, a way of "comparing notes", so to speak, so that the student is always aware of how s/he is doing in relation to the learning outcomes and expectations the instructor has placed on the module as well.

5.2 Final assessment

We noted earlier that using the standard case scenario as both a pre- and post-test can be an effective way of both monitoring and revealing individual student progress. Given the nature of the functional role of an AAL Consultant, and given the nature of the programme-level learning outcomes, a group (or, perhaps, team) based approach to the final assessment appears to be a viable and appropriate approach to take.

Such an approach could be structured as follows. After clarifying the scenario in plenum, if numbers permit, the group could be divided into smaller teams. Each team is then charged with developing and proposing a "solution". Once the time for this development has transpired, the teams present their solutions in plenum, after which (either individually or after all presentations have been made) questions, discussion and feedback can be made by the group and by the responsible tutor. During the solution-development phase, of course, the instructor or tutor should be circulating amongst the teams, making observations for his own feedback.

For documentation purposes, each individual should be given feedback for the group in which s/he participated as well as personal feedback, either in oral or written (preferable) form. This latter feedback should take place individually with each student and should include the students' own observations and commentary derived from his or her own learning journal. Successful completion of the final assessment, of course, is driven by the degree to which the student exhibits fulfilment of the learning outcomes for the programme as whole, combined with the tutor's or instructor's evaluation of how well s/he thinks the student will fare as an AAL Consultant on their own after the programme has been completed.

5.3 Overall assessment

A final certificate and certificate supplement can be issued once a student has successfully completed each module/learning unit and the final, comprehensive assessment.

Regardless of the specific approach taken, there are a few basic principles that must be kept in mind throughout:

1. Competence, not necessarily specific knowledge or particular skills, is what is being assessed.
2. The students must be aware of the learning outcomes, for the programme and for each individual module/learning unit. It is the tutor's or instructor's obligation to ensure that this is the case.
3. The criteria that will be used for assessment must be clear and should be formulated in written form so that the student has access to them at all times and can refer to them if necessary. As is the case with the learning outcomes, it is the tutor's or instructor's obligation to ensure that the student understands precisely what is expected of him/her.
4. All assessment criteria should be known to the students before the programme begins. This applies as well to each module/learning unit.
5. It is also the responsibility of the tutor or instructor to provide feedback in a timely manner. If a student is not fulfilling some specified criteria or if the student is in danger of not fulfilling such criteria before the end of a module/learning unit, s/he needs to be made aware of this so that s/he can take whatever corrective action is required.

The most fundamental principle of assessment should be not to see who is the best or who is the worst in the group, but rather to ensure that those individuals who, after completion of the programme, call themselves AAL Consultants should be able to function effectively as such and make those individuals, their future clients, who are in need of their services feel they were in good hands.

6. Resources

The resources required to conduct this programme will vary depending on the approach taken to conducting the course. In this curriculum, we have, wherever possible, provided suggestions that are a result not only of our development work, but also that are based on the pilot training session that were conducted. These are the focus of this chapter.

6.1 Learning materials

The purpose of a curriculum such as this one is not to specify in detail how a course should be planned and implemented. The primary purpose of a curriculum is to describe the "what" of a given course of instruction. Such a course is built upon a fundamental educational philosophy, but with clear, overall objectives in mind, which, in light of certain foreseeable constraints, can be structured in a certain way. In other words, the curriculum should make clear why a particular qualification is necessary or desirable and it should specify those outcomes that must be met. In this case, what it is necessary to know and how one must be able to act in order to fulfil the role of an AAL Consultant. Consequently, the heart of the curriculum are the learning outcomes that are described in chapters 3 and 4.

The remaining descriptors are variable. Each training organisation will best know how to best approach achieving these outcomes. As a result, the teaching/training methods and tools, assessment methods, and timings are suggestions rather than specifications, and should be treated as such. The specific target group of learners; local customs, legal requirements and traditions; as well as organisational requirements and capabilities all play a role in how a given qualification must be organised and delivered. For this reason, the actual details of organisation, presentation, delivery and assessment are left up to the implementing training organisation, as is the development of partial qualifications derived from the curriculum described here.

It should be noted that during the course of the engAGEnt Project, however, a number of the curriculum modules were piloted in Austria, France, Germany, and Greece. The modules involved included M01, M02, M03a, T01, T02, T04, T09 and T12. Teaching and learning materials that were used in these sessions (primarily in English) are available on the engAGEnt website (www.engagent.eu).

6.2 Learning unit assessment questions

While we suggest a project-based approach, in light of the learning outcomes identified for each module/learning unit, some suggested assessment questions were developed as well. It will be noted that the suggested assessment methods include oral, written and practical approaches, and it is in this context that the questions included in the following table should be understood. These may be used in more formal assessment procedures or may, if so desired, be incorporated into the main body of instruction as well.

No.	Module	Question(s)
T01	Physical infrastructure for AAL systems and devices	<p>Analyze Erna P.'s home environment , in particular in regard to the given technical infrastructure. Examine the wider environment and the in-house situation.</p> <p>Give at least 3 criteria that can be used to examine the possibilities of the installation and use of security and surveillance equipment, access control and other information and communication technology.</p> <p>Give an overall evaluation and justify whether the effort seems reasonable to improve the technical infrastructure in Erna P. 's house.</p> <p>What can be made possible?</p> <p>What would be the costs and disadvantages?</p>
T02	Barrier-free living [Additional task]	<p>Analyze Erna P.'s home environment in regard to accessibility. Give at least two subjects that are relevant in the context of barrier-free living.</p> <p>Make specific proposals which would improve Erna P.'s housing situation. Name some advantages and disadvantages of each measure and give recommendations.</p> <p>Erna P. wants to be able to move safely in her house and she also wants to be able to leave it regularly. Therefore certain construction measures are necessary.</p> <p>Who needs to be involved in the decision-making process?</p> <p>Who needs to be informed and who should be called upon for advice?</p>
T03	AAL systems - Health monitoring I	<p>Which vital parameters are of interest for Erna P. and her illnesses?</p> <p>Would a continuous measurement and monitoring of specific vital parameters be useful for Erna P.?</p>
T04	AAL systems - Health monitoring II	<p>Describe a specific medical measuring device.</p> <p>Which you would recommend to Erna P. for improved health monitoring?</p> <p>What are the specific features, and benefits of the device?</p> <p>What are its advantages?</p> <p>What are the drawbacks?</p>

No.	Module	Question(s)
T05	AAL systems - Alarm systems and home monitoring	<p>Analyze the safety conditions in Erna P. 's life. Describe the principle of</p> <ul style="list-style-type: none"> a) an improved access control to Erna P. 's house, b) an alarm system and c) an automatic, sensor-based, fall-recognition system. <p>What would you recommend? Justify your recommendation.</p>
T06	AAL systems - Navigation, locating, position finding	<p>Explain measures which could help Erna P. find her way around in the city. Explain to Erna P. the functionality of a navigation device and the benefits it provides for her.</p> <p>How and where could Erna P. practice the use of such a navigation device so that she becomes motivated to use it?</p> <p>Advise Erna P. regarding a navigation device. To which criteria should Erna P. pay particular attention when buying a navigation device?</p>
T07	Telemedicine systems	<p>Which of Erna P.'s medical parameters should be monitored ? Is a continuous monitoring useful/ important?</p> <p>How would you explain the basic functioning of P. telemetric health monitoring to Erna P. and how would you motivate her for using it?</p> <p>What problems could come up?</p>
T08	Telemedicine services	<p>What are the possible (telemedicine) services you should discuss with Erna P.?</p> <p>Which services would you recommend to her?</p>
T09	Communication/social interaction systems	<p>Which hardware (which device) would you recommend to Erna P. so that she can improve the contact with her children?</p> <p>What possibilities do you see to bring Erna P. in regular contact with other people?</p> <p>How could Erna P. find out about events nearby and possibilities to participate?</p>

No.	Module	Question(s)
T10	Usability	Describe potential factors which make the use of her son's SmartPhones difficult for Erna P. What is important for Erna P. so she is able to get along with such a device?
T11	Security/safety - sensors and systems	What leads to Erna P.'s feeling of insecurity? What (basic) measures can improve her sense of security? What technical measures would help?
T12	Security/safety - technical solutions	What specific products, services or equipment would you recommend to Erna P. for the improvement of domestic and personal security?

6.3 Case study

In developing the overall case scenario (see Appendix 2, and the relevant sections of chapters 3, 4, and 5), consideration was also given to the final assessment. Consequently, four task areas were identified:

1. the social environment
2. needs analysis
3. conflict resolution (especially in light of the required behavioural skills), and
4. calculation.

For each of these areas, questions were developed that we think are suitable for inclusion the final assessment. These are listed in the following table.

Task	Question(s)
Social environment	Which people can you identify in Erna P.'s environment and in which relation are they to her?
Analysis of needs	In preparation for the construction measures. Erna P. becomes unsure of herself and withdraws more and more from social life. Sometimes she questions the sense of the measure completely. She feels that her wishes and views are not being taken seriously enough. What would you do in this situation so that Erna's needs move back to the centre of attention?
Conflict resolution	Together with Erna you have selected a senior-friendly cell phone that she can use well and that she wants to buy. Her son is not very excited about that. He fears that his mother will now often call him about little things at any time day or night. What do you do to resolve the situation in an acceptable way for both sides?
Project calculation	Erna has now decided on the conversion to barrier-free living. Calculate this project and create a realistic financing plan for Erna P.

Annexes

1. AAL Consultant, complete role profile
2. Case Study

1. AAL Consultant profile

Role profile description

Role title	AAL Consultant	
Also known as		
Relevant professions		
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.	
Responsibilities	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"> • Evaluation of customers' needs • Consulting strategies • Evaluation of consulting services • Selection of adequate products and services 	<ul style="list-style-type: none"> • Ethical issues' report • Market analysis • User requirements • Suggestion of AAL products/devices related to ICT • Usability evaluation

Role title	AAL Consultant
Also known as	
Relevant professions	
Main tasks	<ul style="list-style-type: none"> • Remain informed of new and emerging AAL technologies and systems • Analyse market, identify market trends and user requirements • Understand the expectations of consumers and other potential stakeholders • Selecting and approving befitting products and solutions • Provide consumers with the most suitable solution tailored to their needs, requirements and capabilities • Communicates with customers as well as with service providers • Evaluate customer needs and formulate consulting strategies • Interface technology, client needs and care-giving services • Preparing and negotiating contracts with suppliers • Monitor compliance with standards and regulations on ICT • Provide advice on how to optimize the use of existing tools and systems • Raise awareness of information technology innovations and potential value to a business
Environment	<p>Usually works independently in close collaboration with the AAL System Architect and the Communication Manager.</p> <p>The AAL Consultant can work as an external consultant or internally within the company.</p>
KPIs	<ul style="list-style-type: none"> • Number of new customers • Customer satisfaction

Tab. A1: *Profile description*

Role profile summary

AAL Consultant				Technical					Behavioural										Business						
Area	No.	Competence	Importance	T01	T02	T03	T04	T05	B01	B02	B03	B04	B05a	B05b	B06	B07	B08	B09	B10	B11	B12	M01	M02	M03a	M05
Plan	A.1.	I.S. and Business Strategy Alignment	Low	X	X	X	X	X				X										X			X
	A.2.	Service Level Management																							
	A.3.	Business Plan Development	Medium	X		X	X	X	X				X									X			
	A.4.	Product or Project Planning	Medium	X		X	X	X				X							X			X			
	A.5.	Architecture Design	Medium		X					X									X						
	A.6.	Application Design	Low		X						X	X							X						
	A.7.	Technology and Market Watching	Medium			X		X											X	X				X	
	A.8.	Sustainable Development	High	X		X	X	X		X											X				
Build	B.1.	Design and Development																							
	B.2.	System Integration																							
	B.3.	Testing																							
	B.4.	Solution Deployment																							
	B.5.	Documentation Production																							
Run	C.1.	User Support																							
	C.2.	Change Support	Medium		X				X							X						X			
	C.3.	Service Delivery																							
	C.4.	Problem Management																							
Enable	D.1.	Information Security Strat Development																							
	D.2.	ICT Quality Strategy Development																							
	D.3.	Education and Training Provision	High	X		X	X	X					X		X					X		X			
	D.4.	Purchasing																							
	D.5.	Sales Proposal Development																							
	D.6.	Channel Management																							
	D.7.	Sales Management																							
	D.8.	Contract Management	Medium																						X
	D.9.	Personal Development																							
	D.10.	Information and Knowledge Management	Medium	X	X	X		X											X	X					X
Manage	E.1.	Forecast Development	High	X	X	X	X	X				X	X									X			
	E.2.	Project and Portfolio Management	Medium	X	X		X	X					X				X					X			
	E.3.	Risk Management																							
	E.4.	Relationship Management	Medium							X															
	E.5.	Process Improvement																							
	E.6.	ICT Quality Management																							
	E.7.	Business Change Management																							
	E.8.	Information Security Management	High			X		X					X				X						X	X	
	E.9.	IT Governance																							

Competence areas (Dimension 1)

Competences (Dimension 2)

Knowledge/skills (Dimension 3)

Fig. A1: Profile summary

Detailed profile

A. PLAN

A. 1 IS and Business Strategy Alignment

<i>Dimension 2: e-Competences: Title + generic description</i>	The AAL Consultant is aware of the long term business requirements and determines the IS model in line with the organisation's AAL policy.	
<i>Dimension 3: e-Competence proficiency levels</i>	Level 1	
	Level 2	
	Level 3	
	Level 4	Provides advice for the construction and implementation of long term innovative IS solutions.
	Level 5	Provides IS strategic advice to reach consensus and commitment from the management team of the enterprise.
<i>Dimension 4: Knowledge and Skills</i>		T01: Can measure and report on AAL T02: Has knowledge about existing best practice frameworks in IT 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 B04: Is user / customer oriented M01: Has knowledge of project management principles M05: Can lead a team

A.3 Business Plan Development

<i>Dimension 2: e-Competences: Title + generic description</i>	S/He 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.	
<i>Dimension 3: e-Competence proficiency levels</i>	Level 1	
	Level 2	
	Level 3	
	Level 4	Exploits specialist knowledge to provide understanding of specific AAL environment etc.
	Level 5	

<i>Dimension 4: Knowledge and Skills</i>		<p>T01: Can measure and report on AAL</p> <p>T03: Can explain how (technical) AAL measures add value to the business</p> <p>T04: Has knowledge about compliance with healthcare laws and policies</p> <p>T05: Has knowledge about latest AAL developments</p> <p>B01: Is creative, imaginative,</p> <p>B05: Is committed to corporate strategy and aware of corporate culture</p> <p>M01: Has knowledge of project management principles</p>
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A.4 Product or Project Planning

<i>Dimension 2: e-Competences: Title + generic description</i>	In analysing and defining the current and target status of a product, the AAL consultant acts systematically in estimating cost effectiveness and design decision templates. S/He maintains a project diary and exploits specialist knowledge in the specification development to create and maintain standard and complex documents of the product (such as structure plans, timescales, milestone descriptions).	
<i>Dimension 3: e-Competence proficiency levels</i>	Level 1	
	Level 2	Acts systematically to document standard and simple elements of project.
	Level 3	Exploits specialist knowledge in specification development to create and maintain complex documents of the project.
	Level 4	
	Level 5	
<i>Dimension 4: Knowledge and Skills</i>		<p>T01: Can measure and report on AAL</p> <p>T03: Can explain how (technical) AAL measures add value to the business</p> <p>T04: Has knowledge about compliance with healthcare laws and policies</p> <p>T05: Has knowledge about latest AAL developments</p> <p>B04: Is user / customer oriented</p> <p>B10: Can seek, organize and synthesize</p> <p>M01: Has knowledge of project management principles</p>

A.5 Architecture Design

<i>Dimension 2: e-Competences: Title + generic description</i>	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.	
<i>Dimension 3: e-Competence proficiency levels</i>	Level 1	
	Level 2	
	Level 3	Exploits specialist knowledge to define relevant ICT technology and specifications to be deployed in the construction of multiple AAL ICT projects, applications or infrastructure improvements.

	Level 4	Provides advice to define the strategy to implement ICT technology compliant with business need. Takes account of the current technology platform, obsolescent equipment and latest technological innovations.
	Level 5	
<i>Dimension 4: Knowledge and Skills</i>		T02: Has knowledge about existing best practice frameworks in IT B01: Is creative, imaginative, B03: Is precise and aware of details B10: Can seek, organize and synthesize

A.6 Application Design

<i>Dimension 2: e-Competences: Title + generic description</i>		Defines the most suitable AAL 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.
<i>Dimension 3: e-Competence proficiency levels</i>	Level 1	
	Level 2	Organises the overall planning of the design of the application.
	Level 3	Accounts for own and others actions in ensuring that the application is correctly integrated within a complex environment and complies with user/customer needs.
	Level 4	
	Level 5	
<i>Dimension 4: Knowledge and Skills</i>		T02: Has knowledge about existing best practice frameworks in IT B03: Is precise and aware of details B04: Is user / customer oriented B10: Can seek, organize and synthesize

A.7 Technology and Market Watching

<i>Dimension 2: e-Competences: Title + generic description</i>		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.
<i>Dimension 3: e-Competence proficiency levels</i>	Level 1	
	Level 2	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.
	Level 3	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.
	Level 4	
	Level 5	

<i>Dimension 4: Knowledge and Skills</i>		<p>T03: Can explain how (technical) AAL measures add value to the business</p> <p>T05: Has knowledge about latest AAL developments</p> <p>B08: Can communicate effectively</p> <p>B10: Can seek, organize and synthesize</p> <p>B11: Can analyse (assess, evaluate, critique, test)</p> <p>M02: Has knowledge of budgeting / estimating issues and practices</p>
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A.8 Sustainable Development

<i>Dimension 2: e-Competences: Title + generic description</i>	Estimates the impact of AAL solutions. Advises AAL stakeholders on sustainable alternatives that are consistent with the AAL strategy.	
<i>Dimension 3: e-Competence proficiency levels</i>	Level 1	
	Level 2	
	Level 3	
	Level 4	Provides advice on the definition of objectives and strategy of sustainable IS development in accordance with the organisation's sustainability policy.
	Level 5	
<i>Dimension 4: Knowledge and Skills</i>		<p>T01: Can measure and report on AAL</p> <p>T03: Can explain how (technical) AAL measures add value to the business</p> <p>T04: Has knowledge about compliance with healthcare laws and policies</p> <p>T05: Has knowledge about latest AAL developments</p> <p>B02: Is ethical</p> <p>B11: Can analyse (assess, evaluate, critique, test)</p> <p>B12: Can explain (defend, argue, justify)</p>

C. RUN

C.2 Change Support

<i>Dimension 2: e-Competences: Title + generic description</i>	Implements and provides guidance for the evolution of an IT solution. S/He also provides advice on controls and schedules software or hardware modifications to prevent multiple upgrades creating unpredictable outcomes. Advises on how to minimise service disruption as a consequence of changes and adheres to defined service level agreement (SLA).	
<i>Dimension 3: e-Competence proficiency levels</i>	Level 1	
	Level 2	
	Level 3	Provides advice on how ensures the integrity of the system by controlling the application of functional updates, software or hardware additions and maintenance activities.
	Level 4	
	Level 5	

<i>Dimension 4: Knowledge and Skills</i>		T02: Has knowledge about existing best practice frameworks in IT B01: Is creative, imaginative, B04: is user/ customer oriented B06: Has good interpersonal skills B12: Can explain (defend, argue, justify)
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D. ENABLE

D.3 Education and Training Provision

<i>Dimension 2: e-Competences: Title + generic description</i>	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.	
<i>Dimension 3: e-Competence proficiency levels</i>	Level 1	
	Level 2	
	Level 3	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.
	Level 4	
	Level 5	
<i>Dimension 4: Knowledge and Skills</i>		T01: Can measure and report on 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 B02: Is ethical B05: Is committed to corporate strategy and aware of corporate culture B06: Has good interpersonal skills B11: Can analyse (assess, evaluate, critique, test) M01: Has knowledge of project management principles

D.8 Contract Management

<i>Dimension 2: e-Competences: Title + generic description</i>	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.	
<i>Dimension 3: e-Competence proficiency levels</i>	Level 1	
	Level 2	
	Level 3	Preparing and negotiating contracts with suppliers
	Level 4	

	Level 5	
<i>Dimension 4: Knowledge and Skills</i>		M03: Has knowledge of legal issues

D.10 Information and Knowledge Management

<i>Dimension 2: e-Competences: Title + generic description</i>	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.	
<i>Dimension 3: e-Competence proficiency levels</i>	Level 1	
	Level 2	
	Level 3	
	Level 4	
	Level 5	Correlates information and knowledge to create value for the business. Applies innovative solutions based on information retrieved.
<i>Dimension 4: Knowledge and Skills</i>	T01: Can measure and report on AAL T02: Has knowledge about existing best practice frameworks in IT T03: Can explain how (technical) AAL measures add value to the business T05: Has knowledge about latest AAL developments B08: Can communicate effectively B09: Can work in a team B10: Can seek, organize and synthesize M05: Can lead a team	

E. MANAGE

E.1 Forecast Development

<i>Dimension 2: e-Competences: Title + generic description</i>	He uses user inputs (e.g. user needs, acceptance of products/services) and assesses the user's communication needs to make short-term forecasts. He applies relevant metrics to support the care provider in the decision-making process.	
<i>Dimension 3: e-Competence proficiency levels</i>	Level 1	
	Level 2	
	Level 3	Exploits skills to provide short-term forecast using user inputs and assessing the user's communication needs.
	Level 4	
	Level 5	

<i>Dimension 4: Knowledge and Skills</i>		<p>T01: Can measure and report on AAL</p> <p>T03: Can explain how (technical) AAL measures add value to the business</p> <p>T04: Has knowledge about compliance with healthcare laws and policies</p> <p>T05: Has knowledge about latest AAL developments</p> <p>B04: Is user / customer oriented</p> <p>B11: Can analyse (assess, evaluate, critique, test)</p> <p>M01: Has knowledge of project management principles</p>
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E.2 Project and Portfolio Management

<i>Dimension 2: e-Competences: Title + generic description</i>	He understands and applies the principles of project management. That means that he defines activities, responsibilities, critical milestones, resources, skills needs, interfaces and budget. He is able to apply methodologies, tools and processes. He is able to meet identified needs by implementing new, internal or external processes. He makes choices, gives instructions and bears responsibility for a team (i.e. relationship within the team, team objectives). Sometimes he takes the overall responsibility for an AAL communication project (i.e. outcomes, finance, resource management, time management). He also creates and maintains documents to facilitate the monitoring of project progress.	
<i>Dimension 3: e-Competence proficiency levels</i>	Level 1	
	Level 2	Understands and applies the principles of project management and applies methodologies, tools and processes to manage simple projects.
	Level 3	Accounts for own and others' activities, working within the project boundary, making choices and giving instructions; manages and supervises relationships within the team; plans and establishes team objectives and outputs and documents results.
	Level 4	
	Level 5	
<i>Dimension 4: Knowledge and Skills</i>		<p>T01: Can measure and report on AAL</p> <p>T02: Has knowledge about existing best practice frameworks in IT</p> <p>T04: Has knowledge about compliance with healthcare laws and policies</p> <p>T05: Has knowledge about latest AAL developments</p> <p>B05: Is committed to corporate strategy and aware of corporate culture</p> <p>B07: Has presentation / moderation skills</p> <p>M01: Has knowledge of project management principles</p>

E.4 Relationship Management

<i>Dimension 2: e-Competences: Title + generic description</i>	He is responsible for a positive relationship between the community manager, user and the AAL care provider deploying and complying with organisational processes. He maintains a regular communication with them and he is familiar with current components and systems. He ensures that all components and products are adequately for customer solution	
<i>Dimension 3: e-Competence proficiency levels</i>	Level 1	
	Level 2	

	Level 3	Estimate the usability, moderateness and suitability of possible solutions
	Level 4	
	Level 5	
<i>Dimension 4: Knowledge and Skills</i>	✓ B02: Is ethical ✓ B08: Can communicate effectively	

E.7 Business Change Management

<i>Dimension 2: e-Competences: Title + generic description</i>	Assesses the implications of new AAL solutions. Defines the requirements and quantifies the business benefits. Manages the deployment of change taking into account structural and cultural issues. Maintains process continuity throughout change, monitoring the impact, taking any required remedial action and refining approach.	
<i>Dimension 3: e-Competence proficiency levels</i>	Level 1	
	Level 2	
	Level 3	Evaluates change requirements and exploits specialist skills to identify possible methods and standards that can be deployed.
	Level 4	
	Level 5	
<i>Dimension 4: Knowledge and Skills</i>		T03: Can explain how (technical) AAL measures add value to the business T05: Has knowledge about latest AAL developments B05: Is committed to corporate strategy and aware of corporate culture B07: Has presentation / moderation skills M02: Has knowledge of budgeting / estimating issues and practices M03a: Has knowledge of legal issues

2. Case Study

The Living Situation of Erna P.

Erna P. is 78 years old. She lives in a small house in Zachenbach, a small village with 2000 inhabitants in the rural vicinity. Her husband died some time ago. Erna P. has long been a housewife and responsible for the education of her two sons. Later, when the children were grown and had gone off to university, she sought employment as a part-time assistant in the textile industry.

Her two sons have moved away for work-related reasons. They live in the big city hundreds of kilometres away from Zachenbach. Both sons are very busy and have to travel a lot for business reasons. Her older son is married and has two children. The other son lives with his partner in a shared apartment. Mrs. P. is the youngest of five siblings. Her sisters and brothers, as well as their partners, are no longer alive. The nieces and nephews live about 400 km away.

Two years ago some of Mrs. P.'s friends moved to the assisted-living facility in the nearest large town, which is located 35 km away. For Mrs. P. this was no alternative. She wants to remain living in her house. She enjoys the rare meetings for coffee with friends and acquaintances who have remained in village. However, these contacts become fewer and fewer. One reason is that some of them have died, but another reason is that Erna P. hates to go out when the weather is bad. Erna P. has heard that Zachenbach was connected to the new fibre optic cable for Internet 2 months ago, but Erna P. has not understood what this means exactly.

The neighbouring house was broken into not too long ago .

The cultural offerings in Zachenbach are limited to a Christmas dinner organized by the Catholic parish and the coffee party, which is organized by the senior-citizens association every three months. Services such as help with shopping, household, care, repair help, car service and garden maintenance are provided by private service providers. Erna P. is only able to afford this very rarely. Her monthly pension of only € 680 is just enough for the essentials. After all, Erna P. must not pay rent, but the rising heating costs and fees for waste disposal are expensive enough to cause her some concern. Since she has been assigned no official level-of-care, she gets no additional financial support from the health insurance / care fund and also no subsidies for the use of household services.

Her little house has a garden, but the yard work has slowly becomes too much for Erna. She needs the help of strangers to cut the hedges, trim the trees, and mow the lawn. The 5 steps to her front door are causing her more trouble, so that she leaves the house less and less. She can hardly hear the front-door bell . Erna P. doesn't know whether this is due to the soft rings or due to her waning hearing. The stairs inside the house are demanding ever increasing amounts of time. It happens more often that she sleeps in the living room. Several light bulbs (e.g., in the hallway and one in the stairwell) are

broken. Erna P. fell twice inside her house recently (once from the chair, when she wanted to get the old waffle iron from the cupboard and once when she tripped over the small stair between the stairwell and hallway). That's why she does not want to change the broken bulbs as she would have to climb onto a chair.

Erna P. has an analogue telephone and an older TV. At his last visit, her son left her old SmartPhone and said Erna P. should call him in case she needs help. she tried once, but her son did not answer the phone, instead the secretary of a local politician - and now the phone cannot even be turned on anymore.

Diabetes mellitus and its accompanying high blood pressure affect Erna P.'s health status. Both conditions must be monitored constantly and permanently. Mrs. P. suffers from severe blood sugar fluctuations. From time to time she suffers from sudden hypoglycemia, which can progress rapidly to a life threatening situation. The high blood pressure values cause Erna discomfort. The difficulty here is that the GP (general practitioner) comes only once a month for a home visit because his practice is actually in the next larger town 35 km away. Since Erna P. is becoming increasingly immobile and good, public mobility offers are rare, Mrs. P. cannot go to the GP more often. She is therefore very dependent on the monthly home visits. She is supported by a home-care service that takes blood sugar and blood pressure measurements 2 times per week. These services are paid for by her health insurance. The blood sugar and blood pressure medications can be ordered through the patient-care service.

The last time Erna P. went to the city it was by bus. Unfortunately, they got lost in the city and missed the last bus home and she had to take a taxi which was very expensive. Erna P. would love to visit the choir concerts in the church in the next village from time to time - after all, she sang there earlier herself, but the public-transport connections are so bad that it would take more than 7 hours for such a concert visit.

For products for her daily needs, there is only a small corner shop available in Zachenbach. The prices are higher than at discount stores and the product line is thin. The small shop offers a free, sporadic delivery service. Mrs. P. takes advantage of this opportunity in order to buy fresh products and fresh ingredients for cooking. Cooking is still her passion, even if she can't really do it for social gatherings in the house, but only for herself.