



Kimley»Horn Software Solutions

» KITS » Kadence » Traction

LEARN . COLLABORATE . SHARE . ENERGIZE .



Connected Vehicles - Virtual DMS



About Us



90+ OFFICES
ACROSS THE
UNITED STATES

4,500+
EMPLOYEES



*You know us best
for professional
engineering services*

We have a robust
**in-house software
development team** of
20+ developers
and integrators

KITS ATMS, Kadence ATCS, Traction, 511, I2V and V2I CV, Park+, ALPS, multi-jurisdictional ICM, flood warning, real-time web, CV apps

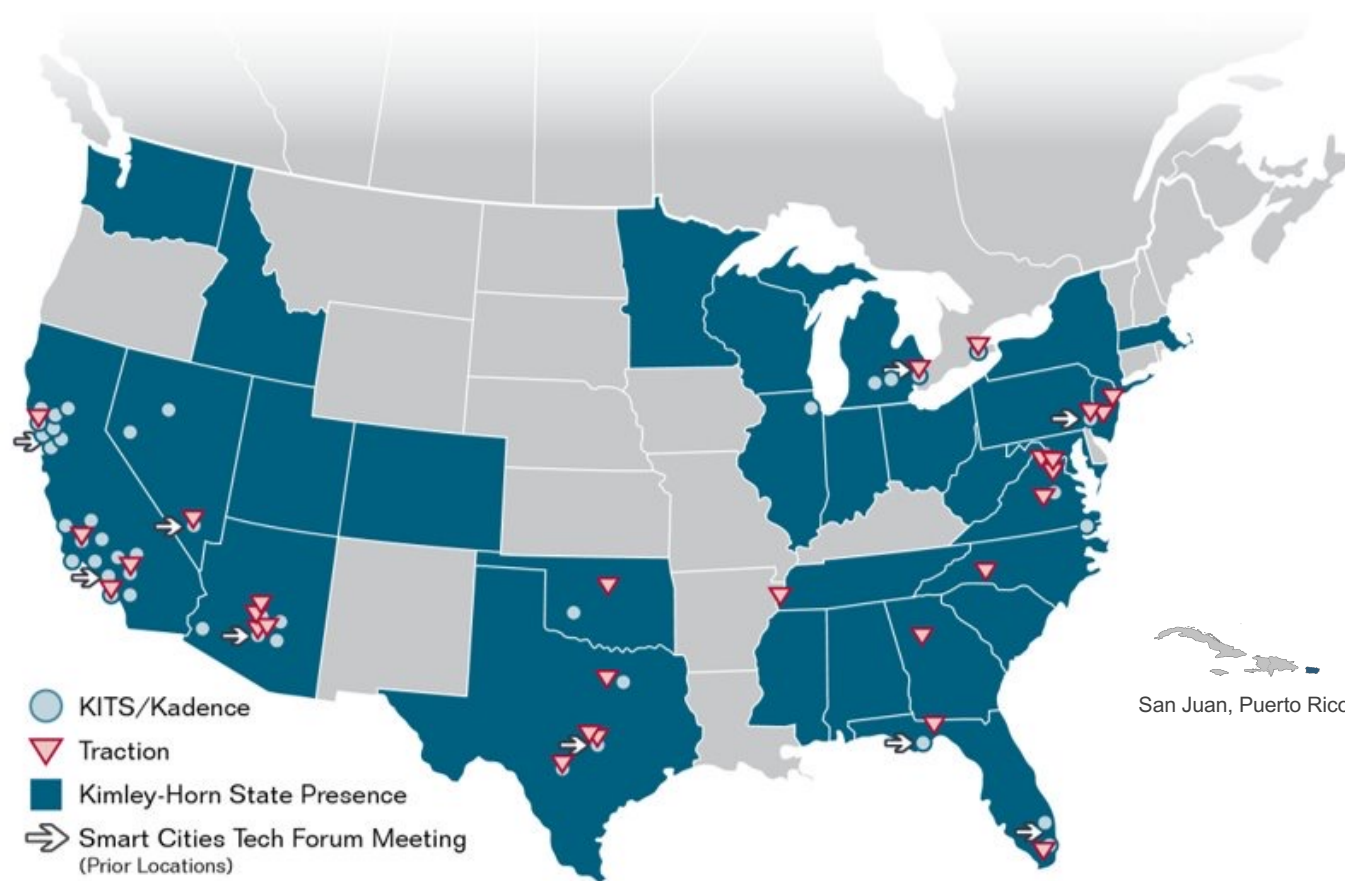


More than
30 years
of ITS software
experience

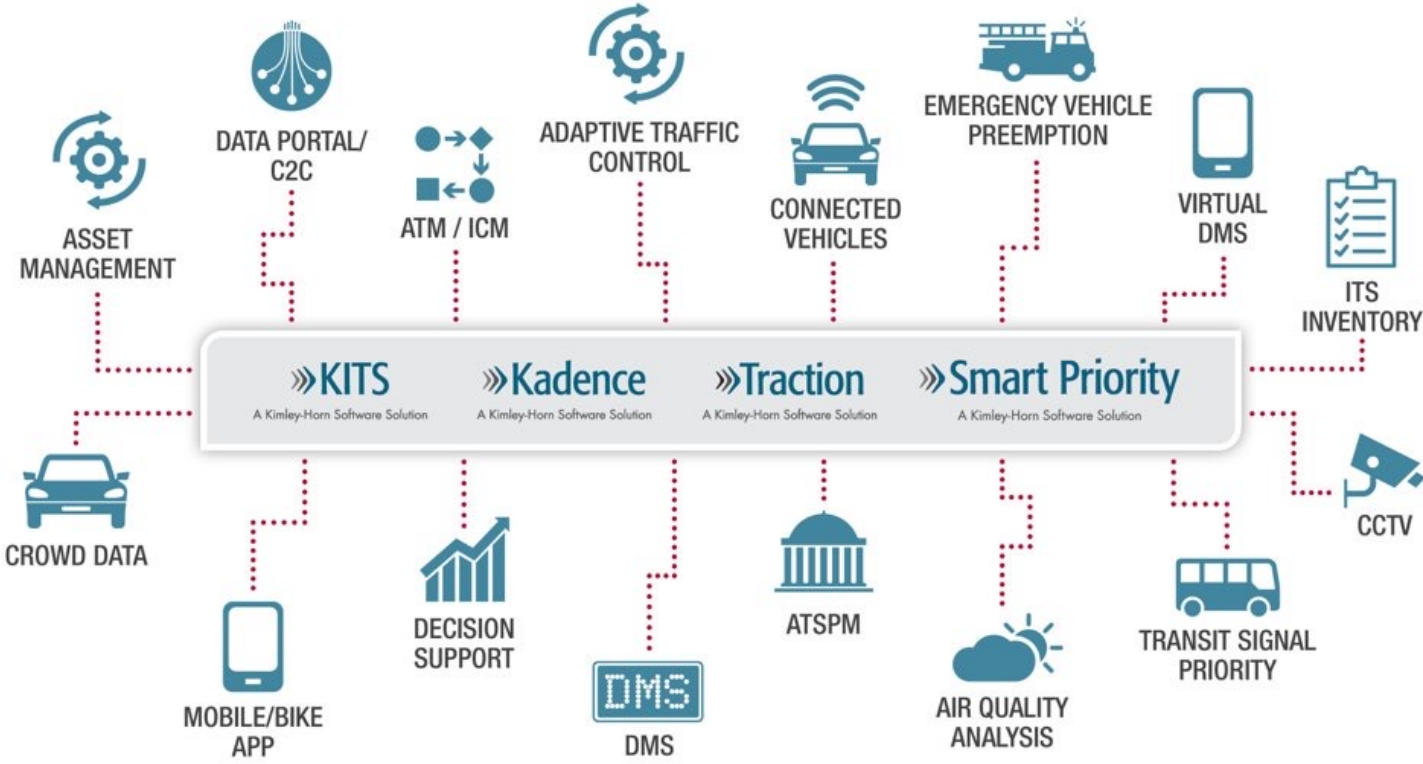
We know both the **software technology** AND
the **transportation management** domain



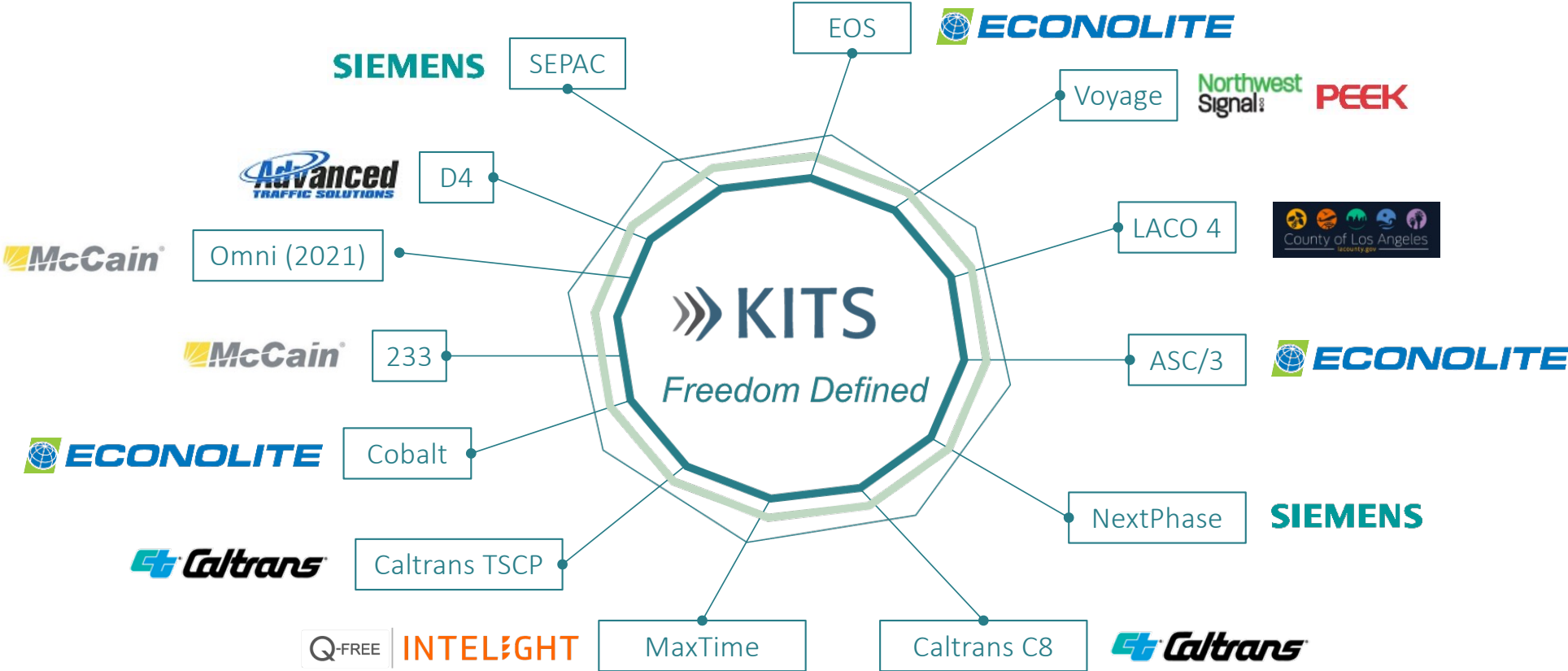
ITS Software Deployments



Kimley-Horn Smart Cities Software Platform

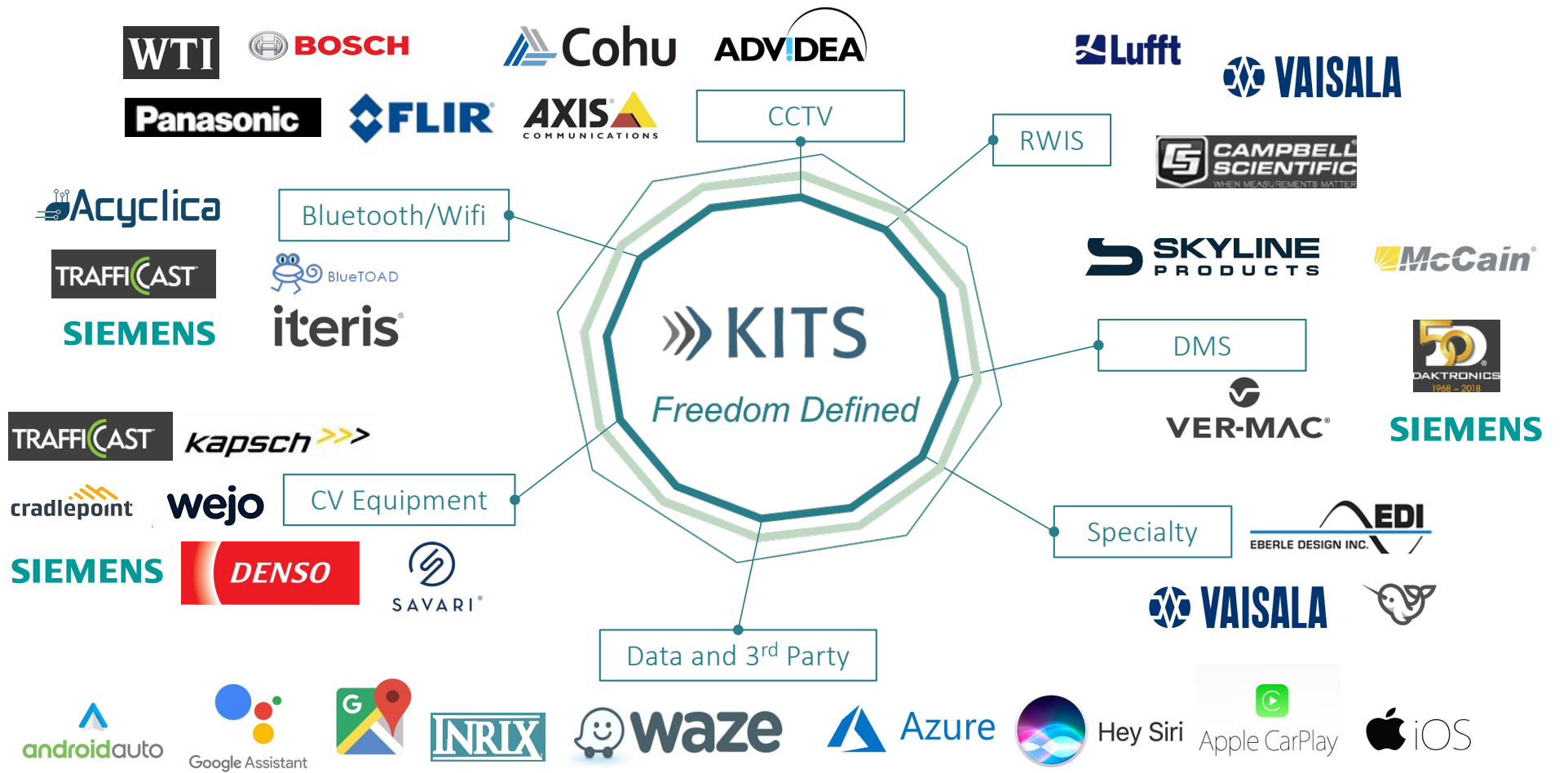


Open System



KITS

Freedom Defined



ITS Challenges

- DMS signs are expensive to deploy and only help drivers in visual range
- Connected Vehicle fleet with CV2X will be slow to materialize
- Most **I2V** CV apps do not require millisecond latency nor high bandwidth, high frequency messaging
- 511 alerts and DMS on arterial roads are very infrequent

» TractionConnect NextGen 511



Virtual DMS Solution

- Send traveler information messages (TIMs) to Android Auto/ Apple CarPlay systems using J2735 standards
- Traffic incidents and warnings
 - Signal status data
 - Work zones
 - "Turn around, don't drown"
 - Curve speed warning
 - Signal in flash, signal dark
 - Railroad preempt (heavy rail)
 - Weather, amber/silver
 - Wrong way driver ahead
 - **GEOFENCED to user's current location**

Alert Types

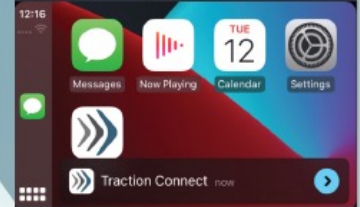
- Signal in flash
- Crash ahead
- Debris in roadway
- Queue ahead
- Signal dark
- Railroad crossing occupied
- Drawbridge up
- TIM/BIM ITIS codes and ad hoc
- Turn around, don't drown@
- Amber/Silver
- Weather event (dust, snow, fog)
- Black ice
- Work zone ahead
- Wrong way driver approaching
- You are going the wrong way
-and more

APIs Supported

- WZDx
- TMDD
- SPaT / MAP
- NTCIP
- CAD
- REST / GeoJSON

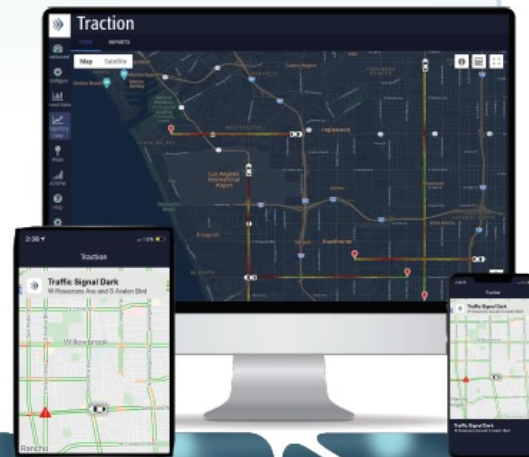
Travel Alerts

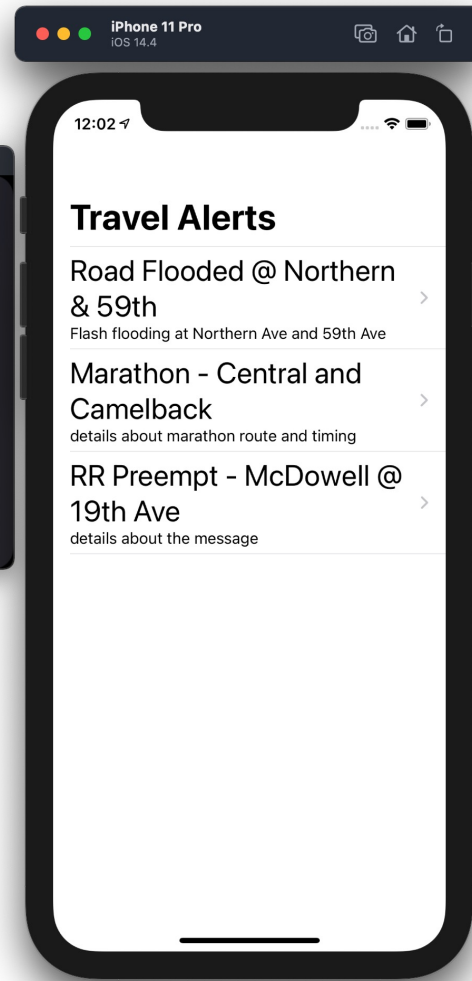
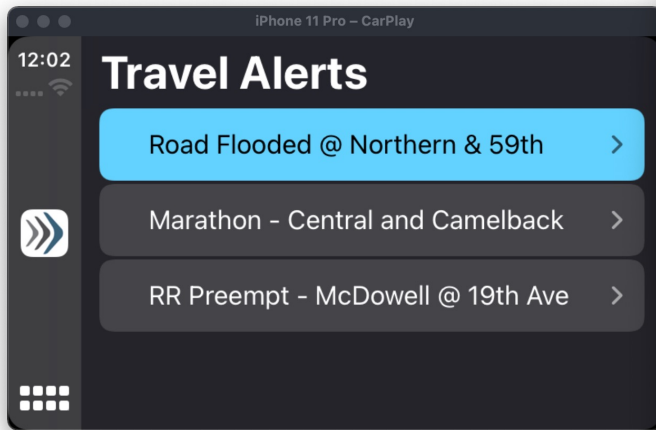
- Road Flooded @ Northern & 59th
- Marathon - Central and Camelback
- RR Preempt - McDowell @ 19th Ave



Benefits

- Complements many I2V apps with no RSE field hardware
- Save costs of building DMS and ATM gantries
- Opt-in option to send CV data back to TMC, safely and securely without PII
- Infotainment system integration reduces driver distraction
- Talk to NextGen511 using Apple Siri and Google Assistant
- Open APIs for third-party connectivity
- Receive traveler feedback safely and automatically







Dashboard

Connected Vehicles

Waze

ATSPM

Travel Times

Help

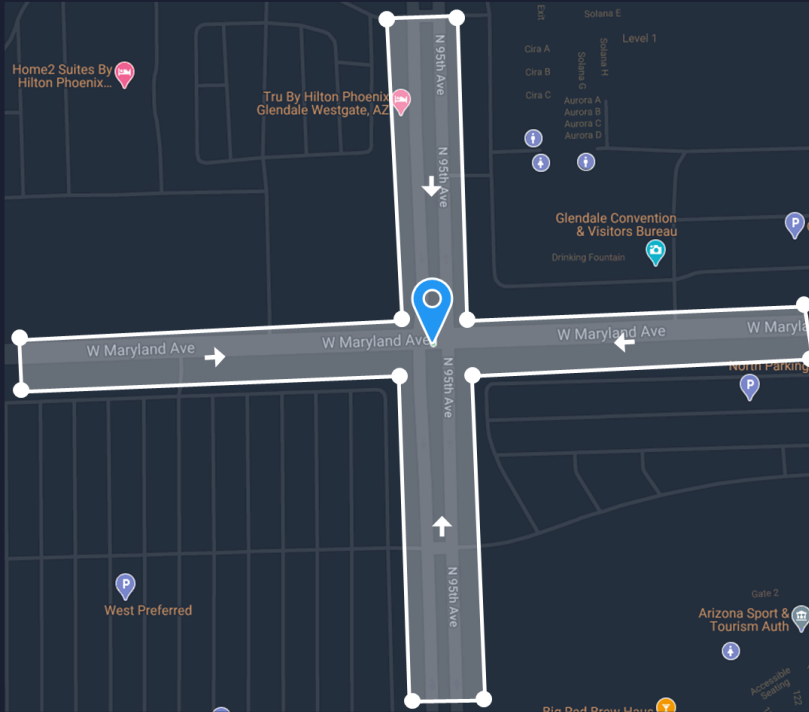
New TIM

Geofence Definition

- Radial
- Custom
- Region wide
- Template

Directionality

Approach only



TIM Definition

- Custom
- Template

TIM Type

Advisory Sign

MUTCD Type

0 – Non MUTCD Info

Information Type

1 – Advisory

Priority

7

ITIS Event Codes

Search

- 0275_stopped traffic
- 0258_stop-and-go-traffic
- 0259_slow-traffic
- 0260_heavy-traffic**
- 0261_traffic-building
- 0262_long-queues
- 0263_traffic-congestion

Virtual DMS String Constructor

8965 1539 8462 . Average Wait Time %% minutes

Virtual DMS Preview

RR crossing active long-delays consider alternate route.
Average Wait Time 18 minutes

Status

- Activate now
- Schedule

Start Date

10/1/2020

Start Time

4:30 pm

End Date

10/1/2020

End Time

4:59 pm

CANCEL

SAVE



Dashboard

Connected Vehicles

Waze

ATSPM

Travel Times

Help

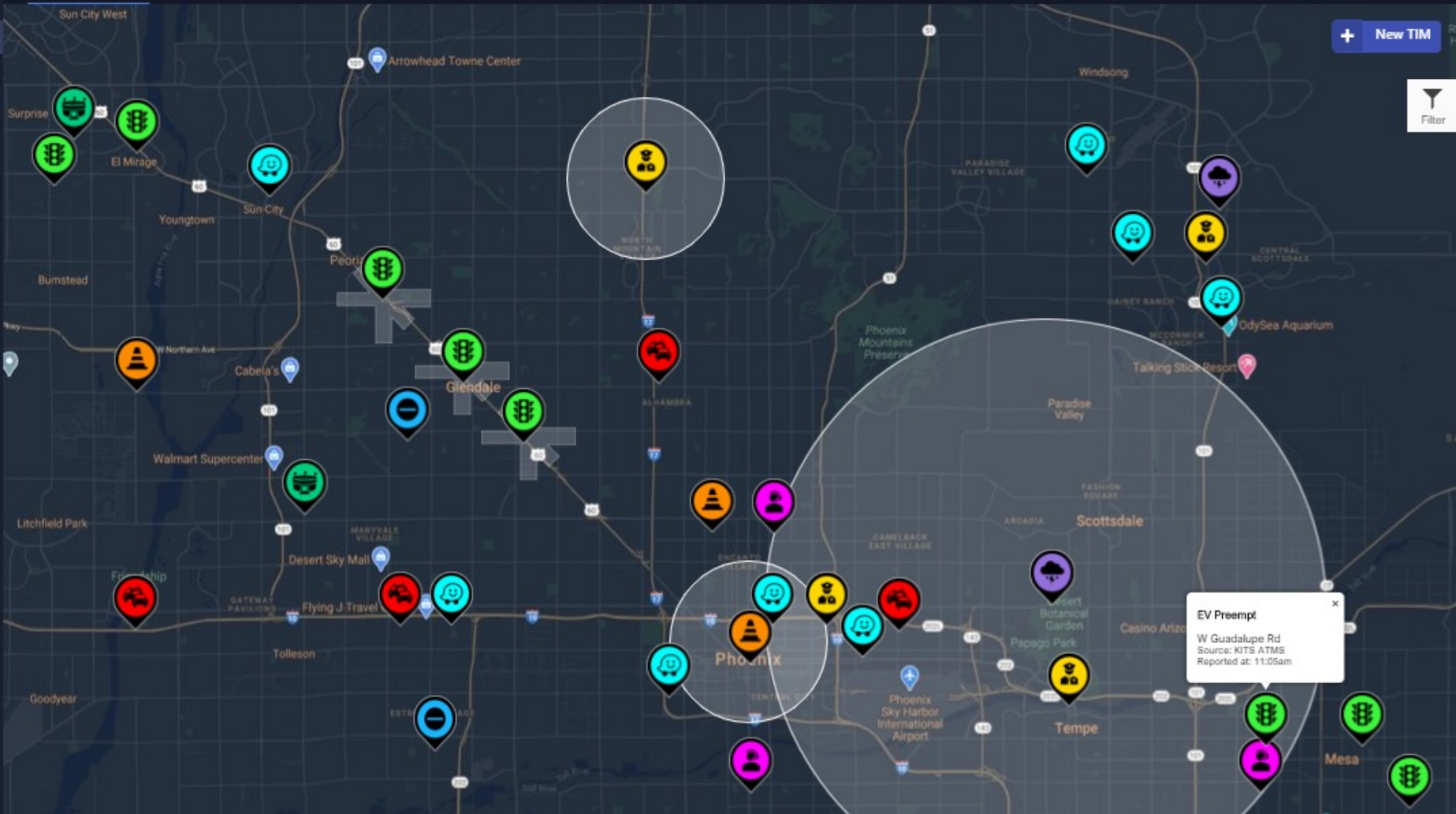
MAP

TIM TEMPLATES

GEOFENCE TEMPLATE

+ New TIM

Filter





» Traction Connect

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Connected Vehicles

Status Map	TIM List	SPaT/MAP List

Safety Warning Zone

Signal Status Zone

Speed Limit Warning Zone

A screenshot of a mobile application interface titled 'Traction Connect'. It shows a map of a city area with various streets and landmarks. A green box labeled 'New TIM' is positioned on a street. Three yellow arrows point from text boxes on the left to specific locations on the map: 'Safety Warning Zone' points to a location near 'W Wood Dr', 'Signal Status Zone' points to a location near 'W Peoria Ave', and 'Speed Limit Warning Zone' points to a location near 'W Orangewood Ave'. The map also shows a car icon and various street names like 'W Greenway Rd', 'W Michigan Ave', and 'W Union Hills Dr'. The 'mapbox' logo is visible at the bottom left.



»» Traction Connect

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»» Connected Vehicles

Status Map TIM List SPaT/MAP List

New TIM

mapbox

ATMS agnostic

Traction SaaS Cloud

- Automatic TIMs connected to any real-time data feeds (ATMS events, weather, CAD incidents, Waze, etc.)
- TIM creator
- MAP creator
- Event map
- Centralized SPaT/MAP API

Traction CONNECT app

- Free “NextGen511”
- Agency branding (optional)
- Opt-in: Retrieve J2735 BSM trajectories to Traction



Status

- Maricopa County KITS agencies (Glendale, Surprise, Mesa, MCDOT) + Tempe (Signal conditions, CAD incidents)

Spring 2021 - Winter 2021

- Kansas DOT (Work zones, weather warning)

Winter 2021 – Spring 2022

- Virtual DMS + RSE management deployment for SANDAG “5 Big Moves”

Summer 2022++



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