

Navigating to Safety: The AI-Powered Journey to Smarter, Safer Driving

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1.19M
people died on the
roads in 2021

15 fatalities per 100,000 population

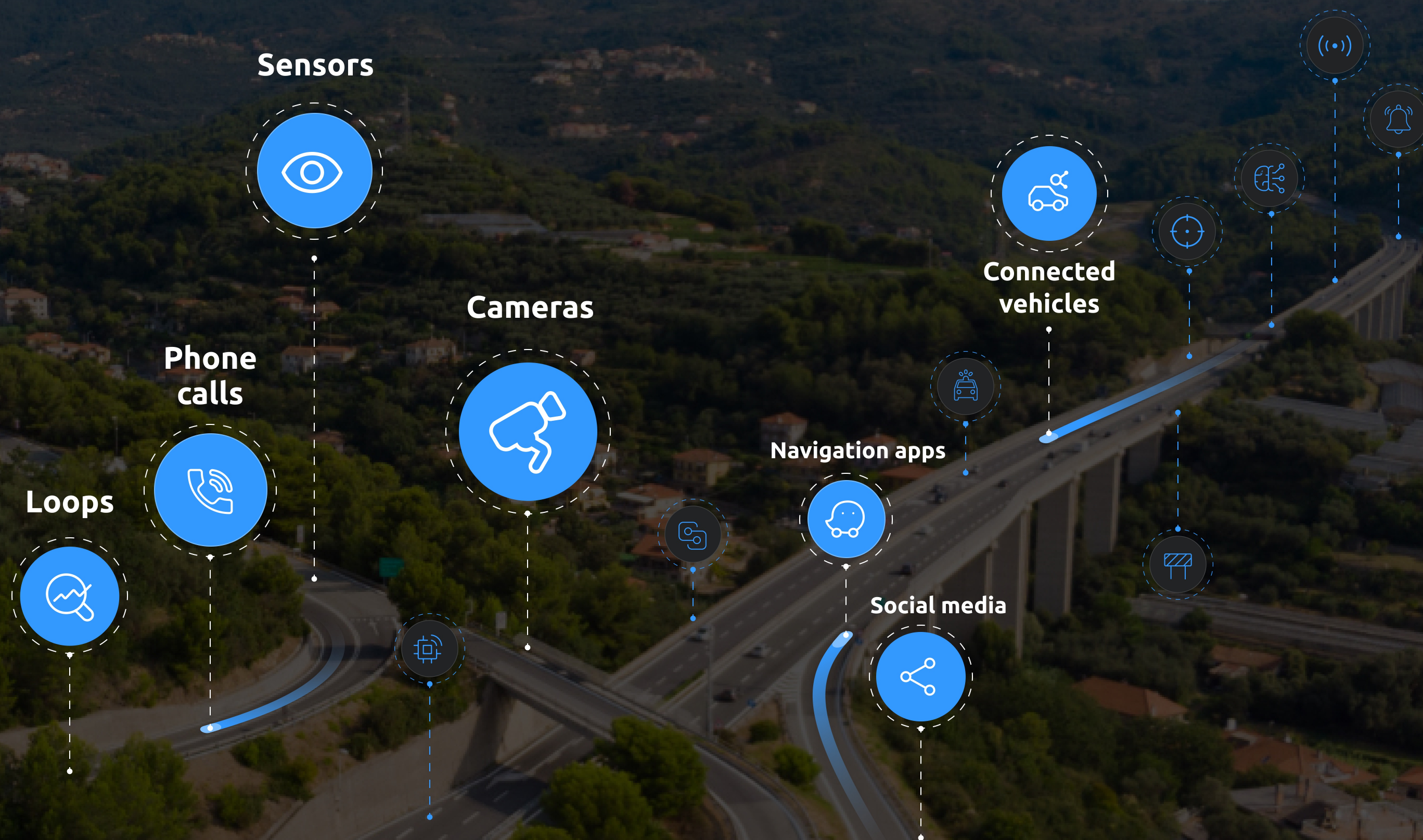


ROADSIDE ASSISTANCE

20 MINUTES

WAITING TIME

Sources of road data





1M

Vehicle Counts



50M

Object Detected



10M

Vehicle data points



1K

Mentions



50K

Weather Data Points



100

Phone Calls



3K

Events



3 People

Data is unstructured



Social Media

Natural Language

user_id: roadUser332
post: "I am stuck in traffic"



Phone Calls

Audio

phone_number: 072263472228
conversation: my_call.mp4



Connected Vehicle

Trajectory, Lagrangian

loc: 48.8674° N, 2.7836° E
speed: 32.2
lane: 3



Computer Vision

Images

bounding_box: {x:2,y:3,w:13,h:2}
class: truck
Confidence: 0.23

Data is partial

My sensor runs with
a **15 minute delay**

((.))

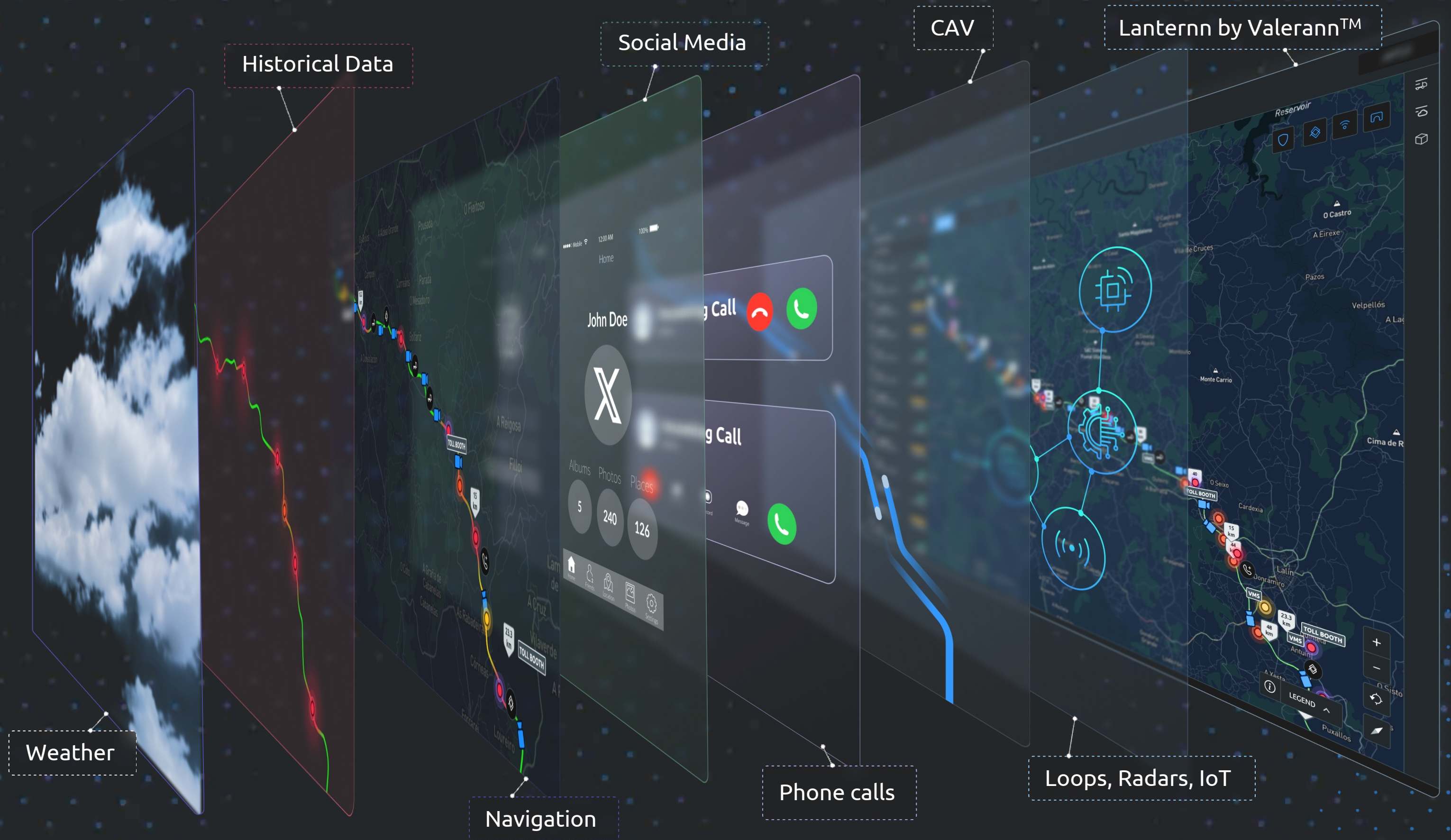
I can't see what's behind me!

I am **stuck** in a traffic jam

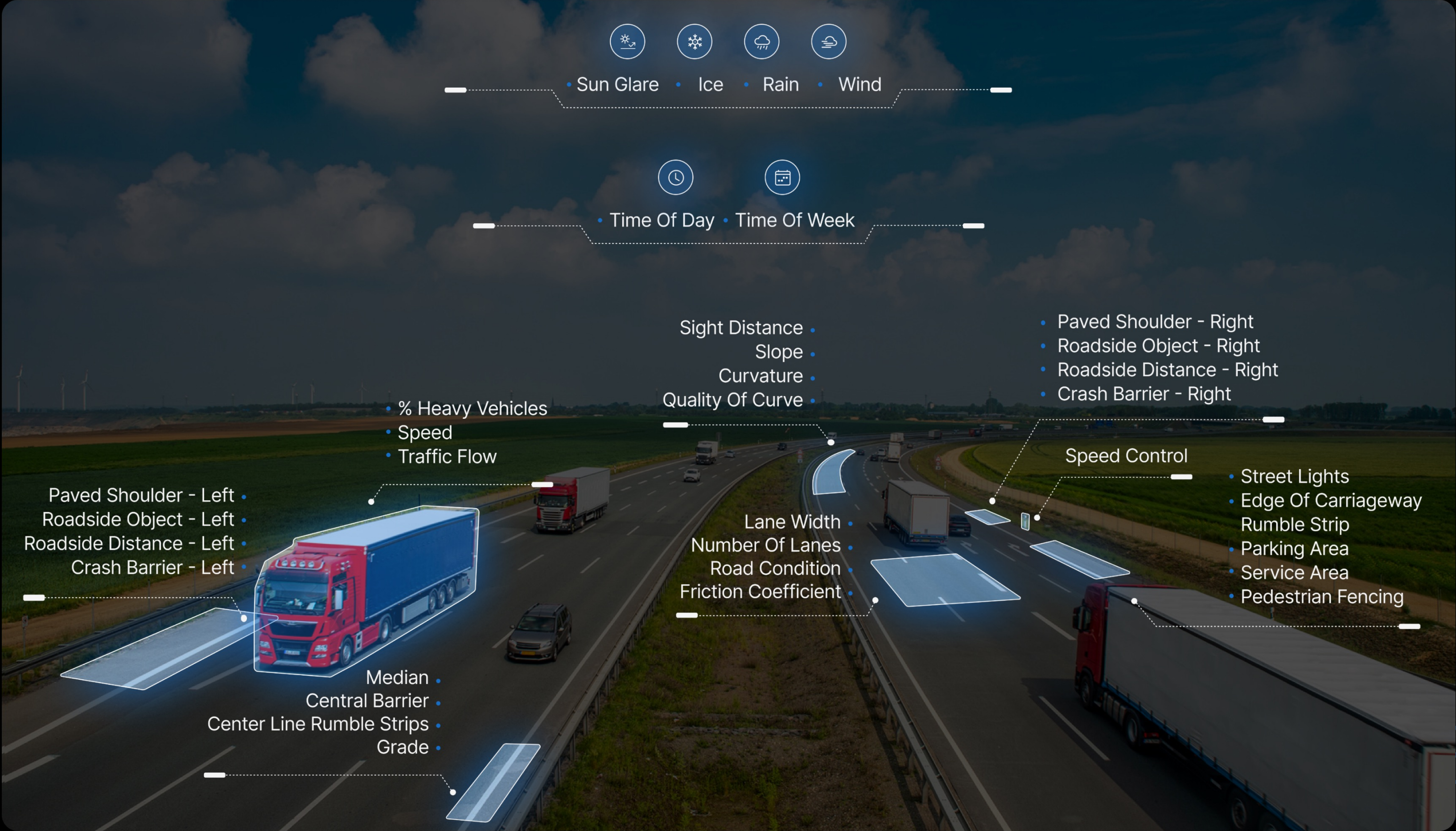
I only work during the day
and **when the weather is good**

AI/ML Deep Data Fusion

	Coverage	% Vehicles	Richness	Accuracy	Robustness	Latency
Machine Vision	-	+	+	+	-	+
CAV	+	-	+	+	+	-
Social Media	+	-	+	-	+	-
IoT Sensors	-	+	-	+	+	+
Fusion	+	+	+	+	+	+



Risk factors



ALERT FATIGUE LONG RESPONSE TIME

60M
DATA POINTS

12 DIFFERENT
SYSTEMS

5,000 ALERTS

100%
30 min response

VISION

CAV

ITS/IoT

CROWD
SOURCE

DEDUPLICATION

30%

CROSS SOURCE

15%

Person getting
out of a
broken-down
vehicle

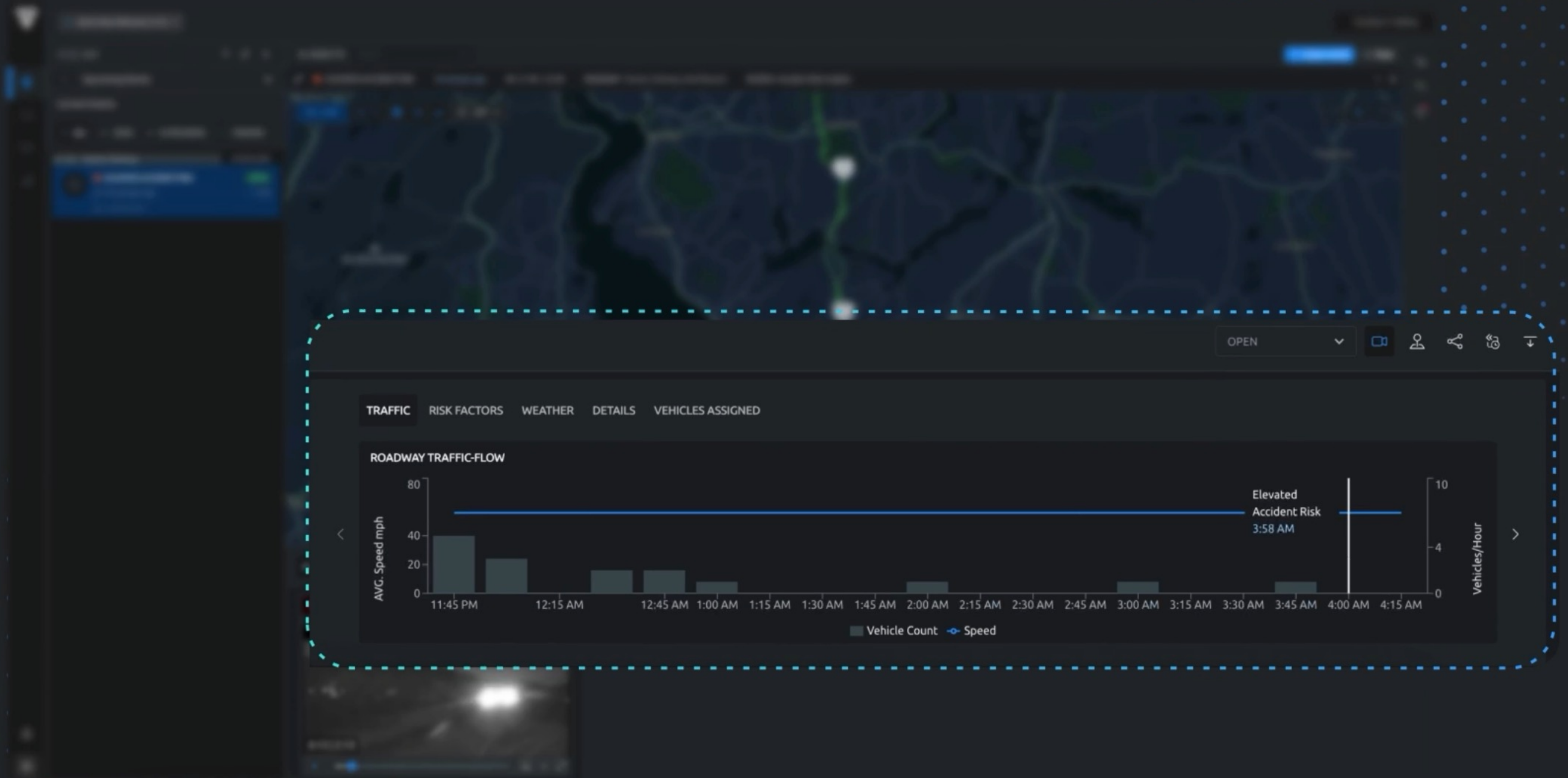
Accident with 5
minutes journey
delay in the rain

CROSS TYPE

7%
5 sec to review

RISK
LOCATION
RELEVANCE
CONFIDENCE

ENRICHMENT





Alerts Max Relevance: 0.45 - 1

4:30 AM

0 Upcoming Events

Current Events

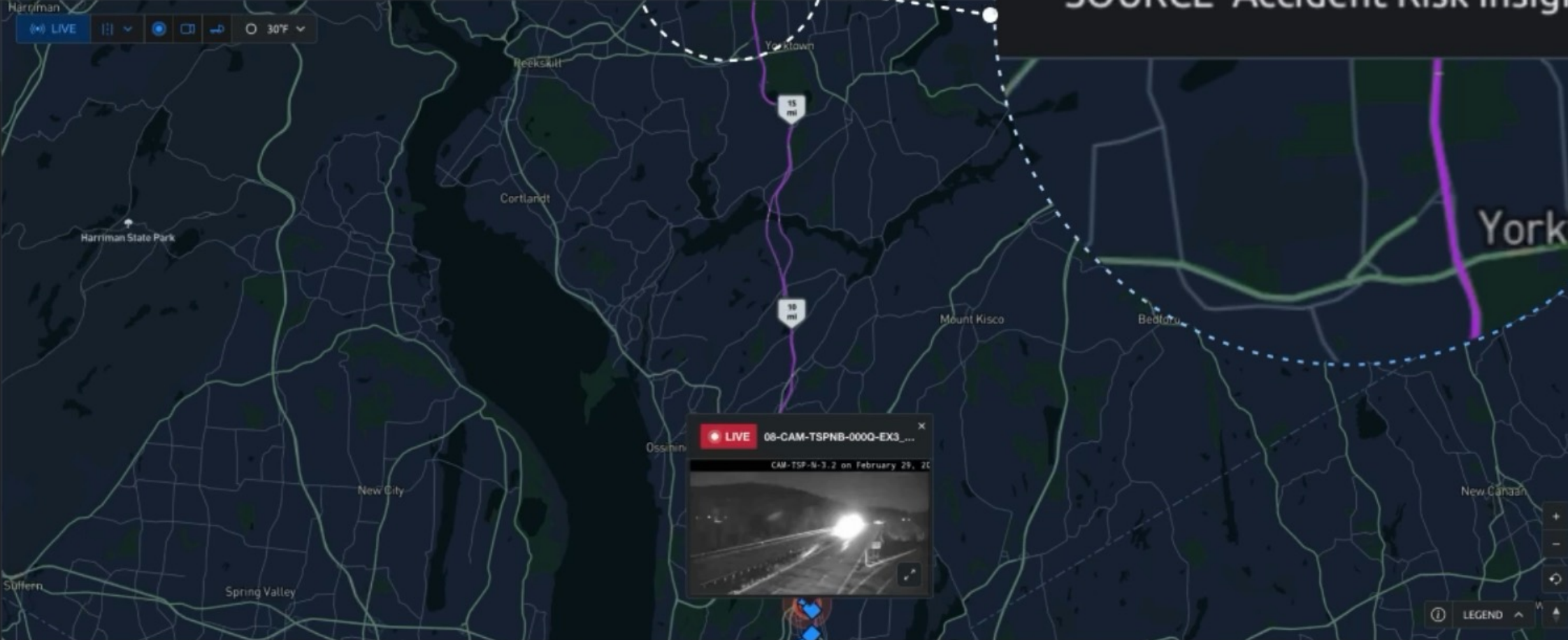
1 ALL 0 OPEN 0 IN PROGRESS 1 FINISHED

3.1 mi - Taconic Parkway ID #5631def9

ELEVATED ACCIDENT RISK OPEN
32 minutes ago

→ ASSIGN TO SELECT

ELEVATED ACCIDENT RISK 32 minutes ago MI 3.1 MI - 3.5 MI ROADWAY Taconic Parkway, Northbound SOURCE Accident Risk Insights



SOURCE Accident Risk Insights

DETECTIONS SUMMARY 1 ELEVATED ACCIDENT RISK

REPLAY FROM NEARBY CAMERA 41 minutes ago 08-CAM-TSPNB-...

CAM-TSP-N-3.2 on February 29, 20



TRAFFIC RISK FACTORS WEATHER DETAILS VEHICLES ASSIGNED

RISK RATING: HIGHLY ELEVATED

Wind Speed strong 20 mph

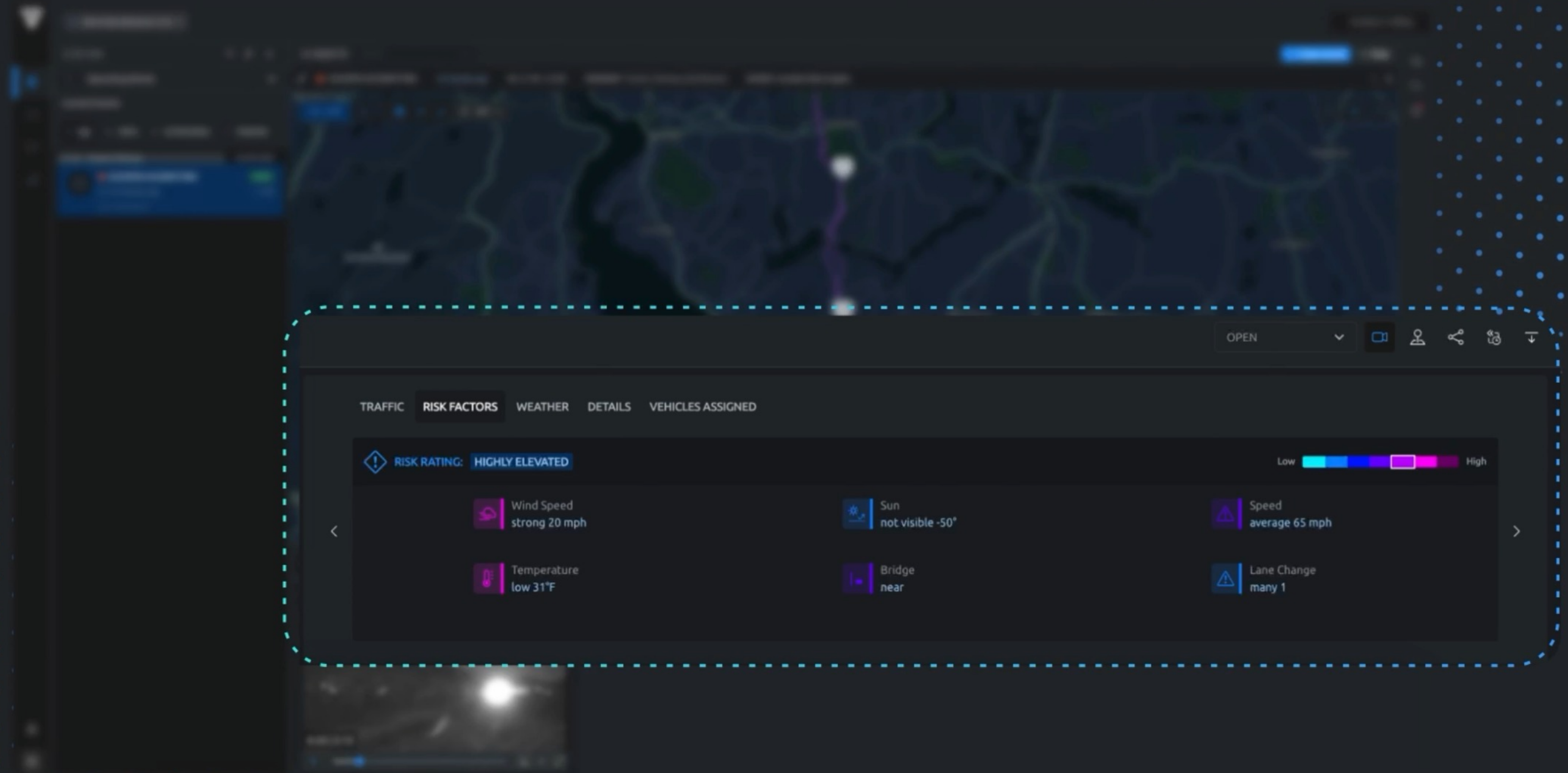
Temperature low 31°F

Sun not visible -50°

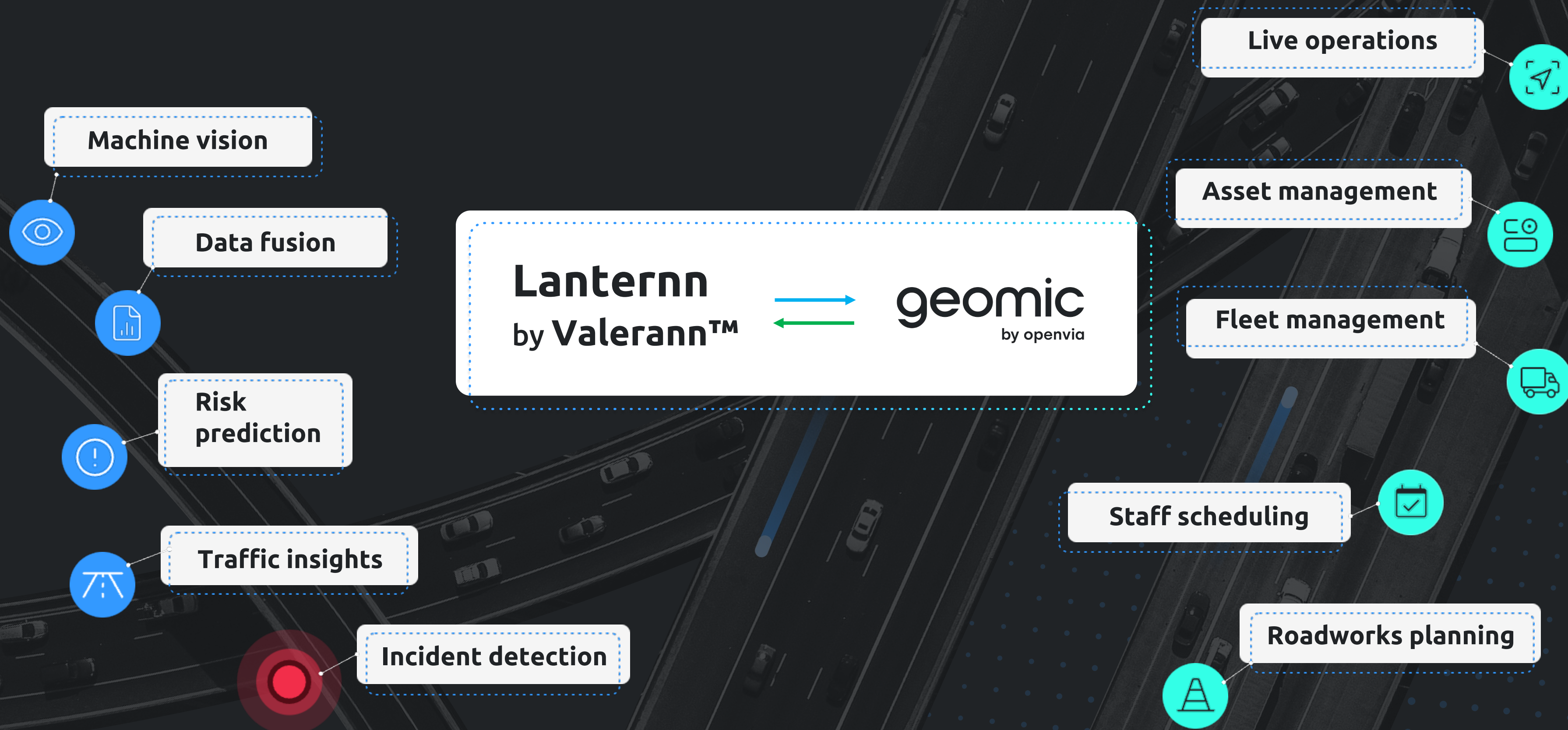
Bridge near

Speed average 65 mph

Lane Change many 1



How we do our management



We will share lessons from three of our joint deployments

g ruta 27 by globalvia



- 55 miles long
120K AADV
Infrastructure-rich
Complex terrane
Main arterial from the capital to
a busy Pacific coast seaport

USE-CASES

- Actual improvements through
trusting your data
automating your response



Risk

Prediction



Incident

Identification

SHORT TERM ACTIONS

Relocation surveillance units based on
incident identification and risk prediction

IMPACTS

- **15%** increase in detected events
comparing 2023 vs 2022
- **15%** increase in attended incidents
- increase **social benefits**
- **concession image** improvement

Enhanced incident detection for improved response

Data is the modern crystal ball

Next Step

THE CHALLENGE:

Taking action through the noise

WHAT WE DID:

Fuse data & automate workflows

BENEFIT

15% increase in detected events comparing 2023 vs 2022

THE CHALLENGE:

Vision zero: **accidents forecast**

WHAT WE DID:

Big data and use of AL/ML

BENEFIT

Detected potential operational improvements

THE CHALLENGE:

Vision zero: **accidents prevention**

WHAT WE DID:

Big data and use of AL/ML

BENEFIT

Detected potential maintenance improvements and actions in order to prevent accidents

The most advanced and complete platform for managing preventive and corrective maintenance of mobility assets

Geomic is configured/deployed in 5 countries and external customers

Shifts

Assets

Maintenance

Operation

Map Service

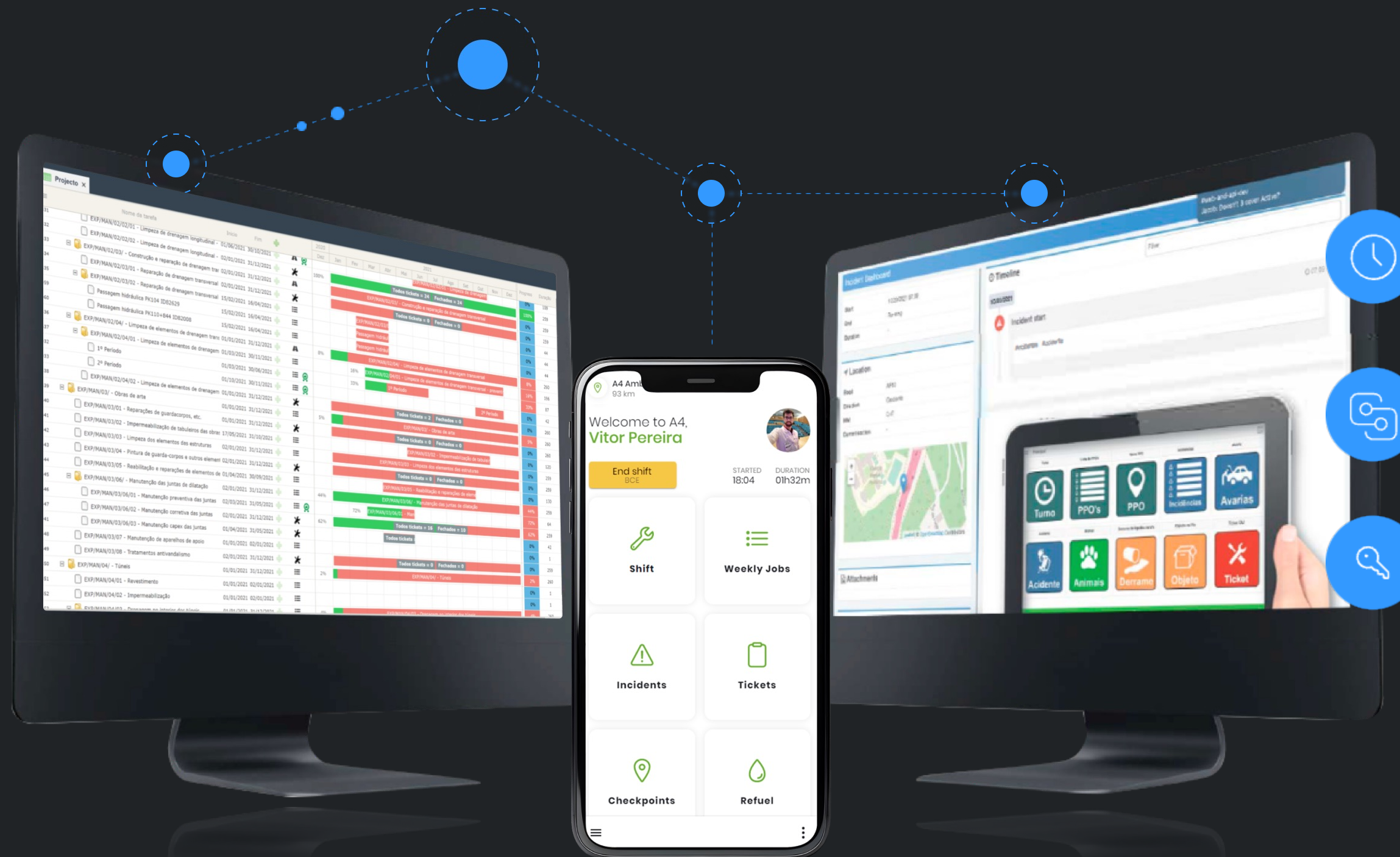
Fleet

Warehouse

Datex

System

Security



Real time



Integrated system

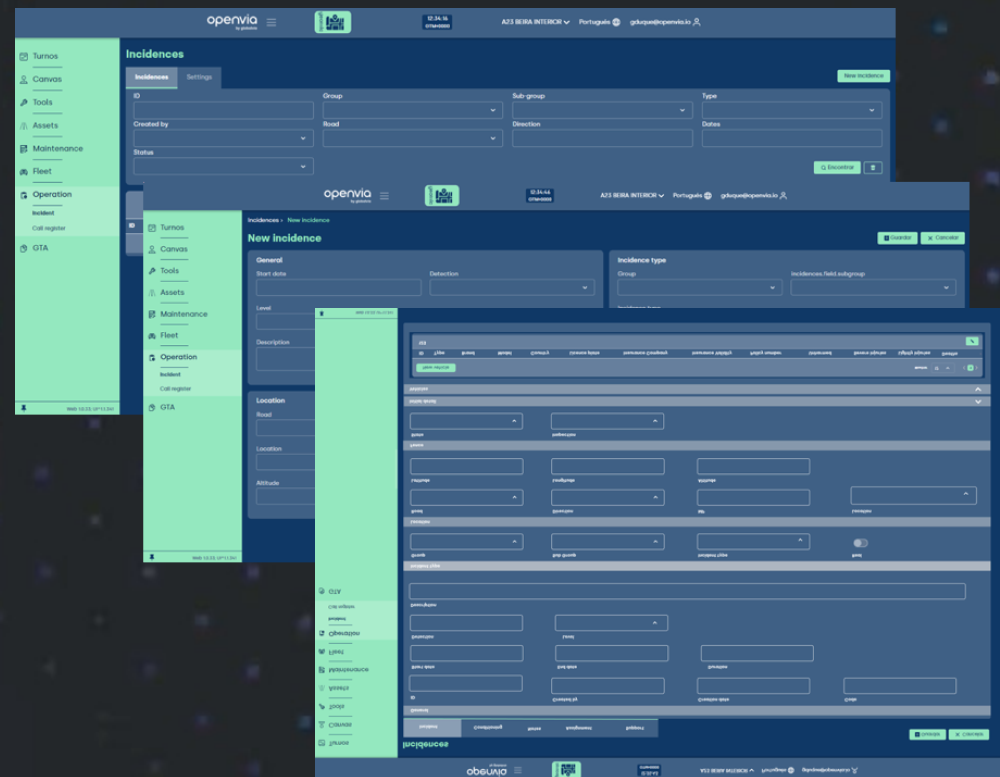


Open api

OPERATION

RECORDING OF INCIDENTS REAL-TIME

- Assign patrols
- Update the incident statuses until its resolution.
- Response time control and operating KPIS.
- Damage registration and ticket opening.



OPERATION

EVENTS/INCIDENTS CONSOLE

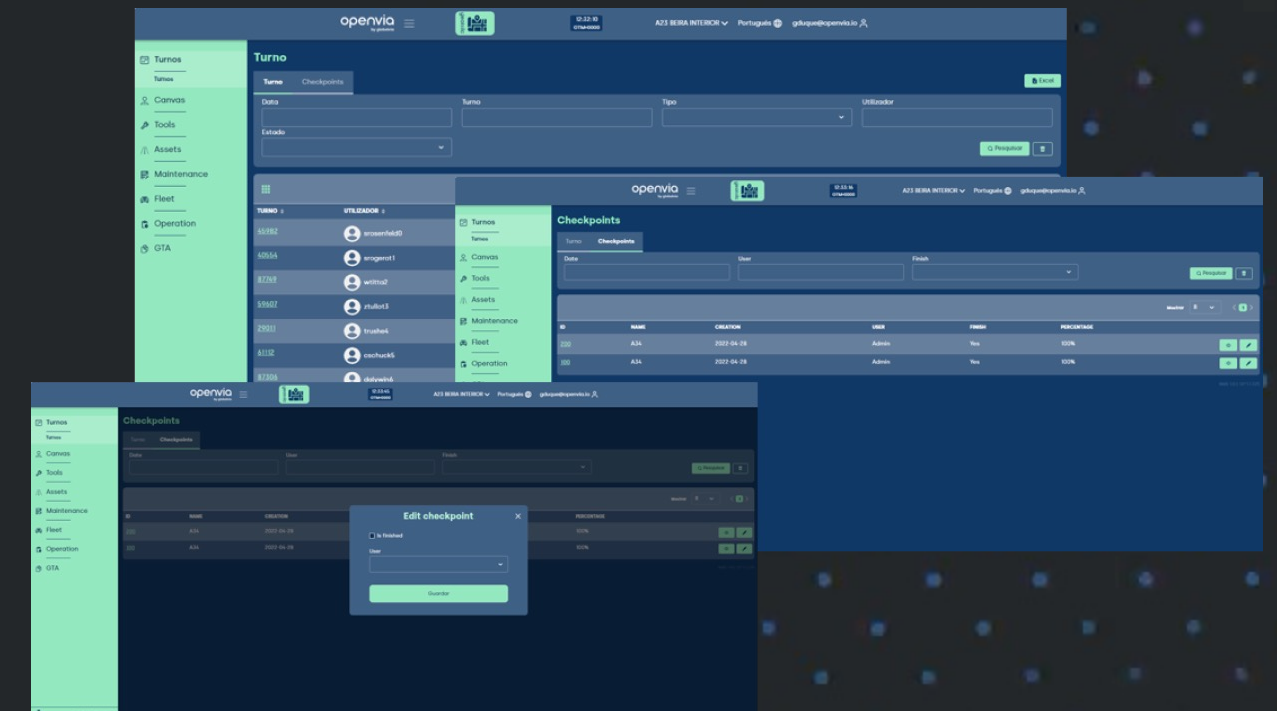
- Filtered by status, code, date, location, response time, type...
- Reporting engine
- Export data
- Management of the total incident flow.

This screenshot shows the 'Ocorrência' (Events/Incidents) console. It includes a sidebar with navigation options like 'A decorrer', 'Finalizadas', 'Mapa', 'Tudo', 'Com origem falhada', 'Sem origem falhada', 'Todas as origens', and 'Report Acidentes APCAP'. The main area is a table of incidents with columns for 'Id', 'Tipo de ocorrência', 'Data de início', 'Data de fim', 'D. (min)', 'Entrada', 'Saída', 'PK', 'Código', 'Mobile', and 'Real'. The table lists various incidents such as 'Chuva', 'Animal na Estrada', 'Objeto na Via', 'Avaria de Veículo', 'Colisão de Múltiplos Veículos', 'Veículo Imobilizado', and 'Nevoeiro'.

SHIFTS

WORKERS CAN BE ASSIGNED TO DIFFERENT SHIFTS

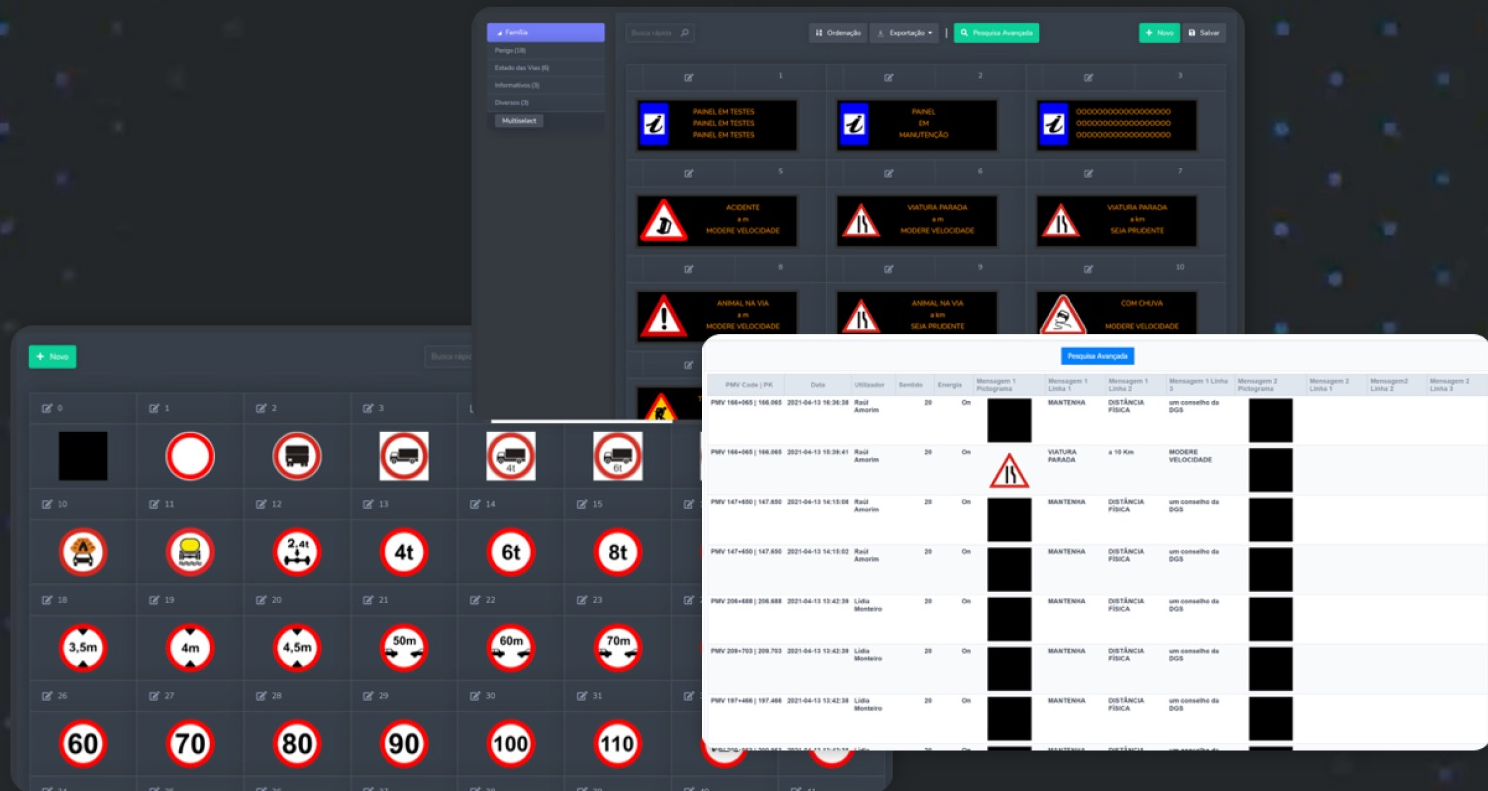
- Defined mandatory routes for workers/subcontractors
- Mobile app or web setting
- Start and end of shifts edition
- Workers Performance
- Calls registered
- VEHICLES used.



OPERATION

ALARM CONSOLE, STATUS MONITORING REAL-TIME

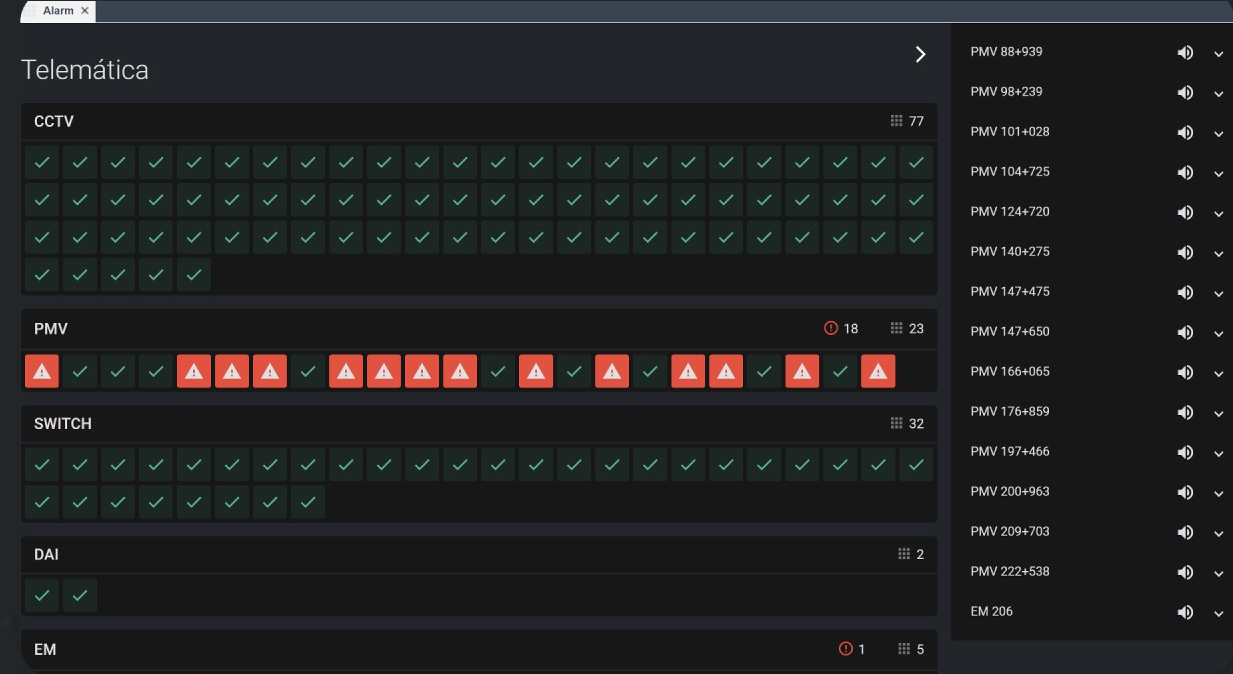
- Connection and availability of ITS equipment (PMV, CCTV/DAI, ADR, etc..)
- Voice alarm
- Description of the failure Integration with Tickets
- Query history



OPERATION

IOT CONSOLE FROM PMVS

- Ad hoc messages configuration
- Predefined message listing with editing capability.
- Historic messages
- Exporting data capacities
- Integration with Incident Panel.



Key learnings:

To use the data,
you need
to trust it

To trust it, you
need
transparency
of how
the data and
insights are
constructed

Once you
analyze your
data, you can
take decisions
and prioritize
actions

There is
a lot of data
already out
there,
we should
use it

To analyze
your data you
need powerful
tools as data
fusion

Safety
benefits &
social benefits

Thank you!

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