BRAZE MOBILITY

INFORMATION PACKAGE

2020

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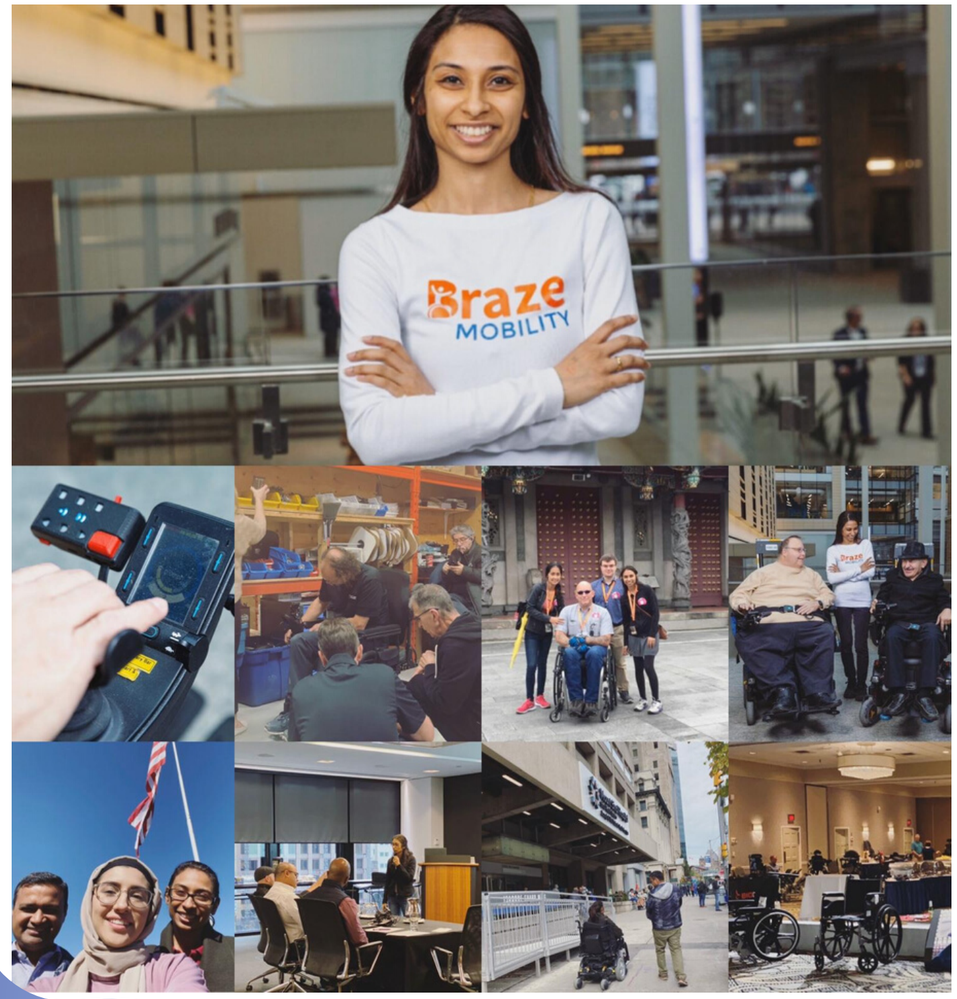
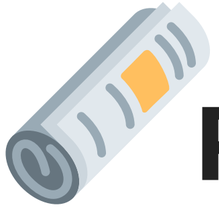
ABOUT THE COMPANY

Founded in 2016, Braze Mobility Inc. provides an affordable navigation solution for wheelchair users.Our blind spot sensors provide audio, visual and vibration alerts to the driver regarding the location and proximity of obstacles. They help the user to navigate while avoiding collisions.



ABOUT THE CEO

Dr. Pooja Viswanathan has a passion for improving accessibility and independance for people with physical disabilities. She has completed doctoral and postdoctoral research in robotics and assistive technologies and has been working with smart wheelchair technology for over a decade.



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P. Viswanathan, J. Little, A. Mackworth, A. Mihailidis, "Navigation and Obstacle Avoidance Help (NOAH) for Older Adults with Cognitive Impairment: A Pilot Study," in Proceedings of ACM SIGACCESS Conference on Computers and Accessibility (ASSETS), Dundee, Scotland, 2011.

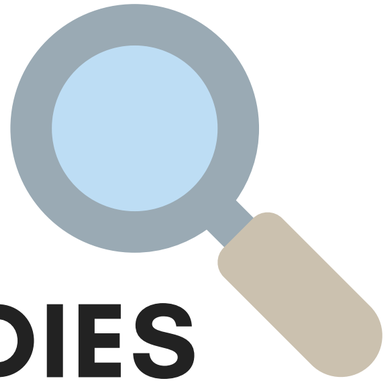
P. Viswanathan, T. Southey, J. J. Little, and A. Mackworth, "Place Classification Using Visual Object Categorization and Global Information," in Proceedings of Canadian Conference in Computer and Robot Vision, Halifax, Canada, 2011.

WHAT PROBLEM ARE WE SOLVING?

20% of powered mobility device users experience major collisions, resulting in property damage and hospitalization costs of $6,000-$22,000 and $25,000-$70,000 per year, respectively.

For the end user, our system increases independence and confidence by providing customizable feedback to accommodate a variety of needs, resulting in an overall better user experience.

For caregivers & institutions, our system reduces property damage and increases safety of everyone in the environment.



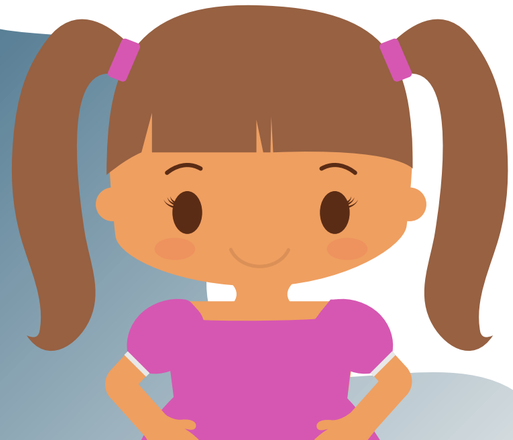
CASE STUDIES

PHIL

- 68 y/o
- U.S. Marine Veteran
- MS, Legal blindness & Above-knee amputation
- Power wheelchair user
- Lives in a home setting
- Needed a system that would help him identify an obstacle and provide him with an auditory or vibration alert.

KATIE

- 7 y/o
- Cerebral Palsy
- Student
- Power wheelchair user, uses a head array
- Lives at home with parents
- Needed a system that would provide auditory alerts about objects/people in the environment, to help her navigate safely at her school.
- Self-pay



DAVID

- Power wheelchair user, drives in a tilt position.
- Lives at a long-term care home
- Needed a system that would provide more spatial awareness and help him to avoid hitting others and objects.
- Has the system on both rear and front
- Funded by 3rd party

WADE

- Multiple Sclerosis
- Canadian Veteran
- Lives in a home setting
- Manual & Power wheelchair user (has the system on both)
- Needed a system that would help him navigate through tight spaces and avoid damage to his chair and property.
- Self-pay


C500

BETTY

- Power wheelchair user
- Lives in a long-term care home
- Had multiple collisions which is why her facility decided to take away many of her driving privileges, indoors & outdoors.
- Needed a system to alert her of obstacles in the environment
- Self-pay

ABOUT THE PRODUCT

1 The Braze System

2 Anatomy of the Controller

3 Feedback Methods

4 Operating modes

5 How the system is powered

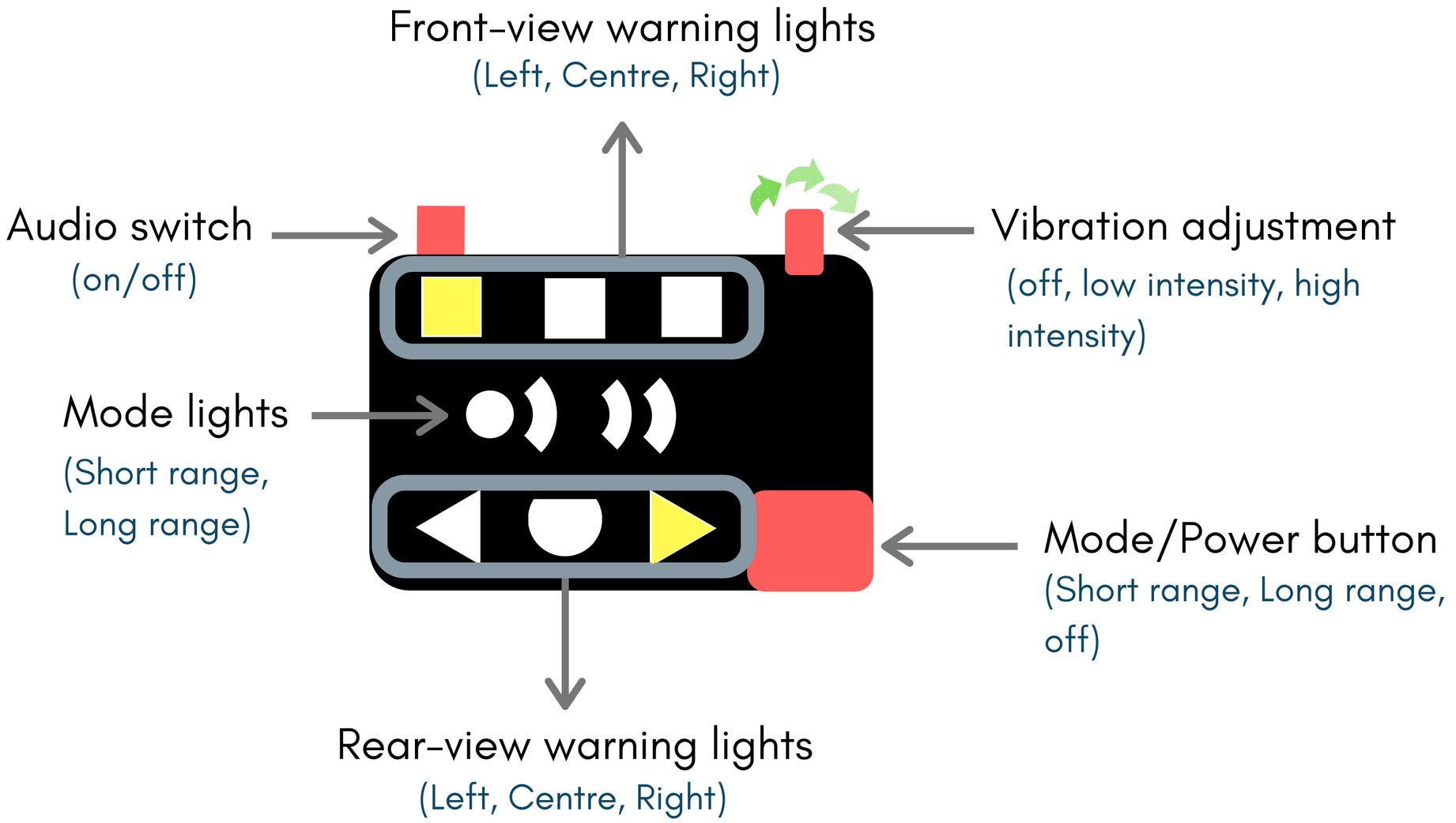
6 What the system does NOT do

WHAT IS A BLIND SPOT SENSOR SYSTEM?

It is a set of ultrasonic sensors that can essentially be attached to any wheelchair, turning it into a "smart" wheelchair. It provides alerts to the drivers about objects in the environment through multimodal feedback (light, sound, and vibrations) enabling them to navigate safely and independently.

The system can be mounted to any wheelchair make and is fully customizable. It is recommended for clients who want a greater awareness of obstacles in their surrounding.

2 Anatomy of the Controller


Front-view warning lights
(Left, Centre, Right)
Audio switch
(on/off)
Vibration adjustment
(off, low intensity, high intensity)
Mode lights
(Short range, Long range)
Mode/Power button
(Short range, Long range, off)
Rear-view warning lights
(Left, Centre, Right)

3 Feedback Methods

VISUAL

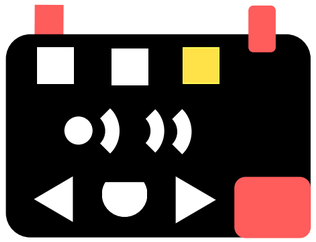
The colour of the lights on the controller indicate the proximity of the objects relative to the chair.

A yellow light indicates a Warning i.e. the object is coming up close to the chair.

A red light indicates Danger i.e. the object is too close to the chair

*These colours can be customized if necessary such as in the case of colour blindness.

The location of the lights on the controller indicates the location of the objects relative to the chair.



Ex: here the light is indicating that an object is coming up close to the right, front side of the chair

AUDIO

- The audio feedback from the system consists of the universal beeping sound.

- By default, the system only beeps when obstacles enter the Danger zone.

  *A common question that is often asked is: Does the system continue to beep/alert the driver if the chair is stationary?

  The answer is no. When a wheelchair is too close to an obstacle but is in a parked position, the system does not continuously beep until the way is clear. At that point, if the wheelchair moves any closer to the obstacle, the system will then prompt the user again with a beep.

VIBRATIONS

- Up to 3 vibration modules can be attached to the system at once.
- A typical customization may include 1 vibration module added to the left and right armrest of the chair, and 1 vibration module inserted into the back rest of the seat.
- Another typical customization is 1 vibration module being added inside the seat cushion under each leg of the driver.
- The system can also be programmed to have feedback from all of the regions (left, right and centre) merge into a single vibration alert.

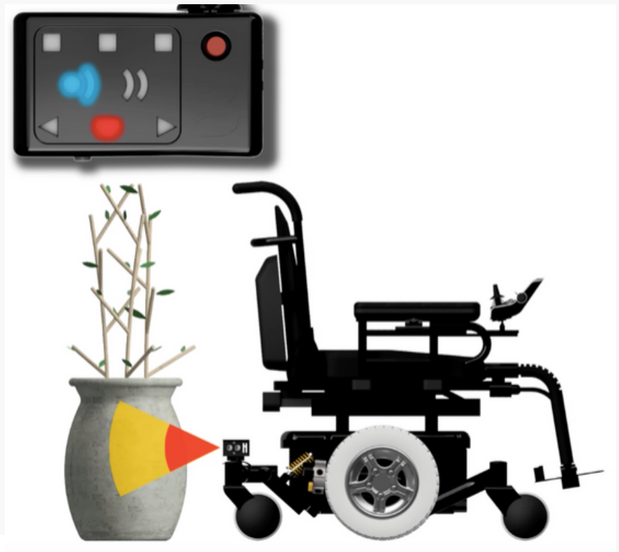
4 Operating Modes

SHORT RANGE VS. LONG RANGE

- The system has both a Short range and a Long range mode (see the next slide for a visual reference).
- The user can toggle between Short and Long range mode using the Mode/Power Button (see Anatomy of the controller on Slide 17)
- The system also has a 3.5mm jack allowing it to be hooked to a Buddy Button, for someone who cannot toggle between the different modes.
- The default setting on the Short range mode is 2 feet for Warning & 1 foot for Danger.
- The default setting on the Long range mode is 4 feet for Warning & 2 feet for Danger.

*see slide 29 for customizations on the Short vs. Long range mode.

Short Range Mode



Long Range Mode


Braze™
MOBILITY


Braze™
MOBILITY

5 How the system is powered

- The system can be powered using a USB hub on the wheelchair or a power bank.

We supply high quality power banks that can last up to 10-12 hours once charged fully

- The system can also be powered using a USB XLR cable/adapter - the power draw of the system is very low (approx. 5 volts/1 amp).

- The controller can be turned off using the Mode/Power Button (Refer to slide 16)

*Note: Turning the controller off shuts off all feedback methods but the system continues to draw low current from the power source. To fully shut down the system, the power source must be disconnected.

6 What it does NOT do

The Braze System does NOT:

- ✗ Detect curbs
- ✗ Modify the wheelchair behaviour (i.e. stop the chair)

CUSTOMIZATIONS

VISUAL, AUDIO & VIBRATIONS

- The intensities of the visual, audio, and vibration feedback and the colour of the visual feedback are all customizable to the needs of the user.

DISTANCE

- The distance on the Short range mode and the Long range mode can be set anywhere from 2 inches to 6 feet.

Feedback from the system is customizable through our desktop and phone apps!

WHAT IS INCLUDED IN A BASIC KIT?

- Sentina (pictured on right), providing 180 degrees of blind spot coverage.
- Controller (audio + visual feedback)
- Mounts

*The Echo heads, that provide additional coverage, and the vibration modules are considered add-ons and entail an additional cost.

INSTALLATION

The installation of the system is easy and can even be tools-free for quick trials.

You do not need to be tech-savy in order to do the installation yourself as long as you are careful with cable management.

All of our mounts are GoPro compatible, providing a number of installation options for the user.

WHO CAN USE THE SYSTEM?

Anyone who drives a wheelchair, but especially those who:

Have objects on the wheelchair (i.e. oxygen tanks, backpack, communication tablet etc.) blocking their vision.

Have low vision.

Have a hearing impairment.

Have limited upper body or neck mobility.

Have an alternative joystick control requiring them to face forward.

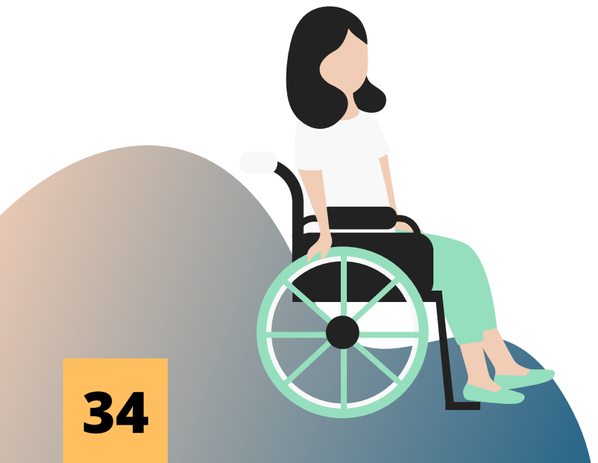
Drive in a tilted position, limiting their spatial awareness.

WHERE THE SYSTEM IS CURRENTLY USED

- Our system is currently used in both the community and long-term care.
- It is specifically useful for navigating through tight spaces such as elevators, doorways, narrow hallways, ramps and etc.
- It not only alerts the driver in crowded areas but also bystanders.

USE BY DIAGNOSIS & OTHER ASSISTIVE TECHNOLOGY

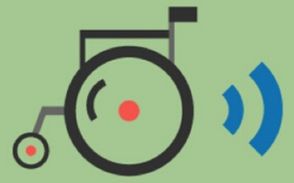
- Multiple Sclerosis (MS)
- Visual Impairments (ex: hemispatial neglect)
- Buddy Button
- Head Array
- Muscular Dystrophy
- Cerebral Palsy (CP)
- Sip-and-Puff Device



40%

- Of clinician's patients or clients who use powered wheelchair have **difficulty with steering tasks**

Source: Fehr, Langbein, & Skarr's (2000)



61-91%

- Of wheelchair users predicted to **benefit from "Smart Wheechairs"**

Source: Simpson (2008)

1 **Multiple sclerosis**

- population: 300,000
- upto 62 % benefits
- market segmet: 186,000

2 **Cerebral Palsy**

- upto 77 % benefits
- population: 750,000
- market segmet: 577,500

3 **Stroke**

- upto 20 % benefits
- population: 1,200,000
- market segmet: 240,000

4 **Low Vision & Blind**

- upto 6% benefits
- population: 6,370,930
- market segmet: 380,681

DURABILITY OF THE SYSTEM

- Our Blind Spot Sensors are as water resistant as the chair itself.

- Although we do not guarantee the system can withstand all temperatures or climates, the sensors have been tested and approved in a number of weather conditions (including rain and snow).

- The system can withstand splash but can fail if submerged in water.

Funding within U.S.

- Auto insurance, Commercial Insurance, OVR, Veterans Affairs, Worker's Comp

*Potentials: Medicaid (ex: HCBS waiver)

FAQ

Is the device funded?

Currently, the device is too new to be on any pre-approved funding lists. We are working on getting it funded! If you think your client is a good candidate for this device, and the therapist agrees, please contact us! There are other options for funding, such as charities, that may also fund this device.

Is this a back-up camera?

No. Braze systems compile all of the information you can get from a backup camera into one alert, meaning, you can focus on driving, rather than watching a screen. In addition, there is no need to mount a tablet or phone anywhere easily visible on your chair. Our controller is compact and minimizes distractions and blocking of the driver's field of view.

Is this a medical device?

Health Canada and FDA does not consider Braze products medical devices. They are accessories that can be added to medical devices.

FAQ contd.

Is the device coded?

Our devices are NOT coded. Typically, miscellaneous code (K0108) is used in the U.S. Furthermore, our devices have been funded by the following institutions in the past:

Veterans Affairs (U.S.)
Office of Vocational Rehab (U.S.)
Auto Insurance (U.S.)
March of Dimes (Canada)

*Refer to page 38 for the full list