incenTrip: A Real-Time Data-Driven Decision-Support Toolkit for the Incentivization and Guidance of Shared, Electrified, and Automated Vehicles (SEAVs)

### Technology at a Glance

- Adoption of automated vehicles, Electrified vehicles
- Shared-vehicle/ride program participation
- Travel and driving behavior shifts
- Eco-routing guidance for SEAVs
- Dynamic re-route guidance
- Gamification, positive social influence.

### Potential Collaborations - SEAVs

- Commuter Connections: To connect over 40,000 D.C. commuters
- RideAmigos: Collaborate on a Ridesharing platform at UMD campus
- DC Dept. of For Hire Vehicles: Incentivize the usage of Electrified Taxi
- Local Motors: effectively incentivize the adoption/usage of its AV: Olli

### Real-Time Big Data Hub

- Regional Integrated Transportation Information System (RITIS) at University of Maryland (UMD)
- Data API
- RITIS Dashboard
- Actual User Data
- AWS Cloud Deployment
- SM-CA Data API
- Predictive Dataset
- App Deployment

### Key Features of Our Approach

- “Congestion is a 10% phenomenon”, a small % change can lead to significant drop in energy consumption and congestion
- “Carrots, not sticks”, personalized/optimized incentivization, features game-type activities and membership levels for loyalty, balances monetary and non-monetary incentives, utilizes social recognition and influence in a user-friendly interface.
- Advanced methodology for behavior research supported by surveys, focus groups, laboratory experiments, naturalistic driving platforms and real world test beds
- Real-time prediction of traffic and user intent.
- Algorithmic approach and data-driven approach. Responsively re-adjust information and incentives to achieve maximum efficiency.

### A Data-Driven Model

- High-fidelity traffic prediction
  - Data Fusion
  - Real-time events/incidents
  - Real-time traffic monitoring
  - Weather conditions
  - Real-time traffic simulation

### Decision-Science Support

- Accurate behavior intent prediction
  - Stated-Preference
  - Over 3,000 samples
  - Behavioral response under incentives
  - Attitudes towards rideshare and SEAVs
  - Work with DFHV and LM on SEAV scenarios

### incenTrip Deployment

- 24/7 Monitoring and comprehensive situation awareness, e.g. incidents, etc.
- Real-time guidance of routing, departure times, and ride-matching for SEAVs
- Quick and accurate analysis using actual user data as feedback