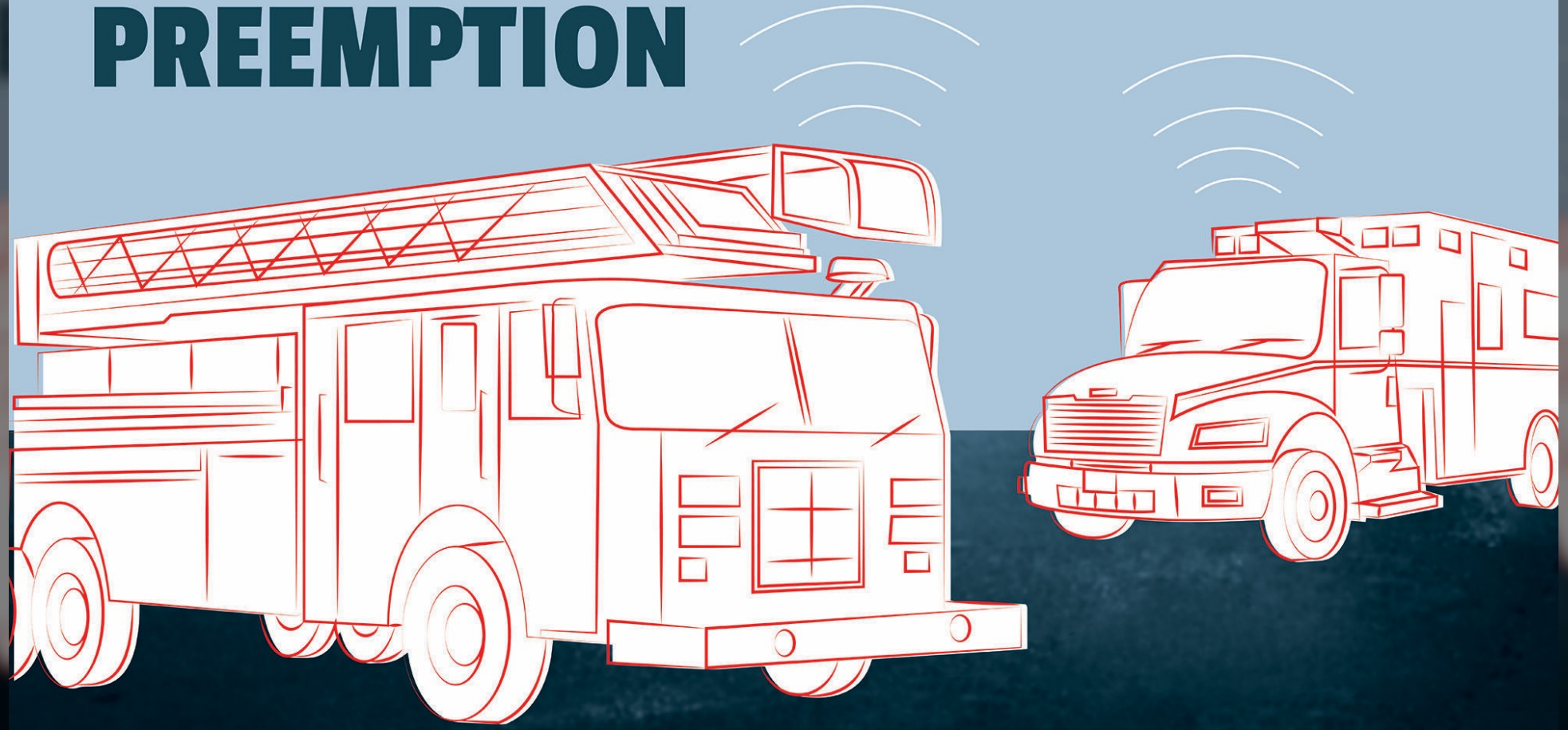
LYT.
CLOUD-BASED EMERGENCY VEHICLE PREEMPTION

ITS ALASKA
INTELLIGENT TRANSPORTATION SOCIETY OF ALASKA

Sept. 13th, 2022
10:30am-11:30am AKDT



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Agenda

- What is Cloud Preemption?
- The challenges with GPS Preemption systems
  - Ways to overcome them
- Deployment Case Study

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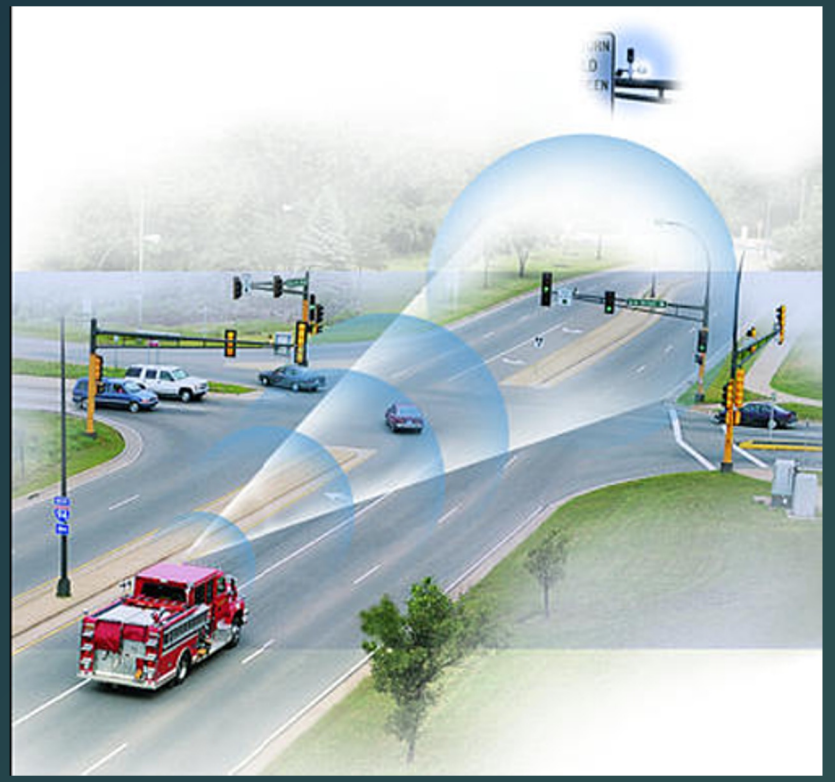
Traffic Signal Preemption

- An established practice of providing emergency services and railroads safe passage through intersections
- Originally deployed as an optical based vehicle detection solution
- Later advanced to a GPS based vehicle detection system



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What is Centralized Preemption?

- Signal Preemption is Actuated from a single on-premise central system
    - Formally through ATMS
- Little to no preemption equipment in the signal cabinet and mast arm
- Virtual detector zones reliant on vehicle GPS

What is Cloud Preemption?

- Signal Preemption request generation resides off-premise
- Highly Interoperable and scalable
    - Signal vendor agnostic
    - Vehicle sensor agnostic
- Seamless preemption across multiple road jurisdictions

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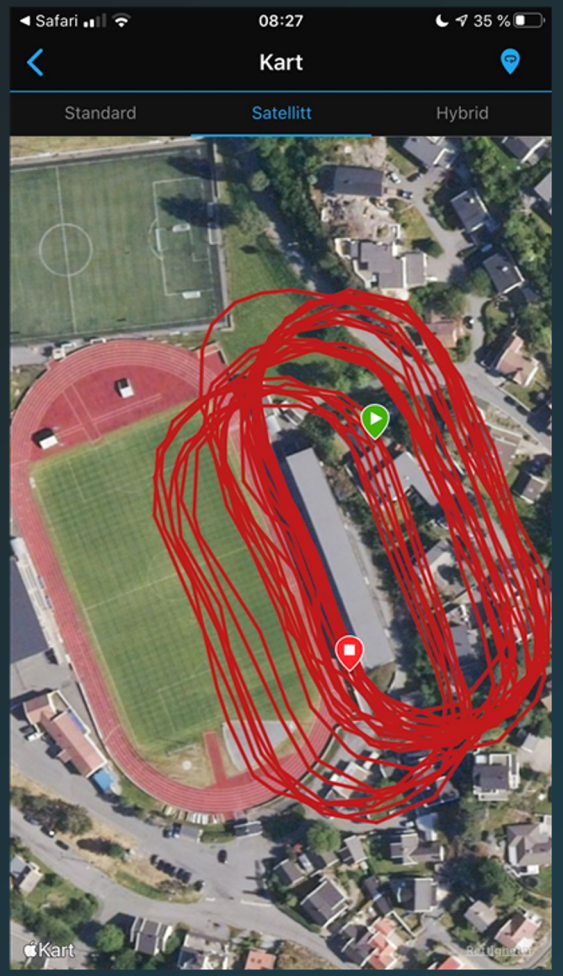
The Challenges of GPS based systems

GPS Drift



Bounding Box Detection Zone

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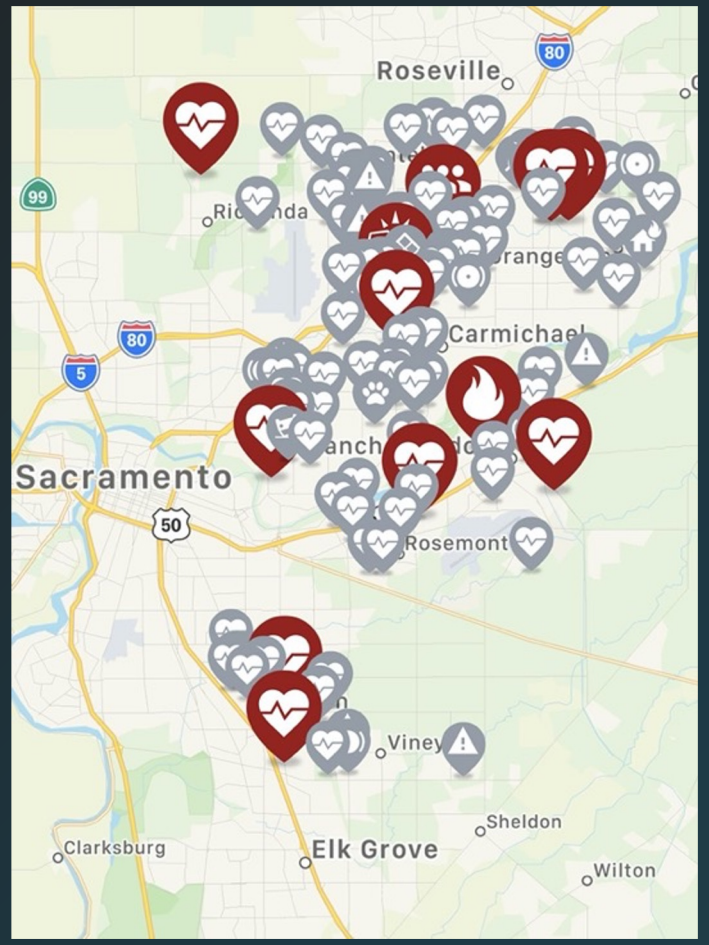
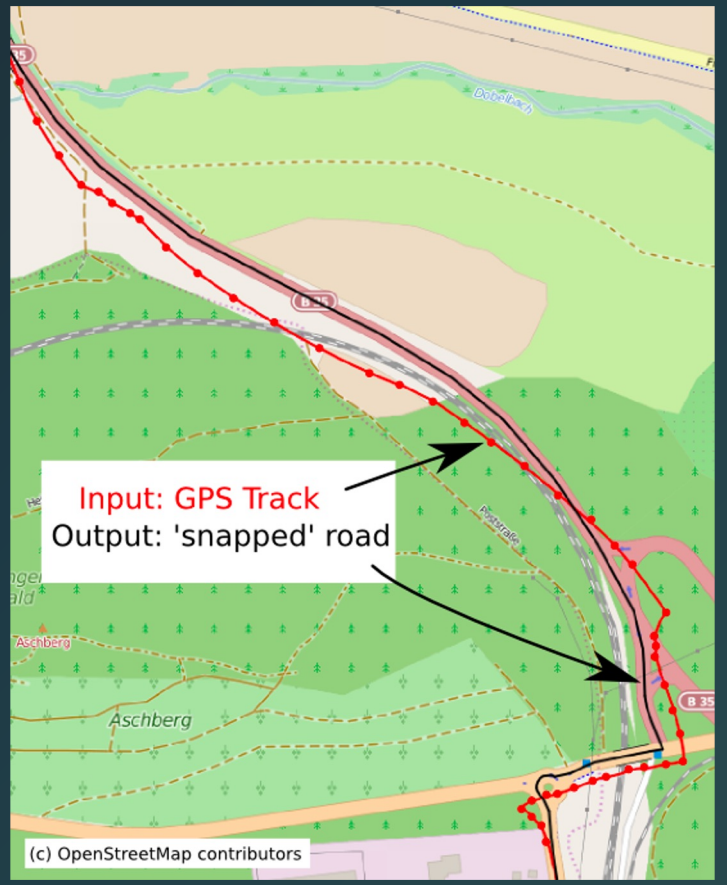
How Technology in the Cloud Optimizes Preemption

Operation and Dispatch Data



Vehicle Tracking
Route Matching



Performance
Reporting

Sac Metro Fire M065

Status: En Route (Last updated 3 minutes ago)

Agency Dispatch Code: C3

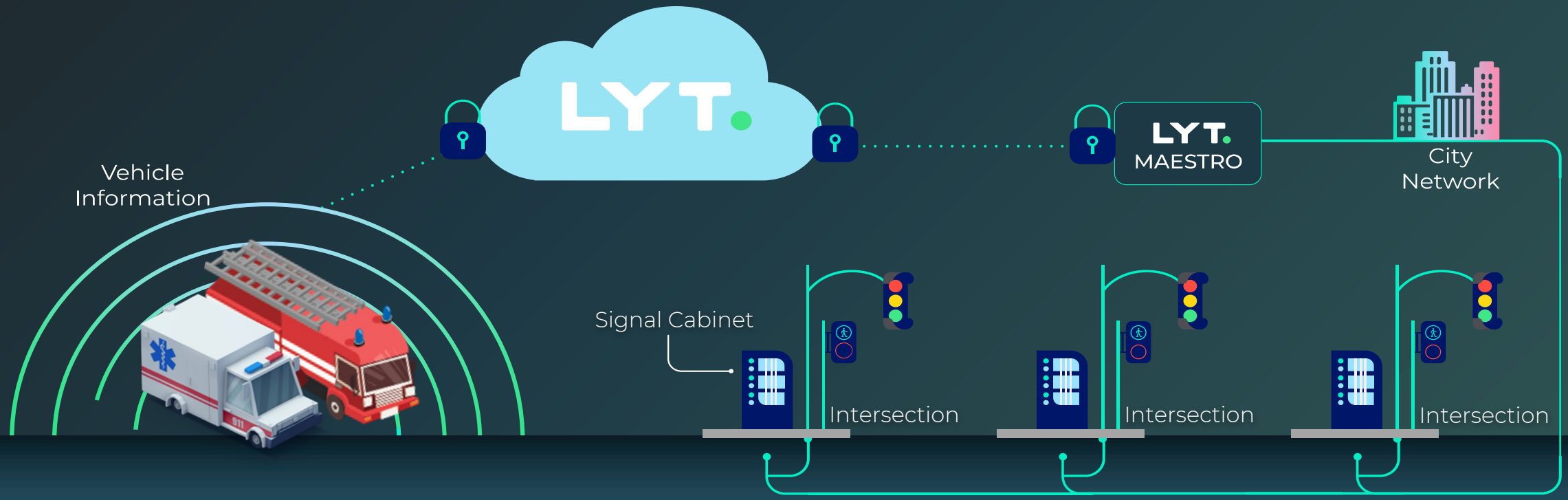
Dispatched 4 minutes ago

En Route 3 minutes ago

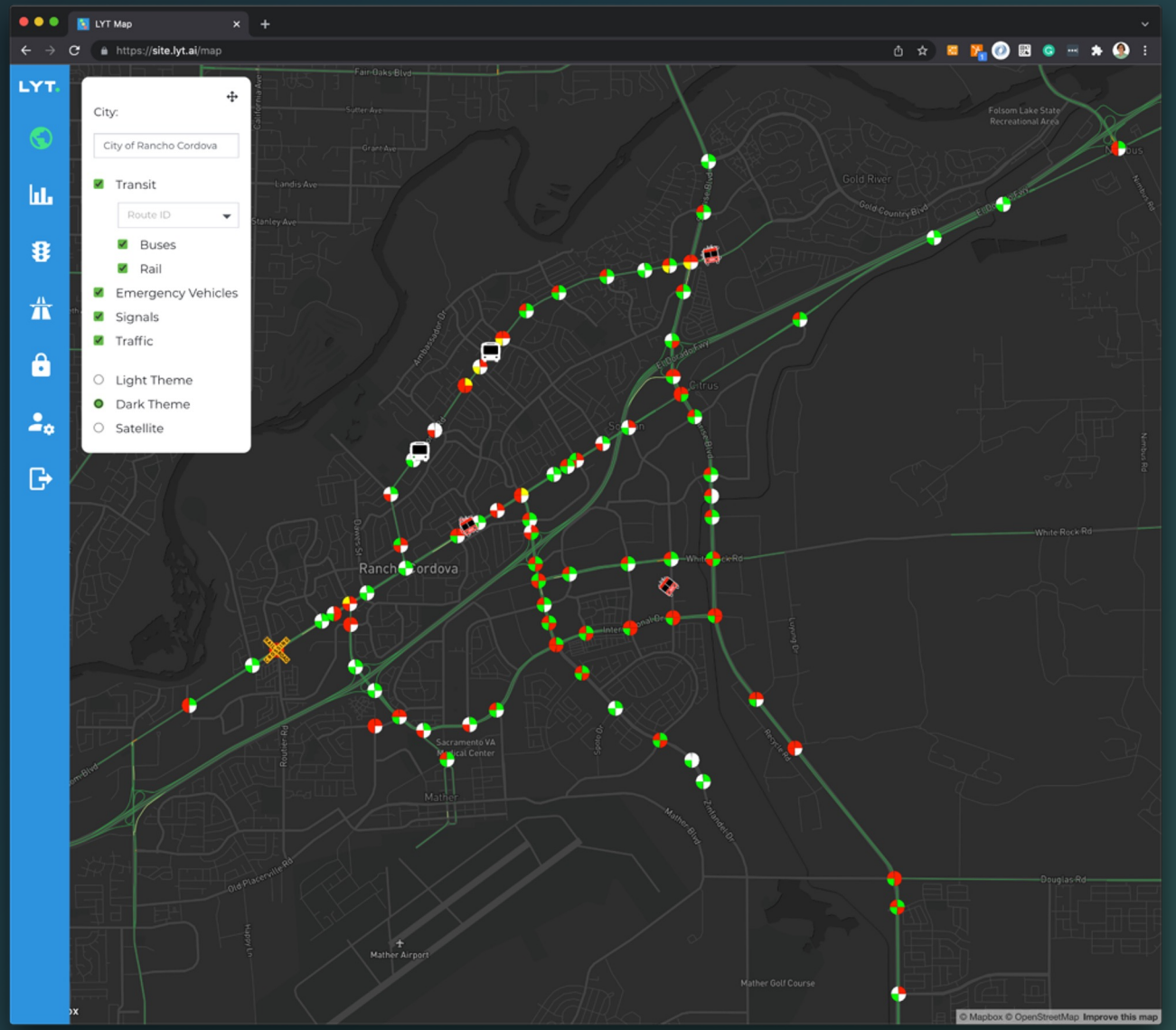
Preemption Enabled

Speed: 50 mph

Cloud Architecture



Rancho Cordova
| EVP Pilot



Why Trial Cloud EVP?

- Looking for a solution with less infrastructure needs
  - Highly scalable and cost effective
  - Not dependent on roadside detection (No line of sight issues)
  - Cross-jurisdiction ready
- Take advantage of evolving/currently available technology
  - Use CAD/AVL system
  - Software is quicker to deploy
  - No new hardware installed at the traffic signal
- Real-time insights and reporting

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Stakeholder Success Metrics

- Safer passage through intersections
- Flushing of vehicles in compacted areas
- Accounting for pedestrian clearances

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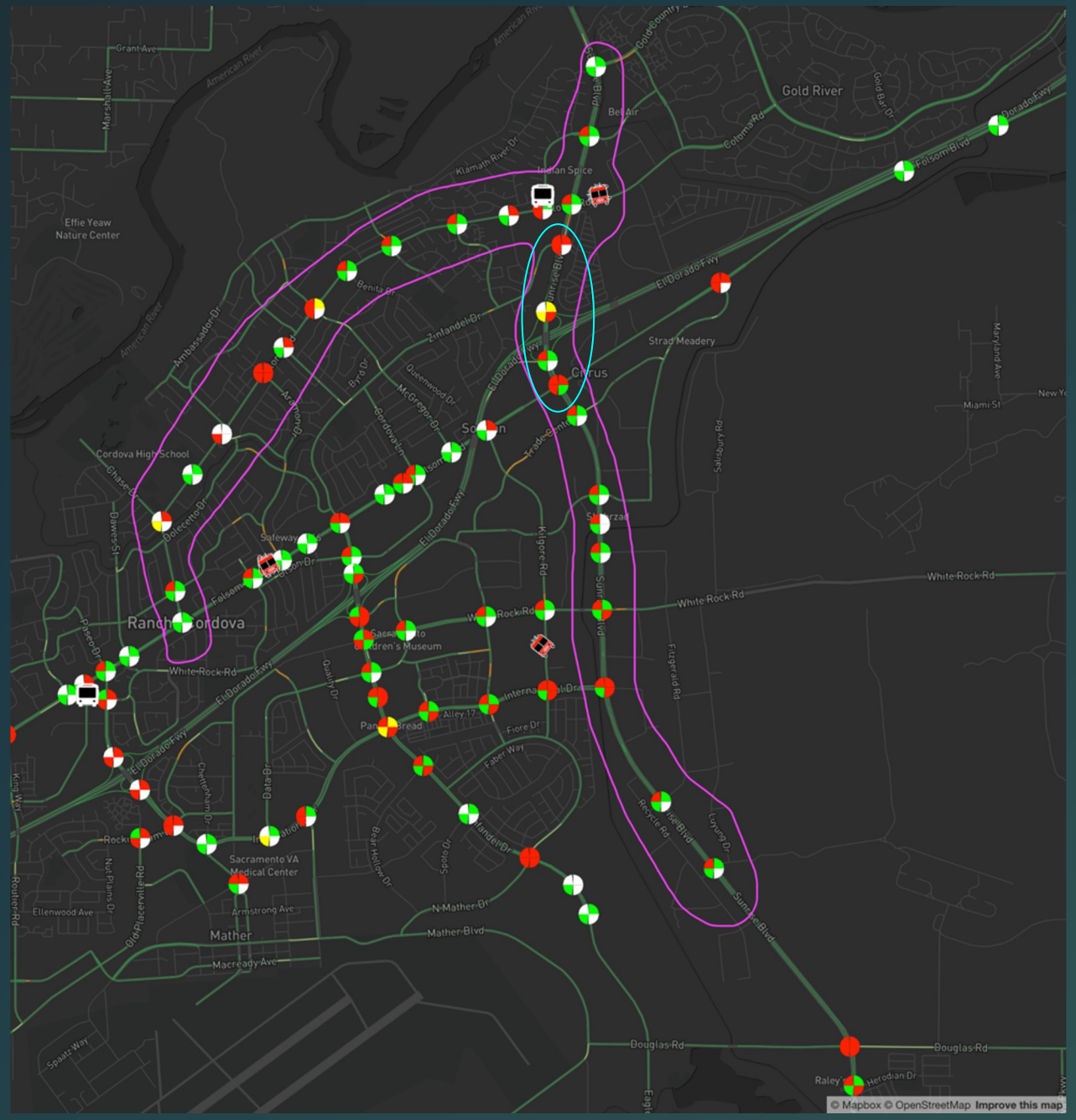
Pilot Area

- 27 Signals - Purple Area
  - The majority had no existing preemption equipment
  - Coloma Rd 40 mph limit
  - Sunrise Blvd 45 mph limit
  - Blue Oval: FHWA documented congestion section (US-50 overpass)
- 6 Vehicles registered
  - 3 Fire Trucks
  - 2 Ambulances
  - 1 Battalion Chief



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Pilot Timeline

- September 2021
    - Signal Database programming
    - Fired department system integration
- October 1 through 14
    - Field tested preemption with City and County Staff
- October 14th through January 31st
    - Hands free operation

Before Technology Deployed

Recording
Contact LYT to See

With Technology Deployed

Recording
Contact LYT to See

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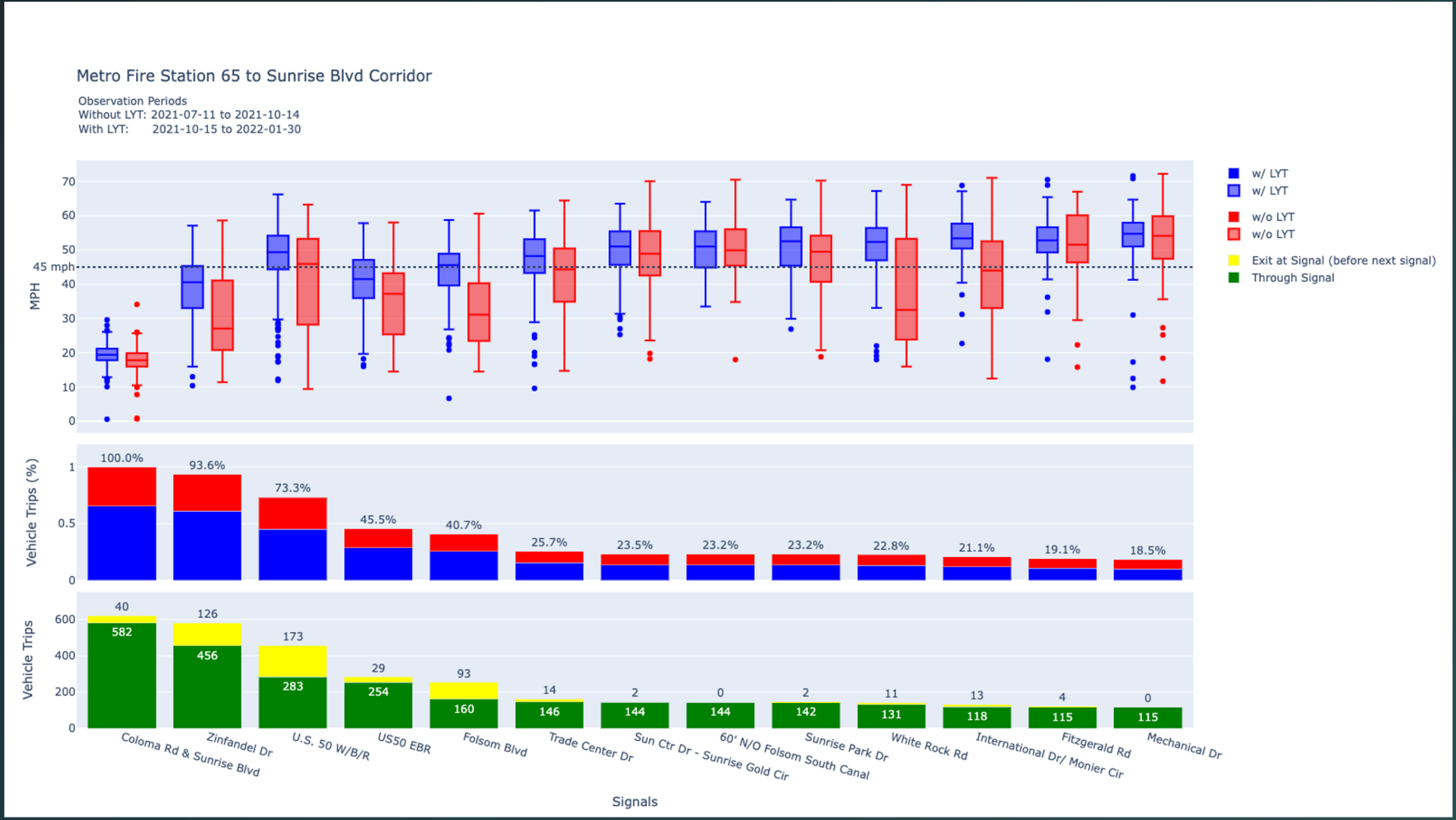
Results

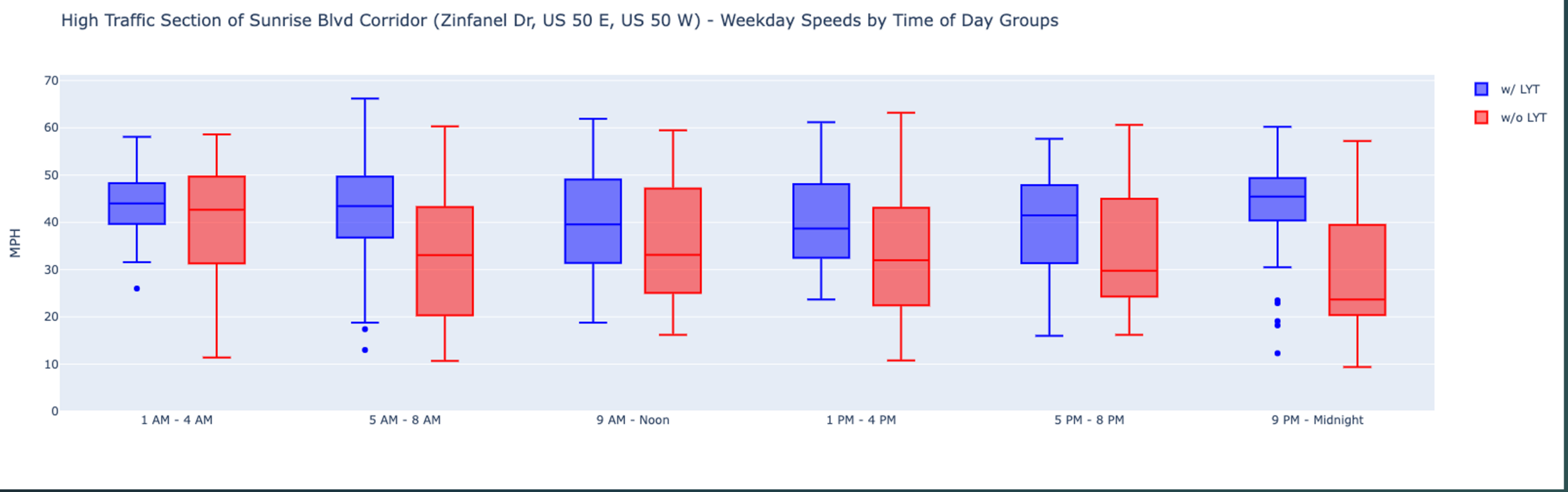
- The highest vehicle **speeds** **in the 90th percentile** **increased** **from 47 to 51 mph, a 7.8% increase**
  - for vehicles on corridor's LYT controlled during the pilot
- The lowest vehicle **speeds** **in the 10th percentile** **increased** **from 13 to 22 mph, a 69.2% increase**
  - for vehicles on corridor's LYT controlled during the pilot
- **14.8% decrease in average travel times** between corridor signals
- Code 3 incident travel times decreased an average of 42 seconds

Sunrise Blvd - With and Without Preemption



This chart captures every single vehicle movement along Sunrise Blvd. This is the accumulation of vehicle trips that went through preempted intersections.

Sunrise Blvd - Crossing over US 50



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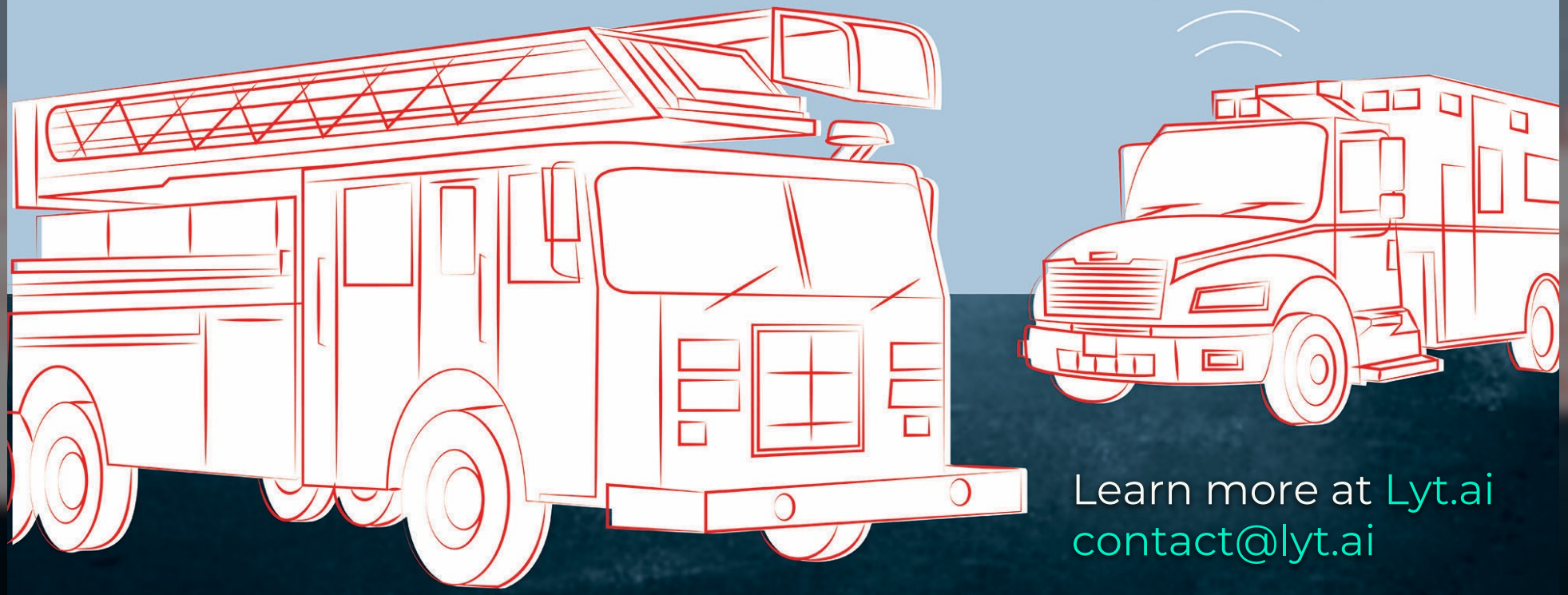

Learn more at Lyt.ai
contact@lyt.ai