Confidence

D 6.3.1 – Training Concepts for End-Users

Project Deliverable

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Short Description

Confidence develops a mobility safeguarding assistance service for people with dementia. This document contains the first ideas on a concept to train the end-users in the usage of the Confidence system. Different possible ways in order to motivate and train the end-users are presented and the concrete concept that is planned in the Confidence project is described. The document corresponds to the Deliverable D6.3.1 as described in the DoW [1].

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1   Contents

2 Management Summary

Confidence aims at developing a mobility safeguarding assistance service with community functionality for people with mild to moderate dementia. This document presents the concept on how to train the end-users with the final objective of showing them the benefits of the system and motivating them to test it within the projects pilots and also heavily use the final product. The document corresponds to the Deliverable D6.3.1 as described in the DoW [1].

As a starting point after the introduction, the document gives a short overview of the state-of-the-art concerning general learning theories, research on end-user training (EUT), and information which the Confidence partners have gained during the end-user requirements phase [27] and in other AAL projects. All three aspects were considered as crucial for a sound and effective EUT concept for Confidence. The theory provides insights about the way people learn in general and the different learning styles they apply. Studies conducted in the field of EUT research validate or disprove the theory and come up with methods and recipes on how to create complete EUT concepts and the most effective training sessions. Finally, the personal experience of the consortium partners provide the needed pragmatic, hands-on tips and list pitfalls to avoid in order to write a concept matching Confidence and taking into account the special needs of people with mild to moderate dementia in terms of training.

The second part of the document, following the theory and advisory part, focuses on the Confidence training concept itself. It starts with a concise list of measureable objectives covering all aspects of the training from the set-up of the personal devices to the most advanced feature as well as task based objectives focusing on every-day tasks. Then the target audience - the primary end-users, the secondary end-users and the teachers – is characterised and split-up in several sub user-groups for which the training will be personalised. The target audience is followed by a mix of methods, activities and materials that shall be applied in the training. All items in the list such as the very important key-user concept, the workshops, events, hands-on sessions, home training sessions as well as the support of the end-users over a hotline are explained in detail. The next section takes the previous list, modularises it and instantiates the result to list the different training modules defined for the concept. Following the module list, a general template for such a training module is presented and its application is shown in an example description of the module "Introductory Training Workshop - Basic". Other aspects of EUT concepts such as the ideal training environment and the needed resources are highlighted. A very important issue concerns the evaluation of the success of the user training in order to react and improve either the training or the product. The section on evaluation and success indicators comes up with ideas on how to achieve this with a reasonable effort. A training schedule plans all the modules and puts them into the right order. This plan concludes the Confidence EUT concept description.

For the interested reader, a closer description of the learning theories, training methods and materials taken as a basis for the concept was placed in the annexes.

This deliverable lays the grounds upon which the concrete training plans, modules and materials can be developed. It will help to prepare the end-users for the pilots and motivate them to be a part of Confidence. If these users positively promote the product they may support the consortium in making the community around the solution grow and getting it accepted by a large group of end-users - appreciating its benefits to maintain their independence and gain more confidence.

3 Introduction

3.1   Purpose of this Document

This document contains all relevant information concerning the concept to train the different end-user groups of the AAL Call 4 project Confidence [1]. It represents to the official project deliverable D6.2.1 End-User Training Concepts which is a result of the activities conducted in T6.3 Training Concepts and Materials of WP6 during the first half year of the project.

3.2   Scope and Relationship to other Deliverables

As already stated above, the document's scope is the end-user training concept of the Confidence project describing how the consortium intends to bring the system to the people and train them using it. On the one hand the deliverable relies on the results of the end-user requirements analysis that is described in deliverable *D2.1 End User Requirements* and takes the inputs coming from the first drafts of *D2.2.1 System Requirements* as well as the initial sketches for the User Interface (UI) finally leading to the deliverable *D3.2.1 User Interface Concept*.

The document does not contain the training materials themselves which will be created in a later state of the project after the first prototypes have been tested together with the end-users. The first versions of the training materials are due at month 16 and will be presented in *D6.3.2.1 Training Materials for End-users*.

3.3   Definitions, Acronyms and Abbreviations

Primary end-user	Person living with Mild-to-Moderate Dementia seeking assistance
Secondary end-user	Secondary end-users providing assistance to primary end-users (family members, nurses or trusted volunteers)
Assistance device	Mobile unit that provides the Confidence interface and services to the primary end-users
Helper device	Mobile unit that provides the Confidence interface and services to the secondary end-users
EUT	End-User Training
ILT	Instructor-Led Training
OJT	One-the-Job Training
ERP	Enterprise Resource Planning
NIS	Nursing Information Systems
EHR	Electronic Health Record
Mi-MoD	Mild-to-Moderate Dementia
ELT	Experimental Learning Theory
UI	User Interface

4 Learning and Training

4.1 Learning Theory

A good starting point in order to develop a training concept for end-users is to have a close look at the state of the art in regards to learning models. A lot of different models exist in the area of learning and training. Depending to the authors and their philosophy, they may highlight specific aspects in more detail, but every theory addresses the motivation of the learners in some form. Their motivation and the relevance of the new information or skills for their personal or professional life are crucial for the success of the learning process. But achieving it is probably one of the main challenges for every teacher. He needs to closely know his learners and their personal goals in order to match his learning programme to their needs. He should apply the existing knowledge on learning and use "best practices" in his teaching while keeping in mind that each learner has his personal preferences.

Most of the theories on learning have been developed somewhere in the 80ies and are in general still valid. Some of them were refined by their authors later on due to new insights or concrete experiences. Although meanings among certain educationalists exist that some of those theories remain largely unproven and their concrete implementation in the education of (younger) people is of questionable benefit [5], it is worth considering them for the project. We will refer to them later on in the document when it comes to learning in Confidence. As the consortium considers the theoretical background important, the most important facts of the more relevant ones are summarised in [30] and 7 Annex – On Learning. This section shall just present a brief overview.

To start with, there are basic psychological concepts to motivate the learners and increase the chance that new information or skills are learned persistently that work for most people. "Best practices" for instance have been developed in order to set up the sequence of events and the contents of an effective learning session.

However, besides these general concepts, a very important insight is that different **learning styles** [2] exist among people depending on their personal preferences. Every one of us has probably experienced a situation in which he learned something fairly simple but failed to grasp the key ideas. Or he was teaching someone else something not too complex but found that the audience was even more confused afterwards. A reason for this could be that the learning styles of the teacher and his learners were not aligned. This can be very frustrating. By understanding the learning styles, one can create an environment in which everyone can learn, even if they don't use your personally preferred learning style [2].

Kolb's Experimental Learning Theory (ELT) was the basis for his learning style theory that addresses both aspects (7.1.1 Kolb's Learning Styles [3][5]). On the one hand Kolb stated a principle that applies to us all. In his learning-cycle learning can be seen as a continuum running in a circle of four stages called "Concrete Experience (feeling)", "Reflective Observation (watching)", "Abstract Conceptualisation (thinking)" and "Active Experimentation (doing)". According to this model, all four stages should be touched for the learning to be most effective. Kolb also stated his insights about "how we think and feel about things" and "how we look at and do" things stating that we always have to make a choice which way to go while learning something new (More feeling or more thinking? More doing or more watching?).

Kolb also identified four different types of learners or four learning styles which Honey and Mumford [4] took as a basis for their adapted model. They closely characterised the different learners and called them activist, reflector, theorist, and pragmatist. But they also pointed out that this concept should not been misunderstood as a mutual characterisation of a person who e.g. is 100% theorist. The extent to which a person adapts to one or more of these styles depends on the concrete situation one is in.

Another widely used model is the Felder and Silverman's Index of Learning Styles [2]. It defines four dimensions characterising different learning styles and can be thought of as a continuum with one learning preference on the far left and the other on the far right. The four dimensions define preferences between the "extreme" values sensory vs. intuitive, visual vs. verbal, active vs. reflective and sequential vs. global. The idea behind the index is to get to a learning style that is well balanced in all four dimensions as it is considered increasing the effectiveness of the learning process. Other authors extend the model and implement it for concrete learning situations also including so called structural features such the level of completeness of the material that is provided, the learning orientation or the structure of a learning group 7.2 Training Approaches and Training Method Features.

As already mentioned above, taking these theories, concepts have been developed providing step-to-step instructions for teachers and learners to create effective learning situations and training sessions.

Using Felder and Silverman's Index of Learning Style and short recipe allows for a balanced learning style that helps individuals for themselves as well as for teaching in a group (7.3.1). Gagne's Nine Levels of Learning explain in nine steps how to get to an effective training – (1) Getting attention, (2) informing learners of the objective, (3) incorporating experiences, (4) presenting effectively, (5) providing learning guidance, (6) letting people show their skills, (7) providing feedback, (8) assessing performance, (9) enhancing retention and transfer. Keller has taken up these ideas and, with focus on motivation, created his ARCS (Attention, Relevance, Confidence, and Satisfaction) model (7.3.3). Another learning system - 4MAT – was inspired by Kolb and tries to come up with specific guidance for all learners, even if their learning style differs.

Finally a whole palette of different methods and materials exists to support both learners and teachers, depending on the learning context: From instructor-led training (ILT) and on-the-job training (OJT) through super-users or mentors, specific method such as error-less learning (EL), learning by modelling (LM), trial and error learning (TEL) to more applied, concrete activities such as role-playing, story-telling, games, puzzles, case studies, hand-on skill labs, simulations etc. Those methods may be supported by ICT e.g. in a computer based training session (CBT), a web learning portal or a video on demand platform. And different forms of materials and delivery methods such as manuals, tutorials, help or support may be involved in teaching the learners in a manner both parties gain most out of it.

There is much more to tell about learning. However, what it all boils down to is that learning happens on different dimensions and with all senses and a good training will incorporate as much as possible of them in a well-balanced manner (e.g. touch their feelings as well as giving them some brain food). The goal is to motivate the learners, create an effective learning atmosphere and make learning a positive experience for everyone. Learners need to be attracted, should know why they are learning something and see a clear direct benefit coming from it. They want to get feedback and reinforcement. And they want to experience progress in the successful application of their new skills in different everyday situations.

4.2 End-User Training (EUT)

The main objective of the end-user training (EUT) is to motivate the end-users to actually use a specific system and allow them to draw the full benefits out of it.

The discipline of EUT is a research topic of its own. Since the early eighties, when ICT systems first came up, several works have been conducted, dealing with theoretical learning models (4.1 Learning Theory), the comparison of different end-user training methods, the end-user involvement in the training, and the delivery of the training [2][15][16][17]. Several studies have been executed on designing and implementing effective EUT-methods and evaluate and improve their effectiveness in different settings [18][19][20][21][22]. The importance of the end-user training for the acceptance of a new system has been pointed out. It has been clearly stated that one of the main challenges is to know the target audience very well and adapt the training to their special needs. The top pitfalls have been identified [23] and studying concrete deployments the emphasis has been put on the need to identify clear objectives, plan it early enough, define on how to deliver it and tailor it to the target audience. Mostly, large commercial deployments such as ERP systems, SAP solutions or – focusing on health care – nursing information systems (NIS) or electronic health record solutions were studied [24][25][26].

The Confidence deployment will not focus on large business solutions, but develop a rather small-scaled AAL application ran by a community based network mostly consisting of relatives, volunteers and people with Mi-MoD. However, when designing EUT we can still learn from the research that has been conducted so far in the area as most of the findings apply to any system that relies on its end-users to be successful – in short any ICT based system. Of course one has to take into account the very special needs of the concerned persons who live with Mi-MoD that have been identified and described in the end-user requirements [27] and will be handled in chapter 4.3.

In an ideal case all users identify themselves with the system and have an intrinsic motivation to learn it as it assists them and gives them more confidence in their daily lifes.

Taking into account the results of the studied literature on EUT, a complete end-user training concept should deliver answers to the following questions:

- What are the objectives of the training?
- Who is the target audience for the training?
- Which training methods will be applied and in which combination?
- What is the content that needs to be communicated?
- How is the training being delivered to the end-users?
- What resources are available for the training?
- In which environment will the training take place?
- What time schedule is foreseen to deliver the different training units?
- How can the effectiveness of the training be evaluated and the training improved?

In the second part of this document those questions will be answered in the context of Confidence. But first, a short overview on personal experiences of the consortium partners, made in Confidence and other AAL projects, is given.

4.3 EUT Experiences – AAL, Confidence, People with Mi-MoD

EUT in AAL projects poses specific requirements on the concept. This is especially true for Confidence as an important end-user group, in fact the primary end-users, suffer from Mi-MoD.

In-depth experiences in training end-users exist within the consortium from other projects concerning both, elderly people and people with Mi-MoD. Valuable additional insights were gained during the Confidence end-user requirements elaboration which will also influence the end-user training [27]. The following list highlights the most important issues to be considered in the training concept.

General Experiences:

- **Create an attractive solution.** The name, the devices, the services, the look & feel of the solution as a whole should already be designed in a way that people like to use it (user experience, fun to use, no stigma etc.)

- **Let it be their project.** Especially also the **secondary end-users** (relatives and care givers) have to closely **identify** themselves with the project.

- **Recruit key-users[1] for promotion and training.** Good experiences have been made with highly motivated and committed end-users who act as key-users for the others. Already very early they should be provided a special "VIP training programme". Finally they will be treated as "specialists" who know the system very well and are widely accepted within the community. Their effectiveness has also been proven by external studies [25].

- **Inform secondary end-users in advance.** Make sure that the information is spread internally e.g. in the case of an ambulant caring organisation. Push the information to the users, tell them how important it is that everybody is informed and remind them periodically about their tasks in spreading the information. Don't rely on "automatic transfer".

- **Explain them the benefits and allay fear.** In AAL and especially also in the group of the professional care givers there still exist reasonable fears and a scepticism related to ICT based assistance systems (controlling people, replace human contact by machines etc.). It is very important that they rate the benefits of the system higher than possible drawbacks arising from it.

- **Execute the workshops shortly before the launch.** Tell them early when the workshops will take place but hold it only about 2 weeks in advance. Earlier trainings do not make any sense as people tend to forget things quite fast.

- **Provide learning material.** Manuals may be helpful in other projects. However, experience has shown that in AAL projects they are read seldom. Good results have been observed using **compact hand-outs**.

- **Set up a hotline, but also ask back.** A hotline helps but make sure, especially in the pilot phase, that you also consult the end-users actively and ask back in case it appears to you that the hotline is not really used.

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[1] Other terms such as super-users, lead-users or mentors have been used for the same concept.

- **Organise workshops after the launch** in order to be in direct contact with and get immediate feedback from the end-users. It may help dissolving existing problems effectively and prevent misunderstandings as much as possible.
- **Localise the training** as training scenarios and habits may differ from country to country.

Mi-MoD Experiences:

The difficulties in learning and remembering new things represent characteristic symptoms of dementia along with others supporting them such as forgetfulness, attention deficits, difficulties in concentrating, slow reactions, difficulties in communicating, the inability reason or to follow complex instructions as well as executing more than one task at once etc.. A good overview on the symptoms of people with Mi-MoD is presented in [30] and the user requirements document [27]. The training cannot overcome these symptoms, but can be adapted in order to minimize their impact on the learning. The following list presents some of the issues that have been identified so far looking at Confidence.

- **Less is more**. Similar to the end-user requirements, this seems one of the main issues also for the training. Rather only explain a few core features and train and repeat them thoroughly instead of trying to make them learn every detail.
- **Keep it simple.** Relates to "less is more" but highlights the complexity of such a system that should be hidden from the end-user as much as possible. During the end-user workshops in Rumania at AAIF 33% of the primary end-users and 20% of the secondary end-users found – without yet knowing the exact set of features – that Confidence is probably too complicated. The messages during the recruitment and the training sessions themselves should take this fear away from them by telling them that Confidence is very useful and very easy to use.
- **Stay natural and don't work with mock-ups.** For the training, use a realistic environment and real-life scenarios. Always stay natural and straight forward in the communication and relate to everyday situations and devices. For the explanation use things and activities which are familiar to the end-users as much as possible. Don't use material such as paper mock-up but let the people work with the real devices from the beginning on.
- **Don't underestimate the end-users.** Know exactly what they are still able to do and adapt the training to their skills.
- **Recruit key-users from the community for promotion and training.** Seems to be even more important in the case of Mi-MoD end-users. Preferably these key-users come directly out of the dementia community and are maybe even living with mild dementia themselves.
- **Implicit learning works better than explicit learning.** A recent study has indicated that explicit learning is not very effective when it comes to teaching new skills to people with dementia [28]. The authors see the results as a proof to further recommend implicit learning methods.
- **Model learning (ML) before Errorless learning (EL), before Try and Error Learning (TEL).** The same study has indicted that model learning (the teacher shows the next learning step that is immediately repeated by the learner) seems the most effective training method for people with the Alzheimer's disease, followed by

errorless learning (the learner gets an in-depth audio-visual instruction on the next learning step) and try and error learning without much guidance (used as control method by the researchers).

- **Let them make errors.** Don't try to create the perfect users but make sure they know the basics by repeating things and trying to minimize the errors. It is important that the users know that nothing bad happens if they make errors.
- **Step-to-step instructions.** Every training instruction should happen in a series of short, simple steps that can be reproduced easily (in alignment with [28]).
- **Audio-visuals.** Always use **images** in conjunction with **text and speech.**
- **Colours and contrast.** Make use of the common knowledge about interface design for people with dementia and elderly people in general. Use traffic light colours to indicate states, big and well-readable fonts, contrasts in the elements so they can be seen clearly etc.
- **Speak slowly and clearly.** Important for every presentation but especially when dealing with our target group.
- **"Yes, that is ok"**, usually means that the explanation was not completely understood but people are afraid of saying it.

5   Confidence Training Concept

The following sections closely describe the training concept for end-users in Confidence according to the fundamental principles and needs that have been identified and described earlier in the document.

5.1   Objectives

One of the most important activities related to EUT is to inform the end-users about the objectives of the training. But for this, the objectives of the training have to be clearly stated and understood by the teachers themselves. Therefore it is the aim of this section to list all objectives in a numbered list and give remarks on them where needed.

Let's first start with the **main objective (MO)** of the EUT for Confidence

> **MO: Motivate the end-users to use the Confidence services and allow them to draw the full benefits from them depending on their skills and needs.**

The following table contains the detailed objectives hopefully leading to the main objective in the end. The authors tried to adhere to the SMART mnemonic in defining the objectives whenever possible. As every goal, a good objective is specific, measureable, attainable, relevant and time-bound. Time-bound here usually means "by the end of the end-user training" which in the case of the Confidence pilots is the end of the project if not stated otherwise. The table does not yet present the way on how to get to fulfil an objective which is the topic of the sections to come.

Table 1: Confidence Training Objectives

No.	Overall Objectives[2]
1	Let the end-users identify themselves with the Confidence system
2	Increase the acceptance of the Confidence system
3	Increase the acceptance of assistance systems in general
4	Let the Confidence community grow
	End-user recruiting and training (for the first pilot)
5	Recruit, motivate and train at least 6 key-users (family members, professional care givers and primary end-users)
6	Recruit and train end-users from all three Confidence end-user countries (Austria, Rumania, Switzerland)
7	Recruit end-users from rural as well as urban areas
8	Recruit and train at least 26 primary end-users in each country
9	Recruit and train at least 26 family members in each country
10	Recruit and train at least 9 professional care givers in each country
11	Recruit and train at least 9 volunteers in each country
	Set up, configuration, personalisation and maintenance
12	Secondary end-users are able to install, set up and configure the Confidence mobile helper device (see [29]) in order to use them for the first time
13	Secondary end-users are able to update their helper device.
14	Secondary end-users are able to install, set up and configure the Confidence mobile assistance device (see [29]) in order to use them for the first time
15	Secondary end-users are able to assist the primary end-users in setting up the Confidence mobile assistance device so they can start using it themselves
16	Primary end-users are able to update their assistance device.
17	Secondary end-users are able to configure and log into the Confidence web and community portal for the first time
18	Secondary end-users are able to change their password on the Confidence web and community portal
19	Secondary end-users are able to configure an alert chain for a specific first end-user including all relevant information
20	Primary end-users are able to start (or check if it is running) and use the Confidence-App on their assistance device
21	Secondary end-users are able to switch on and off optional features for the primary end-users on demand

[2] The overall objectives are neither very specific nor easy to measure but the author decides to state them anyway as they are still objectives although more concentrating on soft skills.

22	All end-users are able to interpret a "low battery" signal
23	All end-users are able to charge their personal mobile device (assistance and helper)
	Training and Help
24	End-users are able to call the support hotline
25	Secondary end-users know how to turn on and off the "training mode" of the Confidence mobile apps.
26	Secondary end-users are able to train features together primary end-users in one-to-one sessions at home
27	Secondary end-users are able to train features for themselves at home
28	End-users are able to see the schedule of Confidence workshops and community activities
	Confidence Pilot
29	End-users know what a Confidence Pilot is, what its aims are and how it is organised
30	End-users know their role and activities in the pilot they are taking part in
	Features [27]
	Need assistance
31	Primary end-users are able to initiate a "need assistance"-request and get into touch with a secondary end-user in order to receive assistance
32	Primary end-users are able to differentiate between "need assistance", "emergency" and "video service" features and use the "need assistance" feature properly.
33	Secondary end-users are able to take a "need assistance"-request initiated by a first end-user
34	All end-users know how to activate the video channel in order to see the primary end-user they are talking to.
35	Secondary end-users know how to deny a "need assistance"-request initiated by a first end-user in case they cannot take the request at the moment
36	Secondary end-users know how to activate and deactivate the "busy"-state indicating that they cannot take a "need assistance"-request from a primary end-user while busy.
	Localise the primary end-user
37	In case of an alert (only then), the secondary end-user should be able to find out the geographical position of the primary end-user (including map- and address-information) by activating the "localise"-feature of Confidence using his personal helper end device (which may be a Smartphone or a traditional (mobile) phone).
38	In case of an alert (only then), he secondary end-user should be able to find out the geographical position of the primary end-user by activating the "localise"-feature over the Confidence web- and community platform.
	Send emergency alerts
39	Primary end-users are able to communicate an emergency situation by manually activating the "emergency call"-feature (press a button).

40	Primary end-users are able to differentiate between "need assistance", "emergency" and "video service" features and use the "emergency call" feature properly.
41	Secondary end-users know the difference between a manual and an automatic emergency call
42	Secondary end-users are able to interpret an incoming emergency call, identify the reason for the call and the person in need
43	Secondary end-users know how to confirm an emergency call and what it means for the primary end-user
44	Secondary end-users know what it means if they do not confirm an emergency call and how they can check that it was handled by another secondary end-user
45	Secondary end-users know how to predefine a path a specific primary end-user must not leave (else an automatic emergency call is issued)
46	Secondary end-users know how to define a geo-fencing area a specific primary end-user must not leave
47	Secondary end-users know how to define a geo-fencing area a specific primary end-user must not enter
	Find way back home or to a destination over map or public transportation info
48	Primary end-users are able to call for the assistance of a secondary end-user in case they have lost their way and want to get back on track to get home or to a given destination.
49	Primary end-users know how to indicate to the Confidence system that they want to be guided to their home or the next destination using a map (and do not want to ask a secondary end-user for assistance).
50	Primary end-users know how to get to a simple map view that presents them with their current location and the position of their home or destination.
51	Primary end-users know how to call for assistance in case they find out they cannot find the way using the provided map.
52	Primary end-users know how to retrieve information about the next step they have to take in public transportation in order to get home or to their destination.
53	Secondary end-users know how to take a call for assistance in case a primary end-user has lost his way and want to be guided back.
54	Secondary end-users are able to differentiate between the type of request for guidance (manual from the beginning on, manual after getting lost again using a map, automatically after getting lost again using a map)
55	Secondary end-users know how to get to a map view showing the current position of the end-user and his destination (or the next step to the destination)
56	Secondary end-users are able to ask Confidence for public transport information in order to provide it to the primary end-user in order to guide him home or to the destination.
57	Secondary end-users know how to enter and change the home address of a specific primary end-users into the system using the web- and community portal

58	Secondary end-users know how to enter a specific path into the system over the web- and community portal. Such a path consists of several sub-sections each pointing to a special point of interest the primary end-user may be familiar with.
59	All end-users know how to activate the video channel in order to see the primary or secondary end-user they are talking to or get more information on the surroundings.
	Call the primary end-user
60	Secondary end-users know how to call a specific primary end-user
61	Primary end-users are able to take the call from a secondary end-user
62	Primary end-users know how to see who is calling and deny a call from a primary end-user
63	Secondary end-users know when a call has been denied by the secondary end-user
64	Secondary end-users know how to turn on and off the automatic answering functionality of Confidence
65	Secondary end-users know when a call has not been taken be the secondary end-user and the automatic answering feature is off
66	Secondary end-users know when they were automatically connected to the primary end-users by the Confidence system
67	All end-users know how to activate the video channel in order to see the primary end-user they are talking to.
	Receive reminders
68	Primary end-users are able to receive reminders
69	Primary end-users are able to differentiate between different reminder types
70	Primary end-users are able to confirm a reminder and knows what it means
71	All end-users are able to enter new reminders for appointments and tasks over their mobile assistance and helper devices
72	Secondary end-users are able to enter new reminders and edit reminders using the web- and community portal
73	Primary end-users are able to activate the speech functionality that reads the reminder aloud
74	Secondary end-users are able to receive an unacknowledged reminder message and knows how to interpret it on his mobile helper device
75	Secondary end-users are is able to look into see the unacknowledged reminder messages from a specific primary end-user over the web- and community portal
76	Secondary end-users are is able to disable and delete specific reminders for a specific primary end-user
	View daily appointments and tasks
77	Primary end-users know how to see their personal daily schedule consisting of appointments and tasks due today
78	Primary end-user are able to confirm a task as done if allowed by the secondary end-user (depending on how it was entered)

79	All end-users are able to enter new appointments or tasks using their mobile assistance or helper devices
80	All end-users are able to assign a reminder to a specific appointment or task using their mobile assistance or helper devices (default)
81	All end-users are able to assign a geographic location (e.g. over the destination address) to a specific appointment or task using their mobile assistance or helper devices
82	Secondary end-users know how to enter and modify appointments and tasks over the web- and community portal
	Get environmental information
83	Primary end-users know how to retrieve the information on which time, day of week and day it is.
84	Primary end-users know how to retrieve the information on when the sun rises and sets
85	Primary end-users know how to receive and interpret a message on the sun rise or sun set coming automatically from Confidence
86	Primary end-users know how to retrieve the information on what temperature it is outside.
87	Primary end-users know how to retrieve the information on what the weather conditions are in general.
88	Primary end-users know how to get tips on their clothing according to the weather conditions
89	Primary end-users know how to interpret an automatically generated message giving them a tip on their clothing according to the weather conditions
	Community services
90	Volunteers know how to plan their availability using the web- and community portal
91	All other end-users apart from volunteers know how to accept a dedicated volunteer
	Concrete tasks or scenarios
92	A primary end-user and an associated secondary end-user are able to find out together the name of the 3rd secondary end-user in the alert chain of the primary end-user.
93	A secondary end-user is able to localise and call a primary end-user for whom an automatic emergency message has been sent because he has left a pre-defined area.
94	A primary end-user is able to enter a new task together with a secondary end-user to drink a glass of water, see the task in his daily schedule, receive a reminder for it in 15 minutes, drink a glass of water and confirm the reminder.
95	A primary end-user is able to see a map on which is indicated where to go to get home and call a secondary end-user who helps him finding out the next bus to take to get there.
96	The primary end-user is able to tell the secondary end-user via video call what date, day of week, time and temperature it is and what he should be wearing today.

5.2 Target Audience

The target audience for the EUT are the primary and secondary end-users of the Confidence system. More information on the profile of the end-users can be found in 4.3, [27] and [30].

In this section the target audience shall be characterised in the focus of the EUT for Confidence.

5.2.1 Primary End-Users

As stated previously the primary end-users of Confidence will be mostly elderly people living with Mi-MoD seeking for more independence, guidance and in the end confidence through meaningful, easy-to-use, non-stigmatizing assistance services. The special profile of these primary end-users, their impairments and how they influence the training have been described 4.3, [27] and [30].

One of the main pitfalls of the primary end-user training is to overburden the people and try to teach them too many features. Experience in other projects and also the feedback of our Confidence end-user workshops have shown that "less is more". Looking at the results from Ana Aslan International Foundation (AAIF) one sees that during the first workshops with the end-users one third of the primary end-users gave the feedback that Confidence is probably too complex for them. The end-user training should prove them the opposite by highlighting the various benefits and showing them how easy these are achieved.

The primary end-users' skills should also not be underestimated and the training should taking into account the strong wish to stay independent and learn the systems features on their own. Of course the existing skills, the wish to be independent also during training and the intrinsic motivation to be part of the Confidence community are very individual, and vary from person to person. Therefore we consider 3 different roles or sub target groups for the primary end-user training who will be served individually:

- **Standard Users:** Wish to know the basics or just the features they consider as especially helpful for them.

- **Advanced Users:** Wish to know a little bit more than just the basics and learn all of the primary end-user relevant features.

- **Key-Users:** Primary end-users, if motivated and still capable, can act as key-users for the system and take over an active and important role in the training workshops.

The idea is to develop courses or training sessions for all three groups of primary end-users especially tailored to the needs of each group. An end-user may start with a standard course and then (hopefully) decide also to take the next step to the advanced user or (even better) finally become a key-user. The training should motivate them to go on and maybe also reward them for doing so in an appropriate manner (meaning not over-patronizing them).

5.2.2 Secondary End-Users

Like the primary end-users, the group of secondary end-users is very heterogeneous. It consists of relatives, volunteers, professional care givers and people working at an assistance call centre each having his or her own motivations to use Confidence. The age may vary from 30 years or maybe younger to around 70 years or maybe older and we cannot assume that the people are affine to technology; some of them may be even rather sceptical

about what Confidence tries to teach them. The EUT must pursue the same goals as with the primary end-users in highlighting the benefits but from the angle of the secondary end-users. The training shall show them that more relief and confidence can be achieved very comfortably by using Confidence and at the same time supporting the primary end-user they care for in his need to stay independent.

And as with the primary end-users the training concept splits up the group of secondary end-users in 3 different sub target groups:

- **Informal Care-Users:** Wish to confidently master all the features they need to know in order to optimally support their assigned primary end-user(s).

- **Formal Care-Users:** Wish to confidently master all the features they need to know in order to optimally support their assigned primary end-user(s). Moreover they shall know the possibilities Confidence offers professional assistance service providers. Last but not least, the marketing and sales activities for Confidence are planned to happen mainly over ambulant care providers such as Hilfswerk Salzburg, who have access to the primary end-users. Therefore formal care-givers will often have the role to promote the system and bring Confidence to the people. They need to know clearly what the benefits for the different end-users are and how these benefits are communicated. Of course, these activities can only be successful if the care-givers stand behind the system and identify themselves with it to some extent.

- **Key-Users:** Secondary end-users, if motivated, can act as key-users for the system and take over an active and important role in the training workshops.

5.2.3 Teachers, Trainers

Instructor-led workshops for EUT are part of the Confidence training concept. Therefore motivated trainers are to be attracted and recruited; for quite challenging tasks. On the one hand they should be capable of competently answering any questions coming from the end-users. On the other hand, even more important, the trainers should also have the skills to present and lead the workshop in a way that some of their passion is passed on to the participants and lights the "Confidence-fire" in them. Motivation is one of the key success factors of the training and it is mainly influenced by the trainers, by their skills and credibility but also by their attitude towards the system and their charisma.

Probably a mixed team of a technical expert and an end-user representative – maybe a key-user - who know the trainees and the features of the system very well, is the ideal form to lead such a workshop.

The technical experts and end-user representative will be trained internally within the Consortium whereas the key-users acting as trainers visit workshop especially dedicated to them.

5.3 Methods, Activities and Materials

Looking at the catalogue of possible methods (7.4 Training Methods, Materials), taking into account some of the literature that can be found on the topic (4 Learning and Training) and drawing from existing experience (4 EUT Experiences – AAL, Confidence, People with Mi-

Confidence

MoD) the consortium proposes the activities, methods and materials to be applied in Confidence EUT.

The following full list of potential methods and approaches may be suited for Confidence. However, it needs to be closely evaluated in the further course of the project as we may not use all of them. Before the pilots the appropriate modules shall be picked out and implemented depending on the needs of the end users and the national resources of the projects' end-user partners.

5.3.1 Workshops on Community Building and end-user Requirements Elaboration & Pre-Information to Secondary End-Users

Community building is a separate task in Confidence which reflects the importance of involving end-users and building an active, motivated community around the solution that feels a part of the project.

Workshops to **inform the professional care-givers** have already taken place using an **emotional short clip** and a **short presentation on the features**. The participant may have been pre-informed by sending them an abstract and a Confidence scenario in advance.

Quite similar is the structure of an **end-user requirements workshop** which directly involves the end-users and motivates them by having the chance to directly influence what will be implemented in the end.

As already stated in the document it is very important to inform the professional secondary end-users and letting them spread the information internally. **Newsletters**, **questionnaires** or the first **informal user tests** including their direct feedback on what to change, may help to periodically tell them about Confidence and make them still feel a part of Confidence.

5.3.2 End-User Recruiting Events

These events may be very similar in their structure to the community building and requirements workshops but have a pure information and motivation character. The aim is to motivate people **to take part in the project** and help us developing and testing Confidence **in several pilots**. So the motivational part is very important here. An **emotional entry** using a clip is very important and making them see the **direct benefits** that matters to them in using the system later but also in being a part of the community already now and **directly influence the research project**. For this they also have to clearly know **what a pilot is** and how it works, what their role is, what is expected from them exactly and see that they can manage this in terms of time and skills. And they should know about the informed consent, privacy protection and their right to leave the pilots without giving a reason at any time.

The event should take place at an **end-user organisation site** the participants already know. A **member of the dementia community** can maybe already be there and promote the system actively (It is for you! It is easy! Don't be afraid!). Some kind of **"cliff hanger"** or look into the **bright future** at the end of the presentation should motivate to go on. **They should clearly know that their participation is important to us and that they matter. They are part of a community and they contribution may help others suffering from dementia.** People will be approached directly and asked if they could imagine being a part of the project and test it. A **snack** and maybe a **goodie or giveaway** should be provided and some **spare time** to discuss, ask back and maybe think about a participation.

5.3.3 Key-users

The concept of key-users and their effectiveness in the context of AAL projects have already been explained (4.3). The Confidence training concept shall make **heavy use of such key-users** in building up the community, recruiting end-users for the pilots, accompanying the pilots and coaching the end-users, as trainers in workshops etc.

5.3.4 Informal User Testing Sessions

A good method to train users early, motivate them and involve them directly is early informal user testing. It also helps the developers to better understand the needs of the end-users early and react in order to optimize the solution.

Informal user tests are a kind of **hands-on session** with only a small group of people – maybe even just in a **one-to-one on-the-Job** training setup. Newly implemented features are tested together with the end-users with their feedback evaluated. It may run as follows:

- **Present** the new feature and its benefits to the end-user

- Go through the feature **step-by-step** applying **learning by modelling** techniques in which the instructor (or a secondary end-user) shows a step and lets the end-users directly reproduce it on their personal device.

- Optionally, let him do the whole sequence **on his own** now.

- **Observe** the user while he uses the feature

- Let him give **feedback in a guided interview**

- **Take the feedback**, spread it within the consortium and alter the implementation plan if needed.

5.3.5 Introductory Training Workshops

Instructor-led workshops will introduce the system to the end-users, motivate them to use it and prepare them for the pilots. These workshops consist of a **well-balance mixture** of different methods and materials **tailored to the target audience** (5.2). The instruction shall be led by a team of **key-users, end-user organisation representatives** and **technical experts**. Every kind of workshop can – if wished – be **announced over the Confidence** features "View daily appointments" and "Receive reminders". The workshop programme can (but most not) include:

- An **emotional introduction movie** maybe introducing a concrete end-user - let's call him Hans (Swiss persona [27]) - **telling a story** about him or her and **relate to a well-known, familiar, end-user relevant scenario**

- A motivating short **presentation** highlighting the **benefits** and how **easy** it is to get to them.

- A **very short manual or reference card** for the end-users

- A **hands-on training session** focusing on the **features** one-by-one

- o Short movie or presentation of a **scenario** in which Hans uses the feature
  - o Go through the feature **step-by-step** applying **learning by modelling** techniques in which the instructor (or a secondary end-user) shows a step and lets the end-users directly reproduce it on their personal device.
  - o A special **training mode** of the Confidence App could somehow **reward** them if did the whole sequence right.
  - o Repeat the step-by-step instruction again.
- **1ˢᵗ Feedback session**. Let the end-users give a feedback in a **led group discussion** to get a feeling on what they learned and how they feel now.
- A short motivational block which **explains the Confidence pilots**, their aim and what the role and activities of the end-users are
- Depending on the feedback: A **realistic role-playing, case-study** session focusing on real **every-day tasks** between a primary and a secondary end-user
  - o The idea is that a **concrete problem situation** is described and the team is asked to find a solution together to solve it. Can also be outdoors in the real environment if possible. E.g. the primary end-user has to go somewhere and the secondary end-user guides him there.
  - o **Reward** them in some form if they were able to **solve the situation** or motivate them to **try it again.**
- **2ⁿᵈ Feedback session.** Let the end-users give a feedback again in a **led group discussion in 3 different groups** to get a feeling on what they learned and how they feel now. Also ask them about the **training** and how it could be **improved**.
- **A summary** is given on the workshop and **the further steps** in regard to the **pilot** are explained
- A **small reward, goodie or give-away** may further motivate the people to use the system or come back for another workshop

5.3.6 Support Hotline and Direct Calls

A **support hotline** is set up to allow the end-users to get answers to their questions. Actually, the Confidence system itself – being an assistance system - could be extended to easily allow every end-user (primary and secondary) to get into contact with someone who can help.

Experience has shown that some users will not have the heart to call the support hotline even if they face problems. To lower the barrier of calling someone, a primary-end-user may of course also just use the **"Need assistance"** feature to first ask a secondary end-user or a key-user who may be able to help.

However, we think the support hotline should be accompanied by **direct calls** (which the end-users have to explicitly allow). In these calls the end-user organisations have the opportunity to actively get in touch and ask end-users about the acceptance and specific problems.

5.3.7 Training at Home

After having received the introductory training, the secondary end-users should be able to repeat the features again for themselves in **self-study** or together with the primary end-users in an **OJT** session. They may optionally use a special training or **real-time simulation** mode, which can help taking away the fear of making something forbidden, like initiating an emergency call etc. An open question is whether the training mode confuses the primary end-users as we have found out that they don't like faked, unnatural situations and mock-ups. But it may be helpful for the secondary end-user or in a team together with secondary end-users.

5.3.8 Repetition and Collaboration Workshops

After the Confidence system has been introduced and used in the community for a while, it may make sense to organise **open workshops** to exchange experiences in **group discussions** and repeat the training on demand in **OJT** sessions together with other the other participants or a key-user.

5.3.9 Community Forum and Collaborative Online Help

As Confidence provides a community and web-portal and implements features to get in touch with the community and exchange "best practices" it seems logical that a kind of **forum** space, preferable **administrated by key-users**, is set up in which the end-users can pose their questions and get answers by other end-users or key-users.

A kind of **collaborative learning tool** such as a **Wiki** can be initially set up by the project partners. It contains **step-to-step text and image instructions** on how to use a feature and can be edited and extended by the end-users.

5.3.10 Continuous Information and Involvement

As with the pre-information it seems important to keep on informing the end-users and letting them spread the information to make the Confidence community grow. **Newsletters or questionnaires** may help to periodically tell them about Confidence and make them still feel a part of it. **Periodic updates** improving the system according to the user feedback or **additional features** as small rewards while they use the system help to keep users involved with Confidence.

5.4   Training Modules and Content

Although a rough guideline has been given in the previous section, this section shall list the different types of training workshops and their concrete instances – the training modules that can be applied in the final Confidence EUT.

The exact instances of those modules and their contents do not lie in the scope of this concept but will be part of the deliverable D6.3.2 Training Materials for End-users which is due in M16 or revised in month M24 respectively.

As already stated, some modules may be optional e.g. the informal user testing sessions. Or one could imagine that certain modules are combined to one bigger module. An example would be to organise one workshop including basic, advanced and key-user workshop

elements. Maybe this workshop would then split up the group of primary and secondary end-users into smaller groups.

However, a template is presented exemplarily describing a module. It can be taken as a basis and completed, adapted and extended when organising the workshops.

The following table lists the possible module instances for Confidence. We included the user-requirement and community building workshops as they also raise the awareness and can be seen as a pre-training for Confidence.

Table 2: Potential Confidence Training Modules and Awareness Activities

No.	Module Name	Description / Objectives
1	User-requirements Workshop Primary End-Users	The user-requirements workshop for primary end-users – accompanied by their relatives - has the objectives to inform the end-users about Confidence and get feedback on their needs which in turn help defining the most valuable set of features in their view. The relatives receive pre-information in advance such as an abstract and a Confidence scenario.
2	User-requirements Workshop Secondary End-Users and Experts	The user-requirements workshop for secondary end-users has the objectives to inform the end-users about Confidence and get feedback on their personal needs and their thoughts or expert opinion about what the primary end-users may need. This in turn shall help defining the most valuable set of features. The participants receive pre-information in advance such as an abstract and a Confidence scenario.
3	Community Building Workshop Relatives and Volunteers	The main objective of this workshop is to inform the relatives and volunteers to become a part of the Confidence community and be part of the project.
4	Community Building Workshop Professional care-givers	The main objective of this workshop is to inform the care-givers to become a part of the Confidence community and be part of the project.
5	Recruiting Event Professional care-givers	Could be a part of the community building workshop of professional care-givers but directly focuses on recruiting professional care-givers to sign in as secondary end-users for the Confidence pilots on the one hand and look out for primary end-users, relatives and volunteers e.g. by organising a recruiting event for primary- and secondary end-users.
6	Recruiting Event Primary- and Secondary End-Users	Could be a part of the community building workshop for relatives and volunteers but directly focuses on recruiting secondary end-users for the informal user

		testing sessions and the Confidence pilots and attract others to follow them.
7	Informal User Testing Session Primary End-Users	A short session involving a primary end-user and an assigned secondary end-user in order to test a new feature intended for the primary end-user together with a professional care-giver, an end-user organisation representative or a developer.
8	Informal User Testing Session Secondary End-Users	A short session involving a primary end-user and an assigned secondary end-user in order to test a new feature intended for the secondary end-user together with a professional care-giver, an end-user organisation representative or a developer.
9	Introductory Workshop Basic	A training workshop to prepare the end-users for the pilots (or at a later stage to use the product). Just contains a few basic but important features of Confidence. Should be visited by primary end-users and secondary end-users.
10	Introductory Workshop Advanced	A follow-up training workshop (after basic) to prepare the end-users for the pilots testing more advanced features and scenarios (or at a later stage to use the product as an advanced user). May first repeat the basics but then also contains advanced features and functionality thought especially for secondary end-users of Confidence. Should be visited by secondary end-users, optional for motivated and capable primary end-users.
11	Introductory Workshop Key-User	A follow-up training workshop (after advanced) to prepare the key-users for being trainers in workshops, accompany pilots and coach other end-users etc. May repeat the basic and advanced features but also contains stuff especially tailored to the key-user role.
12	OJT Session at Home	A short session at home repeating a feature or scenario together in a team of a primary end-user and an assigned secondary end-user.
13	Self-Study Session at Home	A short session at home repeating a feature or scenario together as a secondary end-user.
14	Repetition/Collaboration Workshop	A series of open workshop or sessions with the focus to repeat features and scenarios in a team of end-users to gain more confidence and/or to exchange experiences and best practices and improve the solution.

5.4.1 Example: Introductory Training Workshop Module

Exemplary, a (yet fictional) basic workshop shall be described in the template below:

Table 3: Confidence Workshop Template and Example

Title	Introductory Workshop Basic
Short description	A training workshop to prepare the end-users for the pilots (or at a later stage to use the product). Trains a few basic but important features to get started with Confidence.
Date	DD.MM.2013
Location	terzStiftung Seestrasse 112 CH-8267 Berlingen
Duration	3.5h
Responsible	terz, IHL
Pre-requisite	Recruiting Event Primary- and Secondary End-Users
Level	1 - Basic
Target Audience	Mandatory for all Confidence end-users, especially tailored to: • Standard Primary end-users • Assigned Secondary end-users
Group Size	16 (8 primary end-users, 8 secondary end-users)
Objectives[3]	Motivate the end-users to use the Confidence services and allow them to draw the full benefits from them depending on their skills and needs. • Overall objectives • Set up, configuration, personalisation and maintenance • Training and Help • Confidence Pilot • Feature "Need Assistance" • Feature "Localise the primary end-user" • Feature "Send emergency alerts"
Staff	<u>Mandatory:</u> 2 end-user organisation representatives 1 technical staff member <u>Optional but highly recommended:</u> 1-2 key-users
Material and	• Room, chairs, tables

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[3] See chapter 5.1 Objectives

Confidence

Preparation	- Water and glasses - Paper and pens 1 Confidence System setup - Server running - Assistance Devices for every secondary end-user - Helper Devices for every primary end-user - PC for each secondary end-user - Reliable WiFi connection 1 Beamer 4 Flip charts and markers - Short reference cards - Introduction movie - Power-Point and Flip-Chart presentations - First into and benefits - Short introduction for each feature - Confidence Pilot - Very short Case-Study descriptions for the hand-on session on everyday tasks - Giveaways or goodies
Content and Schedule[4]	- Emotional introduction movie 5' - Short presentation on benefits 10' - Hand-on training session of features 75' for each feature or objective group 15' consisting of - Short introduction - Step-by-step instruction - Success control - Summary and further steps 1st feedback session in 3 groups 15' - Break 30' - Presentation on Confidence pilot 15' - Case-study, tasks training 30' 2nd feedback session in 3 groups 15' - Summary and further steps 15'
Success Criteria	80% of the teams have successfully completed the task they were given in the case-study training.
Revision	February, 20 2013

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[4] See also 5.3.5 Introductory Training Workshops

5.5 Environment and Resources

The environment and the atmosphere in which learning and training takes place is very important as the training will be most effective in an environment both learners and their teachers feel comfortable (yet too comfortable).

When dealing with end-users the location should preferably somewhere near to where they live and they should already be familiar with the place. Of course the environment should support the learning physically and emotionally (enough space, open, quiet, illuminated, fresh air, something to drink etc.) and not distract the end-users – especially not the primary end-users which pose special requirements on an environment. The technical infrastructure needed should be available and working properly.

There will be three environments depending on the training modules:

- **At home:** At the primary end-users home for the informal user testing sessions, the OJT sessions and the self-study sessions.

- **In a seminar room:** An appropriate workshop-room, preferably at the site of the end-user organisation for all workshops and events except for the Repetition/Collaboration Workshops

- **At a community site:** The Repetition/Collaboration Workshops are thought to be quite informal and can take place anywhere suiting the participants e.g. at home, in a seminar room or even at a table in a restaurant or hotel.

The table below summarises the resources for the training and quantifies them for the pilots.

Table 4: Confidence Training Resources

Resource	Role	# for Pilots Per country
End-user organisation representative	Presenter and trainer in workshops, organiser of training site, community building	2
Technical staff, developer	Presenter and trainer in workshops, set up and administrator of technical infrastructure, coach and trouble shooter on technical issues	2
Key-user	Presenter and trainer in workshops, coach for end-users, promotion and community building, administration of end-user forum and collaborative help system	6
Primary end-user	Taking part in training workshops and pilots, deliver direct end-user feedback	26
Professional care-giver	Presenter and trainer in workshops, coach for end-users, promotion and community building, assistance for primary end-users they are assigned to in the role of secondary end-users.	9
Relatives	Taking part in training workshops and pilots, deliver direct end-user feedback, coach and	26

	assistance for primary end-users they are assigned to in the role of secondary end-users, coach for other secondary end-users.	
Volunteers	Taking part in training workshops and pilots, deliver direct end-user feedback, coach and assistance for primary end-users they are assigned to in the role of secondary end-users, coach for other secondary end-users.	9

5.6 Evaluation and Success Indicators

How can be determined whether the Confidence is successful or not in order to evaluate the acceptance of the system as a whole and/or improve the training or the system itself? A set of metrics has to be defined that allows for such an evaluation process which delivers objective, correct and relevant results. Taking all the objectives listed in Table 1: Confidence Training Objectives would be the proper way to do this. However, it is way too complex to capture, assess and evaluate all of them. Therefore a simplified set of metrics was defined for the Confidence EUT. It can be found in the following table (see also [1]).

Table 5: Training Success Indicators

Indicator	Success criteria	Remarks
Number of people who have successfully completed the basic training workshop in each country	12 primary end-users 12 relatives 6 professional care-givers 6 volunteers	Given that 2 workshops with 16 participants have taken place in each country
Number of people who have successfully completed the advanced training workshop in each country	8 primary end-users 8 relatives 5 professional care-givers 5 volunteers	Given that 2 workshops with 12 participants have taken place in each country
Number of people who have successfully completed the key-user training workshop in each country	5	Given that 1 workshop with 8 participants has taken place in each country
Number of people who have taken part in the first pilot	24	
Number of people who have taken part in the second pilot	20	
Number of people who are enrolled in the Confidence community site	100	

5.7 Planning and Implementation

The last section of the training concept provides the generic schedule in relation to the pilots in Confidence. The plan can also work in an adapted form for the product emerging from the Confidence project.

Table 6: Training plan

When	What (for each country)
From the 1st day on	2 Community building workshops
During the first 6 months	2 End-user requirements workshops
During development of the pilot	1 Informal User Testing Sessions Primary End-Users 2 Informal User Testing Sessions Secondary End-Users
6 months before the pilot	2 Recruiting events professional care givers
4 months before the pilot	2 Recruiting events primary- and secondary end-users
4 weeks before the pilot	2 Key-user Workshops
3 weeks before the pilot	2 Introductory Workshops Basic
2 weeks before the pilot	2 Introductory Workshops Advanced
1 week before the pilot and during the pilot	OJT sessions at home on demand Self-Study sessions at home on demand
Between two pilots	2 repetition and collaboration workshops

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7 Annex – On Learning

The pages following in the annex describe the most important research and state-of-the-art of how people learn in general, what learning styles, approaches, methods and materials exist and how effective learning sessions are created. This knowledge has been used in order to set up the Confidence end-user training concept.

7.1 Learning Style Models

There are several different training methods that can be applied to transport a given content to the end-users. To choose them wisely one has to first closely know the target audience. Also helpful in creating an effective training is the knowledge of different learning styles and some basic facts on how to engage people and make them learn new things easily. Every one of us has probably experienced a situation in which he learned something fairly simple but failed to grasp the key ideas or was teaching someone else what he found quite basic facts but found that the audience was even more confused afterwards. A reason for this could be that the learning styles of you're the teacher and his students were not aligned. This can be very frustrating. By understanding the learning styles, one can create an environment in which everyone can learn, even if they don't use your personally preferred learning style [2].

A good theoretical starting point on how people learn in general and which individual learning styles exist is to look at existing learning models. Three of which shall be presented here shortly: The Kolb learning style model [3] and its adaptions from Honey and Mumford [4], The Feld and Silverman's Index of Learning Styles [2] and Gagne's Nine Levels of Learning [6].

Although meanings among certain educationalists exist that those theories remain largely unproven and their concrete implementation in the education of (younger) people is of questionable benefit [5], it is worth considering them for the project.

7.1.1 Kolb's Learning Styles

The model is based on Kolb's Experimental Learning Theory (ELT). Figure 1 summarises the two most important aspects on which the learning style theory is built on.
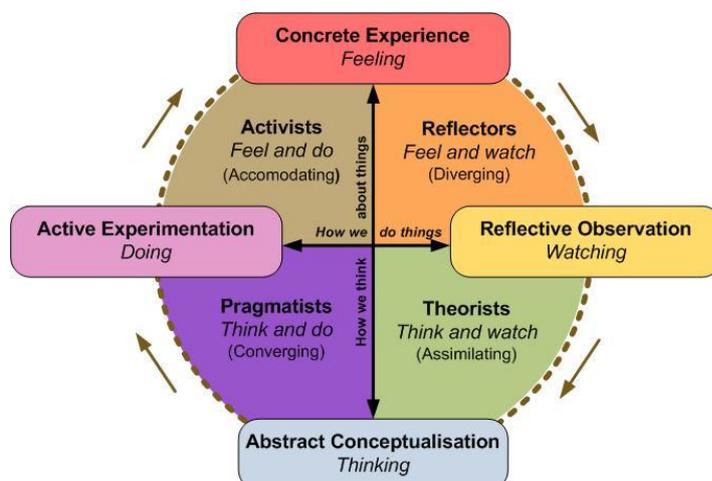
First, Kolb stated a principle that applies to us all. In his learning-cycle learning can be seen as a continuum running in a circle of four stages. In an ideal case a learner should incorporate all four phases. In order to learn most effectively the learner experiences, reflects, thinks and finally acts before again getting to the experience. Or in other words [5]: *Immediate or concrete experiences lead to observations and reflections. These reflections are then assimilated (absorbed and*

Figure 1: Kolb's learning cycle (adapted by Honey & Mumford)

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translated) into abstract concepts with implications for action, which the person can actively test and experiment with, which in turn enable the creation of new experiences. Therefore the model works using the following four stages which shall be illustrated on the example of a child learning to open a closed door.

1. **Concrete Experience (feeling):** The child wants to get into the room, turns the door knob and pushes on the door but it won't open.

2. **Reflective Observation (watching):** Child things that this is strange because it worked when the mother turned the knob last time. The child again observes the mother and sees that she takes out a key, puts it into the key whole, turns it and then uses the door knob to open the door.

3. **Abstract Conceptualisation (thinking):** The child builds a kind of mental model of the door in which there is a concept of a door knob and a lock with a key which both need to be addressed in order to open the door.

4. **Active Experimentation (doing):** Some time later, the child grasps the key ring that the mother left on the table and uses one of the keys in the door. But it won't go into the key whole. Here we turn again to the concrete experience which leads to another round in the learning circle in which the child learns that there are different keys for different locks etc. until it finally knows how to open a door in any case.

The four stages have been chosen in a way that they can be paired into two pairs each containing two related, but contrary approaches toward grasping new things and transforming the grasped things into it into a learned skill.

- **Grasping things** which can be either done by **feeling** or **thinking**
- **Transforming things into a skill** which can be done either by **doing** or **watching**

Those two axes which are also represented in the diagram above symbolize the way **we feel or thing about things** and **how we do or approach things**. This immediately leads us to the second important aspect of the model: Different learners have different preferences on how they like to learn new things. On the one hand you always have to make a choice between "do I want to first think how it exactly works" or "shall I just trust my feelings on it". On the other hand you have also make a choice between "shall I first watch before I touch it" or "shall I just try it out and see then how it works". Based on those axes, Kolb and later on Honey and Humford defined four different types of learners or learning styles. Those styles are represented by the four quadrants of the figure and therefore are always influenced by two stages of the learning process as described before. Kolb stated that the type of learning also depends on the life phase of the learner (birth to youth, schooling to early adult, mid-career to later life). And they should not be seen strictly as fixed personality characteristics as they can be adapted differently in changed circumstances and depend on the concrete learning situation [7].

To explain the learning styles we here use the terms from Honey and Humford which seem to be more "grasping" to the author (who is a pragmatist)[5]. Each type is very shortly characterised [5][8].

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[5] The terms of Kolb are also given in the figure in brackets.

- **Activists ('here and now', "I try anything once"):** Are people who like to experience things. They learn by doing, love to get their hands dirty and try out anything. They are open-minded, not sceptical and enthusiastic. Tend to act first and then consider the consequences. They excel in crisis management and fire fighting rather than the implementation details which bore them. They seek to centre all activities around themselves.

- **Reflectors ('stand back', "Better be cautious"):** Are thoughtful, gather data, ponder and analyse, delay reaching conclusions, listen before speaking, look at different angles and implications, are usually found at the back seats in meetings and discussions. They rather observe other people in action.

- **Theorists ('think things through', "If it's logical it's good"):** Think in logical steps, assimilate disparate facts and bring them into coherent theories, are rationally and objective, reject subjectivity and don't allow their feelings to influence their decisions, are not very comfortable with creative thinking, rigorously question assumptions and conclusions ("Does it make sense?"), tend to be perfectionists.

- **Pragmatists ('seek and try out', "If it works it's good"):** Are keen to think about new ideas, try them out and validate if they work, practical and down-to-earth, enjoy problem solving and decision-making quickly and are bored with long discussions, the sort of people who come back from courses brimming with new ideas that they want to try out in practice. On the one hand they like to see things running and don't put too much emphasis on how it was achieved ("the end justifies the means"). On the other hand they are convinced that "there is always a better way".

7.1.2 Felder and Silverman's Index of Learning Styles

This model is one of the widely used models today although it has already been developed in the 80ies (it was revised in 2002). You'll find that it is not that far away from Kolb & Co. but introduces some additional specific aspects (e.g. visual vs. verbal learning). It defines four dimensions characterising different learning styles and can be thought of as a continuum with one learning preference on the far left and the other on the far right.

The table below [2] presents the 4 dimensions and the possible values which in the end correspond to different learning styles depending on how the values are set. The idea behind the index is that one wants to develop a learning style that is balanced in all four dimensions. Such a style does not let any of the dimensions drift too far to either side. It has been shown that such a learning style lets oneself and others learn much more effectively.

Table 7: Learning Styles Index [2]

Sensory	**Intuitive**
Sensory learners prefer concrete, practical, and procedural information. They look for the facts.	Intuitive learners prefer conceptual, innovative, and theoretical information. They look for the meaning.
Visual	**Verbal**
Visual learners prefer graphs, pictures, and diagrams. They look for visual representations of information.	Verbal learners prefer to hear or read information. They look for explanations with words.

Active		Reflective
Active learners prefer to manipulate objects, do physical experiments, and learn by trying. They enjoy working in groups to figure out problems.	⟷	Reflective learners prefer to think things through, to evaluate options, and learn by analysis. They enjoy figuring out a problem on their own.
Sequential		**Global**
Sequential learners prefer to have information presented linearly and in an orderly manner. They put together the details in order to understand the big picture emerges.	⟷	Global learners prefer a holistic and systematic approach. They see the big picture first and then fill in the details.

7.2 Training Approaches and Training Method Features

Based on the theory of learning styles, there exist different ideas on how to define user learning approaches and classify learning methods, each with its own philosophy and dictionary. There were studies on conceptual models vs. procedural models, application-based vs. construct-based approaches, social cognitive theory-based learning, collaborative learning methods, technology-mediated methods, etc. [2][15].

Davis and Bostrom [10] used some of the ideas of the Felder and Silverman Index (see 7.3.1) to conduct a study on how well different approaches in the context of learning a new computer interface work. As a general classification of training methods they compared **Exploration-based training vs. Instruction-based training**. Similar to Felder and Silverman different dimensions – here called features - have been taken as a means of classifying different learning styles.

In the context of end-user training, those features have been split-up in two groups:

- **Process features** - refer to mechanisms by which individuals carry out learning activities. Therefore they are quite similar to the learning style index dimensions although they use different terms.

- **Structural features** - refer to the organisation of the training and training materials

The following table summarises the features and the possible settings in the context of the classification as more "exploration" or more "instruction" oriented.

Table 8: Training features of exploration and instruction learning [10]

Exploration-Based Learning		Instruction-Based Learning
Process Features		
Reasoning Process		
Induction		**Deduction**
In induction, the learner works from examples (provided or self-created) to discover general underlying principles.	⟷	Deduction takes general the principles and derives specific facts or examples from them.

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Level of Programming		
structure of the learning process		
Trial and Error		**Programmed**
Making errors is an inherent part of the process.	⟵⟶	Trials & errors are minimized as everything is more or less given.

Control of Learning		
High Learner Control		**Low Learner Control**
Transfers a lot of control to the learner	⟵⟶	Defines and controls almost all aspects of the learning process including the specific content and the order in which it is presented.

Structural Features		
Level of Completeness		
amount of task-relevant information that is provided to the learner		
Incomplete Materials		**Complete Materials**
A lot of material and examples are generated by the learner himself.	⟵⟶	Provides the learner with everything needed, step-by-step and prepared by the instructor.

Learning Orientation		
Task Focus		**Feature Focus**
Produces broader outcomes in the sense that it focuses on goal-driven tasks (e.g. create a new appointment)	⟵⟶	Features lie more in the focus of an instruction-based training (e.g. change the time of an existing appointment).

Another structural feature which is not in the table is related to the **delivery of the content**. One question here is whether the learning done purely among humans or whether it is **assisted by technology** such as computers and tablets.

So far nothing has been said about the **number of participants** in the learning process. While some people like to learn for themselves, others prefer to discuss things in a group. The number of participants is not directly related to the two approaches described above. But the **structure of a learning group** is then again something that can be seen as a structural feature similar to the ones in the table above. Whereas exploration learning will tend to happen in active communities and in a milieu of collaboration, classes will be the preferred form for instruction-based learning.

Another differentiation has been made regarding fundamental learning approaches is **implicit vs. explicit learning**. Whereas implicit learning deals with the acquisition of skills in an unconscious or in a playful manner by executing an activity explicit learning often involves task such as learning hard facts by hearth etc.

Coming back to exploration-based learning (naturally more implicit) vs. instruction-based learning (more explicit) one can sum up that exploration relies on more active learners who exchange a lot of information bi-directionally where instruction learning promotes a more passive, one-way learning style driven by the teacher. It has been shown that – although

exploration-based learning intuitively seems more natural – the best choice depends on the learners and the situation. Anyway, we have stated before that a good training concept should provide elements from both approaches.

7.3 Creating Effective Training Sessions

Using the knowledge on learning and applying it as far as possible may greatly facilitate creating effective training sessions. An effective training motivates the trainees, making them learn much more effectively, assimilate information better and even perceive the world differently.

7.3.1 Using Felder and Silverman's Index of Learning Styles

Here, as already stated, balance is the key. A balanced learning style will let the person applying it learn more effectively. And the knowledge about the necessity of a balanced learning style also allows creating trainings which are better understood by the end-users.

To use the index in order to create the preferred learning style, three steps are required [2]:

1. Identify your personal learning style in identifying your preference for each learning dimension. Explanations of each "extreme" learning preferences (e.g. the characteristics of a visual learner) and so called Learning Styles Questionnaires may be of help here.
2. Look at the result and identify the dimensions that are out of balance.
3. For each out of balance area, try to specifically improve your skills in order to get more into the middle of the scale.

To create a learning experience for others one has to be aware that the audience will most likely have quite different preferences in regard to learning. First, one should be aware of the personal preferences not to let them influence the training too much. Also here the key is to balance the way the content is delivered and always try to incorporate both ends of the scale. In other words, the training should provide hard facts and general concepts, visual and verbal information, experimental and reflective activities and try to provide detail in a structured way as well as the big picture.

7.3.2 Using Gagne's Nine Levels of Learning

The model was developed by Robert Gagne, an educational psychologist and pioneer in the science of instruction. It provides a step-by-step approach consisting of 9 steps each detailing an element required in order to create an effective training [6]. Each step focuses on a form of communication and - if completed – increases the chance of motivating and engaging the users and make them retain the information or skills that were learned easier.

The following table presents the nine levels and gives a short description for each one. It is one of different possible recipes on how to create an effective training session.

Table 9: Gagne's Nine Levels of Learning [6]

Level	Name	Short Description
1	Reception	**Gaining the attention** of the learner right from the start.

2	Expectancy	**Informing the learners of the objectives**. It is important that the learners know what they will learn and why. The teacher should explain what they will have learned at the end of a lesson and what their direct benefits will be. It is about motivating the users and making them wanting to know the new information as they clearly see what wonderful new things they can do with it.
		Change the stimulus by e.g. raising the voice, showing a video, gesturing. Tell them that the session starts now!
2	Expectancy	**Informing the learners of the objectives**. It is important that the learners know what they will learn and why. The teacher should explain what they will have learned at the end of a lesson and what their direct benefits will be. It is about motivating the users and making them wanting to know the new information as they clearly see what wonderful new things they can do with it.
3	Retrieval	**Incorporating the learners's experiences**. One should match the new information with related information or topics the learner already knows. The teacher could e.g. ask the audience about experiences they had in the past and relate to things learned previously and give references or make connections to similar situations.
4	Selective Perception	**Presenting effectively.** Presentation should be held in a logical, easy-to-understand manner and using a variety of different media and styles. In other words use a balanced way of learning (see also 7.1.2).
5	Semantic Encoding	**Providing learning guidance.** The teacher should come up with alternative ways of teaching the same information. Effectively this can be done by complementing the theory with examples, case studies, graphics, a story (storytelling), or analogies.
6	Responding	**Letting people show their knowledge and skills.** After a session, the audience should be able to demonstrate what they were taught. The way they do this is an indication on what they have really learned. One way is to ask them questions another, more active possibility is a role-play.
7	Reinforcement	**Providing feedback.** After the demonstration of the knowledge, the teacher shall give feedback, come up with tips and reinforce important aspects.
8	Retrieval	**Assessing performance.** This point is about testing the skills with written or oral tests, short questionnaires, essays etc.
9	Generalization	**Enhancing retention and transfer.** At last the learners should be able to show that they've retained information by transferring the new skills and knowledge to situations which are different from the ones they have been trained on. Here practice and repetition is very important. The learners should use their knowledge as much as possible. As teacher one may also organise a follow-up session or periodic practice sessions where they can practice different situations etc.

7.3.3 Using the ARCS Model

The ARCS model takes up some of the idea of Gagne's Nine Levels of Learning and is especially focused on motivating people to learn. It has been created by John Keller in 1984 [11] and has been widely used in teaching of different target groups from students, on the job training to the military. In short ARCS stands for Attention, Relevance, Confidence and Satisfaction.

- **Attention:** First, one has to attract the learners and gain their attention. This can be done by addressing their curiosity, sensation seeking, surprise, novelty, uncertainty etc. Possible strategies are using role-play, posing challenging questions, humour, variability etc.

- **Relevance:** In the next step the motivation is increased by establishing the relevance relating to personal interests and goals. People have to see why they need to learn the new information and how it helps them fulfilling their goals or satisfy some of their urgent needs. The teacher should build upon their experience and existing skills, tell the learners how the subject matters to them today and in the future, try to match the motive profile of the learners, use familiar examples and give them some freedom to use different methods for learning and let them organise their work themselves.

- **Confidence:** The learner should get confident with what he learns. The teacher should help them understand their likelihood for success [13], provide them with objectives and prerequisites, allow for meaningful success, grow the learners, provide them feedback and make them feel some degree of control over their learning. It is important the learners see that he is successful and that it this is directly related to his learning.

- **Satisfaction:** The outcomes of the learning should match the expectations of the learners and make them "feel good" about it. Learning should be rewarding and satisfying. It should make the learner feel as though the skill is useful or beneficial in that he can use it directly in a real setting. Constructive feedback and especially also reinforcement are very important to show them the positive consequences of their learning and keep them motivated (but don't patronize them by over-rewarding easy tasks). Finally, consistent standards and consequences should be applied for the accomplishment of tasks.

7.3.4 Using Kolb's Model – 4MAT

A concrete method to help learning effectively inspired by Kolb is 4MAT. It *offers a concept-based framework … that focuses on (1) Concepts, (2) Essential Questions, (3) Content & Standards and (4) Outcomes, and (5) gives specific guidance on how to connect all of this to learners.* [12]. It basically tries to create a learning experience that contains elements for all learners and learning types. Besides of Kolb's ideas 4MAT also incorporates ideas from the two methods presented above. 4MAT is on the one hand also about the idea of presenting the information in different ways in order to engage all senses of the learner and incorporate all learning styles similar to using the index
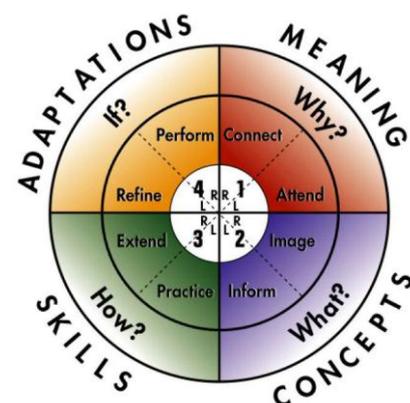

Figure 2: 4MAT Cycle [12]

of Felder and Silverman (7.3.1). On the other hand it presents a step-by-step model for an effective training containing 8 steps (including connecting to the learners, inform them, practice with then etc.) which is not unlike Gagne's 9 levels of learning. Therefore, we will not go into the details of the method here.

7.4 Training Methods, Materials and Delivery

This chapter intends provide input to different learning and training methods, materials and how they can be delivered (more details see [2][7][13]). The following lists contain a lose collection of different items the author have come across during their research on the state-of-the-art in learning. As the methods come from different sources, they differ in their philosophy and the level of detail and even overlap in some cases. Therefore, the lists neither claim to be complete nor do they aim at classifying all possible methods and bring them into one homogenous system to be presented. But they should contain the most important methods on how to learn something more or less efficiently.

Basic training and learning methods:

- **Instructor-led training (ILT):** Training and learning between an instructor and one or more learners, usually occurring in a training room. On the one hand ILT is quite effective as means to deliver information and also allows for direct feedback and dynamic changes during a lesson. On the other hand, when done in a group, it may be difficult to personalise and accommodate different learning styles.

- **On-the-job training (OJT):** A training form that takes place in a normal working situation, usually in a direct instruction situation and one-to-one set up. OJT is one of the oldest training forms still widely used today. Probably not the most efficient form of training, but easy to arrange and manage. OJT, due to its nature is realistic

- **One-on-one training:** Training between two persons. Special case of ILT and also the form applied for OJT.

- **Error-less learning (EL):** Example: Instructor gives an in-depth audio visual presentation and then lets the learners try to achieve a certain task.

- **Learning by modelling (LM):** Example: Instructor presents each learning step and immediately lets the learners reproduce this step

- **Trial and error learning (TEL)**

More concrete learning and training methods:

- Self-study
- Collaborative workshops
- Role-playing
- Story-telling
- Games and puzzles
- Hands-on skill labs
- Case study-based learning

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- Simulations and Real-time demonstrations
- Super-users, mentorship programme

The following lists consist of methods specifically designed for technology assisted training

- Computer based training (CBT)
- Collaborative E-Learning sessions
- Distance learning webcasts
- Web learning portals
- Video (live and on-demand)

Activities related to learning styles:

Learning style	Activities
Activist	Brainstorming, problem solving, group discussion, puzzles, competitions, role-play
Theorist	Models, statistics, stories, quotes, background information, applying theories
Pragmatist	Time to think about how to apply learning in reality, case studies, problem solving, discussion
Reflector	Paired discussions, self-analysis questionnaires, personality questionnaires, time out, observing activities, feedback from others, coaching, interviews

Learning material and delivery methods:

- Self-explanatory
  - No material at all
- Manual
  - Long/Short
  - Tip Sheet, Quick Start, Reference Cards
  - Paper/Electronically
  - On the phone/PC PDF
- Help
  - Web Online
  - On the phone
- Wizard
- Tipps
- Community based
  - Forums
  - Wiki
  - Over the phone
- Tutorial

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- - Presentation
  - Online/Offline
  - Movie
- Exercises
  - On the phone
  - CBT
  - Role Playing
  - Gaming
- Courses
  - Instructor-led
  - One-on-one
  - For care givers / relatives / concerned persons
- Support
  - Phone
  - Via mail
- Super Users, Mentorship