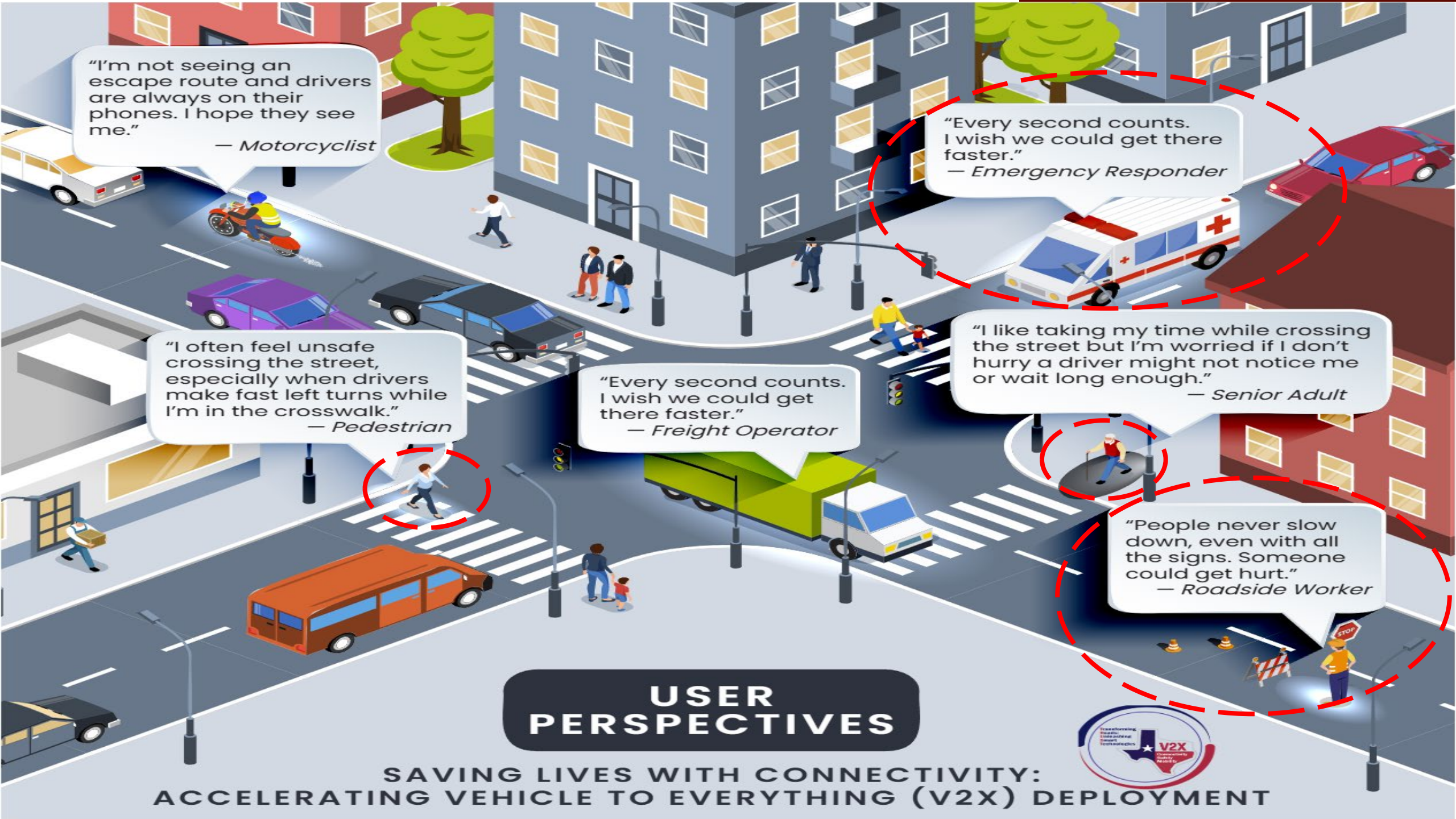

"I'm not seeing an escape route and drivers are always on their phones. I hope they see me."
— Motorcyclist
"Every second counts. I wish we could get there faster."
— Emergency Responder
"I often feel unsafe crossing the street, especially when drivers make fast left turns while I'm in the crosswalk."
— Pedestrian
"Every second counts. I wish we could get there faster."
— Freight Operator
"I like taking my time while crossing the street but I'm worried if I don't hurry a driver might not notice me or wait long enough."
— Senior Adult
"People never slow down, even with all the signs. Someone could get hurt."
— Roadside Worker
STOP
USER PERSPECTIVES
V2X
SAVING LIVES WITH CONNECTIVITY:
ACCELERATING VEHICLE TO EVERYTHING (V2X) DEPLOYMENT

What is Vehicle-to-Everything (V2X)?

V2X is communications technology that allows vehicles to communicate (beyond line of sight) with each other, infrastructure, and other road users.

It enhances **safety**, **mobility**, and **efficiency** by enabling real-time alerts and coordination.

Helps prevent crashes, reduce congestion, and improve traffic flow through smarter transportation systems.

Is V2X New?

- V2X is not a new concept, but its deployment is just beginning.
- Research and testing have been ongoing for 20+ years, with pilots and early deployments across the U.S. and globally.
- Advancements in wireless technologies, AI, and automation are now making large-scale deployment more feasible and impactful.

How is v2x different than autonomous vehicles?

- AVs rely primarily on vehicle sensors and cameras
- V2X enables communication between vehicles and the environment
- V2X supports cooperative driving, while AVs focus on making decisions independently.
- V2X can enhance safety and awareness for human-driven vehicles, while AVs focus on self-driving capabilities.

- **Connected ≠ Self Driving**

What's The Current Status of V2X?

Equipment – Sending information into the "air" is available.

Standards – Messaging standards exist and continue to evolve.

Vehicles – Few can receive (only a few very high-end models).

Prospective Users – No direct reception. A few cellphone apps.

Texas A&M Transportation Institute

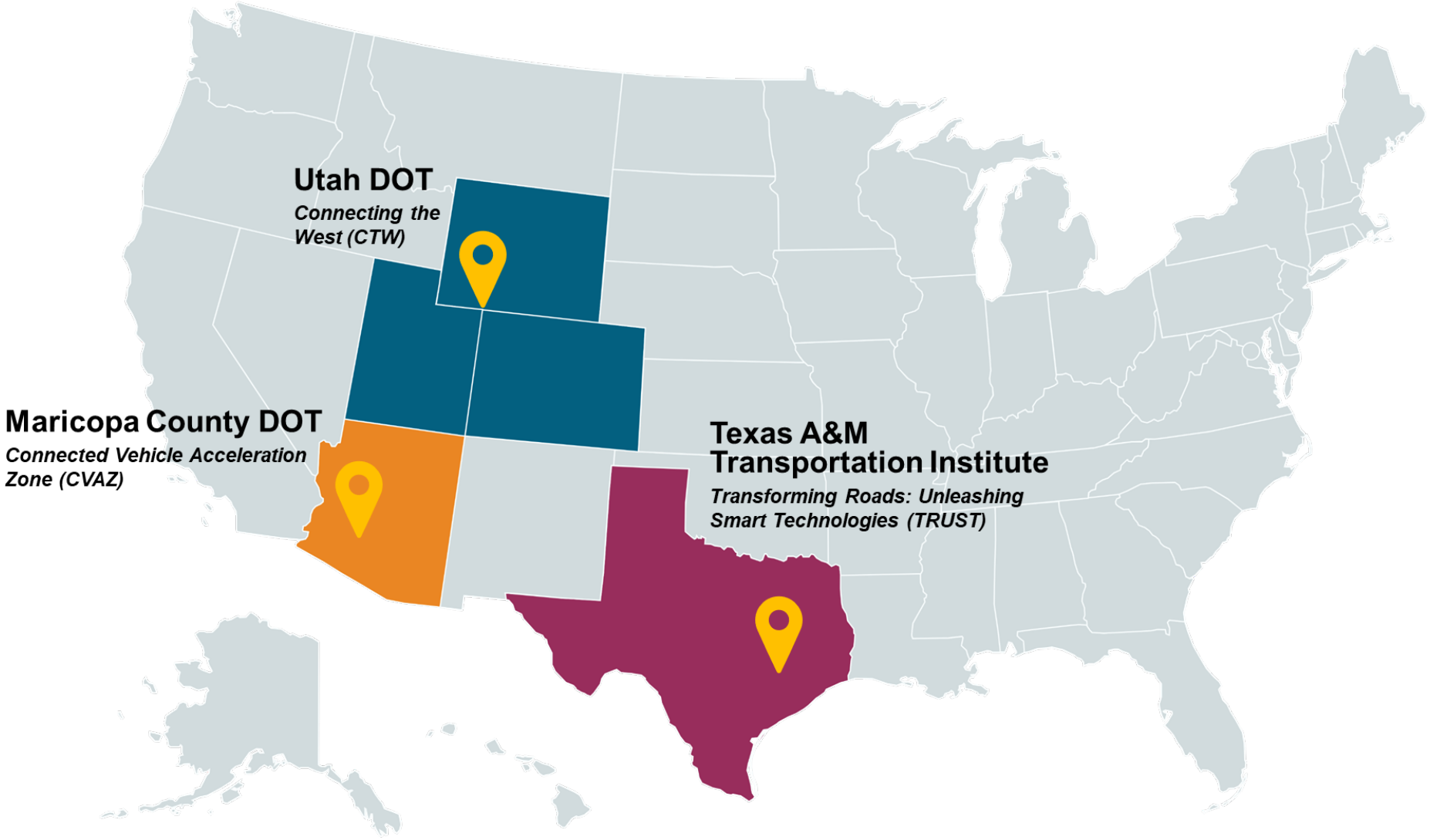
Saving Lives with Connectivity:
Accelerating Vehicle to Everything (V2X) Deployment

Transforming Roads, Unleashing Smart Technologies (TRUST): *Deployment Concept*

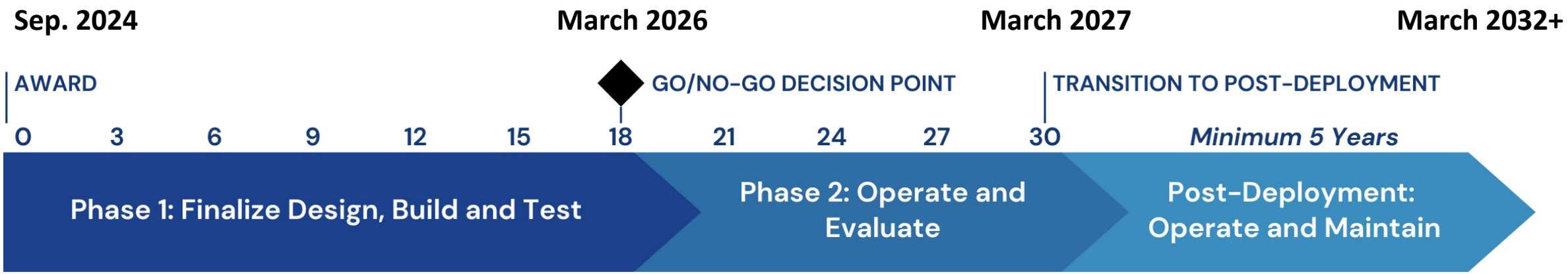
NOVEMBER 20, 2025

Srinivasa Sunkari

V2X Accelerator Sites



Structure and Phasing



TRUST Vision and Mission

- **Vision:**
  To create the nation's most advanced, connected, and resilient transportation system—where every trip is safer, smarter, and more efficient.

- **Mission:**
  Through large-scale, real-world V2X deployments, we will integrate cutting-edge technologies across diverse environments, deliver measurable safety and mobility benefits, and set the standard for how connected systems transform transportation.

Our Approach in One Phrase

Build foundational !

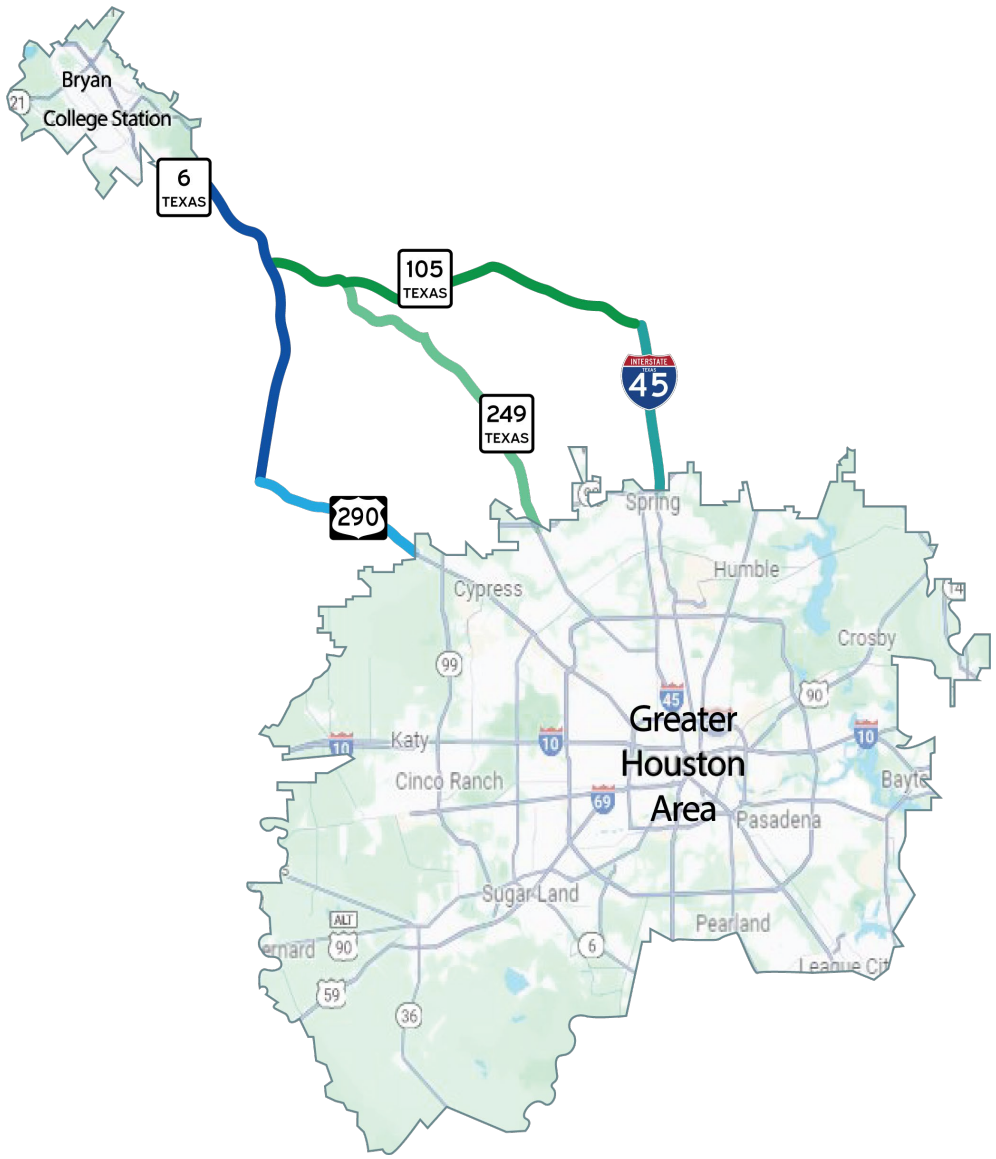
Think aspirational !

TRUST Use Cases

15 different use cases

- Diverse environments.
- Both DIRECT and NETWORK applications.
- Multiple OEMs as partners with test vehicles.
- Bridging NETWORK applications into a development version of Google Maps.
- Phase 2 plans for VRU OBU applications.
- Phase 2 plans for additional fleet vehicles.
- Phase 2 ‘virtual’ RSUs.

Texas TRUST Deployment Region



Applications in College Station

SPaT-Enabled Intersections for VRU Identification and Protection
Traffic Signal Preemption and Priority
Transit Fleet Integration
Every Day a Gameday
Enhanced Highway Construction Worker Safety

Applications on NHS

Incident Management
Adverse Weather Events / Flooding
Construction events
Curve speed warning

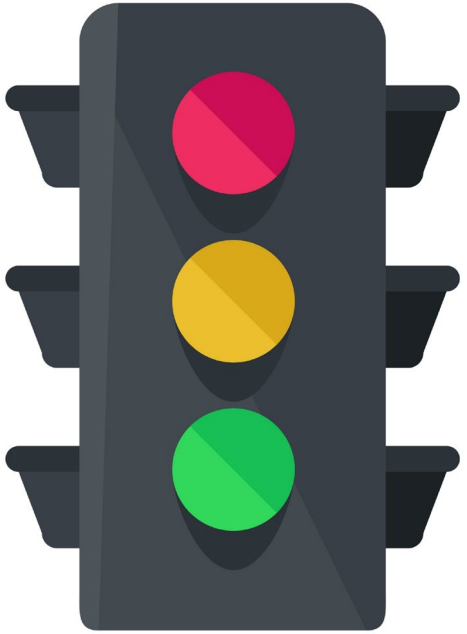
Applications in Houston

Roadway Flood Warning
Houston SPaT-Enabled Intersections
Right Turns on Red Warning
Red Light Violation Warning
Wrong Way Driving
Emergency Vehicle Response Time and Safety

Operational Concepts

- **Concept 1) Connected Intersections**
- *Use connected signals to improve intersection safety for all road users.*
  - UC 1: SPaT-Enabled Intersections for VRU Protection
  - UC 11: Houston SPaT-Enabled Intersections
  - UC 12: Right Turn on Red Warning
  - UC 13: Red Light Violation Warning

- **Concept 2) Preemption and Priority**
- *Give emergency and transit vehicles the ability to request signal timing adjustments.*
  - UC 2: Traffic Signal Preemption and Priority
  - UC 3: Transit Fleet Integration
  - UC 15: Emergency Vehicle Response Time and Safety

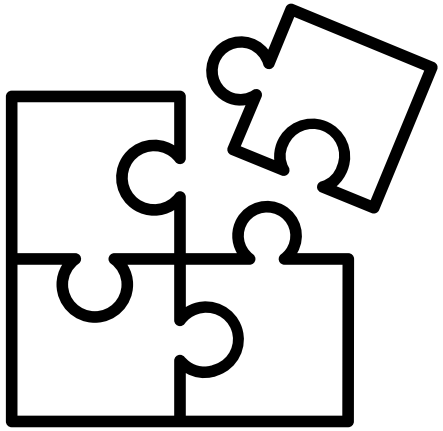


Operational Concepts

- **Concept 3) Enhanced Safety**
- *Provide location-specific safety alerts to help drivers react quickly to changing roadway conditions.*
  - UC 9: Curve Speed Warning
  - UC 5: Enhanced Highway Construction Worker Safety
  - UC 8: Planned Construction and Special Events

- **Concept 4) Enhanced Traveler Information**
- *Deliver timely updates on planned or unexpected roadway impacts.*
  - UC 4: Every Day a Gameday
  - UC 6: Incident Management
  - UC 7: Adverse Weather Events
  - UC 10: Roadway Flood Warning
  - UC 14: Wrong-Way Driver Detection

Our Status



- Evolving system documentation
- 90% of equipment in house
- 35% installed (100% buses, 35 intersections)
- Developing MAP messages
- First set of intersections up and running (College Station)
- Multiple operational tours to TxDOT over short course
- OEM vehicles in progress.
- Google Maps (development) in progress.
- Fully equipped test intersection in closed course setting

What Are The Next Steps?

- Continue documentation efforts
- Continue OEM collaboration and UIX development
- Complete equipment installation
- Test test test and then test again!
- Operational demo development
- Operational readiness testing
- Interoperability testing
- ‘Before’ data collection
- And more . . . .

- Implement 15 use cases successfully.
- Test 15 use cases successfully.
- Pass Phase 1 test gate.
- Show quantitative benefits.
- Demonstrate other aspects, such as latency
- Happy IOO partners.
- Be fiscally responsible.
- Achieve / exceed match requirements.
- Long-term partnerships for operations.
- Think aspirational – deploy foundational

What Keeps Me (Actually Bob) Up At Night?

- Honestly, everything, but especially…
  - Providing the right vision
  - Finishing documentation
  - Getting things installed
  - Testing
  - Phase 1 gate check
  - Money
  - Long-term operations and maintenance clause

THANK YOU

Srinivasa Sunkari, P.E., PMP
Procurement and Installation Lead
Texas A&M Transportation Institute
s-sunkari@tti.tamu.edu

Robert (Bob) E. Brydia, PMP
Texas TRUST Site Deployment Lead
Texas A&M Transportation Institute
R-brydia@tti.tamu.edu

https://v2xtexastrust.com/