

# Accessible Transportation Technologies Research Initiative (ATTRI)

## Online Dialogue

[www.its.dot.gov/index.htm](http://www.its.dot.gov/index.htm)

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<b>16. Abstract</b> In coordination with Easter Seals Project ACTION (ESPA) and with support from Noblis, ATTRI held an online dialogue from May 15-June 6, 2014 to garner input on mobility and transportation technology for travelers with disabilities. Participants were asked to consider both new technology or past ideas about ways to improve existing transportation technology. Through the online dialogue, ATTRI received input on the subject of accessible transportation technology, with a thoughtful discussion of the benefits and challenges of the different technology solutions. Examples of technology discussed by dialogue participants include mobile applications for navigation and wayfinding, use of smart devices to provide traveler assistance for people with cognitive disabilities or who have difficulties communicating with the operator, use of advanced communication technology for improving the safety of pedestrian signal crossings, use of smart devices for multi-modal trip planning, and improving coordination of and scheduling of human services transportation. In this report, the ATTRI team further analyzed the most popular topics discussed in the dialogue that were within the scope of ATTRI's research program for the next five years. The top five ideas align with the potential ATTRI application areas identified in the draft ATTRI Strategic Plan (July 7, 2014). These potential application areas focus on the emerging themes for ATTRI – personal mobility, way finding, connectivity, information sharing and coordination.			
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# 1 Introduction

The U.S. Department of Transportation's (U. S. DOT) Accessible Transportation Technologies Research Initiative (ATTRI) is a five-year joint research and development initiative co-led by Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) with support from the ITS JPO and other federal agencies. As stated in its draft strategic plan, "ATTRI leverages technology advances to transform the mobility of travelers with disabilities." ATTRI identifies, develops, and deploys new applications or systems and supports policies and institutional guidance for three primary stakeholder groups: people with disabilities, veterans, and older adults.

In coordination with Easter Seals Project ACTION (ESPA) and with support from Noblis, ATTRI held an online dialogue from May 15-June 6, 2014 to garner input on mobility and transportation technology preferences for transportation riders who have disabilities. Participants were asked to consider both new technology or post ideas about ways to improve existing transportation technology. ESPA hosted the dialogue because of its previous success in conducting online dialogues with the disability community using the Ideascale platform.

During the online dialogue, ATTRI received 60 ideas and 122 comments on the subject of accessible transportation technology, with a thoughtful discussion of the benefits and challenges of the different technology solutions. Examples of technology discussed by dialogue participants include mobile applications for navigation and wayfinding, use of smart devices to provide traveler assistance for people with cognitive disabilities or who have difficulties communicating with the operator, use of advanced communication technology for improving the safety of pedestrian signal crossings, use of smart devices for multi-modal trip planning, and improving coordination of and scheduling of human services transportation. These results are analyzed in detail in Section 4.

## 1.1 Using Online Dialogues for Stakeholder Input

An online dialogue is a virtual "event" accessed on the internet via computer or mobile device that allows people across the country to hold discussions on a specific topic during a set period of time. Organizations use online dialogues to seek input from key stakeholders on important questions, challenges or issues. Dialogue participants present their ideas, comment on others' ideas and cast votes. Once the dialogue closes, the sponsoring organization analyzes the ideas generated for recommendations and next steps.

ESPA has hosted four online dialogues using the Ideascale platform. The first dialogue in 2009 was a general discussion related to the FTA's United We Ride program. In 2010, ESPA and FTA reached out to paratransit service providers and customers. In 2012, ESPA hosted a multi-agency dialogue for the U.S. DOT, U.S. Department of Defense, U.S. Department of Health and Human Services, U.S. Department of Labor, and U.S. Department of Veterans Affairs on the topic of improving transportation options for veterans. In 2014, two dialogues were held—the first on performance measures for the FTA Section 5310 grant program (Enhanced Mobility for Seniors and Individuals with Disabilities) and the ATTRI dialogue that is the subject of this report.

## 1.2 Goal of ATTRI Online Dialogue

The goal of the online dialogues was: **to seek input on mobility and transportation technology preferences and needs from transportation riders who have disabilities.** Specifically, the online dialogue asked “What mobility and transportation associated products and applications would be helpful for people with disabilities?”

In preparation for the ATTRI online dialogue, ATTRI and ESPA staff held a conference call with an expert panel on May 9, 2014, with the intent of sharpening the dialogue’s focus and developing discussion questions. Six accessible transportation experts from the government, universities, and research centers provided input on the planned online dialogue.

Based on this input, ESPA prepared the final content for the online dialogue homepage depicted in Figure 1.



Figure 1: ATTRI Online Dialogue Home Page

This report describes the approach for conducting the online dialogue, provides data on the number of participants and their backgrounds, and presents the ideas generated, including the top vote getters. The report concludes with an analysis of the results, highlighting cross-cutting findings and the top five technological solutions for ATTRI.

## 2 Approach

Based upon ESPA's previous experience hosting four online dialogues using the Ideascale platform, a number of best practices and processes have emerged. The ATTRI team followed Easter Seal's recommended approach for developing the online dialogue as outlined below.<sup>1</sup>

### 2.1 Planning and Organization

First, the ATTRI team developed and clearly defined a set of goals for the online dialogue to establish clear expectations, set the tone for the dialogue, and ensure that the conversation stayed on topic. Previous studies and online dialogues have focused on the barriers people with disabilities face in accessing transportation, and much of this information has already been documented in the form of user needs. Consequently, the team determined that this online dialogue should focus on potential technological solutions for ATTRI to explore as the focus for the research initiative. With this in mind, the online dialogue goal was established as: to seek input on mobility and transportation technology preferences and needs from transportation riders who have disabilities.

Next, the team set the target audience for the online dialogue as people with disabilities, their advocates, transportation industry associations, state, local, and federal government agencies, and others with an interest in accessible transportation topics. An effort was made to engage information technology developers as well as disability advocates through the expert panel. The target list comprised a diverse group of organizations and individuals who have varying perspectives about and a vested interest in the dialogue topics.

The team formed the expert panel with members from federal agencies, universities, the private technology sector, and disability advocacy and training groups. The expert panel played a critical role in developing the goals and structure, writing content, setting topics, and developing questions for the dialogue. The expert panel members are listed in Table 1.

**Table 1: Expert Panel Members**

Name	Affiliation
Aaron Steinfeld	Carnegie Mellon, The Robotics Institute
Sean Barbeau	University of South Florida, CUTR
Donald H. Barrett	U.S. Department of Education
Scott J. Windley	U.S. Access Board
Bruce Bailey	U.S. Access Board
Anne Taylor	National Federation of the Blind Jernigan Institute

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<sup>1</sup> Easter Seal's Project Action, "Online Dialogues 101: Best Practices for Hosting an Online Dialogue," January 2013, <http://www.projectaction.org/ResourcesPublications.aspx>.



Easter Seals staff acted in a moderator role during the dialogue. ESPA moderated the discussion, kept people on track, ensured active participation, and engaged participants to think about different ways to share ideas. Members of the expert panel served as catalysts for the online dialogue, contributing ideas and comments within the dialogue.

## 2.2 Developing Materials and Structure

Once the plans were in place, Easter Seals developed the structure and content for the online dialogue. As discussed above the focus was on technological solutions for accessing transportation for people with disabilities. The question was posed as follows:

*What Mobility and Transportation Associated Devices Would be Helpful for People with Disabilities?*

The five categories discussed during the dialogue were:

- Devices and applications that assist people with mobility disabilities
- Devices and applications that assist people with difficulty hearing
- Devices and applications that assist people with limited vision
- Devices and applications that assist people with intellectual disabilities
- All ideas, cross-cutting solutions

A member of the expert panel suggested that a background information page on ATTRI be provided to give the participants additional context for the questions. This document was included on the home page and is attached as Appendix B.

## 2.3 Outreach

ESPA followed a process and schedule for encouraging participation in the online dialogue. The online dialogue was announced and marketed through strategic outreach conducted by web, email listservs, e-newsletters, conference flyers, and word of mouth. ESPA announced the dialogue kick-off by contacting partner organizations such as the American Public Transportation Association (APTA), the Community Transportation Association of America (CAA), and the Institute of Transportation Engineers (ITE) and asking them to distribute the dialogue announcement to potential dialogue participants in their networks.

Partner organizations and the sponsoring federal agency were given marketing text to share with their email lists or post by traditional websites or newsletters. In addition, both ESPA and partner organizations were encouraged to use social media outlets such as Twitter to send announcements. The dialogues were marketed by weekly email announcements while the dialogue was live. Announcements for the ATTRI dialogue were distributed on May 15, May 21, May 28, May 30, and June 5. In addition, for the ATTRI dialogue, an information flyer was distributed to participants of the U.S. DOT Datapalooza conference held in Washington, D.C. during the period of the dialogue.

# 3 The Online Dialogue

## 3.1 Google Analytics

The online dialogue was conducted from May 15<sup>th</sup> to June 6<sup>th</sup>. Using Google Analytics on the webpage, the team was able to track various statistics during the dialogue period. Overall, 1,546 people viewed the ATTRI online dialogue for a total of 2,152 sessions. Of that number, 181 chose to register and become dialogue participants; therefore, the conversion rate of participants to browsers/users was 12 percent.

Participants posted 60 ideas and 122 comments. During the dialogue, participants were asked to vote on their favorite ideas; 579 votes were posted over the three week period. Participants spent an average of four minutes and 20 seconds on the site, and the average number of page views was four pages per site visitor.

A comparison of the statics from previous online dialogues administered by ESPA shows that while the overall reach was smaller, the dialogue was successful and had high participation. It can be difficult to compare the ATTRI dialogue to earlier dialogue as the scale and target audience are smaller than for other topics. Table 2 provides the full comparison of each dialogue and the average for dialogues between 2009 and 2012. While participation numbers and percentages are lower for ATTRI when compared to earlier dialogues; it is significant to note that the ratio of ideas to participants is the same as the FTA Section 5310 dialogue and comparable to the first dialogue held for United We Ride. While the ATTRI Online dialogue may have reached a smaller audience and converted a lower number of viewers into participants, it should be noted that even with fewer participants and registered users the number of ideas generated was still comparable to the other dialogues. This would suggest the dialogue reached a very targeted and motivated audience. These numbers support that the right people were captured by the outreach done before and during the dialogue.

## 3.2 Participant Characteristics

Organizations that represented people with disabilities were the largest group to participate in the dialogue. Registrants were asked the question “Do you advocate for or seek solutions to remove accessibility barriers for people with disabilities?” 86 percent responded “yes” that they represent people with disabilities. Of the 181 registrants for the ATTRI Dialogue, 18 indicated that they are currently involved in the ATTRI initiative, as either ATTRI Team members or catalysts.

The dialogue attracted participants from all U.S. states and the District of Columbia. The top five participant areas were District of Columbia, California, Pennsylvania, New York, and Florida. In addition to the U.S, the dialogue was viewed in foreign countries including Canada, the United Kingdom, Australia, and India. The highest numbers of web link referrals were from federal government sites, Facebook links, ESPA webpage, and Ideascale. More details about the geographic location and distribution, referrals, and dialogue participants can be pulled from Google Analytics. Table 2 provides an overview of some of the basic statistical information about the dialogue.

**Table 2: Overview of Online Dialogue Statistics from Google Analytics and Registration Questions**

Indicator	United We Ride (2009)	Paratransit (2010)	Veterans Transportation (2012)	Average (2009-2012)	Section 5310 Performance Measures (2014)	ATTRI (2014)
Unique visitors	3,851	1,163	2,241	2,418	1,060	1,546
Total visits	6,808	2,405	3,584	4,266	1,609	2,152
Participants	783	287	459	510	224	181
Conversion Rate	20%	25%	20%	22%	21%	12%
Total Ideas	280	65	78	141	75	60
Total Comments	1,056	187	239	494	130	122
Total Votes	1,538	371	873	927	651	579
Ratio Comments to Ideas	3.8	2.9	3.1	3.27	0.58	2.03
Ratio Votes to Ideas	5.5	5.7	11.2	7.47	0.11	9.7
Ratio Ideas to Participants	0.35	0.23	0.17	0.25%	0.33%	0.33
Geographic distribution of visitors in the U.S.	all states	all states	all states	--	all states	all states
Bounce rate	32%	38%	49.86%	39.95%	52.02%	53.67%
Total # page views	54,604	13,526	13,524	27,218	7,258	8,087
Avg. # page views per site visitor	8	6	3.77	5.92	5	4
Avg. time on site	8	7	5.38	6.79	5:06	4:20
% people representing people with disabilities	82	56	4	47.33	* Figures not calculated	86
% people representing older adults	64	19	2	28.33	*	N/A
% of participants from non-profits	4	43	N/A	--	*	3
% of participants from local government	12	21	N/A	--	*	1.6
% of participants from any government	29	32	N/A	--	*	7
% of participants with advocacy roles	13	10	3	8.67	*	13
% of participants who were managers	42	37	N/A	--	*	N/A

### 3.3 Top Ten Ideas by Voting

The top ten ideas on the dialogue determined by participant voting are listed below. These ideas have been summarized and do not necessarily capture all of the ideas and feedback given in the comments. For more details the raw data of each all ideas and comments are provided in Appendix C.

1. Idea # 17 - Support of Complete Streets concept by funding agencies, local governments, and developers. (35 votes/6 comments)
2. Idea #4 - Safe Bus Stops – Strategic use of lighting at bus stops for operator to see customer, for customer to see or notify bus, and for general security (30 votes/17 comments)
3. Idea #6 - Wayfinding and Crowdsourcing - Mobile device application that includes Americans with Disabilities Act (ADA) information for particular transit routes (29 votes/12 comments)
4. Idea # 10 – Operation Transportation Finder (26 votes/4 comments) – Smartphone application that uses location services and brings up modal information based on location of the phone. The application would connect the user to a database of public and private transportation services.
5. Idea #8 – Travel Assistance Device (27 votes/7 comments) – Mobile application that uses Global Positioning System (GPS) technology to prompt riders with real-time audio messages, visual images, and vibration alerts to prompt a rider to take action.
6. Idea #18 – Mandate easy to use securement rings on power wheelchairs (23 votes/3 comments) – Equipment-focused rather than technology-focused: Request for U.S. DOT to work with manufacturers to strongly encourage easy-to-reach securement rings on all wheelchairs
7. Idea #7 – Crosswalks for those with limited mobility (23 votes/8 comments)
8. Idea #12 - Transit Pilot (22 votes/2 comments) – Comprehensive application for navigating along routes or within transit facilities
9. Idea #2 - Help People Feel Safe Riding Transit (19 votes/3 comments) –Technology that helps people feel more secure about riding transit
10. Idea #11 - Shared Rides (18 votes/3 comments)

The top ten ideas were determined by user voting, regardless of whether the idea was within the scope of ATTRI. The number of comments indicates interest in an idea, but not always how popular that idea was. Sometimes comments were added that changed the direction of the conversation. Section 4 provides detailed analysis of the ideas and comments, combining related ideas, and excluding those that are out of scope for ATTRI.

It is interesting to note that the Complete Streets approach to designing and building streets was the number one idea in this dialogue on technology. However, the work of building roads and walkways that are friendly for vehicles, pedestrian, and cyclists, or establishing committees that include community members with disabilities, while critical to transportation accessibility, is outside the scope of the ATTRI program. The fact that this approach is mentioned in the dialogue indicates that the

participants are still very interested in non-technological solutions for transportation facilities that take all users into consideration.

# 4 Cross Cutting Analysis

The ATTRI Online Dialogue generated many ideas and comments for a total of 182 statements about the potential of new technology to transform transportation for people with disabilities, including veterans and older Americans. Although by no means representative of the entire disability community, these statements offer a glimpse of current thinking about the challenges faced in accessing and using the transportation system and the possibilities of new technology to address these challenges.

The ATTRI team analyzed this qualitative data by:

- Mapping ideas and comments to a working list of user needs to validate those needs and surface new ones.
- Identifying cross-cutting themes common to the all of the ideas and comments.

The sections below describe this analysis and findings in greater detail.

## 4.1 Mapping User Needs

Based upon ATTRI stakeholder listening sessions held in early 2014 and a review of the four previous online dialogues conducted by ESPA, the ATTRI team distilled stakeholder comments into a working list of user needs of people with disabilities for accessible transportation. The team has begun using this list to map the landscape and begin strategic planning for ATTRI research and development. The nine user needs are:

1. **One-stop pre-trip information:** One-stop traveler information clearinghouse designed to accommodate all user types.
2. **Door to door direct service:** Door to door service for those who may be unable to transfer independently.
3. **Accessible physical environment:** Accessible and comfortable physical access points at origins and destinations.
4. **Accessible en-route traveler information:** Accessible en-route traveler information for all user types.
5. **First-mile/last-mile links:** Elimination of missing links for first and last mile accessibility.
6. **Streamlined eligibility screening:** Improve eligibility screenings to better recognize non-physical disabilities.
7. **Allow for more spontaneous travel:** Responsive transit service, reducing the need for advanced planning of travel.

8. **Independent navigation:** Independent navigation of a trip from start to finish, including physical and environmental navigation of any transfer points, providing assistance with identification, decision making, and action throughout journey.
9. **Travel training:** Travel training to enable passengers with disabilities to utilize the public transportation resources in their communities.

At the conclusion of the online dialogue, the ATTRI team mapped the 60 ideas and associated comments to this list of user needs and analyzed the results. Overall, the list of nine user needs was validated by the online dialogues, with participants referencing at least one of the user needs in their comments. The user need of “accessible en-route traveler information” was mentioned the most, followed by the need for an accessible physical environment.

In addition, a new user need related to the affordability of the transportation system and the technological devices that could be leveraged to improve the system from the users’ perspective surfaced. This need had not been specifically identified in the initial set of user needs but will be included in the working list as the program moves forward. The ATTRI user needs, including the newly surfaced need for affordability, are included in Table 3 below along with the number of ideas and associated comments that mapped to each need. All comments under an idea were rolled up into that comment for this mapping. It should also be noted that while some needs were not necessarily technology specific in the mapping, there may be other technology solutions to the same issues that we have identified in the list of user needs.

**Table 3: User Needs Mapped to Online Dialogue Ideas and Comments**

User Need	Number of ATTRI Online Dialogue Ideas Mapping to this Need
1. <b>One-stop pre-trip information:</b> One-stop traveler information clearinghouse designed to accommodate all user types.	6
2. <b>Door to door direct service:</b> Door to door service for those who may be unable to transfer independently.	1
3. <b>Accessible physical environment:</b> Accessible and comfortable physical access points at origins and destinations.	13
4. <b>Accessible en-route traveler information:</b> Accessible en-route traveler information for all user types.	22
5. <b>First-mile/last-mile links:</b> Elimination of missing links for first and last mile accessibility.	2
6. <b>Streamlined eligibility screening:</b> Improve eligibility screenings to better recognize non-physical disabilities.	2
7. <b>Allow for more spontaneous travel:</b> Responsive transit service, reducing the need for advanced planning of travel.	3

User Need	Number of ATTRI Online Dialogue Ideas Mapping to this Need
<b>8. Independent navigation:</b> Independent navigation of a trip from start to finish, including physical and environmental navigation of any transfer points, providing assistance with identification, decision making, and action throughout journey.	4
<b>9. Travel training:</b> Travel training to enable passengers with disabilities to utilize the public transportation resources in their communities.	2
<b>10. Affordable transportation options for the user,</b> especially for paratransit trips, but also for the technological devices that will enable improvements in accessible transportation.	3

As noted above, many of the comments regarding personal mobility, way finding, connectivity, and information sharing map directly to user needs identified by ATTRI. However, in some cases online dialogue participants commented on user needs and low technology solutions that are not directly related to ATTRI. For example, wheelchair users wanted improved wheelchair lifts and securement devices on buses and paratransit vehicles as well as more advanced technologies on their wheelchairs. This is understandable since for many people with disabilities, their wheelchair is their primary mechanism for mobility.

Also, the commenters noted that safety and security is important for all people with disabilities. In particular, older Americans often feel unsafe and over anxious waiting for buses and get cold waiting outside. Some bus stops are not located in safe locations or are difficult for a person with disabilities to access. Lighting was mentioned several times in the comments, with participants requesting better LED lighting in bus stops and shelters. This user need is denoted as "Accessible Physical Environment" by ATTRI but may need to be expanded to address the security aspect of the issue.

## 4.2 Cross-cutting Themes

Overall, cross-cutting analysis of the online dialogue ideas and comments reveals several major themes for the ATTRI leadership to consider regarding technological solutions for accessible transportation. The themes were divided into two categories, those addressing specific technology solutions and those presenting guiding principles for ATTRI as it conducts its research.

### Themes Addressing Technology Solutions

- Take advantage of smart phone and geo-location technology to improve navigation and wayfinding. This technology could be combined with the possibility of crowd sourcing to identify and tag the physical infrastructure. Information about accessible parking and buildings at destinations could also be included.
- Leverage new signal technology to improve pedestrian crossings. The online dialogue revealed some of the possibilities of technology for pedestrian communication with traffic signals.



- Investigate providing travel assistance on a smart device for people with cognitive issues. There were a number of nascent technologies mentioned in this area, including the Travel Assistance Device (TAD). Other suggestions were made for travel assistance devices to assist people with other disabilities understand transit announcements, and other needed information.
- Enable fully independent, multi-modal transportation so people with disabilities can travel from city to city. Two mobile applications (RideScout and Navigon) were suggested for integrating transportation options in one place across all modes of travel.
- Take advantage of smart phone technology to allow passengers to communicate with vehicles to schedule trips and hail buses. As more and more agencies are deploying smart phones in lieu of more costly dispatch systems--and especially in smaller and more rural systems, this idea seems even more practicable.
- Provide for better coordination among transportation and human service providers. Some commenters envisioned an integrated community wide transport system, using a unified payment system.
- Improve visibility of people with disabilities in the roadway. There was much discussion about the potential use of technology to improve visibility of people using wheelchairs or other assistive devices. While it is not within ATTRI's scope to redesign these mobility devices, there is a possibility of using communication technology to alert others to the presence of a person in a wheelchair.

### Themes Addressing Guiding Principles

- Design and develop transportation systems using universal design principles. For example, many people have difficulty reaching buttons for "Walk" signals, communicating with bus drivers, and understanding public transportation announcements. The technological solutions resulting from ATTRI could benefit everyone.
- Make sure technological solutions address multiple disabilities not just those involving mobility. A number of comments pointed to the need for technology solutions to improve transportation for people with mobility, vision, hearing and cognitive impairments.
- Create better understanding of the needs of people with disabilities. Some commenters expressed that transportation planners and transit staff need better understanding of the needs of people with disabilities. One commenter noted that some transportation engineers have put themselves in wheelchairs to directly experience how much time is needed to cross specific intersections, but described this exercise as an exception. Another commenter recommended better training for bus drivers and transit personnel.
- Expand affordable accessible transportation options. A number of commenters noted that many of the technology solutions proposed involved smart phone enabled applications and that this technology is not economically feasible for everyone.
- Consider ease of use for technology solutions. In particular, consider consolidating transportation applications in one location. A lot of information on multiple applications could be hard to manage, especially while in-route.

## 4.3 Top Five Technology Solutions for ATTRI

Finally, the ATTRI team analyzed the top vote getters within the scope of ATTRI's research program for the next five years. Specifically, many of the improvements in infrastructure (such as Complete Streets and Safe Bus Stops) and mobility assistance devices (securement rings on wheelchairs) are outside of ATTRI's research scope. In addition, some of the ideas overlap or are very closely related,

in particular the mobile applications. When related ideas are combined and the non-ATTRI ideas are excluded, the five top technology-related discussions can be viewed as:

1. **Idea #2 / #8 / #24 – Technology that helps people feel more secure about riding transit / Travel Assistance Device** – A mobile application that uses GPS technology to prompt riders with real-time audio messages, visual images, and vibration alerts to prompt a rider to take action. Alerts can be given for arrival of transit, upcoming stops, time to pull stop request cord, and arrivals at final destinations. An additional idea was generated by a member of the Knoxville-Knox County Community Action Committee (CAC). CAC was awarded grant funding through the U.S. Administration for Community Living in partnership with the FTA and Community Transportation Association of America (CTAA) to develop a tablet-based application that will help individuals who have a disability communicate with the vehicle operator. (Total of 52 votes combined)
2. **Idea #6 / Idea #12- Crowdsourcing Application** - A mobile application that crowdsources routes and associated data to and from transit stops and locations. Users can track their route to and from transit, rate how each segment of the trip was based on level of accessibility, and capture and submit the field data back to the application for use by the community. This could be integrated with an application that provides all of the necessary travel data, in different accessible formats, about the transit system. The applications could help to solve several issues including: route planning, navigation to/from transit stops, identification of the actual stops, determining which vehicle to board, way-finding along a route, identifying the desired stop and navigating between transit and the final destination. The data collected by the application would also be very useful to transit agencies and local transportation agencies to analyze usage patterns for planning and maintenance purposes. (Total of 51 votes combined)
3. **Idea # 10 – Integrated Transportation Clearinghouse (Operation Transportation Finder)** – Smart phone application that uses location services to display all local transportation information. The application would connect the user to a database of all public and private transportation services. The key to this application is the integration of many different transportation services into one easy to use interface. (Total of 26 votes)
4. **Idea #7 – Crosswalks for those with limited mobility** – More crosswalks need to have accessible information about the length of time to cross, remaining time to cross, and which direction can be crossed at any given time. Pedestrian walk times need to also better accommodate all types of people. One solution is to have communication between a device a person with disabilities may carry with them and the traffic signal that could either alert the signal system that the person was still in the cross walk and not to change the light, or extra walk time can be requested based on the persons disability and crosswalk geography. (Total of 23 votes)
5. **Idea #11 / #61 – Shared Rides with Ride Scheduling / Alert System** - Use technology to enable riding sharing program that matches people with disabilities with organizations providing rides. In addition, there should be a system in place for people with cognitive impairments or difficulty waiting outside to let them know when their vehicle pick-up has arrived. (Total of 18 votes combined, plus one substantial comment from Idea #4)

These top five ideas align with the potential ATTRI application areas identified in the draft ATTRI Strategic Plan (July 7, 2014). These potential application areas focus on the emerging themes for

ATTRI – personal mobility, way finding, connectivity, information sharing and coordination. They are listed as follows:

- Real-time multi-modal trip planning and traveler decision support application that assists travelers with finding and choosing accessible transportation that best meet their mobility need.
- Crowd-sourced wayfinding and navigation applications that empower independent travels for people who require mobility, vision, and hearing assistance. For instance, this solution may use geo-located data to assist with outdoor navigation and provide captioning for public transportation announcements in rail, bus, or airport terminals and in the vehicles.
- Integration of travelers with disabilities (both motorized and non-motorized) in the Connected Vehicle environment that provides “all-inclusive” traveler experience enabled by communications technology, interoperable systems and near-ubiquitous access to a wealth of real-time situational data sources, including transportation data, municipality data, points of interest data, crowd sourced data, and disability data.
- Automated vehicles that enhance independent and spontaneous travel capabilities for travelers with disabilities. Within the next five years, the primary focus of ATTRI vehicle automation research and development effort may be on international collaboration and shorter distance (e.g., first mile/last mile) use cases.
- Travel assistance device (possibly on a tablet, smartphone, or wristband) that helps guide people with cognitive disabilities on their travel. The device could also help them communicate with the vehicle operator and potentially inform a caregiver throughout the journey, including when they have reached their destination.

As part of its strategic planning process, the ATTRI team will perform research on technology innovations, consult with stakeholders, then establish an application identification and selection process to determine the applications to be developed and tested by the ATTRI program. The information gathered from the online dialogues provides an important contribution to that process.

# 5 Conclusions

The ideas and comments received during the ATTRI online dialogue indicate that there is strong interest in using technology to help all travelers, particularly travelers with disabilities, reach their destinations safely and efficiently. The ideas posted during the three-week dialogue range from guiding principles for technological design to technological applications that require interaction among the user, devices, vehicles, and street infrastructure.

Technology solutions were proposed for simplifying the often-complicated process of traveling encountered by people with disabilities. For example, GPS enabled navigation augmented by crowdsourced way finding was encouraged as a way to assist a traveler with the basic mechanics of getting from point A to point B. Technological solutions were proposed for common transportation system problems such as operator stop announcements, visibility of travelers with disabilities, and pedestrian crossing signals that are difficult to access. Streamlined payment systems, rideshare programs, and trip planning applications were listed as technologies that aren't new but are systems that haven't been used to their full potential.

User control, independence, safety, and affordability are other topics that appeared throughout the dialogue. Many posters encouraged more traveler/individual control over use of technology in the transportation environment (e.g., pedestrian control over pedestrian signal timing or stop requests on buses). Overall, the list of nine use needs identified in the ATTRI draft strategic plan were validated, with the addition of affordable transportation options as the tenth user need.

## 5.1 Next Steps

The ATTRI team intends to share the results of the online dialogue with the U.S. DOT leadership and the expert panel in the coming months. The team will use this input to categorize and down select possible technological solutions for further exploration by ATTRI.

In July 2014, The ATTRI team prepared a first draft of the ATTRI strategic plan, based upon a leadership visioning session and results from early stakeholder listening sessions. This draft strategic plan is currently in review by U.S.DOT leadership. The online dialogue results will be added as the strategic plan is finalized in September 2014.

## 5.2 Summary

In summary, the ATTRI online dialogue discussion uncovered new ideas and innovative recommendations for technology, recommendations that may be feasible using existing technology, or may require new application development. In addition, the dialogue suggests guiding principles for technology developers to keep in mind regarding the needs of people with disabilities. It was noticeable that there was some overlap in ideas or lack of awareness as to whether a suggested type of technology exists. Information and education about applications, smart phone and device capabilities, and how certain technologies are currently being used would be useful to travelers of all abilities.

## APPENDIX A. List of Acronyms

Acronym	Meaning
ADA	Americans with Disabilities Act
APTA	American Public Transportation Association
ATTRI	Accessible Transportation Technologies Research Initiative
CAA	Community Transportation Association of America
CAC	Community Action Committee
CTAA	Community Transportation Association of America
CUTR	Center for Urban Transportation Research
DOT	Department of Transportation
ESPA	Easter Seals Project Action
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
GPS	Global Positioning System
ITE	Institute of Transportation Engineers
ITS	Intelligent Transportation Systems
JPO	Joint Program Office
TAD	Travel Assistance Device
U.S	United States
U.S.DOT	United States Department of Transportation

# APPENDIX B. ATTRI Background Documents

## Background on ATTRI

In 2013, the United States Department of Transportation launched the Accessible Transportation Technologies Research Initiative (ATTRI) to enhance mobility choice and quality for travelers with disabilities by providing the capability to reliably, safely and independently plan their travel. ATTRI identifies, coordinates, develops, and implements new integrated technological solutions in advancing such capabilities. By working together with other Federal partners, the U.S. DOT aims to achieve an accessible transportation network that is far more economical, expansive and welcoming, something that is of increasing importance not only to travelers with disabilities but to the aging population in the United States.

ATTRI is a 5-year USDOT joint research and development initiative co-led by Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) with support from ITS JPO and other Federal agencies.

ATTRI leads research, development, and implementation of transformative solutions and applications for all people including those with disabilities to effectively plan their travel. ATTRI seeks to enhance the capability of travelers to reliably, safely, and independently travel. ATTRI leverages recent advances in vehicle-and-infrastructure-based technologies including wireless communication and information technologies that connect users; mobile devices; vehicles; and other technology based innovations. These technologies provide access to a wealth of information, including transportation data, municipality data, points of interest data, crowd sourced data, and disability data.

### Other Resources:

- [Rehabilitation Engineering Research Center on Accessible Public Transportation](#)
- [Center for Urban Transportation Research](#)
- [U.S. Access Board](#)
- [U.S. Department of Transportation](#)
- [Federal Highway Administration](#)
- [Federal Transit Administration](#)
- [United We Ride](#)
- [Interagency Committee on Disability Research](#)
- [National Institute on Disability and Rehabilitation Research](#)
- [The U.S. Army Tank Automotive Research Development and Engineering Center](#)
- [National Center for Mobility Management](#)
- [American Public Transportation Association](#)
- [Community Transportation Association of America](#)
- [Easter Seals Project ACTION](#)
- [National Center on Senior Transportation](#)
- [ITS Strategic Planning Group Glossary](#)

## **Examples of technologies to help make transportation more accessible for people with visual, cognitive, mobile, or hearing disabilities**

We are looking for ideas to help us create new apps and devices to help people with disabilities travel. The type of ideas we are looking for would be new, never seen before advances in technology.

Dream big!

Think about challenges that you or someone you know may face every day while traveling, to work, to the store, to a friend's house etc. If you had a magic wand, what would you wish for? Here are some examples and questions to explain the types of ideas we are looking for.

### **Trip Planning and Navigation**

- What are some of the difficulties that might occur for people with disabilities when planning their trip?
- Could you find information about all transportation choices available?
- Would this information include complete information about fees, schedules, and accommodations?
- Would you know if the pathways to that transportation are accessible for people with disabilities?

### **En route Travel Support**

- What would you change about the current personal navigation devices, like a GPS and phone apps with maps and locations on them?
- Is there something that would make it easier to reach a transit stop? Cross streets? Know when your stop is next?
- Is there a device or application that would help you communicate with your family or others who are not traveling with you? Would it be helpful for this device to share your location with others?
- What types of apps or devices would be helpful in an emergency?

### **Personal Mobility**

- Are there new things that devices or apps could do to help people with disabilities operate personal vehicles?
- Are there improvements to existing vehicles, technology, apps or devices that currently assist with personal vehicle operation?

## APPENDIX C. All Dialogue Text

### Idea Number 17 - Transit is only as good as its weakest link.

Topic: Cross-cutting solutions

Votes Up: 33

Votes Down: 2

Total Votes: 35

Percentage Up: 94%

Comments: 6

Author: crawford-scott

Community transportation begins with accessible buses, but doesn't end there. We need accessible sidewalks, accessible bus stops, crosswalks, and streets that are safe for ALL their users, regardless of mode of travel, or ability. ADA does not specifically require the presence of sidewalks, so the Federal Highway Administration could help a great deal by encouraging COMPLETE STREETS along major thoroughfares and transit corridors.

#### Rbrooks

I whole-heartedly agree. Every significant transit new start or improvement project should include corridor improvements to include sidewalks, curb cuts, audible pedestrian signals, detectable warnings and other "complete streets" amenities, and it would be nice if there was a requirement for transit agencies, municipalities and MPO's to coordinate their various planning efforts to ensure that transit systems and pedestrian improvements were coordinated. All developers should also be required to include these improvements as part of new or significantly improved developments. Not sure what this all looks like, but we need to address the simple fact that every transit trip (other than people driving to a park & ride) begins and ends on foot or on wheels.

#### Community Member

Sidewalks have big cracks. Cut outs are damaged, pitted. Roads are lumpy. People in wheelchair feel every bump. Sometimes they can be thrown out.

#### Jmbarlow

Too often "complete streets" seem to be defined as streets with sidewalks and bicycle lanes. Safe and accessible crosswalks are an essential part of a complete street. Safe crossings must be located at regular short intervals so pedestrians don't have to travel a great distance to locate a safe crossing.

#### Jwaterman

Sometimes the weakest link is the lack of training for the individuals with disability. Travel training for individuals with moderate cognitive impairments is comparable to a lift for an individual who use a wheelchair. Without skill development they can not access the bus. It doesn't matter what technology is used to make it more accessible because the individual will not have the opportunity to get on the bus.



### Laura

Interesting point, jwaterman. I agree-- it is crucial that infrastructure is paired with education and training to ensure that individuals feel comfortable and confident using the bus, walking, and riding their bike in their communities!

### Webbmaw

I think that a cooperative effort could be set up between local transit agencies, libraries, local governments, etc. that could help move these things forward. They would need to have ongoing evaluation of what is currently being done in that community with an eye to continuing improvement, and they could hire individuals to facilitate training in transit ridership and other aspects of local travel. In many states, mobility training is sub-standard and disabled users are inhibited from making use of what public facilities actually are available.

### Idea Number 4 - Safe Bus Stops

Topic: Cross-cutting solutions

Votes Up: 29

Votes Down: 1

Total Votes: 30

Percentage Up: 97%

Comments: 17

Author: Michael Bailey

I am a person with disabilities and I think a major improvement to the fixed route bus system for disabled community members who must or want to travel during night time hours or on cloudy, rainy days would be bus stops that are well lit but don't require electricity for lighting. Lights for night time security lighting should be provided by solar power batteries at the top of the bus shelter. Special solar powered batteries and lights should be mounted on the bus stop sign next to the shelter at a certain height that the approaching bus would send out a signal that would activate this light(s) to let the driver know there are people waiting to board the bus at that stop. Such lighting would be especially useful at stops used by a lot of persons with disabilities and seniors. The cost would be less than the cost of conventional power and would conserve energy, opening up more funding to go into the transit agencies bus operation funds and improve system wide service. This needs to be part of a complete safe streets initiative that includes sidewalks with wide wheelchair cuts; crossing signals with wheelchair accessible, large buttons that can be pushed with little effort; sound messages and visual cues that let people know how much time they have to cross the street; and an announcement at the bus stop that lets people who arrive there know what direction the bus will be going, what main stops it will make, and how soon the next bus will arrive.

### Michael Bailey

This is an important safety issue for wheelchair users and the equipment must be made available as soon as possible. The more time spent waiting on it to be on the market; the more lives lost. Since many wheelchair users are covered by MediCare, MediCaid, DVA, this equipment should also be covered by insurance as a part of the wheelchair costs.

### Michael Bailey

I think it would be great if automated ticketing machines at bus terminals/train stations were not only more accessible and easier to use but environmentally friendly as well. My idea would be that instead of loading money into the machine, people would instead load empty plastic bottles into it. Once the Numberber of bottles had been put in to equal the right amount of train/bus fare, the machine would issue you your ticket. The transit agency would get its fare money by selling the plastics to the recycler.

This would be an easier way to pay fares and help a great deal to rid the environment of unwanted plastics at the same time. This is a program already working well on the Beijing subway system in China.

**Michael Bailey**

The solar powered motion lighting at the bus stops when someone is waiting would really alert the bus driver to stop. There have been times when the buses passed up people because the driver didn't see anyone and was in the wrong traffic lane or going too fast to stop and people had to wait an extra hour.

**gary.dubourjr**

Some of our newer bus stops here have solar powered lighting (but not motion-activated)

**Michael Bailey**

In Orange County, California, we don't have big problems with bus/train integration because our Metrolink/Amtrak stations also serve as hub bus terminals. Metrolink trains act like a main backbone transportation system between Oceanside in San Diego County, through the center of Orange County, to L.A. Union Station. The train stations are hub points for OCTA and LA Metro buses whose lines provide the spokes in the wheel that connect people between home and job. But, when you look at John Wayne Airport, OCTA has only one bus line with one stop at one of the airport terminals and that stop is also the only stop for disabled persons going to and from the airport on ACCESS. The bus line (and ACCESS) stop running for the day before the airport stops its operations for the evening. We need more than one bus line to serve the airport and more than one stop at the terminals. It is not just passengers that would use the buses. It's also airport personnel, airline staff, and the people who work in the airports shops, at TSA, and Immigration/Customs. There is a long way to go to get the bus service integrated with the airport and flights in and out of the airport.

When I served on the California State Council on Developmental Disabilities, I had to make several trips a month between Orange County and Sacramento for Council and Council committee meetings. Bus service and paratransit service is much better at Sacramento Airport. Several bus lines serve Sacramento Airport and there are bus stops at each of the terminals. What would help disabled people a lot in making the change from planes to buses at the airport would be large TV screens in the airport baggage claim area or where you go out of the terminal for ground transportation that would list where the bus stops are, what bus lines serve each stop and what each line's schedule is. This large print written information could also be accompanied by corresponding verbal announcements. And better directional signage from the airport terminal interior to the bus stop is also needed. A cell phone app that could show you a map of the airport terminals and their relationship to the terminal bus stop(s) and verbal directional announcements is also needed. The buses that will serve the airport need visual and verbal announcements of which terminal stop is coming up and what airlines are served by that terminal. It would be very helpful, too, if the airlines provided information on bus lines and bus stops at the airport serving that airline's terminal and including stop location, bus line Numbers, schedules, destination points, and bus system contact Numbers; and provide this information (or links to it) at the time you buy your airline ticket or the time you print your airline boarding pass. The system should be set up to make travel as seamless as possible and you should not be on your own in a strange place to figure things out on your own.

Paratransit is very important in Orange County and all parts of California as we emphasize that persons with disabilities live and work in the community with the supports and services they need rather than be segregated in large state owned institutions. It is the fixed route bus system and the paratransit system that is the glue that makes independent living possible by connecting the disabled to all the generic community services and supports.

Sometimes, paratransit passengers don't realize their ACCESS vehicle has arrived and the driver needs to go get them. This though does add time that has not been scheduled for and can backup the whole paratransit system from scheduling through travel time to destination. There should be a system in place for people who have short term memory problems or sensory problems to let them know when their paratransit pick-up has arrived. This could be a system that could be activated from the vehicle or the call-in center that would generate a phone call message into the client's house. In addition, up to three lights could be installed in any three rooms of the the client's apartment the client chooses. These would be red blinking or rotating lights to let clients who can't hear the phone wring know their ACCESS is waiting for them. This system could be installed in the same way that home security systems are installed. Funding could come from grants from CalOptima--MediCal in Orange County-- and/or the regional center which serves the disability community in Orange County. This would speed up the travel process by making sure people are ready to go when their pick-up arrives and so making sure all clients are picked up inside their 30 minute window.

In Orange County, the OCTA Board of Directors has married the ACCESS paratransit program to the fixed-route bus system. When ACCESS operates in your area is dependent on when the fixed-route bus line closest to where you live is in operation and on which side of the street you live on along the bus route--the bus route may open and close going in one direction sooner or later than it does going the other. People using ACCESS need an easy to understand system to allow them to find the fixed route bus line nearest to where they live and its start and closing times and if there is or is not weekend and holiday service. This information is key to making ACCESS travel plans. The information needs to be available in various formats including computers using screen readers, Google Transit large print, and a cell phone app that can provide it by print and by verbal announcements. With this information, ACCESS clients can schedule their trips without fear of being stranded.

#### **Lblack**

I think it is a good idea perhaps a LED which push by the user can be utilize to illuminate the persons presence. It would be less costly. Another alternative can be motion sensor Fog lighting that goes on when the person is under it and off when the person leaves and a covered platforms to shield the person from the rain. A fog light system will allow the user to be seen more clearer in the rain. If I were a disabled person who was visually impaired. I would appreciate a button or an instant verbal overhead message board that would announce the street location as I stood under it . IT could be programed to make announcement on intervals of time.

#### **Steve Yaffe**

Too complicated. Just let folks pay with their cell phone. Verizon is adept at mailing bills.

### **Michael Bailey**

I think that another thing that could be done to improve transit access for the deaf and deaf-blind community would be to create a new cell phone app. It would be voice activated and similar to a gps system. A client would speak into the phone where they were, where they wanted to go, and when they wanted to come back home. The app would put up a map and written information on how to get from home to the nearest bus stop, information on transfers, destination bus stop, and fare. At least some of this can be included in cell phone apps now, so to make it more comprehensive involves building onto what is there. But the building on process should include verbal announcements as well as written information. Verbal information would include direction of travel and distance to the bus stop, the side of the street you need to be on to get the bus you want, the nearest safe street crossing if you have to cross streets to get to the bus stop, would tell you when you are at the right bus stop, tell the schedules of the next three buses going the direction you need to go, let you know when the bus is approaching. It would also tell you when your transfer stop/destination stop is coming up, and how to get from your destination stop to your final destination. This is something that R&D teams at Google, Microsoft, AT&T, Verison, and T-Mobile should be working on. The verbal information is critical for blind and low vision folks. And, the app should be at an affordable price for someone whose income is entirely SSI or Social Security. Google is able to do a lot of these apps and programs and make them available as free downloads to individual users. This would make sure everyone who needs the app can access it.

### **Michael Bailey**

It would also be great to improve the process of fare collection so it is easier than it is today. A plastic identification card might be created for people with disabilities and seniors who have a hard time handling money. As they get on the bus or train car, a camera takes a picture of the identification card; and, at the end of the month, an invoice is mailed to the person, which it can be in alternative formats. This would make using the buses and trains more easier and the person would pay less in transportation costs a month. And dwell time and idling at bus stops would be reduced.

### **Lblack**

There is a device that is a great idea for allowing wheelchair users to be seen while standing for a bus, crossing a street or just being seen in the dark . You can google and find it . Look for the wheelchair first Upright overhead warning light it is not on the market but it is a great idea and needs support to get to the market. It will also save lives .Take a look and ask yourself the question will this device fill a void? The light will certainly allow wheelchair users to be seen. It will light your way also to safety. Do we think it is needed now? We have to make it happen. Would you desire this if it were on the market . that is the question that is needs to be answer will this devices fill a void? I wonder if it were made available now how many lives would it save. There is only one. you can google wheelchair first upright overhead warning light . You can see it in action.

### **Lblack**

I think it is not only enough to just be seen at the bus stop but especially for wheelchair users to be seen operating their wheelchair at night on dimly lit streets. I think that a device that will allow a user to be visually seen regardless of if the street lights change when crossing it or not is important. There is a device that will allow that. I think that what is important is wheelchair users for the first time can have a device that can be installed on their wheelchairs

that is an upright overhead warning light to allow them to be seen wherever they go is important. There is one device. It is the world's first. we only have to show it is desired to get it mandated by law. But it is the Wheelchair's first Upright Overhead warning light that is designed especially for wheelchairs. you can goggle and find it.

**Community Member**

Me too!

**Moderator Rik**

I should have added that the lights should be motion activated.  
Community Member

**Moderator Rik**

When I'm at the bus stop in the winter and it is dark, the bus sometimes doesn't see me and used to drive by. Now I hold my phone up with the screen lit up and the bus can see me better. I like the idea about lights at the bus stop.

**Moderator Rik**

I like the idea of the use of such lights as a signal to approaching buses. That'd be helpful at night, but also for people who are blind or deaf, who may not be as aware as a bus is coming in order to make their presence at the stop known to the approaching driver.

**Michael Bailey**

I would like to see an app that can show information in large print format and also provide verbal announcements; and this app would integrate fixed route bus lines and commuter rail--heavy and light into it. It would provide travel directions to and from stops closest to final destination; the next three bus/train arrivals; and provide an easy interface between the user and the bus/train customer service departments.

I am in Orange County, California, have disabilities, and know from personal experience how hard the automated ticket machines on the railroad boarding platforms can be to use. They can be hard to operate and a number of them are located so they get sun glare in the windows that are supposed to show you what tickets and how many tickets you are buying. The last time I went somewhere by train was a number of years ago; neither me, nor my caregiver, could figure out how to operate the ticket machine at the Mission Viejo/Laguna Niguel Metrolink station. Back then the Irvine train station had a ticket agent stationed there, so we went to Irvine and bought Amtrak tickets from the agent. It would be great if there could be an app created for commuter rail that would be similar to what the airlines use: You buy your ticket and the day before or day of travel, you download train boarding passes into your home computer, print them out on your printer, and they would be accepted by the railroad as cash fare. An idea that would better integrate bus and rail travel is that when you board the bus, you can buy a 24-hour day pass for \$2.00 that could be used on any bus line or train line in your county. This is a cross cutting idea would benefit everyone in the disability community and make trains more accessible. Some commuter train stations also need to have more verbal announcements, more large print information available, and more Braille directional signs.

**Idea Number 6 - Way-finding and crowd sourcing****Topic: Mobility****Votes Up: 27    Votes Down: 2    Total Votes: 29    Percentage Up: 93%    Comments: 12    Author: Jeff Mansker**

The conceptual idea that I have had in my head for a long time now would assist individuals with mobility issues in knowing what paths to take and the like to get to/from a fixed route bus stop, and could even be extended to travel in general regardless if it has to do with public transportation. The idea is a crowd-sourced application on mobile devices that allows someone to start relaying their position via GPS when they are walking to/from a bus stop. Then after the trip is made the user can go back and view the trip on a map that allows the user to make notes on how ADA Accessible the route they just took was. An example of this would be, two points on the map and between these points the label would state **\*\*No Sidewalks,\*\*** and also different segments of the route could also be rated on a star scale for quicker viewing later on. Once an individual is finished logging the accessibility of the paths they just took they submit them and then when someone logs into the app and needs to take a trip from one address to another they can cycle through the options and sort which path of travel would be the most accessible. Once a path of travel is selected it could also pull up a navigation option that helps them along the way to their bus stop. I brought the star rating into play since in my community it seems there are times when we do have sidewalks along a street but they may not be up to ADA standards so technically the path would be accessible to wheelchairs but not fully up to ADA standards. From working as the mobility manager for my community for over a year now I have talked with many individuals who were disappointed that there wasn't a better way to determine beforehand if a path of travel to a bus stop was ADA Accessible, and this is where I have grown this idea from. I believe this could be built fairly easily and since it is "crowd-sourced" meaning all data that is held within the app is provided by the consumers; the more it is used by the community the more beneficial it can be. There are also other availabilities that I could see this "back-end" data being used for; such as, the municipality using the input routes to see which ones are traversed the most to help the decision process as to what pedestrian areas need to be improved. I know there are Numbererous apps that are crowd-sourced and deal with ADA accessible restaurants, stores etc.. but I don't believe there is a crowd sourced application that deals with ADA accessibility and paths of travel to/from bus stops.

**Community Member**

What a great idea!

**susans**

I love this idea! It took me a minute to visualize the concept, I use an app for traffic that is very similar.

Regarding the "back end" data - I think it could also be used as an additional tool when seeking funding for projects. Fantastic!!!

**Phil Winters**

We did a research project using OpenStreetMaps that demonstrated how multimodal trip planners can be developed using open-source software and open data sources (including data from crowd sourcing). The idea was to use crowd sourcing to add content that could be used to plan trips, including identifying whether or not a path was wheel chair accessible. Here's the online demo <http://opentripplanner.usf.edu/#/>

Here's the report <http://www.nctr.usf.edu/2011/05/enabling-cost-effective-multimodal-trip-planners-through-open-transit-data-2/>

### **rbrooks**

This is an extremely good idea. If you could build in a social media component, you would strengthen it further. One area to address would be vetting of information. Not all users view accessibility in the same way. Not all users understand ADA requirements. How do you filter through divergent opinions about accessibility to get to the truth? Still, a great start on a great idea.

### **Susans**

There IS an app for that! Through Apple (probably Android too) the app called AbleRoad is "a community effort assembling comments, reviews & ratings to connect people with accessible places". I think the app is only as good as the people using it - I live in an urbanized area & noticed there not many places that are "rated".

It appears to be connected to Yelp somehow. It could be a very good beginning if you want to check into it...

### **Jeff Mansker**

As far as other apps go there are quite a few out there (for android) such as; Ableroad, AXSMap, and Woussoul. However, it seems these apps strictly focus on distinct places not necessarily routes to places. I could see an integration for both to not only help an individual at their location but while in route to their location.

I am enjoying the work done by Opentripplanner and I have been watching that development from a transit agency perspective for awhile now and am excited about all of the applications that could and have come about.

I am envisioning, in a sense, a combination of both the opentripplanner concept with the same approach as all of the apps for distinct accessible locations, IE. restaurants, nightlife, businesses, and add bus stops or rail stops into the mix.

### **Sean Barbeau**

I think this is a great idea! We actually had a very similar concept planned for a Master's student to work on as part of his thesis, but he ended up opting for another topic. I think you could do this with a combination of OpenStreetMap and OpenTripPlanner, and some open-source tools (including the OTP Android app - <https://github.com/CUTR-at-USF/OpenTripPlanner-for-Android>) surrounding those projects. There are a range of options for vetting information, from just using simple Amazon-style star ratings for paths, to more complex trust mechanisms based on user history, peer-reviews, or user reputation. For example, Google has a peer-review system for edits you make to their maps.

### **Nick Ford**

I think this is a great idea! I would recommend checking out Google Map Maker, a crowd sourced tool where average folks can add pedestrian paths, rail lines, realign road polylines, and lots of other things.



<http://www.google.com/mapmaker>

Once the people make the reviews (I think they need to have a Google account), they go for review before folks at Google as well as others in the community. Eventually changes can be published.

I looked through, and I didn't see anything about accessibility, but it might be a good idea to contact Google and see if/how we may get this feature added. It doesn't seem like it would be that hard to add, especially because of the range of options you can make for a trail or path, such as paved, gravel, grade, among others. Perhaps it would be easy to add? Hopefully this helps!

**Jeff Mansker**

Awesome suggestion!

**Susans**

A way to include this information on GPS devices would also be very helpful to those that drive. If it were me, that info would be useful to determine where to park to have the best accessibility.

Love this - ok, what's the next step to get this going!!!

**Yochai Eisenberg**

Great ideas here. Excited about what's been written already and the OpenTripPlanner. I've been exploring this area for awhile now too. I had helped with this report a few years back: <http://www.geoaccess.org/> and we touched on some similar ideas. One technical aspect I'm wondering about is the need for sidewalk GIS layers to allow for trip planners to direct to one side or the other based on accessibility scores. They would also allow for more accurate modeling. I think... Or do people use an easier approach for the OpenTripPlanners. I think if people could click on the paths and then enter information about particular paths, it will be easier as the network will already be built. It is difficult to create a network from scattered array of sidewalk paths that can be used for navigating and routing.

**Sean Barbeau**

Yochai - OpenTripPlanner uses sidewalk data from OpenStreetMap (OSM - <http://www.openstreetmap.org/>), which is like a "Wikipedia" for geographic data. OSM has a tagging system for labeling sidewalk attributes such as slope, curb cuts, stairs, tactile paving, and whether a segment is generally traversable in a wheelchair. We "micro-mapped" pedestrian paths for our campus (University of South Florida) in OSM, and OpenTripPlanner correctly plans trips here (including wheelchair accessible routes, as shown here - <http://opentripplanner.usf.edu/#/submit&fromPlace=28.065421,-82.410588&toPlace=28.058754,-82.416196&mode=WALK&min=QUICK&maxWalkDistance=840&walkSpeed=1.341&time=2:53pm&date=5/21/2014&arriveBy=false&itinID=1&wheelchair=true&preferredRoutes>



=&unpreferredRoutes=). If area sidewalks haven't been mapped in OSM yet, and you have GIS data for sidewalks (e.g., ESRI shape file), there are ways to upload this information into OSM, and use it in OpenTripPlanner. So, OSM is a good place to store objective data about sidewalks. For more subjective rating data, we'd need to store that information elsewhere.

### **Idea Number 10 - Operation Transportation Finder**

**Topic:** Vision

**Votes Up:** 25

**Votes Down:** 1

**Total Votes:** 26

**Percentage Up:** 96%

**Comments:** 4

**Author:** Ray1530

Operation Transit Finder would be an app that runs on a smart phone. It takes advantage of the location services on your phone. When you go to a new city or metropolitan area, you could use this app which would identify your location, and bring up information on all of the available transportation options in the area where you are. For example, if someone came into Chicago, this app would provide information on the Chicago Transit Authority, Metra and Pace systems.

Through thi app, you could input where you want to go and it would tell you which routes to use to get there. Additionally, it would provide information on how to make the trip using paratransit services, and if there are other services in the area such as taxi cabs, Uber and Lyft.

### **Rbrooks**

Although many transit agencies have websites with the type of information you are recommending, and although off-the-shelf apps like Navigan have some information, I am not aware of any app that has all such information in one easy-to-use and accessible place. I think the idea is a good one. Issues to be addressed include: 1) Updating content; 2) Which modes to include and which go beyond a reasonable scope for such an app; 3) How much information to provide as the amount of detail is almost endless4) What about path-of-travel issues? These are just as daunting and perhaps more limiting than knowing one's travel options. Actually, I'm surprised someone hasn't already developed this one.

### **Nick Ford**

One service which may be beneficial for this is a new upcoming app called RideScout. This is an app which pulls together all the different modes of transportation in a given city. It covers everything from bike sharing, scooter rental, bus, taxi, car share, rideshare, parking and walking directions. It really is amazing how much it encompasses. It has been released in five cities so far: Boston, DC, Chicago, San Francisco, and Austin, and people love it. Here is the website:

<http://www.ridescoutapp.com/>

You can download it for iOS and Android, and I've tried it out. Perhaps with improvement and dialogue we could include issues around accessibility, such as sidewalks and walkability.

### **Steve Yaffe**

Keep in mind that transit, paratransit, and taxi services all train the drivers, inspect the vehicles, and meet insurance requirements that engage even when the vehicle doesn't have a passenger inside.

That isn't verifiable with Uber or Lyft. They may say they do some of those things, but talk is cheap.

### **webbmaw**

There are a few of these apps out there for specific communities, but they have different interfaces and provide different levels of satisfaction in terms of ease of use and reliability of information, or even content of information. There needs to be a nationwide RFP process that would encourage companies who already in the transportation and mapping business to get involved and compete for the best product. Either that, or the existing ones need to be expanded to cover more cities.

### **Idea Number 8 - Travel Assistance Device**

**Topic:** Intellectual

**Votes Up:** 24

**Votes Down:** 3

**Total Votes:** 27

**Percentage Up:** 89%

**Comments:** 7

**Author:** Nevine Georggi

The Travel Assistance Device (TAD) is a mobile application for global positioning system (GPS)-enabled cell phones that helps new transit riders navigate the public transportation system. TAD prompts the rider in real-time with a recorded audio message (e.g., "Get Ready" and "Pull the Cord Now!"), visual images, and vibration alerts when the rider should pull the stop request cord to exit the bus. Personalized trips are planned for each traveler using the TAD web page.

Automated alarms can be triggered and the travel trainer and/or parent/guardian remotely alerted in case a rider wanders off their pre-determined path. Traditional phone communication is possible between the rider and the trainer allowing them to guide the rider to the correct location if they are lost. More information at <http://www.locationaware.usf.edu/ongoing-research/projects/travel-assistance-device/>

### **david.mcmaster**

Sounds like a neat idea. In my experience, we have some challenges to overcome with GPS accuracy in urban canyon environments.

### **Nick Ford**

I am very interested in this idea. We are looking at implementing some sort of device/app here in Vancouver, WA to help riders in the area. The only issue we are running across is the division between feature phones and smart phones.

The problem is that the technology for feature phones works in an entirely different way than the technology for Android and iOS apps. Because of this, many feature phones require custom apps, usually from their manufacturers (Nokia, Samsung, ect.) in order for it to work on the phone. There is no underlying operating system to utilize like Android or iOS.

For smart phones, I have found many different, and free, apps which are called GPS alarms, designed for regular commuters. The basis is that the commuter puts in their final stop (bus, train, tram, ect.) on a map, and when their device comes within a set distance of that point (100 meters, 500 meters, or custom set), it will make the phone make a noise, vibrate, or set off an alarm to "Pull the Cord" or signal the stop. (Or if you are riding a train, to get ready to depart).

I am thinking that with the proper training, folks with cognitive disabilities, or just the public in general, can easily bookmark their stop, and the phone will let them know when to get off.

The other option we are looking into is using Google Maps directions (integrated with your local transit), and training folks on how to watch their location (the blue dot) on the map until it comes close to the last stop on the map/directions (usually a white dot), then pulling the cord or signaling the stop. This is a really simple solution, and for folks with smart phones, is free, and really easy. Its how I learned my transit system when I first moved here.

Sadly, I haven't seen an app which can combine directions service with a GPS alarm, but it seems like it should be relatively easy to do. With the GPS alarm you get an alarm or signal, and with Google Maps you get the full set of directions to and from the bus stops themselves.

Here is a link to a really popular GPS alarm in the Google Play Store: <https://play.google.com/store/apps/details?id=com.sandyapps.alarmgps>  
Something to look into! As for the feature phones, I tried messing around with some code, but it looks like it would need cooperation from the individual manufacturers to get an app created.

#### **Nick Ford**

I know that for smart phones the location also uses wi-fi networks as well as mobile data to triangulate location if the GPS is not available. Usually in big cities this is sufficient enough to get directions/track location. But it depends on if the app can also use the mobile data and/or wi-fi (if you are connected) to do this. I know Google Maps does, but I'm not sure about other applications.

Feature phones (like those used with the TAD in Florida), I'm not so sure about mobile data location services. (See below comment for more feature phone difficulties).

#### **Renee Arrington-Johnson**

I put a disagree by mistake and can not seem to undo it...sorry

#### **Darlene McGraw**

This sounds cool, I have noticed myself I'm not close enough to the pull cord, or I can't pull it I have seen others not be able to pull it we should be able to have our phones/other devices announce "Pull Cord" when we are ready. The bus should also announce better to make sure everyone knows where the bus is.

#### **Webbmaw**

Another thing that would be possible, is to have your device signal the bus's system to activate its stop request notification to the driver. There is no reason why ou should have to pull a cord or find a button if your device can do it. Additionally, most feature phones and smart phones now have 4G or

LTE capabilities. They should be able to triangulate between 3 cell towers if GPS is not available. This would be a sort of reverse of who 9-1-1 systems locate you when you call them.

**Idea Number 18 - Mandate easy to use securement rings on power wheelchairs.**

Topic: **Mobility**

Votes Up: 23    Votes Down: 0    Total Votes: 23    Percentage Up: 100%    Comments: 3    Author: **crawford-scott**

Many power wheelchairs are being manufactured without easy to use (or reach) securement rings. Consequently, it takes too long for paratransit or fixed route bus operators to secure the chair. Others aren't being properly secured at all. DOT needs to work with wheelchair manufacturers to STRONGLY encourage strong, easy to reach securement rings on all wheelchairs.

**Rbrooks**

I like the idea, but I'm not sure USDOT will have much impact. I recommend that USDOT work with Department of Health and Human Services, Medicare and private health care insurers to develop recommendations. Ultimately, what will motivate manufacturers is hearing with one voice from all of the large purchasers of mobility devices. In short, USDOT can serve as a catalyst for the discussion, but since USDOT doesn't buy the equipment, the ultimate demands need to come from those who do.

**crawford-scott**

Oh, I hear you, and agree. It will be best coming from the consumers. When I was in Washington, I spoke with several wheelchair manufacturers and stressed the need for EASY TO REACH securement rings. They seemed to listen. I've also talked to my friends in the Custom Rehab Tech industry...perhaps if people from different angles converge on this fairly simple idea, it will happen.

**gerardo.sanabria**

This issue is an important concern for transit providers, as it is a challenge to safely secure the many types of wheelchairs; with some of them, one cannot safely use the "tie-down" hooks or straps—they lack securement points. Moreover, the stability of the three-wheeled motorized chair when it is tied-down on a bus becomes a real concern for safety as the bus turns—these three-wheeled chairs want to fall-over and have toppled when the bus turns; I attribute their instability to their 3-wheel base, that does not provide sufficient stability when the bus is turning. I believe that the National Highway Traffic Safety Administration regulates automobile standard for seatbelts on motor vehicles and thus it might consider extending the regulation to improve and facilitate the safe securement of wheelchairs on public transportation

**Idea Number 7 - Cross Walks for those with limited mobility**

Topic: **Mobility**

Votes Up: 22    Votes Down: 1    Total Votes: 23    Percentage Up: 96%    Comments: 8    Author: **Community Member**

When a cross walk button is pushed it changes the length of time the light stays green. Ever saw a person who is using a wheelchair or on crutches try to cross 6 lanes of traffic? Some lights are so short even able-bodied people will have to run the last 1 to 1 1/2 lanes to get to the sidewalk safely. Lights are set for cars, not people. Suggest is that the light would stay green longer, only if the button is pushed.

### **Michael Bailey**

We really need crosswalks and crossing signals that have the disabled community in mind. The majority of these in the United States are set up with car traffic in mind and people whether able bodied or disabled a secondary consideration. The buttons to punch to activate the crossing signal need to be at a level easily reached by someone in a wheelchair and include an audible sound or announcement when it is safe to walk and when the light is about to change. Curb cuts need to be wide and the street where the crosswalk will be located needs to be free of dips or potholes and it needs to be well lighted. I would also support the installation of traffic control cameras at these locations because history shows that where traffic cameras are located, drivers pay more attention to the road and what is in front of them. Having safe crosswalks is key to having safe bus stops and a safe public transportation system. Every area of the country has a long way to go on this, even with the ADA. I am in Orange County, California, and we have some towns--San Clemente, San Juan Capistrano, Laguna Beach--where some streets are so narrow there are no sidewalks and I see regularly people in wheelchairs who are forced to be in the street in the wheelchair because they have no other options on the street where they live.

### **Susans**

This is so very true! I can't imagine this would be a difficult fix, perhaps it's just a matter of making the issue known to the people that can make the change within the community...

### **Jonathan Antin**

One possible technological solution is to make use of the emerging Connected Technologies set of solutions. For instance, anyone with a mobility impairment could carry a device which could communicate with the lighting infrastructure (e.g., via DSRC) -- so long as the individual started across during the "Walk" cycle, it would remain in the "Walk" cycle for as long as it takes for the person to safely reach the other side. Admittedly, there are many questions about this type of approach which would need to be carefully considered and thoroughly researched (e.g., costs of widespread implementation, traffic flow disruptions, human factors, user acceptance, etc.).

### **Rbrooks**

I believe that the newer pedestrian signal technology automatically lengthens the pedestrian cycle. Example: without pressing the button, the walk cycle is 10 seconds; with the button pressed, the cycle is 20 seconds. These settings are user-defined, so the real issue might be that the traffic engineers don't have an appreciation for how long the walk cycles should be. I'm aware of some more enlightened traffic engineers who have put themselves into a chair to hazard a crossing. I'm betting those guys and gals know how to set their cycle times. ... Anyway, I think the technology is there; we just need to figure out how to educate the engineers to use it correctly. Same issue is true for audible pedestrian signals. They're available, but no one seems to know how to set the volume consistently and so that it can be heard.

### **Pwg**

I was thinking about something like this, but worried the potential for abuse would cause problems. Changing the cycles at peak hours can cause major disruptions to traffic flow which would be worth it if a person with a disability needed it, but it does leave open the chance for someone who was not disabled to abuse and mess up the system. The wrong person intending on using it only to cause disruptions could create major gridlock in some cities. As you mentioned, it would really need to be researched before implementing.

### **5/26/2014 5:16:18 AM**

For ped crossing time, I believe most engineers follow the MUTCD requirement of using 3.5 fps unless as you point out they are aware of site specific conditions requiring a longer length which is also addressed by the MUTCD. (<http://mutcd.fhwa.dot.gov/htm/2009r1r2/part4/part4e.htm>)

### **Scott Matlofsky**

Better yet, add motion sensors to all light polls and sign polls and as long as the sensors detect pedestrians within that square (the actual intersection) the lights don't change. there can also be an electronic voice that says something like step lively or something kind to motive them if time is getting excessive for them to cross.

### **Neatebox**

Hi all,

Great debate. I have just posted with a review of my own work in this area. I note the need for extended crossing times. This is an important debate but is not without its complications. Increasing crossing times can have negative side effects.

The crossing which remains on red when there is no pedestrian crossing the road can prompt drivers to drive through red lights.

The knock on effect for city centres can be dramatic with backed up traffic.

Both scenarios are taken into consideration when setting a crossing hence the need to find an optimum crossing period.

My solution automatically changes the crossing time dependent on the pedestrians requirements and is an automatic button push from the persons smart device. No need to find the pole and no need to press the button. Take up optimum position and wait for signal knowing the crossing time has been adjusted accordingly. 18 years working with Guide Dogs led me to come up with the solution. Please check out Neatebox.com and contact me at Neatebox@icloud.com for more info.

### **Idea Number 12 - Transit Pilot**

**Topic:** Vision

**Votes Up:** 21

**Votes Down:** 1

**Total Votes:** 22

**Percentage Up:** 95%

**Comments:** 2

**Author:** rbrooks

Blind and visually impaired transit riders often report difficulties with a variety of transit-related challenges, including:

- Planning a safe route between the origin address and the nearest transit stop or station
- Identifying the actual transit stop or station entrance

- Navigating between a transit station entrance and the correct platform
- Identifying which bus or train to board
- Identifying the appropriate stop to deboard
- Navigating between the vehicle and the most appropriate transit station exit
- Planning and following the best and safest route between the transit stop or station and the final destination

Traveling on transit is like sailing a boat. In the same way that a good captain can navigate his sailboat through the roughest waters, avoiding underwater shoals, submerged reefs and dangerous cross currents, Transit Pilot would be able to assist any blind, visually impaired or mobility-impaired transit user to navigate from origin to destination safely and efficiently. Transit Pilot is envisioned as a smart phone app that uses data provided by transit agencies, other transit riders and other third-party mapping services and social media sites to create a comprehensive and detailed environment where users can plan and execute their trips on transit. Information which would be gathered and used by Transit Pilot would include:

- Detailed network of a metropolitan area's streets with sufficient detail to pinpoint any physical address as well as the ability to match a smart phone's current location with a physical address
- Map of all transit routes within the metropolitan area with detailed schedules for each route – For each route, the app would be able to identify the provider, the transit mode (bus, streetcar, trolley, light rail, commuter rail, etc.), the frequency and the days and hours of service.
- Geocoded points for all bus stops and transit stations within the metropolitan area – For each stop or station, the app would be able to identify which routes are served by day of week, time of day, etc.

Information about the accessibility of specific streets and segments of streets – This information would be able to be directly entered into the app or mined from other social media sites, thereby enabling any subscriber to receive all information, regardless of source.

With the information housed within Transit Pilot, the user would be able to enter starting and ending addresses. With this information, Transit Pilot would present up to five travel itineraries based on user-defined priorities, including, but not limited to: fastest time, all bus, all rail, shortest walking distances, etc. The app would also provide walking directions between the user's origin and the nearest transit stop or station and between the end point stop or station and the user's final destination. If there is accessibility-related information available for the user's path of travel between origin and transit or between transit and destination, the app would provide this information, and because transit stops and stations would be geocoded, Transit Pilot could guide the user to the stop and provide notification to the user when he/she has reached the stop or station. Transit Pilot could also include way-finding information for complex stations which could guide the user between the entrance he/she has entered to the desired platform or stop. At the stop or station platform, Transit Pilot could be designed to interact with transmitters installed in transit vehicle head signs in order to announce the line or destination of approaching vehicles. While on board, the app could use the vehicle's GPS location to announce major stops or stations and to notify the user of the distance to his/her point of disembarkation. This app would be able to support transfers. At the user's destination, the app would work in reverse, pointing the way between the transit vehicle and the entrance of the station (if applicable) and on to the user's final destination. To make the app more user-friendly, Transit Pilot could include:

- Links to transit agency websites
- Links to transit agency phone Numbers with call-out capabilities
- Information about fares and a fare calculator

- Links to post status updates to Facebook, Twitter and other social media sites
- Ability to message other users and to send itineraries to other users
- Ability to plan simultaneous trips for multiple users—either from the same origin or to arrive at the same destination and at the same time (such as planning trips for multiple attendees of a lunch meeting) (Urban Pulse is an app which possesses at least some of this functionality.)
- Level path-of-travel mode – This mode would conduct all trip-planning using accessible routes and would flag any path-of-travel which is either accessible or which may not be fully wheelchair accessible

There is a lot of development here, but this is the type of app that would help with a Number of very difficult transit tasks. These include: route planning, navigation to/from transit stops, identification of the actual stops, determining which vehicle to board, way-finding along a route, identifying the desired stop and navigating between transit and the final destination. This app may also have relevance for people using mobility devices and non-disabled travelers who want a good end-to-end app for planning and executing a trip—and particularly in an unfamiliar city or metropolitan area.

### Steve Yaffe

Ron, the GPS long/lats for some of these parameters would need to be very specific. Would this app profit by operating in dual modes? GPS and RFID way finding tags similar to those being used in warehousing and at the Atlanta Veterans Affairs hospital? GPS to get you close and the RFID to trigger a voice for direction, degree turns, something more precise than "warmer, warmer..."?

### Rbrooks

I'm not an expert on the differences between GPS and RFID technologies, but I'm for using whatever technology will accomplish the goals. If there is a way to use both types of data/technology to make the app work better, then I'm all for it.

### Idea Number 2 - Help people feel safe riding transit

Topic: Cross-cutting solutions

Votes Up: 18

Votes Down: 1

Total Votes: 19

Percentage Up: 95%

Comments: 3

Author: Community Member

Often people who want to “retire” from driving have difficulty transitioning to public transit and become dependent on friends and family for rides. A technology that helps people feel more secure about riding transit. This would also be helpful for people with cognitive disabilities, especially people who are on the autism spectrum. It would be helpful to have a technology that informed riders when to expect the bus/train in real time, know when they have reached their destination, have a safety plan and contacts in case of emergency.

### gary.dubourjr

My area in Virginia we have those audible ACS announcements on the buses and light rail, but we need more of them. More stop announcements.

### Phil Winters

See the Travel Assistance Device idea. This software was developed to be used on a flip phone. The trip is planned online and downloaded to the phone. The prototype was developed with the assistance of Hillsborough Area Regional Transit in Tampa to help their travel trainer assist individuals with



cognitive disabilities to use fixed route transit service. It alerts the individual who may have difficulty recognizing landmarks (including new transit riders) that their stop is approaching so they can signal the driver they want to get off. Funding was provided by Florida DOT, USDOT through the university transportation center program, and TCRP Transit IDEA funding was used to fund the prototype. Full scale demonstration is needed.

### Susans

I completely agree. When it comes to older adults - technology sometimes makes them feel uncomfortable no matter how easy it is to use. For older adults an actual Travel Trainer would be more effective but the younger population and even many of the "younger" older adults they are familiar with smart phones, etc. & this would be great!

### Idea Number 11 - shared rides

**Topic:** Mobility

**Votes Up:** 18    **Votes Down:** 0    **Total Votes:** 18    **Percentage Up:** 100%    **Comments:** 3    **Author:** Community Member

There are some with disabilities that CAN safely drive. In communities in which there is NO public transportation, why not develop a ride-sharing system in which those disabled drivers would be employed to provide rides for individuals with disabilities who cannot drive?

### Phil Winters

Good idea! There often are ridesharing programs that help commuters find rides/riders. Some have expanded into help form SchoolPools (instead of every parent dropping their child off at school, look to carpool). They might be able to help match people willing to assist the disabled. There are concerns about liability but we conducted a research project several years ago, Programs That Match Seniors With Volunteer Drivers, that helps describe the issues.

**Abstract:** Seniors need adequate transportation, not only to maintain their health and vitality, but also to stay active in the community and fully participate in life. Transportation is the essential link to basic services needed by the aging population. The problem that this research project addresses is the documented general lack of transportation options suitable for seniors who are no longer able to drive, particularly those who are too frail to use public transportation. The development and operation of volunteer driving programs for seniors has been one approach to solve this problem. However, these programs encounter various operational challenges, including a demand for service that is far greater than program capacity. Challenges involve configuring volunteer driving services that can be sustained over time within the limitations of scarce resources. While the issues facing volunteer driving programs are varied, the most significant problem is insufficient Numbers of volunteers.

Protecting the safety of riders and drivers and properly insuring a program are both fundamental to the success of a volunteer driving program. Liability and insurance problems can profoundly influence how a volunteer program operates. This research project had three objectives: to identify and explore the challenges of developing and operating a volunteer senior mobility driving service; to propose solutions to establish successful programs; and, to provide guidance on best practices that could be used by a variety of audiences, including transit agencies, paratransit agencies, non-profit programs, social service agencies, volunteer driving programs and policy makers. This

report provides recommendations to volunteer driving programs on how to enhance risk management and recruit volunteers. Recommendations are offered to public transit agencies and commuter assistance programs on how to coordinate with volunteer driving programs. Recommendations are provided for raising public awareness and legislative remedies to enact liability reforms.

Final report is at <http://www.nctr.usf.edu/pdf/77717.pdf>

### **Community Member**

The ridesharing idea is a good one, especially in suburban areas that are not served by public transportation. It will be impossible to find volunteer assistance on a constant basis unless you are fortunate enough to find healthy individuals from your local nursing home or church to help out. There is also a plethora of volunteers to be found in the local high schools with the relatively new high school graduation requirement. Many high schools around the nation have adopted criteria into their curriculum where the students must perform X amount of community service hours before graduating. This could be a great source of volunteer help; however, the students are usually still teenagers and the insurance component may not be an attractive combination. It is still worth checking into.

### **Community Member**

If you are disabled and approved to use a paratransit service there should not be conditions on which you can it. Maybe Septa CCT which is in PA. Septa CCT should have an online Scheduling system like Rover which is another Paratransit service in PA. This would cut down on wait times on the phone. Septa should schedule things better for drivers so riders can get picked up or dropped off as close to there scheduled times as possible. Tgey should have an evaluation system to track how many times they are late or on time. I think they should have more drivers for designated areas this would cut down on traval time and distances for CCT drivers.

### **Idea Number 3 - More Options**

**Topic: Mobility**

**Votes Up: 16    Votes Down: 1    Total Votes: 17    Percentage Up: 94%    Comments: 6    Author: gary.dubourjr**

I live in area where options can be few and limited. I also happen to have a disability (cognitive impairment though I am able to ride my bike.) We need more audible crosswalks, and just more crosswalks period. We also need more public transportation options such as limited and rapid buses, better frequencies, more light rail. We need also more ADA curb cuts.

### **david.mcmaster**

I came across some appealing audible cross-walks in Arlington VA that were the first of their type I had experienced. As a casual observer, I wasn't aware of the meaning of the different sounds from one crosswalk to another, but it would certainly be useful to have the sound used provide additional information on the crosswalk (direction(s) of traffic, Number of lanes to be crossed, odd or even block Numbers, etc. come to mind).jrapp

5/21/2014 12:12:47 PM

There should be more affordable para-transit services for people with disabilities, especially for those who have mobility issues. They cannot always rely on public transportation to go to places, such as public buses.

**gary.dubourjr**

I wouldn't know since we only have one audible crosswalk for the entire city here, but ones I've seen & heard in Richmond, Va, I like even though they only countdown the seconds left for crossing. I agree the Numberber of lanes to be crossed idea is a good one.

**gary.dubourjr**

That would likely require changes in federal laws that currently govern how paratransit services are priced. Unfortunately, due to the special equipment that A PARATRANSIT VEHICLE MAY NEED OR some other circumstances, such as the life span of a paratransit vehicle is much shorter than it is for a bus, these may play a role in the higher fares. At least for non-ambulatory paratransit users, if the agency had the services of a taxi company for example, like they do for their "guaranteed ride home programs", for employees, that could be cheaper, as often the cab fare is the same as regular fixed-route bus fare, but they would haveto do that without the restrictions the "guaranteed ride" programs normally have (i.e. maximum of 3 riders per year).

One good thing I always tout of my former transit system is that they had some routes that could be deviated by request, to help riders who are unable to access the regular bus stop. Some agencies charge extra for this, mine did not. You can use a "cutaway" van for the entire route, or a 30 or 35 foot city bus, if space and turning radius permit, that way, the disabled can also enjoy a ride that is tailored to their needs, and maybe not as expensive as paratransit.

**Jwaterman**

Too often we are looking for a silver bullet to solve transit issues for individuals with disabilities. Technology is great but it needs to be tied to travel training. This is especially true for individuals with autism and developmental disabilities. For some the tech may be to distracting and make traveling more of a challenge. The ability to combine the bike, tandem or trike is a low tech method of travel for individuals with disabilities. The use of bike and accessible bike shares will expand our transportation system for everyone.

**R Beyerle**

Accessible cabs that integrate up-to-date technology are another option to add to the mobility mix. Easter Seals Project ACTION received the following comment for the dialogue via our project action email:

"I have LGMD2A I needed to travel to London a couple of times recently. To be honest I dreaded the Idea of travel to a foreign country with my disability, but I have to tell you those wonderful cabbies in those beautiful black cabs ARE the gold standard for those of us that need assistance in getting around. Knowledgeable understanding cabbies where all cabs are equipped to handle our special needs!"

Bill

**Idea Number 31 - Foster cooperation and coordination**

**Topic: Cross-cutting solutions**

**Votes Up:15    Votes Down: 0    Total Votes: 15    Percentage Up: 100%    Comments: 4    Author: Loren Bawn**

DOT, DHS, VA, and DOL all fund transportation. Much of the funding is restricted to certain people based on categorical eligibility for particular programs. This is grossly inefficient. Require any agency giving clients rides using federal funding to participate in a coordinated transportation system, and put out "increasing match" grant funding for communities to develop the coordination infrastructure. If a veteran can get a ride to work on a Medicaid-funded bus, for example, the system would be less wasteful and more responsive.

**Renee Arrington-Johnson**

So true! We have to stop funding in "silos" The only way to use funds effectively is for all functional groups to work together for the common good.

**Susans**

Absolutely! We should never penalize for coordination efforts!

**Steve Yaffe**

If I might tag on: enable paratransit providers to use computer-assisted scheduling with an accounting system that proportionately splits ride time among agencies sponsoring rides on shared-ride services (system exists, I wrote it in Lotus in the early 90's and had it applied to Trapeze Pass at a former worksite) & Allocate Capacity (fixed) costs (infrastructure, insurance, supervision, IT, etc.) to peak period service while spreading variable costs proportionately according to ride time. First will financially reward agencies to allow their rides to be scheduled based on geography and ride-time requirements. Second will reward agencies and individuals who shift their ride time to off-peak.

**melvinjohnson20774**

Ideally there should be one entity per service area that coordinates the funding from all sources. This entity would be the entry point for all clients. Then after vetting the entity will determine based upon need the appropriate mode.

**Idea Number 20 - Integrate smartcard technology across all modes**

**Topic: Cross-cutting solutions**

**Votes Up:14    Votes Down: 0    Total Votes: 14    Percentage Up: 100%    Comments: 2    Author: R Beyerle**

While smart cards are not a new idea in the technology arena, expanded use of smart card payment across public and private modes in a community could benefit all users of all abilities, particularly when it comes to getting to that "last mile" destination. An example would be better integrating smart card payment options so that one smart card can be used to pay for fixed-route service, taxi service, bike share, and parking. When stepping off a train (which I traveled on using my smart card), I'd like to be able to reach my final destination by using that same smart card to get on a bus, rent a bike, transfer to a ferry or pay for a short taxi or shuttle trip. As modal options expand in many U.S. communities, it would be gratifying for payment options to become more streamlined so that

travelers of all abilities are less apt to be "stranded" or subject to longer wait times during off-peak hours if they can take advantage of transferring to a different mode that participates in a unified payment system. On a similar note, the program could incorporate the ability to wave my smart card at a parking meter and have a sensor (on the pavement, in a card chip, or perhaps on my vehicle) record the duration of my parking session. This would eliminate the need to dial a phone Number to pay for a parking session. (Some cities' meters are already allowing smartcard payments but are they integrated into the community-wide transport system?)

**susans**

It would be incredible if this could happen :)

**Bill Casson**

This is the idea with NFC. In several different Asian countries, the use of NFC at POS is nearly universal. The idea is, anytime you would use a credit card or other payment type, NFC would also be an option. In the Asian markets noted above, the NFC chip is usually part of an individual's phone. An application on the phone allows the user to determine which payment method the user would like to use, and the NFC chip would transmit the appropriate information to the POS machine. If an individual does not have a phone that supports this, low-cost solutions like a smart card except with a static NFC chip that is permanently linked to a credit or debit card or a declining balance account that can be refilled should be available. Thus, your bus fare, train fare, ferry fare, etc. could be paid easily with one device or card.

**Idea Number 22 - Hearing Loss and Public Transportation**

Topic: Hearing

Votes Up:14

Votes Down: 0

Total Votes: 14

Percentage Up: 100%

Comments: 2

Author: Carrie Spangler

Hearing announcements that are made in the airport, airplane, bus, train, etc. is difficult and sometimes impossible to understand. It would be helpful to have an APP that would provide captioning for whatever location you may be in.

**Bill Casson**

I believe this could be useful for everyone. The deaf and hard of hearing aren't the only ones who cannot understand the announcements. It would be nice to have them displayed on a sign and also available via an app that is accessible to blind individuals as well.

**Bfschultz**

To further comment on Bill Casson's remarks, I think that such signs should be in rail, bus and airport terminals and on the buses, trains and planes themselves.

**Idea Number 14 - Improve bus stop location accuracy via mobile apps**

Topic: Cross-cutting solutions

Votes Up:11

Votes Down: 0

Total Votes: 11

Percentage Up: 100%

Comments: 0

Author: Sean Barbeau

All pedestrian/transit navigation apps rely on accurate bus stop location information to provide good directions to users. For example, to tell a transit rider where to board a bus, the app needs an accurate location for the rider's origin stop. The problem is that many transit agency bus stop inventories have inaccurate position information for many stops. Therefore, a solution is needed to help improve the accuracy of these bus stops inventories. This idea would leverage mobile apps to help enhance the position accuracy of bus stops via the embedded GPS technology in mobile devices. A scalable solution would likely include crowd-sourcing, which would allow users to contribute improvements as they detect a problem with bus stop positions. Users could flag problematic stops, and contribute position information that the transit agency could use to improve their bus stop inventory. OpenStreetMap.org, a "Wikipedia" for geographic data, could be used as a data source. Various intelligent methods could be used to help enforce trust of user edits and quality control of stop information.

### **Idea Number 13 - Magnify the world with Google Glass**

**Topic:** Vision

**Votes Up:**10

**Votes Down:** 1

**Total Votes:** 11

**Percentage Up:** 91%

**Comments:** 3

**Author:** Sean Barbeau

Google Glass is a wearable technology that has a small display mounted on a pair of glasses frames. Large print and high contrast navigation information, such as real-time bus arrival times or pedestrian/transit step-by-step directions could be displayed to the user. This information could also be spoken to the user via the bone-conduction speaker. Additionally, the camera mounted on the front of Glass could capture a first-person view and magnify this image on the display. This would allow the user to see a "zoomed-in" view of whatever they are looking at to help them navigate their environment. Real-time image processing could potentially enhance this image to increase the contrast and make certain details easier to see for individuals with low vision.

#### **Susans**

Great idea, is this something that is affordable to the average person?

#### **Sean Barbeau**

Thanks! Google Glass is expected to launch to consumers later this year, so we will find out the consumer price at that point. I personally expect it to be on the order of a mid to high-end smart phone in terms of cost to consumers (~\$300-500). An early developer version (i.e., "Explorer Edition") can currently be purchased directly from Google for \$1500.

#### **Omkar Dokur**

Great Idea !!

### **Idea Number 21 - Improving in-vehicle notifications**

**Topic:** Hearing

**Votes Up:**10

**Votes Down:** 1

**Total Votes:** 11

**Percentage Up:** 91%

**Comments:** 0

**Author:** neal

There needs to be a consistent UI across vehicles regarding notifications to the driver and/or passengers. Especially with navigational aids and safety related warnings. Too many vehicles emit beeps and boops and give too little visual indication of anything going on. My suggestion is that every audible indication has a matching visible indication. Audible sounds and visual indications (particularly icons) should be standardized across all vehicles so there is no confusion.

Visual indications should be in places (heads-up, mirrors, dash display and navigation system) where a driver's eyes will be.

### **Idea Number 16 – Outreach**

**Topic:** Cross-cutting solutions

**Votes Up:**9

**Votes Down:** 1

**Total Votes:** 10

**Percentage Up:** 90%

**Comments:** 0

**Author:** jcornish

More resources outreach needs to be distributed to seniors and disabled communities. Each transit agency needs to make sure they are getting much needed resource information to key locations and informational sites via internet, face-to-face, on-board, apps and where they live.

### **Idea Number 40 - Flag stop service notification**

**Topic:** Cross-cutting solutions

**Votes Up:**8

**Votes Down:** 0

**Total Votes:** 8

**Percentage Up:** 100%

**Comments:** 3

**Author:** Donna Smith

Flag stop service can be problematic for both people with disabilities and vehicle operators for a Numberber of reasons including:

- knowing when the bus you want is approaching in time to flag it
- knowing that the operator has seen your effort to flag the bus
- knowing when to alert the operator that you are approaching your destination
- visibility of passengers who are in wheelchairs or who need to sit for other reasons
- difficulty or impossibility of making eye contact to be certain that the bus should stop

Nevertheless, flag stop service is often the best choice in certain situations and can make the difference between the ability to offer public transportation or not. To resolve the issues mentioned above and to perhaps bring a greater sense of reliability to all customers, I envision a smartphone app that allows the customer to indicate readiness to catch a particular bus and uses GPS to send the customer's location to the bus operator or perhaps just pings the operator as he approaches the location, and in turn vibrates/signals the customer that the bus desired is approaching. I anticipate that while such an app will increase accessibility for people with disabilities, it will be widely used by all passengers of flag stop systems. An additional consideration is that the same type of capability could be made available on stand-alone devices for customers who do not use smart phones. While this probably isn't a large Numberber of people, it may include some older adults not interested in the newer technologies and people who can't afford smart phones.

### **Steve Yaffe**

Great idea, but the signal to the bus driver has to be simple and clear - and above all, not distracting.

### Donna Smith

Absolutely. It needs to be a simple and nondistracting as possible for both the user and the operator, but especially for the operator. I'm thinking that the distance for the notification needs to be greater than typical, too, particularly in rural areas where the vehicle may be moving at quite a clip. I really hope we can find a solution for this particular situation.

### Rbrooks

As more and more agencies are deploying smart phones in lieu of more costly dispatch systems--and especially in smaller and more rural systems, this idea seems even more practicable. This is especially true if the Flag Stop System has designated stops that can be geocoded ahead of time and imbedded within the app. Then, the notification could be as simple as a ping with a color change on the location of the next stop the driver is approaching.

### Idea Number 9 - wheelchair upright overhead warning light with an siren alert

Topic: **Mobility**

Votes Up:7      Votes Down: 3      Total Votes: 10      Percentage Up: 70%      Comments: 1      Author: **lblack**

Do you think an upright overhead warning light with a siren alert is needed for the wheelchair? It will allow wheelchair user to be seen standing on bus stops at night, crossing dark lit street and traveling on dark streets. The wheelchair is more than 500 years old. There are more than 5000 accessories on the market for wheelchair user today. Wheelchair users are still using flags, flashlights, helmets with lights that point straight ahead. Wheelchair users are also stilling dying in the street because they were not able to be seen. Every time a wheelchair user travels at night they are at risk. Cars, bicycles, motor scooters all have lights to alert others of their presence. I can not take my wheelchair on the streets at night and say for sure I will make it home safely. There is a device, it is the wheelchair first upright overhead warning light and it is ideas like this that will make a difference in the lives of people with disabilities.. Is this a good idea for you if you are a wheelchair user or know someone who is a wheelchair user? Would you desire this device? google this device and see it for yourself. We need to support this to our government we need to make a stand and help this to become known . We need it to save lives. what is your opinion?

### lblack

I think that wheelchair users are at risk operating their wheelchairs at night it is not enough to just be seen standing on bus stops but when crossing crosswalks, and riding on street in dimly lit areas . Wheelchair users are the only devices on wheelchair that has no known identifiable device to be notice and used to alert others when a wheelchair user in traveling on dimly lit and dark streets . I know this device is needed. I became a wheelchair user in 1990 and in 2001 I almost hit a wheelchair user because I could not see her while driving my car in a storm without street lights. This device will save lives.

### Idea Number 41 - Timely pickups Topic:Mobility

Topic: **Mobility**

Votes Up:7      Votes Down: 0      Total Votes: 7      Percentage Up: 100%      Comments: 0      Author: **Ashley Volion**

There needs to be timely pickup, and phone calls when the driver is in route



### **Idea Number 33 - Wheelchair comfort**

**Topic:** Mobility

**Votes Up:**7      **Votes Down:** 0      **Total Votes:** 7      **Percentage Up:** 100%      **Comments:** 2      **Author:** dorothea.turnbloom

Every transportation administration in a city should have representation from the disabled community i.e physical, visual, intellectual. Secondly, in all buses the wheelchair should be placed somewhere other than over the rear axle. As far as walkways- consideration when building new trails should be paramount. No fancy bricks smooth even trails for wheelchair and those with a mobile disability.

#### **Bill Casson**

I agree that representatives from the community is paramount to providing good services.

#### **crawford-scott**

Agree with transportation advisory boards. I chair a Paratransit board in my area and it makes a big difference. Placement of wheelchairs toward the front of a Paratransit bus does make for a MUCH smoother ride, but alters the braking and weight distribution, which affects handling.

### **Idea Number 32 - Travel trainer and Occupational therapist**

**Topic:** Vision

**Votes Up:**7      **Votes Down:** 0      **Total Votes:** 7      **Percentage Up:** 100%      **Comments:** 2      **Author:** kwhiteman-jones

There needs to be an app for passengers with Visual Disabilities, which would audibly identify the bus stop # (we have individual id #'s for each stop here in Denver, RTD) so they can locate exact location of and unfamiliar stop and so they can call the customer service line and use automated info to hear next 3 times for that route. This could also be used by people who don't have the height to see the stop id#.

#### **Bill Casson**

Would this be part of a cell phone app or a device at the stop itself? I believe that it should be part of the stop. Also, I'm not sure if you can, but I would recommend changing the title of this idea.

#### **Steve Yaffe**

This is very similar to Ron Brooks' idea - please see my comment on that one. However, I'm not keen on cell phone apps - too dependent on cell phone tower capacity. Try making a call when a major event is happening.

### **Idea Number 24 - Knox County CAC Transit Inclusive Transportation Planning Project**

**Topic:** Cross-cutting solutions

**Votes Up:**7      **Votes Down:** 0      **Total Votes:** 7      **Percentage Up:** 100%      **Comments:** 1      **Author:** karen.estes

The Knoxville-Knox County Community Action Committee (CAC) was awarded grant funding through the U.S. Administration for Community Living in partnership with the Federal Transit Administration and the Community Transportation Association of America to develop a tablet-based application that

will help individuals who have a disability communicate with the vehicle operator. CAC has partnered with the University of Tennessee and we should have the application developed by the end of November 2014. We will develop the application to deal with all disabilities. We have been conducting "Meetings in a Box" where we ask seniors and people with disabilities what type of information they need to communicate with the vehicle operator.

### **Stopsafetyfirst**

Fantastic! Can we also have the program/grant, in other metropolitan/tourist driven communities? Like Miami-Dade County, FL. Where our agency program: STOP! Safety First, conducts several workshops and community out-reach events for the challenge community, vets, seniors and people with learning disabilities, and in transition. Our agency, Little River HC&EDC, would be more than happy to become a host/test partner and defiantly would appreciate the opportunity to also apply for the grant(s) available for such a needy program through the state of Florida. Please contact me direct at 786-344-3705 or via email(s) Stopsafetyfirst@yahoo.com & littlerivercity@gmail.com

### **Idea Number 19 - Universal Surface Parking and Accessible Pathways Locator**

**Topic:** Mobility

**Votes Up:**7      **Votes Down:** 0      **Total Votes:** 7      **Percentage Up:** 100%      **Comments:** 0      **Author:** david.mcmaster

It is increasingly common for large parking garages to provide signage at entrances advising parkers where in the garage there is parking capacity, accessible spaces, elevators, and such to help them avoid endless circling in search of an open spot that may or may not be there, or finding a spot only to realize it is not accessible or is too far from an accessible pathway to the final destination. Surface lots and on-street parking rarely have such features and even where this feature is present, it may not include accessibility information (disabled spaces, ramps/curb cuts, sidewalks, etc.). What is needed is a satellite based system for tracking availability of known surface and street parking spaces, including accessibility information and barriers for those with disabilities, for communication to mobile applications that provide driving directions to available parking and accessible pathways. Think of it as "accessible walking directions" and "real-time

### **Idea Number 29 - Virtual Mobility Hub**

**Topic:** Mobility

**Votes Up:**6      **Votes Down:** 0      **Total Votes:** 6      **Percentage Up:** 100%      **Comments:** 0      **Author:** Mike Mullins

A virtual mobility hub would provide real-time, web-based travel information inclusive of all mode types that could be displayed on computers and mobile devices. This would be obviously need to be universally accessible, but travelers with and without disabilities would benefit by having the ability to make travel decisions "on the fly."

### **Idea Number 49 - On call paratransit**

**Topic:** Cross-cutting solutions

**Votes Up:**6      **Votes Down:** 0      **Total Votes:** 6      **Percentage Up:** 100%      **Comments:** 0      **Author:** Kat Lyons

Do away with laws that require vehicles that transport people in wheelchairs to have ambulette type equipment and paramedic training. Utilize and subsidize accessible non-van taxis with door to door service for people with all types of disabilities. These are universal design, and could be used for non-disabled as well.

### **Idea Number 28 - Mobility Device leasing**

**Topic:** Mobility

**Votes Up:**6

**Votes Down:** 0

**Total Votes:** 6

**Percentage Up:** 100%

**Comments:** 3

**Author:** Community Member

My observation is that customers that can afford high quality mobility devices utilize the public transit system more often and with more confidence. If users of motorized wheelchairs had access to a leasing program that provided high quality motorized wheel chairs that included maintenance and loaner program at a reasonable expense it would increase the use of the fixed route public transit systems. What other services could go with this program that would support peoples use of the fixed route service?? Most people can't afford the high quality motorized wheelchairs and expensive maintenance and that is why they many times can't use the fixed route system and have to rely on the complimentary ADA services. Is this observation valid? Would a leasing program encourage people to use the fixed route system over the ADA paratransit service?

#### **sue\_bee**

Oh my gosh, this would be so awesome! As improvements are made to wheelchairs, a brand new wheelchair would not have to be purchased. A wheelchair that is comfortable could be affordable. I only have a manual wheelchair - an electric wheelchair would be such a luxury, and one I could reasonably afford if it were leased.

#### **Community Member**

My thought is that many times people utilize the complimentary ADA service and would prefer to use their motorized wheelchair for a short trip or to access the bus/train. I think of it as a personal electric car. From a trnsait operators viewpoint it has the distinct possibility of being less expensive then complimentary ADA service.

#### **Steve Yaffe**

I'd restrict this service to wheelchairs that are W-19 compliant. This is a standard on wheelchair configuration that enables safe securement of the wheelchairs on transit vehicles (so they don't be come unguided missiles if the bus is Tboned or otherwise brakes too hard or turns too sharp.

### **Idea Number 15 - Auto-Systems for Boarding/Securing Wheelchairs in Vanpools**

**Topic:** Mobility

**Votes Up:**6

**Votes Down:** 0

**Total Votes:** 6

**Percentage Up:** 100%

**Comments:** 0

**Author:** david.mcmaster

Vanpooling is a cost-effective transportation solution for commute to work in urban, suburban and rural settings where traditional transit is not available or convenient. But most vanpool programs fail in forming vanpool groups for wheelchair patrons due to the inconveniences to other riders (who must participate to have a vanpool). Most lifts, ramps and, especially, systems for securing riders require the assistance of others and many systems lead to

long delays in boarding and unloading, adversely affecting boarding time. Furthermore, most systems remove too many seats from the vanpool vehicle for it to still qualify under applicable federal guidelines for seating capacity and occupancy (including the IRS qualified transportation fringe benefit. What is needed are systems that require less intervention by others to operate ramps, fold away seats, and secure the wheelchair rider, and for these systems to operate quickly, reliably and with a variety of wheelchair equipment.

### **Idea Number 47 - The Neatebox Pedestrian crossing solution**

**Topic:** Cross-cutting solutions

**Votes Up:**5

**Votes Down:** 0

**Total Votes:** 5

**Percentage Up:** 100%

**Comments:** 8

**Author:** neatebox

The Neatebox is in advanced stages of development and represents a significant step forward in road crossing safety. With the free application downloaded on a smart device the crossing button is pushed automatically by your proximity to the crossing. The user no longer needs to interact with the button and instead can use their time to take up the optimum position prior to crossing. The crossing is aware of your need for an extended crossing time and changes the period of crossing accordingly. The crossing will also register that it has been used by a person with reduced mobility and a data profile of specific crossings can be collated. "Neatebox Ltd" on Facebook for more info. Please join me.

#### **Donna Smith**

Might this also be useful for any pedestrian? I've noticed that quite a lot of pedestrians who don't identify as having a disability do not actually bother to push the ped button. I think there is a widespread misconception that pushing the button doesn't do anything. Anyway, this app could push the button for everyone and then if you are a person who needs additional time to cross that intersection, it could allow you to choose the option of pushing the button and requesting additional seconds. As a person who is blind, I don't always need additional time to make the crossing. I just need the pedestrian signal to be engaged. However, there are some intersections for which extra time would be very useful and add to my sense of safety when crossing. For those intersections, making the choice of engaging the ped cycle and adding seconds would be very useful. Also, a breakdown such as this would give more accurate information in the feedback portion of the data to traffic engineers.

Great idea!

#### **Neatebox**

Thanks for these points Donna. I will certainly be including your thoughts within my project. Of course the only way to bring a system like this into existence is through public engagement. Please tell your family and friends it's possible and contact me directly at neatebox@icloud.com for more info. Gavin.

#### **Community Member**

I agree with Donna, this device would be helpful for any pedestrian and bicyclist crossing a street.

**Neatebox**

Certainly but it is worth pointing out that the system avoids misuse by ensuring the pedestrian is in position prior to crossing. I wanted to avoid joggers and cyclists abusing the system by changing the lights from a distance. Very valid points though as the system can be used by a wide demographic. Please click "like" and spread the word to other members. Thx loads. .gavin.

**Rbrooks**

One of the major traffic signal manufacturers is pilot testing technology which will allow individuals with a proprietary smart phone app to interact with their devices in much the same way as you are proposing. This technology was demonstrated a couple of years back in the Phoenix area. As I recall, this would require installation of the manufacturer's equipment and use of the manufacturer's app. I can imagine that the proprietary nature of these technologies might make it difficult for a technology like this (whether Neatebox or something else) to be universally effective. How can we ensure that technology of this nature is able to interact with signals produced by a host of manufacturers? After all, even within one city, there are devices manufactured by many manufacturers. Come to think of it: how will Neatebox communicate with existing traffic signals? Also, regarding the comment regarding joggers and bikers, this app doesn't sound like signal prioritization. Rather, it's just a signal actuator. If that's correct, then why not joggers or bicyclists? They have the same needs to cross intersections safely.

**Neatebox**

Hi RBrooks. True. There is of course no reason why the app can not be used by these groups. What we wanted to avoid was the jogger or cyclist operating the lights from a distance. Ultimately the issue is about safety and it would be counter productive to in some way hinder this. We want to encourage safer crossing procedures. I would be interested to know the name of the company which has been carrying out trials if you were able to find out. Thanks for your input.

**Rbrooks**

You could always establish an outer limit/geofence within which the app would be able to function. 20 or 30 feet should do it. As for the company doing the testing, I want to say Polaris, but I'm not sure if this is right.

**Neatebox**

Excellent. Thanks. Within the Neatebox design we had looked at the person being stationary and on the tactile paving rather than at a distance but of course I totally understand the need to look at if not regional requirements then certainly national ones. Ultimately I would live it if this kind of technology could help the wheel chair user, seeing eye dog user, long cane user access pedestrian crossings in a safer fashion. Not a bad aspiration.. Loving this forum it is a shame I have not found one like it here in the UK.

### **Idea Number 34 - app to track a designated location as you get near it**

Topic: Vision

Votes Up:5

Votes Down: 1

Total Votes: 6

Percentage Up: 83%

Comments: 1

Author: dpound

Need a cell phone app that will allow you to set a marker on a location and give it a name. Then when one wants to return to that spot one can call up the app and it will produce a tone when you are pointing the phone at the location and get louder as you get nearer.

#### **Bill Casson**

I believe this should be part of an integrated mapping app such as Google Maps rather than its own app.

### **Idea Number 39 - National Database of ADA transit eligible persons**

Topic: Cross-cutting solutions

Votes Up:5

Votes Down: 1

Total Votes: 6

Percentage Up: 83%

Comments: 3

Author: Bill Casson

Each transit agency currently maintains its own database of persons who are eligible for ADA services such as paratransit. When traveling, it can often be difficult or impossible to receive ADA services while visiting another transit agency. I propose the implementation of a national database that contains an individual's eligibility information as gathered by the individual's home transit agency. This database would be available to the transit agency in the location the individual is visiting. The individual could contact the foreign agency 1-3 days prior to visiting and the foreign agency would be able to pull the file and quickly determine eligibility for services and to set the visiting individual up for services in the visiting location. This would allow for a hassle-free visit for individuals who rely on ADA transit services and not require some sort of re-evaluation in the foreign location which could take weeks to set up.

#### **Steve Yaffe**

This would mandate only one database for people to hack to download your personal information. I'd rather see a standard on paratransit IDs, just as has been mandated for DMVs, so providers can easily recognize the validity.

#### **Webbmaw**

If a person cannot schedule a ride with the paratransit service in the community they've arrived in, a universal ID would not be of any use. As it is, we're expected to take a cumbersome letter to that location and have a long conversation with the scheduler in order to satisfy them that we are entitled to utilize their service. A national database would eliminate this. It is true that standards for certifying users of the service would need to be standardized across the country, but at least we could get a ride more easily when we need one.

#### **Rbrooks**

I suspect that most paratransit customers do not travel outside their resident service areas, but obviously, many folks do travel, and they travel quite often and to a variety of places. I also know that the process for getting visitor status eligibility varies by jurisdiction, meaning that the rider has to redo the process for each trip. The current process depends on the emailing or faxing of cumbersome letters or photographed paratransit ID's, and it is hampered by staff absences, people failing to promptly check email boxes or return phone calls. In short, it's a mess. Given all these factors, what if the database were optional? Of course, it would have minimal information, e.g. the passenger's name, address, a contact number, email address and eligibility

dates, along with transit agency contact information. People could opt in or out at any time, and they would be advised of the risks of posting data to the site. I think this is a fabulous idea--as long as it's optional. ... I also like the idea of a standardized ID. An ID serves a different purpose than the database, but for those systems who require ID's to ride, it could be invaluable.

#### **Idea Number 42 - Consolidating sources of information**

**Topic:** Cross-cutting solutions

**Votes Up:**5

**Votes Down:** 0

**Total Votes:** 5

**Percentage Up:** 100%

**Comments:** 1

**Author:** Donna Smith

One thing that occurs to me as I have been reading through all the great ideas posted is that there is a lot of information out there already and it would be useful to find some way to unite it so that duplicating effort wouldn't be necessary. For instance, the crowd-sourcing idea raised many available sources of information, none of which provide everything needed, but all of which provide some useful piece of the puzzle. In addition to the crowd-sourcing information that is available or potentially available, there is the mapping being done by communities and transit providers that includes information about routes, stops and stations, accessible pathways and features, etc. A way to unite these various sources of information would be useful. As a person who is blind, I have enough things to concentrate on while traveling without having to juggle apps. Of course, that's possibly more an age-related deficit! Still, instead of giving me more things to hold, turn on, charge up, find head phones for, download, learn to navigate, complain about because buttons aren't labeled, surely there is something that could bring this very helpful yet very disparate information together in one place?

#### **Webbmaw**

I agree with this idea absolutely. A lot of communities are doing some good things and doing them right. They are not doing all good things but some. These things could be taken nationwide and would improve the transportation landscape for us all.

#### **Idea Number 27 - Integration of Infrastructure & Smart Phones/Devices**

**Topic:** Cross-cutting solutions

**Votes Up:**5

**Votes Down:** 1

**Total Votes:** 6

**Percentage Up:** 83%

**Comments:** 2

**Author:** pwg

The current APS system results in a noisy, chaotic environment for everyone. The competing signals and messages are either not well heard, and it can be difficult to discern between them. By programming these devices to integrate with smart phones/devices and sense an individual, they could then only activate when needed and only the one closest to the person with the device would activate eliminating the noise from devices at other corners. Perhaps the individual could also have programmed in his path or destination so that the signal knows which one to activate to lead him in the correct direction. If this is possible, we could also install other devices at every corner that are small and perhaps hang on a sign that would also offer this guidance capability. They could also be programmed in a fail mode to deliver a type of signal that would notify the person they are not working correctly. Also we could install some type of wire or loop along each crosswalk line so that a person with a sensor app in a smart device could receive a slight pulse or vibration if they are wandering outside of the crosswalk as they cross the street. And as vehicles increase their sensing technology, they could also pick up on messages from these devices so drivers are alerted to be more aware of peds in the area. All bikes should also have these sensing devices.

### Bill Casson

I believe this is overkill. The audible pedestrian signal (APS) system is already badly designed and over-thought. We have been training blind individuals to independently travel for decades. Given this, the only form of the APS system that I have liked is one I have seen on one crossing in Boulder. When one presses the button when one is interested in crossing a street (we are all familiar with this concept), the button then announces the state of the signal and the direction and street that was requested.

Since this is at the location of the button, it is quiet compared to the traditional APS. Furthermore, the buttons vibrate when they are pressed and when the walk signal is given. This allows persons who may be deaf and blind to use the signal. However, I believe this is only needed at intersections that either are unusually complex or where safe crossing decisions cannot be made based on the parallel traffic. As to the point about straight line crossing, car and bike sensors etc., I believe that is completely unnecessary. People should be aware of their surroundings while crossing a street and not distracted by or trusting in a technological device to do the work for them.

### Webbmaw

This gentleman makes good points. However, I need to point out that with the age of the population rising, the number of individuals who lose their sight later in life is also on the rise. These individuals are never as comfortable traveling about as those who have been blind all their lives as I have. Also, there are places where mobility training is not as good or as available as others. The training in Colorado is exceptionally good and could be held up as an example to the rest of the country. Also, as far as making this work through mobile devices, this could be done through the blue tooth functionality on the devices if they all had the same blue tooth AD. then you would only need to set it up once and it would work for all.

### Idea Number 37 - bus stops that send out info about routes and next buses/trains

Topic: Vision

Votes Up: 4

Votes Down: 1

Total Votes: 5

Percentage Up: 80%

Comments: 1

Author: dpound

this would be both a free app and a system for transit companies to have info at bus stops sent out so if you get within its radius, it sends info to your phone about next bus, time/route

### Bill Casson

I believe this should not be its own app but rather part of a comprehensive travel app. I believe it is functionality that could be added to an app like Google Maps.

### Idea Number 38 - orientation services virtual or personal

Topic: Vision

Votes Up: 4

Votes Down: 0

Total Votes: 4

Percentage Up: 100%

Comments: 0

Author: dpound

this would be a service that you could get in person or virtually to help you learn a specific area like say an airport's exit scheme, baggage, taxi, relief area, etc.



### **Idea Number 45 - Teleprompt inside mode of Transportation**

Topic: Hearing

Votes Up: 4    Votes Down: 0    Total Votes: 4    Percentage Up: 100%    Comments: 2    Author: Lorraine Heyboer Mahon

I am hearing impaired with an occupation that mandates frequent flying time. Alike many normal hearing customers, the ability to hear the pilot announcements inside the plane is impossible. The announcements should be displayed either through the seat monitors or through a monitor off the ceiling of the plane, since apps would not be feasible if phones are off.

#### **R Beyerle**

Lorraine, you are correct that the announcements can be difficult to decipher no matter what level of hearing one has. I think an audio announcement and a narrow announcement board above the aisle would be useful for planes that do not have in-seat screens. For example, on their high-speed trains, Austrian Railways has a digital display sign that periodically posts train speed, distance to destination, next station served, etc. A similar type of system could be considered for important announcements on aircraft.

#### **Neal**

I think it would also need to be multi-lingual as not everybody understands English as clearly.

### **Idea Number 30 - Mobile app or something to support ride sharing**

Topic: Cross-cutting solutions

Votes Up: 4    Votes Down: 1    Total Votes: 5    Percentage Up: 80%    Comments: 1    Author: Community Member

If ride sharing was more convenient and socially acceptable I think that more people would do it. It would be easy pick up a neighbor and share a ride if people knew who was going where and when...

#### **Bill Casson**

The private market is taking care of this. Safety is a growing concern in today's society.

### **Idea Number 48 - Smart G.P.S device affordable to indigent**

Topic: Cross-cutting solutions

Votes Up: 4    Votes Down: 1    Total Votes: 5    Percentage Up: 80%    Comments: 0    Author: mckennakenneth2

I don't know about others, but my disability isn't enough to eat most days, never mind afford a smart phone, and safe link phones are unreliable in emergencies. An Affordable G.P.S device, to include bus routes, change bus alerts, and a way to get help fast in emergency, linked in the device. Maps, routes, Change in route alerts, and affordability.

### **Idea Number 46 - Dial A Stop**

Topic: Cross-cutting solutions

Votes Up: 4    Votes Down: 0    Total Votes: 4    Percentage Up: 100%    Comments: 1    Author: veronicam

I would like to see an on board system or app that could automatically signal for a bus stop by simply entering in a bus stop ID Numberber on a key pad on the bus or from a phone via bluetooth technology. The system would also ideally alert the person requesting the stop via text or alarm that they are at their correct stop.

This would be useful for people with sight impairments or developmental disabilities, yet would be beneficial to any rider.

### veronicam

To add more information to this idea, this would be a way for people to request a stop when they board a bus, without having to identify when to pull a stop request cord during their ride. Having an on board keypad would allow a person without a cell phone to use it. When the requested stop was next, the stop Numberber and description would show on a reader board and be automatically announced. The service would also ideally be enhanced with a smart phone for remote access to send a stop request via Bluetooth (Bluetooth would allow for only people in a close approximation to the bus to send a request) as well as send a text or alarm to the persons phone to alert them that they are at their requested stop. Not only would this enhance the accessibility of transit to people with disabilities but the general public as well. A person could use google maps to trip plan and then use the stop ID Numberbers given by google to enter into the "Dial a Stop" system. A person with a disability could easily communicate (verbally or written) to the driver the stop ID Numberber and the driver could enter it. This system should decrease the mistakes made by drivers when they

### Idea Number 25 - MERISZ (Mobility Equipment Restriction Inline Safety Zone)

Topic: Cross-cutting solutions

Votes Up: 3

Votes Down: 1

Total Votes: 4

Percentage Up: 75%

Comments: 0

Author: stopsafetyfirst

usage for most super market store shopping carts. The idea comes from the retail industry merchants trying to solidify a concept to minimize their shopping cart from being taken outside their property. The concepts is consider to be design to prevent a shopping customer once leaving the store to only be able to use and move the shopping cart within the property zone of the store or shopping complex. The idea of flipping the concept of the anti-theft limitation lock-down of the shopping cart once it has reach the limits of the propose legal area, came to mind before, but I though who would listen and it really a needed concept and besides, I don't have the money to engage in such a well meaning, but monstrance concept. As I vision the concept the same idea (make the hold thing very economical, except for the placement of the strip (could be magnetic) or equipment (on the underneath or alone the inner-side of the pavement crossing margins define lines) on municipal/state or federal road side walks and/or street crossing areas, as well). To me brilliant and help keeps, wheel chairs, walkers, mobile chairs/ carriers in place. Especially baby buggies push by a parent or someone with limited visual opportunity. Not only is the sidewalks or crossing zone equip with the concepts, but as well a separate dice, bag, tag or sticker, that would reflect or received signal or give off signals, can be purchase separately and attached to the wheels or lower part of the attach prospective usage equipment. Eventually, as these requirements are being manufacturer, that they should have automatically these items attached. This concept will help during and after snow has fallen, near the beach where there is sand on the crossing roads, parks natural paths and after a major rainstorm and flooding is an issue, ect... Depending on the location, pavement asphalt or natural materials, each concept should adapt to the climacteric seasonal situation and response or connect to the sidewalks and cross road pavement magnetic, electronic or sound off linings. Most powered by solar and/or the constant weight and heat produce by the connections of the vehicles continues passing. Little River/STOP! Safety First & Prospective Innovations Thanks you for the free forum opportunity to help safe someone's life one day. Ms. Lorna Shuford

### Idea Number 5 - Ms. Kathy DiAntonio

Topic: **Mobility**

Votes Up: 3    Votes Down: 1    Total Votes: 4    Percentage Up: 75%    Comments: 4    Author: Kathy DiAntonio

We have no transportation easily available for people with mobility issues and no one to help.

#### Community Member

Hi Kathy, Would an accessible taxi service help? Would you share some more information about your situation? Would some form of ride sharing help? Do you have public transit but you are not able to use it?

**gman091457**

Hi, Kathy if your in an area that doesn't have public transportation the only thing I can suggested a ride share program.

**crawford-scott**

Hi Kathy. You mentioned having a mobility impairment. Do you need a lift/ramp equipped vehicle to transport you, or will a standard vehicle suffice? In any case, look up your state's Department of Transportation's Public Transit Division. They can look up any public transit providers in your area. Sometimes rural transit providers have difficulty getting the word out, so it's worth a try to call.

**Jhopperjr**

Kathy, if you are in a rural area contact your county senior center. They often have resources which are not well if at all publicized regarding transportation for those with mobility or other disabilities regardless of age covered by federal funds. For an example of what I am talking about Google Rides Mass Transit District and see if the is something similar in your area.

### Idea Number 50 - Personal Transportation

Topic: **Intellectual**

Votes Up: 3    Votes Down: 0    Total Votes: 3    Percentage Up: 100%    Comments: 0    Author: Katrina Milligan

My son is very uncomfortable in unfamiliar situations and crowds. He also struggles with paranoia. He needs door to door transportation just for him be it that could accommodate him without having to plan days or weeks in advance. I saw a while ago, a prototype of a car that you program a destination in and it drove itself to and from the destination(s), this would be hugely helpful to my son especially if it were somehow made affordable.

### Idea Number 26 - MERISZ ( Mobility Equipment Restriction Inline Safety Zone)

Topic: **Cross-cutting solutions**

Votes Up: 3    Votes Down: 1    Total Votes: 4    Percentage Up: 75%    Comments: 0    Author: stopsafetyfirst

Sorry the initial commencement of my concept suggestion was cut of when I submitted it. Here the begging of my submission for those that care to know the hold story, and want to have the full submission from begging to end. This idea original development concept is nothing new, as it refers to common daily commercial thief usage for most super market store shopping carts. The idea comes from the retail industry merchants trying to solidify a concept to minimize their shopping cart from being taken outside their property. The concepts is consider to be design to prevent a shopping customer once leaving the store to only be able to use and move the shopping cart within the property zone of the store or shopping complex.

#### **Idea Number 36 - an electronic tablet that can produce tactile images on its scr**

##### **Topic: Vision**

**Votes Up: 3      Votes Down: 0      Total Votes: 3      Percentage Up: 100%      Comments: 0      Author: dpound**

This tablet would be able to indicate buttons and other visual item with tactile representations. It also could produce refreshable Braille on the tablet screen and this feature would be built in and available to all tablet owners.

#### **Idea Number 44 - inappropriate prime directives**

##### **Topic: Cross-cutting solutions**

**Votes Up: 3      Votes Down: 0      Total Votes: 3      Percentage Up: 100%      Comments: 0      Author: tjs\_rebirth07**

FUNDING! Nothing else means anything substantive; all else is conjecture and debate. Argument: last evening: at a lighted intersection in an urban neighborhood I was nearly mode down midway through a green crosswalk by a city bus! If I had not have caught it and backed up several feet, if the driver had used the inner lane instead and had someone to drop off at the bus stop nearby, or if I had been 2 seconds earlier in my arrival at the location, I wouldn't be alive today. All the discussions I viewed here would not resolve what unilaterally boils down to funding. Was the driver tired? Overworked? Undertrained? None of us will ever know... However if I was to examine the underlying circumstance to befall public transit in my traveling area, we are facing across-the-board cuts in transportation by 17% beginning in September as voted against by majority 3 times recently by the taxpayers. Who could blame them in an underemployed and overtaxed economy? How is it that we can be discussing improving through apps when we have not even addressed the matter of funding public transit? Has someone overlooked the underlying issue of federal budget shortfalls concerning infrastructure, such as roads and bridges, as part of the funding that would rectify and protect public transportation for disabled? I have been mobility impaired for 16 years, and can travel to fewer places now than I ever have due to cutbacks year after year. I am highly concerned over how much worse it will get beginning in September, and if I will be able to get out to get groceries and medical care at the VA in the coming years. Should someone consider scaling back this dialogue to stem the choking budget in balance first, or at least Regressing to the point where the basics are covered initially? Could the funding for this initiative not have been better spent on any of the above?

#### **Idea Number 43 - Noise cancellation on rail platforms**

##### **Topic: Cross-cutting solutions**

**Votes Up: 3      Votes Down: 0      Total Votes: 3      Percentage Up: 100%      Comments: 0      Author: Donna Smith**

One of the more disorienting and distracting factors on rail platforms is noise. I most often think of this as I am standing in a station and a train is coming in, but that's not the only source of noise. I was recently in Los Angeles and was transferring trains on a platform in the middle of a freeway; the nonstop, intensive noise of freeway traffic was even more of a problem. It would be great if there was noise cancelling technology to offset some of this.

### **Idea Number 23 - wheelchair upright overhead warning light**

**Topic:** Intellectual

**Votes Up:** 3

**Votes Down:** 1

**Total Votes:** 4

**Percentage Up:** 75%

**Comments:** 2

**Author:** lblack

Wheelchair users have no identifying alert safety device that will allow others to know when a wheelchair user is using their wheelchair on dimly lit streets, Wheelchair users need to have a safety device that can be installed onto their wheelchair that will increase mobility awareness, provide a more safer environment for vehicle motorist , improve and enhance the life of the user as well as a device that will allow the wheelchair user to be seen in the day and night time to save the life of the wheelchair user while operating their wheelchair on dark roads, crosswalk and streets without curbed sidewalks. There has never been an upright overhead warning light designed for the wheelchair user to allow the wheelchair user to be seen. Although the wheelchair is more than 500 years old with more than 5000 accessories on the market, there has never been a safety device designed especially for wheelchair users to allow them to be seen in the day or nighttime. A safety light known as Sight-A-Light will fill this void. It will allow wheelchair users to be seen standing and waiting on dark streets for buses and it will light their way to safety. [www.sight-a-light.com](http://www.sight-a-light.com) it is needed on the market to save lives today. vote for it.

#### **Lblack**

Too many wheelchair users are being killed too often all because they were not seen in time for the vehicle motorist to avoid collision. Seldom are vehicle motorist cited when they hit and kill a wheelchair user . WHY? because there is nothing to hold them accountable , There are no safety device made available to allow the wheelchair user to be seen. But now there is. Wheelchair users need a safety device that can be mandated by law, and that which can be identified with wheelchair users. This will create a more harmonious and safer environment. This will increase mobility awareness, and this will help save wheelchair users lives. This is a problem that can be solved with the upright overhead warning light for wheelchair known as the Sight-A-Light. it needs our vote and support this is a patented device that needs to be recognized and supported.

#### **Bill Casson**

This seems to be an abuse of this system. This is not a forum for advertising!

### **Idea Number 35 - techniques for best practice to produce 3d maps for blind travel**

**Topic:** Vision

**Votes Up:** 3

**Votes Down:** 1

**Total Votes:** 4

**Percentage Up:** 75%

**Comments:** 1

**Author:** dpound

Need research and a guide that tells one how to use 3d printing to make tactile directions and maps for blind folks

#### **Bill Casson**

I would much prefer the tactile tablet screen in idea 36. 3-d printing (like paper printing) is wasteful for just a single use.

### **Idea Number 56 - Sidewalk Condition Index**

**Topic:** Cross-cutting solutions

**Votes Up: 2**    **Votes Down: 0**    **Total Votes: 2**    **Percentage Up: 100%**    **Comments: 0**    **Author: rdingess**

Cities are financing mobile asset data collection of their streets using photogrammetry and LiDAR. Contractors have the ability to develop algorithms that will extract sidewalks and ADA locations. Once extracted, additional processes currently being used for asset management can be applied to develop a condition index, similar to the International Roughness Index (IRI) for roadways. This information could be provided in a format similar to the UsRAP program's safety index to provide users with assistance in better understanding the condition of sidewalks. We could create a smoothness index. This might be of benefit to both users and segment owners for planning improvements.

### **Idea Number 58 - Steering Committees of Disabled Persons**

**Topic: Cross-cutting solutions**

**Votes Up: 2**    **Votes Down: 0**    **Total Votes: 2**    **Percentage Up: 100%**    **Comments: 0**    **Author: webbmaw**

It is a source of amazement to me how many decisions about accessibility are made by persons who are not disabled and are only using their imaginations to determine ways to meet accessibility needs within their communities. They need input and ongoing interaction with disabled members within their communities to ascertain that the efforts they are making are not being wasted or not being used to their best effect. To that end, I propose the formation of steering committees made up of representatives of as many disability types of people as possible. These individuals would not only give input on planned initiatives for improving local transportation access, but would physically examine and evaluate these efforts in their real world settings to determine whether

### **Idea Number 52 - Weekend Service**

**Topic: Mobility**

**Votes Up: 2**    **Votes Down: 0**    **Total Votes: 2**    **Percentage Up: 100%**    **Comments: 1**    **Author: alexabrill**

Transportation services for people with disabilities such as shared ride programs should be available during the weekends. The one in my area near Mechanicsburg, PA called Capital Area Transit (CAT) is available Monday-Friday, but not on the weekends. People with disabilities should have the freedom to go places on the weekends just like everybody else.

#### **[Webbmaw](#)**

In these tough times, the 1st reaction of budget-conscious administrators is to close down on week-ends and increase user fares. This trend needs to be reversed, even if it means adding more targeted subsidies.

### **Idea Number 54 - Similar to MBus**

**Topic: Cross-cutting solutions**

**Votes Up: 2**    **Votes Down: 0**    **Total Votes: 2**    **Percentage Up: 100%**    **Comments: 0**    **Author: Community Member**

The bus system at the University of Michigan has a mobile app that shows the progress of the bus. You can see where each of the busses are at any point in time, and you can see how long it will be before the next bus arrives. This would be useful for those with mobility disabilities so they could time their approach to the bus stop. (If it takes five minutes to get to the bus stop, but the next bus comes in three minutes, and the next bus comes in 15 minutes, it would save them from standing outside for an extra 10 minutes.) For those with vision impairments, the app could announce the approach of the busses out loud. If this could be combined with the Google Maps function that plots routes, one could determine in real time what the best routes

would be to a specific location. Additionally there could be a feature where an individual could inform the bus drivers that there is a passenger with such-and-such special need at the next stop, that way the bus driver could plan accordingly (i.e. watching for someone, assisting someone on to the bus, assisting them with payment, etc.)

### **Idea Number 51 - Social Media Alerts for People with Disabilities**

**Topic:** Cross-cutting solutions

**Votes Up:** 2      **Votes Down:** 0      **Total Votes:** 2      **Percentage Up:** 100%      **Comments:** 0      **Author:** charlene.wilder

Social Media has emerged on a very fast pace, with twittering as the Numberber #1 method for social medial. Social media applications need to be made easier, more accessible, affordable, and available so that all persons with disabilities, including older Americans can readily access the applications and understand how to use them and how the process works.

### **Idea Number 57 - Smart Streets Audits**

**Topic:** Mobility

**Votes Up:** 1      **Votes Down:** 0      **Total Votes:** 1      **Percentage Up:** 100%      **Comments:** 0      **Author:** rdingess

Digital asset collection technologies are capturing the physical features of city streets. Processes could be developed to create a compliance index for the road network similar to the UsRAP safety index. This could be valuable in planning routes with the best access and for planners looking to develop smart street compliant corridors as part of a planning process

### **Idea Number 55 - An App that identifies with Service Dog potty areas.**

**Topic:** Mobility

**Votes Up:** 1      **Votes Down:** 0      **Total Votes:** 1      **Percentage Up:** 100%      **Comments:** 0      **Author:** Steve Roberts

Service dog users need an App that identifies with map and directions locations where SD's can do their potty business. This would be helpful in unfamiliar locations and airports when traveling.

### **Idea Number 53 - transport companies**

**Topic:** Mobility

**Votes Up:** 1      **Votes Down:** 0      **Total Votes:** 1      **Percentage Up:** 100%      **Comments:** 0      **Author:** Randy Nielsen

I have ALS, and I'm limited to when and where I go. Because of the power wheel chair. The outsourced companies, receive no subsidies from any level of govt. So there are very few choices for transport. And almost all are undependable and lack any kind of professional care. It's important not only better oversight. But, subsidies, so more reputable people. Will consider going into the business.

### **Idea Number 60 - Our Opiniomn**

**Topic:** Cross-cutting solutions

**Votes Up:** 0      **Votes Down:** 0      **Total Votes:** 0      **Percentage Up:** 0%      **Comments:** 0      **Author:** sglendenning

To U.S. DotThe STEPS group is writing to you to share our thoughts and opinions about the public transportation for people with disabilities.

- The price of fares for CCT/Rover transportation buses is too much money. We would appreciate it if they could be lowered so that we can afford to attend our scheduled appointments and services.
- We would like a better training for the staff to understand those with disabilities.
- An updated dispatch system to help buses run on time.
- Improve staff's attitude towards people with disabilities.

We would like more bus routes and better planning within our community. An app to track bus routes and where bus stops are located. An app to track where buses are on the route to plan for timing would be helpful technology. We appreciate you taking the time to read our opinions and we hope to see improvements with our public transportation system in the future. Sincerely, The STEPS group

### **Idea Number 59 - Establishing Virtual Fields for Visually Impaired People**

Topic: Vision

Votes Up: 0    Votes Down: 0    Total Votes: 0    Percentage Up: 0%    Comments: 0    Author: cyi

Most visually impaired and blind people, in their familiar environments, are able to find their paths and destinations without any trouble. Thus the visually impaired or blind people may not need any help if they are in a familiar path. However, what if they are thrown into an un-familiar environment? One solution is to establish a virtual field of the new environment, containing the information of all possible obstacles for visually impaired people, such as stairs, blocks, traps, trees, and crossing roads. They can be trained in this virtual field to transfer an unfamiliar environment into a familiar one. It is not a difficult task to reconstruct this kind of virtual field, while the main problem is how to collect the data of the environments where visually impaired people are going. One solution named as crowd data collection is as follows. First, in a community (city, school, or park), sampling a set of places which are very likely to be starting points or destinations of blind people (elevator, subway station exit, building front door, etc.). Second, a set of sensors is placed at each sampled place. Third, since the sampled places usually have a crowd of people in normal vision, we can invite them to take a sensor from one place to another place. In this process, both the data of surrounding obstacles and the paths of the people in normal vision are recorded. Fourth, the collected data are processed into a virtual field for each connection of two sampled places. The visually impaired people can then know more about an unfamiliar environment and know how to arrive at his/her destination from a starting point.

### **Idea Number 61 - Communication Device - "Ride Alert" or "Ride'n Go"**

Topic: Cross-cutting solutions

Votes Up: 0    Votes Down: 0    Total Votes: 0    Percentage Up: 0%    Comments: 0    Author: sturner

One of the greatest issues in the transportation of the elderly is the wait time the elderly face while expecting their ride. The unpredictable nature of the system can force elders to wait for extended periods of time, causing unneeded stress and anxiety. Why can't there be a communication device that alerts the elderly when their transportation is approaching, reducing their wait time, and relieving stress? Ride Alert is a wearable device for the elderly. Its three way alert system (vibrating, audible ding, and screen message) will alert the user when their scheduled ride is approaching. User Needs: 1. Communication 2. Social Experience 3. Physical Comfort 4. Compensation for what they don't have 5. Accessibility We want our users to be more confident in their travels and feel more safe when the driver they know come to pick them up. This product was designed during a Design Thinking class at Rochester Institute of Technology.



We worked with Monroe County Office of Aging and community transportation providers during the semester to meet users to get feedback on needs problems and design ideas. We had 2 student teams work on the concepts which led to 2 different design concepts; Ride Alert & Ride'n Go, both have,

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