



Training course Senior Service Worker

Ambient assisted living services in home care and community based settings for the elderly

Guiding and advising about ambient assisted living services

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4. Guiding and advising about ambient assisted living services

4.1. Guiding and giving advice to elderly or other professionals

To be effective in assisting older people's everyday lives, our first and foremost task is to assess the elderly's abilities and environmental capabilities. Both areas can cover a wide range. There may be excellent home conditions, a good distribution, accessible house, AAL solutions can be installed, family support, good outside environment, there is a small community available at a distance, daily food and accessories can be purchased independently, etc. But if the abilities of the elderly, whether mental or physical, do not allow them to take advantage of these, the design of AAL solutions certainly need revision.

Aging is a natural process, abilities are fading, autonomy is also lost, sometimes in a rush, sometimes gradually. When using AAL services and solutions, we must take into account who and what to offer, because it is easy for a service system - that is preferred by the family, despite the profound preparation, to fail to work because of personal factors or because the real needs and abilities of the elderly were not measured. This may be especially true if the caring family has not lived close for a long time to the person who is in need of care. They begin to shape the environment of the elderly with recalling old memories, remembering the elderly's physical and mental abilities, seeing the present state of the elderly based on the activity of the past, creating a lot of tension, because the elderly can no longer produce - because of natural aging - that activeness and the level of attention that we expect from him, or even what he himself expects of himself. The tension of this can be solved by properly assessing the abilities of an elderly person.

Nowadays, the elderly routinely use common technology and tools. It is really not necessary to think in stereotypes that all the elderly know only the TV. It is important to look at the tools and technologies known and being used by the elderly person during his/her day. The technical level of these solutions - machines, tools, or the computer - can give you an insight into the design of services and solutions that they will actually use. Much energy can be lost if we try to persuade solutions to the elderly they have no affinity for, they do not understand how and in what way do they help them or they know exactly what it would do for them, but they hated it in their life or opposed its use. Such as beeper, emergency, voice-controlled device, especially with people who worked with manual controlled machines and devices.



Again, we should not generalize, there are things we might think will never work, e.g. using the internet, touch screen display and yet the elderly may learn them surprisingly fast.

The key here, too, is to look for motivation. If older people are motivated to become independent, self-sufficient and willing to do so, it is much easier to integrate the various AAL services and solutions into their everyday lives. With proper preparation and training, the elderly will be able to understand new features and learn how to use new tools. They have to understand exactly how they help them and what benefits they bring. It is important to understand that the elderly's focus may differ from the goals of the family or caregivers who care for them. Often, rather than planning for the future, they want to experience the present better and communication needs and relationships become more important. There are also big differences here, it's important to find motivation points. If the elderly are not motivated or it is difficult to map their interests, what moves them, it makes it difficult to develop the environment surrounding them. Here, the careful assessment is even more important and, if necessary, the involvement of the appropriate specialist, physician and psychologist in the process. After a careful survey, the introduction of the right solutions to the household or the elderly can bring significant improvements to their life, new areas can open to them or they can enjoy even more their past and share it with their environment.

They can learn new features, since we are still able to learn even at old age. It is also important to note that there is a need for constant control over the new opportunities so that fresh abilities cannot turn and have an adverse effect, not to take too much of something, to spend too long time with an activity - flipping their schedule, overnight stays - or the elderly might think about themselves, if they have learned new things so well, then they are able to execute other tasks too and put themselves at risks.

Overall, it can be said that AAL solutions and services that are appropriate to the habitude, the psyche, the motivation of the elderly can greatly assist the relationship of the elderly with themselves and their environment, enabling them an active life, with the right control and settings.



4.2 Proper application of assisting services

The use of support services can only be successful if the right person uses the right service. Following the survey process described above, a choice has to be made to match the needs and opportunities of the elderly person. Then comes the process of training, when the elderly person and his / her environment, must acquire the proper use of the AAL solution. It is an important principle to keep in mind the gradualism of the process and to take into account the abilities of the elderly person.

Like with all services, e.g. alarm systems, etc., when installing, we know the system's operation, maintenance tasks, important phone numbers, component names, but this knowledge quickly fades away. We may forget about important details, safety regulations, application specifications. The more complex a device or device system, the more attention we need to pay, especially to systems where the computer or other telecommunication device is part of the AAL solution.

We have to make sure in multiple ways that the elderly person has the same idea of how some settings work like we do. Although the use of electronic devices is widespread and there are more and more tools available for the elderly, it would be misleading to think that the different age groups use these tools in the same way. Elderly people are usually use them in a more purposeful way, and can quickly get stuck in the maze of features, settings, and multi-level user interfaces, and can only find their way back to their original purpose with external help. It is therefore important that the AAL services and solutions for older people are designed both in hardware and software for the needs and capabilities of the elderly. Therefore, it is also important that besides the proper involvement, the proper use is also ensured at the place of use. For example, the emergency calling device should be in the right place, the buttons should be clear, what each one means and when to press them.

It's not an easy task to teach new and new features, tasks to the elderly, often about remote monitoring and tracking devices, while many of them desire close and direct attention. It is important to find a balance between the amount, elaborateness and complexity of the technical assistance and the amount of personal care applied. This balance can be significantly influenced by the available human resources or the range of technical possibilities.



It is not enough to have the latest technology in the environment of the elderly, if the elder who we care about or whom we help to control his life with the various services, cannot fully control, use, or there is not a person to supervise and maintain the tools and processes. At the same time, it is often not possible to cover every minute with personal care, the proper use of technical solutions and services is necessary and useful.

For AAL's success, besides careful assessment and maintenance, we must strive for the development and maintenance of the most appropriate environment for all elderly people.



4.3. AAL solutions for seniors suffering from dementia

Apart from more or less healthy seniors, those suffering from dementia are another frequent target group for Ambient Assisted Living (AAL) solutions. They can be regarded an extreme user group with specific disabilities and, therefore, with specific needs. This chapter addresses typical dementia symptoms, measurement tools, common interventions and design guidelines. Owing to our increasing life expectancy, the prevalence of dementia is increasing: The World Alzheimer Association estimates that, worldwide, there will be three times more dementia patients by 2050, i.e. 115 million people.¹

4.3.1. Typical symptoms of dementia

Dementias are the most common and most severe psychological disorders at a higher age. Dementia describes a collection ('syndrome') of cognitive (mental) and behavioural symptoms with a progressive course, which is referred to as the behavioural and psychological symptoms of dementia:

- Cognitive symptoms: decline in memory, thinking, orientation, learning abilities, speech and judgement.
- Non-cognitive symptoms: changes in behaviour (agitated or aggressive, seems compelled to move, apathy) and in the sufferers' emotional life (depression, hallucinations).

The cognitive symptoms result in difficulties with daily tasks that require organisation or planning, in forgetting routes or names (leading to questions being repeated) and in becoming confused in unfamiliar environments. Finding the right words and handling money when shopping are also potential problems of dementia patients. The non-cognitive personality and mood changes include behaviours such as screaming, hoarding, cursing, or other culturally inappropriate behaviour that may occur during the disease's course. Some dementia patients also suffer from delusions that their spouses are being unfaithful, are imposters, or strangers in the house, as well as visual or auditory hallucinations that make

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United Nations, Department of Economic and Social Affairs, Population Division (2011). World Population Prospects: The 2010 Revision.



them believe people are talking or appearing when there is no one. Mood changes can be triggered by the sufferers' loss of their everyday abilities and orientation (e.g. they can no longer slip into their clothes, nor recognise relatives), which makes them sad or aggressive.

Dementia symptoms not only reduce patients' quality of life, but also mean that their families and caregivers are faced with severe problems. The disease leads to a progressive loss of independence, with the sufferers eventually being dependent on demanding care. Since the number of elderly people is increasing steeply, projections estimate that by 2025 there will be about 35 million people dementia sufferers worldwide. On average, 80% of the affected seniors end up living in care facilities. Dementia symptoms are caused by brain damage due to neurodegenerative diseases such as Alzheimer's disease, vascular dementia, frontotemporal dementia and Lewy body dementia. These diseases cause the brain to degenerate more swiftly than it would do during the normal aging process. Patients can suffer from several of these conditions at the same time. The progression depends on the type of underlying disease and occurs in stages.

Dementia is often preceded by mild cognitive impairments (MCIs), an intermediate stage between normal age-related cognitive decline and dementia symptoms that interfere with daily life. The sufferers' memory, language, thinking and judgment are impaired. Long-term studies suggest that 10% to 20% of those aged 65 and older may suffer from MCI. Although MCIs increase the risk of dementia, some seniors never get worse, while others even improve. As dementia progresses, memory loss and communication difficulties often become very severe. In the later stages, the sufferer is likely to require constant care and attention.

The table below shows an overview of typical symptoms in the later stages of dementia.

Symptom areas	Difficulties with
Memory	<ul style="list-style-type: none"> -recognising close family and friends -remembering where one lives or where one is -remembering recent or past events -carrying out or completing basic tasks -following instructions



Communication	-understanding simple information -finding words, eventually with speaking - reasoning clearly - interact appropriately (loud, rapid, aggressive)
Mobility	-moving about unaided -carrying out everyday tasks -moving purposefully (vs. wandering)
Eating	-eating regularly and enough -eating at all or swallowing
Hygiene	-controlling one's bladder -controlling one's bowel

Measuring the quality of life of dementia patients ought to involve:

- Their health status (including health-associated disabilities)
- Their environment (including restrictions, activation, opportunity of choice)
- Their subjective perceptions of their mood, physical discomfort and frustration
- Behavioural observation of their activities, emotions and social involvement
- Caregiver reports on the patient's behaviour and mood.

KEEP IN MIND: Dementia is a degenerative state that exceeds the effects of normal aging. It comprises mental, behavioural and emotional aspects. As the disease progresses, the patients' dependence increases, as well as the stress and strains of relatives and caretakers.

CONCLUSIONS REGARDING AAL DEVELOPMENT: AAL solutions can target not only memory loss, but also behavioural or emotional aspects of dementia. The individual health status and abilities of patients should be taken into account (in terms of adaptability). The system should neither patronize nor overstrain the users. Since patients and their caregivers are impacted by dementia, successful management has to comprise interventions for both.

4.3.2. Coping with dementia

In addition to medical or ergo-therapeutic treatments, there are several pragmatic measures to help dementia patients cope with their symptoms and to enhance their quality of life. These arrangements focus on providing support to counter these patients' tendency to

wander, their loss of orientation, their lack of social inclusion and stimulation. The more severe the dementia, the more important it is to initiate activity and social contact, since demented people tend to increasingly withdraw into themselves.

Interventions to support dementia patients:

Target dimension	Measures
Enhancing temporal orientation	<ul style="list-style-type: none"> -Regular meals -Visible calendars and clocks -Seasonal decoration
Enhancing spatial orientation	<ul style="list-style-type: none"> -Coding doors/rooms by colour, -Photographs of the patient, personal object
Supporting living environment	<ul style="list-style-type: none"> -Corridors with seating arrangements -Corridors without dead ends -Tranquility room next to activity rooms -Protected outdoor areas -Neatly arranged furniture
Offering stimulation	<ul style="list-style-type: none"> -Moderate sensual stimulation: aroma therapy, music, light (e.g. Snoezelen rooms²), decoration objects -Moderate cognitive stimulation: learning or memory games, creative activities (crafting) -Activity stimulation: boxes for rearranging things, singing, creative activities (crafting), celebrations
Supporting social interaction	<ul style="list-style-type: none"> -Assignment of minor duties (e.g. cooking) -Communication via expressions, touch, gestures (if speech has already deteriorated) -Animal therapy

² A Snoezelen room is a multisensory environment or room with a soothing yet also stimulating effect. It was developed in the Netherlands in the 1970s and is frequently utilised for autistic people or those with dementia.



4.3.3. Designing AAL solutions for dementia patients

A range of initiatives has been designed to include the needs of disabled people in the design process, for instance, Universal Design, Design for All and Inclusive Design. These initiatives have laid down basic design principles that can also be applied in the design of AAL solutions for users with dementia. Even though it might be challenging to meet all the suggested guidelines (since some might be contradictory), they can still serve as a practical guideline for a user-centred philosophy that addresses extreme users and their needs. For example, the principles of the Universal Design approach are:

Principle 1 - Equal use:

- Provide the same means of use for all users; identical whenever possible, equivalent when not.
- Avoid segregating or stigmatising users.
- Provisions for privacy, security and safety should be equally available to all users.
- Make the design appealing to all users.

Principle 2 – Flexibility in use:

- Provide choice in the methods of use.
- Accommodate right-handed or left-handed access and use.
- Accommodate the user's accuracy and precision.
- Allow adaptability to the user's pace.

Principle 3 – Simple and intuitive use:

- Eliminate unnecessary complexity.
- Be consistent regarding user expectations and intuition.
- Accommodate a wide range of literacy and language skills.
- Arrange information according to its importance.
- Provide effective prompting and feedback during and after task completion.

Principle 4 – Perceptible information:

- Use different modes (pictorial, verbal, tactile) to repeat essential information.
- Provide an adequate contrast between essential information and the background.
- Maximise the readability of essential information.



- Differentiate elements in ways that can be described (i.e. make it easy for those who have to instruct or give directions).
- Ensure compatibility with the variety of techniques and devices that people with sensory limitations use.

Principle 5 – Tolerance of errors:

- Arrange elements to minimise hazards and errors: the most used elements, the most accessible elements; eliminate, isolate or shield hazardous elements.
- Provide warnings of hazards and errors that could be made.
- Provide fail-safe features.
- Discourage automatic actions in tasks that require vigilance.

Principle 6 – Low physical effort:

- Allow the user to maintain a neutral body position.
- Use reasonable operating force.
- Minimise repetitive actions.
- Minimise sustained physical effort.

Principle 7 – Size and space for approach and use:

- Provide a clear line of sight to important elements for seated or standing users.
- Make reaching for all components comfortable for seated or standing users.
- Accommodate variations in hand and grip size.
- Provide adequate space for the use of assistive devices or personal assistance.

If these principles are applied, AAL solutions should be much more usable, intuitive and attractive – not only for dementia patients, but also for secondary users. In addition to these basic principles, the following design aspects should be considered regarding the specific needs of people with dementia as primary users:

- Consider the diversity of users. AAL systems are not only used by demented people, but also by their relatives or caregivers. Ensure that the system functions cover the needs of all of these user groups.
- Avoid cognitive overload. The interface should limit options and should be simple. Whenever possible, the dialogue should be linear and parallel tasks should be avoided. The usability should be guided by providing an interface (appealing buttons), that does not rely on users having to recall any functions.



- Take individual characteristics of dementia into account. Systems for patients with cognitive impairments should be able to adapt to the user's personal conditions, which will change over time. Model real-world objects. When users lack ICT expertise, or their cognitive capacities are increasingly weakening, it helps them if symbols or objects from real life are presented to make an interface more intuitive. For instance, time can be presented as a clock rather than digitally, or the turning of pages can be displayed as if the user was in fact turning pages
- Consider aesthetics. An appealing design does not necessarily interfere with accessibility and will make products more appealing to their users.

KEEP IN MIND:

The basic Universal Design principles and accessibility guidelines offer a good starting point for the design of AAL solutions.

CONCLUSIONS REGARDING AAL DEVELOPMENT:

Demented people can be regarded as extreme users that an AAL system should be able to handle. Make sure that the design of the system meets their disabilities.



Literature

World Health Organization (2012): Dementia: A Public Health Priority.

Thomas Pocklington Trust (2008). The experiences and needs of people with dementia and serious visual impairment: a qualitative study.

Publications of the European Collaboration on Dementia (EuroCoDe): www.alzheimer-europe.org