

1. WHAT IS ASSISTIVE TECHNOLOGY (AT)?

The term Assistive Technology or AT is used to describe equipment, services related to that equipment or the industry in which professionals and equipment come together to assist individuals with disabilities. The following definitions address AT in each of these contexts:

Equipment

Tech Act Definition: "Any item, piece of equipment, or product systems, whether acquired commercially, off the shelf, modified or customized, that is used to enhance, maintain or improve the functional capabilities of individuals with disabilities."

Public Law 100-407

Everyday definition: "Any technology or gadget used by a person with a disability to get things done."

Services

Tech Act Definition: "Any service that directly assists an individual with a disability in the selection, acquisition, or use of any assistive technology device." Public Law 100-407

Everyday definition: "People using technology and gadgets to assist a person with a disability to get things done."

The Industry

Everyday definition: "The training, manufacturers, professionals, vendors and equipment that come together to assist individuals with disabilities in getting things done."

Professionals

The field of assistive technology is still fairly young and is constantly changing and evolving. Some assistive technology is done in a very academic environment by individuals with high levels of education and in a formalized, research setting. However, much of the assistive technology you'll find on a day-to-day basis is developed and implemented by individuals without formal training in the area of assistive technology. Many "homegrown" applications of assistive technology are very functional and useful additions to assist individuals with disabilities in gaining more independence at home, at work or in school.

In many AT implementations, no assistance is needed from an AT professional. However, in some cases, the job coaches, employers, family members, teachers and caregivers find themselves in need of the skill and experience of an AT professional.

Because the field of AT is so broad and still evolving, there are very few professionals whose only field of expertise is assistive technology. Many AT professionals are trained as occupational therapists (OTs), physical therapists (PTs), special educators, engineers, social workers, rehabilitation counselors and other professionals in the fields of rehabilitation and education.

In addition to these professionals who come from more traditional disciplines, there are some professionals who specialize specifically in the field of assistive technology. A few colleges are beginning to offer graduate degrees, undergraduate minors and certificate programs specifically in the area of assistive technology. Examples of schools offering training in the area of AT include: University of Wisconsin, University of Illinois Champaign and California State University Northridge.

Two common AT credentials are:

1. ATACP - a basic competency certificate offered by California State University Northridge
2. Assistive Technology Professional (ATP) - a credential offered to service providers by RESNA

Assistive Technology Reference Guide (cont'd)

2. ASSISTIVE TECHNOLOGY LAW AND LEGISLATION

Civil Rights

1973 - The Rehabilitation Act of 1973: Section 504 (P.L. 93-112)

As part of the Rehabilitation Act of 1973, Section 504 became the first federal civil rights law to protect the rights of individuals with disabilities.

Section 504 provides that:

“no otherwise qualified handicapped individual in the United States shall, solely by reason of his/her handicap, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance”

What does this mean for students?

- Discrimination against individuals with disabilities is prohibited by the federal government within programs and activities receiving federal financial assistance, including public schools.
- Students who have a physical or mental impairment that substantially limits one or more of their major life activities are protected; those who have disabilities such as orthopedic impairments or conditions such as hepatitis but do not qualify for special education services are included. School districts must implement procedures to ensure students with disabilities have access to the full range of programs, activities and services.
- A student's 504 plan describes all reasonable accommodations that include a change in routine, method or approach (RESNA, 1992), and must be stated on the IEP or a separate form. Examples such as changes in time requirements and testing accommodations are included as well as AT devices and services.

1990 - Americans with Disabilities Act (ADA) (P.L. 101-336)

In 1990, the ADA was passed, giving full civil rights to all individuals with disabilities. It extends Section 504 by prohibiting discrimination in public and private sector employment, public accommodation, transportation, state and local government services and telecommunications.

For students with disabilities, the ADA prohibits discrimination and extends the right of access to ALL educational programs and services, whether or not the school receives federal funding.

1992 – Reauthorization of the Rehabilitation Act: Section 508 (P.L. 102-569)

In 1992, Section 508 further strengthened the rights of individuals to be provided access to electronic and information technology. It requires that Federal agencies' electronic and information technology – such as federal websites, telecommunications, software, hardware, printers, fax machines, copiers and information kiosks – are accessible to people with disabilities. It is working to establish standards for accessibility. Final regulations were published in 2001.

Special Education

1975 - The Education for the Handicapped Act (EHA) (P.L. 94-142)

The Education for all Handicapped Children Acts is more commonly known as the EHA; it had as its purpose:

- To guarantee a Free and Appropriate Public Education (FAPE) for all children with disabilities, ages 5-21
- Special education and related services must be free, provided by the public agency at no cost to the parents
- Appropriate education is the provision of regular and special education and related services designed to meet students' individual educational needs.
- To develop an Individualized Education Program (IEP) for each child eligible for special education and related services; plan is based on multi-disciplinary assessment and includes a statement of specific special education and related services to be provided to the child.

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- To the maximum extent appropriate, all children and youth with disabilities will be educated in the least restrictive education (LRE) environment
- Parents have the right to participate in every decision related to the identification, evaluation and placement of their child. Parents must give consent for any initial evaluation, assessment or placement decision. Due process procedures assure parents' rights to appeal.

1986 - EHA Amendments (P.L. 99-457) Preschool and Toddler Programs

Amendment to the EHA, extended the purpose of EHA to include children ages 0-5 and included:

- To extend the guarantee to a Free and Appropriate Public Education (FAPE) to children with disabilities, ages 3-5
- To establish Early Intervention Programs (EIP) for infants and toddlers with disabilities, ages 0-2
- To develop an Individualized Family Service Plan (IFSP) for each family with an infant/toddler with disabilities

1990 – EHA Amendments (P.L. 101-476)

In 1990, amendments were again added to EHA, considerably adding components to the law:

- To rename the EHA as the Individuals with Disabilities Education Act (IDEA). The amendment also replaced the phrase “handicapped child” with “child with a disability.”
- To provide transition services for students by age 16
- To extend eligibility to children with autism and traumatic brain injury
- To define assistive technology devices and services for children with disabilities for inclusion in the IEP
- To extend the least restrictive environment (LRE) to require the child, to the maximum extent appropriate, be educated with children without disabilities – in the same class s/he would have been but for the disability

1997 – IDEA Amendments (P.L. 105-17)

1997 amendments further strengthened the rights of students with disabilities:

- To extend LRE as an assurance that all students would have “access to the general curriculum.”
- To “consider” assistive technology devices and services on the IEP’s of all students. Use of school-purchased AT in a child’s home or other settings is required if the child needs access to those devices to receive FAPE.
- To include orientation and mobility services to the list of related services for children who are blind or have visual impairments as well as for other children who may also need instruction in traveling around their school or to and from school

Assistive Technology Laws

1988 - Technology Related Assistance for Individuals with Disabilities Act (Tech Act) (P.L. 100-407)

The “Tech Act” provided federal funds to states to develop training and delivery systems for assistive technology devices and services. It required states and territories to develop statewide, consumer-responsive programs of technology-related services for individuals with disabilities of all ages. This act first defined assistive technology devices and services and promoted the availability and quality of AT devices and services to all individuals, including children.

Assistive Technology Act of 1998 (P.L. 105-394)

This Tech Act amendment affirms technology is a valuable tool that can be used to improve the lives of Americans with disabilities. It extends the funding of the 50 states and six territories to develop permanent, comprehensive, statewide programs of technology-related assistance.

3. WHO USES AT?

People

Although the field of assistive technology has been described as “complicated,” “high tech,” “expensive” and even “fancy,” it’s important to remember the ultimate goal and purpose of AT is to assist people with disabilities in reaching their goals.

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Disability Categories

In general, the disabilities addressed by assistive technology may be divided into four major categories:

Mobility: any impairment that impedes a person's ability to move part of their body. Examples of diagnoses include paralysis, cerebral palsy, ALS, multiple sclerosis or carpal tunnel syndrome.

Sensory: any impairment that impedes a person's ability to see, feel or hear stimuli in their environment. Examples of diagnoses include retinitis pigmentosa, macular degeneration, diabetic retinopathy, ocular albinism, deafness or peripheral neuropathy.

Cognitive: any impairment that impedes a person's ability to understand stimuli or their role in their environment. Examples of diagnoses include mental retardation, learning disabilities such as dyslexia, autism and various psychological disorders.

Communication: although communication impairments are often found in tandem with mobility, sensory or cognitive impairments, communication impairment refers specifically to impairments that impede expression or reception of written, verbal or auditory communication. Examples of diagnoses include ALS, cerebral palsy, traumatic brain injury or autism.

Employers and Educators

It's important to realize that, in addition to AT professionals and individuals with disabilities, employers and educators are users of assistive technology. The goal of an employer is to create an environment in which employees can do work. In many cases, the implementation of AT is what allows the employer to reach this goal. Similarly, the goal of an educator is to teach students. In many cases, the implementation of AT is what allows the educator to reach this goal.

When implementing AT into a work or educational environment, it is important to ensure the goals and needs of the employer or educator are met.

Funding Agents

One of the most significant issues facing the field of assistive technology is the lack of funding. Because the field is young and, in many ways, still emerging, reliable sources of funding are not always available. However, it is important to realize that of those agencies, organizations and individuals who provide funding for AT, their primary goal is often to ensure the end user is provided with the highest quality equipment and services at the most reasonable cost.

Funding agents are often charged with the task of providing funding for many individuals in their care and attempting to provide the greatest amount of equipment and services to all their clients for the least cost.

In Indiana, the following entities have been known to provide funding for assistive technology:

1. Vocational Rehabilitation
2. Medicaid, Medicaid Waiver, Medicare, Choice
3. Social Security Work Incentive programs (PASS, IRWI, BWE)
4. Schools
5. Employers
6. Veterans Administration
7. Foundations, charities, faith-based organizations
8. Individuals often private pay for their own technology.

4. WHY USE AT?

Although it may seem obvious in some situations, the rationale behind implementing AT is not always completely clear. The following are common reasons to implement AT:

1. Increase efficiency and/or effectiveness: In many cases, an employee with a disability is capable of performing the essential functions of a job without accommodation. However, productivity or quality of the job may be improved with the implementation of AT. Most employers are interested in tools and techniques that will increase the quality and/or quantity of the work produced.

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2. Decrease degenerative nature of disability: Repetitive stress injuries, degenerative vision conditions and many other disabilities are exacerbated when the individual performs certain activities. In these situations, AT can often replace the need to perform these damaging actions, thereby delaying the degenerative nature of the disability.

3. Avoid injury: In some cases, the person's disability increases the likelihood of injury. Examples include the increased likelihood of falls by a person who has difficulty with walking or the increased likelihood of injury by someone who doesn't see well in their work environment. Implementing a scooter or white cane may assist in avoiding injury in these situations.

4. Legal obligation: The Americans with Disabilities Act requires employers to make reasonable accommodations for employees to allow them to perform the essential functions of their jobs. Other similar legislation requires the federal government to provide accommodation for their employees. The IDEA requires schools to provide equal educational opportunities to students with disabilities. In nearly every employment or educational setting, there is a legal obligation to provide some level of accommodation to employees or students with disabilities. In many cases, this accommodation includes assistive technology.

5. Moral/ethical obligation: Many employers feel a moral or ethical obligation to assist individuals with disabilities in achieving their goals. In a surprising number of cases, employers will provide accommodation and/or assistive technology simply because they feel it is "the right thing to do." Often, this motivating factor supercedes any of the other rationales for providing accommodation.

5. WHEN SHOULD AT BE INTRODUCED?

Assistive technology may be introduced at various times throughout the life of a person with a disability. Factors leading to the introduction of AT include onset of disability, changing educational or vocational goals, desire of the individual to utilize AT, and/or new technological developments that occur in the field of AT.

The following are common times in which AT is introduced:

Preschool

Children who are born with disabilities (congenital disabilities) or who incur injury or disease at a very young age may be introduced to assistive technology or devices well before they enter school. It is important the AT used with these children is age-appropriate and capable of being adjusted or replaced as the child grows, develops and experiences changing needs. Examples of AT used with children in their preschool years include wheelchairs, walkers, augmentative communication systems and cognitive development systems (adaptive toys and object recognition systems).

School

Most children with congenital or acquired disabilities have quickly changing needs during their school years. Throughout a child's educational career (from kindergarten through higher education), adaptive technology should be selected, adjusted and utilized to assist the child in meeting educational goals. Many special educational programs and systems are becoming more aware of assistive technologies, their purpose, implementation and benefits. Funding of assistive technology in the schools seems to be increasing with this awareness.

Pre-employment

Many individuals with disabilities participate in vocational or career assessment testing and counseling while planning their vocational goals. In many cases, a disability prevents them from participating in testing or awareness of assistive technology might greatly increase the vocational options they consider. It is always important to consider AT as individuals with disabilities develop their vocational goals. Some AT service providers offer consultation in this situation.

On-the-job

Assistive technology is frequently used as a part of job accommodation. There are a number of adaptive devices that assist individuals with disabilities in performing tasks that, without AT, would present barriers to employment. AT used in job

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accommodation can range from no-cost or low-cost devices such as a foot rest, door prop or a piece of Velcro tape to provide a tactile mark to high-cost devices such as eye-gaze computer systems or building an electronic sensor activated, hydraulic device to cut movie tickets.

AT provided as part of the job accommodation process is often implemented by the individual with the disability, employment specialists, supervisors, coworkers, human resource professionals or safety professionals. In many cases, this level of intervention is appropriate and sufficient. However, in some cases, more elaborate AT solutions are necessary and require the intervention of an AT professional and/or a medical professional. The typical referral process used to involve an AT professional is in the section below.

Follow-along, maintenance and upgrades

When implementing AT on the job or in school, follow-along support, maintenance and upgrades should always be considered. In some cases, the AT will be utilized differently as the worker becomes more proficient on the job. Some AT devices have expendable components that should be replaced, and in the case of high-tech and computer-based AT, upgrades are often required when an employer changes their software or other technology infrastructure. It is a common for funding agents such as vocational rehabilitation to cover the initial cost of accommodation while ongoing costs are absorbed by the employee or employer.

6. WHERE CAN I FIND AT?

Assistive technology can be found nearly anywhere. The local hardware store or drugstore can be a source for fasteners or handheld magnifiers. The local electronics superstore or office supply house can be the source for a large-screen computer monitor or a digital recorder. While some technology is designed specifically to assist individuals with disabilities, many of the best job accommodations are accomplished using everyday items.

Local Resources

In many cases, a local resource is available to assist with AT. In some cases, however, local resources may be limited in their scope of service and may not be aware of the latest technological advances. When working with a local resource, be sure they are well-informed and make efforts to keep abreast of AT advances occurring on the national level.

Agencies and Vendors

Specialty

Equipment: There are several organizations and companies who provide AT equipment in Indiana. There are several agencies, individuals and companies who act as vendors for national manufacturers and importers of AT. In order to contact these individuals, please refer to a particular product's website that will often include a list of local "resellers."

Services: It's important to remember AT is not just about the equipment. Without someone knowledgeable in how to implement, train and support the equipment, it will often go unused. Appendix B lists a number of agencies who provide AT services. When choosing an agency for AT services, always be sure to speak with someone about their particular area of expertise. Some agencies are listed as accredited AT providers but may not have skill in certain areas. For example, augmentative communication is a very specialized form of speech therapy. Some agencies may be skilled in the area of job accommodation but may not have a speech pathologist proficient in augmentative communication.

Mainstream

Equipment: Many assistive technology professionals have sought advice from a seasoned handyman or hardware store clerk. Because AT is so wide and varied, often the experience of a person who has high levels of mechanical experience and knowledge is crucial to the successful implementation of AT. A person with product knowledge is essential to the successful implementation of AT. Often, this knowledge comes from mainstream sources.

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Services: In many situations, AT does not require device-specific knowledge. It is common for a corporate IT person to install an oversized computer monitor for an individual with low vision. Many office chair salesmen have been successful in matching a person with an ergonomic chair. It is important, however, to keep in mind the fact that many individuals with disabilities are more likely to become injured or may be susceptible to exacerbation of their symptoms if they improperly utilize technology. One should not hesitate to contact a medical or AT professional should concern about injury arise or if the implemented AT is not functioning properly.

National

There are a number of national resources available to assist with AT services and equipment. Keep in mind, however, national resources may not spend a great time in the actual implementation of AT or may charge significant fees should an on-site visit be required for assessment or implementation.

Equipment: In the past few years, and specifically since the increased prevalence of the internet, a number of national vendors of assistive technology have emerged. These vendors typically offer a wide variety of assistive technology devices and software and very competitive prices. Most offer online and/or catalog sales but are not capable of providing on-site installation, training or technical support.

Services: Most national providers of AT equipment will refer clients/customers to local resources for training, installation and support. It is important when dealing with a national provider that the question of local support and services is addressed.

The Job Accommodation Network (JAN) (800-526-7234) is an important national resource that provides telephone and email-based consultation in the area of job accommodation. Based at West Virginia University, JAN's staff members are very useful in making basic AT recommendations. However, because they are unable to provide on-site assistance, their ability to make sophisticated recommendations is somewhat limited.

Online Resources

As the use of the internet increases, there are an increasing number of databases and information repositories available to the public online. While convenient, it is important when using online resources, you keep the individual's needs in mind. Solutions found online often seem like a very good solution when surfing the internet but become more complicated when implementing them on a job site or in a classroom.

Abledata (<https://abledata.acl.gov>) is a free online database of assistive technologies. This database is useful in providing information regarding the types of assistive technologies used on the job, in school or at home.

An increasing amount of information is available at JAN's website: <http://jan.wvu.edu>.

7. HOW AT ASSESSMENTS ARE INITIATED AND CONDUCTED

As mentioned before, a great deal of the AT implemented is created by the individual with the disability, their employers, employment specialists, coworkers, human resource professionals and other caregivers. However, when needs are complex or specialized technology is required, a referral to an assistive technology professional is appropriate.

Referral process

Most AT programs have a similar referral process. Once the need for assistance by an AT professional has been identified, a phone call or email to an AT provider is made. Once the referring source and the provider agree the service required is within the scope of practice of the provider, a referral document is completed.

This document generally includes all pertinent information about the client/consumer and their needs, including contact information, diagnosis and functional limitations, type of work/job being performed and the specific need to be addressed. In addition to the referral document, relevant medical or academic information is typically provided to the service provider.

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Once the referral document is received and reviewed by the service provider, arrangements are made for funding, and the service is scheduled.

Throughout the referral process, a number of individuals may be consulted to ensure the most appropriate evaluation is conducted. In the event a job accommodation or computer access evaluation is being performed, information may be sought from the client/consumer, family members, employer, human resources, corporate IT staff, supervisor, trainers or the vocational rehabilitation counselor.

When the evaluation is for a school-aged child, the family, special educators, guidance counselors and other professionals may be involved.

A Good Evaluation

The following are characteristics of a good AT evaluation:

- The client/consumer is observed in the environment in which the AT will be utilized.
- When possible, the client/consumer has an opportunity to try AT devices before they are recommended.
- When multiple products exist in a particular category of AT, the consumer is made aware of those choices and is actively involved in choosing one product over another.
- The AT professional is well qualified and has experience in the area of AT being utilized for that evaluation.
- The AT professional has access to, or involves, professionals from other disciplines in a multidisciplinary approach.
- The AT professional has access to the most up-to-date technology available and is aware of changes in the industry that may affect the utilization and/or implementation of the technology.

Credentials

Although not all AT must be provided by a credentialed professional, it is important to recognize that many areas of AT are very specialized, require product-specific knowledge and require the professional to have disability-specific knowledge to make appropriate recommendations. In the area of AT, both agencies and individuals may be accredited or certified.

An example of agency accreditation is the CARF accreditation. Agencies that are CARF-accredited have demonstrated sound business practices, good record keeping and a dedication to well-trained staff and a quality of service recognized by organizations internationally.

An example of individual certifications offered by the Rehabilitation Engineering and Assistive Technology Society of North America (RESNA) are the Assistive Technology Supplier (ATS), Assistive Technology Practitioner (ATP) and Rehabilitation Engineering Technologist (RET) certifications. Individuals who have earned these levels of certification have demonstrated an educational background or work experience relevant to the field of AT, have worked in the area of AT for some period of time and have passed an examination that indicates a working knowledge of the field of AT.

As the AT industry matures, more funding sources are preferring or requiring accreditation or certification of the agencies and individuals providing AT services.

Examples

Low Tech

- A great deal of AT is low tech in nature. Low tech typically refers to assistive technologies that are simple and non-electronic in nature. The following are a few examples of low-tech AT:
 - Footrest
 - Chair's arm rest
 - Mouth stick used for typing
 - Velcro used as a tactile marker
 - Screw-on door lever (makes a knob a lever)
 - Universal cuff (allows use of pen, pencil, toothbrush, fork, etc. by someone without ability to grip)

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- Book of photos providing instruction on how to perform tasks
- Letter board for communication
- Lap tray for a wheelchair user
- Cane
- Handheld magnifier

High Tech

Some of the more elaborate AT is high tech in nature. High tech typically refers to assistive technologies that are more complex, electric or electronically activated or computer based. The following are a few examples of high-tech AT:

- Voice-activated telephone
- Eye-movement (eye-gaze) controlled computer system
- Computer-based augmentative communication device
- Joystick-controlled van
- Refreshable Braille computer access system
- Switch-activated environmental control system
- Satellite navigation system
- Sip-puff controlled wheelchair

The following categories of AT may include low-tech or high-tech examples but are listed individually due to the specific areas of function they address.

Augmentative communication

Augmentative communication refers to a collection of devices and a specialized form of speech therapy in which low-tech or high-tech devices are used to assist an individual who does not communicate verbally in an effective manner.

Computer access

Computer access refers to any device or technology used to enhance a person's success in utilizing a computer system.

Ergonomics

Ergonomics refers to the physical interaction of an individual with their environment. In many cases, furniture, tools, seating and the positioning of items within a working environment are addressed.

Switches and control systems

Switch and control systems are often used by individuals with limited mobility to access physical or computer-based items in their environment. The fabrication and/or positioning of switches so the person with a disability can activate them is a specialized area within AT. Once a switch or control system has been implemented, that switch or control can often be used to control the individual's environment (see ECU below), wheelchair (see mobility below) or computer or communication system (above).

Mounting and positioning systems

Correct placement of computer keyboards, switches or other control interfaces is critically important to ensure proper access. Mounting and positioning systems are often used in tandem with switches and control systems to ensure the systems used to control AT are within easy reach.

Environmental control units (ECUs)

Some individuals with physical limitations are unable to activate the lights, television, telephone, thermostat or other items in their environments at home or at work. ECUs are typically used to automate these systems in such a way that they are more accessible. Examples might include a voice-activated telephone or switch-activated television remote.

Mobility devices

Any device that assists an individual with being more mobile in their environment is a mobility device. Mobility devices can be as simple as a cane or brace used to assist an individual in navigating their environment or can be as elaborate as the gyroscope navigational system of the Segway mobility device.

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Daily living aids

Daily living aids typically refer to any device (often low tech in nature) that assists an individual with dressing, food preparation, eating, toileting or other activities of a personal nature.

Sensory aids

Sensory aids refers to any AT that assists an individual with better perceiving stimuli in their environment. Examples include hearing aids, voice output computer system, Braille note taker, large-print or big button telephone and a doorbell system that makes a lamp blink for the Deaf.

Vehicle modification

Many individuals with physical impairments or vision impairments may be able to drive when they utilize a modified vehicle. Examples of vehicle modifications include a ramp system for accessing a van, power-assisted steering, extra-wide rearview mirror or bioptic glasses for seeing items in the distance.

Home modification

Home modification refers to any change in the home that allows a person to be more independent. Examples may include widening a doorway, an automated entry system, a roll-in shower for wheelchair users or the removal of door thresholds to allow clear navigation of doorways.

Services

Although most think of AT as devices and gadgets, it is important to remember that without installation, training, consultation and technical support, AT would not be possible. As individuals plan to fund, recommend or utilize AT in any way, they should always keep in mind the initial and ongoing services required to ensure AT is utilized.

CASE STUDIES

Patrick

- Individual working in electronics assembly factory
- Complained of back pain
- Found him leaning close to his work, which caused pain
- Discovered he leaned because he wasn't able to see well
- Implemented a video magnifier (CCTV); he was able to see better, and the back pain was alleviated.

Rick

- Tele-sales rep for bank
- History of mental illness
- Failed to get all information from customers
- Created a laminated list of points to make during call
- Used a penny to move down the list during call
- Was able to cover all points by moving penny down list
- World's first one-cent job accommodation!

Jack

- Accounting clerk
- Ataxia caused mobility, communication and vision impairment
- Difficulty in doing data entry from paper documents
- Implemented a computer scanner with auto doc feeder
- Implemented single-switch computer access system
- Implemented a large screen (31") monitor
- Able to scan in 25 documents, use large monitor to see text and switch system to enter data into company' accounting system

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Carl

- Stockbroker and investment counselor
- Blind since birth and strong Braille user
- Implemented computer system with speech/Braille feedback
- Implemented custom computer programming to ensure compatibility with company's software applications
- Implemented document scanning/reading system
- Implemented Braille note taker
- Most successful broker in group; recently started partnership with another top performer.

Jeremy

- Stay-at-home TV connoisseur
- Muscular Dystrophy, only small head movements
- Needed reliable phone access when caregivers were gone
- Wanted to control cable television, stereo, fan, thermostat, lights, PlayStation
- Implemented experimental voice-controlled ECU
- Has access to all devices desired (except PlayStation, still working on that)

Gary

- Ticket taker
- Traumatic Brain Injury (TBI) results in use of only one hand
- Originally using one hand and mouth to tear tickets (saliva problem)
- Implemented hack saw blade device (too slow)
- Implemented high-tech electronic sensor guillotine-style device
- Was able to quickly tear tickets but had to replace blades often

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APPENDIX A: GLOSSARY

Abledata: Online database of assistive technology devices. <https://abledata.acl.gov>

Accommodation: Changing the environment to increase access and independence for an individual with a disability

Activity of Daily Living (ADL): Activities related to dressing, bathing, eating, cooking and toileting

Americans with Disabilities Act (ADA): passed in 1990 and prohibits discrimination based on disability and guarantees reasonable accommodation

Assessment: Structured process by which assistive technology devices and services are recommended based on an individual's needs

Assistive Technology (AT): Any device or gadget used to assist an individual with a disability in achieving their goals

Assistive Technology Practitioner (ATP): Credential offered by RESNA for individuals who provide AT consulting, assessments and services

Assistive Technology Supplier (ATS): Credential offered by RESNA for individuals who sell and supply AT equipment

Augmentative Communication: Specialized form of speech therapy in which low-tech or high-tech devices are used in interpersonal communication

Braille: System of raised dots used to convey written information to the blind

Braille display: Panel that connects to a computer system and, in tandem with a screen reader, provides a Braille representation of information on the computer screen to a blind user

Braille embosser: Device that "prints" or "embosses" information in Braille

Captioning: Text-based version of audio information, synchronized with its media source (television, video, etc.)

Closed Circuit Television or Video Magnifier (CCTV): A device that provides the user a "large print" version of any material placed under the unit's lens

Cognitive impairment: A disability that reduces the individual's ability to understand their environment or typical thought processes

Commission on the Accreditation of Rehabilitation Facilities (CARF): Group that surveys rehabilitation facilities to ensure they are operating at a suitable standard of practice

Computer access: Any device or service related to assisting an individual with a disability in accessing a computer system

Disability: A disease or disorder that impedes or impacts one or more major life functions

Ergonomics: The study of how a person interacts with their environment. Typically refers to modified tools, furniture or positioning of items in the work environment.

Environmental Control Unit (ECU): Any device, low tech or high tech, that increases an individual's ability to interact with and change their environment

Evaluation: Systematic process of determining the appropriate assistive technology equipment and services needed to assist an individual in achieving their goals

Eye-gaze: A sophisticated computer system that monitors the user's eye movement, allowing computer control based on those movements

Footrest: Any device designed to increase support of an individual's feet and lower extremities

Funding: Money or agents or agencies providing monies for assistive technology equipment and services

High tech: Assistive technologies which are more complex, electric or electronically activated or computer based

Home modification: Any change made to a residence with the intent of increasing accessibility

Individuals with Disabilities Education Act (IDEA): Federal law requiring special education and related assistive technology

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Job accommodation: AT and services designed to improve an individual's access to their working environment and the tasks performed on the job

Job Accommodation Network (JAN): Federally funded program designed to provide information and technical assistance in the area of AT and job accommodation

Joystick: A device consisting of an upright stick which is grasped and moved to control a computer system, wheelchair, van or other device

Jig: Any device, holder or system designed to hold tools or working materials in a more convenient position so an individual with a disability may better access the tool or materials

Keyguard: A plastic or metal device that covers a computer keyboard, leaving holes or slots over each key. The purpose of which is to allow a user who experiences tremors to type without striking multiple keys.

Low tech: Assistive technologies that are simple and non-electronic in nature

Magnifier, handheld: A lens, often lighted, that provides an individual with low vision simple, portable magnification

Mainstream: Referring to non-special ed classes or non-AT sources of technology

Mobility device: Any device that assists a person with a disability in moving throughout their environment. Examples include wheelchairs, walkers or canes.

Mobility impairment: Any disability or impairment that creates difficulty with walking

Mounting system: Any device designed to position a device temporarily or permanently within easy reach

Note taker: May refer to either a specialized device to allow person with a disability to take notes independently, or the assistance provided by a non-disabled person when taking notes for a person with a disability

Occupational Therapist (OT): A medical professional who treats a variety of impairments including vision impairment, psychological impairments or fine motor impairments

On-screen keyboard: A virtual keyboard on a computer system which is activated by a single switch system or a pointing device

Optical Character Recognition (OCR): The process by which scanned text is converted to accessible computer-based text

Orthotic: A device designed to provide support to an impaired body part. Examples include braces or shoe inserts.

Physical Therapist (PT): A medical professional who specializes in the treatment of impairments related to gross movements

Pointing device: A device designed to control the computer's cursor, such as a mouse or trackball

Prosthetic: A device designed to replace the functionality or cosmetic appearance of a body part. Examples include artificial limbs or eyes.

Referral: The process by which a person with a disability begins working with an AT professional

Rehabilitation Engineering Technologist (RET): The highest level of AT certification offered by RESNA

Relay: A service that allows non-TDD/TTY users to communicate with TDD/TTY users via the assistance of an operator

Reseller: A company or individual who sells AT products to individuals or other agencies; synonymous with vendor

Scanning system: Also known as a document scanning system; converts written text to spoken/accessible text via a process known as optical character recognition

Screen magnification: Computer software that "enlarges" the appearance of text and graphics on the computer's screen

Screen reader: Software that "reads aloud" the information presented on the computer's screen

Seating and positioning: The process by which a wheelchair seat and supports are fitted to a particular wheelchair user's need

Sensory impairment: Any disability that affects an individual's ability to see, hear, feel or otherwise sense stimuli in their environment

Sip/puff: A control system that presents the user with a straw whereby sip/suck and puff/blow actions control a computer, ECU or wheelchair

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Switch: A button, tube, wand, lever, motion or light sensor that is activated by the user and causes an on/off action to control a computer, ECU, wheelchair or communication device

Tech Act: Federal legislation that increases awareness and encourages local support of the field of AT. In Indiana, ATTAIN is the Tech Act organization.

Telecommunication Device for the Deaf or Teletype (TDD/TTY): These terms are synonymous and refer to a device that allows individuals to communicate over a telephone line via standard text

Universal cuff: A device that slips over the hand of a person who does not have the ability to grip and allows the use of pen, pencil, toothbrush, fork, etc.

Universal design: A design concept in which making things accessible for individuals leads to more usability by the general population. A classic example is that curb cuts not only assist wheelchair users but also aid users of shopping carts or baby strollers.

Vehicle modification: Any change to a vehicle to increase accessibility for those with disabilities

Vendor: A company or individual who sells AT products to individuals or other agencies; synonymous with reseller

Veterans Administration (VA): An agency that provides a wide variety of services to veterans of the United States Armed Services. The VA has been known to be a good funding source for AT equipment and services.

Vocational Rehabilitation (VR): A state agency charged with assisting individuals with disabilities in regaining, obtaining or maintaining employment. VR is a well-known funding source for AT as it relates to work.

Word prediction: A software program that monitors a user's keystrokes and attempts to "guess" what word the user will type next, which results in more efficient and expedient keyboard entry

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APPENDIX B: AT-RELATED WEBSITES

Job Accommodation and AT Research Resources

Job Accommodation Network (JAN)

<http://jan.wvu.edu>

Abledata

www.abledata.acl.gov

Trace Center on AT

<https://trace.umd.edu>

Associations and Conferences

RESNA

www.resna.org

Closing the Gap

www.closingthegap.com

Assistive Technology Industry Association

www.atia.org

California State University's Center on Disability

www.csun.edu/cod

Commission on Accreditation of Rehabilitation Facilities (CARF)

www.carf.org