CTR Symposium 2022

TxDOT Austin District

May 6, 2022

Waycare – Traffic Management

- Waycare is a cloud-based artificial intelligence (AI) solution for traffic management
- Aggregates multiple sources of data including connected vehicle data
- AI algorithms feeds the Waycare platform to automatically detect more incident and provide workflows for response

Waycare – Traffic Management

- Goals/Benefits:
  - Higher resolution roadway monitoring
  - Instant, comprehensive ability to detect and predict incidents
  - Improved collaboration and response times
  - Prevent secondary crashes due to incidents or stalled vehicles
  - Decrease incident durations

SH 130 CAV Corridor

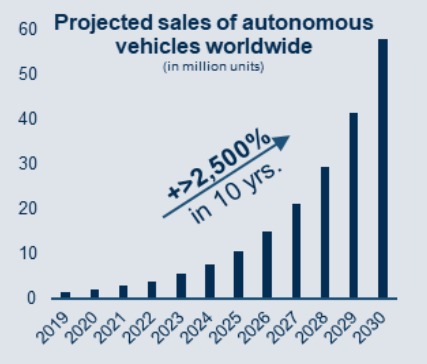
- SH 130 CAV Corridor Project: deploy technology solutions to enable CAV operation to realize several outcomes such as:
  - Unlocking safety and operational efficiencies from Advanced Driver Assistance Systems (ADAS) and autonomous operation
  - Use data to help manage transportation system operations
  - Reductions in vehicle crashes and fatalities
  - Reductions in traffic delays caused by both recurring and non-recurring events
- SH 130 is ideal CAV test bed with comprehensive ITS infrastructure including modern fiber backbone and CAV partners (Tesla, Kodiak).

Mobility Trends and Disruptions

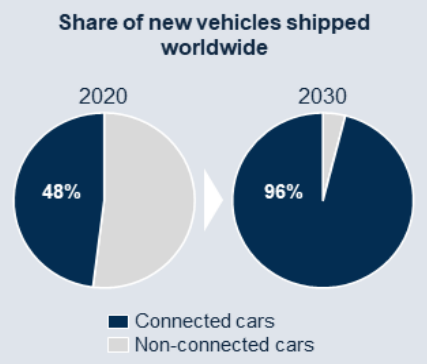
Mobility "Mega Trends"

Automation, Connectivity, Electrification, Sharing (ACES) Trends

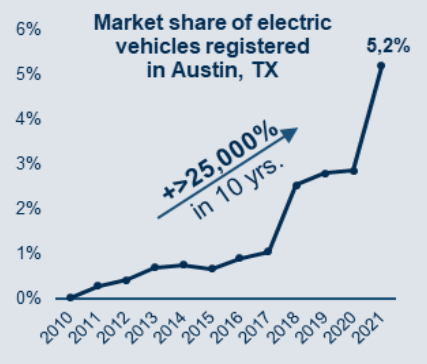
Automation



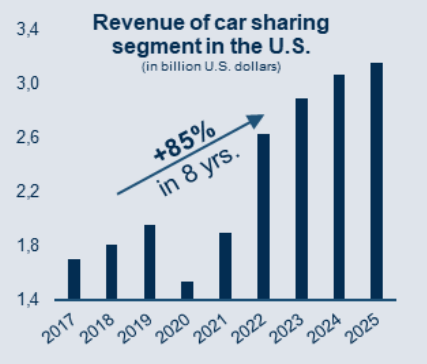
Connectivity



Electrification



Sharing



Mobility "mega trends" driven by the private sector lead to **increased testing needs, complexity in their validation methods and approval procedures**, and make it **difficult for the infrastructure provided by the public sector to catchup.**

Source: Statista, Austin Energy

Regional Approach to Technology Implementation

SmartTrack Concept's Implications: Regional Approach

CAMPO
CAPITAL AREA METROPOLITAN PLANNING ORGANIZATION

Collective Regional Approach

Alignment of regional goals, systems and resources for a standardized customer experience within Texas without interruptions between services

Texas Department of Transportation

Unified "Front"
Create a platform and streamlined approach for partnering with private sector

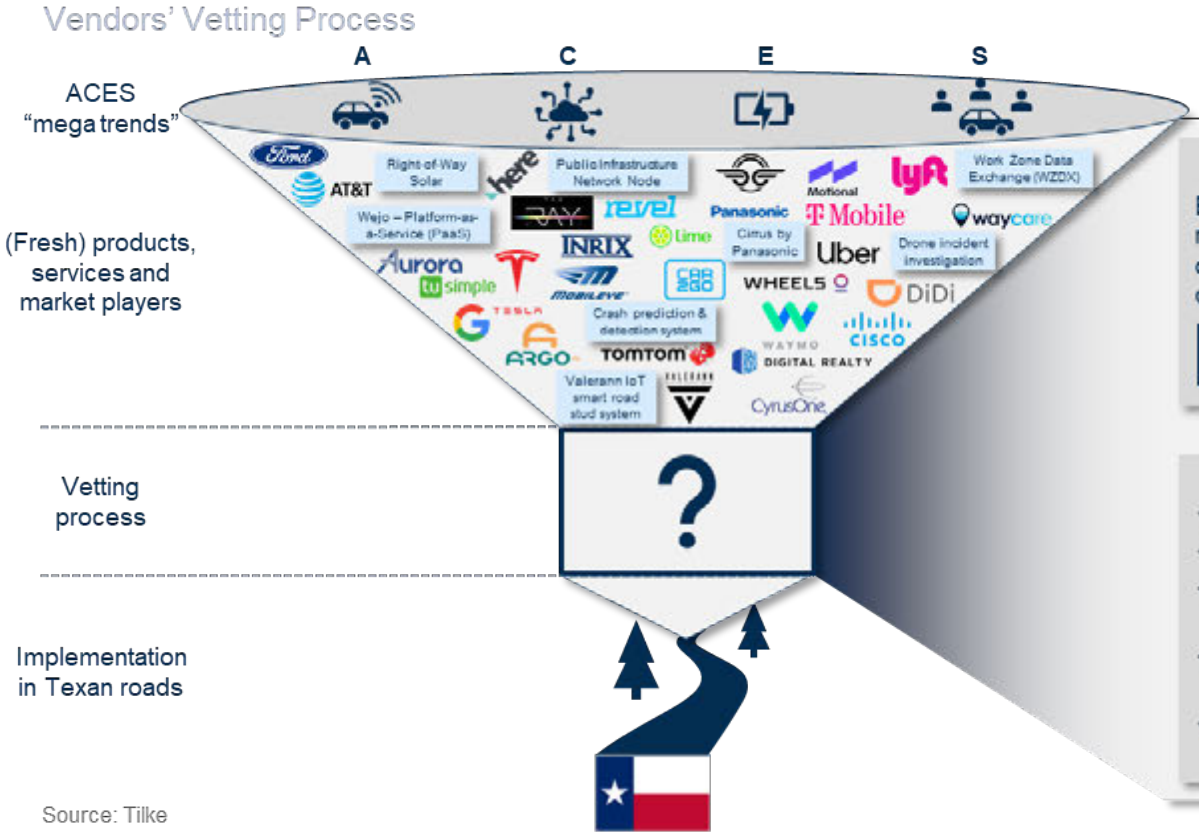
Standardization
Align goals and tech systems across jurisdiction

Collectivity
Advantage of working collectively with private sector as opposed to each individual agency working independently

Process Optimization
Developing processes and protocols for vetting technologies

Source: Tilke

Mobility Trends and Disruptions



Key Challenge

Ensure **regional interoperability** following standard requirements and **maintain transparency** while leveraging only the **most promising technologies** for the improvement of TxDOT's main goals in Texan local to interstate roads:

Traffic safety | **Traffic operations** | **Traffic management**

SmartTrack solution

- ✓ Keep Texas at the forefront of mobility innovation
- ✓ Standardize vendors' vetting process
- ✓ Establish data platform to share with cities, counties and state agencies
- ✓ Create a sustainable method to react towards future mega trends
- ✓ Collaborate with the private sector to speed up mobility innovations

Safety, Mobility, Autonomy, Research and Testing Track Center (SMARTTRACK)

THE UNIVERSITY OF TEXAS AT AUSTIN
CENTER FOR TRANSPORTATION RESEARCH

Texas Department of Transportation

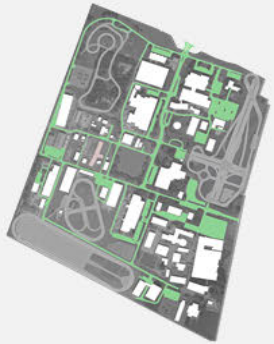
T1 T2 T3

Three Tiers of Test Track

Tier 1
Closed testbed

- Testing in safe and closed environment
- 4 testing modules
  - ✓ Wet handling
  - ✓ Loss of signal
  - ✓ Pavement test facility
  - ✓ Endless loop

Tier 2
Semi-closed testbed



- Existing road network of research campus
- Road network under operation
- Different road stiles (total length 8 miles)

Tier 3
Open testbed

- Real-world implementation
- Interstate highway structures included
- Roadside units tie into the core computing and data units

Source: Tilke

Open Question

Our conventional problem statement process is often very specific and on immediate needs; both in the problem and potential solutions.

How can we reimagine the research by taking a vision-driven approach to a future issue (like emerging transportation technology) to identify proactive, programmatic solutions and practices?