



# ***The AT Messenger***

*bringing technology to you*

Delaware Assistive Technology Initiative (DATI) • Volume 11, No. 3 • Summer 2003

## Only Congressional Action Will Save DATI Services

**W**e have received numerous calls and emails expressing concern about the funding status and actual expiration of the Assistive Technology Act and what it means for Delaware. In order to clarify this and provide accurate information, the national Association of Tech Act Projects obtained confirmation of the following information from the Department of Education's Grant Office.

The President eliminated FY '04 funding for the Title I AT State grant program and its accompanying technical assistance program. Federal funding for DATI in Delaware will end on August 31, 2004, if nothing changes. For the last three years, the state projects have been kept alive via amendments to the appropriations bills that have waived the "sunset provision" in the statute. Now it is time to reauthorize the law to ensure the continuation of a state grant program in every

state. If no action is taken by September 30, 2003, all state projects funded under Title I of the Assistive Technology Act will be eliminated. If these projects are eliminated, a federal investment that has built a national state-by-state infrastructure will be eliminated.

People with disabilities in Delaware will no longer have access to the same AT access supports on which they have come to depend. Without funding for DATI, the following services would be lost:

**Focus on  
AT for  
Employment**

- Statewide Assistive Technology Resource Centers
- No-cost equipment demonstrations and equipment loans
- Technical assistance from trained AT professionals via phone, e-mail, & on-site
- Statewide Equipment Exchange Program
- This newsletter
- The DATI website
- AT publications specific to the needs of Delawareans, such as the *Guide to Resources for AT in Delaware*
- Training (statewide, regionally and locally) on a variety of AT topics
- Interagency coordination of AT services
- Expert assistance in locating funding resources for AT and home modifications.

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### **Congressional Action Steps**

Congress needs to address both the near-term and long-term status of the State AT Projects if

they are to continue. That means that Congress must:

- Reauthorize the Assistive Technology Act (P.L.105-394) and fix the law to ensure ongoing funding for the Delaware Assistive Technology Initiative. This needs to occur before September 30, 2003.
- Amend the Appropriations Bill to provide at least the same funding level as FY03 for State Assistive Technology Programs. \$26,824,000 was the final FY03 appropriation amount for Title I of the Assistive Technology Act. Delaware's portion of this is \$348,000 annually.

### Breaking News

As this issue of the *AT Messenger* was going to print, we received word from Washington that the

House Committee on Education and the Workforce has determined that it will consider the AT Act for reauthorization this year. David Cleary, the lead Republican staffer for the Committee, anticipates developing a new bill in the fall.

Despite this positive development, if DATI is to continue after August 30, 2004, this year's appropriations process must restore the funding for State AT Projects eliminated in the President's FY04 budget and waive the sunset provision. The House Appropriations Committee will meet on June 19th and 27th to complete action on the spending bill that impacts the AT Act. The Senate Appropriations Committee is expected to take action in July. For an update on this late-breaking development, call the DATI Central Site at (302) 651-6790 or (800) 870-DATI. ■

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## The "Disability-Friendly" Workplace

The concept of being "disability-friendly" is one way that employers are being made aware of what they can do to not only meet accessibility requirements, but to also expand their sources of good workers, enhance productivity for all workers, and create a more satisfying work setting.

Providing flexibility in the workplace, such as considering requests for flextime, job sharing, part-time work or compressed work schedules, can help many persons with disabilities better manage their needs. These low- and no-cost arrangements are the same ones contributing to more "family-friendly" workplaces. With appropriate use, these practices can lead to more productive workplaces for employers and more satisfying settings for everyone.

Tools and technology that were once only used by people with a disability are now being used to help anyone complete tasks more effectively and efficiently. Voice recognition technology is a good example of an aid that has become a regular part of the work environment. Tasks such as taking notes or tracking inventory while walking through a warehouse can be completed with mainstream products that started out as

specialized aids for persons with disabilities. This acceptance of technology is helping to make workplaces more willing to consider use of different types of accommodations.

How can a workplace be made more disability-friendly? Here are some suggestions and resources.

Ask, "What do you need to do your job?" This simple question, when asked by an employer of a current or potential worker, is a good indication that the workplace is disability-friendly. Skip Simonds, with the Unum-Provident Return to Work Program, uses this question as a lead-in when explaining how human resources managers should approach a worker with a disability or disabling condition.

For specific suggestions on strategies that employers can follow, a publication from the Office of Disability Employment Policy (ODEP) and the Business Leadership Network (BLN) of the U.S. Chamber of Commerce can help. Some of their suggestions include:

- Educating staff and providing ongoing information about disabilities
- Forming a disability support group

- Providing accessible facilities and services
- Accommodating applicants and workers with disabilities
- Projecting a disability-friendly image
- Hiring applicants with disabilities
- Training and advancing workers with disabilities.

For more information check out:  
<http://www.dol.gov/odep/pubs/ek00/friendlystrat.htm>

The Work Supports RRTC program at Virginia Commonwealth University has developed a checklist to help businesses and employers in becoming more disability-friendly. The checklist covers general accessibility, interactions with customers with disabilities, and evaluation of disability-friendly employment practices. For a copy check out: [http://www.worksupport.com/Main/disability\\_friendly\\_checklist.asp](http://www.worksupport.com/Main/disability_friendly_checklist.asp)

The needs of persons with disabilities vary, so you may need resources that are especially adapted to a particular group, such as individuals who are deaf. For example, check out the following iCan.com web article on creating a deaf-friendly workplace.  
[http://www.ican.com/news/fullpage.cfm/article\\_id/C96AD04C-2D44-44EB-93D61FC157F24276/cx/employment.for\\_employers/article.cfm](http://www.ican.com/news/fullpage.cfm/article_id/C96AD04C-2D44-44EB-93D61FC157F24276/cx/employment.for_employers/article.cfm)

As employers continue to become more aware that persons with disabilities are a valuable and largely untapped source of employees, we will hopefully see more practices and policies that make it easier for someone with a disability to find successful employment. ■

*This material was provided by Tech Connections, a project funded by a grant from the National Institute on Disability and Rehabilitation Research of the Department of Education. For more information, visit [www.techconnections.org](http://www.techconnections.org).*

## Ergonomics in the Office

*Dan Fendler, AT Specialist  
 Sussex County ATRC*

**W**e recently got new computers in all of the DATI Resource Centers. I was excited to get the new equipment with promise of quicker response times and lots of storage. Most of the new software requires both speed and space to run. After I finished setting up, and was eagerly waiting for the initial boot, I noticed a fluorescent orange tag on the keyboard. It read: "See bottom of keyboard for HEALTH WARNING". The first sentence of the warning on the back reads "Use of a keyboard or mouse may be linked to serious injuries or disorders." The rest of the warning explains that the repetitive use of a keyboard or mouse may cause repetitive stress injuries, like carpal tunnel syndrome.

After seeing this warning on a device that I use every day, I couldn't resist signing up for a session titled "Practical Ergonomics for Computer Use in the School and Office" at this year's Closing the Gap conference. I would like

to take this opportunity to pass along some ideas that may help reduce the possibility of acquiring a musculoskeletal disorder (MSD), such as carpal tunnel syndrome, tendonitis, or tenosynovitis, associated with repetitive stress.

### Ergonomics

First, let's take a look at the meaning of the word: er·go·nom·ics - *an applied science concerned with designing and arranging things people use so that the people and things interact most efficiently and safely — called also human engineering*. In other words, an ergonomic approach involves changing the tool to work with us, rather than changing us to work with the tool.

To demonstrate how you may be damaging the nerves in your hand, try the following: seated at a table or desk, put your hands palm down on the surface. Watch your forearm as you roll your hand from the palms down position to a position I'll call the "thumbs-up" position (just like you're giving someone the thumbs-up). Notice how your forearm twists. When you

have your hands in a palms down position, you twist your forearm, which puts stress on the nerves running through your wrist. Keeping your hand in a neutral position (close to the thumbs up position) will reduce the stress to those nerves. Now, if you have a keyboard near you (assuming that you have a standard keyboard, not one that has a split design), put your hands on the home row keys. Notice how you turn your hand to accommodate the keyboard. Your hand is rotated down and turned to fit the keyboard. This puts stress on the nerves running into your hand. Using the keyboard everyday with your hand rotated and twisted can lead to MSDs. The same principles also apply to the use of a standard mouse.

If you use a computer every day, the bad news is that, with bad habits and old equipment, you could develop a debilitating condition. The good news is that there are lots of products that you can start using now to help reduce the overall risk.

## Keyboards

There are a number of different keyboards available that help adapt the tool to your body.



Contoured Keyboard

Several examples include the Contoured Keyboard, the Goldtouch Keyboard and the Comfort Keyboard (all pictured). Each one accommodates a wide range of individual needs. The Goldtouch and the Comfort Keyboards adjust to allow maximum flexibility.



Goldtouch Keyboard

The best way to find one that works for you is to try them out. We have all three keyboards in our centers, available for loan.



Comfort Keyboard

## Alternative Mice

Using a mouse that allows you to keep your hand in a more neutral position will help reduce stress as well. An example of one mouse is the Ergonomic Mouse (shown below). It looks like a joystick and let you keep your hand in a neutral position, which results in low pressure in the carpal tunnel.



Ergonomic Mouse

There are a number of ergonomically designed trackballs that will also help reduce stress. Many computer stores now carry a wide array of alternative mice and track balls.

## How to Best Arrange Equipment

Assuming that you are seated in an appropriate chair, set the height of the work surface to accommodate the major activity (keyboarding vs. writing). If you spend more time writing, the work surface should be slightly above elbow level. If you use a keyboard more frequently, hold your upper arms straight down along your torso, keep your forearms parallel to the floor and that should give you a good idea of the proper keyboard height. Avoid reaching out or up. Keyboard trays are available and they allow for ready height adjustment, but also move the user away from everything else on the desk. When placing a mouse or trackball, you should follow the same guidelines as placing the keyboard. Do try to place it to minimize forward reach and rotation of the arm and shoulder.

When placing the monitor, if you use the computer most often, place it directly in front of you. If you spend more time with paper, place the monitor slightly to the side. In both cases, the top of the monitor should be 15 degrees below eye level (allows for dynamic movement of the head, a comfortable viewing position, and reduces dry eyes). At a minimum, try to keep the monitor at least an arm's length away.

### Good Practices

Here are some basic ideas that can help reduce the possibility of acquiring a MSD:

1. Keep everything within reach
2. Work at proper heights
3. Work in good postures

4. Reduce excessive forces
5. Minimize fatigue
6. Reduce excessive repetition
7. Provide clearance and access
8. Minimize contact stress
9. Provide mobility and change of positions
10. Maintain a comfortable environment.

One source that has a number of alternative keyboards and mice is Infogrip ([www.infogrip.com](http://www.infogrip.com)). An interesting source for ergonomic furniture is Office Organix ([www.officeorganix.com](http://www.officeorganix.com)).

As always, if you have any questions or need additional information, please feel free to contact your nearest ATRC. ■

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## Inaugural Money Management Workshop A Great Success

On Friday, May 30, 2003, DATI hosted an exciting half-day workshop at Del Tech's Terry Campus in Dover on money management skills for persons with disabilities. This free workshop, titled "Money Matters!" was funded by the Delaware Developmental Disabilities Council (DDC). Ms. Rashmi Rangan, the Executive Director of the Delaware Community Reinvestment Action Council (DCRAC), was the featured speaker. Attendance was limited in order to maximize learning and discussion.

Those present worked with sample budgets and took part in other interactive exercises on various aspects of money management, including credit, banking, home ownership, fair housing, fair lending, and consumer protection. Each trainee was also given a series of easy to read booklets on each of the above topics. Attendees enthusiastically agreed that the training provided them with practical knowledge that will help them be more effective and independent managers of their personal funds.

DATI and DCRAC will repeat the training five more times, once in Kent County and twice in each of New Castle and Sussex Counties. Dates

for those trainings have not yet been scheduled. If interested in attending or recommending a trainee, please contact Tom McDonough at DATI's Wilmington office, (302) 651-6792 (voice), (302) 651-6794 (TDD), or [mcdonoug@asel.udel.edu](mailto:mcdonoug@asel.udel.edu). ■

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### DATI Designated a DJI Learning Center

Don Johnston Incorporated, one of the country's leading developers/marketers of learning intervention resources, has recently named the DATI as of its official **Learning Centers**. This means that DATI's AT Resource Centers will house all of the latest and greatest DJI products, including BuildAbility, Simon Sounds It Out, and DraftBuilder. DATI's AT Specialists will also offer training throughout the year on DJI products. ■



# Dealing with Standing Limitations

**W**orkers who have stamina or standing limitations can often benefit by alternating between sitting and standing to reduce or alleviate fatigue and back discomfort. Different types of stools or chairs might be considered as options depending on the type of work setting, the specific nature of the workstation, and specific tasks and activities that the worker will need to perform.

This look at sit/stand accommodations was prompted by a recent inquiry concerning a 52-year old barber with knee problems that restricted his ability to stand. This individual had worked for 30 years as a barber, and he wanted to continue working in this capacity. Stools and raised seats that can be used to work in a semi-standing position were considered. One option, a “Rol-Seat,” featured a height-adjustable small round seat that pivots on two wheels and is attached to the barber's chair. Unfortunately, although this device appeared to be a possible solution, attempts to locate the manufacturer were not successful, and it appears that the product has been discontinued.

## Consideration of Features

Subsequent discussion on the RESNA listserv looked into a number of possibilities for this individual and also helped to identify general factors to be considered with sit/stand accommodations:

- Height and seat angle adjustability matches the stool support to the correct height for the user.
- Swivel capability allows the worker to reach the work task area easier.
- Arm rests provide support for the arms during some task activities and provide support if the user needs to use his arms to raise or lower himself into the seat.
- Backrests provide additional back/lumbar support.
- Footrests provide support and additional stability.
- Seat surfaces, such as slip or non-slip fabric or surface textures, can be important for

stability and maintenance in certain environments.

- Stationary bases provide more stability while working.
- Caster bases allow the user to move easily within the work area.
- Locking casters, which will “lock” the wheels of a seat when weight is applied, may improve stability for individuals with balance problems. However, locking casters limit the ease of moving the stool, which could restrict someone changing positions while doing work such as cutting hair.

## Types of Stools and Chairs

**Saddle Stools** - These height-adjustable chairs or stools are mounted on rollers and look somewhat like a horse saddle that you straddle. Two examples are the Salli Saddle Chair and the Bambach Saddle, which can be obtained through many sources. These stools are designed for a number of work settings, including hairdressing. The Bombach has an optional backrest feature.

**Sit/Stand Stool Designs** - These ergonomically-designed office and industrial stools allow the user to work in a semi-standing position. Bases are usually fixed or non-slip and work best for activities that do not involve frequent position change. The contoured seats have height, tilt and swivel adjustment. Check out the Ergostoreonline web site, International Source for Ergonomics, or search under sit/stand stools and ergonomic seating for other possible options.

**Standard Office Chairs and Stools** - Chairs with adjustable ergonomic features are also available. These lower cost alternatives can be found through standard office and industrial seating sources, so they can often be tried out in retail stores before purchase. Review office supply catalogs or search online under ergonomic stools or seating for possible options.

## Selecting the Right Product

There are many commercially available stools and seating options that may be appropriate. With any of the alternatives, it is important to allow the

individual to actually try the stool or chair. The greatest factor influencing whether sit/stand options will be used on a day-to-day basis is the worker's comfort with using the stool. The stool will need to be easy for the person to use, move about in the work area, and store. It is also important to make sure that unique needs such as balance or trouble moving into a standing position are accommodated. In addition, when alternative seating is considered in the workplace, the employer should be involved from the onset. Co-workers and others in the immediate work area can also influence how well an accommodation may be accepted. Each situation will vary and accommodation suggestions will likely differ as specific information and preferences are identified. Cost for the seating options noted above range from approximately \$160-\$1,600.

## Product Information

Salli Saddle Chair

<http://www.portalmarket.com/salli.html>

Bambach Saddle

<http://www.officeorganix.com/Bambach1.htm>

Ergostoreonline

[http://www.ergostoreonline.com/harvard\\_lab\\_stools.htm](http://www.ergostoreonline.com/harvard_lab_stools.htm)

International Source for Ergonomics

[http://www.ise-ergonomics.com/products/product-display.cfm?product\\_id=ss9al](http://www.ise-ergonomics.com/products/product-display.cfm?product_id=ss9al) ■

*This material was provided by Tech Connections, a project funded by a grant from the National Institute on Disability and Rehabilitation Research of the Department of Education. For more information, visit [www.techconnections.org](http://www.techconnections.org).*

## Inclusion Conference Scheduled for November

**M**ark your calendars – the **10th Annual Inclusion Conference** will be held on **November 6, 2003**. The conference will begin at 8:00 a.m. with a continental breakfast followed by the keynote address. **Collaborative Teaming**, which will be given by Dr. Marti Snell, the Coordinator of the Special Education Program at the University of Virginia. Her research and writing focuses on inclusion and severe disabilities. Rounding out the day will be session strands focusing on Collaborative Teaching, Accessing the General Curriculum, Classroom Management, and Inclusive Strategies. The conference will conclude at 3:15 p.m.

Registration materials will be available in September. Cost will remain at \$20 per person, which includes the continental breakfast and lunch. A 50% discount will be given to all full-time students. Also, in an effort to attract more general educators to this year's conference, special education teachers registering along with a general education teacher will only pay one registration fee.

If you would like more information, please contact Marsha Mills at the Developmental Disabilities Council by phone at 739-7193 or e-mail at [mmills@state.de.us](mailto:mmills@state.de.us). ■

## Employment Opportunity

**T**he Freedom Center, a consumer-driven organization providing a variety of services and supports for independent living, is seeking a qualified individual for the full-time position of Independent Living Specialist. The ideal candidate will have personal/professional experience with disability, strong problem solving skills, an understanding of issues relevant to the constituency served, and knowledge of existing laws, programs, resources, and entitlements relevant to people with disabilities.

The Freedom Center is looking for someone with excellent organizational, written and verbal communication skills, and the ability to successfully develop relationships with the constituency served and the ability to interact effectively and efficiently with professional colleagues. Candidates should hold a Bachelors degree in a related field of study and be computer literate. Demonstrated ability and experience may be substituted for a college degree. Candidates should forward a letter of interest and a resume to Debbie Bain at the Freedom Center, 3 East Main Street, Middletown, DE 19709, or via email to [FreedomCIL@yahoo.com](mailto:FreedomCIL@yahoo.com). ■

## Technology in Literacy Education Grant Competition

A partnership between the International Reading Association and Don Johnston Incorporated supports a competition intended to foster the creative use of computer technologies in classrooms to “connect” students with literacy learning. They seek projects that use the unique capabilities of computer hardware/software applications to enhance the literacy curriculum, extend the communication capabilities of students, provide interventions, or offer students opportunities to assemble and express knowledge in authentic contexts. The winner of the competition will receive up to a \$400 grant award as well as Don Johnston literacy software appropriate to the project objectives.

Applicants must be members of the International Reading Association and its Technology In Literacy Special Interest Group, and proposals may be submitted by individual educators, a team of collaborating teachers, or a computer lab teacher. Both public and private K-12 schools are eligible. Applications are due February 9, 2004, and the award will be made by May 2004. For more information and an application, visit the IRA SIG or DJI websites: [www.wm.edu/education/tilesig](http://www.wm.edu/education/tilesig) or [www.donjohnston.com/about/grantfrm.htm](http://www.donjohnston.com/about/grantfrm.htm). ■

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## NIDRR Seeks Input to Long-Range Plan

The National Institute on Disability and Rehabilitation Research (NIDRR) generates, disseminates, and promotes use of knowledge that improves the ability of individuals with disabilities to perform activities in the community, and increases the capacity of society to provide full opportunities and supports for participation. NIDRR is in the process of updating its long-range plan, and seeks input from people with disabilities, interested family or friends, service providers, disability and rehabilitation researchers and others to guide its future activities. Input can be provided via a web-based form ([www.cessi.net/nidrrlrp/questionnaire.htm](http://www.cessi.net/nidrrlrp/questionnaire.htm)), via

email to [NIDRR.Plan@ed.gov](mailto:NIDRR.Plan@ed.gov), or by mail to:  
CESSI  
Attn. Long-Range Plan  
6858 Old Dominion Drive  
Suite 250  
McLean, VA 22101

Three teleconferences will also be held, and interested parties may participate on-site, by telephone via a toll-free number, or by following a link to the real-time captioning. For more information, visit [www.cessi.net/nidrrlrp](http://www.cessi.net/nidrrlrp) or call toll-free 1-866-448-8380. ■

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## The Low Down on Low Tech

For an individual with dexterity problems and/or fine motor impairments, using a key to unlock a door, cabinet, or drawer can be difficult and sometimes painful. There are several remote locking systems that can be purchased for door locks and there are padlocks that can be locked and unlocked through infrared or radio frequency control buttons. For locks that cannot be adapted or require a key, creating a larger handle for the key might be helpful. In *Easy Things to Make... To Make Things Easier*, Doreen Greenstein (author) suggests attaching a polymer clay (e.g., Fimo or Sculpey) or sheet plastic material (e.g., Friendly Plastic) to the head of the key. These materials can be cut and molded to any shape and they harden when heated. Additionally, painting a bright color around the keyhole might help locate it. For complete instructions on this and other useful adaptations, please see her book. ■

Brookline Books  
PO Box 1047  
Cambridge, MA 02238  
Phone: 1-800-666-BOOK (2665)

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## Resource for the Road: National Mobility Equipment Dealers Association

The National Mobility Equipment Dealers Association (NMEDA) is a 500-member trade association serving dealers, manufacturers, and professionals involved in the modification of transportation vehicles for



people with disabilities. NMEDA helps consumers find the transportation equipment that meets their individual needs. Their web site provides links to transportation equipment manufacturers and helps locate equipment dealers in each state. The web site also includes publications and other information to aid in finding the vehicle and equipment best suited to a disability, and resources covering the full range of transportation-related assistive technology, including wheelchair carriers, hand controls, pedal extensions, and hand lifts. ■

National Mobility Equipment Dealers  
Association  
<http://www.nmeda.org>

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## A Useful Web Site

NICHY is pleased to let you know about the launch of the great new website by the National Collaborative on Workforce and Disability for Youth (NCWD/Youth): [www.ncwd-youth.info](http://www.ncwd-youth.info)

NCWD/ Youth is one of two technical assistance centers funded by the US Department of Labor to assist the workforce development community in addressing issues affecting the employment of people with disabilities. The site contains useful information and resources for youth with disabilities and their families, service providers and other front-line workers, administrators, policy-makers, and employers. The content is developed by NCWD/Youth partners, who have expertise in disability, education, employment, and workforce development issues. You'll be able to access materials such as the Information Brief entitled "How Young People Can Benefit from One-Stop Centers," links, resources, answers to your questions, and much more.

For those of you who are interested in employment issues for young people with disabilities, this is a site you'll find very helpful! ■

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## Did You Know? – Access at the Gas Pump

The Delaware Code (Title 6, Section 2912) requires gas stations that offer both full- and self-serve fueling to provide full-service at self-service prices for disabled drivers with state issued disabled placards or license plates. This aspect of Delaware law is consistent with the Americans with Disabilities Act's equal access provisions. If necessary to provide access, gas stations must:

- Provide refueling assistance upon the request of an individual with a disability. If two or more employees are present, refueling assistance is required per the ADA. A service station or convenience store is not required to provide such service at any time that it is operating on a remote control basis with a single employee, but it is encouraged to do so, if feasible.
- Let patrons know (e.g., through appropriate signage) that customers with disabilities can obtain refueling assistance by either honking or otherwise signaling an employee.
- Provide the refueling assistance without any charge beyond the self-serve price.

The State Department of Transportation established the Voluntary Service Station Assistance Program last year. This pilot program aims to increase assistance to motorists with disabilities who cannot pump their own gas. Participating stations display the international wheelchair symbol and also a sign indicating the hours the service is available. The State has agreed to provide, at no cost to participating Service Station retail dealers, the signage necessary to designate the station as a participant in the program. If the three-year pilot program is successful, it will continue beyond the initial program period. For a list of participating stations, or for any questions regarding this program, please contact the Delaware Motor Fuel Tax Administration, Office of Retail Gasoline Sales, Post Office Drawer E, Dover, Delaware 19903-1565, or call (302) 744-2703. ■

# Election Reforms Benefit Voters with Disabilities

*Laura J. Waterland, Senior Staff Attorney  
Disabilities Law Program*

One of the few positive things generated by the 2000 federal election debacle is the Help America Vote Act (“HAVA”), 42 USC § 15301-15545, passed by Congress in 2002. The Florida election, bogged down in a quagmire of voter challenges and disallowed votes, exposed the inconsistency, even on a precinct to precinct basis, in the way voters were determined eligible to vote, and how their votes were counted. Further review after the election showed that elections practices varied widely, within each state and among the states. As many as 6 million votes may have been lost in the 2000 election, according to the CalTech/MIT Voting Technology Project.

HAVA introduced election reforms for national elections encompassing voting systems<sup>1</sup>, voter registration, provisional voting and a centralized grievance system. Perhaps the most fundamental element of HAVA is the insistence that voters be allowed to cast their votes independently and privately. Other key requirements are a statewide centralized voter registration system and a provisional ballot mechanism that allows voters whose registration is contested by poll workers to cast a provisional vote.

States must comply with the requirements of HAVA, with or without federal funding. There is a fairly generous appropriation attached to the bill, however, including a minimum of \$5 million early appropriation (“Title I”) to assist in the administration of elections and up to three years of funding, with a small state match, to assist states in complying with the substantive requirements of the law (“Title III”

or “Requirements” payments.) If fully funded by Congress, Delaware anticipates receiving around \$14 million over three years of Title III payments.<sup>2</sup> Delaware has already received the early Title I appropriation of \$5 million.

From the disability perspective, HAVA should improve access to voting by people with disabilities in several ways. One, states are required to place a minimum of one voting machine, either a Direct Recording Electronic (“DRE”)<sup>3</sup> device, or another voting system, that is accessible to all individuals with disabilities, at each polling place, by January 1, 2006. A commission (Election Assistance Commission, or “EAC”) is established that in part sets standards for accessibility of voting systems.<sup>4</sup> Two, HAVA makes accessibility grants available to states to improve physical and nonvisual access to polling places, of which Delaware could receive \$100,000 per year. HAVA also allows states to use Title I funds to improve polling place access. Three, the law establishes a Protection and Advocacy system to assist voters with disabilities, to support training of people with disabilities, and to evaluate voting systems. Other aspects of HAVA that will improve voter access include education and outreach. Finally, the centralized approach to policy and implementation that HAVA requires should standardize practices throughout the state, which will benefit all voters.

Voting access for people with disabilities has long been identified as problematic. A General Accounting Office survey conducted in 2001 revealed that 84% of polling places limit access to people with disabilities. In at least 27% of counties surveyed, accessibility was not a criterion used in polling place selection. The American Association of People with

<sup>1</sup> “Voting Systems” refers generally to the mechanical or electronic equipment used to cast a vote and to record and tally votes.

<sup>2</sup> Part of the early implementation process is the development of a State Plan for HAVA compliance. Delaware’s draft Plan, at the date this article was written, is in the public comment process. The Plan can be obtained by contacting the Commissioner of Elections Office at 302-739-4277 or on the website at [www.state.de.us/hava/](http://www.state.de.us/hava/).

<sup>3</sup> DREs are typically touch screen devices, similar to ATM machines.

<sup>4</sup> The Disabilities Law Program of Community Legal Aid Society, Inc. is the Protection and Advocacy program in Delaware. Our toll free number is 1-800-292-7980.

Disabilities (AAPD) estimates that while over 14 million voters with disabilities voted in 2000, more than 21 million did not. US Census figures indicate that, among voters with disabilities, more than 10 million voters could not cast their vote in private because of vision impairments, while thousands more with upper extremity impairments could not vote either independently or privately.

Earlier legislation has already spurred states to improve accessibility of voting systems and polling places. Other laws which impact the voting process for people with disabilities include the Americans with Disabilities Act, 42 USC Chapter 126 (1990) and the Voting Accessibility for the Elderly and the Handicapped Act, 42 USC §1973ee (1984) (“VAEHA”). The ADA in the past has not been a particularly useful tool, because it has not been interpreted to require states to purchase new equipment, although its accessibility provisions apply to new purchases. The ADA also allows states to offer curbside and assisted voting as part of its requirement that only the system as a whole be accessible.

The VAEHA requires that polling places for federal elections be accessible, but authorizes the use of alternate means when no accessible place is available. The law also requires states to provide registration and voting aids for voters with disabilities. Even with these laws, many voters with disabilities remain unable to vote independently or privately, either because they cannot access the polling place or they cannot operate the voting machines without assistance.

### **Polling Place Accessibility**

While HAVA encourages states to improve polling place accessibility and provides funds for that purpose, through grants and by use of Title I money, the law does not define “accessibility.”<sup>5</sup> The section of the statute creating the accessibility grant component indicates that state governments should use the money to make “polling places, including path of travel, entrances, exits and voting areas accessible to individuals with disabilities.” 42

USC §15421(b). One assumes that the states and advocates will look to the existing accessibility design standards, the ADA Standards for Accessible Design or ADAAG, promulgated by the US Architectural and Barriers Compliance Board, for guidance.

Delaware conducted a survey in 1999 of 146 polling places to determine whether existing sites were accessible or could be made accessible. Delaware uses a variety of sites, including schools, churches and civic halls. The survey identified a number of significant barriers to accessibility, particularly at fire halls, community centers and churches. The total statewide cost to remedy the deficiencies at the time was estimated at around \$725,000. In the draft State HAVA Plan, accessibility improvements are budgeted for approximately \$1 million of Title I HAVA funds.

There are several key areas where improvements must be made. Parking spaces for people should be of sufficient number and size, and appropriately marked. The spaces must be positioned on the accessible route to the polling site. Accessible routes should be marked clearly. Curb ramps on the accessible route should be of proper slope and width. Walkways must be level. Entrances that are not flush with the sidewalks must be appropriately ramped. Doors must be of sufficient width, have level thresholds, be adjusted so that people with disabilities can pull them, and have accessible hardware.

Inside the polling place, directions and voting instructions must be placed where people with vision impairments and those in wheelchairs can read them. Routes to the polling place should be clear of protruding objects. If other facilities are made available to voters, such as restrooms, then they should comply with ADAAG requirements as well. The approach to the voting machines should be unobstructed. In the polling place, any tables or voting booths should have sufficient clearances, reach, and clear floor space for people in wheelchairs. If necessary, machine buttons and levers should

<sup>5</sup> Delaware law requires polling places to be “readily accessible” but does not define the term. 15 Del. Code §4512(b).

be adjusted to require only minimum pull strength. Printed instructions, in alternative formats, should be made available.

### **Voting Technology**

To reiterate, States at a minimum must install at least one DRE voting system, or other voting systems equipped for individuals with disabilities, at each polling place by 2006. The voting system must be “accessible for people with disabilities, including nonvisual accessibility for the blind and visually impaired, in a manner that provides the same opportunity for access and participation (including privacy and independence) as for other voters.” 42 USC §15481(a)(3)(A). The equipment must possess the same features that are required generally by HAVA. Consequently, the machine must be designed so that a voter with a disability can (1) verify in a private and independent manner the votes selected before the ballot is cast; (2) be able to change their ballot in a private and independent manner before the ballot is cast; and (3) be notified before a ballot is cast that the voter has selected more than one candidate for a single office. 42 USC §15481(a)(1).

The Federal Election Commission issued the most recent Voluntary Voting System Standards in 2002. Accessibility standards are found in the Functional Capabilities Section, Vol. I, Section 2.2.7. The FEC has incorporated specifications developed by the U.S. Access Board, and are based on federal regulations implementing Section 508 of the Rehabilitation Act, 36 CFR Part 1194, Electronic and Information Technology Accessibility Standards. These are the requirements that the states must follow in implementing HAVA’s accessible voting system requirement, as well as ADA standards. All voting systems purchased under HAVA must be certified machines.

The FEC Voluntary Standards, which states are authorized to use<sup>6</sup> until the EAC issues

guidelines (which will be the FEC Guidelines), have a number of common standards as well as standards specific to DREs. Section 2.2.7.1 requires all voting systems to have minimum and maximum reach requirements and floor space, as well as minimum and maximum height and reach requirements for operable controls.

DRE systems have additional requirements. Voters must not be required to bring their own assistive technology. The machine must have the following characteristics: provide audio information and stimulus and a wireless assistive coupling device; be operable with one hand and not require tight grasping, pinching or twisting; require a force of less than 5 pounds to operate; allow voters to adjust contrast, color and size of letters; and, for a device with touchscreen, provide a method using mechanically operated controls or keys that are tactilely discernable without activating the control. Any system that provides sound cues must also have visual cues.

Delaware purchased a DRE<sup>7</sup> called the DanaHER ELECTronic 1242 (6T) in 1996. At the time, this machine was state of the art. It has many accessible features, including a tilt design that allows people in wheelchairs to vote unassisted, provided they have the upper extremity agility to do so. However, this machine does not satisfy new guidelines. Due to positioning, the write-in ballot feature on the machine cannot be accessed, even when tilted. Additionally, the machine lacks non-visual cues for the visually impaired.

Delaware will have to replace or modify its existing equipment to satisfy HAVA requirements. The proposed budget in the draft Delaware HAVA Plan dedicates up to \$5,750,000 to purchase new equipment, although the state is also considering

<sup>6</sup> U.S. Department of Justice, Civil Rights Division Interpretive Letter, March 17, 2003.

<sup>7</sup> Delaware was very much ahead of the curve in voting technology at the time. According to the National Organization on Disability, in 2000 only 9.1% of voting systems nationwide were DREs, while 34% were punch cards, 18.6% were lever systems, 27.3% were optical scanners, 1.6% paper ballots and 9.1% a mixture of systems. States that use punch card or lever systems are eligible under HAVA to receive additional funds to replace those disfavored systems. DREs are the most technologically advanced systems and provide for greatest probability of private and independent voting for people with disabilities.



purchasing a module to attach to the existing equipment, or purchasing only one accessible machine per polling place. New DREs run an estimated \$2,000 to \$5,000 apiece.

The technologies are ever-evolving. Some new machines are portable, and can be placed in the lap of a voter in a wheelchair, for example. The eSlate<sup>8</sup> is not a touch screen; however, it is portable (weighing less than 8 pounds), and can be controlled by two tactile switches that voters can operate using their elbows or feet. An upgraded model, the Disabled Access Unit (DAU 5000) accommodates various devices that support voting for people with disabilities, including head movement switches and "sip and puff" devices, so that voters with severe disabilities can operate the equipment independently.

The TRACE Research and Development Center at the College of Engineering, University of Wisconsin, has developed a prototype cross-disability machine, which is designed to allow any voter to use the machine without instruction or assistance of a poll worker. This technology, called EZ Access, can be used on a variety of voting machines, including tablets and kiosks. It is designed to be easy to use for individuals with a range of disabilities, and the elderly. It also can be manipulated with a sip-and-puff device.<sup>9</sup>

The future for accessible voting technology is bright. E-Voting through the Internet, however, may eventually replace voting as we know it. As the CalTech/MIT researchers point out, touch screens and optical scanners are old technology. The British and Swiss have conducted pilot programs of internet voting for some local elections. The United States military is developing an internet-based voting component for its overseas personnel. If the obstacles of security, privacy and fraud can be surmounted, networked electronic voting may become the norm, and citizens will no longer have to "come out to the polls." Americans crave convenience and many would prefer to vote at home. In 1972, only 5% of voters were absentee; in 2000, 15% used absentee ballots. In Washington state, 50% of voters exercised the franchise by mail. Oregon has gone exclusively to mail-in ballots and will have to create polling places to comply with HAVA.

In the meantime, states will be phasing out non-accessible systems, such as punch cards and lever machines, and replacing these antiquities with state of the art equipment with federally-mandated features of accessible design. More and more voters with disabilities will be able to vote independently and privately, in the same manner as other voters. ■

<sup>8</sup> eSlate is manufactured by Hart InterCivic of Austin, Texas; [www.hartic.com](http://www.hartic.com).

<sup>9</sup> The TRACE website address is [www.trace.wisc.edu](http://www.trace.wisc.edu).

## Safe Transport for Children with Special Needs

**T**he Injury Prevention Center at Connecticut Children's Medical Center has produced a free, web-based interactive training that provides information about safe transport for children with special needs. The modules include information regarding:

- Basic crash dynamics and injury prevention
- Selection and use of motor vehicle restraints
- Tethering child safety seats
- Wheelchair transport
- Other vehicles such as school buses, adaptive vehicles, and ambulance transport.

If you are interested in this free training opportunity, pre-register by visiting [www.ccmckids.org/training](http://www.ccmckids.org/training) by August 1, 2003. The self-administered course will be available for completion from October through December 2003. Approximate time to complete the online training is 4 hours. Some portions are optional and contain supplemental information. The course may be completed in one session or over a period of time. Participants will be provided with ongoing resources on the subject as well as a certification of completion to submit for continuing education credits. For more information, contact Eileen Henzy at 860-545-9943 or [ehenzy@ccmckids.org](mailto:ehenzy@ccmckids.org). ■

# What Is All of This Talk About Blue Teeth?

*Marvin Williams, AT Specialist  
Kent County ATRC*

**B**luetooth is the newest kid on the technology block, and it holds a lot of promise for the assistive technology industry. Named for a 10th Century King of Denmark who unified the kingdoms of Denmark and Norway, Bluetooth is a short-range wireless communication specification that promises to improve and increase electronic access to a number of environments by overcoming some of the obstacles typical of current technology. Bluetooth technology will enable devices to communicate and transfer data wirelessly and without the line-of-site issues of infra red technology.

## **What does this mean for people with disabilities?**

In fact, the implications of the technology are staggering. Imagine a hearing impaired person going to a movie or a play and being able to hear the audio with improved clarity through her own Bluetooth hearing aid. Completely deaf individuals could use Bluetooth enabled viewers to watch movies, plays, or even sporting events with captions while actually at the event. Bluetooth devices would allow the users to be connected to the public address systems in places like theaters, airports, train stations, and arenas. A visually impaired person with a Bluetooth cell phone could trigger an audible-locating signal from an ATM, ticket counter, or informational kiosk. She could then use her phone or a Bluetooth headset to receive speech output of the information on the terminal's screen. Someone using a Bluetooth cell phone or headset could receive information about the busses at a certain bus stop, the names of streets and the direction the user is traveling, or whether a street is safe to cross. A person could enter a large office building and navigate the building's many floors and offices via audio announcements transmitted to a Bluetooth cell phone or headset.

## **So how does it work?**

Bluetooth devices search each other out within their given operational range. Unlike devices that are wired together, Bluetooth devices do not have to be aware of the capabilities or properties of

the devices to which they will connect beforehand. Bluetooth devices have a built-in mechanism that lets each device identify itself as well as its capabilities as it connects into this new Bluetooth network. This dynamic network does have a controlling device that designates itself as the master for the connection. Its programming and the capabilities necessary for the given task determine whether or not a device can be a master. For example, a cell phone may act as a master device when connecting to a headset, an ATM, or an informational kiosk. However, the same cell phone or headset may act as a slave device to the informational kiosk, now acting as the master device, broadcasting emergency evacuation information. The cell phone and kiosk can function in either capacity depending on the required function and their programming.

The master device broadcasts a signal requesting all slave or slave-capable devices to identify themselves. All possible slave devices that receive the signal send the master device information about what type of device it is and what its capabilities are. During this phase of communication, the slave device also sends the master device information necessary to synchronize and optimize their communication. Once the master collects the information from all of the available slaves, it selects the specific slave devices the user needs and begins selective communication with those devices only. It is this directed broadcast communication and directed receiving that prevents signal interference between various slave units. The master and slave can communicate as long as they stay within broadcast range of each other.

As Bluetooth operates on two power levels, it has two different ranges. The low power level has a maximum range of 20 feet, while the higher power range has a maximum range of 10 meters. By utilizing the two different power levels, larger Bluetooth networks can be easily established without overloading a single network. Thus, a student on a college campus would connect to the higher power Bluetooth broadcast for the building where her class is and connect to the lower powered network while she is in her class.

That way, she does not listen to the lecture going on next door or three doors down.

### **So where do we stand currently?**

Well, on the communications front, Bluetooth enabled phones are available on the market from most every cell phone manufacturer. This is because the majority of telecommunication industry experts agree that developments in Bluetooth will be cell phone driven. Of the 40 million Bluetooth chip sets produced last year, industry experts expect more than half to end up inside cell phones; and by 2005, 75% of cell phones are expected to be Bluetooth compatible.

GN ReSound has developed the first Bluetooth cell phone headset specially designed for hearing aid wearers. It eliminates the need to remove the hearing aid in order to use the headset. Presently, a hearing-aid wearer has to remove the hearing aid to avoid the interference between the headset and the hearing aid.



*GN ReSound's specialized Bluetooth headset and how it's worn*

This new headset would fit over the ear with the hearing aid in place with virtually no risk of interference. This new headset weighs 28 grams and is compatible with some GN ReSound and Beltone hearing aids.

As Bluetooth technology spreads across the electronics landscape, the benefits for the disabled community will grow. Fortunately, the consumer electronics industry is recognizing the benefits of implementing universal design in developing new devices. Bluetooth definitely lends itself to universal design in consumer electronics. Industry is also beginning to address the needs of the disabled community with its products. While initially this was driven by the requirements of federal and state legislation, companies have begun to recognize that people with disabilities comprise a great untapped market that has money to spend on consumer electronics. ■

## **PROMISING PRODUCTS**

### **Lift Mates**

Lift Mates, Inc. has developed two new products to make boxes easier to lift and stack. The products provide one or two handles that can be used for lifting. These handles do away with the need to "get under the box" or to stretch and twist to reach the distant corners of the box. "The Solo Lift" is a clamping device that grips the top edge of a box and is held in place with small pins that penetrate the cardboard. It provides a single handle at the top of a box to allow it to be lifted and carried with one hand. "The Dual Lift" provides two handles that attach to the sides of a box and which are again held in place with small pins. Neither product should be used to carry boxes weighing more than 50 pounds, and the company states that users should not try to lift more than they can carry comfortably. The Solo Lift costs \$29.95 and the Dual Lift costs \$44.95.

Contact:

Lift Mates, Inc.  
25440 Carmel Knolls Drive  
Carmel, CA 93923

### **Dana**

People looking for an inexpensive way to type notes and stay organized now have another option for a portable device. Dana is a Palm™ OS-powered device that combines the size of a laptop with the utility of a notebook. Information can be entered by typing or using the stylus on the screen. Dana comes with AlphaWord (word processor compatible with Microsoft Word format), Palm Reader (for eBooks), Address Book, Date Book, To Do List, and Memo Pad. Additional Palm applications are compatible with Dana and can be purchased separately.

Dana has a full-size keyboard and an LCD with backlight that is 560 x 160 pixels. The device has 8 MB of memory and two expansion card slots for adding memory and backing up data. Dana has an infrared port for sharing data and software with another Dana, Palm-powered device, or IrDA-enabled printer. The device also has two USB ports for printing or connecting Dana to a computer. Dana runs from a rechargeable battery pack, standard AA batteries or an AC adapter. It

weighs 2 pounds and is 9.3 in. by 12.4 in. Dana costs approximately \$400 and is available from the manufacturer and resellers.

AlphaSmart, Inc.  
973 University Ave.  
Los Gatos, CA 95032

Phone: 1-888-274-0680

Fax: 1-408-355-1055

<http://www.alphasmart.com> ■

*The DATI will soon add several Dana devices to its inventory. Please call in advance of your visit to check availability.*

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Has your address changed? Are you receiving duplicates?

If the address we have for you is incorrect, please type or print your correct address and forward it to DATI along with the current mailing label. If you no longer wish to receive this newsletter, please contact our office or send us your mailing label with "discontinue" written next to the label. Thanks for your cooperation.

## DATI Mailing List Application



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Non-Delaware Residents: If you wish to receive copies of *The AT Messenger*, the annual subscription fee is \$20. Make checks payable to the University of Delaware (EIN 51-6000297) and mail to the address shown below with this completed application form.

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University of DE/duPont Hospital for Children  
P.O. Box 269, 1600 Rockland Rd.  
Wilmington, DE 19899-0269  
Phone: (800)870-DATI or (302)651-6790  
TDD: (302)651-6794 FAX: (302)651-6793

I am a:

- ☐ Person with a disability  
(please specify): \_\_\_\_\_
- ☐ Family member of a person with a disability
- ☐ Friend/advocate/colleague of someone with a disability
- ☐ Professional working with people who have disabilities  
(please specify) \_\_\_\_\_
- ☐ Interested citizen
- ☐ Other (specify) \_\_\_\_\_

Accessibility Needs:

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- ☐ Large print
- ☐ 15/16 Audiotape
- ☐ 1-7/8 Audiotape
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- ☐ Tactile Interpreter
- ☐ Transportation
- ☐ Spanish

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- ☐ Service provider network
- ☐ Funding initiatives
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- ☐ Project governance  
(boards & committees)
- ☐ Advocacy activities
- ☐ Volunteer work as: \_\_\_\_\_

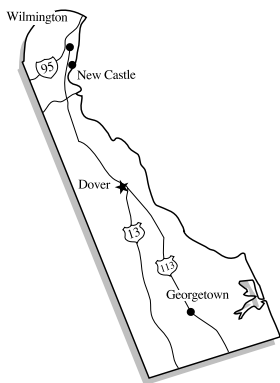


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100 Enterprise Place, Suite One  
Dover, DE 19904-8200  
(302) 739-6885; (302) 739-6886 (TDD)

Sussex County ATRC  
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Delaware Technical & Community College  
Jason Technology Center, Room 104  
Rt. 18, P.O. Box 610  
Georgetown, DE 19947-0610  
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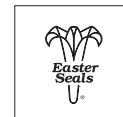
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