What Consumer Marketers Should Know about Connected Automated Vehicles

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VISION
Transform the Way Society Moves

CONNECTED SOCIETY

Conduct research, development, and education activities to facilitate the adoption of information and communication technology to enable society to move more safely and efficiently.
Imagine a Transportation System in which

VEHICLES CAN SENSE

Things That You Can’t.
Connected Vehicles (CV) are vehicles that can communicate with each other, roadside devices (traffic signals), or non-motorized users (smart phones and other advanced devices)

- Vehicle to Vehicle (V2V)
- Vehicle to Infrastructure (V2I)
- Vehicle to Anything (V2X)

Illustration of communications between C/AV-enabled vehicles and infrastructure
AUTONOMOUS VEHICLES

- Autonomous & Driverless Car
  - Array of sensors to detect other vehicles and obstacles
  - Requires Detailed map
  - Use machine learning to make software smarter
  - Doesn’t rely on communication with other vehicles
Connected Automation for Greatest Benefits

Autonomous Vehicle
Operates in isolation from other vehicles using internal sensors

Connected Vehicle
Communicates with nearby vehicles and infrastructure

Connected Automated Vehicle
Leverages autonomous and connected vehicle capabilities
MOBILITY VIDEO INSERT
Innovation Through Automation

- Technologies available today:
  - Adaptive Cruise Control
  - Lane-Keeping Assistance
  - Braking Assistance

- In the near-term:
  - Connected Automated Cruise Control (CACC)
  - Vehicle Platooning
  - Speed Harmonization
  - Cooperative Merging
• Involves connecting physical objects to the internet

Transportation Connection

• IoT and connected and autonomous vehicles are a natural fit, opening up avenues for consumer access to places and opportunities - enhancing safety and mobility!
IoT and Transportation

- **Consumer Movement (Intercity & Urban)**
  - Connecting people to places & opportunities more efficiently
  - Providing end-to-end travel solutions & on-demand services for seamless travel across modes
  - Enabling real-time - fusion of data into a common operating platform

- **Goods Movement (Production & Consumption)**
  - Enhancing end-to-end Connectivity – Manufacturing/Processing Centers to Warehouses/Distribution Centers to Retail Markets/Homes
  - Improving Freight Supply Chain enabling Cost Effective, Just-in-time and Same-Day Deliveries
What’s REAL
In September 2015, Secretary Foxx announced that New York City, Wyoming, and Tampa, FL were selected for the **Connected Vehicle Pilot Deployment Program** - to pilot next-generation technology in infrastructure and in vehicles to share and communicate with each other and their surroundings in real time, reducing congestion and greenhouse gas emissions, and cutting the unimpaired vehicle crash rate.
CONNECTED VEHICLE PILOT
Deployment Program

ITS Joint Program Office
ICF/WYDOT Pilot Deployment Vision

150 - 200 Commercial vehicles

300 Miles of I-80

122 VSL Signs

450 - 500 Equipped Trucks:
- 100 WYDOT Snow Plows/Highway Patrol vehicles
- 200-250 Other WYDOT Maintenance, Cities & Fleet Vehicles
- 150-200 Commercial vehicles

30-50 RSU

55 Parking Locations

300 Miles of I-80

Note: The number is a rough estimate for the concept development phase.
ICF/WYDOT PILOT DEPLOYMENT SITE: HIGH PRIORITY CORRIDOR

Wyoming I-80 Corridor – Connected Vehicle Map

Source: Wyoming CV Pilot Deployment Team
NYCDOT Pilot Deployment Vision

- 500 UPS Vehicles
- 1,500 MTA Buses
- 500 Sanitation & DOT vehicles
- 7,500 Taxis
- 239 Intersections with RSE coverage

Note: The numbers are rough estimates for the concept development phase.
**Manhattan Grid**
- Closely spaced intersections (600’ x 250’)
- Day vs. Night conditions
- Residential/commercial mix
- High accident rate (red dot) (2012-2014)
  - 20 fatalities
  - 5,007 injuries
- 204 intersections

**Central Brooklyn – Flatbush Ave**
- Over-Height restrictions
  - Tillary St.; Brooklyn Bridge
- High accident rate (red dots) (2012-14)
  - 1,128 injuries
  - 8 fatalities
- Average AM speed 15 mph
- 35 intersections

**Manhattan – FDR Drive**
- Limited access highway
- Excludes trucks/buses
- Short radius of curvature
- Over-Height restrictions
- $1,958,497 in Over-Height incident delay costs (2014)
  - 24% of City-wide total

Source: NYC DOT
Tampa (THEA) Pilot Deployment Vision

2,000 Vehicles Equipped with VAD

Note: The numbers are rough estimates for the concept development phase.

1,000 Vehicles Equipped with OBU
• 180 Equipped Buses
• 20 Equipped Trolleys

2,500 Equipped Pedestrians
40 Intersections (I-SIG, TSP, PED-SIG)

2,000 Vehicles Equipped with VAD

Data exchange will use DSRC (Dedicated Short Range Communications) or other wireless media. SCMS (Security Credential & Management System) will be used where appropriate.
TAMPA (THEA) PILOT DEPLOYMENT SITE
AN OVERVIEW OF DOWNTOWN TAMPA
SMARTCOLUMBUS

Source: The City of Columbus

U.S. Department of Transportation
THE FUTURE – LOOK MA NO HANDS
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ITS Pilot Deployments
www.its.dot.gov/its_deployments.htm

Smart City Challenge Website
www.transportation.gov/smartcity