Autonomous Vehicle Mobility Initiative

Association of MPOs
March 6, 2018

Doug Jamison
Senior ITS Developer
LYNX and its partners at MetroPlan, the City of Orlando and the Florida Department of Transportation are interested in identifying and understanding the implications of autonomous vehicle technology and its application in the Orlando metropolitan area to support current and future transit service initiatives and investments.

Purpose is to outline

- Partnerships
- Policies
- Technical issues
- Financial implications
- Infrastructure requirements
- Workforce needs
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<tbody>
<tr>
<td>None</td>
<td>Driver Assist</td>
<td>Partial</td>
<td>Conditional</td>
<td>High</td>
<td>Full</td>
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0. **No Automation** – Zero autonomy, the driver performs all driving tasks

1. **Driver Assistance** – Vehicle is controlled by the driver, but some driving assist features may be included in the vehicle design

2. **Partial Automation** – Vehicle has combined automated functions, like acceleration and steering, but the driver must remain engaged

3. **Conditional Automation** – Driver is a necessity, but is not required to monitor the environment and must be ready to take control at all times

4. **High Automation** – Vehicle is capable of performing all driving functions under certain conditions with the driver option to take over control

5. **Full Automation** – Vehicle is capable of performing all driving functions under all conditions with the drive option to take over control
Strategic Transit Automation Research

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- Smooth Acceleration and Deceleration
- Emergency Braking and Pedestrian Avoidance
- Curb Avoidance
- Precision Docking
- Narrow Lane/Shoulder Operations
- Platooning

- Circulator Bus Service
- Feeder Bus Service

- Precision Movement for Fueling, Service, Wash
- Automated Parking and Recall

- Automated First/Last Mile
- Automated ADA Paratransit
- On-Demand Shared Ride

- Automated Bus Rapid Transit

Transit Bus Advanced Driver Assistance System (ADAS) Levels 1 and 2

Automated Shuttle Level 4

Maintenance, Yard & Parking Level 4

Mobility-on-Demand Service Level 5

Automated Bus Rapid Transit Level 4

LYNX CENTRAL FLORIDA REGIONAL TRANSPORTATION AUTHORITY
# Strategic Transit Automation Research

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## Integrated Demonstrations

- Transit operations and maintenance
- Fuel and emissions
- Service quality
- Safety
- Passenger experience, comfort

- Acceptance
- Accessibility
- Travel options and mode choice
- Fare collections
- Cost-effectiveness

<table>
<thead>
<tr>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020</th>
<th>FY 2021</th>
<th>FY2022</th>
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<tbody>
<tr>
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<tr>
<td>Automated ADAS (L1, L2)</td>
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<tr>
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<td>Automated Shuttles (L4)</td>
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<tr>
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<td>Maintenance, Yard &amp; Parking (L4)</td>
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<td>Automated Paratransit (L5)</td>
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<td>Automate First/Last Mile (L5)</td>
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<td>On-demand Shared Ride (L5)</td>
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<td>Automated Bus Rapid Transit (L4)</td>
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Request for Information – RFI 18-R09

Released on January 17, 2018 requesting information on:

• Current readiness of the technology
• Estimation of when additional functionality will become available
• Recommendations for developing scopes of service for design and deployment

Initial concept:

• Operate in downtown Bus Rapid Transit Lanes (BRT)
• Transit vehicle transporting passengers at low speed (25 mph)
• Level 3 autonomy (or higher)
• Electric vehicle without wireline infrastructure
• Intuitive for all users including Senior Citizens, children, disabled and visitors
LYNX PROPOSED AUTONOMOUS VEHICLE TESTING RIGHT OF WAY (LYMMO LINES)
LYNX PROPOSED AUTONOMOUS VEHICLE TESTING RIGHT OF WAY (LYMMO LINES)

Orange Line
- Exclusive guideway
- 683,904 riders (17)
- Rail crossing
- Parking garage
- Heavy pedestrian traffic
- Serves Senior Citizen population
LYNX PROPOSED AUTONOMOUS VEHICLE TESTING RIGHT OF WAY (LYMMO LINES)

Lime Line
- Mixed traffic/ guideway
- 68,944 riders (17)
- Heavy pedestrian traffic
- Schools

**Legend**
- LYMMO Orange Line - Downtown
- Lime Line - North Quarter
- Grapefruit Line

**Map Details**
- Central Blvd
- Orange County Public Schools
- Central Business District
- Heritage Square and History Center
- Orlando Public Library
- Civic Center
- City Hall
- Dr. Phillips Center for the Performing Arts

**Schedule**

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<thead>
<tr>
<th>Time</th>
<th>Monday/Tuesday</th>
<th>Wednesday/Thursday</th>
<th>Friday</th>
<th>Saturday</th>
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<tr>
<td>FIRST TRIP</td>
<td>6:00 am</td>
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<td>10:00 am</td>
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<tr>
<td>EARLY AM</td>
<td>5:45 am-7 am</td>
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<tr>
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<tr>
<td>EVENING</td>
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<td>10:00 pm</td>
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<tr>
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<td>12:00 am</td>
<td>12:00 pm</td>
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*Link 212 KnightLYNX serves all LYMMO stops along Magnolia Ave and Livingston St.
LYNX PROPOSED AUTONOMOUS VEHICLE TESTING RIGHT OF WAY (LYMMO LINES)

Grapefruit Line
- Mixed traffic/ guideway
- 417,443 riders (17)
- Heavy pedestrian traffic
- Senior Citizens
- Rail crossing
- Three Venues
- Schools
LYNX PROPOSED AUTONOMOUS VEHICLE TESTING RIGHT OF WAY (LYMIMO LINES)

North Quarter
- Mixed traffic
- 43,211 riders (17)
- Rail crossing
- Roofed terminal
- Heavy pedestrian traffic
- Serves Senior Citizen population
Doug Jamison, Senior ITS Developer

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(407) 254-6071