Development of a Training Program for the Improvement of Active and Healthy Ageing through the Exploitation of High-Tech Assistive Technologies

AcTive – Training materials

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Content

1. Background

1.1. The AcTive project

Technology has the potential to support the process of active and healthy ageing. However, modern devices, in particular information and communication technology (ICT), lack of adoption and use by older persons. The reasons for this are complex: On the one hand, technology is often not designed according to the user´s needs. On the other, older persons often lack in digital skills and ICT-literacy.

The overall aim of the European project "AcTive" is to provide training materials that pay attention to specific needs of persons who are not experienced in using ICT-based devices (e.g. like smartphones or emergency call systems). These training materials can be used by peers, friends and family but also professional users to raise awareness, answer questions and show examples of the benefits that technology.

Aims of AcTive:

- To create awareness and trust about the potential of using technology for improving active and healthy ageing;
- To foster ICT-literacy of older persons so that they can benefit from modern technology;
- To inform about technological possibilities and their application to specific needs of the users;
- To give support and guidelines for a "peer to peer" training model.

Website

The training material is supported by an online platform. Visit http://www.active-ict.eu for additional information in multiple languages (French, German, Polish, Romanian, and Spanish).

1.2. About this guide

What is it about?

This guide will give an overview of different technical devices that have the potential to support active and healthy ageing. It contains several guidelines and information on the benefits but also limitations of modern technology. Furthermore, it offers methods and techniques to identify which kind of technology could be useful.

- If you want general information about healthy ageing and technology, jump to this section (section 1.3.).
- If you want general information about older persons and the use of technology, jump to this section (section 2).
- If you want information about identifying the needs and training material, jump to this section (section 3).

Who can use it?

This guide is written for a broad audience. First it can be used by anyone who is interested in learning about the benefits of modern information and communication and assistive technologies and how those can help to support active and healthy ageing. Second it can be used by older people who are interested in teaching other older people the use and the benefit of modern technology. Third in particular, it aims at supporting people who want to show their relatives, family members or friends what technology is capable of and how it could be implemented into their daily lives.

Where can I find additional information?

Assistive technologies are a very broad field covering countless devices and products. Depending on the country you are living in, there might be other sources of information. Go online and look for websites that focus on technologies for older persons.

1.3. Technologies for active and healthy ageing

Introduction

Modern technologies have the potential to support daily life activities and have become of growing importance in ageing societies. Information and communication technologies, such as the internet, smartphones or PCs, play a continuously important role for all ages, including older persons[1]:

Technology can support communication with family and friends (e.g. video chat, messenger) and health professionals (e.g. telemedicine).

Mr and Mrs Smith are living in a suburb of a large city. Because of a new job their son and his family have just moved into a foreign country, so that they cannot visit their grandchildren regularly. Video chat via the internet is a good opportunity to maintain the contact even while they living abroad.

Mr Smith suffers from hypertension. He can connect the device he is using to measure his blood pressure with his smartphone and transfer all data directly to the doctor. Instead of every week, he now has to go to the doctor only once in the month.

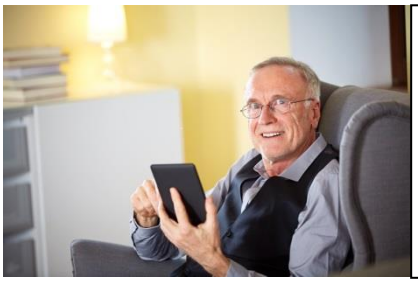
Technology can support independent living at home (e.g. "smart home technology" such as "intelligent" sensors that regulate the central heating at home).

[1] There are different definitions about who is considered as „old". In most cases, "age" refers to the chronological age and people above 65 are considered as "older persons".

Mrs Miller is living alone in her house. She can take care of herself but since she fell a few weeks ago she is afraid that it will happen again. An emergency button that can be used to call for help at any time provides security.

Technology can help to compensate age-related restrictions (e.g. driving assistance systems).

Mr Green has driven many years without accident. In recent years he has noticed that his reaction time has decreased. The breaking assistance of his car gives him the feeling to drive more safely.



Technology can support leisure activities (e.g. videogames, fitness tracker, E-Books) and also support an active life style.

Mr Walker´s hobby is reading books. In recent years he has a noticeable loss of vision. Since he bought an E-Book-Reader, he can adjust the type size. He does not have to take several books with him on holiday because he can store them on a single device. In addition, he can use the online offer of the public library.

Technology and ageing

Using the internet is widely spread among younger people in Europe but people who are 80 years and older often do not go online regularly. There are differences between the European countries: In Sweden for example almost every one within the age group 60 – 69 years is active on the internet whereas in Poland only every third user is an active user. In each country the proportion decreases with increasing age but in Sweden more than one third of the very old people are active users. In

Poland, however, almost no one of the very old people uses the internet.

Technology domains

There are countless types of (modern) technologies *Table 1* shows different life domains and technological functions. The following domains are distinguished:

- Physical and mental health
- Mobility
- Social connectedness
- Safety
- Everyday activities and leisure

Technology functions	Life domains				
	Physical and mental health	**Mobility**	**Social connectedness**	**Safety**	**Everyday activities and leisure**
Monitoring/ measurement (person, environment)	Physiological functioning (e.g.,heart rate, blood pressure, and oxymetry), affect, health behaviors	Speed and variability of gait, distance covered, vestibular functioning, driving behavior, daily exercise	Frequency and duration of mobile and fixed communication device uses; frequency and duration of time in direct communication with other humans; frequency and time spent in social settings	Frequency of falls, location, driving ability	Frequency, accuracy, and speed of daily task performance; frequency and duration of leisure activities
Diagnosis, screening	Clinical conditions, risk status for clinical conditions	Risk for falling; ambulatory ability, adequacy of daily physical exercise	Social isolation, social integration	Emergency situation, being lost, at risk for driving accidents	Critical cognitive functioning, critical ADL/IADL status
Treatment, intervention (compensation, prevention, enhancement)	Remote behavioral treatment, chronic disease management, prevention and wellness interventions, clinical decision support	Guidance assistance, risk mitigation (e.g., risk of falling), encouragement and support for exercise	Enhanced social integration, connectivity through computers/communication technologies	Emergency response systems, computerized driving assistance, alert systems	Task assistance or training, entertainment, education

ADL = activities of daily living; IADL = instrumental activities of daily living.

Figure 1: Technology applications to important life domains. Reference: Schulz, Richard; Wahl, Hans-Werner; Matthews, Judith T.; Vito Dabbs, Annette de; Beach, Scott R.; Czaja, Sara J. (2015): Advancing the Aging and Technology Agenda in Gerontology. In: The Gerontologist 55 (5), S. 724–734. DOI: 10.1093/geront/gnu071.

2. Older persons and technologies

The results above show that there are age-specific and country-specific differences. However, older persons are highly heterogeneous in their living conditions, intellectual and social competences, health and economical status, problem solving skills and education level. So it is also important that technology fits in the social context of the individual older user. Therefore, the following aspects need to be considered:

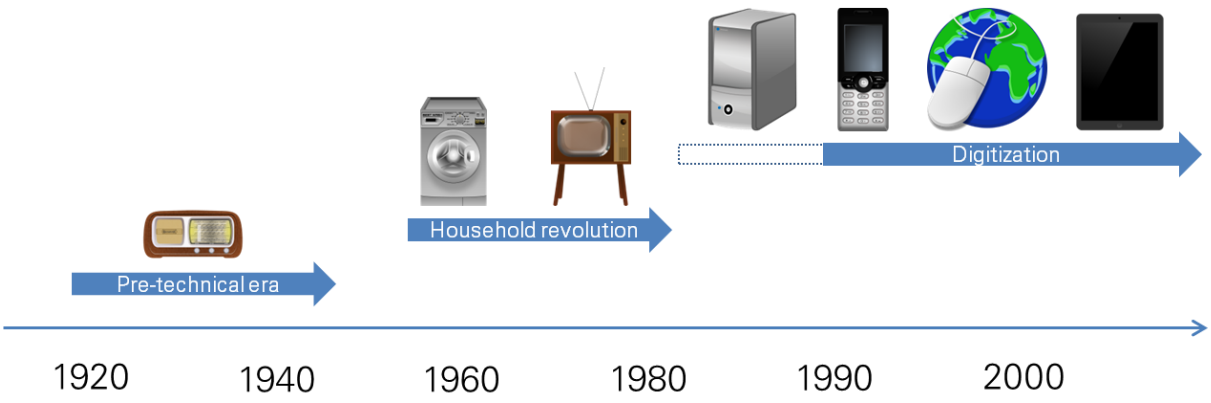
- *Chronological age and biography:* How experienced is the user with the use of modern technology?
- *Health status:* Is he or she able to use the device or does he or she have any kind of handicaps, mentally or physically?
- *Living conditions:* Does the users have any kind of social support (e.g. by a spouse, family member or friend)?
- *Level of cognitive skills:* Is the user able to understand and follow the instructions of the device?
- *Economic status:* Is the user able to afford a device or is there any kind of financial support?
- *Infrastructure:* Some devices require a broadband connection which is sometimes not available, in particular in rural regions.

The answers to all these questions listed above need to be kept in mind. This shows that the interplay of age and technology is very complex and a lot of aspects need to be considered.

Although generalisations are difficult, most older persons perceive technology as very helpful. This holds in particular true for household technology (like microwaves, vacuum cleaner, etc.) or entertainment and communication technology (like radios, televisions, telephones).

2.1. Technology generation

Every generation has made experiences with different technologies. Four technology generations, each characterised by certain key-technologies[2], can be distinguished:



These generations can help to explain why persons of a certain age are not used to different devices. Moreover someone who was not very tech-savvy over his or her life course probably will not use ICT-based products in old age.

As people grow old, so does technology. Devices and their functions and design change over the years and the pace of their development is continuously increasing. This makes it hard to keep up with new technologies.

[2] Sackmann, R. & Weymann, A. (2004). Die Technisierung des Alltags – Generationen und technische Innovationen. Frankfurt.

2.2. Stereotypes about age

In particular those devices that were designed to support active and healthy ageing are often perceived as stigmatizing by older persons. Instead of addressing positive aspects and empowering older persons, many devices underline negative aspects of ageing. However, being old does not imply being frail and ill. Therefore, the question should not be *"what technology do you need?"* but *"what can you do or make with the technology?"*

Older people need to be included in the information society; otherwise they are left behind and, ultimately, excluded. There are a lot of negative stereotypes about them which influence how they are perceived by society:

Negative stereotypes about the use of technology of older people:

- Older persons cannot learn new things.
- Older people are sick and ill.
- Older persons reject modern technologies.
- Older persons are not interested in the use of modern technology.

These stereotypes should be avoided and need to be corrected:

Facts about the use of technology of older people:

- Higher-educated people use modern technology more often than lower-educated people.
- People with more technology experience in their former life are more interested and open-minded in using technology in later life.
- Older people need more training and time to understand how to use unknown devices compared to younger people.
- The introduction of modern digital technologies, such as smartphones or computers, to older persons is often initiated by relatives, children or grandchildren (e.g. as a present). It is necessary to have someone who can be asked in case of questions.
- Older people need more support than younger user. Instruction manuals are often found to be "useless".

Ageism

Using negative stereotypes and negative age images is referred to as "ageism". Ageism is a form of discrimination against older persons. It has negative impacts on society but also on older individuals because it can undermine confidence and make people feel devalued.

In particular considering the capability to understand and use technology, ageism is often encountered. Simple things can prevent ageism while teaching older persons in the use of technical devices:

- Try to avoid foreign words and technical terms.
- Take problems seriously.
- Don´t laugh about mistakes.
- Prepare time for questions.

The use of modern technology often poses ethical questions. The majority of older persons use devices in their private living environment and in some cases personal data needs to be stored or transmitted. Therefore, it is necessary to fully explain what data will be collected and if it will be transmitted. If a person does not want to use a device, this needs to be respected.

3. Where does technology help?

Modern technology – as all technology – should meet the needs of their potential users, including older people. This asks for a participatory approach to make sure that the user actively decides which technology he or she wants to use.

Therefore, several steps are necessary:

(1) Analyse actual needs including living arrangements and personal circumstances. This requires to better understand a person and the situation he or she is living in.
(2) Show technologies that are able to support (or simply entertain) a person and also provide alternatives.
(3) Explain those technologies, including benefits and limitations.

A method that does not only provide good results but is also fun is described in detail below. Please keep in mind that the following exercises are only examples. They are not suitable for everyone and, in some cases, need to be modified or personalised. You can also visit the project´s website for additional material and information (http://www.active-ict.eu).

Assessing your needs

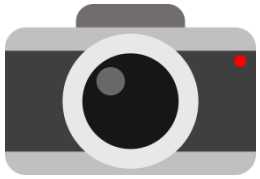
Description: This technique is usually used by designers who want to know more about a person's life, including the living environment and circumstances someone lives in. This also covers a person´s thoughts, values and beliefs. Therefore, several materials (see below) are given to a participant who is asked to use those to record his or her environment, events or interactions. This method allows not only gathering information about a person but also enabling participants to reflect on their habits, environment and also technical devices. Considering technology, this means the objective is to show a person new possibilities and to challenge existing assumptions and conventional views. Talking with someone about the possibilities of a device might

have him or her change their view. The following examples of techniques can be used separately or combined. Furthermore, they can be complemented by other exercises. The information that will be gathered can be used to identify technologies that might fit into the living environment of a person. E.g. if you see or notice that someone cannot hear the telephone properly and misses calls, you could suggest to use a device that that vibrates or flashes whenever some calls per telephone. Also you might uncover that someone is afraid of using a smartphone that he or she has received as a present by a relative. In this case, you can explain how to use it.

IMPORTANT: Participants should be able to write, draw and hold the camera or other objects and should not be affected by cognitive impairment. Moreover, all participants should agree that information about them is gathered and this information should be treated with responsibility. Data security is an important topic and therefore, it should be clearly communicated for what purpose the information will be used and that it will stay confidential.

Material: A lot of different material can be used. Which is best depends on the person. Here is a list with some examples that are often used:

- A camera (disposable camera)
- A diary or notebook
- Postcards
- A map


How to: There are a lot of different ways to conduct individual needs. The best way to make use of this technique is to have a clear picture of what should be the primary goal:

- Find out if a person has trouble with different kind of technologies;
- Identify areas or daily living situations in which assistive technology could help (e.g. because a person is having trouble with it);
- See what different kind of technology someone has already in use.

Depending on the goal(s), different materials can be used.

Diary or notebook

Again, there are a lot of different ways to organize the diary. For instance, you can give someone an empty notebook and ask him or her to write down events and situations in which technology was either experienced in a good or bad way. If you are not very familiar with someone, it is also an easy way to gather information. Some people might be afraid of ICT-based assistive devices, e.g. because they think they might break device. A good way to take away their fear is to have them make a list of technologies that are already in use in their household (this includes the telephone, TV, smartphone, etc.). This shows that technology already plays and has played an important role in the everyday life. Furthermore, it helps to underline that technical devices are useful.

The following example will help to gather certain information. A diary helps a person to think about different technologies and how helpful (or not) those are.

My diary

Name:

Sex:

Age:

(Former) occupation:

Living situation:

Comments:

Technology and I

I use the following devices:

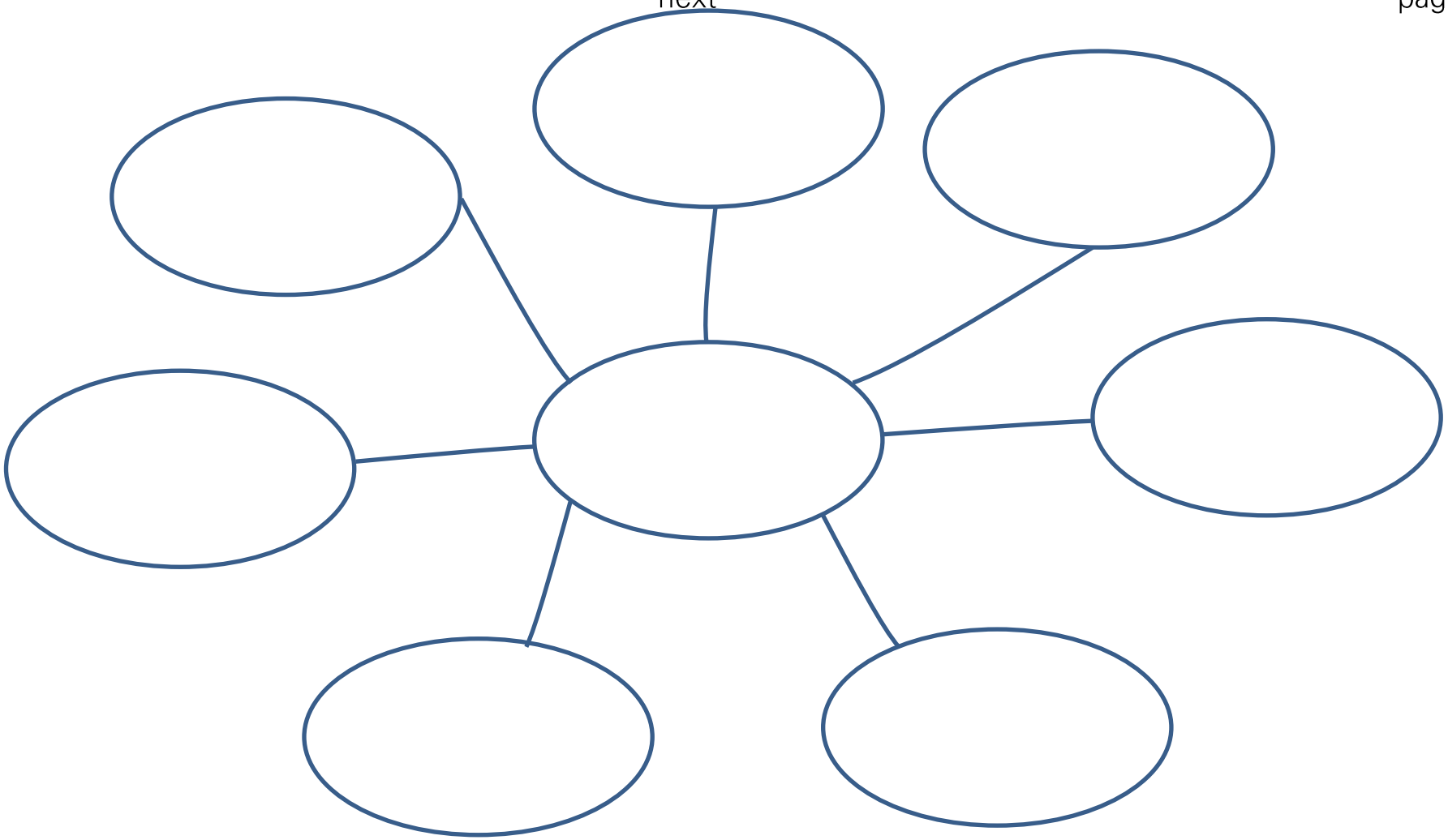
	Every day	Once a week	Once a month	Never
TV				
Radio				
Telephone				
Handy				
Smartphone				
Computer				
Notebook				
Tablet				
…				
…				
…				
…				

I have trouble using the following devices:

	No trouble at all	Sometimes	Much trouble	I do not use it
TV				
Radio				
Telephone				
Handy				
Smartphone				
Computer				
Notebook				
Tablet				
…				
…				
…				
…				

My contacts

Please write your name into the centered circle and all persons with whom you communicate into the surrounding ones. Indicate how you communicate with your friends and family (you can use sympbols like the ones listed on the next page).





















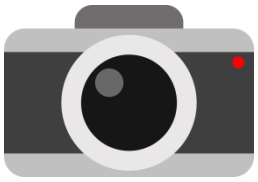






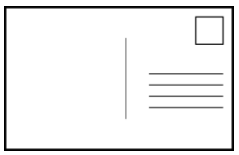



Camera



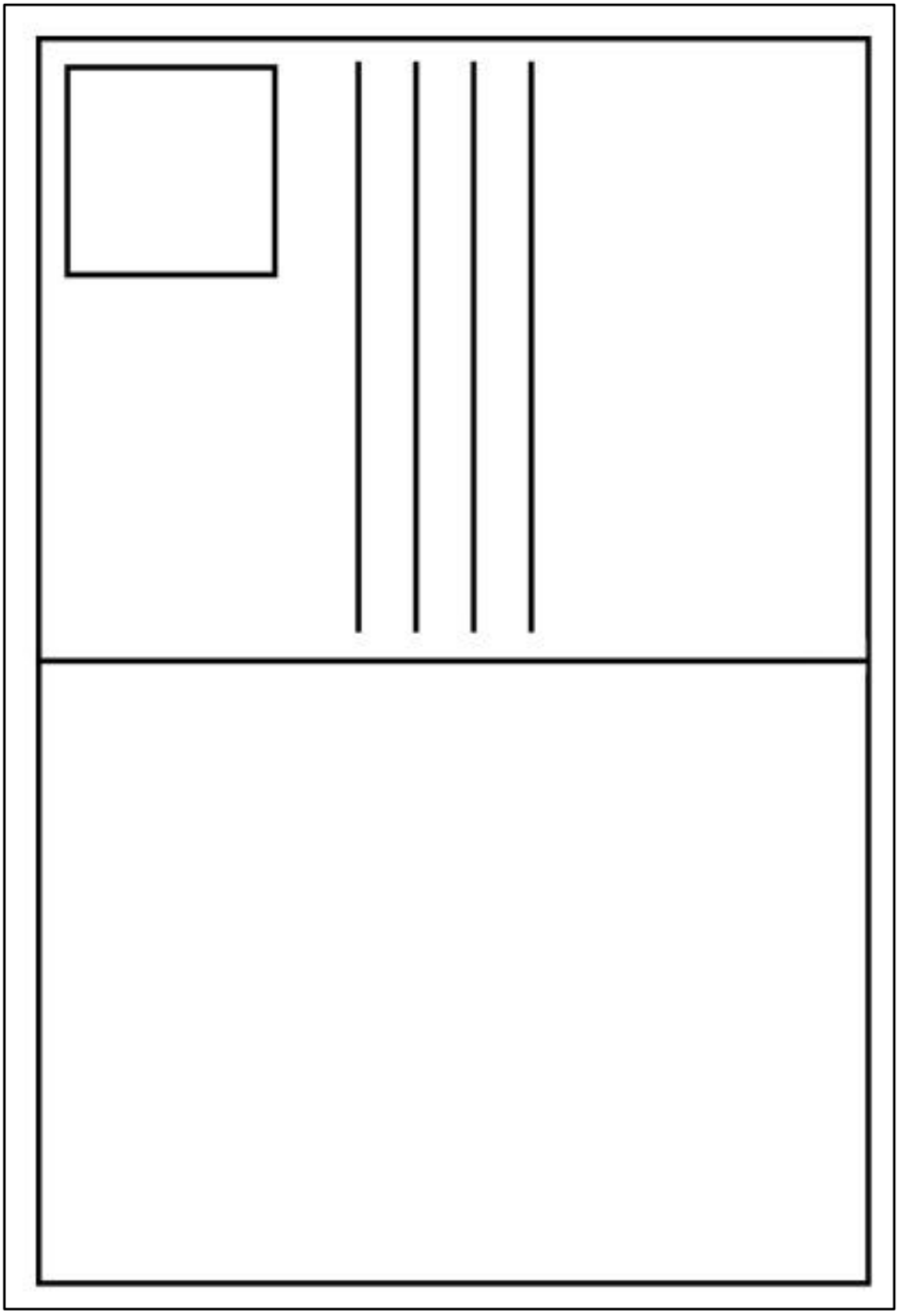
Taking pictures can help persons to express themselves. Disposable cameras are not expensive (they cost around 5-10 Euros) and easy to use. Give a person the camera and ask her or him to document situations, devices and all other kind of different situations that cause trouble or are simply seen as interesting. There is also the opportunity to include the pictures taken into the diary. The pictures can be used to discuss these challenges and find solutions.

Postcard

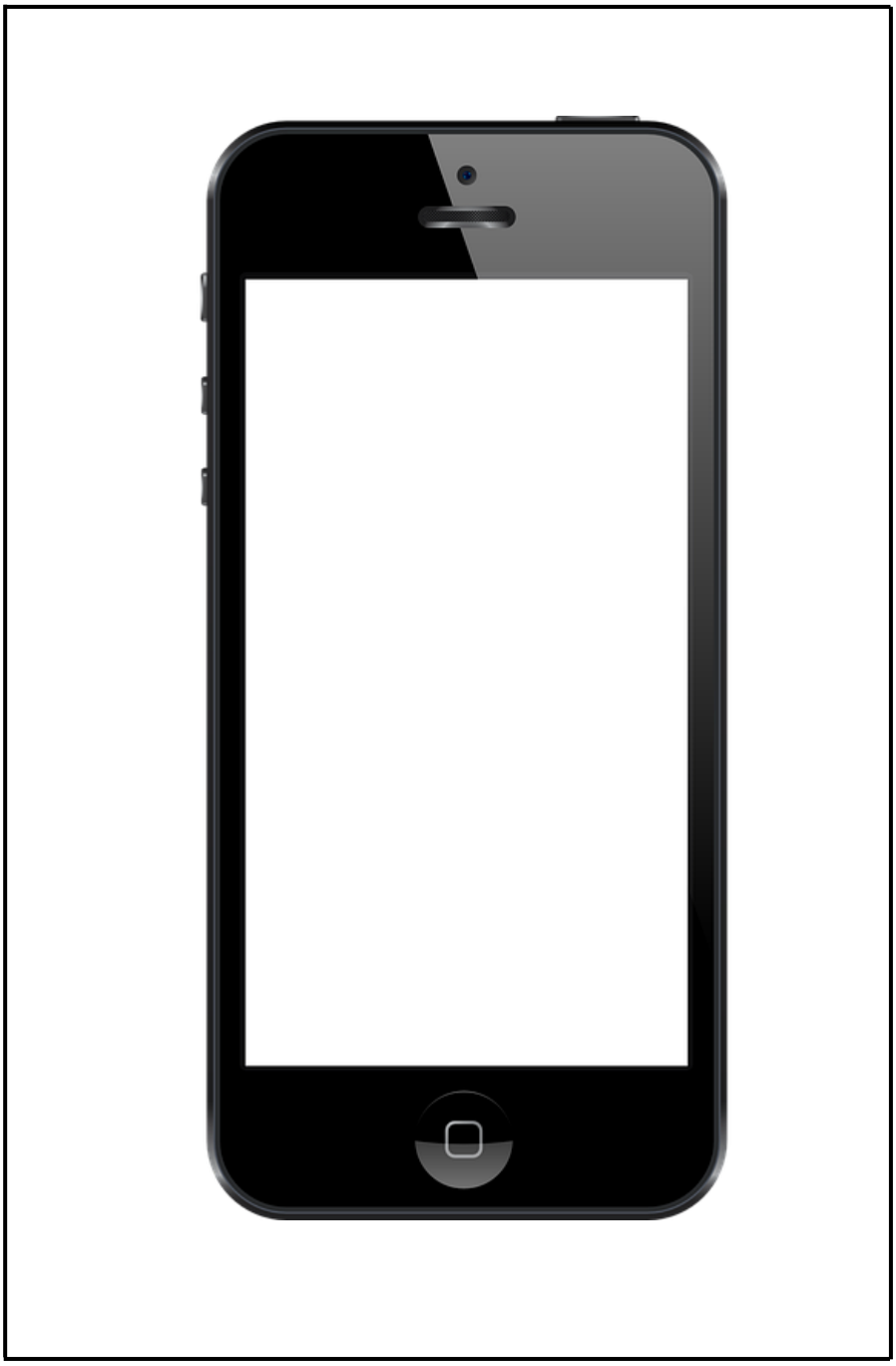


Postcards can be used to have someone think about different devices. One side of the card shows one or multiple images of technologies (e.g. tablet, smartphone or home alarm systems); the backside shows one (or more) question. The question can address attitudes towards modern technologies and their use in daily life. Here are some examples, feel free to add additional questions:

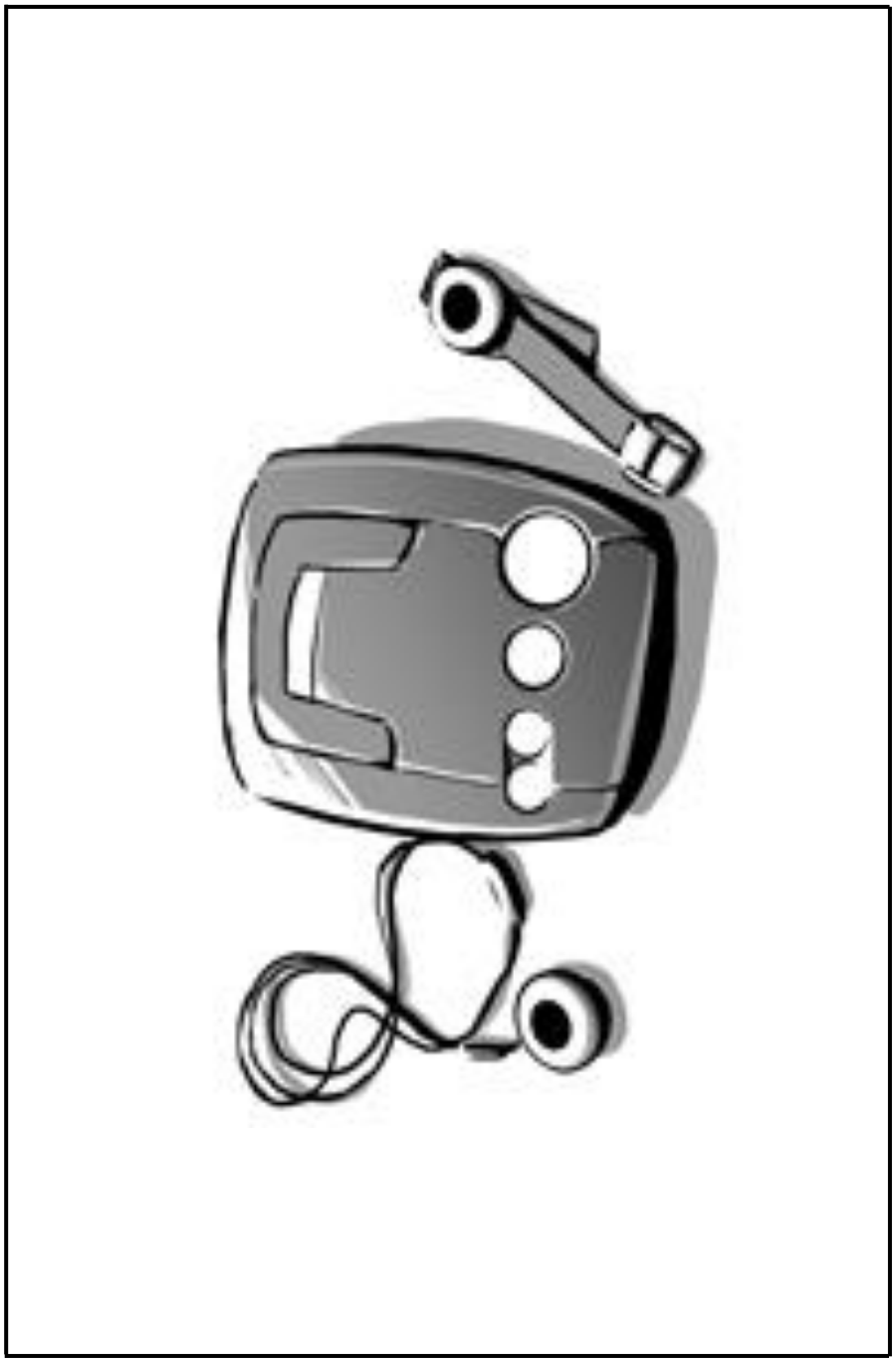
- How confident are you in using this device?
- Have you ever used such a device?
- Do you think, you will use one of those by yourself?
- Do you have any negative feeling or worries about this device?



Smartphone



Emergency call



Orientation device

Entertainment system

Smart Watch

Partners


Eseniors


gesmed
GESTIÓ MEDITERRÀNIA
DE NECESSITATS SOCIALS


SOZIALVERBAND
VdK
SAARLAND
Unser Land sozial gestalten.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