TECHNOLOGY EFFORTS
Texas Department of Transportation
National technology efforts

- AASHTO Committee on Transportation System Operation (CTSO)
  - Cooperative and Automated Transportation (CAT) Coalition
  - AASHTO Connected & Automated Vehicle Working Group
  - Soon to be formed Task Force on Highway Automation (develop a National Strategy on Highway Automation, through forming a Pooled-fund study to do this (led by Tennessee DOT)) (vision, business case, goals, benefits, ROI, legislative strategy, etc.)

- State Automated Vehicle Task Forces Community of Practice
- Multi-state Coalition on Highway Automation Readiness (MCHAR)
- FHWA National Dialog on Highway Automation
- ITS America and TRB committees
National Technology efforts

- Connected Vehicle Pooled Fund Study
- NCHRP Projects
- Cooperative Automation Research Mobility Applications (CARMA)
  - An open source software platform initiated by FHWA to enable the testing and evaluation of cooperative automation concepts for improving safety and increasing infrastructure efficiency.
  - Vision of cooperative automation as an extension of TSMO
- National Operations Center of Excellence (NOCoE)
- Comments to FHWA and NHTSA
- Congressional Testimony
Focus on Freight and Passenger CAV

Peer Exchange States
• Texas
• Pennsylvania
• Florida
• California
• Michigan
• Nevada
• Arizona
• Colorado

Other guests:
• FHWA Texas
• FHWA Pennsylvania
• FHWA National
• CARMA

Questions (broadly):
• How are states organized to respond to CAVs?
• What research are other states doing related to CAVs?
• Where can we collaborate?
Texas Innovation Alliance and Smart Cities Lab

ARLINGTON | AUSTIN | BRYAN / COLLEGE STATION | CORPUS CHRISTI | COLUMBUS | DALLAS
DENVER | DETROIT | EL PASO | FRISCO | FT WORTH | HOUSTON | KANSAS CITY | OMAHA
PITTSBURGH | PORTLAND | SAN ANTONIO | SAN FRANCISCO | SEATTLE | SOUTH BEND

Technology Efforts

April 29, 2019
Technology Efforts

Equity & Access
Tackle the challenge of providing affordable and reliable mobility service to enable the elderly and disabled to access healthcare services.

Seamless Mobility
Unlock the 1st/last mile and develop a multimodal payment platform that enables travelers to tap into a marketplace of mobility options.

Energy & Sustainability
Forge strategies for installing charging infrastructure, incentivizing fleet electrification, and shifting mode share.

Real-Time Data
Develop a standard for construction/lane closures/ incidents and prioritize readiness investments for CAV infrastructure.

Freight & Logistics
Improve goods movement by enabling truck platooning, supporting port operations, and securely exchanging public-private data.

MONTHLY DEEP-DIVES

Automated Vehicles for Aging & Disability Populations
Dockless Mobility
Single Payment Platform
Mobility Data Lakes
Texas Innovation Alliance and Smart Cities Lab Cross Cutting Initiatives

- Texas Proving Grounds
- Data Challenge & Open Data
- Communications & Community Engagement
- Funding, Policy, & Procurement
- Cooperative Research Agenda
Advanced Transportation and Congestion Management Technologies Deployment Program

Houston 2016: ConnectSmart – Connecting Transportation System Management & Operations (TSM&O) and Active Demand Management (ADM)

TxDOT 2017: Texas Connected Freight Corridors

I-10 Coalition 2018: Interstate 10 Truck Parking Availability System (TPAS)
Innovative Transportation Projects

CAV working group and task force

- CAV information and development: educate, collaborate, coordinate, integrate
  - CAV Working Group: Focus on internal TxDOT activities/strategies/resources
  - CAV Task Force: Focus on state/county/local governments, MPOs, RMAs, toll authorities, industry and academia.
- Both with ties to federal and national activities
TxDOT internal tech efforts

**Operations**
- High Precision Survey
- OnDemand Geospatial
- Georeferenced Assets
- Intelligent Construction / AMG

**Integration**
- Connected Autonomous Vehicles / Drones / UAS
- Smart City / ITS IoT / Edge Computing
- Multi-Modal

**Business**
- Automation AI / RPA
- Intelligence & Insight
- Realtime Analytics
- GRC & Open Data
Common ideas for a CAV working group

- CAV opportunities, challenges, and guidance
- Guidance on transportation technology and infrastructure
- CAV Strategic Plan, CAV business plan, tied into Technology, Research, Freight, ITS and TSMO plans...as well as LTRP and UTP

CAV Planning encompasses many things:
- national planning (interoperability & architecture)
- strategic program planning
- business & organizational planning
- transportation system planning
- communications & outreach planning

Make the case for technology installations that will benefit human drivers now
- Asset management, even understanding and digitizing what is currently on-system is a great first step
- Lane striping changes and frequency of updates
- Standards for Hardware and Software
- Cybersecurity

- Design build
- DSRC vs C-V2X
- Benchmark to other DOTs
Common ideas for a Statewide CAV TF and National COP

- CAV opportunities, challenges, and guidance
- Guiding policy frameworks that Enable or Regulate for CAV Testing and Operations
- Statewide CAV strategic planning and policy
- Resourcing & organizational alignment
- Advise local governments on CAV technology, local planning, collaboration with local governments – knowledge and laws primacy
- Strategic partnership opportunities for testing, pilots and deployment of CAV
- Guidance on preparing for CV Data and information, and ownership
- AV Testing, voluntary certification
- Operation and safety of CAVs / Impacts on public safety and perception
- Privacy & Cyber Security
- Multi-modal applications and seams
- Technical Details / Operating Design Domains
- Insurance and Financial Responsibility
- Law Enforcement Interaction
- Education and Public Engagement
- Workforce Impacts and Agency Staffing
- Crash and Incident Reporting Requirements
- Lessons learned and successes
- Testing experiences & feedback from manufacturers/OEMs on infrastructure needs
- Standardizing and Harmonizing State Regulations: Vehicle Code, Enforcement and Compliance
- Multistate corridors
- Cross border/jurisdictional interoperability
- Peer network development & support, best practice synthesis, research needs & projects (supplement NCHRP & FHWA), research products/tools/guidance implementation & training