## Technology is a major force of disruption
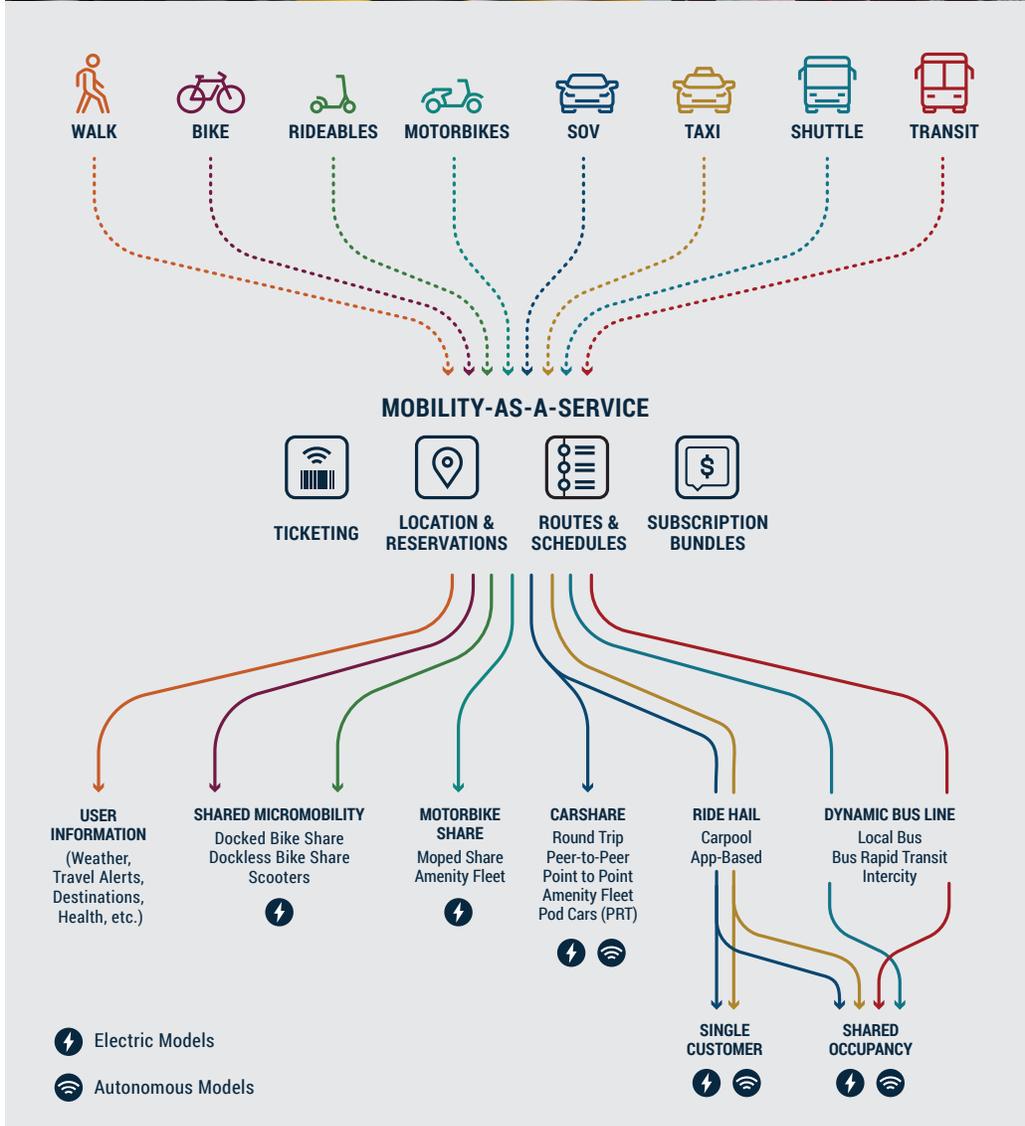
— Automated vehicle (AV) and connected vehicle (CV) technologies will likely change how we travel and how goods travel. AV and CV will make travel faster and more efficient. They will also affect how business is done, how land is used, and the quality of life.

— Ways to get from Point A to Point B have increased, especially in urban areas. New ways to travel include bike share to ride hailing (Uber and/or Lyft) to e-scooters.

— More travel options have changed the conversation from traveling one way everywhere (car, bus, bicycle) to "mobility-as-a-service" (MaaS). MaaS means you can use different types of travel for each trip based on how much it costs, how long it takes, and personal preference.
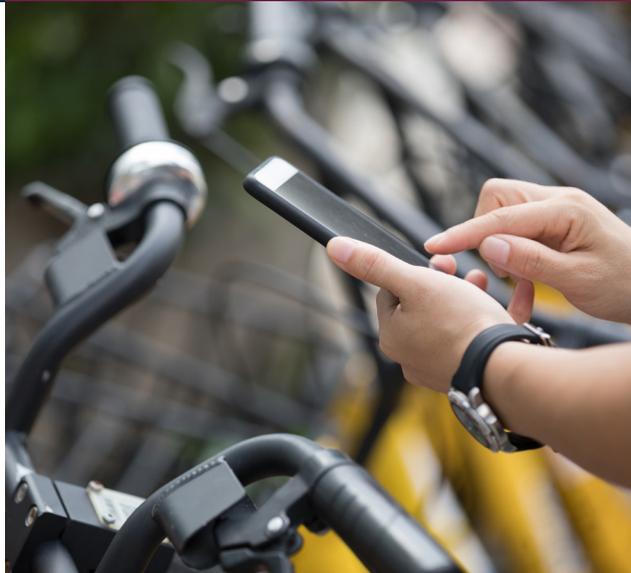
No one knows what the future of transportation looks like

— The universal need to get from Point A to Point B has created new ways of traveling. There are new ways to rent or share cars, new types of fuels, and other emerging modes, like e-scooters.

— These changes affect government agencies and what they do every day. Public agencies, like transit operators, must plan for future changes in technologies.

North Carolina is preparing for the future of transportation. The State has passed policies that support testing new technologies. AVs are now being tested on the Triangle Expressway.
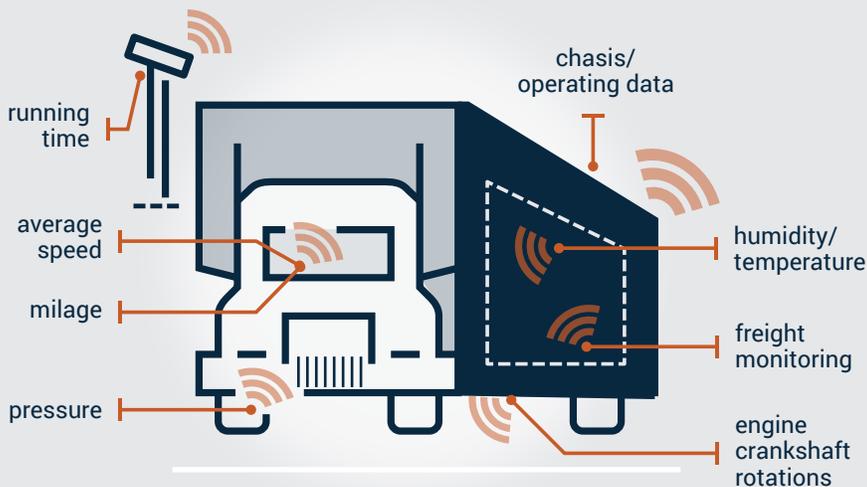
WALK BIKE RIDEABLES MOTORBIKES SOV TAXI SHUTTLE TRANSIT

MOBILITY-AS-A-SERVICE

TICKETING LOCATION & RESERVATIONS ROUTES & SCHEDULES SUBSCRIPTION BUNDLES

USER INFORMATION
(Weather, Travel Alerts, Destinations, Health, etc.)

SHARED MICROMOBILITY
Docked Bike Share
Dockless Bike Share
Scooters

MOTORBIKE SHARE
Moped Share
Amenity Fleet

CARSHARE
Round Trip
Peer-to-Peer
Point to Point
Amenity Fleet
Pod Cars (PRT)

RIDE HAIL
Carpool
App-Based

DYNAMIC BUS LINE
Local Bus
Bus Rapid Transit
Intercity

SINGLE CUSTOMER

SHARED OCCUPANCY

Electric Models
Autonomous Models

Source: Alta. "The Rise of Micromobility." By Jean Crowther. Alta Innovation Lab: 20 September 2018.

Changes and Uncertainities

— Mobile and web platforms are becoming a part of daily travel for many people. Platforms can create more efficient travel.

— AV technologies will affect trucking. For example, "platooning" technology is being tested now. "Platooning" is when trucks can drive very close to each other with little supervision. This can increase efficiency and lower costs.

— Drones could make services like package delivery easier and more efficient. Drones could also aid with moving people or taking aerial photos.

— Mobility options such as bike shares, ride sharing and e-scooters have grown in the past decade. These options help with short trips and completing first/last mile trips.

— More people want to travel between their city and another city. Many are traveling for work. Right now, there are several technologies that could help. High-speed trains or similar technologies could move people longer distances faster.

— Electric vehicle sales have increased in the last few years and are expected to continue growing.

Connected Vehicle Systems

running time

average speed

milage

pressure

chasis/ operating data

humidity/ temperature

freight monitoring

engine crankshaft rotations

Transportation Efficiency

Connected vehicles and "smart" roadways can reduce traffic and make roads more efficient. "Smart" roadways and connected vehicles use data to "talk" to each other.

Lower Operating Costs

Right now, there is a lot of data on transportation systems. Some of this information can help maintain existing infrastructure. Maintaining infrastructure quickly can decrease overall cost.

Improved Safety

When vehicles talk to each other, crashes can be avoided.

Source: Adapted from Datastax Infographic https://www.datastax.com/resources/infographic/ema-research-presents-the-future-of-internet-of-things-with-datastax

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