Assistive Technologies for Computer Use and People with Disabilities
Forward

The purpose of this report is to provide some very basic information about assistive technologies to facilitate computer use for people with disabilities. The report will touch on the different types of assistive technologies related to computer use available to people with disabilities, identify specific disabilities and assistive technologies that might be helpful to individuals with those disabilities, and identify potential funding sources individuals with disabilities or organizations could approach to acquire assistive technologies in regards to computer use.

A list of questions you might want to ask yourself as a legal services advocate or technology professional serving people with disabilities is also included in the report, as well as links to websites with examples of assistive technologies. The report also includes links to videos of people using the technologies, and finally links to other helpful websites.

While the author does not claim expertise on the topic, and most of the information can be found on the Internet, readers might find the availability of the report saves the time and hassle of researching and reviewing multiple sites to find basic, comprehensive information. Perhaps this report could be a catapult to initiating a broader conversation in the legal services community regarding how to enhance the effectiveness of serving people with disabilities.

The author sees the report as a dynamic document, therefore your knowledge, input and feedback would be invaluable in making this report more useful to legal services providers throughout the U.S. If you have any feedback, please send it to mfrench@colegalserv.org.
Introduction

According to the 2010 census, there are over 36 million (11.9%) individuals in the United States living with a disability. Almost 500,000 people with disabilities (10.1%) are living in Colorado. If 14% of those individuals are low-income, potentially 70,000 low-income people with disabilities could need legal services. In 2011, Colorado Legal Services recorded 5,379 individuals served with information, advice, brief services or representation as reporting either a mental or physical disability during the intake screening process. To find out how many people with disabilities live in your state, refer to page 12 of the 2011 Annual Disabilities Statistics Compendium.

There are ways to ensure online content and tools are accessible to persons with disabilities. At the onset of any website design, web developers need to design and program website code to the highest level of accessibility. Staff could have familiarity with assistive technologies people with disabilities use to access online content, and have knowledge about places in their communities where disabled clients can go to get free access to the Internet, as well as have access to assistive technologies to facilitate computer use. As legal services providers, it’s important to have some basic knowledge regarding how to ensure applicant and client success when communicating and accessing legal information through technology with people who have disabilities.

As the U.S. population continues to grow and age, it will become increasingly important for legal services staff to understand how a person with a disability communicates. This, in turn, will help ensure the individual with a disability receives the same high-quality, efficient and effective service as those who are not disabled when seeking a legal resolution.
Types of Computer-specific Assistive Technologies available to People with Disabilities

Assistive technology (AT) can be defined as any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve the functional capabilities of individuals with disabilities. (29 U.S.C. Sec 2202(2)). Assistive technologies, or computer access aids, discussed in this report are those helpful in making computers and online content adaptive to an individual’s abilities.

Computer access aids include hardware and software products that enable persons with disabilities to access, interact with, and use computers, and include the following\(^2\) (Note: this list is a starting point and does not include all assistive technologies available.):

**A. Alternative Input Devices**

1. Adaptive keyboards
   - Beyond the more standard variety of QWERTY keyboards, there are a wide variety of assistive and adaptive keyboard options available, including left or right-handed, expanded, keyless, backlit, touch or on-screen keyboards, and more.

2. Alternative and ergonomic mouse/pointing systems
   - Alternative pointing devices are often hands-free, and include head-operated, eyeglaze or mouth/tongue pointing, trackballs (using hands and arms only), keypads and more.

3. Brain-actuated pointing devices
   - These devices attempt to read electrical activity from the head in order to use and navigate a computer.

4. Cursor enlargement or magnification software
   - This software allows the user to enlarge the area near a cursor on a computer screen.

5. Keyguards
   - Keyguards are devices that fit over a standard computer keyboard for users with various mobility impairments that would make keyboard use otherwise inaccessible. Keyguards allow users to hit only one key at a time.

6. Switches
   - Switches are designed to take advantage of a person’s movements and physical control. A comprehensive list of switches and the adaptability they provide users can be found here.
7. Voice recognition/voice command software
   - This software converts spoken words to computer text.

8. Scanning software, and more
   - This software highlights or announces selection choices (e.g., menu items, links, phrases) on a computer screen one at a time.

B. Alternative Output Devices

1. Braille display/output devices
   - These devices, such as Braille embossers (or printers), display Braille characters, usually by raising dots through holes in a flat surface.

2. Screen reading software
   - This software allows blind or visually impaired users to read text displayed on a computer screen with a speech synthesizer.

3. Screen magnification/enlargement software
   - This software magnifies text and images on a computer screen.

4. Large print monitors

C. Accessible Software

1. Software applications adapted for children and adults with disabilities.

2. Operating system accessibility options – for example, newer operating systems have default screen readers, such as Windows 7 and Narrator. Also, mobile devices such as iPhones and iPads have built-in accessibility software.

3. Accessible web browsers, and more

D. Universal Design

- Design methods, techniques and guidelines for making computers and their applications fully accessible to people with disabilities.
  - Universal design could be the most important part of making information accessible through computers. For example, if a person with a disability can’t successfully navigate through a website to access all of the content on the site because of the programming or way the content was developed, it won’t matter what assistive technologies they have access to for navigational purposes.
  - Web and software application developers should design and program according to the Web Content Accessibility Guidelines (WCAG 2.0), and the Electronic and Information Technology Accessibility Standards (Section 508). For comprehensive information about designing for accessibility, go to WebAim’s WCAG 2.0 Checklist at this site, and the WebAIM Section 508 Checklist here.
Matching Assistive Technologies for Computer Accessibility

Many disabled adults have had access to assistive technologies from early childhood in their schools, in developmental learning centers in health-related settings and more. Since technologies are consistently evolving, individuals with disabilities who start using the technologies at an early age become highly skilled on the technologies and increasingly independent as adults. Some adults first encounter assistive technologies at rehabilitative hospitals, especially those suffering traumatic injuries or degenerative conditions appearing in adulthood. At rehabilitative hospitals, assistive technology professionals assess the individuals and their needs and abilities, match them with the most suitable assistive technology and provide training.

Each state has an Assistive Technology Program, funded under the Assistive Technology Act. Services from each program vary from state to state. For more information, go to the Association of Assistive Technology Act Program website, or Google ‘Assistive Technology Program’ and your state. It is up to the professional to recommend, demonstrate and train on use of the assistive technologies, and most importantly for the person with the disability to select the technology best suited for their needs. See Appendix A for a chart which attempts to match specific disabilities with assistive technologies commonly used by those who have the disability.
Relevance to Legal Services Staff
(including legal advocates and technology professionals)

Have you ever thought about what information might be useful to you as an advocate providing legal services to people with disabilities? Or about how you could better facilitate communication and information sharing regarding legal information when providing help such as advice, brief services or representation? In addition, have you thought about what your organization can do to become more accessible to people with disabilities in regards to your online efforts?

Some questions to consider:

For the Advocate
- How can I best communicate with my client in a way that is most convenient and comprehensible to him/her given the disability, whether it be they can not see, hear, have limited range of motion, limited cognitive ability, etc.?
- What communication device(s) can I use to ensure this client is provided the same level of service as all other clients?
- What does this client have access to as far as the Internet, computer, phone, assistive technologies, etc. when communicating and seeking legal assistance and information?
- How can I refer the individual to an organization to attempt to acquire or access assistive technologies that may help them communicate with me? Is this realistic given any case-related time constraints or court deadlines?
- How could the Courts help facilitate equal access to justice by providing assistive technologies and/or other communication tools in the courtroom?
- What community partners (libraries, other non-profits, courts, etc.) can help my organization and me work with this client and other clients with disabilities? How would the help be coordinated? For example, could it be coordinated simply by referring the client to a library’s computer configured with assistive technologies, to a University’s assistive technology department, by providing organizations with links to information on how to get help to pay for assistive technologies, etc.?

For the Legal Services Technology Professional
- How can we develop and build our website in a way that is as accessible as possible?
- Are the multimedia tools and content on our website (LiveChat, A2J Author, videos, screencasts, etc.) built to be accessible by people with disabilities using assistive technologies such as screen readers? If not, are we providing alternative ways to access the content such as captioned videos, transcripts to video content, links to printable court forms, alt tags to identify images in website coding, etc.?
- What types of assistive technologies are individuals with disabilities using to access information available on our website?
- What tools are available online that will help me learn whether our website is as accessible as possible?
- What organizations do I have access to that will help me learn whether our website is accessible as possible?
- How can I partner with organizations to request assistance to test whether our information is accessible online to site users with disabilities?
- How can I solicit feedback about our site and its accessibility from users with disabilities viewing content on the site?
- Can my organization provide a computer accessible for people with disabilities in its waiting room or lobby? If not, do I have relationships with local libraries or other organizations where my client can go to access assistive technologies?
- What other ways can I help make our organization more accessible to people with disabilities?
Financial Aid Resources for Requesting Purchase of Assistive Technologies

Assistive technologies can be inexpensive, for example a software application for person with a cognitive disability can cost less than $5 on iTunes, or alternately extremely expensive, for example an expanded keyboard for an individual with limited motion range can cost over $1,000. People with disabilities may have access to funds to acquire assistive technologies in regards to computer use through their private health insurance, Medicare, Medicaid, Social Security and other health-related social and government-funded programs, but often these organizations do not fully fund the purchase, maintenance or replacement of the assistive technology.

Below is a list of organizations and agencies which help individuals with disabilities acquire assistive technologies. *(This list is not all inclusive. If you know of others, please inform the author and they will be added to this list.)*

**Assistive Technology Fund**
- The Association of Blind Citizens operates the Assistive Technology Fund (ATF), which will provide funds to cover 50% of the retail price of adaptive devices or software.

**AT Funding Sources**
- AT Funding Sources is a fully accessible, Colorado-specific statewide on-line database providing individuals with disabilities, family members, and caregivers with a single point of entry for determining where to seek funding for assistive technology devices, equipment, or programs.

**Deaf and Blind Equipment Distribution Program**
- The Telecommunications Equipment Distribution Program (TEDP) makes telecommunications equipment and accessories available to qualified deaf and hard of hearing citizens in the state of Colorado.

**eldercareLocator**
- Provides several options if seeking funding for assistive technology

**Hearing Loss of America**
- Provides several options if seeking funding for assistive technologies specific to hearing loss.

**Lions Clubs International**
- Provides grant funding for local and global humanitarian efforts.

**National Deaf Blind Equipment Distribution Program**
- Helps to ensure that low-income deaf-blind individuals have access to the Internet and advanced communications.
State-by-state listing of Vocational Rehabilitation Agencies

Telecommunications Equipment Distribution Program
- Colorado residents, who are deaf or hard of hearing, may be qualified to receive FREE telecommunications equipment, if they meet specific criteria.

United Cerebral Palsy
- Funding tips and options from United Cerebral Palsy.

United States Department of Education
- Grant Programs, Office of Educational Technology
Informational Links

Videos of People Using Assistive Technologies
- http://www.uiaccess.com/accessucd/resources_videos.html
- http://webaim.org/intro/#video
- YouTube.com
  - Webinar - Assistive Technology for Public Computers
  - You can search ‘assistive technologies’ or similar key words at this site, and find all kind of demonstrations of devices and the built-in accessibility options of those devices, including iPhones and iPads

Other Links
1. Abledata.com
   - Can help an individual find assistive technologies.
2. Ablelink.com
   - Cognitive support technologies.
3. AccessIT
   - Promotes the use of electronic and information technology for students and employees with disabilities in educational institutions at all academic levels.
4. American Association of People with Disabilities
5. Apple Accessibility
6. Apps as Assistive Technology
7. Alternative Input Devices
8. Assistive Technology Glossary
9. Association of Assistive Technology Act Programs
10. AT for Assistive Technology
    - Many universities have assistive technology centers and departments, some funded in part through the Association of Assistive Technology Act Programs.
11. Coalition of Organizations for Accessible Technology
12. Colorado Fund for People with Disabilities
13. Colorado Therapy
14. Disability.gov
   • The federal government website for comprehensive information on disability programs and services in communities nationwide.

15. Disability Compendium

16. Disabled Online

17. e-bility.com
   • An online resource for people with a disability.

18. Global Assistive Technology Encyclopedia

19. Microsoft Accessibility

20. Morse Code for Computer Access

21. National Center for Accessible Media
   • A non-profit organization dedicated to achieving media access equality for people with disabilities.

22. National Council on Disability
   • An independent federal agency committed to disability policy leadership.

23. National Public Website on Assistive Technologies

24. Rehabilitation Engineering and Assistive Technology Association of North America

25. SNAP! Your Website Into Shape

26. The Family Center on Technology and Disability

27. University of Colorado Assistive Technology Partners

28. WAVE Web Accessibility Evaluation Tool
   • A free web accessibility evaluation tool provided by WebAIM. WAVE shows the original web page and reveals the accessibility of the page.

References
## Disabilities and Assistive Technologies for Computer Use

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Source: equalitytechnology.org/