



The Effects of Automation on the Public Transportation Workforce

APTAtch Workshop | September 18, 2019
TCRP Project J-11 / Task 34





Introductions

Michael J. Walk

- Research Scientist at Texas A&M Transportation Institute (TTI)
- Manager of TTI's Transit Mobility research program
- Expertise and Interests
 - Transit Performance and Financial Management
 - Process Management and Improvement
 - Bus Planning, Scheduling, Operations, and Maintenance
 - Applying Innovation and Technology to Address Transit Challenges and Improve Customer Service
- Father of 6

Why The Study? TCRP J-11 / Task 34



- It's coming...
- Workforce impacts not well-documented or understood
 - Type
 - Magnitude
- Be prepared

Research Approach



Use Cases



Planning and
Policy
Decisions



Job Impacts



Preparation
Strategies



Workshop Purpose

Obtain feedback from the transit industry regarding key planning and policy decisions that will have implications on workforce impacts of transit vehicle automation.

Research Products



Final report



Strategies to maximize benefits and minimize / mitigate negative impacts



Fact sheets, presentations, webinars, etc.

Agenda

What are we doing today?

Start	End	Duration	Session Title
8:30 AM	8:40 AM	0:10	Introductions
8:40 AM	8:50 AM	0:10	Preparing for Automation
8:50 AM	9:05 AM	0:15	Use Cases Overview
9:05 AM	10:05 AM	1:00	Breakouts
10:05 AM	10:30 AM	0:25	Report-Out and Discussion
10:30 AM	10:45 AM	0:15	Q&A and Discussion



Preparing for Automation

What *is* transit's role?

Examples of Past Automation



Dockworkers



Warehousing



Manufacturing



Banking



Agriculture



Retail



Aviation

Societal and Community Impacts and Benefits(?) – Transit Automation

- Increased safety
- Decreased operating costs
- Improved customer service
- Attract ridership
- Improve sustainability



A mechanic in a blue shirt and gloves is working on the engine of a red vehicle. The engine is dark and complex, with various belts and pulleys visible. The mechanic is using a tool, possibly a screwdriver, to work on the engine. The background is dark, and the overall scene is dimly lit.

Automation's Workforce Impacts Will Vary

- Transit agency type and size
- Public employees vs. private employees
- Positions / jobs

Disparate Impacts Research on Drivers

- Blacks 3x more likely to be security guards, bus drivers, and taxi drivers than Whites
- 28% of bus drivers are Black (12% of U.S. population is Black)
- Lower educational attainment (93% have less than Bachelor's)
- More difficult to adjust / bounce back for
 - Lower income
 - Lower education
 - Minority

Potential Workforce Positives(?)

- Improved working conditions (lower stress)
- Help address operator shortage
- Others?



**Should we be
starting to prepare?**





Use Cases

5 Transit Vehicle Automation Use Cases

Key Study Assumptions

- Modeling potential impact
- Automation \neq Electrification

Enabling Technologies

In common: On-board technologies to support automated operations L4 or L5

Differences: some specific technologies / systems might be needed for certain use cases



Cautions and Disclaimers

Bus Automation for Maintenance and Yard Operations

- Description / examples
- Operational impacts
- Supporting technology
- Potential timeline
 - Demos in past 2 years
 - FTA STAR Plan predicts demos complete by 2021



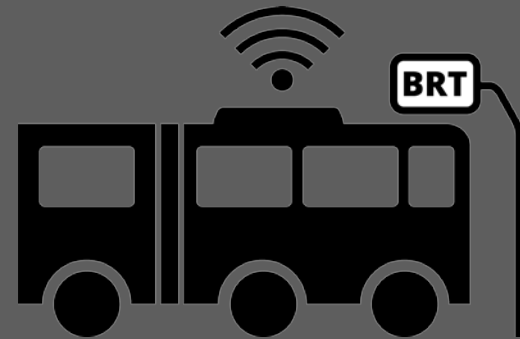
Low-Speed Automated Shuttles

- Description / examples
- Operational impacts
- Supporting technology
- Potential timeline
 - Many past and current demos and pilots
 - Continued near-term implementation expected



Automated Bus Rapid Transit

- Description / examples
- Operational impacts
- Supporting technology
- Potential timeline
 - Pilots across the pond
 - FTA STAR Plan demos BRT in 2021-2022



Automated Mobility on Demand



- Two sub-cases:
 - Private operator
 - Public operator / purchaser of service
- Description / examples
- Operational impacts
- Supporting technology
- Potential timeline
 - Private operator: “soon” (but not so much)
 - Public operator / purchaser of service: uncertain

Automated Local Bus Service

- Description / examples
- Operational impacts
- Supporting technology
- Potential timeline
 - Automated Bus Consortium
 - Uncertain timeline





Breakout Sessions

Instructions

- Group
- Identify
 - Facilitator
 - Scribe
- Discuss planning and policy questions
- Record summary of answers on notes pages
- Report-out and discussion

Report-out and Discussion



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What do you think?

Questions



Next Steps and Staying Involved

- Front-line employee survey
tinyurl.com/TransitAutomation
by Oct. 11, 2019
- Webinars (TBD)

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Questions



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