AVS 2018 Breakout Session #21

FTA’s Strategic Transit Automation Research (STAR) Plan

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Automation Benefits in Public Transportation

- Improve safety
- Increase efficiency and productivity
- Potentially reduce costs
- Increase traveler convenience and comfort through improved service frequency, flexibility, and reliability
- Expand service hours and area
- Increase overall customer satisfaction
Transit Automation Research Goals

- **Conduct enabling research** to achieve safe and effective transit automation deployments
- **Identify and resolve barriers** to deployment of transit automation
- **Build awareness** to socialize automation for transit stakeholder community
- **Demonstrate market-ready technologies** in real-world settings
- **Leverage technologies** from other sectors to move transit automation industry forward
STAR Plan Scope

• Transit bus operations
  - “Bus” is defined broadly
    • Passenger capacities
    • Traditional and novel vehicle designs
  - Lessons learned from automation in rail, light-duty vehicles, commercial vehicles, and aviation considered

• Full range of automation (SAE Levels 1-5)
  - Does not include driver assistance systems without an automation aspect (e.g., driver warnings and alerts)
STAR Plan Development Process

Engage stakeholders
• Interviews, workshops, and presentations

Identify potential scenarios (use cases)
• Identify, analyze, and prioritize use case scenarios for automating transit bus operations

Develop a plan
• For future transit automation development and demonstration projects

Major Project Tasks
• Literature Review
• Risk/Barrier Assessment
• Stakeholder Engagement
• Benefit-Cost Analysis
• Research Plan
Transit Automation Scenarios (Use Cases)

- Smooth Acceleration and Deceleration
- Automatic Emergency Braking and Pedestrian Collision Avoidance
- Curb Avoidance
- Precision Docking
- Narrow Lane/Shoulder Operations
- Platooning
- Circulator Bus Service
- Feeder Bus Service
- Precision Movement for Fueling, Service Bays, and Bus Wash
- Automated Parking and Recall
- Automated First/Last-mile
- Automated ADA Paratransit
- On-Demand Shared Ride
- Automated BRT

- Transit Bus Advanced Driver Assistance System (ADAS) (L1-2)
- Automated Shuttle (L4)
- Maintenance, Yard, Parking Operations (L4)
- Mobility-on-Demand (MOD) Service (L5)
- Automated Bus Rapid Transit (L4)
Key Findings

• The transit industry is increasingly interested in the potential applications and benefits of automation.

• Investment in automated transit application development and deployment has been relatively modest.

• Transit agencies face many potential barriers to automation (legal, financial, and institutional), in addition to technical challenges.

• Federal investment in transit automation can accelerate adoption.
STAR Plan

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Additional Information

• **Talking Technology and Transportation (T3) Webinar:** Introducing FTA’s STAR Plan [https://www.pcb.its.dot.gov/t3_webinars.aspx](https://www.pcb.its.dot.gov/t3_webinars.aspx)

• **FTA Website:** Transit Automation Research [https://www.transit.dot.gov/automation-research](https://www.transit.dot.gov/automation-research)

• **USDOT Website:** Automated Vehicles Activities [https://www.transportation.gov/AV](https://www.transportation.gov/AV)
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