

# Assistive Technology “(or) Universal Design”

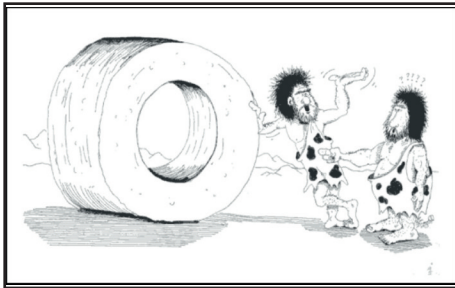


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Technology has revolutionized life for all of us, but it has had a particularly powerful effect on people living with disabilities. In a world where technological

advances are made daily and new products abound, it is often difficult to decide which products will work for you. Abledata ([www.abledata.com/](http://www.abledata.com/)) is a great resource to find and select products.

The essential thing is to understand that "technology" is all around us, an inherent part of our culture and environment. Often in the world of rehabilitation though, many individuals act as if technology is somehow separate from culture. That has never been true in human existence since the first stone hammers were picked up. The oldest evidence of wheelchairs is a Chinese engraving from 525 AD.



It is all "technology." A stairway at the entrance to a school is technology, as is a ramp. The lighting in the corridors and in a classroom is technology. The floor surface is technology, as are classroom seating, the windows, and the sound absorbing materials in the ceiling. Clothing is technology, so are books and papers, pens and pencils, chalk and whiteboards, videos and doorknobs. The PA system, clocks, and bells are technology. The school bus is technology, as is everything that we build and design for human use.

What does "Assistive Technology" really mean? According to the classic definition in law, it is "...any item, piece of equipment, or product system, whether acquired commercially or off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities."

I prefer "Universal Design, but that is a different concept for many of the same systems. Assistive

Technology can mean technology adapted or specifically chosen to assist someone with a disability. Universal Design means offering technology design options that increase the functional abilities of all. Just as a short person is more impacted by high shelves than "an average height" person and a tall person is more impacted by car door height than "an average height" person.

As you move through every environment, observe and look around. See all the conscious and unconscious "technology" decisions that people in power have made that may make life more difficult for a wide range of individuals. Then consider what could be changed, and how that might help everyone.

Growing numbers of hi-tech assistive technologies are enabling people with disabilities to enter the mainstream society. Past innovations have tended to be one-of-a-kind, customized to an individual's limitations and hugely expensive. Government, insurance, and charitable funds to help pay for complex rehabilitation technologies have never been adequate. But the value of enabling a dependent person to become an employed, tax-paying member of society is raising priorities for assistive technologies. The picture is becoming brighter as medical and rehabilitation advances prevent or minimize severe physical disabilities and (industrial) designers adopt the Universal Design concept. When combined with rising demand from the "senior market," universal AT may lead to economies of scale and affordable prices for items that can be mass produced.

In Information Technology (IT), universal accessibility produces flexibility for all. The IT industry is now capable of designing mass-market products with no need for special lines for persons with disabilities. For example: a small computer (the size of a wallet) uses the same features for everyone. Prompted by the 2000 scandal over Florida ballots and voting machines, a cross-disability accessible voting tablet debuted in the 2004 election. Developed at the TRACE Center (University of Wisconsin), the EZ Access technology allows a person to vote regardless of visual, mobility, or cognitive limitations. Voters register their selections on the tablet, which instantly and accurately totals the results and sends them to a central site as election day closes. The EZ Access Solution (<http://trace.wisc.edu/handouts/ez-intro/index.php>) also works for ATMs, PDAs, and home entertainment centers.

The Galileo power chair from Israel offers user-maneuverability and the ability to travel stairs, steep inclines, and various terrains. The Galileo features a height-adjustable seat that lowers to floor level, raises to standing level, and reclines to a full horizontal position. The chair also allows unassisted ascent and descent, facing the direction of motion while keeping the rider at an optimal combination of balance and comfort. The Galileo web site has interesting streaming video demonstrations of its products, including robotics, <http://www.galileo-mobility.com/>.



Smart Home Technology is a collective term for information and communication-technology in homes, where the components are communicating through a local network. The technology may be used for monitoring, alarming and executing actions, according to the programmed criteria.

The local network communicates with the external world by telephone or through the Internet, sending messages or alarms to one or more recipients. These may be the resident of the house, his family, a private security-company or the community-team. This communication makes it possible to program the smart home from inside or outside the house.

In a smart home one may integrate:

- Safety (for example alarms)
- Environmental control systems (for example remote control or programmed control of doors, windows and lights)
- Communication (linked to the telephone or the Internet)
- Energy-control-systems (for example adjusting the heating at all hours)
- Entertainment (for example television, film and music)

The smart aspect is the integrated communication between the devices, and the possibility to generate automatic actions. An automatic action often used is the generation of alarms when an emergency occurs,

or when a normal action fails to appear.

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