Automated Vehicles Update…And More

TexITE Greater Dallas Chapter

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North Central Texas Council of Governments

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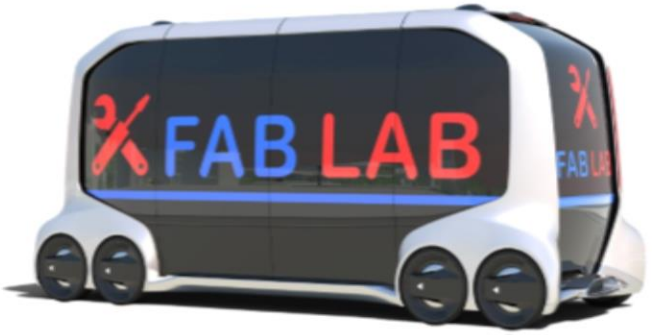
AV Development Goes Mainstream

ARGO AI

DELPHI

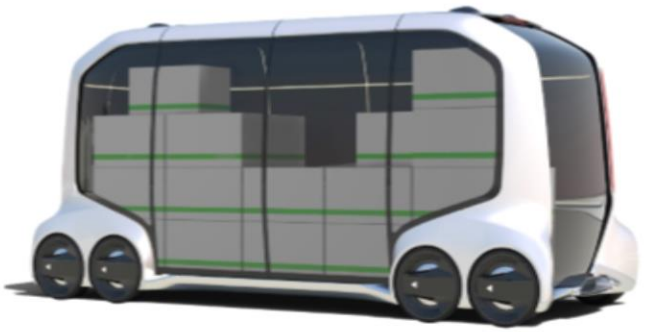

WAYMO
WAYMO
PACIFICA
7NFV173


REAL
E-COMMERCE

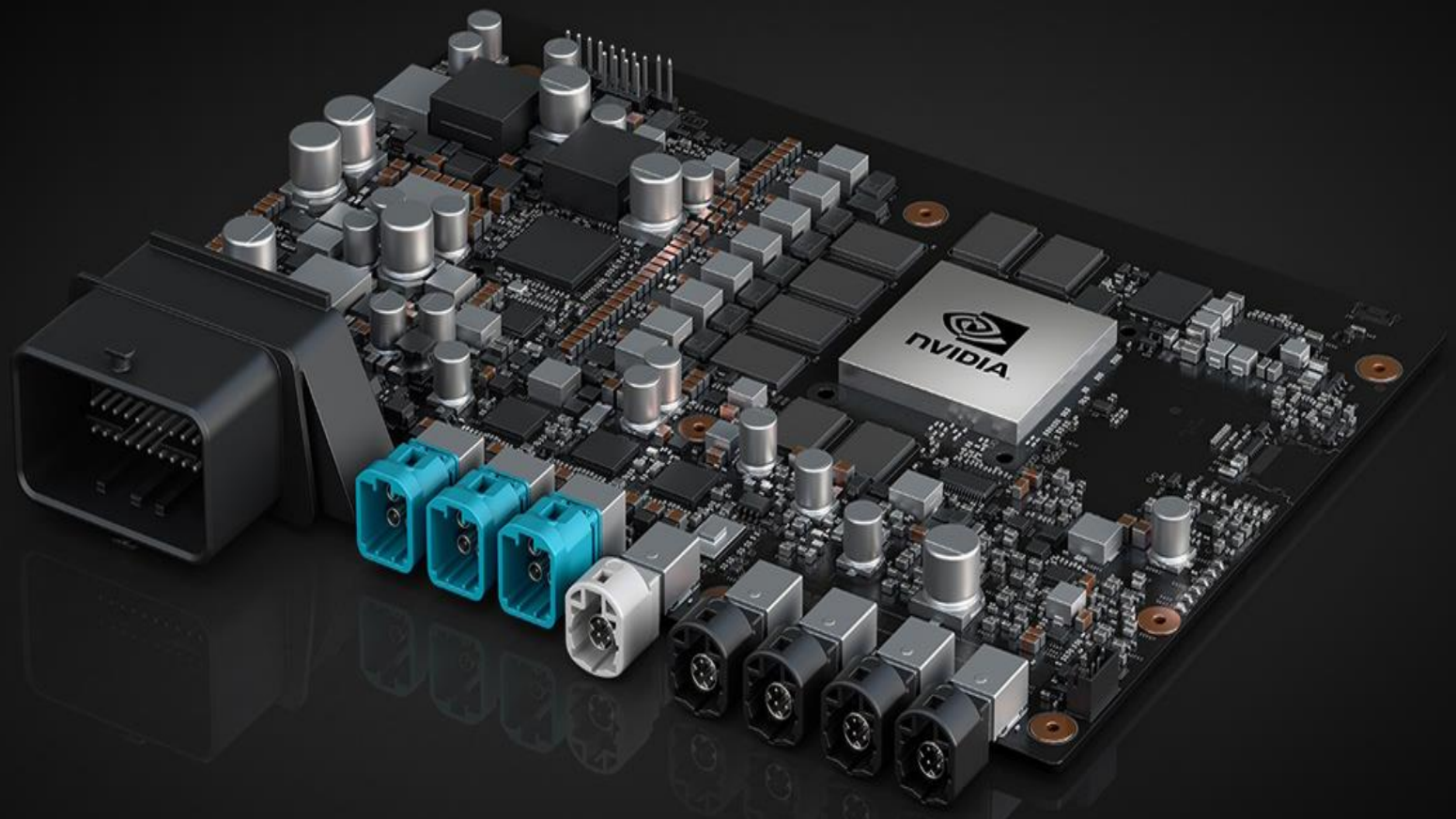

FAB LAB


Pizza

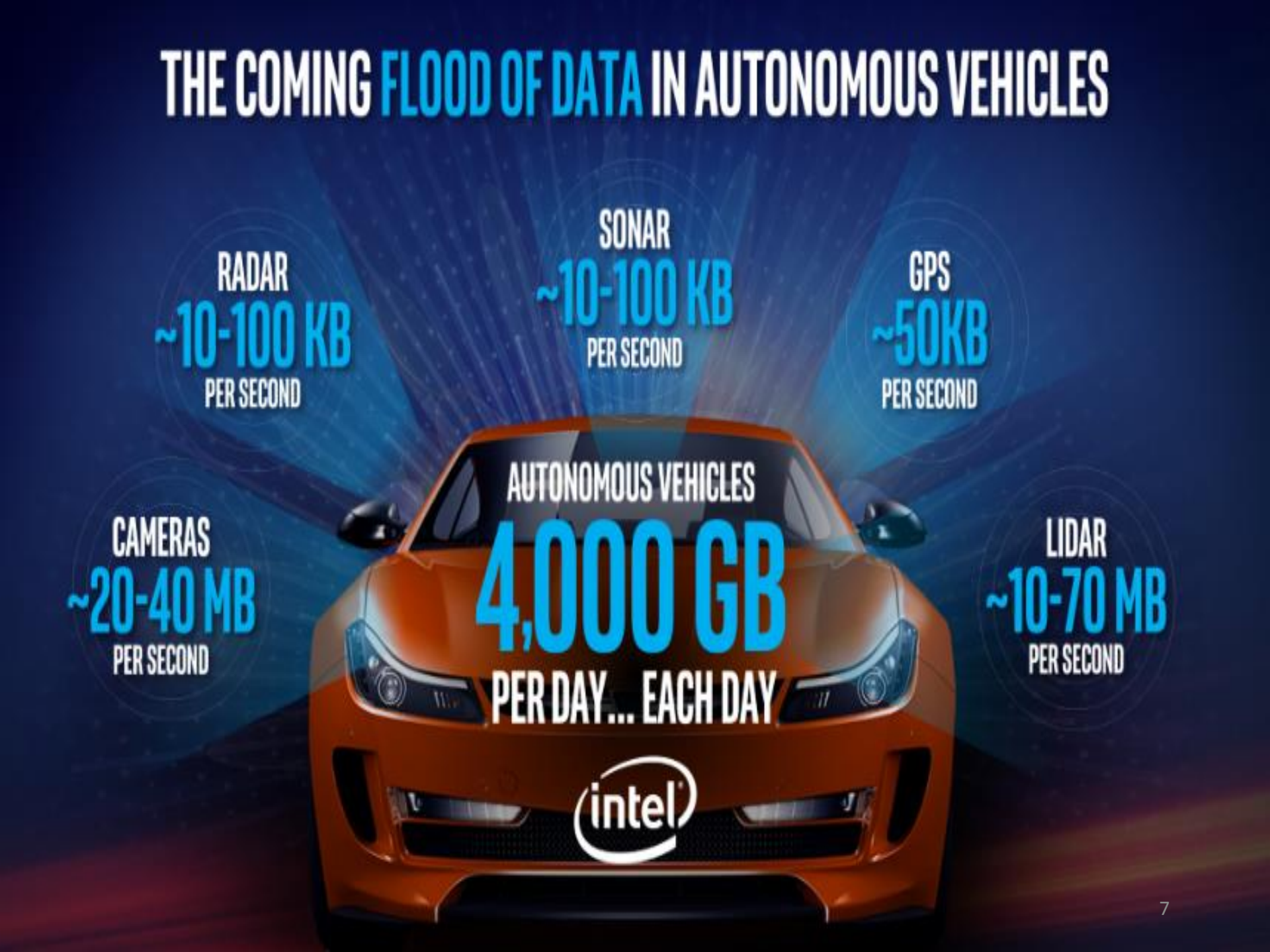

LOGISTICS



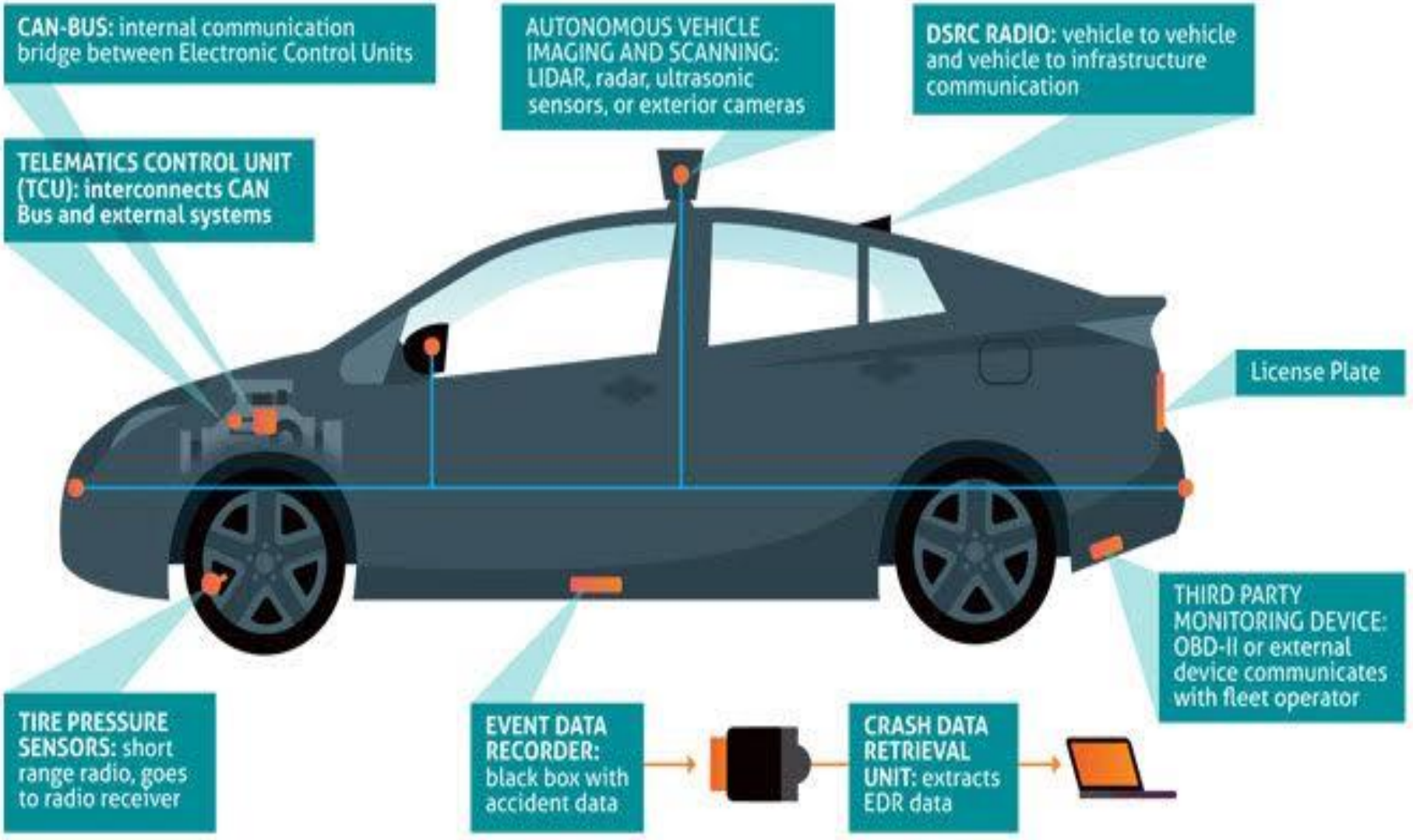
NVIDIA unveils its powerful Xavier SOC for self-driving cars



The system can process 30 trillion operations per second.


THE COMING FLOOD OF DATA IN AUTONOMOUS VEHICLES
RADAR
~10-100 KB
PER SECOND
SONAR
~10-100 KB
PER SECOND
GPS
~50KB
PER SECOND
CAMERAS
~20-40 MB
PER SECOND
AUTONOMOUS VEHICLES
4,000 GB
PER DAY... EACH DAY
LIDAR
~10-70 MB
PER SECOND
intel

DATA and the **CONNECTED CAR**



Vehicle Data Use Cases

HERE's Safety Services Suite aggregates real-time, rich sensor data generated by cars. HERE transforms this data into useful live road safety information delivered to drivers through the car's head unit display, or to the car's Advanced Driver Assistance Systems (ADAS) to support automated safety functions.

Vehicle Data Use Cases

Waycare draws data from social media to crowdsourcing apps like Waze, refines and synthesizes information including speed, braking and acceleration data, then predicts potential highway trouble spots. Since the system went live: 12% improvement in police crash response times; 23% drop in secondary collisions.

Vehicle Data Use Cases

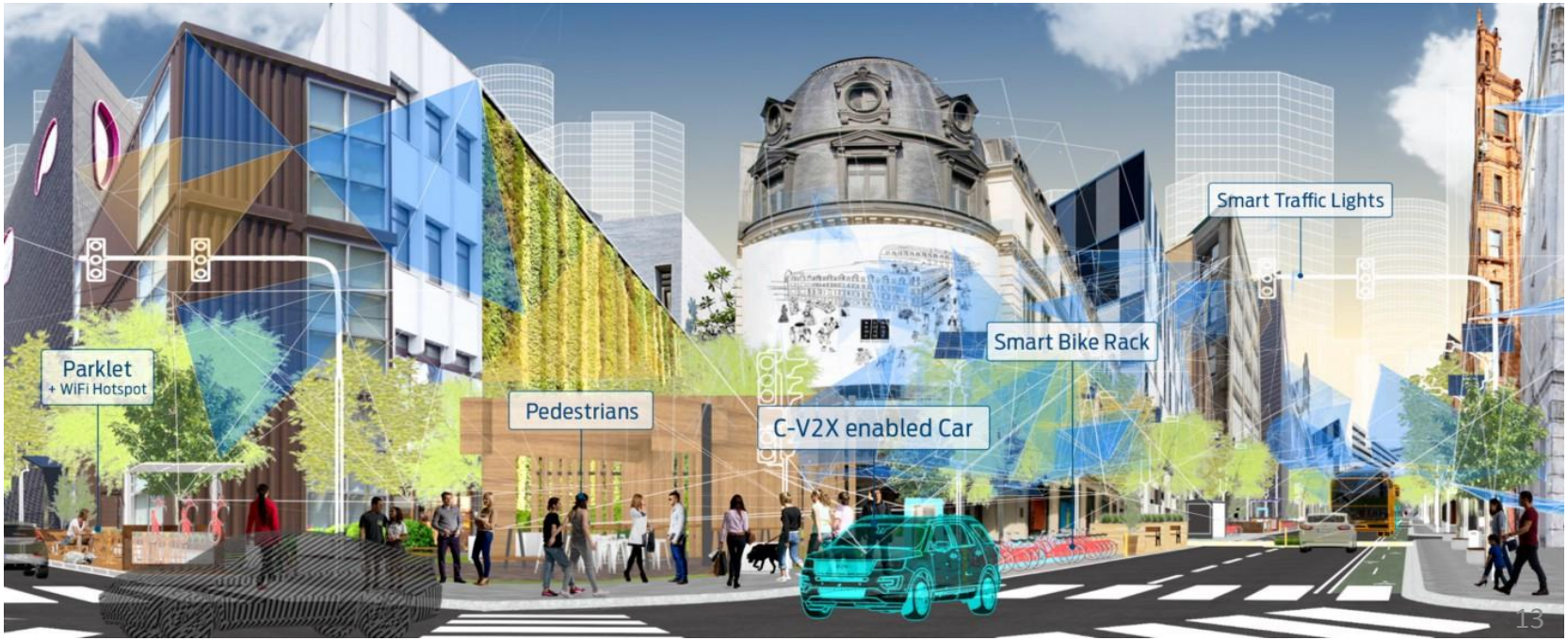
Ford connects Waze through its infotainment system: Latest update connects SYNC with the popular traffic app.

U.S. DOT launches multi-modal initiative to modernize its data usage, collection: Pilot project will integrate traffic crash data with data from the crowd-sourced app Waze on traffic hazards and conditions.

Vehicle Data Use Cases

Vehicle Data Use Cases

Ford believes cellular vehicle-to-everything has the most potential to allow cars and cities to communicate quickly, safely and securely. Global adoption of C-V2X can deliver vehicles that help cities around the world create a safer environment where people can move more freely.



Current ITS Environment

1. Dumb vehicles
2. Highway agencies harvest and process data about highway conditions
3. Highway agencies have the most information about highway conditions
4. Human driver primary target of information highway agencies choose to share

Emerging ITS Environment

1. Really, really smart vehicles
2. Vehicles generate far more data about highway conditions than highway agencies can collect
3. Private entities (e.g., Waze, Toyota, HERE, Allstate) have much more information about highway conditions/operations than highway agencies
4. Vehicles become the primary consumers of information

Implications

1. Vehicles now part of the infrastructure
2. Leverage vehicle smarts to do hard work of data collection/processing
3. Focus on providing visually robust and well-maintained roadways
4. Share information to give AV's a head's up
5. Audience = autos not humans
6. Wireless network coverage key

AVs and DFW Cities

Robo-taxis

AV Shuttles

Buses

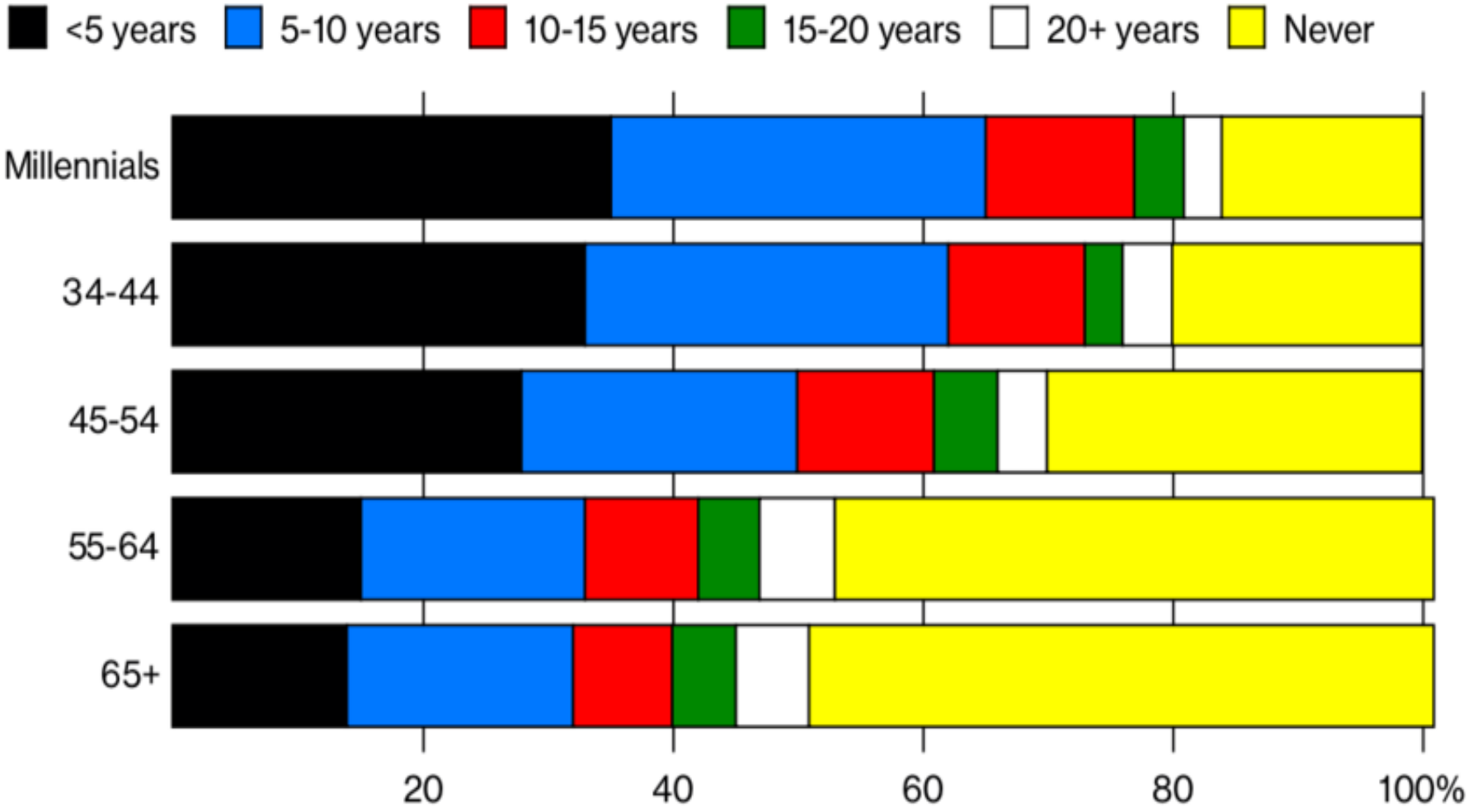
Delivery

Personal

People Mover

Driverless Divergence

When Americans say they'd be willing to buy an autonomous car varies by age group



Note: Numbers may not add up to 100 percent due to rounding

Data: Edmunds; graphic by Bloomberg Businessweek

NCTCOG Automated Vehicle Program

Texas AV Proving Ground Network

- UTA campus/streets - $350,000
- Second AV shuttle deployment - $250,000
- I-30 test corridor (Managed Lanes 3.0) - $1M

Transportation data infrastructure

- Traffic signal data sharing - $250,000
- Transportation data sharing (Waze/511DFW) - $250,000

“Mover” prototype - $575,000

Help Build AV Program 2.0

Exercise: You have 10 points to allocate among the listed projects and your suggested projects in any amounts that you see fit.

Project	Score
Promote ridesharing/microtransit to prepare for robotaxis	
Build Transportation Data Infrastructure (e.g., Waze, signal data sharing)	
Use video harvested from vehicles for operations/capital planning purposes	
Transit last mile solutions using AVs	
Low-speed AV deployment on “campuses” with SOV trip reduction programs targeted at the campus members	
Add additional low-speed automated vehicle pilots in multiple environments	
Ensure highways/streets are have sufficient wireless network coverage to support advanced vehicle	
Prioritize managed Lanes as AV/Tech corridors	
Install DSRC roadside units	
Make 511DFW one-stop-shop for incident reporting and travel info	
(Your ideas)	

Contact Information

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MPO Automated Vehicle Policies (Draft)

1. Make roadway conditions and safety data accessible to developer community to support AV operations and optimize travel navigation services.
2. Give priority to two-way data sharing arrangements.
3. Do cost/benefit analysis of data sharing as an alternative to ITS hardware solutions.
4. Support reliable next generation wireless communications (e.g., 5G) in and around highways and other transportation facilities.
5. Support private/public partnership solutions that will advance deployment of next generation wireless communications systems.

MPO AV Policies (Draft)

6. Support efforts to increase average vehicle occupancy by TNCs, etc.
7. Do cost/benefit analysis of using AV technology and related demand management tools as alternative to building additional lanes to increase roadway capacity.
8. Maintain existing roadways at a level that supports AVs before investing in the construction of new roadways.
9. Support testing and deployment of automated vehicles.
10. AVs must support efforts to provide consumers more travel options and enhance the safety of other roadway users such as bicyclists and pedestrians.