



Wearable Technologies: How they can Assist Someone with a Disability

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with contributions from TFL Team
www.gatfl.gatech.edu



Tools for Life Mission

Tools for Life, Georgia's Assistive Technology Act Program, is dedicated to increasing access to and acquisition of assistive technology (AT) devices and services for Georgians of all ages and disabilities so they can live, learn, work and play independently and with greater freedom in communities of their choice.



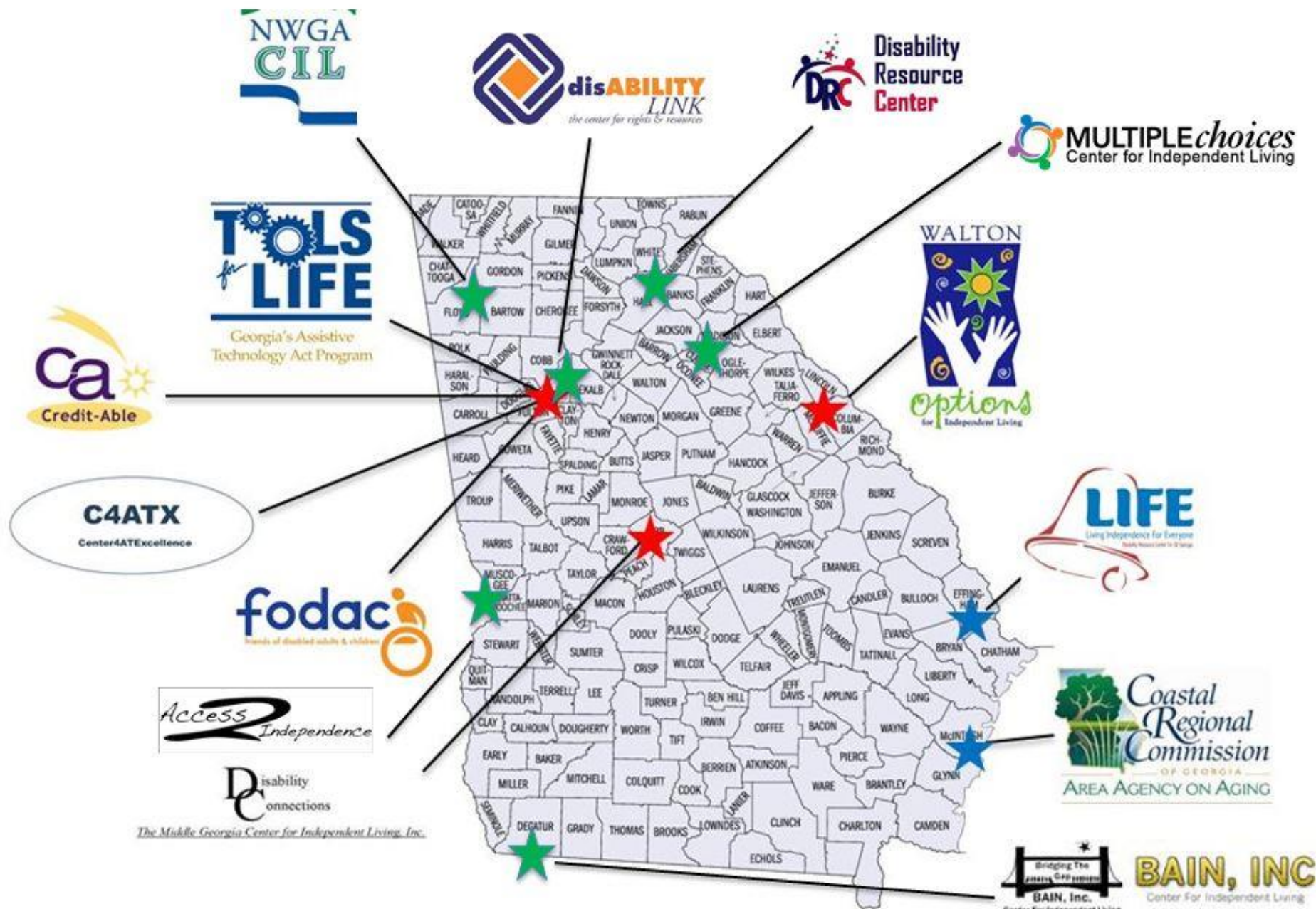
Guiding Principles

- **We – Collectively – are Brilliant & Can find an Innovative Path and Create Brighter Futures**
- **Smooth Transitions Make The Difference!**
- **We must Think, Live and Act from a place of Abundance – We have enough time, money, resources.**
- **We Must Focus on Abilities!**
- **Assistive Technology is Key to Success.**
- **Success Breeds Success**
- **YOU have the Power to make the Difference!**
 - Change vs. Progress (Bob Phillips)



The TFL Network

4



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Georgia Tech **TOOLS for LIFE**
Georgia's Assistive Technology Act Program

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Welcome AT Services Try AT Get AT AT Guides Research

Stay up-to-date on the latest assistive technology strategies and solutions with customized individual and group trainings.

Welcome to Tools for Life

Tools for Life, Georgia's Assistive Technology Act Program, is dedicated to increasing access to and acquisition of assistive technology (AT) devices and services for Georgians of all ages and disabilities so they can live, learn, work and play independently and with greater freedom in communities of their choice.

Tools for Life and the TFL Network work collaboratively together to accomplish our mission through:

- [AT Demonstration](#)
- [AT Evaluations and Assessments](#)
- [AT Funding Options & Education](#)

GATE 2016
DEC 9 Georgia Tech Student Center

WEBINARS

- [Current Webinar Schedule](#)
- [Webinar Archives](#)

TOOLS FOR LIFE APPFINDER

...for Living, Learning, Working, and Playing.

AT ONLINE EXCHANGE

AT FUNDING GUIDE
DOLLARS & SENSE
NAVIGATING THE AT FUNDING STREAM

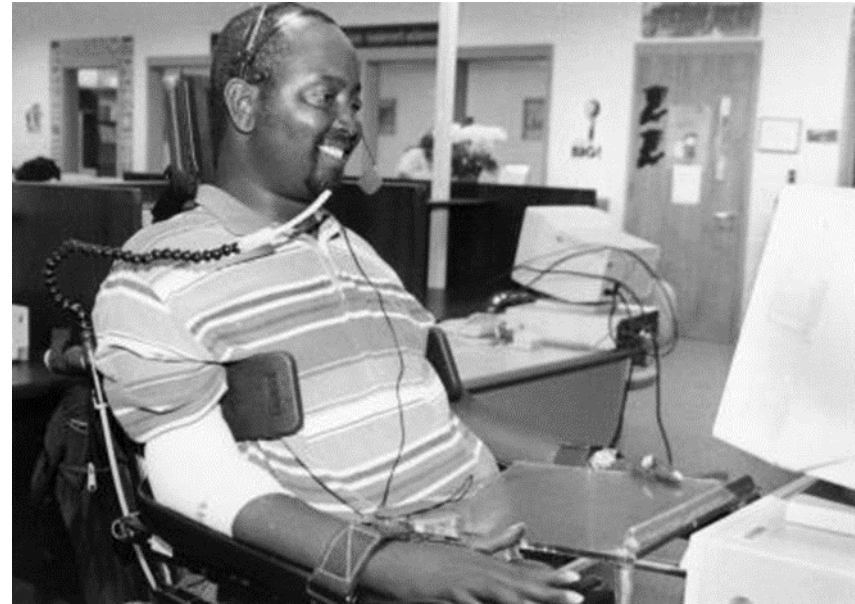
What is Assistive Technology?

- **Assistive Technology (AT) is any item or piece of equipment that is used to increase, maintain or improve the functional capabilities of individuals with disabilities in all aspects of life, including at school, at work, at home and in the community.**
- **Assistive Technology ranges from no/low/light tech to high tech devices or equipment.**



Why Assistive Technology?

- For a person without a disability, technology makes life easier.
- For a person with a disability, technology makes life possible.
- TIP: USE AT! We have yet to meet a successful individual who does not use any AT.



Wearable Facts

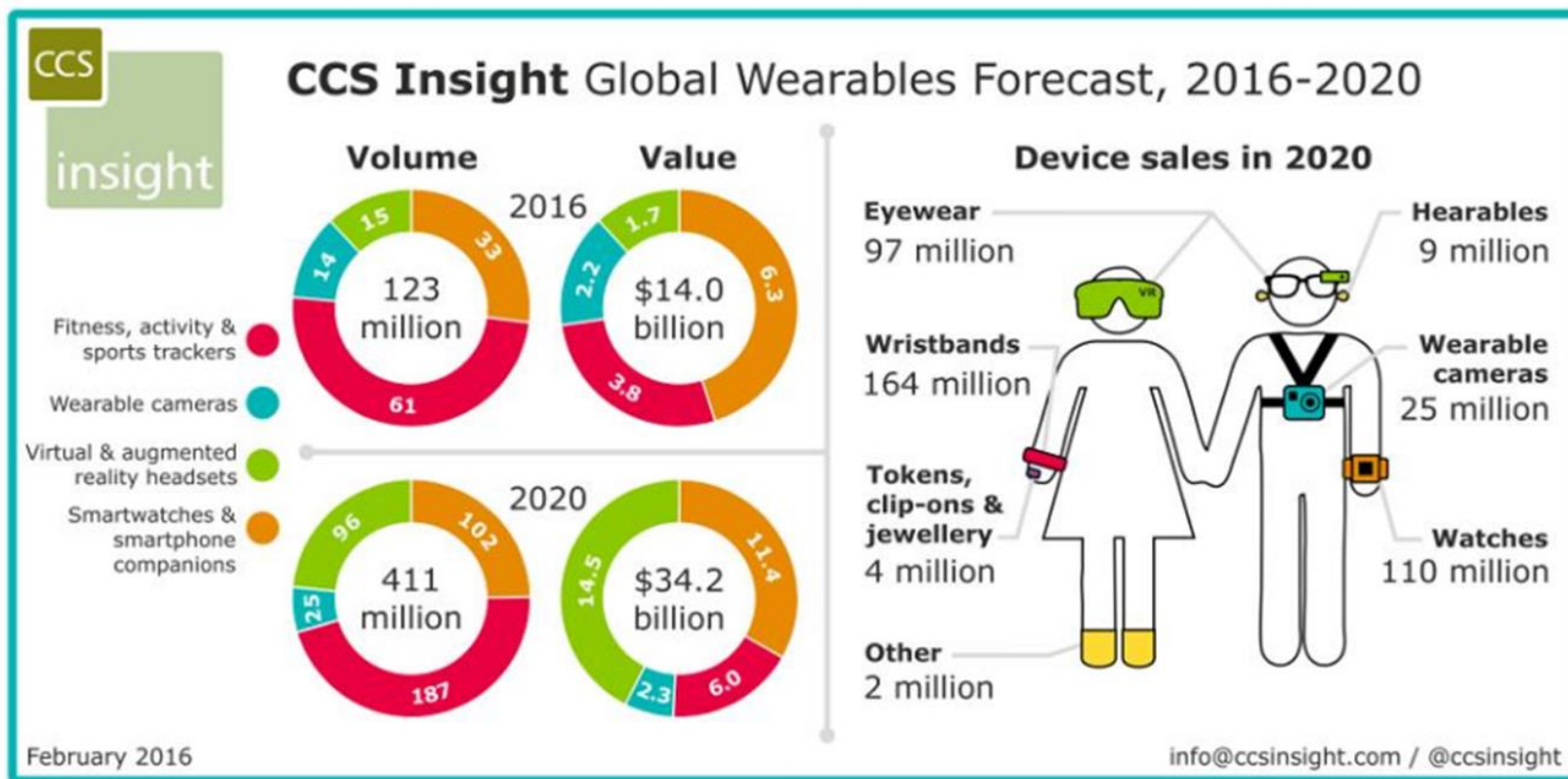
- Invention of the first wearable device can be traced to the creation of the portable watch in the 16th century
- In 1979 Sony invented the Walkman
- In 2000, the first Bluetooth headset was sold
- 2004, the first GoPro was launched
- Google Glass released in 2013
- ABI Research estimates the global market for wearables in health and fitness could reach *170 million devices* by 2017
- Global wearables market is expected to reach a value of *19 billion U.S. dollars in 2018*



Wearables!

- **Nokia has been developing magnetic or vibrating tattoos that can alert the user when there is an incoming call or a warning alert for a dead battery from a mobile phone**
- **Remote Brain Machine Interface (RBMI) can be defined as a means to control a machine that is in a different geographical location than the user**
- **Increase of using wearable in the aging population**
- **Increase of using wearable technologies for people with disabilities**

CCS Wearables Forecast



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See for Yourself

What is OrCam?

OrCam is an intuitive portable device with a smart camera designed to assist people who are visually impaired.


OrCam gives independence.



Lechal

- **Haptic Footwear**
- **Uses GPS to let you know where you are**
- **Connects with app**
- **www.lechal.com**



An aerial photograph of a city street with various buildings and rooftops. In the foreground, a couple is walking away from the camera, holding hands. The man is wearing a dark jacket and dark pants, and the woman is wearing a dark jacket and dark pants. They are walking on a light-colored surface. The background shows a dense urban environment with various buildings and rooftops.

BUY NOW

REDEFINING NAVIGATION

FEEL YOUR WAY

Lechal's haptic feedback, via simple vibrations, is with you every step of the way, giving you detailed **route guidance at every turn**. It even works offline! Which means you can wander off with **no internet or data connectivity** or get off a plane in a new country and Lechal will work, always in all ways.

 FEATURES



Apple Watch

- **Receive Calls and texts**
 - “Inner Circle”
- **Apps**
- **Can be used for fitness**
 - Heart Rate Monitor
 - GPS
 - Accelerometer
- **“Hey Siri”**
- **Haptic feed back**
- **Calendar**
- **\$499**



FitBit

- **Fitness tracker**
- **Variety of styles and colors**
- **Track Activity**
- **Track Food**
- **Track Sleep**
- **Track Heart rate**
- **Works with other Apps**
- **New Smartwatch**



 **fitbit.**
Discover a whole
new world of fitness.



Microsoft Band

- Works across all platforms
- Receives calls and texts
- Uses Cortana
- Keep tracks of steps
- Keeps track of Sleep
- Keeps track of UV
- Keeps track of heart rate
- Choose apps
 - Facebook
- \$199



Watchminder

- Rechargeable battery
- 65 pre-programmed messages to
- 30 daily recurring alarms
- Create your own personalized me
- Helpful training and reminder mc
- Vibrating alert



GPS Tracking Devices

- Find My iPhone
- Find My Friends

10 Tracking Devices that Keep Loved Ones with Dementia Safe



Wandering adds more confusion to the lives of those already dealing with a disorienting disease, and leads many people with Alzheimer's or dementia into unsafe situations. Location and elderly GPS tracking devices for dementia are an increasing option for families and caregivers trying to reduce wandering.

Here are 10 location devices that are being used to keep loved ones with the disease safe:

1. iTraq

A new cellular tracking device that came out this year, iTraq is the "world's first global location device that can be found anywhere." It uses cellular towers to determine location, allowing it to be used anywhere there is service around the world. The device itself is as small as a credit card, and its location is reported to you through a mobile application which allows you to view a map of locations and timestamps. iTraq also features a "Guard Mode" where users can specify a radius on a map, then receive alerts if/when the iTraq goes beyond your pre-set radius. This means that you could receive notification if a loved one wandered from home, and also be able to track where they are with accuracy.

2. Project Lifesaver

Fulfilling their mission to "provide a timely response to save lives and reduce potential injury for adults and children who wander due to Alzheimer's, autism and other related condition or disorders," Project Lifesaver's GPS tracking program has helped rescue 2,983 people. We spoke with Gene Saunders, Chief Executive Officer and Founder of Project Lifesaver, who shares more about the technology – a small PAL (Protect and Locate) tracker worn around the wrist – that has saved so many from wandering. "Citizens enrolled in Project Lifesaver wear a small personal transmitter around the wrist or ankle that emits an individualized tracking signal. If an enrolled client goes missing, the caregiver notifies their local Project Lifesaver agency, and a trained emergency team responds to the wanderer's area. Most who wander are found within a few miles from home, and search times have been reduced from hours and days to minutes. Recovery times for PLI clients average 30 minutes, 95% less time than standard operations," Saunders adds. "Recently, Project Lifesaver has added a new technology... that can also provide a radio frequency safe zone around them that notifies the caregiver in the event an at risk individual breaches this established safe zone."

3. Mindme

Mindme offers assistance to families dealing with dementia and wandering in the form of both an alarm and

B-Calm

- “acoustic shield”, allowing the individual to have control of the sound environment
- helps reduce off task behaviors and irritability
- disturbing noises are blocked and replaced with familiar and soothing sounds



Snug Vest

- inflates to provide adjustable and evenly-distributed pressure to the torso for a comforting hug-like squeeze without pressure placed on the stomach or chest.
- promotes independence as the user can self-inflate their vest in a discrete way to get the exact amount of safe pressure they need. Snug Vest enables the user to complete daily tasks with ease anywhere they go!



T. Jacket

- **Wearable technology vest**
 - Provides customizable deep touch pressure
 - Uses adjustable air pressure compression controlled via smartphone app
 - <http://www.mytjacket.com/>



Neutun

- Makes it easy to track, manage and live with epilepsy
- App for Smart Watches
- Useful for:
 - Medication Management
 - Care Circle
 - Health Insights
 - Log Seizures



Ultimate peace of mind

Neutun makes it easy to track, manage and live with epilepsy

Your email here

Get started



Medication management

Track, manage and fulfill your medications



Care-circle

Share your journey with your loved ones



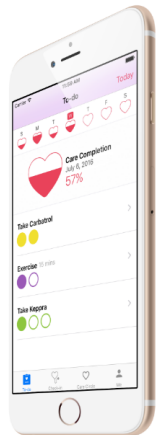
Health insights

Reduce and prevent seizures with the best research



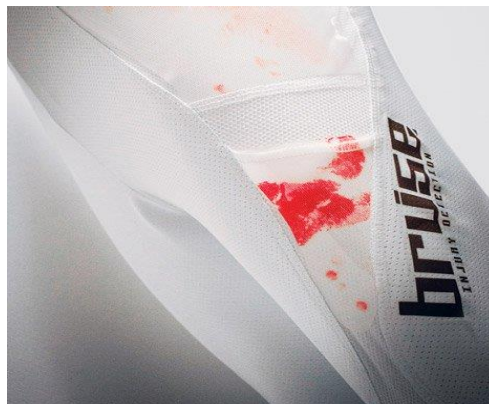
Log seizures

Maintain a complete log of all of your seizure activity


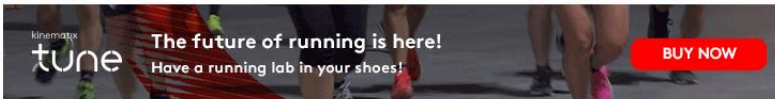


The Bruise Suit

- Smart injury detection suit for disabled athletes with loss of sensation.
- It applies a recyclable pressure-sensitive film to indicate the severity of injuries. High risk areas are covered with disposable, made-to-fit film sheet inserts.
- If an area is excessively stressed during an accident, the film will irreversibly change color. After training or competing, injured areas can be easily spotted and effectively treated.”



Bruise Suite





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[NBA Shootarounds Appear On Facebook Live For NBA TV Fan Night](#) November 25, 2016

Disabled Athletes Using Smart Injury Detection Suit to Find Injuries

■ Fitness, Sports Science ○ December 3, 2014 👤 Jesus Salas





bruise
INJURY DETECTION

SHARING

Facebook

Twitter

The creative minds at the Royal College of Arts have designed **The Bruise**, a new smart injury detection suit that helps treat injuries quickly and efficiently for disabled athletes. What is amazing about the Bruise is that it is designed to change colors on impact using a recyclable pressure sensitive film to indicate the severity of an injury.

[Download Here](#)

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Reveal

- **Measures and tracks anxiety to help you better understand behavior and prevent meltdowns.**



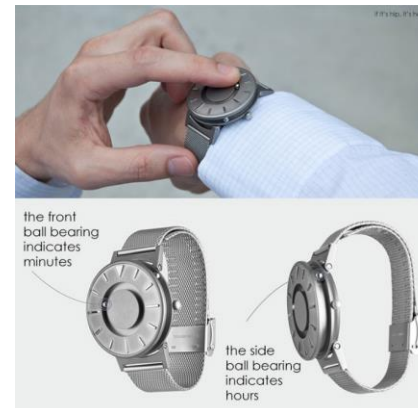
GlassOuse

- Helps people control electronics without using their hands.
- Based on your head movements, it moves the cursor onscreen. You bite on a blue extension to click, and it can go a week without charging.”
- <https://vimeo.com/158593763>



The Bradley

- A fashion timepiece, designed in collaboration with the vision impaired, that you can touch and see to check time.
- Instead of traditional watch hands, time is indicated by two ball bearings (connected by magnets to a watch movement beneath the watch face)—one indicating minutes (top) and one indicating hours (side). Even if the ball bearings are displaced when touched, the magnets will move the bearings back to the correct time with a gentle shake of the wrist."



Muse: The Brain Sensing Headband

- Put on the Muse headband, put on your earbuds, start the app, and close your eyes. Immerse yourself within the sounds of a beach or rainforest.
- While you meditate, it measures whether your mind is calm or active, and translates that data into weather sounds.
- When you're calm, you'll hear peaceful weather sounds. When your mind wanders, the weather will intensify, guiding you back to a calm state.



Lumo Lift

- Lumo for back and head/shoulders
- Sends gentle vibration alert when posture needs to be corrected



UPRIGHT- Posture Trainer

- **Short term training, with long term results; by training with Upright only 15 - 60 minutes a day, you will have improved core strength & muscle memory to maintain a lifelong habit of good posture.**



e-Handle

- *** Handle/grip for e-readers, tablets and iPad Minis**
- **Safe way to hold devices with better grip, control and functionality**
- **Rotates 360 Degrees; Easy to use; Adjustable; Detachable**



CellHandle

- **Wearable tech for all phones and cases**
- **Great for larger phones**
- **Safe way to hold and use phones**
- **Solves dexterity issues Rotates; adjustable; detachable**



Modular hose -tabX Tablet Holder and Plate

- **This solution is great for situations when there is no surface to attach to hold up your tablet.**
- **Whether lying on the sofa or sitting in a chair/wheelchair, the adjustable straps help hold it in place for hands free operation.]**
- **Attach this tablet holder to your leg**



Serene

- **Converts any TV Audio output into an infrared light beam for wireless transmission to a receiver**
- **Dramatically broadens the acoustic sweet spot of your living room.**
- **Be able to clearly hear all dialogues and stereo sounds in your movie or TV program.**

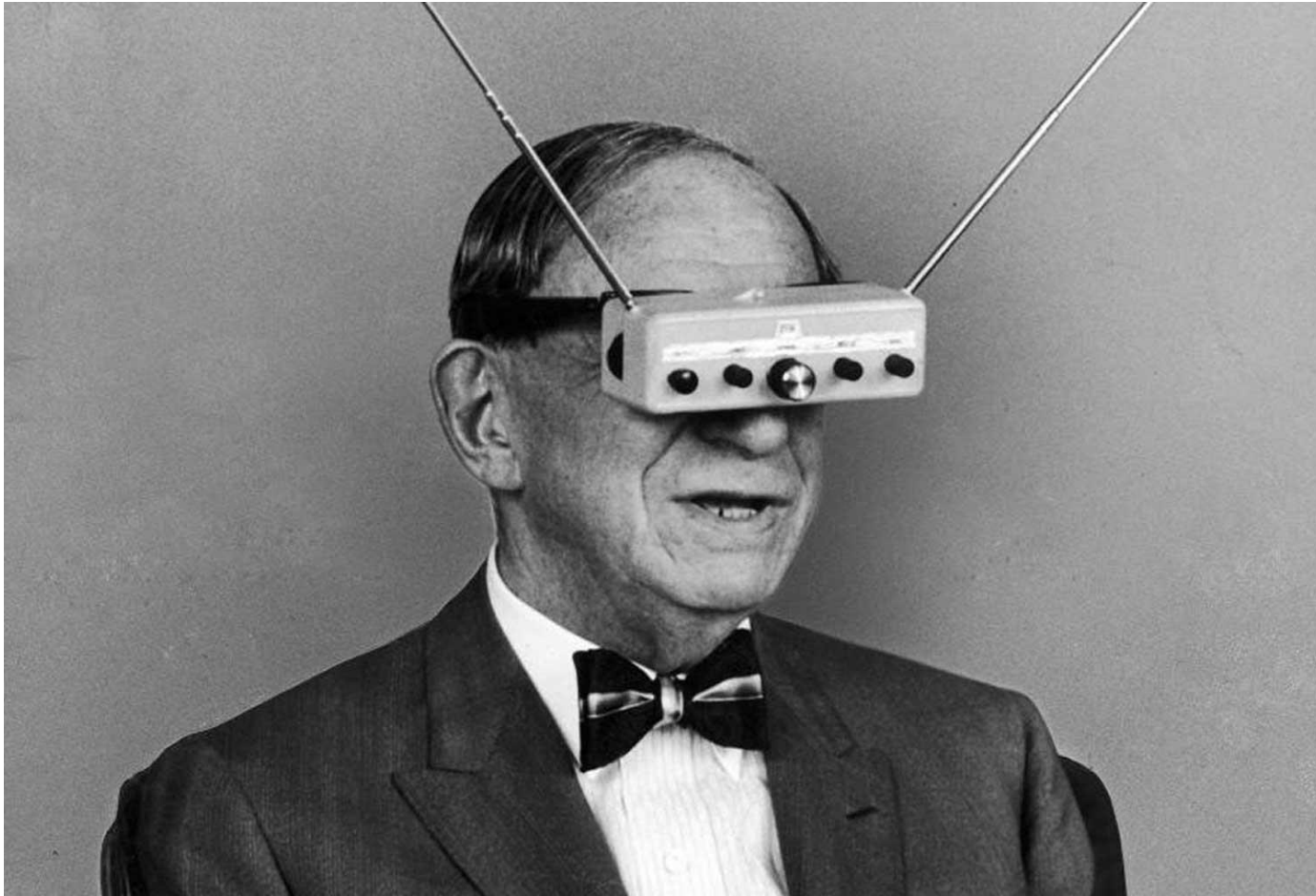


Fidget Ring

- **Similar to fidget toys; except you can wear them!**
- **Helps for people who are anxious or have trouble focusing on the something.**



Where are we Going?



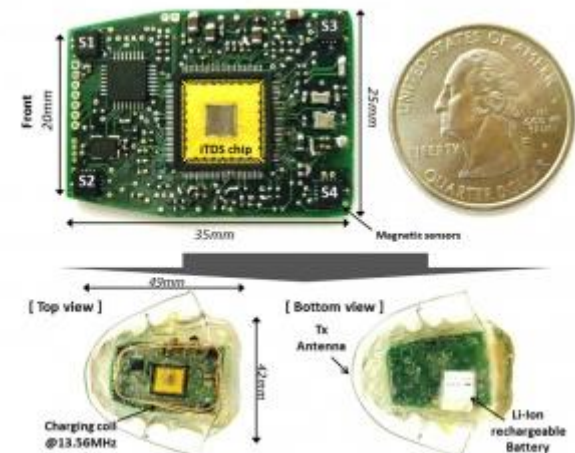
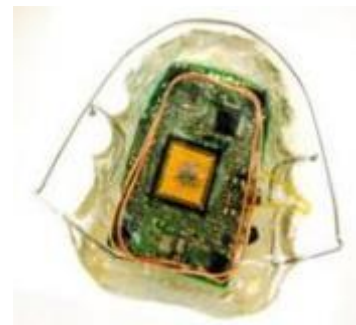
3D Printers

- **Coming down in price**
- **Creating assistive technology for lower cost**
- **In classrooms**
- **Ability to feel how something looks**
- **Prosthetics**
- **Medical Advances**

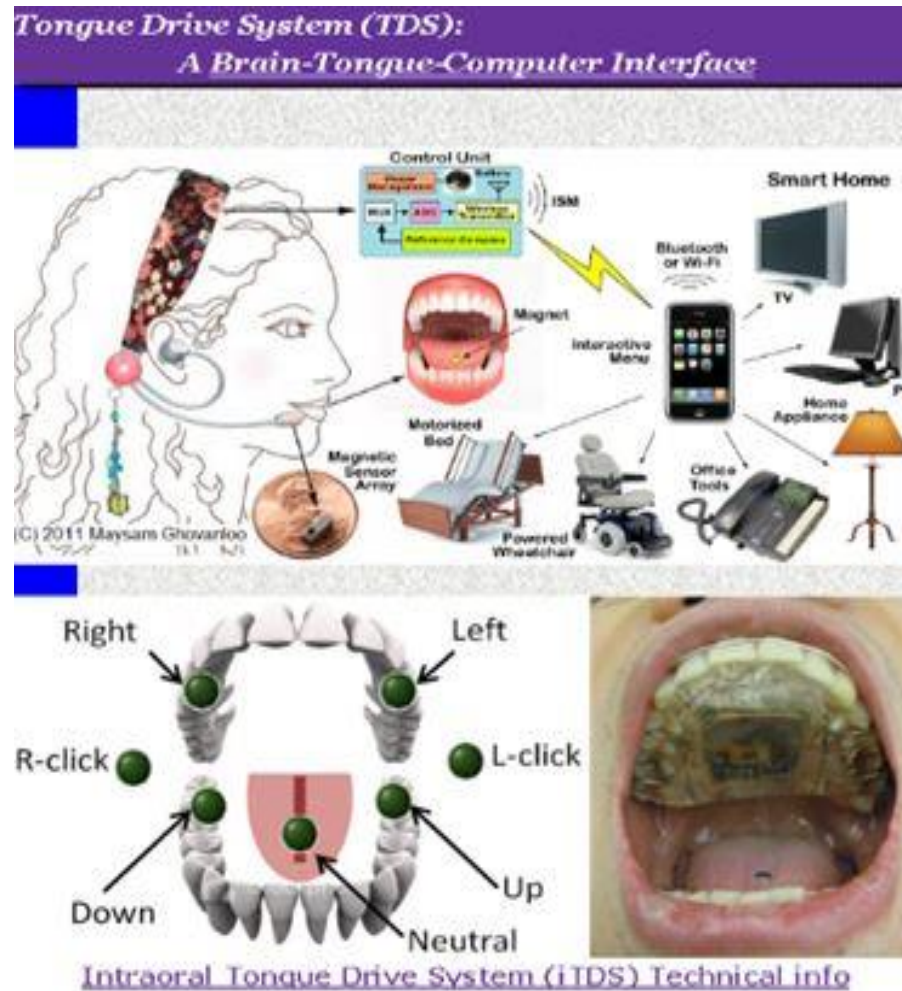


Tongue Drive System

- Wireless device that enables people with high-level spinal cord injuries to operate a computer and maneuver an electrically powered wheelchair simply by moving their tongues
- dental retainer embedded with sensors
- detect movement of a tiny magnet attached to the tongue
- Testing with iPods and iPhones
- GA Tech
- Shepherd Center and Rehab Institute of Chicago



Tongue Drive System



Cicret Bracelet

- Turns your arm into a touchscreen
- Works on every skin color
- iPhone and Android
- Phone screen mirroring
- Removeable battery
- Water resistant
- Pre-Orders begins in 2017
- [Cicret Bracelet](#)
- <https://cicret.com/wordpress/>



Octopus by Joy

- Smartwatch for Kids
- Icon Friendly
- Watch, Scheduler, and Assistant
- Visual Reminders
- [Octopus by Joy](#)



Toyota: Project BLAID

- **Worn around the shoulders and aims to fill in the everyday gaps visually impaired users experience using canes, dogs and GPS devices**
- **U-Shaped**
- **help identify everyday indoor items such as escalators, stairs and bathrooms**
- **built-in cameras will detect the user's surroundings and the device will communicate information using speakers and vibration motors**
- **be able to interact with the device using voice recognition technology and buttons**
- **eventually add mapping, object identification and facial recognition technology**

Project BLAID Video

- **Project BLAID Video**

<https://www.youtube.com/watch?v=sNoPV0epfHA>



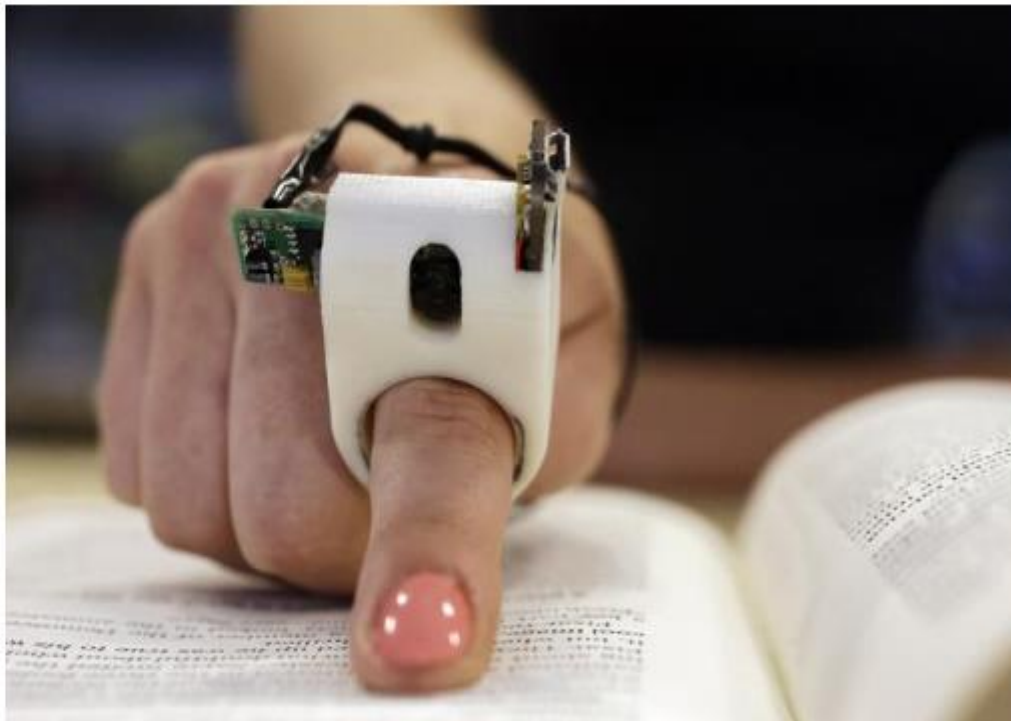


HEALTH

 SHARE

 COMMENT

MIT Finger Device Reads to the Blind in Real Time



By RODRIQUE NGOWI

Associated Press

JULY 8, 2014 1:24 AM

In this Thursday, June 26, 2014 photo, a model wears a FingerReader ring at the Massachusetts Institute of Technology's Media Lab in Cambridge, Mass. Researchers designed and developed the instrument, which enables people with visual disabilities to read text printed on paper or electronic devices. (AP Photo Stephan Savola) AP



Tracking the Trends

- **As sensor technology improves and becomes more cost-effective => more and more sensors incorporated into smart devices**
- **Virtual Reality/ Augmented Reality will continue to gain traction**
- **Smart Clothing=> eTextiles**
- **Growth of “internet of things” IoT jobs**



My Question to You: What have You Learned today?



Thank you for Attending!

- **CEUs – Session Code: ET-27**

- More info at: <https://www.atia.org/conference/education-program/ceus/>
- For ACVREP, AOTA and ASHA CEUs, hand in completed Attendance Forms to INFORMATION DESK at the end of the conference. Please note there is a \$15 fee for AOTA CEUs.

- **Session Evaluation**

- Please help us improve the quality of our conference by completing your session evaluation form in the mobile app.

- **Handouts**

- Handouts are available at: <http://s3.goeshow.com/atia/orlando/2017/handouts.cfm>
- Handout link remains live for 3 months after the conference ends.



Resources

- <https://www.statista.com/topics/1556/wearable-technology/>
- <http://www.forbes.com/sites/paullamkin/2016/02/17/wearable-tech-market-to-be-worth-34-billion-by-2020/#18d3ae9f3fe3>
- <http://dl.acm.org/citation.cfm?id=1358913>
- <https://static1.squarespace.com/static/516c369de4b00b44ca2bcdce/t/527fee38e4b0217581602d6e/1384115768724/wearable-computing-the-next-big-thing-in-tech.pdf>
- <http://www.scientific.net/AST.85.11.pdf>
- <http://thirdwavefashion.com/2016/06/wearable-tech-for-the-disabled/>
- <http://www.choosemuse.com/>
- <http://www.uprightpose.com/>
- <http://www.scottpaultech.com/>
- <http://www.modularhose.com/Assistive-Technology/mh-Tablet-and-Device-Solutions/130701>
- <http://www.dudeiwanththat.com/style/jewelry/fidget-rings.asp>
- <http://www.sereneinnovations.com/tvdirect-private-tv-listening-headset>

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TOOLS *for* LIFE

Georgia's Assistive Technology Act Program

thank
you

