



Context

Standard keyboards and mice are functional ways of interacting with computers, however standard devices can pose difficulties for people with physical, sensory, cognitive impairment.

Alternative keyboard, mouse and other pointing devices are available and can be useful for users with disability. If “standard alternatives” do not suit the necessities required, manual adaptations can be made, by professionals, to standard keyboards, computer mice and other devices.

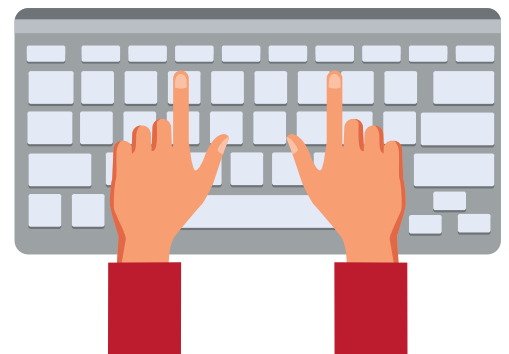


General Principles



Physical impairment can lead to movement limitation, sensorial cognition impossibility or other kind of barriers. Alternative keyboards are set in a way that exploits residual movement in the best possible functional setting, finding alternative solutions for functions which are challenging or not at all accessible for the user.

In the most extreme cases, movements could not be executable by the user, a head or an ocular pointer could be required: these devices recognize inputs from an infrared pointer connected to a special computer, this way mouse functions are simulated by eye movements. Hand-typing can be substituted by the use of special wands and sticks that can be worn directly on hands or head if the disability impossibles fingers dexterity.



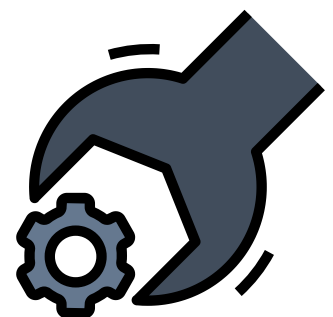
Devices adaptation



Often the setting of alternative input devices requires the assistance of a caregiver because of the nature of physical impairments.

This caretaker shall always make sure to set the device in a ready to use condition and to stay nearby the user in order to always be reachable in case of need.

Adaptive technology (designed to be modifiable for the user's needs) is dedicated to producing input devices that are easily adaptable to different needs; low or high tech solutions. Different associations and support groups for disability rights and inclusion organize activities and meetings about technologic to modify devices which are not yet designed for being adapted.



Examples of adaptive/assistive technology



Ocular pointers and eye trackers exploit infrared high-tech sensors to recognize human eye sight and its movements to simulate the mouse arrow on the screen, recognizes blinking as mouse button pression and usually have all normal computer features customizable to be used on-screen, hands-free. This kind of assistive technology is essential to people that have motion impairment and body paralysis to interact with the digital world.

Pointers are an adaptive low-tech that can be worn on head or hand; with the help of a wand or a bent stick they are used for computing and phisically press the keyboard keys. This kind of technology permits to users with partial paralysis or motion disability to access the keyboard. If wrist or arm mobility are possible for the user, assistive computer mouses can allow accessibility to mouse functions exploiting gross motor residual movements.

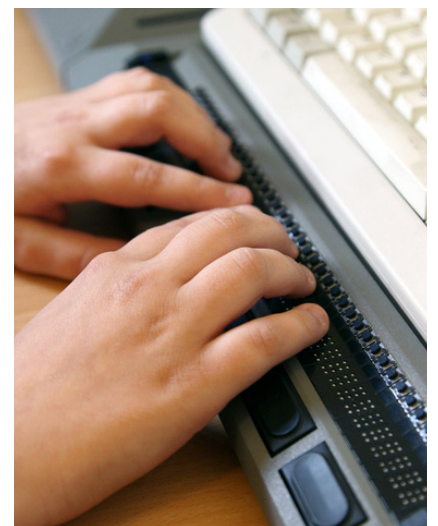


These tools substitute small mouse buttons and laser tech with more accessible joysticks, trackballs and simplifies button research adding big and differentiated buttons which can help disabled users to navigate the screen and interact with computer functions. This technology may seem old nowadays, but is still exploited successfully.

Braille keyboards permit to blind and visual impaired users to recognize and inputs keys comfortably exploiting braille code. It is often used together with a tactile screens of more recent but similar tools that ease screen accessibility and reading.



The world of gaming also offers hardware adaptations to create accessibility to virtual world for disabled gamers.



Resources

If you wish to deepen your knowledge about this topic you can visit **AbilityNet** website, enterprise dedicated to make technology accessible to any person with disability or impairment. Other interesting initiative is represented by **AbleGamers**, association dedicated to gaming accessibility directed to gamers with disability.