

The Assistive Technology Program



Alexander Kocian

Department of Computer Science
University of Pisa
Largo B. Pontecorvo 3
56127 Pisa

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1 Introduction

2 Terms and Definitions

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- Assistive Technology Devices
 - Physical Disability
 - Sensory Disability
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 - Pervasive Development Disorders
- Assistive Technology Services
- Assistive Technology Platforms
 - Assistive Technology Interface

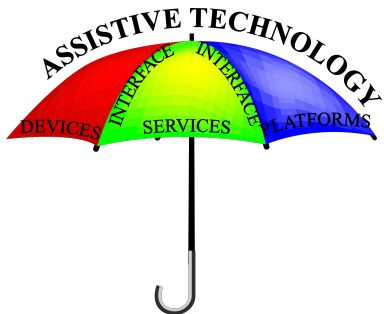
Technology that assists in making things turn



Media: Nichols is 5 years old. He has Cerebral palsy^[1]



How is it defined?



Definition

Assistive technology refers to any device or service that enables individuals with a disabilities to participate more fully in all aspects of life (home, school, work, community).

Who benefits from it?



- Individuals
 - Autism (disorder of neural development);
 - Low vision, or blind;
 - Hard of hearing, or deaf;
 - Development disability (due to mental and/or physical impairments);
 - Learning disability;
 - Physical disability;
 - Speech / language impaired.

Assistive Technology Devices



Definition

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Exception

The term does not include a medical device that is surgically implanted (by a physician) or the replacement of such device (e.g. a cochlear implant)^[2].

Physical Disability



- Daily organization



Figure: Button hook

Physical Disability



- Daily organization



Figure: Button hook



Figure: Zipper pull

Physical Disability



- Daily organization



Figure: Zipper pull



Figure: Door knob extender

Physical Disability



- Daily organization



Figure: Door knob extender

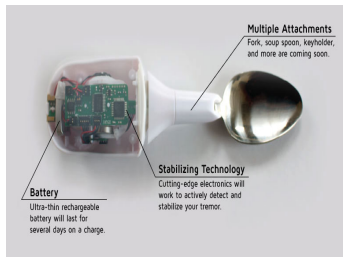


Figure: Anti-tremor spoon^[3]

Physical Disability



- Daily organization

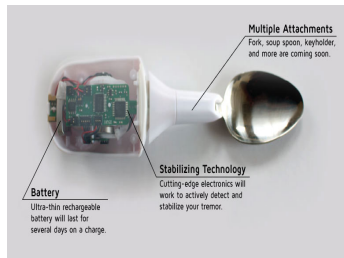


Figure: Anti-tremor spoon^[3]

Figure: meal support robot^[4]

Physical Disability



- Daily organization



Figure: meal support robot^[4]

Physical Disability



- Daily organization
- Mobility Impairment



Figure: Pediatric stander

Physical Disability



- Mobility Impairment



Figure: Pediatric stander



Figure: Hospital-style bed

Physical Disability



- Mobility Impairment



Figure: Hospital-style bed



Figure: Assistive car seat

Physical Disability



- Mobility Impairment



Figure: Regular walker

Physical Disability



- Mobility Impairment



Figure: Regular walker



Figure: Regular wheelchair

Physical Disability



- Mobility Impairment



Figure: Regular wheelchair



Figure: Robotic wheelchair

Physical Disability



- Mobility Impairment



Figure: Robotic wheelchair



Figure: iBOT - Robotic stair climbing wheelchair^[5]

Sensory Disability



- Hearing Impairment

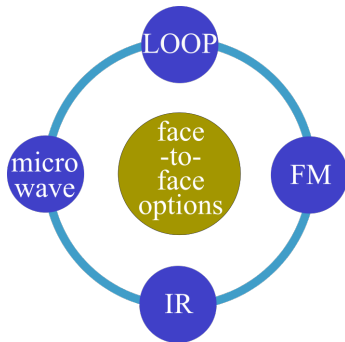


Figure: Wireless assistive listen technology

Sensory Disability



- Hearing Impairment

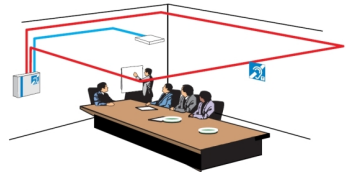
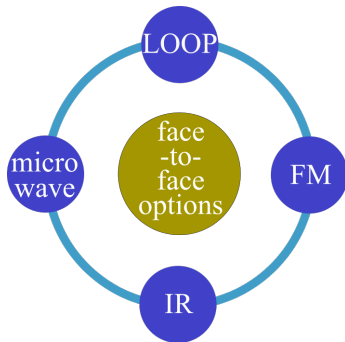


Figure: Hearing loop (TX)

Figure: Wireless assistive listen technology

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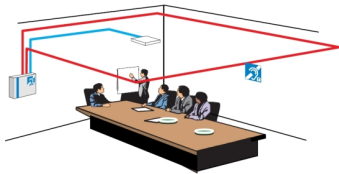


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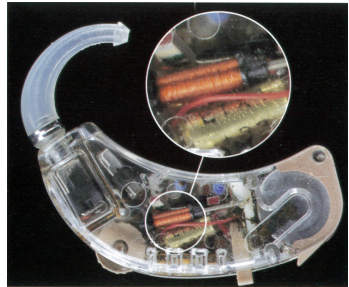


Figure: Hearing loop (RX)

Sensory Disability



- Hearing Impairment
- Vision Impairment: Seeing, Reading

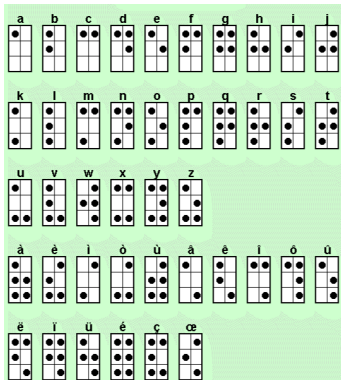


Figure: Braille letters

Sensory Disability



- Vision Impairment: Seeing, Reading

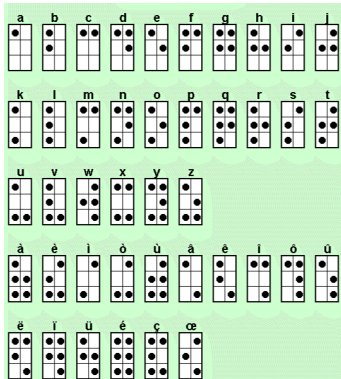


Figure: Braille letters

Braille technology

- Refreshable braille display
- (Mobile) Braille notetaker
- Braille embosser (printer)
- Braille writer (Input: braille, Output: text)

Sensory Disability



- Vision Impairment: Seeing, Reading



Figure: Optical character recognition - The reading pen



Figure: OCR - Camera

Sensory Disability



- Vision Impairment: Seeing, Reading



Figure: Brailler

Sensory Disability



- Vision Impairment: Seeing, **Reading**



Figure: Brailier

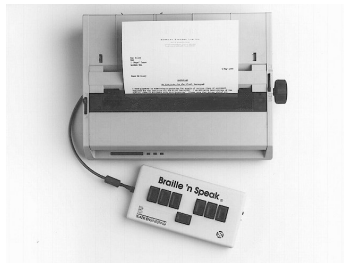


Figure: Braille-to-text with reading rehearsal

Sensory Disability



- Vision Impairment: Seeing, Reading



Figure: Braille-to-voice encoder

Motor Neuron Diseases

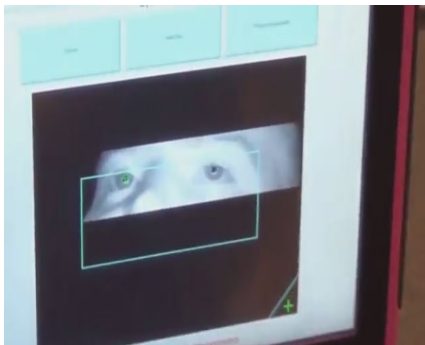


Figure: Alternative and Augmentative Communication - DynaVox®

Pervasive Development Disorders



a group of development disabilities.



Figure: (Online) Text-to-speech converter

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Figure: Picture-to-speech converter

Figure: (Online) Text-to-speech converter

Assistive Technology Services



Success of assistive technology depends on supports or service.

Assistive Technology Services



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Definition

refers to any service that directly assists an individual with a disability in the selection, acquisition, or use of an assistive technology device^[2].

Assistive Technology Services (cont'd)



Assistive Technology supports and services include^[6]:

- 1 the evaluation of the needs;

Assistive Technology Services (cont'd)



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- 1 the evaluation of the needs;
- 2 purchasing, leasing, or otherwise providing for the acquisition of AT devices;
- 3 selecting, designing, fitting, customizing, adapting, applying, maintaining, repairing, or replacing AT devices;

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- 3 selecting, designing, fitting, customizing, adapting, applying, maintaining, repairing, or replacing AT devices;
- 4 coordinating and using other therapies, interventions, or AT services;
- 5 training or technical assistance.

Assistive Technology Related Services



- 1 transportation;

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- 2 developmental services (addressing development delays and disabilities throughout an individual's lifespan);

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- 3 corrective services (educational training for offenders);
- 4 supportive services (medical therapy and recreation, lending devices or money).

Assistive Technology Service Provider



helps individuals with disabilities acquire and use appr. AT.

For the U.S., AT job roles^[7]

- 1 Direct services to the client (see Slide-12)

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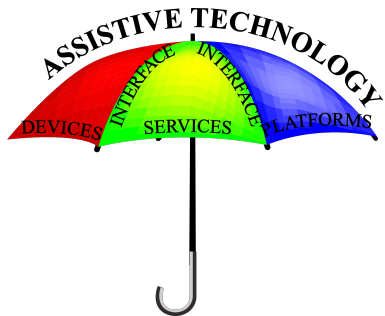
For the U.S., AT job roles^[7]

- 1 Direct services to the client (see Slide-12)
- 2 Dissemination of information on AT activities
- 3 Administration activities
- 4 Product development activities

Assistive Technology Platforms



Interoperability among AT device (HW and/or SW), operating system and its applications is crucial for the AT device to function.



Definition

Assistive Technology Platform defines a framework around which a system can be developed.

Assistive Technology Platforms (cont'd)



Example

- 1 **Tobii Communicator**: alternative and augmentative communication AAC platform. Functionality can be extended by the user.
- 2 **VoiceOver (Apple Inc.)**: screen reader platform with Braille support for more than 40 USB and wireless Braille displays.
- 3 **Assistive Technology rapid integration and construction set (AsTeRICS - openSource)**: It allows the creation of flexible solutions for people with disabilities using a large set of sensors and actuators.

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Assistive Technology Platforms (cont'd)



Example

- 4 **Universal Ambient Assisted Living (UniversAAL - openSource)**: helps connect heterogeneous technical devices to a single unified platform; and the user may control this system

Assistive Technology Interface



Definition

AT interface is a shared boundary across which two separate components of AT exchange information (device, service, and platform).

Example

Q: An Interface between Alternative and Augmentative Communication device and food delivery service?

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AT interface is a shared boundary across which two separate components of AT exchange information (device, service, and platform).

Example

Q: An Interface between Alternative and Augmentative Communication device and food delivery service?

A: The deli store (i.e. an AT-Service Provider)

References



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