Innovation and Emerging Technologies To Advance Universal Transportation
Your Speakers

• Moderator: Peggy Griffin, Regional Civil Rights Officer, Federal Transit Authority, detailed to Departmental Office of Civil Rights
• Presenter: Rik Opstelten, Office of Mobility Innovation, Federal Transit Administration
• Presenter: Ben Schutzman, Director of Transportation Innovation, Massachusetts Bay Transportation Authority
Purpose of the Session

• Promote awareness and begin a discussion of technological changes that are reshaping how transportation is provided, helping to ensure everyone can travel independently.

• Provide an overview of research, demonstration projects, and a discussion of successes and challenges with mobility on demand demonstration projects.
RIK OPSTELTEN

FTA Office of Mobility Innovation
Overview

Building Universal Mobility Means:

• Advancing Mobility on Demand
• Developing Accessible Transportation Technologies
• Keeping an Eye to the Future
• Ensuring Input
What is Mobility on Demand?

An integrated and connected multi-modal network of safe, affordable, and reliable transportation options that are available to all.

- User-focused
- System Optimized
- Data and Technology Driven
Trends: What’s Driving MOD?

Societal Trends
• American population getting larger, older

Technological Trends
• Technology is Transforming our Communities and our Demands

Mobility and Environmental Trends
• Being Stuck in Traffic is Costly, Frustrating
• People and Communities Seek Alternative Means of Getting Around
MOD Program Goals

- **Explore** New Approaches to Mobility
- **Prepare** the Industry to Delivery Innovative Solutions
- **Enable** solutions that are connected, equitable and effective

**Through:**

- MOD Foundational Research
- MOD Performance Metrics
- MOD Sandbox Demonstrations and Evaluations
- MOD Accelerator
- Stakeholder Engagement & Outreach
- Policies and Practices
MOD Sandbox Program

**Demonstration Program to Explore MOD Models**

- **Explores** innovative approaches to integrate MOD solutions with public transportation
- **Empowers** project teams to deliver high-quality, seamless and equitable mobility options
- **Informs** the MOD program on how to approach MOD
Opportunities Identified by MOD Sandbox Awardees

1. Affordable mobility options for work or social activities
2. Address first mile/last mile and low density area service gaps
3. Reduce vehicle miles traveled and congestion while not reducing number of personal trips
4. Increase the utilization of existing investments in public transit/parking facilities
5. Increase mobile ticketing adoption and usage
6. Increase usage of integrated mobility apps to reduce travel and wait times
7. Increase mode share of non-single occupancy vehicle options
8. Increase access to MOD, including low-income users
9. Improve safety, security, and satisfaction of riders
10. Decrease response times and cost of paratransit services for people with disabilities
11. Incorporate shared modes and accessible trips in trip planning
12. Establish best practices and standards for MOD demonstrations
Pinellas County, FL

- Work to create efficient, cost-effective, flexible and responsive paratransit service
- Serving those who use wheelchairs, and who don’t
- PSTA provided the most appropriate option for each rider through a dispatch system
Pierce County, WA

**Problems**
- Transit’s usefulness limited by geography, time, etc.
- Parking overcapacity

**Solution**
A three-pronged strategy to connect riders with:
- First and last mile connections
- Rides home outside span of service
- Rides to and from park and ride lots and Sounder stations to alleviate congestion
Next Steps

• Identify a set of **performance metrics** to assess the success of the MOD deployments.

• Conduct comprehensive **independent evaluation (IE)** of the MOD Sandbox Demonstration projects

• Continue **Stakeholder Outreach and KTT** to inform the transportation community on the activities of the MOD program, **elicit stakeholder feedback**, and promote **technology transfer**

• Prepare **MOD Sandbox 2.0**
Accessible Transportation Technologies Research Initiative (ATTRI)

Supporting Independent Travel by Through Technology
76% of people with disabilities say adequate transportation is important to their job search. 29% consider it a significant problem in accessing jobs.[1]

### Challenges and Opportunities

<table>
<thead>
<tr>
<th>Targeted Populations</th>
<th>Persons with Disabilities</th>
<th>Veterans with Disabilities</th>
<th>Older Adults</th>
</tr>
</thead>
</table>

### Types of Disabilities

- **Vision**
- **Mobility**
- **Hearing**
- **Cognitive**

### Enabling Technologies

- **ITS, Wireless & Sensors**
- **Connected Vehicles**
- **Automated Vehicles/Personal Mobility**
- **Robotics, Artificial Intelligence**
- **Accessible Data**
Developing Solutions

Foundational Considerations

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

- **Universal Design Standards**
  - Pre-trip and in-route traveler information
  - Connected travelers
  - Virtual caregiver

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

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

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U.S. Department of Transportation
Federal Highway Administration

U.S. Department of Transportation
Federal Transit Administration

U.S. Department of Transportation
Office of the Assistant Secretary for Research and Technology
**Title:** Accessible Transportation Technology Research Initiative (ATTRI) Application Development

**Description:** Development of applications in three areas:
1. Smart Wayfinding and Navigation Systems
2. Pre-Trip Concierge and Virtualization
3. Safe Intersection Crossing.

**Award Expected:** Very Soon

**Title:** Disability and Rehabilitation Research Projects (DRRP) Program: Accessible Transportation

**Description:** Development, prototyping, demonstration, and evaluation of accessible transportation technologies in automation and robotics
Purpose

• Adapting Street Design to Needs
• Synthesize current guidance
• Highlight innovative practices
• Document key design challenges
• Use a collaborative, problem solving approach
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.
Considerations for the Future

Changing Needs
- Technology adoption
- Changes in User Preferences

Changing Technology Landscape
- Automated Vehicles
- Augmented Reality
- Virtual Reality
Contact

Rik Opstelten
Research, Demonstration and Innovation
Federal Transit Administration
Hendrik.Opstelten@dot.gov
On-Demand Paratransit Pilot

Ben Schutzman

MBTA
The RIDE is MBTA’s paratransit service for those who qualify under the Americans with Disabilities Act (ADA)

The RIDE’s goal is to provide high-quality services to the ADA-eligible population in the most cost effective way possible

The RIDE is required to provide certain levels of service in compliance with ADA and historically has gone above and beyond what is required

While progress has been made, the RIDE’s average one-way registered passenger trip cost is still $59 (including fixed and variable costs)
Growing Costs Despite Interventions

Despite earlier interventions, RIDE costs have continued to grow.
On-Demand Paratransit Pilot

The on-demand paratransit pilot in partnership with Uber and Lyft was established in October 2016 to expand customer options and reduce costs.

- Improve **customer flexibility and mobility**
- Test how to **convert trips from the RIDE to on-demand options**
- Provide **equal or better service at a lower cost**
- Identify the financial and operational **feasibility of the new model**
How the Pilot Works

The pilot has innovative pricing, modes, and ordering options

**Pricing**
Customer pays first $2, MBTA pays next $13, and customer pays remaining fare

<table>
<thead>
<tr>
<th>Sample $8 Trip</th>
<th>Sample $19 Trip</th>
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</thead>
<tbody>
<tr>
<td>$6 MBTA</td>
<td>$6 Customer</td>
</tr>
<tr>
<td>$2</td>
<td>$6</td>
</tr>
</tbody>
</table>

**Modes**

- uberX
- WAV Taxi
- Lyft
- Line
- Access
- Pool

**Ordering Options**

- App-based
- Provided Smartphone
- Call Center Booking
Results to Customers

The pilot is designed to offer many new benefits to customers

To date, pilot customers have received...

- Reduced Fares
- Lower Wait Times
- Same-Day Booking
- Faster Trips
- No Need to Share Rides
- Access to wheelchair accessible vehicles
- Options to book trips without an existing smartphone
Improved Cost

Per trip costs have decreased by over 80%

**Avg. MBTA Cost / Trip**

<table>
<thead>
<tr>
<th></th>
<th>Traditional RIDE</th>
<th>Uber/Lyft Pilot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed cost</td>
<td>$24.00</td>
<td>$9.07</td>
</tr>
<tr>
<td>Variable cost</td>
<td>$35.00</td>
<td>$35.00</td>
</tr>
<tr>
<td>Total</td>
<td>$59.00</td>
<td>$59.00</td>
</tr>
</tbody>
</table>

-85%

**Trips Taken**

<table>
<thead>
<tr>
<th></th>
<th>Traditional RIDE</th>
<th>Uber/Lyft Pilot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Trips</td>
<td>34,193</td>
<td>45,360</td>
</tr>
<tr>
<td>RIDE Trips</td>
<td>-16%</td>
<td>-16%</td>
</tr>
<tr>
<td>On Demand Trips</td>
<td>64%</td>
<td>36%</td>
</tr>
</tbody>
</table>

A reduction in more costly RIDE trips more than offsets an increase in total trips – producing a net savings to the MBTA
Decreased Trip Times

The pilot has saved customers over 6,700 hours of trip time

**Taking a Trip**

<table>
<thead>
<tr>
<th>Promised</th>
<th>Actual</th>
<th>Drop Off</th>
<th>Appointment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pick-Up</td>
<td>Pick-Up</td>
<td>9:36AM</td>
<td>10:00AM</td>
</tr>
<tr>
<td>9:01AM</td>
<td>9:04AM</td>
<td>9:36AM</td>
<td></td>
</tr>
</tbody>
</table>

**Average trip using The RI DE**

<table>
<thead>
<tr>
<th>Promised + Actual</th>
<th>Drop Off</th>
<th>Appointment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pick-Up</td>
<td>Off</td>
<td>10:00AM</td>
</tr>
<tr>
<td>9:35AM</td>
<td>9:55AM</td>
<td></td>
</tr>
</tbody>
</table>

34 min saved

**Average trip using the On-Demand Pilot**
Lessons Learned - Keys to Success

1. Involvement of high-level officials
2. Customer/advocate task force
3. Equivalent service for all customers
4. Multiple committed service providers
5. Access to data
6. Testing and iteration
Lessons Learned - Key Challenges

1. Creating clear channels for customer help and feedback
2. Controlling for latent demand of existing riders
3. Increasing adoption of customers with accessibility needs (technology and wheelchair accessibility)
Next Steps

Where does The RIDE go next?

- **Additional Mode of Transport**: Provide another mode of service with a taxicab partnership and test pilot.
- **Consolidation Call Center**: Streamline multiple reservation and dispatch centers to one location.
- **Dynamic Brokerage Model**: Book most cost-effective trip customized to user needs through dynamic broker model.
Summary and Key Points

- The RIDE is a MBTA program designed to provide **federally mandated complementary paratransit** transit service for those who qualify under the Americans with Disabilities Act (ADA).

- The RIDE’s faces **high costs** to maintain **high-quality** services to the ADA-eligible population.

- To decrease cost and increase efficiency, MBTA has **partnered with rideshare vendors** Uber and Lyft to provide transit service to paratransit customers through a rideshare pilot.

- The Pilot has demonstrated strong results in **improved customer experience** and **decreased costs** to the MBTA.

- Success from the Pilot can be attributed to **strong leadership and community support** and its **iterative design** and implementation.
Thank you very much!

Request additional information or pose questions to the following:

**crlc@dot.gov**
**202-336-9367**