

Assistive Technology for Seniors and Health-stratified - Definition and Division

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Abstract

Assistive technologies cover a very wide area that the Czech Republic has not yet fully mapped. These are technologies that can provide so-called "inclusive services" or can serve separately. The ATIS (Assistive technologies and inclusion services) concept is used in modern states to improve the services provided to social and healthcare users.

Keywords: seniors; health-stratified; assistive technology.

INTRODUCTION

Assistive Technology is a tool that mitigates the impact of any disability or lack of ability. Users of assistive technologies may be people of any age, with the need for some different tools changing, some of which are very long-term. These tools, which improve or modify physical and mental abilities, can therefore be used virtually throughout the life of the individual, while helping older and older people with healthy technologies in older age. Such a person is characterized by the need to balance the technology with its inadequacy.

Assistive Technology - Definitions

Assistive Technology (AT) is any tool, device, software or system that uses modern technology (in particular sensors, information and communication technologies) to maintain or enhance the functional capabilities of individuals with special needs, thereby facilitating their daily lives and improving the quality of life and self-sufficiency. People with special needs are seniors and people with disabilities. Assistive technologies innovate social services, apply to all social services, help people without disparities, disadvantages, but also help with social service providers. They greatly help the caregivers to improve their finances and make their service more efficient. Assistive technologies and services will make it easier - even allowing you to interrupt uninterrupted direct care. Carers prevent social exclusion, they have the opportunity to integrate socially but also integrate into the majority society (dealing with personal affairs, work on short-time work).

Even from simple compensation aids, after installation with special hardware, the software becomes assistive aid, assistive system.

With the help of assistive technologies, used alone or on their built services, the following barriers can be removed or reduced [1]:

1. physical,
2. psychological,
3. social,
4. Information,
5. interactive,
6. Realization.

Basic types of assistive technologies

The basic criterion for AT classification can be considered to be the relation to the user's person: whether it is allocated to the AT or by some technology it deals with its surroundings (the environment it is visiting), we recognize the dual kind of technology [6]:

a) **The mobile technology** that a person transfers with him either permanently or as the need arises and the nature of his journey, and whose operation and at least some functions work autonomously, ie without the need for further special equipment. However, these facilities can use commonly available networks, especially telecommunications, and other infrastructure built independently of the specific needs of assistive technologies [6];

b) **Stationary technologies** that create an environment in which the person can move (eg intelligent or monitored households, technology for the orientation of the blind). These are special installations, the existence of which facilitates or facilitates any action or function of the user. The user may or may not be equipped with a particular personal device. Some installations can also be used in practice by other people who do not normally require them.

This basic division of assistive technologies can work in any environment that a person with a disability or senior attends.

Technological representatives from both groups can interact or are directly designed to complement each other and then perform certain other functions (for example an infrastructure to resolve alarms from panic buttons assigned to individuals, thus the technical means to call for help).

The first environment in which the user of these technologies is located is the family (apartment, house) and health and social care facilities. In addition, with all ages, all levels of pre-school and school education and out-of-school training, all public and non-public spaces visited, municipalities including infrastructure, services, communications networks, vehicles, parks [6].

Assistive technologies can be further divided into different groups according to a variety of criteria and considerations. These are the following aspects of division [1]:

- a) By disability,
- b) By purpose,
- c) By nature,
- d) Passive x active,
- e) By physical nature,
- f) By degree of danger,
- g) According to separate applicability.

Basic division of assistive technologies

a) By disability

- For blind and partially sighted people - eg, compensation aid, reader, Braille interface, software that converts image information into text or spoken speech; Smartphone - navigation, communication;
- Hearing impairment - for example cochlear implant, visual signaling; PC, tablet to communicate with sign language through video conferencing;
- For motor impairment, including amputations - robotic prostheses, robotic devices for manipulation with objects, computer control interfaces, electronic rehabilitation aids - not eg balloon;
- For cognitive impairment - eg motivational games, navigational systems, reminiscent of devices; Game console, for social communication, individual and group eg Skype, webinar, soc. Networks;
- For specific learning disorders - eg motivation games, focusing games, electronic learning aids with remote remote monitoring capability [3].

b) By purpose

- Learning support (calculator, spell checker, word processor);
- For daily activities (such as food, washing, cooking, dressing, cleaning, etc.);
- To support communication (from images to speech synthesizer);
- For device control in a given environment (switches, controllers, special interfaces);

- For ease of use; Enabling movement (walkers, manual / electric trolley);
- For leisure activities (adapted books, toys, computer applications, etc .;);
- For better sitting and lying (special chairs, beds, anti-decubitus mattresses) [4].

c) By nature

- Fixed at the appropriate device - eg special interfaces requiring precise settings or, Calibration, single-purpose software bound to the device;
- Mobile on a device - such as a computer interface that can be transferred to another computer (connection via a standard connector or wireless) - Braille reader, computer control devices with eye movements; Smartphone
- Fixed in man - robotic prostheses, cochlear implant, individualized aids;

Mobile in humans - Usable for more individuals - walker or wheelchair fitted with detection of dangerous inclines, falls, locators [6].

d) Passive x active x unattended by a person with disabilities
Passive type means devices and devices that must be activated by one's own power or control elements, emergency buttons,

- Typically, an active type is an electric drive and the person can control it using control elements (a switch, a joystick), or this device can operate autonomously without human intervention.
- Unattended by the client - remote assistance by a second person - communication systems, but also opening, closing of windows, doors, control of electricity, gas, water, individual appliances, lock motor unit, magnetic barriers, safety zones, autonomous devices, systems.

e) By physical essence

- Mechanical
- electrical
- Optical
- Acoustic
- combined (often electric + mechanical, electric + acoustic, electric + optical) [5].

f) Depending on degree of danger - impact on vital human organs and their function (classification of classes of medical devices under the Medical Devices Directive (93/42 / EEC)). - influence on human health - influence on the protection of personal data of a person - influence on human safety in different environments [3].

g) Depending on whether they function primarily as separate functional units (with or without a link to a service) or whether they are only means of providing other services:

- M2B (man2box) technologies are technologies that the user can use in their entirety without the need for third party assistance. It is a standalone device that meets its primary function directly at the user and which the user can independently control and use. Examples: special compensating and inclusion aids, positioning beds, fitness bracelets, pressure and temperature gauges and subsection.
- M2M (man2man) technology is a technology that requires the control or collaboration of others, whether formal assistants or intermediaries and managers of another service, to fulfill their purpose and function. These devices can not be controlled by the user himself or partly by the user, but they do not provide full functionality without the intervention or assistance of others. Examples: fall alerts and other emergency care devices (connecting the user with the service provider), special communication devices enabling the user to communicate with the surveillance center, means for remote navigation and localization of persons, etc. [6].

CONCLUSION

Technological development shows a steadily expanding range of technologies, and the quality and utility of those offered on a long-term basis. The attribution of these technologies, particularly those based on computer technology and ICT, is therefore openness to other functions that may benefit the target group. It follows from this that the listing of aids at a given time will soon be obsolete, and therefore, in order to solve questions of assistive technologies, a system-wide view that is free from previously created purpose templates is appropriate. It is appropriate to stick to the definition of assistive technologies, which is much longer than the specific list of devices intended for routine practice.

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