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• 76% people with disabilities say adequate transportation is important to their job search

• 29% consider it a significant problem in accessing jobs [1]


Why is DOL Interested Transportation Technology?

Because...

• A job without a way of getting to it doesn't work

• Just as accessible technology is the **great equalizer** for ICT, accessible technology is the **great equalizer** for transportation…*or the great barrier*

• It’s cool
The Connected Citizen

- Transportation
- Workforce
- Home
- Healthcare
Changing the Way We Do Business

- The New Federal Government: *Open, Transparent and Participatory*

- Expanding Beyond Information Sharing to Policy Development

- **Information Sharing**
  - Ensuring public better access to agency information
  - Providing opportunities to provide general input

- **Policy Development**
  - Ensuring meaningful citizen engagement and input from critical stakeholders
  - Providing opportunities for stakeholder and interagency collaboration
Open, Transparent, Participatory ...

...and Inclusive

- Inaccessible technology can exclude large segments of our constituency
- Educate technology providers about developing accessible products
- Encourage policymakers to demand and use accessible products
Breaking Down Employment Barriers with Accessible Transportation Innovation

Trends from the @ePolicyWorks Twitter Chat

On February 1, 2016 ePolicyWorks hosted its inaugural Twitter Chat on accessible transportation. Participants joined a real-time, interactive discussion on the current state of accessible transportation, shared accessible transportation experiences, and provided insights on what improvements must be made.

For a full recap of our ePolicyWorks Accessible Transportation Twitter Chat from February 1st visit https://storify.com/ePolicyWorks/accessible-transportation-twitter-chat-recap.

Breaking Down Employment Barriers with Accessible Transportation Innovation

Hosted by the U.S. Department of Labor’s Office of Disability Employment Policy (ODEP) and the U.S. Department of Transportation’s Accessible Transportation Technologies Research Initiative (ATTRI), this online dialogue is focused on gathering insight and ideas for the future generation of accessible transportation solutions, including connected and automated vehicles, to further develop and enhance transportation options as an effective employment support for people with disabilities.

Please keep the following trending topics in mind as you submit your ideas or comment and vote on ideas submitted by others below:

1. Self-driving cars
2. Real-time transit route updates
3. Pedestrian accessibility
4. Expanded availability of apps for accessible transportation
5. Expenses of accessible transportation

6. Disability training for transportation staff
7. Use of social media for improvement of accessible travel
8. Simplify paratransit systems
9. Improved regulations of private transit providers
10. Greater availability of accessible taxis
Accessible Transportation Dialogue

- Hosted from Nov 2, 2015 to Feb 14, 2016

- Questions Posed:
  - What new technologies should be developed in response to these issues?
  - What existing (or new) APIs, Open Source code and other accessible data sets could be used/are needed to create new transformative accessible transportation applications to deal with these issues?

- Campaigns/Categories:
  - Connected and Automated Vehicles, On-Demand Operations, Virtual Concierge Travel Assistance, Robotics, Visualization and Alternate Reality, Shared Mobility, Personal Mobility Vehicles, Big Data and Smart Cities.
• Based on your experience, what might improve the accessibility of your travel? Any suggestions specific to transportation to work?

• Do you have any suggestions for strategies that might improve access to public transportation across county or state lines?

• Do you use any mobile apps to assist you in finding or using accessible transportation? If so, what are they?

• How can technology be used to enhance transportation options for people with disabilities?

• Any specific suggestions for people w/cognitive disabilities? Wounded Warriors? Older Americans?

• How can #BigData and #InternetOfThings be used to enhance future accessible transportation solutions?

• What advancements in technology do you envision for the future of accessible transportation?
Twitter Chat Topics

• Self-driving cars
• Real-time transit route updates
• Pedestrian accessibility
• Expanded availability of apps for accessible transportation
• Expenses of accessible transportation
• Disability training for transportation staff
• Simplify paratransit systems
• Improved regulations of private transit providers
• Use of social media for improvement of accessible travel
• Greater availability of accessible taxis
Accessible Transportation Dialogue

- **1,208 total registrants**
  - Transportation Professional: 19%
  - Developer or IT Professional: 3%
  - Researcher: 15%
  - Travelers with disabilities: 18%
  - Caregiver or Family Member of someone with disabilities: 14%
  - Other: 31%

![Community Info Map](image_url)
Online Dialogue Top Ideas

1. Measuring Accessibility
2. Shared Mobility - Collaborative Mobility
3. Coordinate with Local Agencies So No Penalty For Crossing Jurisd
4. Hire People With Disabilities
5. Ridesharing app for friends of travelers with disabilities
Online Dialogue Top Ideas

Most Active Ideas November-2014 to February-2016

1. Hire People With Disabilities
2. Measuring Accessibility
3. Shared Mobility - Collaborative Mobility
4. Coordinate with Local Agencies So No Penalty For Crossing Jurisd
5. New kiosks at street corners in connected cities
Online Dialogue Top Ideas

TRENDING IDEAS NOVEMBER 2014 TO FEBRUARY 2016

1. Autonomous Vehicles (AVs), Accessibility, and the Workplace
2. ICT Enhanced Transportation can Improve Employment Opportunities
3. Penalties for late service
4. ACCES-VR Manager, Legislative & Community Affairs
5. Promote private fixed route transportation options like Uber hop
Turning Input into Action

Dialogue

Results/Data

Analysis

Action
### Documenting User Needs

#### Top Identified Barriers

<table>
<thead>
<tr>
<th>Rank</th>
<th>Barrier Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>75</td>
<td>Lack of / or inaccessible signage/ maps/ landmark identifiers/ announcements</td>
</tr>
<tr>
<td>71</td>
<td>Navigation difficulties (do not know when arrive, transfer time, distance)</td>
</tr>
<tr>
<td>67</td>
<td>Inconsistent accessible pathway infrastructure</td>
</tr>
</tbody>
</table>

#### Top Identified User Needs

<table>
<thead>
<tr>
<th>Rank</th>
<th>Need Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>102</td>
<td>Amenity information (e.g. restroom, shelter)</td>
</tr>
<tr>
<td>88</td>
<td>Real-time transportation information</td>
</tr>
<tr>
<td>76</td>
<td>Safety, security and emergency information</td>
</tr>
</tbody>
</table>

#### Top Identified Issues with Technology

<table>
<thead>
<tr>
<th>Rank</th>
<th>Issue Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>46%</td>
<td>Training to use and awareness of new technology</td>
</tr>
<tr>
<td>21%</td>
<td>Affordability</td>
</tr>
<tr>
<td>16%</td>
<td>Performance quality (especially long-distance travel, rural areas)</td>
</tr>
</tbody>
</table>

*User Needs Final Report Due: Spring 2016*
Technology Recommendations

Wayfinding & Navigation Solutions
- Focus on integration of map data and standardized infrastructure descriptions from various sources
- New data unique and specific to ATTRI users should be developed

ITS & Assistive Technologies
- Focus on remote assistance for stakeholders and opportunities to inform and aid barrier traversal
- Modernizing assistive technology maintenance and asset management (area for advanced research)

Automation & Robotics
- Shared neighborhood autonomous vehicles which are cost effective and aid at traversing distances between transit stops, homes, and places of employment.
- Assist service models, electric vehicles, and autonomous vehicles create opportunities for novel accessible designs

Data Integration
- Reduce complexity and identify coordination in service matchmaking through open data and services
- Develop environment for community generated data

Enhanced Human Services Transportation
- Support initiatives by ridersharing services to involve ATTRI stakeholders and develop accessible versions of these services.
- Support mode shift through private on-demand ride services

Technology Scan Final Reports: Due Spring 2016
• To gain insight on technology applications and obtain informed views to document opportunities and challenges to technology development was published on Feb 19, 2015.
• USDOT received 20 responses.

• **Key Takeaways**
  - Technology areas rely on one another
  - Proposed technology solutions can benefit multiple user groups
  - Technology solutions vary greatly in size, scope, and complexity
  - More foundational research is necessary to advance proposed solutions
  - Integrated technology solutions are necessary to match the diverse needs of all travelers to be effective
Application Development

Foundational Considerations

**Standard Accessible Data Platform**
- Smart Wayfinding & Navigation Systems
  - Wayfinding and navigation systems for indoor and outdoor use
  - Wearable technologies
  - Community navigators

**Universal Design Standards**
- Pre-Trip Concierge & Virtualization
  - Pre-trip and in-route traveler information
  - Connected travelers
  - Virtual caregiver help for pre-trip planning and on-route support

**Integrated Payment**
- Shared Use, Automation & Robotics
  - Assistive and collaborative robotics to enhance mobility
  - Ability to plan and execute trips, associated services
  - Transformative transportation alternatives

**Leverage Existing Technologies**
- Safe Intersection Crossing
  - Intersection crossing assistance for all travelers
  - Pedestrians interface with traffic signals, vehicles and nomadic devices
  - Guidance, notifications and alerts for optimization
ATTRI Program Trajectory

**Phase 1:**
- Exploratory Research & Partnership Development

**Phase 2:**
- Application Selection and Prototyping
  - Collaboration & Partnerships

**Phase 3:**
- Integrated Demonstrations and Pilots

ATTRI is addressing a significant transportation problem in a comprehensive way. The ATTRI Program is positioned to capitalize on potential large-scale opportunities.
Be on the Lookout!

• Spring 2016 Procurements
  □ Application Development in 4 focus areas:
    ▪ Smart Wayfinding & Navigation Systems
    ▪ Pre-Trip Concierge & Virtualization Technologies
    ▪ Shared Use, Automation & Robotics
    ▪ Safe Intersection Crossings
Would it Be Possible???

• For a robot to greet me at the airport, understand my needs and offer services including help with wayfinding and navigation, transfer of my luggage or securing a boarding pass, either on my assistive device or a shared resource at the airport?

• For a traveler to borrow a shared resource robot (similar to bikeshare) at the transportation hub, be it a metro/bus stop to navigate to the next destination, and leave that resource for the next passenger?
Help Us Answer These Questions

• What existing or new application program interfaces (APIs), open source code and other accessible data sets could be used/are needed to create new transformative accessible transportation applications?

• What new technologies should be developed to enhance personal mobility and independent living for people with disabilities?
“The best way to predict your future is to create it.”

~Abraham Lincoln
Thank You

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