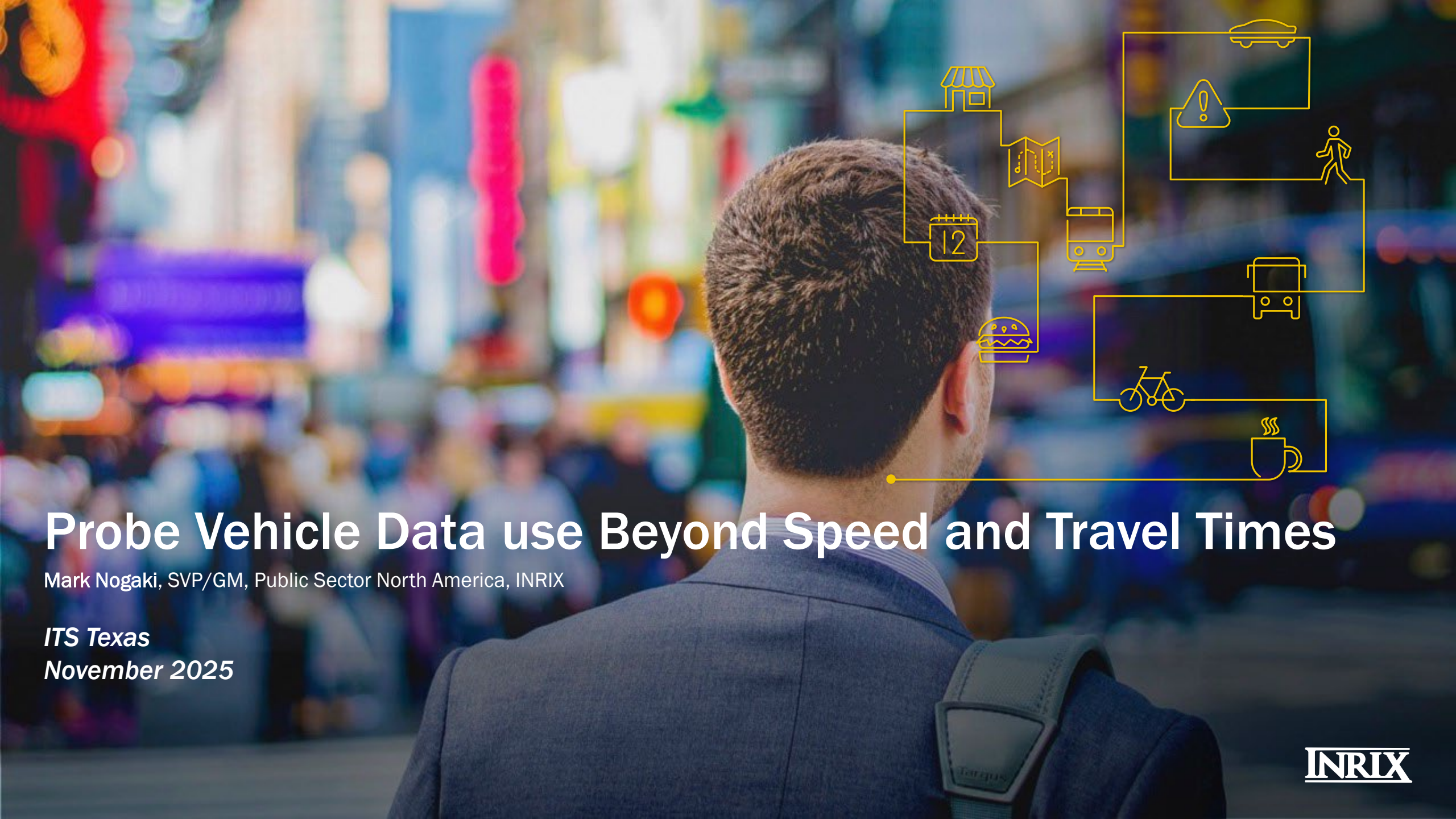


Probe Vehicle Data use Beyond Speed and Travel Times

Mark Nogaki, SVP/GM, Public Sector North America, INRIX

ITS Texas
November 2025

INRIX

Agenda

- Brief INRIX overview
- Understanding Probe Vehicle Data
- Evolution and Expansion of PVD
- Advanced Applications of PVD
- Use Cases
- Conclusion

What We Do: Provide Intelligent Solutions in Real-Time

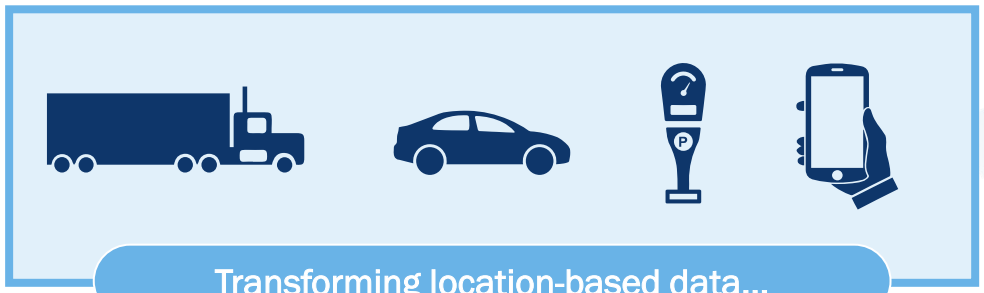
Creating Differentiated Insights From People, Cities, Vehicles and Roads

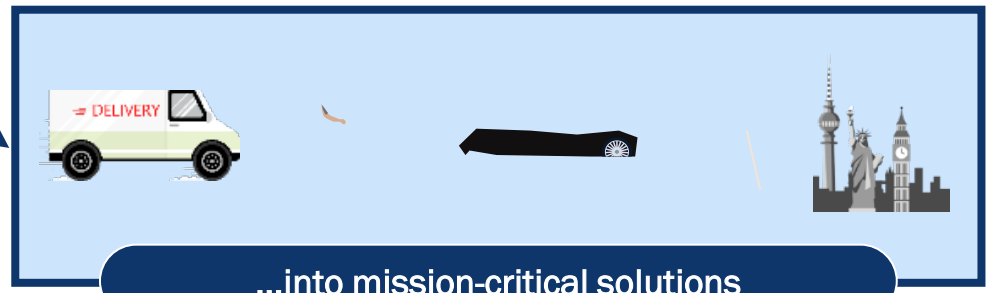
Mobility-Intelligence Platform

15+ Yrs. Of Proprietary Historical Data	**180M+** Daily API Calls	**470+** Data API's	**60 PBs** Data in INRIX Data Lake
310M+ Vehicles & Devices	**2T+** Kilometers of Vehicle Trip Data	**23M+** Data Points Per Minute	**33B+** Data Points Per Day

Software-As-A-Service

15+ SaaS/ Analytics Applications	**145+** Service Countries	**1,250+** Active Revenue Generating Customers (1)
400+ Public Sector Customers	**250+** Patents Issued Over Past 15 Years	**400,000+** Average Monthly Interactions





Source: Company information as of 24 Apr 2023
Notes:
1. Number of indirect customers estimated based on royalty reports and partner information

Probe Vehicle Data: Definitions and Applications

PVD: What is it?

- **Definition of Probe Vehicle Data**
  - Data from GPS-equipped vehicles—no roadside hardware needed.
    - Vehicle is the source (passenger & freight)
    - Collected at varying ping rates
- **Evolution of PVD**
  - 15+ years of progress into a trusted real-time traffic data source.
- **Applications in Traffic Management**
  - Supports 24/7 TMCs for monitoring and incident response.
- **Impact on Transportation Systems**
  - Turns raw data into actionable insights for efficiency and responsiveness.

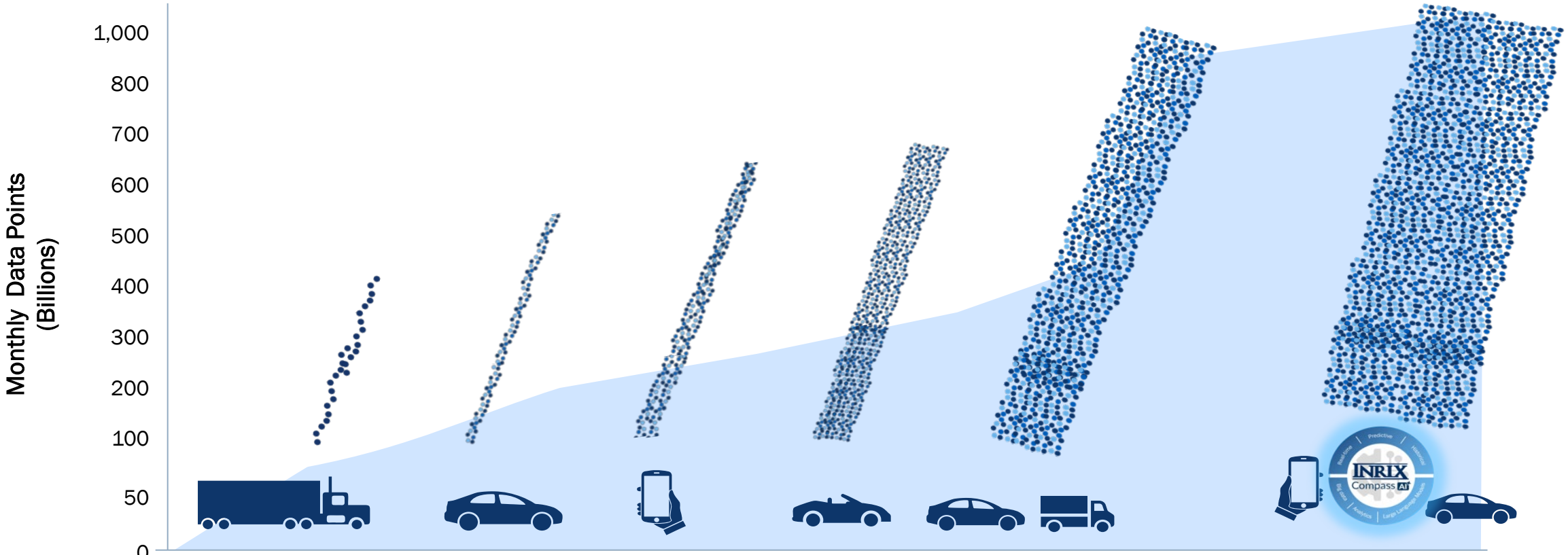
PVD: Applications

- **Incident Management**
  - Tracks conditions for timely, efficient resource deployment
- **Performance & Safety Insights**
  - Identifies bottlenecks and high-risk zones for safer roads.
- **Optimizing Signal Operations**
  - Improves signal timing to reduce delays and enhance flow.
- **Data-Driven Planning**
  - Enables project prioritization based on traffic needs.
  - Origination & Destination for planning studies

INRIX

Over 15+ Years of Connected Vehicle Data Growth

INRIX processes over 1 Trillion Data Points per Month, most of which is in real-time



2005
- Road Sensors
- Fleet Data (GPS)

2010
- PND's
- Incident
- Consumer GPS

2012
- Mobile App Data

2017
- Connected Car Data
- Sensor Data

2022
- High frequency Data (3 seconds)

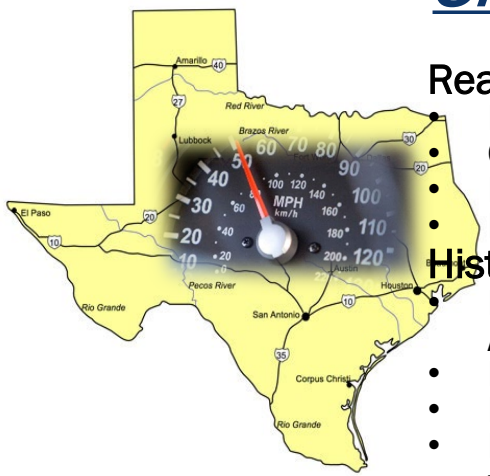
2023
- Collapse of key CV data suppliers rattles industry
- Removal of bad

2024+
- Addition of more LBS & micromobility data
- Addition of CV Data from new provider
- Use of AI Models to Optimize Utility

Use Cases: Texas Department of Transportation

INRIX at Work at TXDOT

SPEED AND TRAVEL TIME

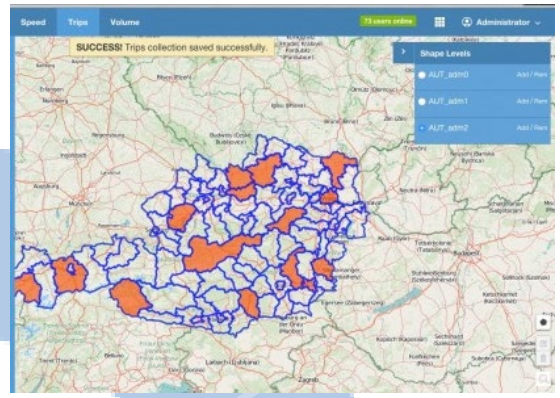


Real-Time Traffic Data & Tools

- Real-Time Traffic Flow Data
- Connected Services Platform (APIs)
- Real-Time Traffic Monitoring Site
- Full RITIS

Historical Traffic Data & Analytics

- Historical Travel Speed and Travel Time Archive
- Historical Traffic Flow Profiles Statistics
- IQ Roadway Analytics
- Probe Data Analytics (PDA) in conjunction with CATT Lab



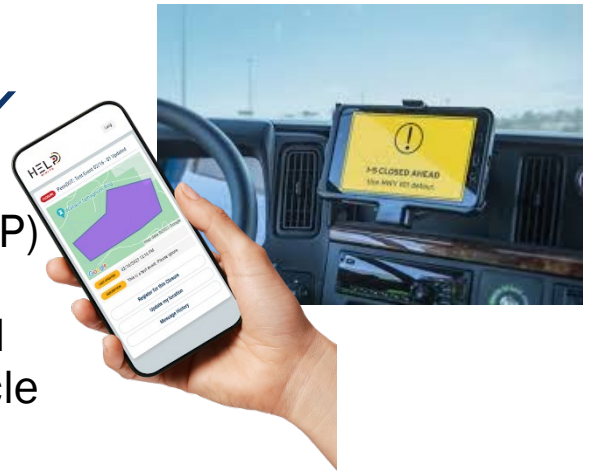
TRAJECTORY & O-D

Trip Data & Analytics MONTHLY REPORTS

- Trip Path Dataset (Passenger & Truck)
- Trip Analytics powered by the CATT Lab

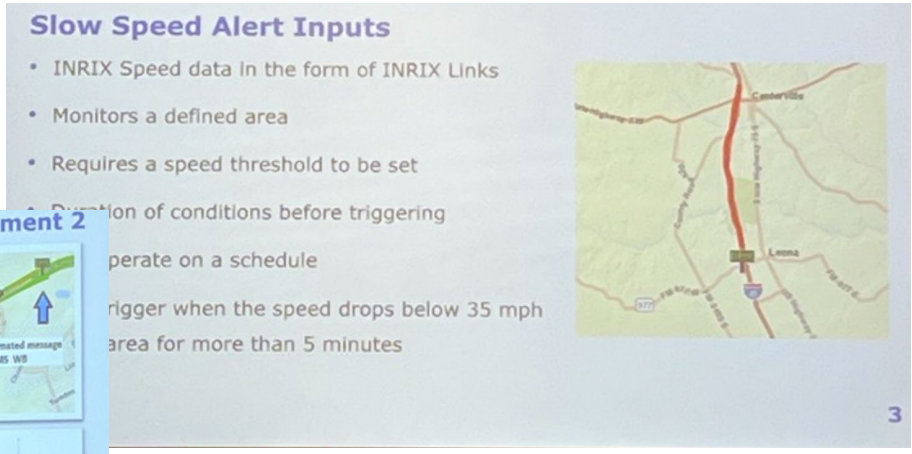
SAFETY

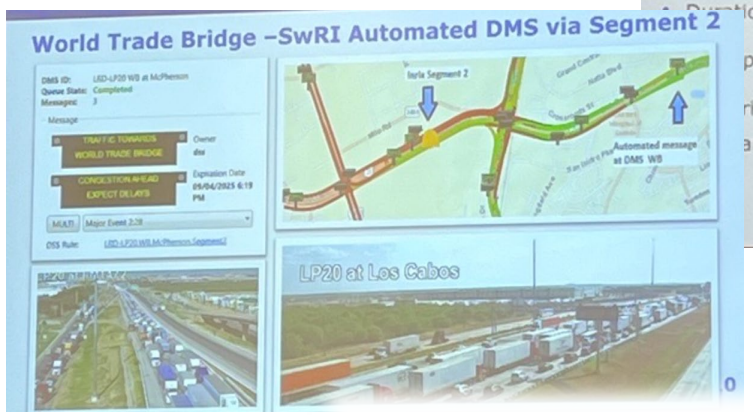
- HELP Alerts (TxDOT HELP)
- Commercial Motor Vehicle Alerts



INRIX Real-Time Data Examples

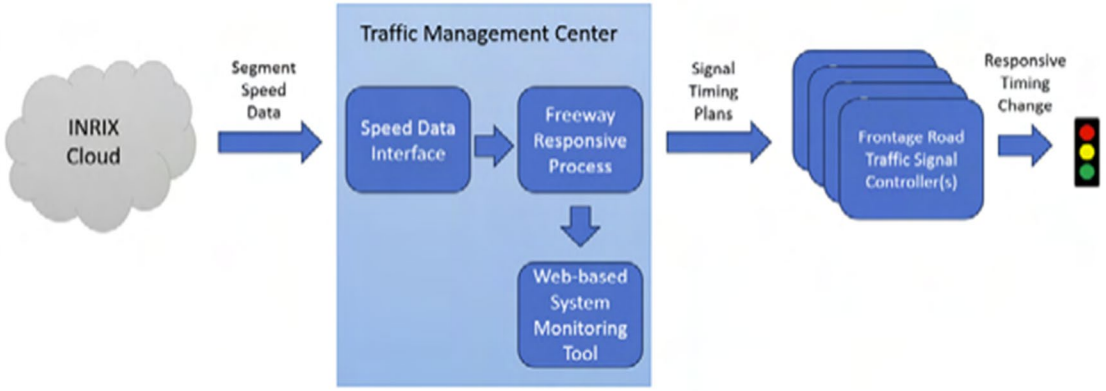
Integrations with LoneStar/RIMS





Implemented/Piloted

- **Bryan:** Slow Speed Alerts
- **Laredo:** Congestion Alerts
- **El Paso:** Variable Speed Limits
- **Houston:** Signal timing changes to automatically flush the ramps

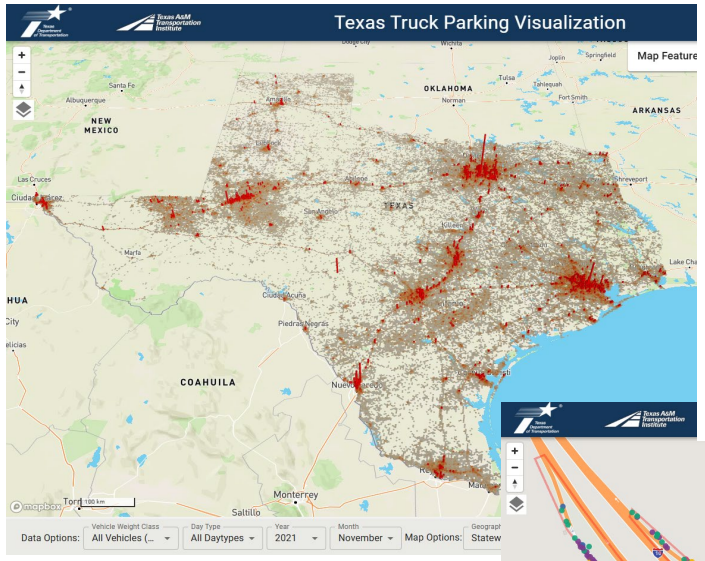


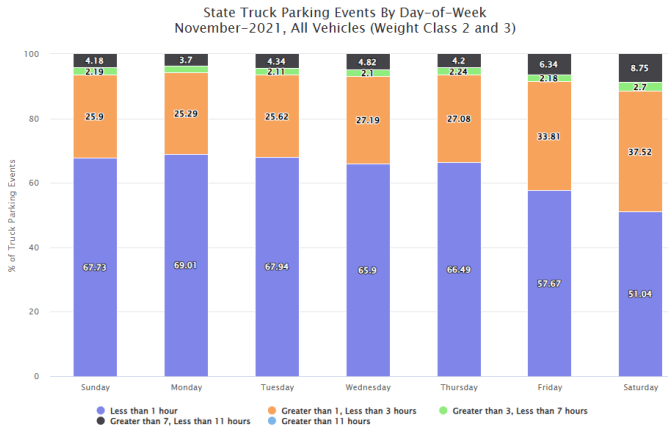
TxDOT: Truck Parking Analysis & Dashboard

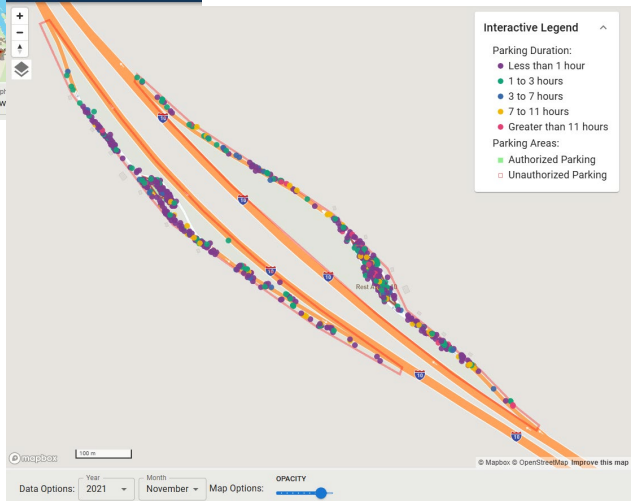
Truck Parking Program developed by Texas A&M Transportation Institute (TTI)

TxDOT worked with TTI to create dashboards for analyzing their statewide program:

- Visualization of concentration of truck stops statewide
- Assessment of official and unofficial parking locations
  - ✓ Concentration of truck stops
  - ✓ Percentages of dwell time frame
  - ✓ Trends over time (day, month, year)





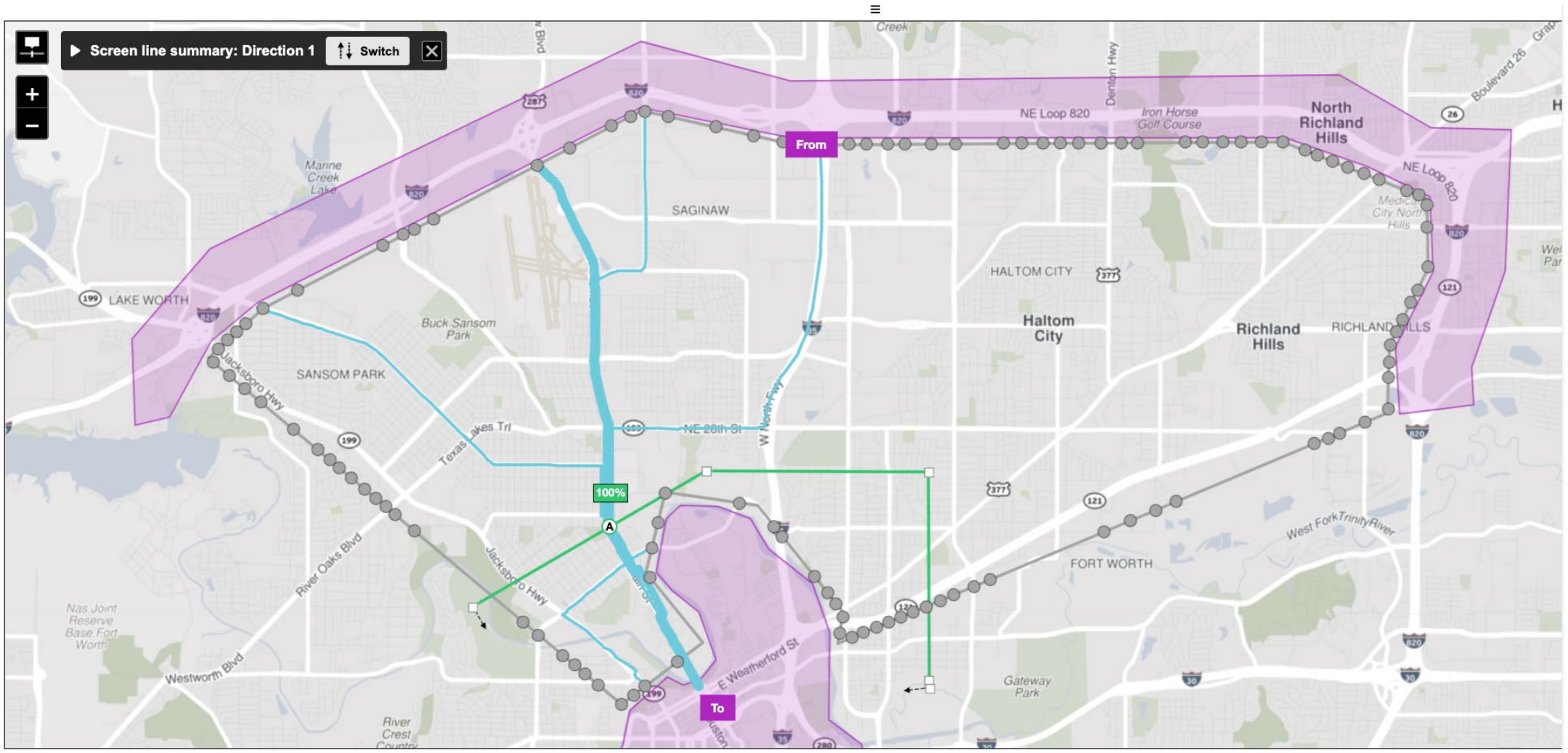


Parking Events

Search

Month	% < 1 hour	% >= 1, < 3 hours	% >= 3, < 7 hours	% >= 7, < 11 hours	% >= 11 hours	Total
February	66.74	24.79	6.76	1.71	0.00	100.00
March	71.27	22.72	4.71	1.31	0.00	100.00
April	66.36	21.79	4.04	7.82	0.00	100.00
September	70.27	27.82	0.69	1.22	0.00	100.00
October	69.46	28.67	0.70	1.17	0.00	100.00
November	68.21	29.86	0.66	1.27	0.00	100.00

Using Trip Analytics to Understand Routes Taken Due to closed Road



12th Street Reimagined, City of Erie, Pennsylvania

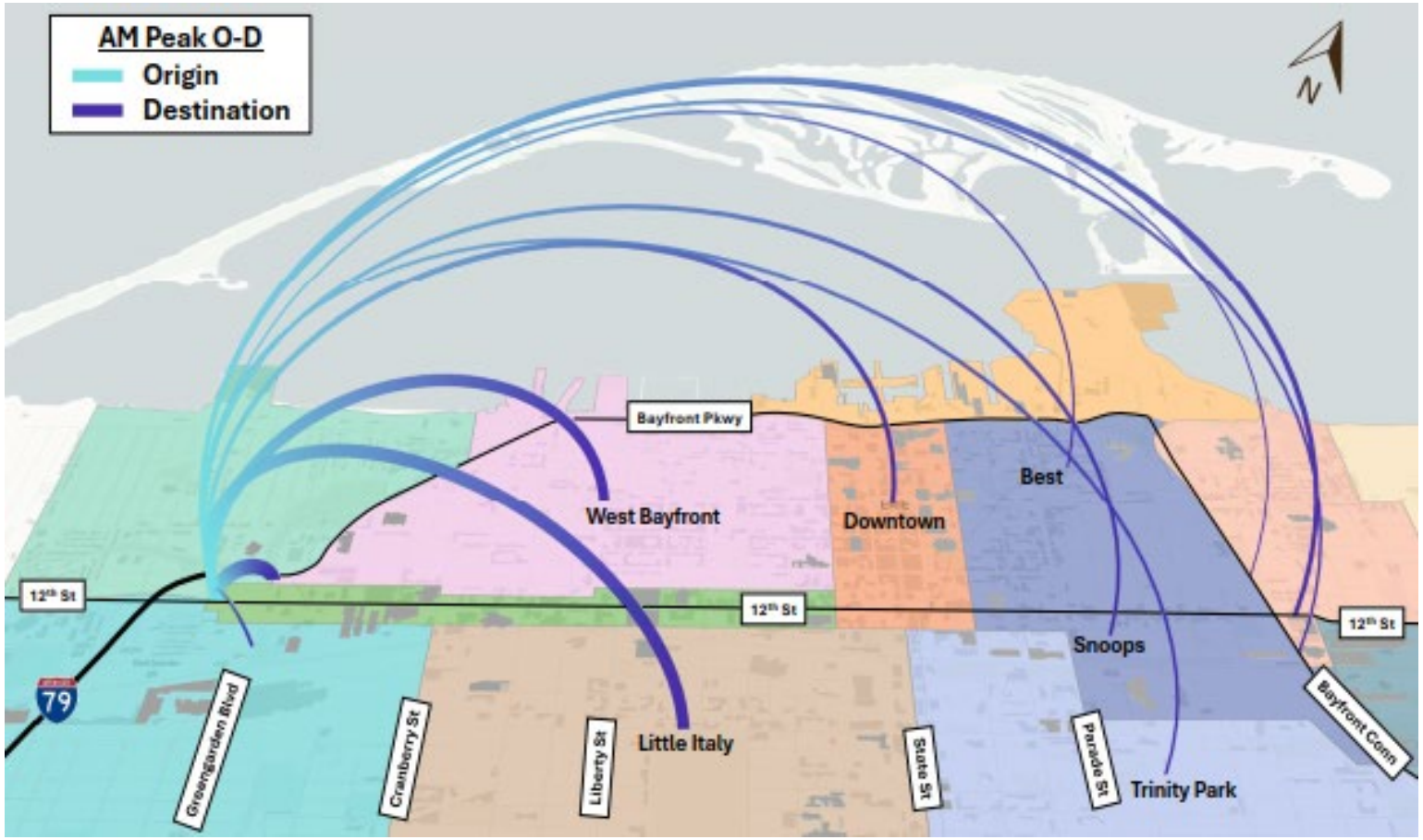
Resolving disagreement among stakeholders on how 12th street is being used.

12th Street Multimodal Corridor Study

- East-West Arterial that Bisects the City of Erie
- Heavy Truck Traffic
- Active Redevelopment Projects
- Diverse Multimodal Needs

Probe O-D Data was able to evaluate the origin-destination patterns

- 12th Street is actually a gateway rather than a cut-through route.



Commercial Motor Vehicle Safety Alerts

Drivewyze By Fleetworthy

Real-time alerts and messages to commercial vehicle drivers on their ELD devices

- Automated Queue & Sudden Slowdown Warnings
- Agency Generate Safety/Regulatory Messages
- Alert Logging and Reporting

CSU | Cleveland State University

Secondary crashes involving a CMV decreased by 29%

89% of Drivers say Sudden Slowdown and Congestion alerts are effective

"The alerts give us time to prepare instead of panic."

Currently active in Texas and 15 other states

INRIX

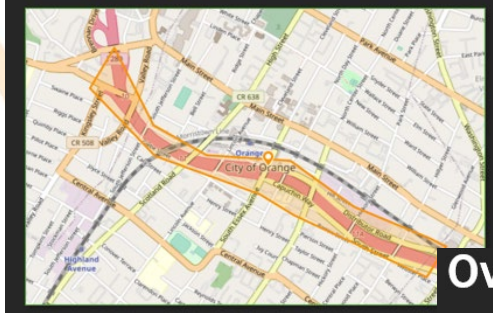
Highway Emergency Link Platform (HELP) Alerts

INFORMATION LOGISTICS

- Two-Way Emergency Communications
- No Preregistration or App Needed
- Geo-Targeted Alerts
- Wireless Emergency Alerts

HELP alerts

Hurricane Flooding



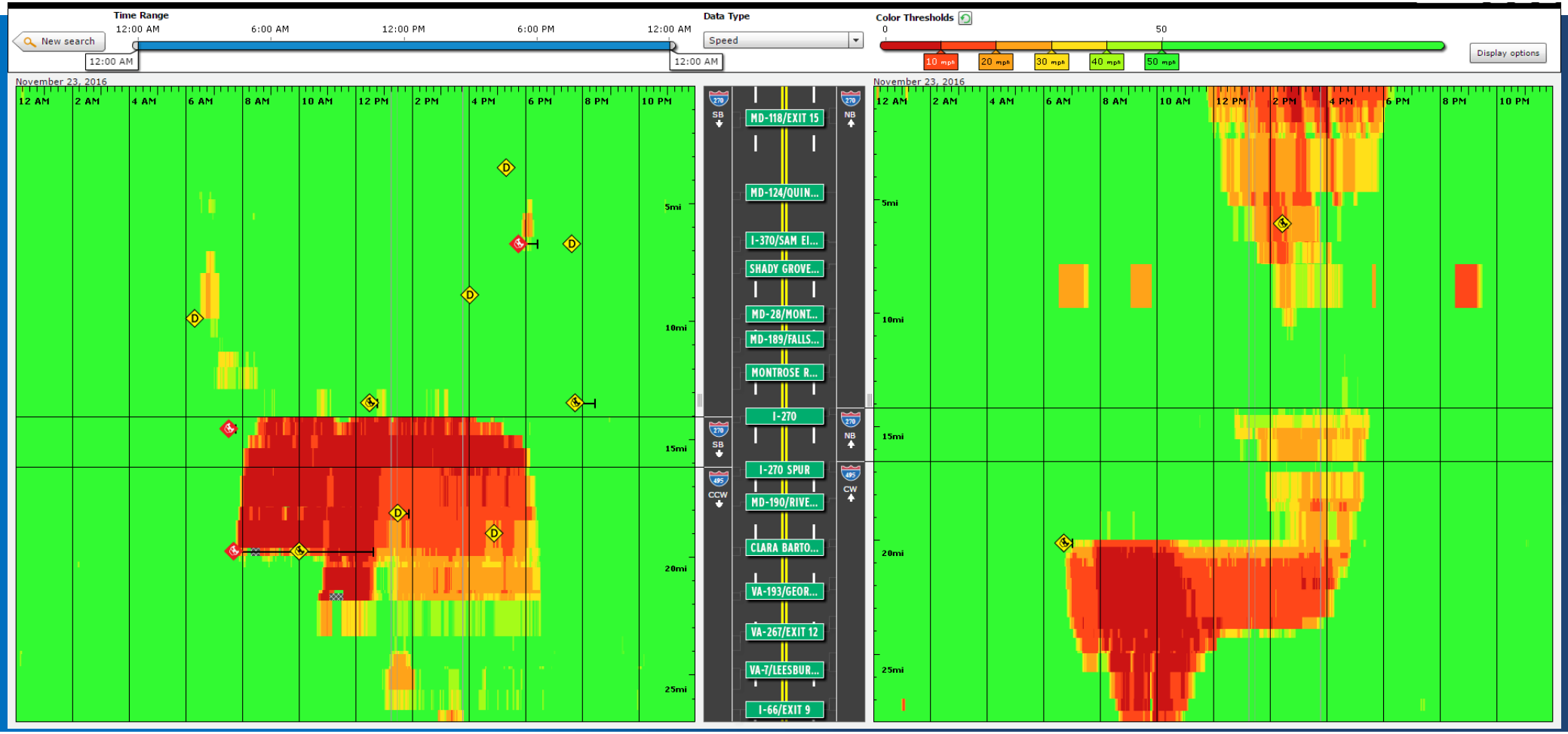
Overturned Tanker

Brush Fire

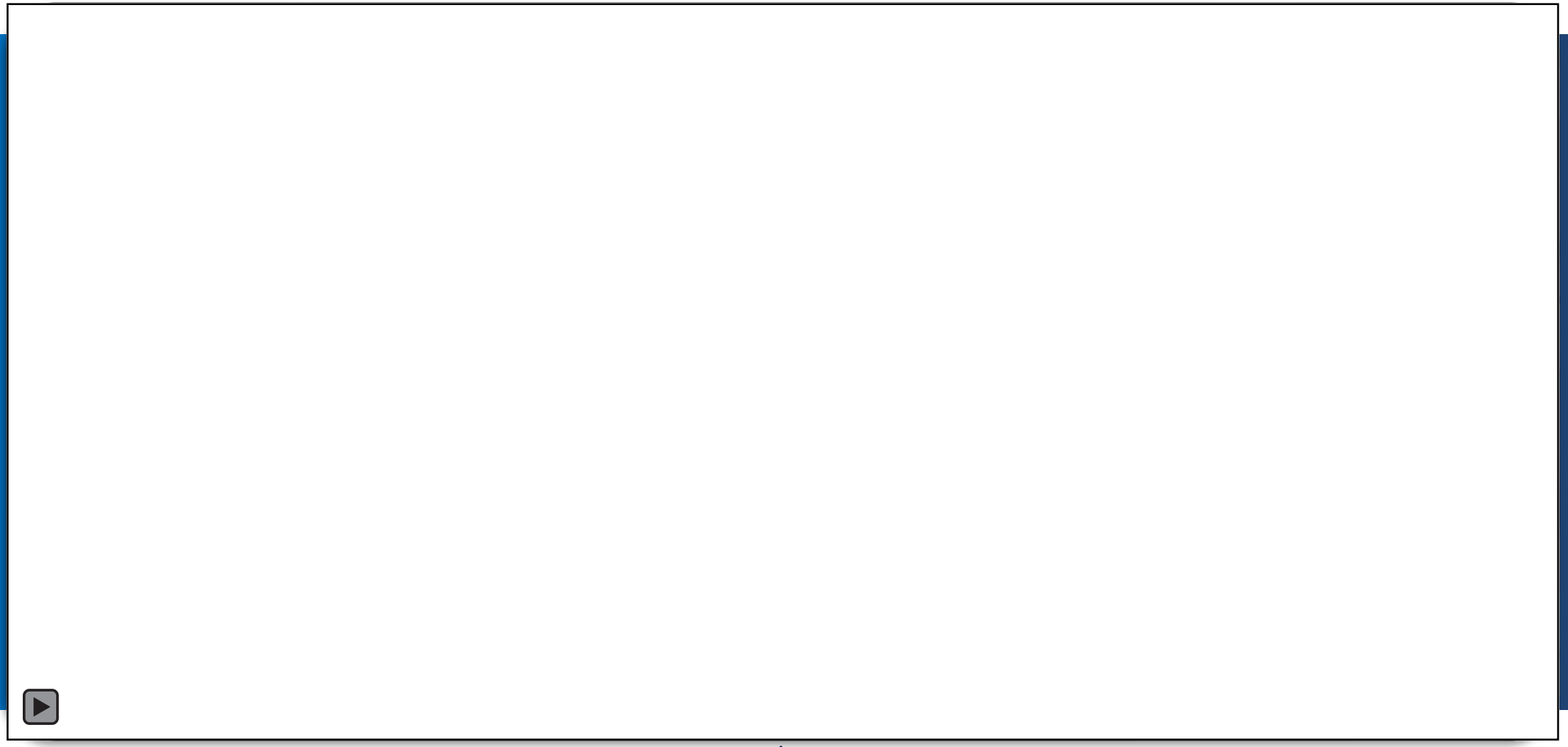
Has been deployed in 8 states and launching more soon.

INRIX

Example: Congestion Scan (with events/incidents/weather)

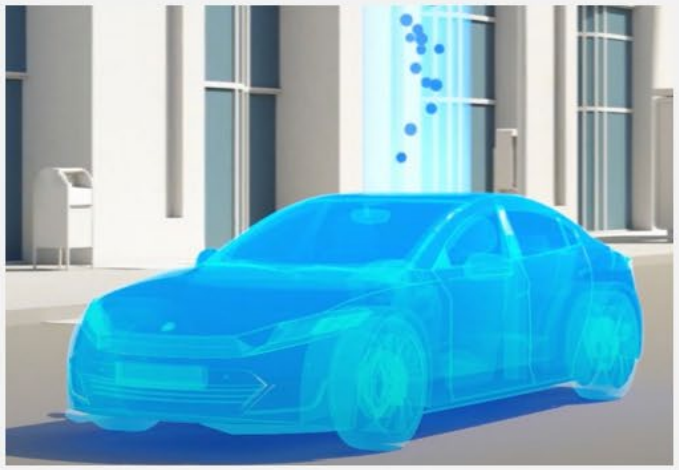


Example: Bottleneck Ranking (project prioritization)

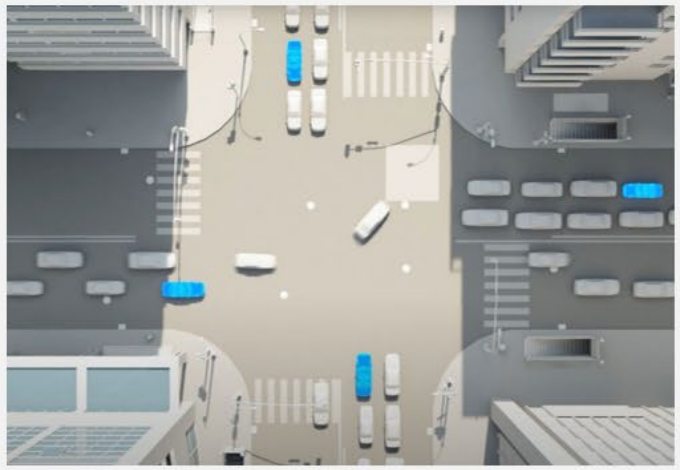


Next Generation: INRIX IQ Signal Analytics
In Partnership with CATT Lab

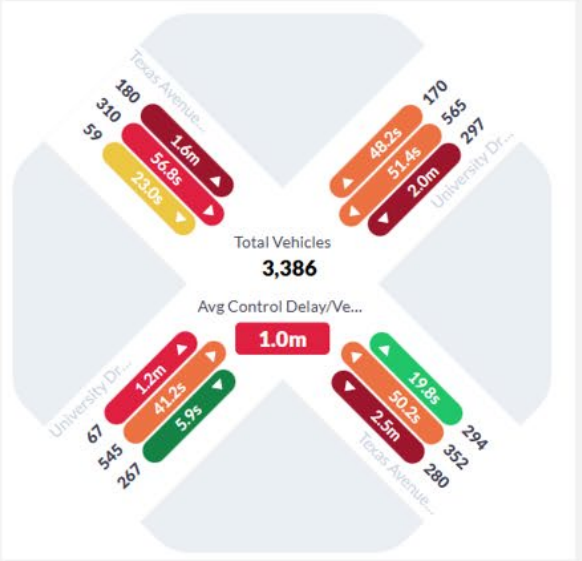
- **Sourced Directly from Vehicles**, via OEMs → 1 INRIX GPS Ping = 1 Vehicle… accuracy in metrics
- **High-Frequency GPS** → >80% check-in at faster than 5 seconds… accuracy in metrics



Probe Vehicle Data



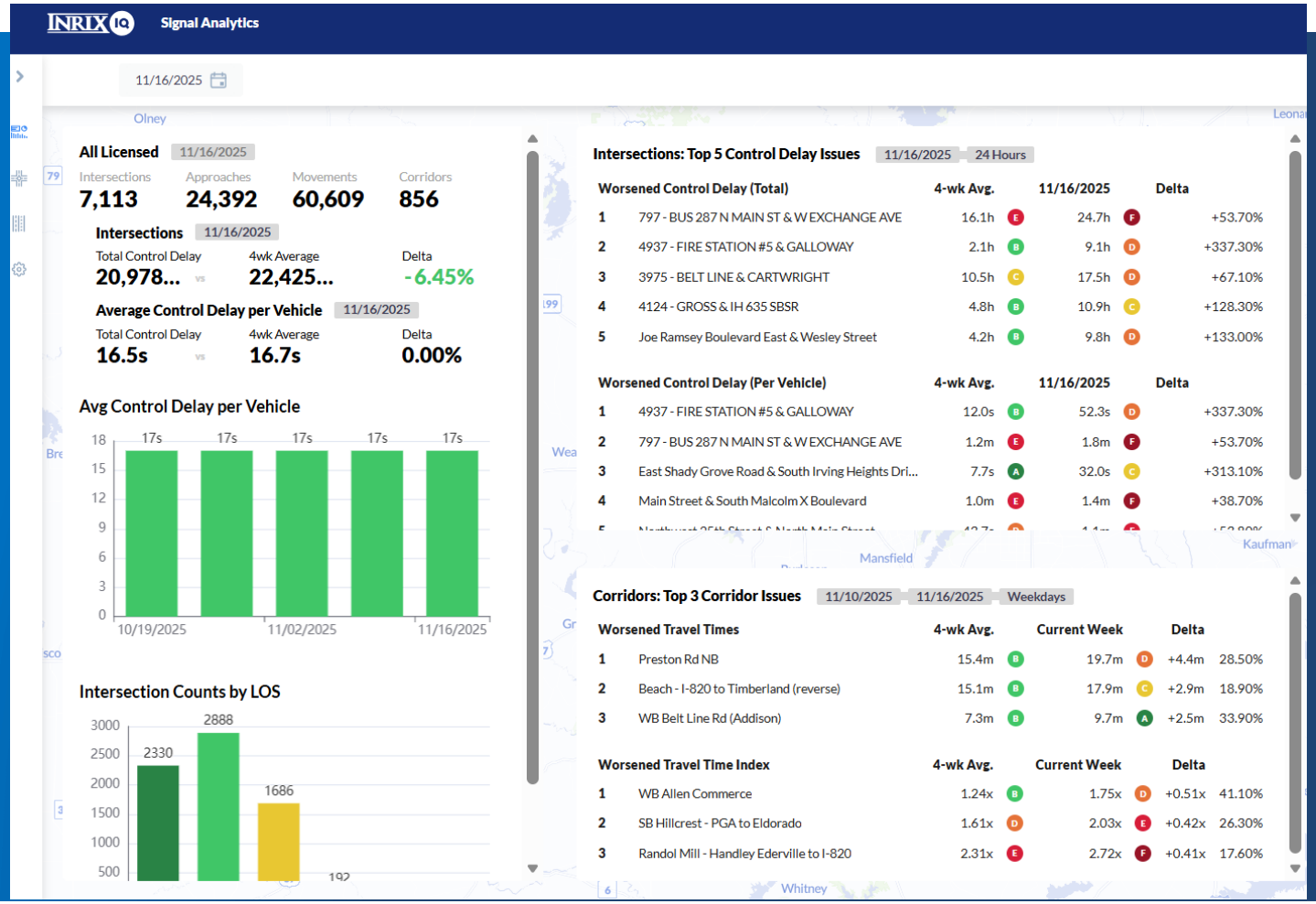
Observed Travel Times



Signal Performance Metrics

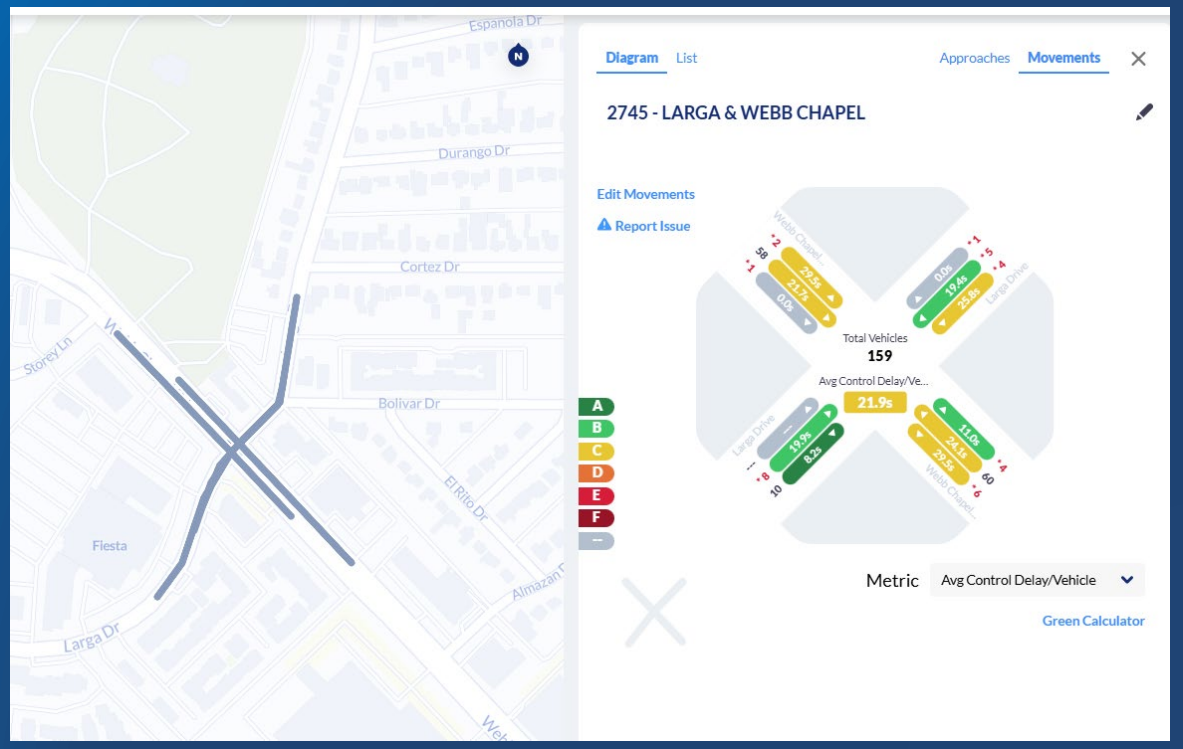
Signals Insights (outside TxDOT Contract)

- Signal Performance Insights
- Daily Health Emails
- Rankings
- Corridor Analysis



Data Driven Actions

NCTCOG



Thank You!

Mark Nogaki
SVP/GM, Public Sector North America
Mark.nogaki@inrix.com

INRIX®

Intelligence that Moves the World