The Rules of the Road

Policy Considerations for Connected/Autonomous Vehicle Initiatives

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Overview

• Connected/Autonomous Vehicles
  + Improve traffic flow
  + Create efficiency
  + Reduce congestion
  + Enhance safety
  + Provide access for disadvantaged persons

*However implementation requires robust broadband connectivity and ample privacy protections.

Strategic policy and planning decisions will be vital to ensuring sufficient infrastructure and privacy measures are in place to deploy CAVs.
Federal Regulations of CAVs

• **Federal guidance is developing:**
  – June 2017 – FTC hosted workshop to tackle data collection and storage, privacy and security practices of vehicle manufacturers
  – Sept. 2017 – U.S. Senate introduces AV START Act
State Regulation of CAVs

• States have taken the lead in developing legal frameworks to regulate CAVs.
• Twenty-two states and Washington D.C. have enacted legislation related to CAVs.
• States vary significantly from each other with varying requirements related to:
  ✓ Non-testing / public use of autonomous vehicles
  ✓ Presence of a human operator in the vehicle
  ✓ Liability
  ✓ Insurance
  ✓ Safety mechanisms
CAV Regulations by State

States with Enacted Autonomous Vehicle Legislation

Source: National Conference of State Legislatures (April 6, 2018)
Michigan Leads the Way

• First state to pass “comprehensive” CAV legislation.
• One of the few states where the operation of CAVs are permitted on public roads.
• Statutes enable motor vehicle manufacturers (e.g., Ford) and non-motor vehicle manufacturers (e.g., Google) to test autonomous vehicles on public roads.
• Before beginning testing, an entity must comply with the following:
  ✓ Must submit satisfactory proof of insurance.
  ✓ Vehicle is operated by a person authorized by the manufacturer.
  ✓ Operator can monitor vehicle performance and take control at any time.
  ✓ Operator must lawfully be able to operate a motor vehicle in the U.S.
Broadband Infrastructure Needs

• High-speed broadband connectivity, considered the “fourth utility” in several markets, offers economic growth and development advantages to cities

5G

5th generation (5G) mobile connectivity: the next wireless telecommunications standard; will support the proliferation of Internet of Things and Smart Cities

smarter cities

Intelligent transportation systems, traffic control, public safety, utility monitoring and more

Internet of Things (IoT): will create unprecedented new uses for internet-enabled devices and heighten demands for high-speed connectivity
**Broadband Infrastructure Needs**

1. **Fiber** - is “future-proof,” meaning the available bandwidth can be increased without having to change the infrastructure.

2. **Wireless** – Fifth generation (“5G”)

   - **2016** - Federal Communications Commission (FCC) unanimously voted to open high-band spectrum for 5G expansion.
   - This action is projected to impact connected devices, including **connected vehicles**, in ways that are not yet fully imaginable.

3. **Network Deployment Models**

   - Publicly, privately and P3-ownership models

We are still **several years from true 5G deployment**, but several telecommunications providers are already testing 5G wireless networks.
Broadband Infrastructure Needs

2. Wireless

- Large-scale small cell deployment is not only imminent, but essential for cities to obtain the full benefits of 5G and IoT into municipal functions
  - Requires the proliferation of smaller, more numerous towers and antennas
- Municipalities are naturally protective of rights-of-way and local aesthetics
  - May resist the deployment of infrastructure in ROW, despite the need for modern communications systems
Broadband Infrastructure Needs

2. Wireless

Dedicated Short-range Communications (DSRCs)

- DSRCs are an additional communications option, in addition to cellular and Wi-Fi connectivity, for connected/autonomous vehicle networks.
- Multi-communication road-side units (RSUs) that include DSRC, cellular and Wi-Fi capabilities:
  + Additional bandwidth
  + Immediate connectivity with cellular and Wi-Fi enabled devices
  + Incremental cost increase for additional functionality benefits
Broadband Infrastructure Needs

3. Network Ownership Models

- Publicly owned networks:
  - More municipal control;
  - More municipal responsibility/risk
- Privately-owned networks
  - Most networks built this way (familiarity); less municipal risk
  - Less municipal/policy control
- Public-private partnerships (P3s)
  - Strikes balance between control/risk;
  - Structures vary, no one-size fits all.
Revenue Generation

- Monetizing the network infrastructure
  - Fiber and DSRCs
- Revenue share of public asset
  - Parking
- Monetizing CAV data
  - Insurance
  - Real-time vehicle monitoring
- Fare collection/variable fees
  - Ridesharing
- Cost-savings
  - Fleet Management

"Data is the new oil. It's valuable, but if unrefined it cannot really be used. It has to be changed into gas, plastic, chemicals, etc. to create a valuable entity that drives profitable activity; so must data be broken down, analyzed for it to have value."
Federal Trade Commission & Privacy

- The FTC is the nation’s primary data security and privacy enforcer.

- In January 2018, FTC Staff released a report highlighting key takeaways from a June 2017 “Connected Cars” workshop.
CAV Data Collection

- Companies will collect CAV data
- As motor vehicles become “smarter” and increasingly connected to the internet, they will naturally begin to collect and analyze various data points while operated.
- The data collected will be a mixed bag of non-sensitive data and sensitive personal data.
- Consumers may have concerns over secondary, unexpected uses of collected data.
  - This will play a critical role in the adoption and acceptance of the new technology.
CAV Data Collection

Types of data collected:

1. **Current Data Collection**
   - Event Data Recorders (EDRs)
   - On-Board Diagnostic Information (OBD-II)

2. **New Data Collection**
   - Location Information
   - In-Cabin Information
   - External Information
   - User Recognition
   - Apps
CAV Data Collection

**RFID VEHICLE TAG:** enables short-range tracking

**ELECTRONIC TOLL COLLECTION SYSTEM:** transponder sends ID via radio

**CABIN MONITORING SYSTEM:** e.g. monitors eye movement to measure attention

**VEHICLE SERVICES:** Links to, e.g., roadside assistance and preventative maintenance reminders

**GPS UNIT:** uses satellite to inform location, navigation

**VIN NUMBER:** long-used unique vehicle identifier

**OBD-II PLUGIN:** pulls data from port, or generates own location or movement data

**OBD-II PORT:** interface to driving and operational data

**INFOTAINMENT SYSTEM:** access entertainment and navigation apps

**PHONE-PROJECTING SOFTWARE:** mirrors apps from smartphone

**SMART PHONE:** connects to car via Bluetooth, Wi-Fi or USB

**SIM CARD:** connectivity point for transmitting onboard information

**WI-FI NETWORK:** enables in-car internet access

**USB PLUG-IN:** connects via USB port for power or data transfer

**TOUCH SENSORS:** detects driver fatigue through grip, pulse

**KEY FOB:** supports keyless entry

*Source: Data and the Connected Car, Future of Privacy Forum*
Risks & Consequences

**Risks**
- The threat of a cyber attack is serious.
- With network connectivity, a hacker may:
  1. steal data collected by a vehicle and
  2. may also be able to actually override and control the vehicle itself.
- Cybersecurity Best Practices:
  - Information sharing, network design, risk assessment and mitigation, and standard setting

**Consequences**
- Data Breach Notification Law Compliance
  - All 50 states, the District of Columbia, Guam, Puerto Rico and the Virgin Islands have their own, different laws.
- Litigation
  - Government investigations and enforcement actions
    - FTC Section 5 Enforcement Action
    - State Attorney General
  - Business v. Business Lawsuits
  - Consumer Class Actions
Considerations for Companies

1. **Transparency**
   ✓ Clear and concise privacy policies

2. **Affirmative Consent**
   ✓ Opt-in v. Opt-out consent

3. **Use Restrictions**
   ✓ Sharing with Third Parties
   ✓ Sharing with Government and Law Enforcement