PM&R Assistive Technology Programs

Partnership between the University of Pittsburgh and the VA Leaves a Lasting Impact

By: Bill Wenninger

On December 31, 2017, the Assistive Technology (AT) contract between the Department of Veterans Affairs (VA) and the University of Pittsburgh came to an end. Pittsburgh has been a partner with VA in development of AT programming since 2009. Project manager Dr. Mark Schmeler and Project Coordinator Dr. Richard Schein are to be commended for their tireless support of the contract and the Veterans who have benefitted from their willingness to share their knowledge with VA providers. Given the nearly 8-year relationship with the University of Pittsburgh, it is worth some time to review some of the accomplishments.

Records indicate that since the inception of the contract over 130 clinicians in the VA have been awarded their Assistive Technology Professional (ATP) Certification from Rehabilitation Engineering Society of North America (RESNA). Prior to starting the relationship with the University of Pittsburgh there were approximately 6 clinicians in VA with this credential. The individuals who have received this credential represents a cross section of rehabilitation staff including, occupational therapists, speech pathologists, physical therapists, rehabilitation engineers, kinesiotherapists, physical therapy assistants, recreation therapists and occupational therapy assistants. The ATP credential recognizes competence in meeting the needs of Veterans with disabilities and assist in proper selection of assistive technology devices based on the Veterans disability. The VA would not have this level of competence if it were not for the efforts of the University of Pittsburgh staff.

Because of this contract, Rehabilitation Engineers have been introduced into the VA within the Physical Medicine and Rehabilitation System of Care at limited sites. There are currently 5 Rehabilitation Engineers in the VA with another 2 positions open for recruitment in the system. These individuals have brought a unique ability to provide ongoing insight to clinicians and the ability to modify devices which can specifically cater to the disability needs of Veterans. This includes the ability for some of these individuals utilize 3D printing capabilities to further develop products to fulfill interesting clinical challenges.

The contractors also developed am mechanism to review AT devices and trained VA clinicians how to perform comprehensive reviews in a logical and straightforward manner. There have been reviews of over 70 different devices which allow other clinicians to see the pros and cons, benefits and challenges to using specific devices recommended applications to certain disabilities as well as cost benefit and thoughts on repair. This program has subsequently been taken over by internal VA staff to continue the process into the future. Many of the results of these reviews have been part of this newsletter.

There are numerous other accomplishments that have resulted from the partnership between VA and the University of Pittsburgh including CARF accreditation for AT labs, an outcome measurement system and numerous training opportunities. All have served to enhance the ability for VA to provide state of the art AT services to Veterans. While it is unfortunate that VA cannot continue the formal relationship with the University of Pittsburgh, the influence that the relationship has provided will be long lasting. Once again, thanks to Mark, Rich and all of the University Pittsburgh team for their dedication to Veteran care over the years.

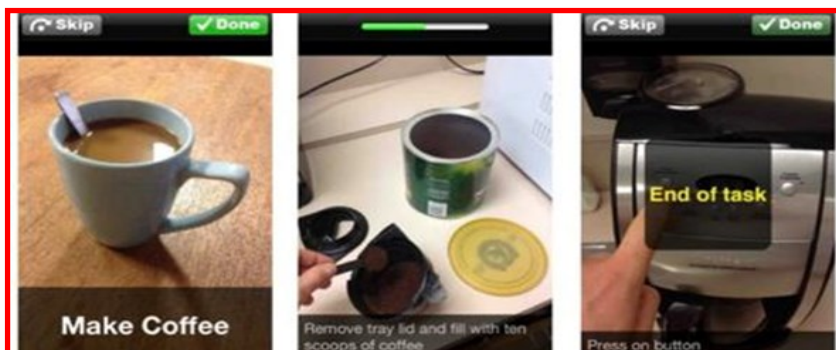# AT PRODUCT REVIEW: CanPlan App by University of Victoria

By Marisa Leyden, SLP Graduate Clinician and Telina Caudill, M.S., CCC-SLP, ATP

Make Coffee   Remove tray lid and fill with ten scoops of coffee   End of task / Press on button

Overview: CanPlan is a task management app that offers additional auditory and visual prompts beyond a basic task list. The major benefit is the ability to create custom photo or video prompts with supporting text or audio for individual sequential items of a task. Tasks may be scheduled to prompt the user at specific times and are checked off when completed. The CanPlan app facilitates user independence in successfully completing activities of daily living.

Indications: Mild to moderate cognitive impairment with deficits in attention, concentration, memory, executive functions and organization skills. May include those with TBI, ABI or dementia. Functional UE dexterity, vision and hearing are necessary for task prompt recognition and tablet interaction. Ideal candidates would already possess a compatible mobile device though one could be provided if deemed the most appropriate match. Ideal candidates would also consistently carry the device on them throughout the day and possess the motivation and initiative to complete activities of daily living (i.e., morning routines, medication schedules, exercise, shopping, cooking, household chores, etc.). Users that have a good support system or caregiver who can assist with task development and taking photos in the natural environment would be ideal.

Contraindications: Severe cognitive impairment that would limit users' consistent and successful ability to carry, maintain and interact with the application and device. Significant amotivation, abulia, reliance on caregivers and/or overly attentive caregivers who do not allow the individual the opportunity to be independent should be considered. Reduced UE and hand function, receptive language impairments, visual deficits or field cuts and hearing impairment are contraindicative if native accessibility features do not facilitate access. Lack of an iOS device or ability to use/maintain an iOS device.

Affordability: Free if the user has an existing mobile device, otherwise, consider the cost of hardware. CanPlan supports a maximum of 3 tasks to start; however, user can unlock unlimited tasks as a free in-app "purchase".

Compatibility: Available only on the App store for iOS devices including iPhone, iPad, and iPod Touch running iOS 8 or newer.

Consumer Repairability: The user can force-quit the app; however, advanced repairs require the assistance of the technical support team who may be reached at the following email address: appsupport@canassist.ca.

Dependability: No known issues with the app given proper care and maintenance of the hardware.

Durability: No known issues over time; however, the app is dependent on the battery life of the iOS device.

Ease of Assembly: After download/installation from the App Store, setup of the CanPlan app is swift and easy. For any given task, a user initially goes through the task with a support person or family member. Together, they take photos of each step in the task, adding video, text or audio as desired. The task is then filed under a customizable set of categories. A manual is available on the developer's website listed below, containing detailed instructions and screen-shots guiding users through the app setup.

http://www.canassist.ca/EN/main/programs/technologies-and-devices/at-home/canplan.html

Ease of Maintenance: The CanPlan App is easily maintained with proper device protection (i.e. iOS drop or water-proof case). Periodic app updates may be required through the iOS App store.

Effectiveness: The app does what it claims to do. If customized for the users' needs, the app can facilitate task completion thus increasing independence in activities of daily living.

Flexibility: The CanPlan app is highly customizable. Tasks are created per the users' needs. Photos, videos, text and audio prompts are developed using the individual's household items and activities. Two views are available including "To-do List" and "All Tasks." Other customizable features include speech rate, icon size, default starting page, sounds/alerts, repeat feature, snooze, auto speak and reminders. Many features (i.e., photo, video, text) are optional depending on the user's needs.

AT PRODUCT REVIEW: CanPlan APP, cont.

Learnability: Basic operational competency for the end-user may be mastered within the initial training session. Strategic competency for programming including creating tasks with audio, text, photo and video prompts requires additional training, likely for the caregiver.

Operability: Easy to operate. Users may choose their preferred view: a complete list of all scheduled tasks or a "To-do list" including tasks scheduled for that date only. Users navigate easily through task sequences by pressing "Start" and the arrow buttons to proceed through sequential steps. If the arrow buttons are too small, the user can swipe among the sequence of pictures. A green progress bar at the top shows the status of the task being completed. Tasks are marked "completed" once the green "Done" button is selected.

Personal Acceptability: The app is compatible with Apple devices of iOS 8 or newer, making it both modern and socially acceptable.

Physical Comfort: No pain associated with the use of the app; however, positioning of the device should be considered to avoid physical discomfort during extended use (i.e. extended use with the device positioned in user's lap may lead to neck discomfort).

Portability: Easily transported among locations depending upon the size of the hardware. Various accessories are available on the market for device portability and safety.

Securability: The CanPlan app may be secured by use of iOS passcode. The app itself is incapable of being secured against user editing. Hardware accessories (i.e., cases, straps, etc.) should be considered if used outside the home to prevent loss/theft. Backup of data is available via iCloud or to a computer.

Supplier Repairability: The app is easily replaced via download in the iOS App store. Regular backup of information in iCloud or to a computer allows for tasks to be restored should the app or iOS device need replacement. App repairs may be requested at the following email address. appsupport@canassist.ca

1	2	3	4	5
Not satisfied at all	**Not very satisfied**	**More or less satisfied**	**Quite Satisfied**	**Very Satisfied**
	Category		**Score**	
	Affordability		5	
	Compatibility		3	
	Consumer Repairability		3	
	Dependability		5	
	Durability		5	
	Ease of Assembly		4	
	Ease of Maintenance		5	
	Effectiveness		5	
	Flexibility		5	
	Learnability		4	
	Operability		5	
	Personal acceptability		5	
	Physical Comfort		5	
	Physical Security		5	
	Portability		5	
	Securability		3	
	Supplier Repairability		4	
	Average		4.47	

AT PRODUCT REVIEW: Smyle Mouse

By: John T. Miller, Clinical Rehabilitation Engineer

Fig 1. The Smyle Mouse software control screen, from which calibration is initiated and one's settings can be adjusted. The tracking shows the software's ability to recognize a person's eyebrows and mouth
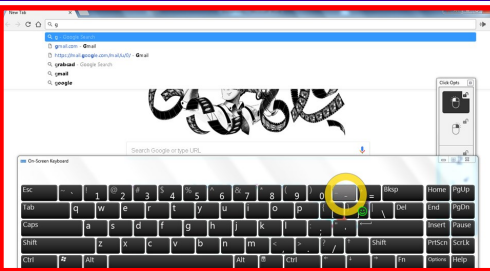

Fig. 2. The built-in Windows on-screen keyboard can be used to type using Smyle Mouse.
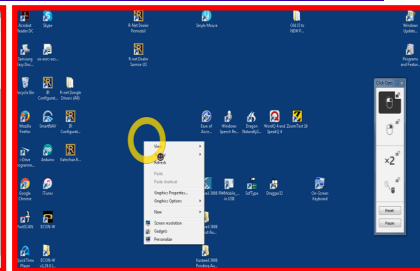

Fig 3. The Click Options control bar (right) enables the user to left or right click, to double click, and even to drag.

Overview

Smyle Mouse is a computer/tablet/AAC device software from Perceptive Devices that utilizes a webcam to translate facial movements and expressions into mouse control. It is intended as a replacement for head mouse devices currently on the market, which otherwise use a specialized camera and necessitates the placement of a tracking dot on the user's forehead. Smyle Mouse uses facial tracking algorithms to follow the user's face and initiates mouse click when a user smiles. There are additional settings and customization options that allow a user to access his or her computer/tablet/AAC device with different methods. This software may be of value to patients with paraplegia and quadriplegia who can move their heads and have difficulty manipulating a standard mouse. In addition, it may be of value to individuals who control their Windows-based AAC device using switch scanning, as the software has an option to translate a smile into a spacebar keystroke rather than a mouse click. Smyle Mouse runs on personal computers and tablets that have Microsoft Windows operating systems.

Indications

The Smyle Mouse software is indicated for users that cannot access a standard mouse and have good head control, or for users with upper extremity muscle weakness so that they lack the endurance to use a standard mouse for extended periods of time. The software may benefit individuals with spinal cord injuries, stroke, multiple sclerosis, amyo-trophic lateral sclerosis, and other diagnoses with upper extremity limitations.

In general, the following criteria should be met for a user to benefit from the Smyle Mouse software:

- The user must have adequate head movement for the software to track.
- If using independently, the user must demonstrate independent understanding and use of the software.
- The user must have a Windows-based PC/tablet/AAC device, as well as a built-in or add-on webcam with a resolution of at least 480x240.

Contraindications

In general, the Smyle Mouse software should not be used when:

- The user cannot generate sufficient head movement for the software.
- The user has restricted head movement due to a medical intervention, such as a cervical collar or neck brace.
- The user has restricted/limited facial movement, must wear a face mask for medical reasons, or has non-invasive ventilation equipment that obscures the face.
- The user is unable to demonstrate comprehension and utilization of the application due to cognitive barriers.
- The user does not have access to a Windows PC or tablet and a webcam with sufficient resolution.
- The user can access a standard or ergonomic mouse adequately.

Affordability:

The Smyle Mouse software costs $499 per license, which can only be used on one device for one user at a time. There are no hidden fees or renewal costs. Additionally, it must be accessed on a Windows PC or tablet, which can cost approximately $150-$2000, or a Windows-based AAC device (e.g., Tobii Dynavox, WinSlate series, autonoME, Grid Pad, etc.) which can cost up to $10,000. The user must have a webcam, which can cost approximately $40-$100 to add on if not included with the PC/tablet.

Compatibility:

This software operates on a Windows PC or tablet, preferably Windows 7 or higher. Windows operating systems are extremely commonplace in the United States, and many devices come with a Windows operating system already installed which will be clearly advertised when purchasing new devices. Older users with less computer experience may require assistance installing the software and connecting it to the license, as well as education on initiating the program.

Consumer Reparability:

The Smyle Mouse software does not come with a formalized technical support service, although the website for the software does have a Resources page (https://smylemouse.com/resources.php).

AT PRODUCT REVIEW: Smyle Mouse, cont.

Multiple video tutorials and demos are posted on this page. These videos guide users through effective use of the software, what settings are available, and how to change the settings to tailor the software to an individual. In addition, the Resources page has a User Documentation pdf to browse written instructions and a FAQs section. There is also a Contact page with a form for general comments and an email address for requesting information, but there is no dedicated troubleshooting form. To date, I have not had to use the Contact page to request information or assistance troubleshooting the software.

Dependability:
For this software to be dependable with predictable levels of accuracy, the user must have access to a Windows computer or tablet with an adequate charge and sufficient RAM (4 GB or more is sufficient) and computational performance to run it. The software should be used with good lighting of the face and good positioning (angle/distance) of the webcam facing the individual. The individual must have sufficient head range of motion up/down and right/left, and they must be able to smile to the extent that the software can detect a change from a neutral facial expression.

Durability:
The software is not intended to expire or require major changes. If the computer on which the software is being used is declining in function, the software can be transferred to a different computer/tablet device.

Ease of Assembly:
Once the device is set up, a user's caregiver can simply initiate the software, which will generally open in less than 15 seconds. It can be set to automatically select a default camera and to begin a new calibration (10 seconds long).

Ease of Maintenance:
In general, maintenance of the software will revolve around ensuring the computer/tablet is up to date, charged, and running effectively. The software itself does not require any maintenance.

Effectiveness:
Smyle Mouse allows a user with adequate head control/movement to control a computer mouse hands-free. In general, it is effective in allowing the user

to select something on a computer, particularly with practice. Based on trialing with two different individuals, wearing glasses does not negatively impact the software's effectiveness. This software is not an effective solution for individuals with complete paralysis (locked-in syndrome) or those without the ability to control their head movement; eye-tracking or other technology may better serve those individuals. This software will also lack effectiveness in situations where positioning of the computer-tablet and lighting are not optimal for the webcam to capture a user's face. A mounting solution for the device may be necessary for the user to succeed with the software.

Flexibility:
There are many settings that can be changed to fit the software to the user's needs and preferences, including mouse movement sensitivity in the vertical and horizontal directions, the mouse "stickiness" (i.e., it will stay put until significant head movement is detected), ability to click using smile detection or dwell click, dwell click settings like click time and dwell zone size, ability to allow mouse movement only during smile detection, ability to add scroll and drag functions depending on amount of time smile is detected, head tremor filtering, and more. Additionally, the "Space key on Smile" option can allow a Windows-based AAC user to operate switch-scanning without a physical switch.

Learnability:
The Smyle Mouse software is user-friendly and intuitive to use right away. The website provides a pdf manual and a variety of tutorial videos intended to teach users how to best utilize the software and change the settings. For a user with prior comfort with technology, the tutorials will provide all the necessary instructions on how to best use the software within 20 minutes. For users with memory issues, it may be more difficult to master Smyle Mouse. For users with aphasia, it may be difficult to understand the pdf text on how to use the software or to navigate the settings page.

In general, users that are not comfortable with technology may struggle to adjust to using this software.

Operability:
The Smyle Mouse software is intended to be very straightforward. The calibration

begins automatically once the software is opened, which means the user will be using the software, already calibrated, within about 30 seconds of the software being initiated. After that, no further steps are necessary to operate the software, unless the user/caregiver decides that the settings need to be changed. Changing the settings is also quick and accessible, with a button on the main toolbar for accessing the various settings. Note that if an add-on webcam is required, it will need to be positioned and connected to the device for operation.

Personal Acceptability:
This software can be accessed via a computer or tablet. These devices are mainstream in society, so it would be typically acceptable and comfortable for the user. Use of a computer is more likely to occur at home or the workplace, where the user can make facial expressions to control the device with a higher likelihood of privacy. While in public, the user may be less comfortable controlling a computer/tablet with facial expressions, which is different from the typical mouse/touchscreen access methods.

Physical Comfort:
This software does require head movement and facial gestures. Over the course of hours of continuous use, the user may find that their neck and facial muscles are fatigued. However, the user can take a break as needed without incurring any risks.

Portability:
Computers and tablets are easily portable, and an add-on webcam is generally compact as well. The device can fit into a medium/large purse, backpack, and/or briefcase.

Securability:
The securability of the software is entirely dependent on the security of the device it is installed on, as the software itself does not have any security features. Computers/tablets typically come with log-ins that offer password protection or fingerprint access, and many computer brands have security locks that can enable a user to lock a computer to a table or desk. These features will likely require assistance from a caregiver to engage.

AT PRODUCT REVIEW: Smyle Mouse, cont.

(Cont. pg, 5) **Supplier Repairability**: If there is an issue with this software, Perceptive Devices LLC does have a general contact form to leave comments. However, there is no immediate help desk or call center to troubleshoot issues

1	2	3	4	5
Not satisfied at all	**Not very satisfied**	**More or less satisfied**	**Quite Satisfied**	**Very Satisfied**
	Category		**Score**	
	Affordablity		4	
	Compatibility		4	
	Consumer Repairability		3	
	Dependability		4	
	Durability		5	
	Ease of Assembly		5	
	Ease of Maintenance		4	
	Effectiveness		4	
	Flexibility		5	
	Learnability		4	
	Operability		4	
	Personal acceptability		4	
	Physical Comfort		3	
	Physical Security		3	
	Portability		4	
	Securability		3	
	Supplier Repairability		2	
	Average		3.8	

## Site Updates…The Eastern Colorado Healthcare System

The Eastern Colorado Healthcare System (ECHCS) Assistive Technology program hosts the fifth annual Deep Dive in conjunction with University of Pittsburgh Rehab Science and Technology in May 2018. **Program highlights:**

- A member of the ECHCS Driver's Rehab Program is participating in the Deep Dive to strengthen her skills and gain a better understanding of how AT applies to multiple settings.

- The ECHCS Assistive Technology team has merged with the Wheelchair Program and Driver's Rehab Program to strengthen continuity and provide seamless collaboration among rehab professionals. This collaboration provides same day access for appointments when warranted and improved patient satisfaction.

- A tentative job offer has been made for a Rehab Engineer position for the team.

- ECHCS AT program is increasingly utilizing telehealth to provide services including VA Video on Demand in the home.

- The team continues to provide in-services to various departments and CBOC's on the value and benefit of AT services in an effort to meet our recurring goal of increased outreach and education for stakeholders.

- The team is actively working on preparation for the upcoming opening of a new hospital and Spinal Cord Injury Center including equipment procurement and training.

Site Updates…Tampa

OUTREACH
♦ Vendor In-Services included:
  BEST Connections
  Sesame Enable
  Accessibility Services Inc.
  Voxello
  NeuroNode
♦ Telina Caudill presented at the Association of VA Speech-Language Pathologists (AVASLP) on "Expansion of Tablet Use in the AAC World."
♦ AT provided demonstrations for the VA Delegation Workshop for the Center of Excellence for Stroke and Technology Enhancing Veteran Care
♦ AT participated in the Nursing Skills Fair as well as the Brain Injury Rehabilitation Resource Fair
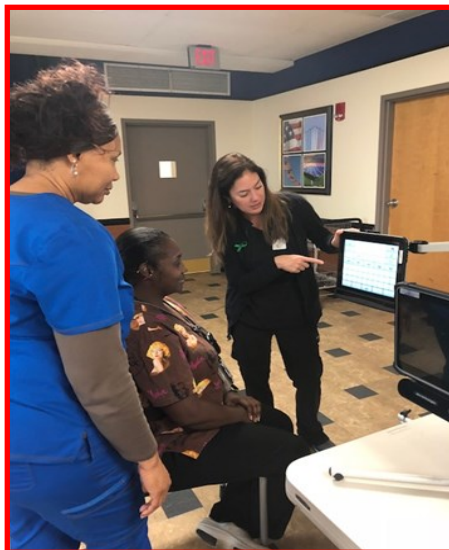
TELEHEALTH
♦ AT CVTHm visits to date for CY2018 total 20

CURRENT PROJECTS AND PERFORMANCE IMPROVEMENT
♦ YouTube Video Tutorial Library ongoing and currently totals 10 videos
♦ Engagement in the Lean Six Sigma

(LSS) model for performance improvement with weekly huddles
♦ Collaborating with the Office of Connected Care and VA Smart Home towards the development of a Healthy Home demo within the Polytrauma independent living apartment utilizing commercially available smart home technology

Site Updates…San Antonio

♦ Currently we have posted a GS-12 lead OT position in our Wheeled Mobility/AT clinic. Announcement closes 4/12/18 and we anticipate the new arrival mid-summer
♦ We will be posting Rehab Engineer vacancy announcement in April. We anticipated new arrival late summer.
♦ The long awaited telehealth program is in place is an available resource for AT needs
♦ We are in the process of trialing HomeSmart Assistant EADL system combined with Amazon Alexa with our spinal cord population
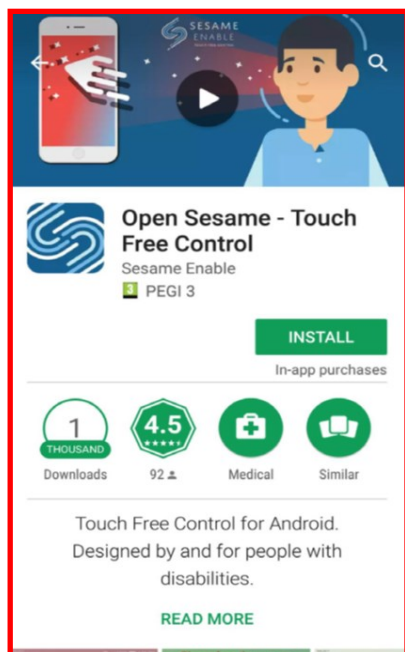
AT PRODUCT REVIEW: Open Sesame

By: Seth Hills, Clinical Rehabilitation Engineer

Overview:
Operate any mobile device simply using head movements.
Millions of people worldwide suffer from disabilities that limit the use of their hands and prevent them from doing activities that most of us take for granted – like using our mobile devices. With Open Sesame, that freedom and control is restored. Using the front-facing camera of any Android device, Open Sesame tracks head movement to unlock touch-free texting, social activity,

Open Sesame - Touch Free Control
Sesame Enable
PEGI 3

INSTALL
In-app purchases

1 THOUSAND Downloads   4.5 92±   Medical   Similar

Touch Free Control for Android. Designed by and for people with disabilities.

READ MORE

searching the web and more.

Indications
Open Sesame offers touch-free control for those who cannot use their hands to access a smartphone or a tablet. Our users are mostly paralyzed below the neck, and come from many disability backgrounds: spinal cord injuries, Multiple Sclerosis, ALS, neurodegenerative diseases, Cerebral Palsy, Traumatic Brain Injuries, and others.
If a person cannot use their hands to control a smartphone or a tablet, and has controlled movement of their head (even if limited) then Open Sesame is indicated. In addition, individuals may require extended

voice commands such as voice answering, dismissing calls, and the option to end a conversation by a voice command due to paralysis or nervous system disorders.
Contraindications
Patient is unable to move head and unable to speak. Patient has extreme or uncontrolled tremors and/or unintelligible speech.
Criteria for Evaluation of Assistive Technology Device
Affordability: The app is available in a 30-day free trial, on a subscription basis ($19.99/month, 1-year for $220, or 2-year for $420), as an unlimited license ($700), and as a package ($1,095.00 includes a Smartphone or Tablet, 2-Year License, Updates to the Latest Version, Premium Support; the optional Bamboo™ Mounting Kit costs an additional $250). After the limited license periods, the Veteran would be responsible to pay for the monthly fee, or would need to be re-evaluated to determine if the device and app are still appropriate. One app purchase is required for each mobile device, so if the user wants it on their Android tablet and smartphone, they have to purchase the app twice. The unlimited license is for a single version of the app (e.g. Microsoft sells different versions of its Operating System- Windows, but still provides updates to those versions for an indeterminate length of time). So, the unlimited license isn't really perpetual. The purchase includes updates to the current version for as long as those come out, and backward compatibilty for as long as that is possible. As the technology changes, new possibilities arise, and new versions of the technology will come out which may require issuing new versions - and only then another purchase will be needed - if the customer wants to upgrade to the new possibilities. If not, they can still enjoy the older version.

This is comparable to the cost of a headmouse (~$1000 for the Nano or SmartNav), if you are purchasing the package. If you are using your own phone or tablet, it is a much more afford-

able option, and is a monthly obligation rather than a one-time payment.

Compatibility: Currently, the Open Sesame App only works on Android based devices running version 7 or later. The device can be switch enabled for individuals that cannot "wake up" the app by voice.

Consumer Repairability: The product is an app (software application for smart devices- not computers), and is regularly being updated by the vendor. Any equipment risks are to the device that runs the app and any associated mounting hardware. The company does provide phone and remote support.

Dependability: Lighting, background, and clothing can impact the way the application recognizes the user's face. It is important to have adequate lighting, high contrast background, and clothing, so the individual's face is not washed out or too dark to be recognized by the front facing camera. Otherwise, it is very predictable. If, for some reason the user shifts position, the user can use the verbal command "reposition" to re-center the camera view on the patient's head.

Durability: limited only by the durability of the device on which it is installed, and its' ability to perform updates. As with any app, to stay ahead of vulnerabilities and threats, as well as to be compatible with many different devices and platforms, it requires regular updates.

Ease of Assembly: The only difficulty in assembly is mounting the phone or tablet so that the user's face is within range of the device's camera. There is some minimal setup of the app, and calibration for the individual patient. However, the supplier provides easy to read instructions on how to get started. If your device is not already setup for google assistant, you will need to turn that feature on.

AT PRODUCT REVIEW: Open Sesame, cont.

Again, the vendor provides instructions on how to do that. Typical setup, calibration, and training (barring mounting concerns) takes less than an hour. The app is available online on the Google Play store, or preinstalled on the package purchase.

Ease of Maintenance: Maintenance is automatic; updates are provided regularly by the app creator. The Tablet or smartphone that the app is installed on will require regular charging, and connection to a wireless cell service provider, or internet connection for continued updates and support.

Effectiveness: For individuals with limited mobility and access, the device is very effective in providing hands-free control of an android device. So, independence and quality of life are improved.

Flexibility: Settings are adjustable to manipulate the cursor size, coloring, and timing. It is an app for android devices, so if a user already has an android device it should be compatible.

Learnability: Users will need to memorize the verbal commands for the google voice assistant and Open Sesame. They will also need to recognize the different cursor icons and how to manipulate them in order to lock and unlock the pointer (e.g. if you are going to be on the same page for a while, and don't want to keep moving your head around to avoid going into a cursor function you would need to lock the pointer), how to swipe, scroll, etc. After some practice, it becomes second nature.

Operability: Once the app has been set-up properly, it responds as expected (head movements move the cursor, and hovering in one spot activates the cursor selection feature). Device performance plays a part in how well the app works. If the user's device is out-of-date, bogged down with a multitude of other apps, or many apps are running at the same time, performance will suffer, and it may not be as responsive. App startup time is similar to what you see with the google voice assistant.

Personal Acceptability: Most people are using tablets or smartphones these days, so aesthetically it is no different, and quite mainstream to interact with your smart-device via voice commands.

Physical Comfort: Initial over-use could potentially cause some neck strain

Portability: The Sesame App is highly portable as it can be installed on most Android devices, and transferred from one device to another (it cannot reside on multiple devices without the purchase of additional licenses). Most Android devices (tablets and phones) can be mounted on power wheelchairs and scooters, or at the bedside. Depending on device power capacity, it may require an auxiliary power source for extended untethered use.

Securability: The sesame app is as secure as you can keep your smart device. Even if your device is stolen, you could reinstall it on a replacement device without having to re-purchase. Sesame Enable does not collect any personal data.

Supplier Repairability: The app is regularly updated by the supplier; remote support is available depending on the extent of the issues the user is having with the app and device.

1	2	3	4	5
Not satisfied at all	Not very satisfied	More or less satisfied	Quite Satisfied	Very Satisfied
	Category		**Score**	
	Affordability		3	
	Compatibility		4	
	Consumer Repairability		5	
	Dependability		4	
	Durability		5	
	Ease of Assembly		5	
	Ease of Maintenance		5	
	Effectiveness		5	
	Flexibility		4	
	Learnability		5	
	Operability		5	
	Personal acceptability		5	
	Physical Comfort		5	
	Physical Security		5	
	Portability		5	
	Securability		5	
	Supplier Repairability		5	
	Average		4.7	

Veteran Highlight…Mr. Reyes by: Daniel Ganoza

After more than two decades in rehab, (specializing in seating and positioning) at the SFVA, I am not surprised when a need arises that is not met by the current product offerings. It is why I feel lucky to be part of the VA system. We are allowed to seek out new technologies, modify current technology, and even innovate new technology all for the purpose of providing the best possible solution for the men and women that have served and continue to serve our country.

Mr. Reyes is a 69 year old male combat VETERAN who served in Vietnam as a 91W in Army Airborne. He is a former police officer with a large extended family committed to assisting him in his daily life.

The problem: Mr. Reyes attends the SFVA ALS clinic and has "head drop". With limited muscle tone, he is unable to keep his neck and head in the upright position while sitting in his power chair. His wife (primary caregiver) uses one hand to drive the chair with an attendant control while using her other hand to maintain head position. This makes it difficult to navigate the chair safely. It is exhausting for her to manage and limits his ability to be outside, or go places.

Correct head position is vital for breathing, visual contact, swallowing without obstruction, improved socialization, ADL, IADL, MRADL and most other upright activity.

OT goal: find a position for his head that enables him to drive the chair with chin control.
Veteran goal: to keep his head upright while in sitting in the chair.

Several earlier solutions that were tried included:
ORTHOTIC.
- - THE ASPEN HARD COLLAR
- - SOFT COLLAR.

The outcome for these was unsuccessful. The limitations with hard collar:

- forces head and neck into uncomfortable position. Forcing neck into extension, can't swallow and difficulty breathing.
- Can't use the muscles he does have in his face to communicate (could not move his eyebrows to say yes or no, or hello.
- Said it gives too much support
- Did not like the way he looked.

Other things tried included:
- Re-positioning in the seating (tilt/recline) to use gravity to support the head, but this resulted in:
- compromised breathing
- compromised swallowing and
- an increased possibility of aspiration
- older Stealth head rest model
- a recliner chair (lounger) they modified to recline, but provided support to keep head upright.

I have tried other head rests from multiple manufactures over the years for this same problem. All have failed. Every expert I know with the same or similar problem hasn't found a satisfactory solution. So failure seemed to be an OK standard. No one seemed to have a reasonable solution that addressed comfort, function, and was safe to use. Most had some element of an orthosis that was not addressing the problem.
I sketched out the problem with some recommendations and design ideas and asked a manufacturer I work with if they could prototype a design for me:
- anterior/posterior points of control for head and neck
- not limiting the movement he does have with complete bracing
- comfort
- allow breathing and swallowing.
- chair could not go past 35 degrees without increasing the risk of aspiration.
Together we developed (after a couple of attempts) an adjustable forehead stabilizer that attaches to the headrest. Its goal was:
- to provide stability without limiting the mobility he does have
- to assure that his head was not stuck in one position

Falcon ALS Head Rest

Additionally, I used 30° of recline and tilt.

NOTE: We learned in the prototyping that a headrest pad that is too large is less effective. The stabilizer needs to be positioned within the circumscribed area of the forehead.

These changes are being incorporated in the production version.

OUTCOME: Veteran's wife at first anticipated his head falling off and braced for impact, but his head never needed her assistance to stay upright. This was verified at key points around the ramp, side walk, curb cuts, and down the street. We went into backyard where she could focus on driving without having to support his head the whole time; they were able to stay outside for 2.5 hours instead of the usual 30 minutes or less. He liked it because he could see, it looked good, was not invasive and he could stay out longer. I saw no indication of irritation on the skin due to the effectiveness of the gel pad.
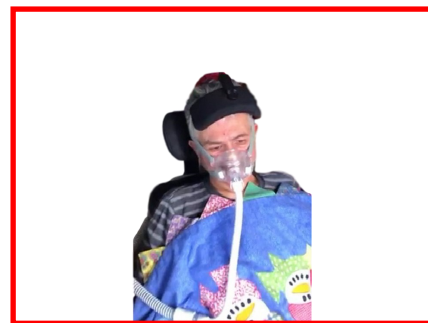
Caring for the Whole Veteran

The Denver VA Assistive Technology team is proud of the interdisciplinary perspective we bring to our patient evaluations and care planning, and a recent patient experience has truly highlighted the importance of an individualized approach to assistive technology service delivery.

Bill came to us in 2017, recently diagnosed with ALS. As we began our chart reviewing and preparations to meet with our new Veteran, we realized a few unique aspects to his situation which we would need to carefully consider. First of all, Bill lived nearly three hours from our AT clinic, so travel limitations were an important consideration. In addition, he was employed full-time as a CEO of the local community hospital; this full-time job meant he could not come for routine week-day visits, and would require telehealth and similar services to most fully engage with our clinic services. Finally, Bill is also a bilateral trans-radial amputee, who has used bilateral upper extremity prosthetics with hook terminal devices for many years.

Early on, we were able to examine devices and adaptations not only from a functional perspective and feature perspective, but also recognizing the potential similarities and differences which would result from a Veteran requiring access via prosthetic arms, but in need of equipment which could adapt to his neurological disease progression as well. Considering anticipated strength

changes which would affect his prosthetic control, fine motor and gross motor similarities and differences to other Veterans we have worked with, and noting strategies needed to use his prosthetics to operate various buttons and switches, required us to think "outside the box".

Optimizing Bill's independence and meet his goals through his disease progression has required a team approach, involving not just the occupational therapists, speech therapists, and vision rehabilitation specialists of the assistive technology team, but also the active participation of and input from the amputee and spinal cord injury teams as well and use of our facility telehealth program. Since our assistive technology clinicians also overlap into the wheelchair program, visual impairment program, speech therapy and occupational therapy departments, and outpatient SCI clinic services, we have been able to truly meet Bill where he is at, as his disease progresses. Since our clinicians work at multiple facilities and in multiple roles through the ECHCS, we have been able to coordinate appointments with other disciplines to enable Bill to make best use of his time with coordination of multiple same-day, same-facility appointments both at the main hospital campus and at the outpatient building we share with the prosthetics and orthotics team. While Bill was still working, we were able to schedule telehealth sessions through his tablet, and provide training to him via telehealth in his office at work.

This also enabled us to problem solve work-related needs, such as using a voice amplifier for improved participation in staff meetings during his retirement transition.

As Bill's voice quality and strength has changed, our assistive technology team, especially our Speech Therapist, has maintained an active and regular role in his health care delivery. While he initially was able to be successful with a voice amplification system early in his disease, more recently he has transitioned toward a touch-screen speech generating device and is actively learning an eye-gaze system to help him retain strong communication and independence even as his arm strength shows further signs of weakness.

Recognizing the individual's assets as well as their disabilities, and capitalizing on abilities is crucial to success. In addition, the opportunity for interdisciplinary communication and transdisciplinary work can truly ensure a best solution outcome for our Veterans as we use technology to promote their best independence no matter what the future has in store. (By: Meg (Margaret) Dimpfel, MOTR/L, ATP; VA Eastern Colorado Health Care System)
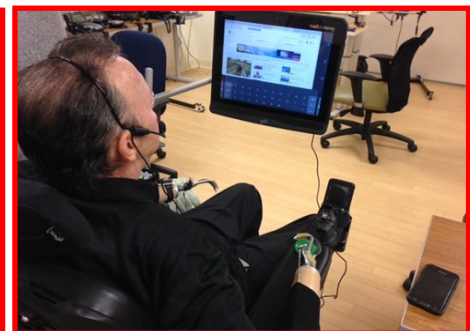
Bill is wearing the headset which enables his use of voice amplification device. Bill's wheelchair armrest provides a readily accessible location to access his green buddy button for select function of his eye gaze driven speech generating device, which he is currently learning. His wheelchair joystick control is adapted for access with his prosthetic limb with a self-fabricated loop modification, and the speaker for his voice amplifier is attached to the front of the joystick control to assist in communication. Bill's phone sits nearby, which is connected to his speech generating device, enabling him to make phone calls, send text messages, and access the other phone features, in addition to the array of other environmental and computer related controls offered by his speech generating device

COLLABORATION FROM A DISTANCE

If you are walking down the hallways of James A Haley VA Medical Center (JAHVA), you may notice a flash speed by you. Is it a bird, a plane? No it is Tim Myers flying down the hallway in his Power Wheel Chair (PWC) to deliver medications to waiting nurses and patients.

There have been frequent Tim Meyers sightings since 2006 when at the age of 52, Tim sustained a Spinal Cord Injury (SCI) from a Motor Vehicular Accident and received his initial rehab from James A Haley SCI unit. This accident left Tim unemployed from the date of his accident until 2011. Tim was a bail bondsman at the time of his injury and attempted to continue this career of 20 years with help from his son. In May of 2011 he was employed by PROMote research project part time helping to authenticate Veterans for the MyHealtheVet program for 3-4 years.

In 2015 Tim was hired as a full time VA employee with a job title of pharmacy technician. His job tasks include delivering medications from the pharmacy to nursing in all units in the hospital and at times going to outlying clinics on campus.

Tim's primary Occupational Therapist, Barbara Taylor, OTR/L, CHT completed a job analysis prior to Tim starting his new job focusing on accommodations and accessibility. Tim's physical limitations include limited shoulder, elbow and hand active range of motion bilaterally. Initially the job required him to open doors, push door access keys and operate the elevator. He was unable to perform all of these tasks independently without accommodations. Restricted entry doors were outfitted with door bells to make it easier for Tim to gain entry. Door bells were installed on doors for access. Nursing made accommodations so Tim would not have to open doors and Barbara designed and fabricated an elevator button stick that allowed Tim to navigate the elevators independently. The following picture shows Tim's limited upper extremity range of motion.

Coupled with limited range of motion was the amount of space his PWC required, making it difficult to get close to the elevator buttons.

Tim came to work on a holiday and the hospital was very quiet that day. He finally maneuvered himself into the elevator by pressing the button with his elbow. Once inside the elevator he was stuck for over 30 minutes, because he was unable to push the button for the floor. This happened numerous times that day. Needless to say Tim was in Barbara's office the very next day. They tried different options to include a modified mouth stick, however they best option was a handheld stick for Tim to press the buttons. Barbara designed the elevator button stick. The elevator button stick handle was fabricated out of molded orthotic material and a ¾ dowel was molded into the handle. A piece of cylinder foam was added to the distal end of the stick to prevent the stick from slipping on the elevator button. To make the handle durable it required multiple layers of the orthotic material which caused sores on Tim's hand. He would return to the clinic and have the grip remolded or padded. The elevator button stick was heavy and would rub on Tim's hand. Tim lost several of the sticks, because they would fall out of his hands and on the floor. Tim was not able to retrieve the sticks or would run over them and break them. Caregivers frequently placed the stick horizontally on the back of his power wheelchair where he could not see it. Then when he went through doorways the stick would hit the door and brake. The solution was to make a vertical tubular holder so the stick could be positioned on the back of his chair when it was not in use.

Finally after 3 years and 25 replacements or repairs of the elevator button stick, Ursula Draper, OTR/L from Assistive Technology recommended a collaboration with Assistive Technology at the McGuire VA in Richmond Virginia to have the device 3D printed. An Interfacility Consult was set up between Richmond VA and Tampa VA.

COLLABORATION FROM A DISTANCE, cont.

Rehabilitation Engineer Brian Burkhardt, ATP from the Richmond VA started communicating with Barbara and Tim via Telehealth and the rest is history.

Barbara sent Brian a sample of the equipment that Tim felt worked the best. The sample equipment was 3D scanned to capture the unique organic surfaces that interface with Tim's hand. This data was imported into mechanical design software as the basis for a new design of elevator button stick. The new design incorporated features based on the current handmade design in addition to feedback from Barbara and Tim. Because the original handmade design suffered from plastic fatigue and breakage the new design included features to enhance strength and the durability. The new device was then produced on a 3D printer. The material selected for 3D printing is a fusion of nylon plastic, chopped carbon fiber, and continuous carbon fiber strand. This combination produces a final product that is rigid, durable, light weight, and safe for prolonged skin contact.
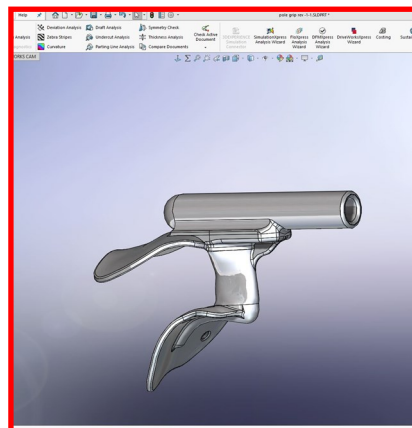
The 3D printed prototype for the elevator button stick was received by JAHVA and Tim has been using the equipment for the past 3 weeks without any adverse reactions

from the material. Tim immediately commented on the weight of the 3D device when he received it, stating how light it felt. Brian, Barbara, and Tim have continued using VA telehealth visits to assess the ongoing performance of the new equipment.
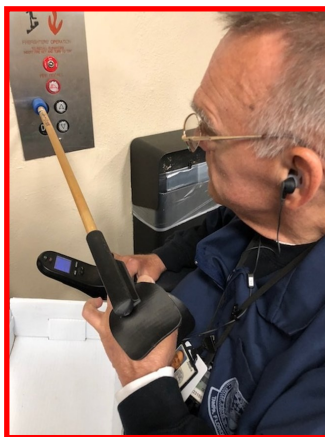
Mr. Dunn, also a patient at the James A Haley VA, initially used a head array proximity control system to drive his PWC. His primary therapist Justin Kampff, OTR/L, ATP worked diligently to help the patient learn to drive his PWC with his right arm instead of the head array. Mr. Dunn started to regain some shoulder movement which led to the trialing of accessing the PWC with hand drive controls. Justin trialed him with a goal post drive control, however the patient's hand would slip off the goal post. Looking for solutions to meet the patient's unique needs Justin consulted with Ursula Draper, OTR/L, ATP for a method to allow independence with driving his PWC. After careful evaluation of his limited hand use a Pen Again, an adaptive writing implement, was modified and installed on the post of Mr. Dunn's PWC. The plastic of the Pen Again was not durable and did not hold up during regular wheelchair usage. Once again the

Assistive Technology Program at the McGuire VA was contacted and rehabilitation engineer John Miller, in collaboration with the James A

Haley Occupational Therapist, came up with a solution.

An isolated finger drive control based on the Pen Again shape was designed in mechanical design software and 3D printed. Mr. Dunn has been using the device for the last 4 months without difficulty. It is made of durable acrylonitrile butadiene styrene (ABS) material and is not fragile like the plastic of the Pen Again. This plastic is similar to plastic used in many children's toys, so it is durable, yet very safe for skin contact.

Both the elevator button stick and the isolated finger drive control are custom designed and fabricated to meet the needs of individual Veterans. If either of these devices is lost, broken, or needs modification it is a simple, fast, and inexpensive to process to provide 3D printed replacements. The usage of modern rapid prototyping tools, like 3D printing, make these solutions time and cost effective compared to more traditional fabrication techniques. Most importantly these solutions meet the individual needs of specific Veterans more effectively than previously possible. This allows VA rehabilitation clinicians to better enable our nation's Veterans to achieve life goals and improve their overall quality of life.

Site Update...Minneapolis

The Minneapolis AT Program and Stroke Specialty Program received funding for a two-year grant entitled "Effect of Constraint-Induced Gaming Therapy in an Acute Care Setting". The grant is a collaborative partnership with Lynn Gauthier, neuroscientist, of the Ohio State University. The grant will compare progress of acute stroke patients receiving standard therapy versus standard therapy and playing a constraint-induced video game named Racing Rapids. The Kinect-enabled game only responds to input from the effected limb. Participants must navigate multiple dangers such as rapids and attacking spiders while catching and retrieving supplies for their journey.

Brian Fay, Director of the Minneapolis AT Program, will present on methods for using Near-Field Communication (NFC) tags for cognitive rehabilitation at the 33rd Annual Conference for Professionals in Brain injury. NFC tags are most commonly used with easy pay services such as Apple Pay and Android Pay. Dr. Fay's presentation provides a road-map for TBI caregivers to find apps that program NFC tags and enable them to active processes on the phone such as start timers or open apps. The

conference is sponsored by the Minnesota Brain Injury Alliance.

Multiple clinical care programs in Physical Medicine & Rehabilitation at the Minneapolis VA Medical Center participated in the on-site visit from the Commission on Accreditation of Rehabilitation Facilities (CARF), February 26-27, 2018. Included in this review was the re-accreditation of the Assistive Technology Program. The AT Program was honored to host Polly Davis, MA, CCC-SLP as our surveyor. Ms. Davis has been a practicing Speech and Language Pathologist for over forty years and a CARF surveyor for over twenty years. Upon completion of the review the AT Program had no formal recommendations. Final accreditation decisions from the CARF headquarters are expected in late May or early June 2018.

The Future of the VA SmartHome

The VA SmartHome has been successfully implemented over the last seven years in the Tampa VA Polytrauma Rehabilitation Transitional Program (PTRP), as well as within seven homes in the community. The current prototype of the VA SmartHome exists as a web-enabled interface and provides prompts and reminders; activity monitoring; scheduling and task management; medication management; data analytics; and reporting.

The next steps of the project include optimization of a mobile application to improve functionality and accessibility for veterans and their caregivers. The Smart Home app is different from other commercially-available apps in that all the features are integrated into one space, eliminating the need to rely on multiple apps for their daily reminders, schedule management, etc. Furthermore, stakeholders, including veterans, caregivers, clinicians, and programmers, have all played an active role in the development

to date to ensure identified needs were satisfied and to enhance the user experience. Expected outcomes include increased independence, increased self-management, reduced caregiver burden and improved quality of life; with current users already reporting success with the system, particularly in facilitating greater independence and a reduction of caregiver stress.

Following the Tampa VA Smart Home presentation in Washington, D.C. at the VA Center for Innovation Demo Day (August 2017), the Office of Connected Care has offered to support the development of the mobile application. This effort will consist of two phases as part of a larger, "Healthy Home" initiative, as proposed by Kathy Frisbee, Executive Director of Connected Care. The first phase will focus on the app which will consist of the capability to manage and monitor schedules, tasks, medications, etc., among the Veteran's/Caregiver's network of support. This specific development may lev-

erage the other applications previously developed within the VA, or those which are commercially available, as well as create an opportunity for additional implementation with future technologies. Simultaneously, the second phase will focus on the use of the Tampa VA Polytrauma Center as a testbed to integrate the video telehealth, text messaging and remote monitoring capabilities, along with commercial technologies, into a connected care hub in which to support a better quality of life for wounded veterans and the caregivers supporting them. This initiative will create "a technology-enabled home that weaves together VA and commercial assistive technologies to create a technology ecosystem that supports chronic care in Veteran's homes."

Assistive Technology: Small Things Make a Big Difference for Veterans

"We went through three versions before finally coming up with the one that Malik is using," said Vass. "Malik is really excited to play again."

Navy Corpsman Malik Jones, 22, has always enjoyed playing billiards. For years, he played every weekend with his friends. That changed, as with most everything else in his life, on July 29, 2017. While stateside in Virginia Beach, Jones suffered a traumatic brain injury and was left paralyzed on the left side of his body.

Jones, who enlisted at age 19, is still on active duty. However, his treatment and rehabilitation is being coordinated in partnership with the Department of Veterans Affairs. When he arrived at McGuire VA Medical Center's Polytrauma Rehabilitation Center in Richmond, Jennifer Vass, a Certified Therapeutic Recreation Specialist, immediately started working to engage him back into recreational activities he enjoyed.

He wanted to play pool, but trying to manage a traditional pool bridge and the pool stick was virtually impossible. Vass heard about the 3-D printed rolling pool bridge the Assistive Technology (AT) Rehabilitation Engineering team had developed, so she tried it with Jones.

"He picked up on it really quickly and immediately had strategy on how to use it," Vass said.

"It is awesome!" said Jones. "How far away the cue ball is will determine where I place the rolling pool bridge on the pool stick."

The device is the brainchild of Seth Hills and adaptive sports recreational therapist Nicole Shuman.

"Nicole came up with the concept by putting a toy train on the pool stick to see if it would work, and it did," said Hills, an AT rehab engineer. "She asked us to further develop the idea."
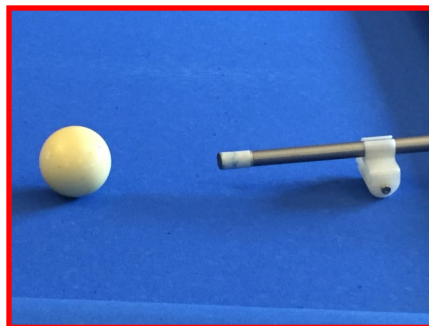
There is a similar product on the market, but it is too narrow to get on and off the pool cue. Hills designed the concept, which took about five hours to print in nylon using the AT program's 3-D printer.

Motivated by this, Jones is doing much more than playing pool. He's working hard with staff of the Polytrauma Transitional Rehabilitation Program to regain his lost strength and skills. He takes regular trips into the community for both leisure and community reintegration, and he recently enrolled in the VA's Driver Rehabilitation Program with the goal of regaining the skills to drive a car again.

"I am so happy with the progress that I see with Malik," Vass said. "His speech and comprehension are great, and he is walking every day. He has made tremendous physical progress and maybe more importantly, he is far more outgoing and happy these days. Working hard with the right attitude makes all the difference in the world – for all of us."

Assistive Technology Industry Association (ATIA) Orlando 2018 Highlights & Resources
Complied by: Telina Caudill, CCC-SLP, ATP

ACCESS	
Assistive Mouse Adapter BT interface to control your iDevice with any mouse, trackball, head or chin mouse or joystick; filters out tremor	https://www.csslabs.de/
AssistX AS one Acoustic Sensor Trigger a sensor by human sounds	https://www.csslabs.de/
General Accessibility for Google, Chrome and Android	https://sites.google.com/view/accessibility-resources
Irisbond Duo Tablet- or table-mounted eye tracking camera	http://www.irisbond.com/products/irisbond-duo-2
Limitless Stylus Angled stylus with Velcro attachments	https://www.limitlessstylus.com/
Noddle Tongue-click and proximity switch	http://voxello.com/
Touch The Future Vendor in SC for computer, DME and AT services and devices	https://touchthefuture.us/veterans-connect/
AUGMENTATIVE-ALTERNATIVE COMMUNICATION	
BlueTalk Wireless display and speakers	https://www.invotek.org/
CoughDrop AAC app compatible across platforms including Kindle, offers a log with details reports of use, remote pro-gramming	https://www.mycoughdrop.com/
Irisbond Duo Tablet- or table-mounted eye tracking camera with speech synthesis	http://www.irisbond.com/products/irisbond-duo-2
Message Banking Video tutorials, join the Facebook page, letterboard templates, communication book templates, list of mes-sage banking phrases, etc.	http://www.childrenshospital.org/alsmessagebanking
Noddle Chat System Android OS tablet with Noddle Chat app + Tongue-click and proximity switch kit	http://voxello.com/
SmartPredict app prototype Co-construct aac app, integrating partner knowledge into word prediction	https://rerc-aac.psu.edu/development/d3-developing-a-smart-predictor-app-for-aac-conversation/
Speak for Yourself AAC app developed by SLPs using motor learning prin-ciples	http://www.speakforyourself.org/
TippyTalk app Texting through images for nonverbal users	http://www.tippy-talk.com/

ATIA Orlando 2018 Highlights & Resources, cont.

COGNITION	
BikeAround Uses Google StreetView for an interactive experience while on a stationary bike	http://www.camanio.com/us/products/bikearound/
Claro Apps Read/Write/Study/Work	https://www.claro-apps.com/#focus
Notetalker App and desktop software for audio recording of notes that can later be created into a rich media note including highlighting, annotation and importing of videos, power-points, etc.	http://www.notetalker.com/
HEARING IMPAIRMENT	
Hamilton CapTel Phones, apps and PC software for closed captioning	https://hamiltoncaptel.com/index.html
UbiDuo2 Text-to-speech for deaf and hearing person to communicate with face-to-face	https://www.scomm.com/
HOME AUTOMATION	
HouseMate Hardware/app solution for switch user to control mobile devices and smarthome technology	http://housemate.ie/
Teltex Home Automation	https://iaccessibility.com/
VISION IMPAIRMENT	
Cyber Eyez M300 OCR glasses with real-time magnification, object recognition, color ID and bar code reader	https://cybertimez.com/
ReaderPen OCR text reading, talking dictionary, language translation, scan text to PC, record audio	http://www.readerpen.com/
RightHear System pairing small sensors and a free mobile app to make any venue accessible to a vision impaired user	https://right-hear.com/
Seeing AI app Talking camera for the blind	https://itunes.apple.com/us/app/seeing-ai/id999062298?mt=8
Speechify app Text to audiobook	https://itunes.apple.com/us/app/speechify-text-to-audiobook/id1209815023?mt=8
TactileView Print tactile graphics of a photo for blind/vision impaired users	http://tactileview.com/

Assistive Technology AT

AT EDUCATIONAL OPPORTUNITIES WITH EES

When: 1st Friday of the month (unless there is a holiday)

Time: 1pm EST

Topics:
May 4: Invacare w/c Part 2
June1: W/C Prescription for challenging clients
July 6: Outcomes for special events—wheelchair games; adaptive sports
Aug. 3: Tele-Mobility
Sept. 1: 3D Printing
Oct 6: Wheeled Mobility/ pressure mapping

VA HEALTH CARE Defining **EXCELLENCE** in the 21st Century

Assistive Technology Program Mission

To enhance the ability of Veterans and Active Duty members with disabilities to fulfill life goals through the coordination and provision of appropriate interdisciplinary assistive technology services.

To serve as an expert resource to support the application of assistive technology within the VA health care system

Site Update…Richmond

AT Outreach: The AT Program hosts wheelchair Skills Assessment Training.

The University of Pittsburgh Department of Rehabilitation Science and Technology and McGuire VA Medical Center's Assistive Technology Program hosted the Wheelchair Skills Assessment Training on November 6, 2017. The training workshop was presented by Dr. Lee Kirby and Cher Smith from Division of Physical Medicine & Rehabilitation at Dalhousie University and Department of Occupational Therapy, Capital District Authority in Halifax, Nova Scotia, Canada. The Wheelchair Skills Program (WSP) includes low-tech, high-impact evaluation and training tools to help practitioners translate research evidence into clinical practice. The full day workshop started with a one hour lecture discussing the rationale and evidence in supporting WSP. The rest of the day was mainly a practical experience, providing therapists the opportunities to experience a range of caregiver and manual wheelchair users skills. These skills included spotting techniques, assessment methods and training techniques.

There were 22 attendees and here are a few comments about their experience:
- *Energetic, engaging presenters*
- *Evidence-based, good information, professional presenters who are experts in the field*
- *The class was excellent!!!! Thanks to all for arranging this.*
- *Interactive experience for therapists: chance to try wheelchair skills, trainer skills – inside and outside, including fall and fall recovery. Nice to have kinesthetic learning opportunity*

This was most hands on, interactive wheelchair skills course I've ever been able to take. The information was applicable to my day to day job

- *– I believe it will improve my treatments and approach to teaching wheelchair skills.*
- *I felt the instructors were incredibly knowledgeable and able to answer any and every question we as a group had for them.*
- *I feel the information we learned will be incredibly helpful for our veterans. We've had a few vets recently who are w/c level but also want to live more independent lives and I feel these tools are a way for us to make that happen.*

AT Telehealth: Richmond VA was selected as one of the five hubs sites to develop and grow TeleRehabilitation. The AT team has been actively involved with our local TeleRehabilitation Team developing new TSAs and services that the AT can provide to veterans in rural areas. We provided face-to-face training with the Clarksburg VA team in areas of AAC, EADLS and specialized Powered Mobility during their site visit to Richmond. Our Rehabilitation Engineering team has been providing consultative services to rehab providers and their veterans in their homes across the country (Texas, West Virginia and Ohio, soon).