

MTI Research Snaps presents:

Gaps and Opportunities in Accessibility Policy for Autonomous Vehicles

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Gaps and Opportunities in Accessibility Policy for Autonomous Vehicles

- Objective
- Background Research
- Case Studies
- Future Work



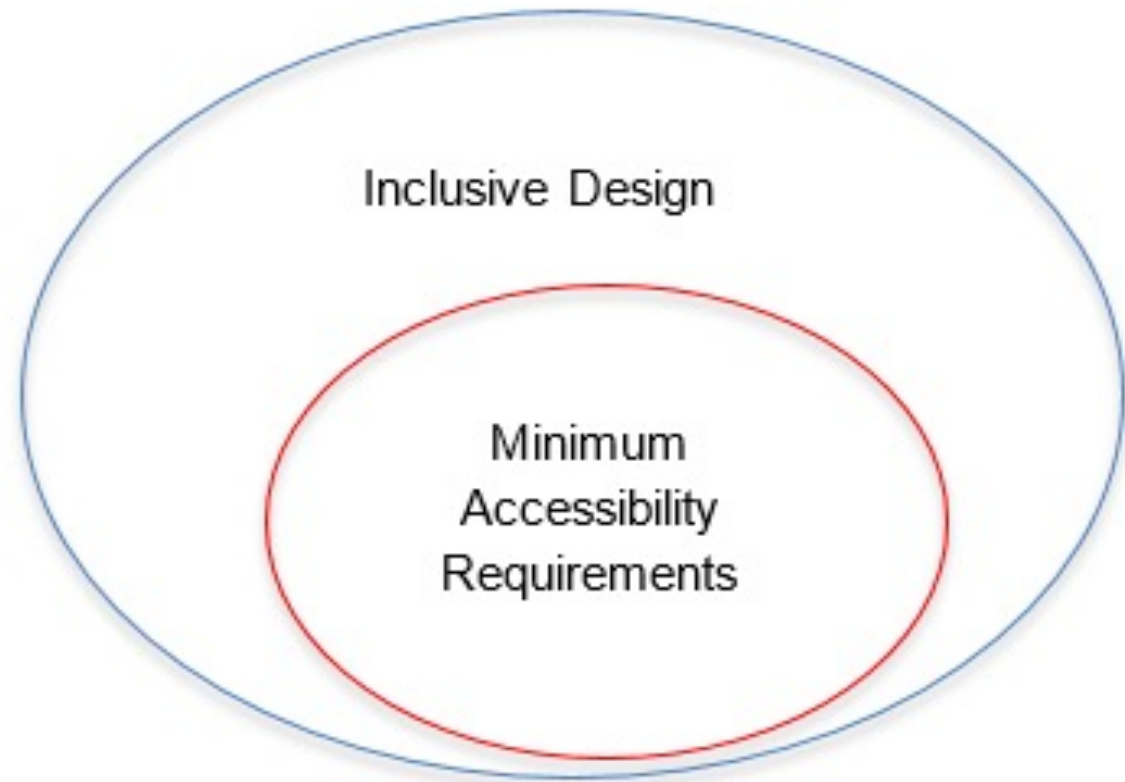


Objective: Accessibility
of AAV in the Context
of VTA AAV Project



Objective

- 49 CFR Part 37 -Transportation Services for Individuals with Disabilities (ADA)
- 49 CFR Part 38 - Americans with Disabilities Act Accessibility Specifications for Transportation Vehicles
- New Final Rule: Reasonable Modification of Policies and Practices (Federal Transit Administration Office of Civil Rights)
 - Spirit of the ADA vs. the letter of the law/regulations?
 - The key is to ensure that the accessibility concerns are addressed NOW rather than retrofitted later.



The Complete Trip

Seven trip-making stages divided into three distinct categories:

- Pre-trip concierge (Information system design)
 - Trip planning and booking
- Wayfinding and Navigation (Accessible infrastructure design)
 - Navigating to AAV pick up point
 - Waiting at AAV pick up point
 - Navigating from AAV drop off point to end destination
- Robotics and Automation (Vehicle design)
 - Boarding AAV
 - Riding AAV
 - Alighting AAV



Taxonomy of Accessibility Considerations




Information system design



Vehicle design



Infrastructure design



Taxonomy of Disability Considerations

Cognitive and/or Developmental Disability

Auditory Impairment

Visual Impairment

Wheeled Mobility Devices

Ambulatory Impairment

Older Adults

Extremes of Size and Weight

Summary of Background Investigation

- Wheeled mobility devices and ambulatory impairments have significant literature
- Research on **cognitive and developmental disabilities and auditory impairment** is most sparse
- The combinations of disability type-trip making stage where the research is most sparse:
 - Trip planning and booking stage: **Auditory Impairment**
 - Boarding AAV stage: **Cognitive and/or developmental Disability; Auditory Impairment; Extreme Size and Weight**
 - Riding AAV stage: **Auditory Impairment; Visual Impairment**
 - Alighting AAV stage: **Cognitive and/or developmental Disability; Auditory Impairment**

Applicability of AAV Technology to On-demand Microtransit and Paratransit Services

	Accessible Safety Features	Wheel Chair Stowage / Tethering	Voice Controlled Systems	Pick Up Point Orientation	Drop Off Point Orientation	Location, weather, route info etc.
AAV On-Demand Microtransit	Meets Standards	Meets Standards	May Need Additional Development	Meets Standards	May Need Additional Development	Exceeds Standards
AAV Paratransit	Meets Standards	Meets Standards	May Need Additional Development	Meets Standards	May Need Additional Development	Exceeds Standards

Case Studies

- **Microtransit**
 - May Mobility's Prototype of Wheelchair-Accessible AV
 - Waymo / Custom Chrysler Pacifica
 - Volkswagen Sedric
 - Renault EZ-GO
 - Kenguru
- **Paratransit**
 - Detroit Medical Campus / Navya Shuttle Evo
 - US Army Catapult
 - JTA/Olli 2.0



Conclusions & Considerations

AAV can potentially offer superior service to disabled passengers, providing: inclusion of video/safety analytics; ramp deployment and actuation; voice warning for securing passengers, rider/stop information; the ability for multi-lingual support.

Additional considerations include:

- Universal standard to allow for the elimination of fare boxes
- The design of vehicles must account for individuals with cognitive disabilities
- Voice control systems and drop-off orientation may need more technological development or additional service specifications through on-demand or on-call help services (Critical for Microtransit)
- Exploration of slope standards and including them in any requests for qualifications
- Ensure that vehicles are designed to accommodate roadway users (especially those with disabilities) not using or interacting with those vehicles
- Infrastructure concerns require collaboration between local agencies and transit authorities/private sector

Potential for Agency Partnerships

- Coordination to on enhance and build appropriate infrastructure (curb ramps, bus stops, etc.)
- Prioritization curb availability for accessible services and collaboratively managing pick up and drop off locations between multimodal users
- Digitization of transit trip data to encourage multimodal integration of future AAV service with existing transportation infrastructure

Thank you for joining us for:
Gaps and Opportunities in Accessibility Policy
for Autonomous Vehicles

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