

How people with different disabilities use IT adaptive technologies

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One of assistive software, which is developed by Aisquared company (<http://www.aisquared.com>) that can be useful for visually impaired users (users that have partial vision) is Zoom text. Zoom text screen magnifier enlarges entire screen and has easy navigation and toolbar with different modes of highlighting things on screen - mouse pointer, change color and contrast on screen, voice reading of selected text or document and so on.



Its interface allow screen and the mouse pointer to be enlarged with a different focuses that facilitate partially blind users to operate and use PC.

A short clip that demonstrates the Zoomtext opportunities can be watched here:

<http://www.youtube.com/watch?v=olEukZezeQQ>

This product is commercial and is available in 20 languages and are sold in 45 countries through their network.

The family of Ai Squared products includes ZoomText, ZoomText USB, the ZoomText Large-Print Keyboard, and ZoomText Express.

ZoomText Large-Print Keyboard



Easy typing and quick access to ZoomText
Designed for anyone who struggles to see the lettering on their keyboard, the new ZoomText keyboard makes typing faster and easier than ever before. Each key and button label is easy to see, even in low light, thanks to its 36-point text and choice of high-contrast color schemes: “Black on Yellow” or “White on Black”.

The ZoomText keyboard also provides quick access to ZoomText (9.04 and later) features. Eighteen dedicated buttons allow you to instantly start ZoomText, change magnification levels, toggle screen enhancements, launch AppReader and DocReader, and more, all without having to memorize hotkeys.



ZoomText Large-Print Keyboard

You can even reassign each feature key to your choice of ZoomText commands, Internet and multimedia commands, or to open an application, document or web page. It's compatible with any computer running Windows 7, Vista, XP, or 2000.



Keyboard Keyguards

These are rigid plates with holes designed to work with specific keyboards. The holes are positioned over each key and they make it impossible to press two keys at once. As a further benefit it is possible to rest hands and arms on the guard without pressing keys. They can be removed and fitted for use only when required.



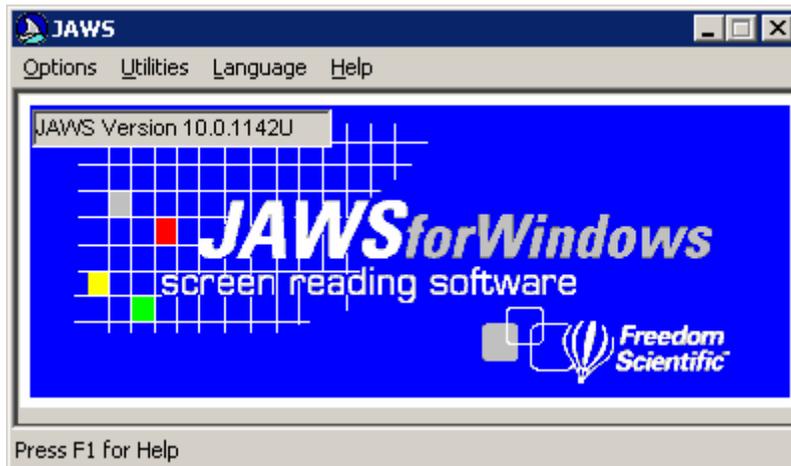
USING JAWS SCREEN READER:

Blind users can use screen reader Jaws that is developed from [Freedom scientific company](http://www.freedomscientific.com).

This program allows the blind user to prepare her/himself and to have access to the information on its computer and of course on the Internet.

Users can read and create documents and to send messages via email, to browse the Internet and to access all kinds of information using Jaws screen reader.

Bellow I give you screenshot of screen reader Jaws:



It has small interface and a lot of keyboard shortcuts allows navigation of the blind users. It can be set up and customized for specific users conditions.

Screen Reader Nvda does not have visible interface but is very simple nad functional. Here <http://www.youtube.com/watch?v=qjCQ30gBEsU> you can find a video clip explains and introduces to Nvda.

There are many others screen readers such as Russian espeak, newphone etc. Here is an example

<http://leo.aha.ru/na/media/media.shtml>

Many blind users use screen readers such as discussed above. This example is for Bulgarian blind users.

There is many users in all the world that uses various speech synthesizers such as Nvda at <http://www.nvda-project.org/> which is completely free product. This product have same functionality even more! It can read text under the mouse cursor and to orientate blinds for mouse position through high and low frequency sounds.

There are many things such as eye tracking systems, adaptive keyboards, mouse and other tools, that allow access to information at computer and Internet.

These technologies are:

- Eye tracking system – two cameras tracks eyes of the user that may have motor impairment. To navigate with eyes. Here <http://www.eyegaze.com/> can be found description and examples for using eyes tracking system.



Here <http://www.abilitynet.org.uk/myway/Factsheets/Keyboard%20and%20Mouse%20Alternatives.pdf> can be found information that describes these technologies and examples of other various technologies for people with disabilities.

Here is an example of Magic wand keyboard.

It allows disabled user to touch a buttons and to navigate PC holding special stick in its hand or in its mouth.



The T3 is a touch sensitive, multi-sensory device which provides instant audio feedback from tactile images. This combination of sound and touch transforms the way in which people with or without disabilities can access graphical information.

The T3 is fully inclusive and enables you to meet the needs and requirements of a wide range of disabilities. It is not a tool which is provided purely for the visually impaired but a tool to be used and enjoyed by everyone. Due to the consistency of the information supporting the T3 overlays materials it is extremely helpful for those who have Autism or Asperger's. It is also an extremely useful tool for those with dyslexia and removes the embarrassment for people who are unable to read print.

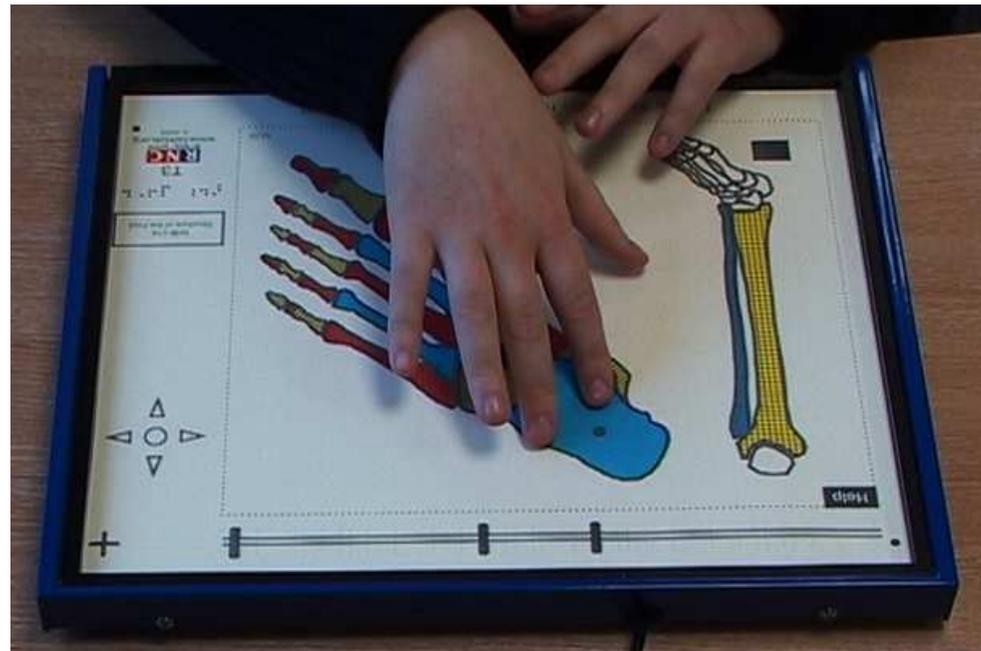
The T3 can be used in many ways for example mainstream and specialist education, public service areas, museums, galleries, heritage venues and anywhere there is a point of interest.

Blind user can use T3 tactile technology that consists of swelling paper that is burned by a special technology managed by computer that swells displayed pictures and texts and it later can be read from blind user and he/she can receive feedback voice information on what he/she feels.

It is used to teach blind users about various things, such as musical notes, human anatomy etc.

More information about this appliance can be found here:

<http://www.rncb.ac.uk/page.php?id=872>



Here: <http://vbox7.com/play:c4f93fab> is a short video clip that demonstrates education process – the teacher explains to a blind user how to make Bookmarks in MS Word using Jaws technology with Bulgarian synthesizer voice named Gergana.

Here <http://www.cv.tu-sofia.bg/Download> is a short video clip with shows how due to IT people who could not use their hands are able to manage the mouse only with their eyes. The left mouse click is the closing of the eyelids. This system will improved with the active participation of Future 21 st century foundation through a project financed by the Bulgarian fund for scientific researches.

The technology for management of the computer mouse with eyes is in development process to be integrated with a technology for gesture recognition. The result will be the input of many additional commands for easier and more effective use of the computer, browsing, etc.

Extremely important additional integration is the involvement of a module for riding of the wheelchair through GPS (outside) and through digital maps (inside).

These innovations allows 100% participation in education under only one requirement - the format of the education must be e-learning.

Still the interfaces of these technologies demand additional specific knowledge .

For example: for the creation of the digital maps.

In the near future these procedures will be automated, hence much more VETPROs will implement them in their daily practice.

Only few weeks ago Second Life more and more attractive environment for e-learning was not accessible for visually impaired people.

The development of the information technologies is so extreme that the situation changes literally in front of our eyes:

Accessibility

Alternative user interfaces

Second Life has been criticized for its lack of accessibility as users unable to use a mouse or unable to see are excluded from accessing Second Life using the Second Life viewer. However, since the Second Life viewer was made open source a number of solutions towards making Second Life accessible have been developed (listed chronological order):

A modification of the Second Life viewer has been developed that allows users who are visually impaired to navigate their avatar using force feedback. Different object types are distinguished through different vibration frequencies. TextSL is a text client developed by the University of Nevada that allows Screen reader users to access Second Life. TextSL allows users who are visually impaired to navigate, communicate with avatars and interact with objects using a command based interface inspired by the Zork adventure game. IBM's Human Ability and Accessibility Center developed a Web based interface for Second Life that can be accessed with a screen reader. This client provides basic navigation, communication, and perception functions using hotkeys. The guide dog project developed by Virtual Helping Hands offers a virtual guide dog object that can be "worn" by a user's avatar.

The guide dog provides a number of functions such as navigation and querying the environment through a chat-like interface. Feedback is provided using synthetic speech.

A study showed one of the biggest barriers towards making Second Life accessible to users who are visually impaired is its apparent lack of meta data, such as names and descriptions, for virtual world objects. This is a similar problem for the accessibility of the web where images may lack alternative tags. The study found that 32% of the objects in Second Life are called 'object' and it is estimated that up to 40% of the objects in Second Life lack an accurate name.

Virtual Worlds Among People with Disabilities

There are many virtual world platforms currently in the marketplace, all for different demographics of users. Some are more game-based, others less so. Some are appended to existing social media sites such as Facebook. Others are browser-based, some are standalone applications. Use ranges from hard-core gaming to social networking to children's education.

One interesting aspect of Second Life is the availability of its source code. Innovation efforts have been helped by Linden Lab releasing the SL platform under a General Public License, allowing for more experimentation among development project teams.

Source: White, G. (2008). Haptics. In Second Life for the Visually Impaired. Retrieved May 20, 2008 from

<http://blindsecondlife.blogspot.com/>

Say It Sign It (SiSi)

There is another product under development that could make the interpretation of speech into sign language very simple. Called Say It Sign It (or SiSi), the program uses voice recognition software to convert spoken words into text, and then translates the text into signs that are displayed by a digital character. While not yet available for commercial use, the software is eagerly anticipated by spokespersons for the deaf community. It will make lectures, radio, internet, and television more accessible to the deaf and hard of hearing—and having the translation in signs rather than text, with a character whose appearance you can customize, makes the experience that much more familiar and comfortable.



The product will first be released in British Sign Language, but IBM hopes to make it available in other sign languages as well. See the video for a short demonstration of how this program works:

<http://www.youtube.com/watch?v=RarMKnjqzZU>

http://en.wikipedia.org/wiki/Second_Life

http://audioscribe.com/index.php?option=com_content&task=view&id=6&Itemid=8
- E-learning for deaf people

<http://www.alleducationalsoftware.com/software-for-the-deaf.html> Software packages for the deaf people.

<http://www.cognifit.com/press-releases/cognifit-coaches-multiple-sclerosis-patients-improve-memory-and-cognition> Improving cognitive capabilities of people with multiple sclerosis.

<http://www.w3.org/> - Provides a lot of protocols, procedures making accessible Internet for people with different disabilities.

<http://www.aisquared.com> - Adaptive technology and software for visually impaired people