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ASECAP DAYS ISTANBUL 2023

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Enhancing Road Safety with Innovative Solutions

Jacob Rainbow

Tech Lead (Data Fusion)
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What problems do Operators have?

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The Problem in Numbers

1.35
MILLION

€8.1
MILLION

1 in 70

+13.3%

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What are the available options?

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Real Time

- Dispatch Patrol Vehicles
- Change VMS
- Close / Open lane
- Divert Traffic

Long Term

- Optimise Existing Roadside Infrastructure
- Install new Sensors
- Develop new Safety Features

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Data Challenges

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VOLUME

PARTIAL

NOISY

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Imagine these options

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Tool #1:
PREDICT RISK

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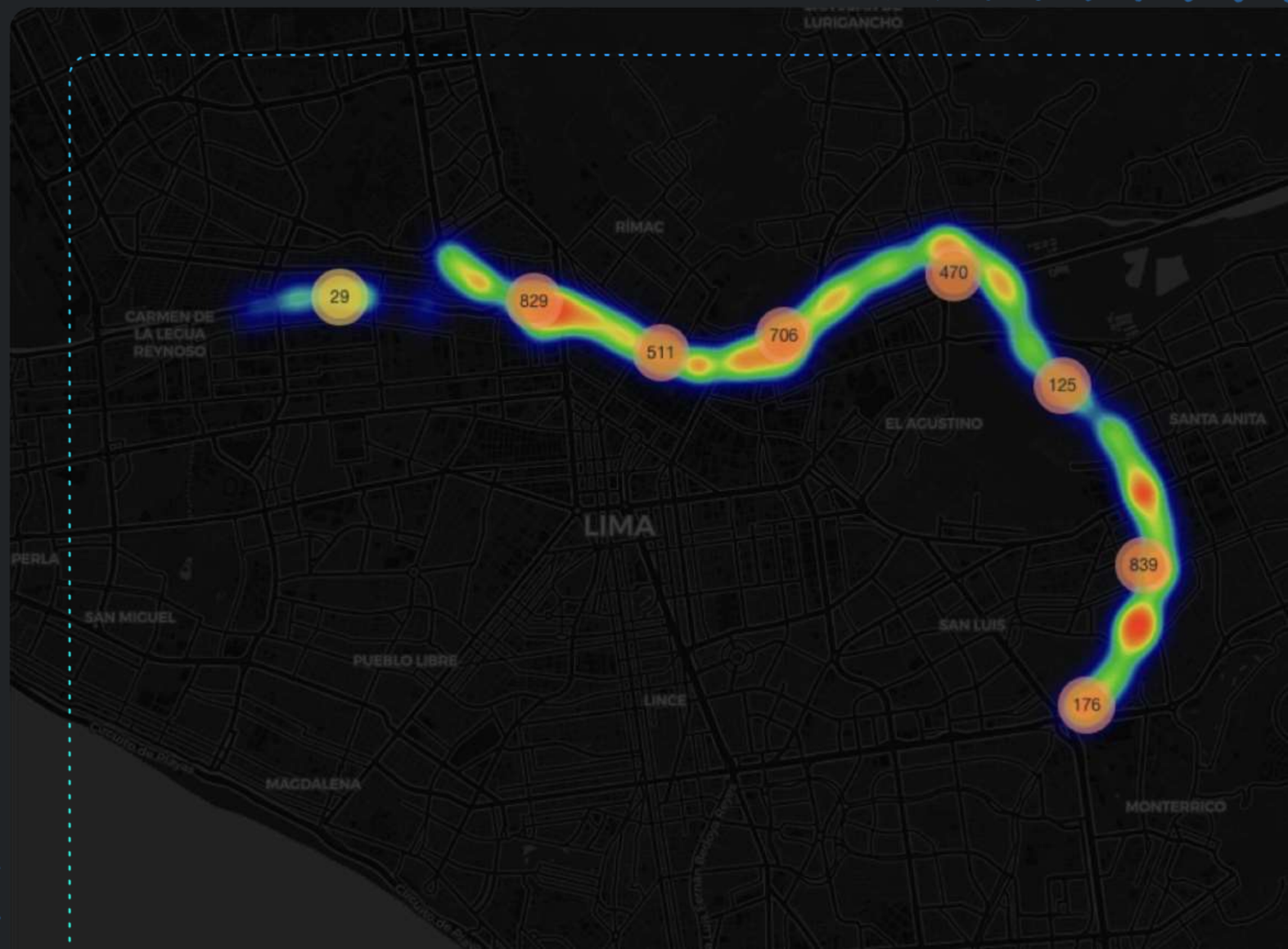
Predict Risk

- Day one risk model
- Draws immediate insights from millions of historical incidents



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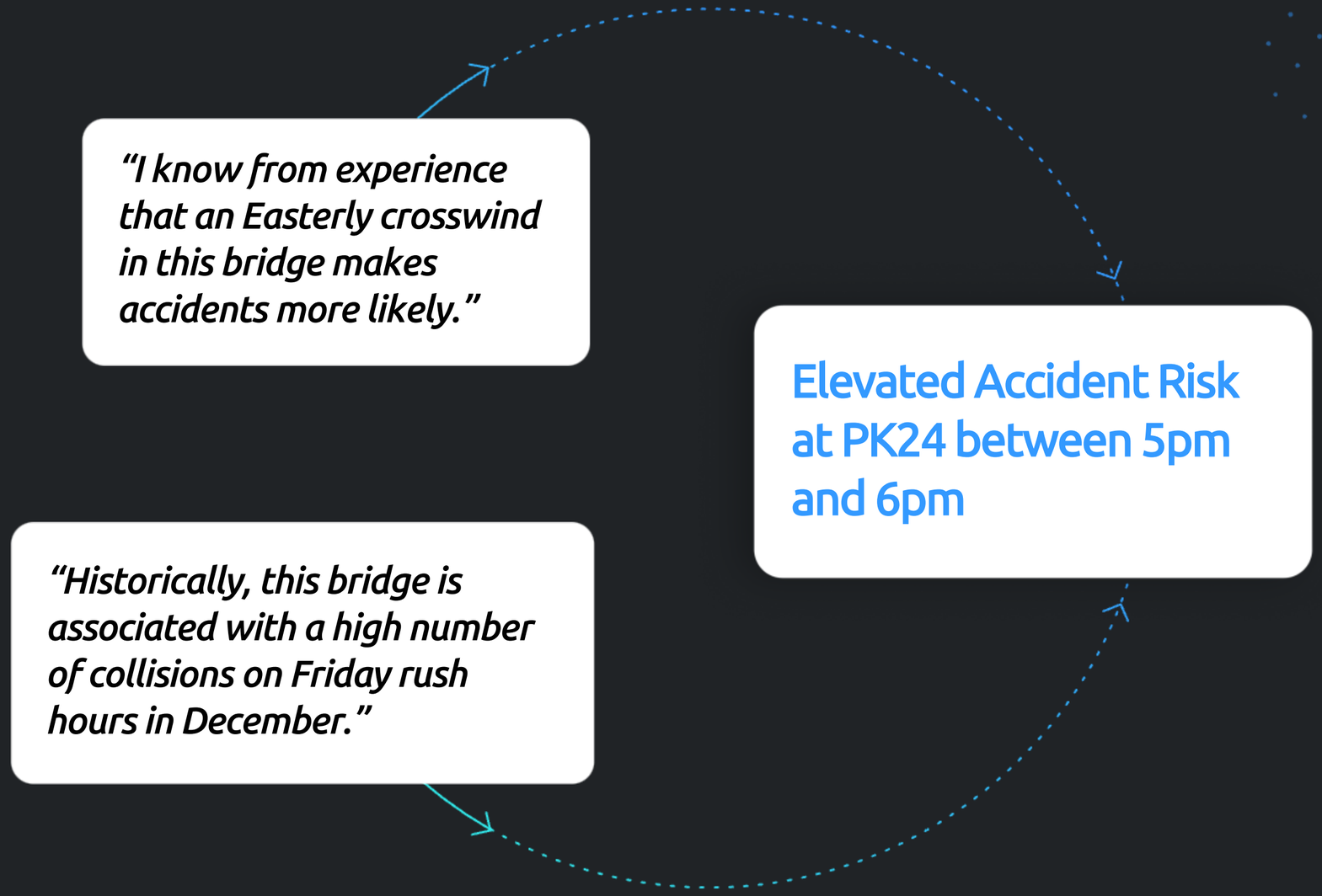
Ensemble Approach

- Machine Learning Models
- Expert Model
- Fusion Model



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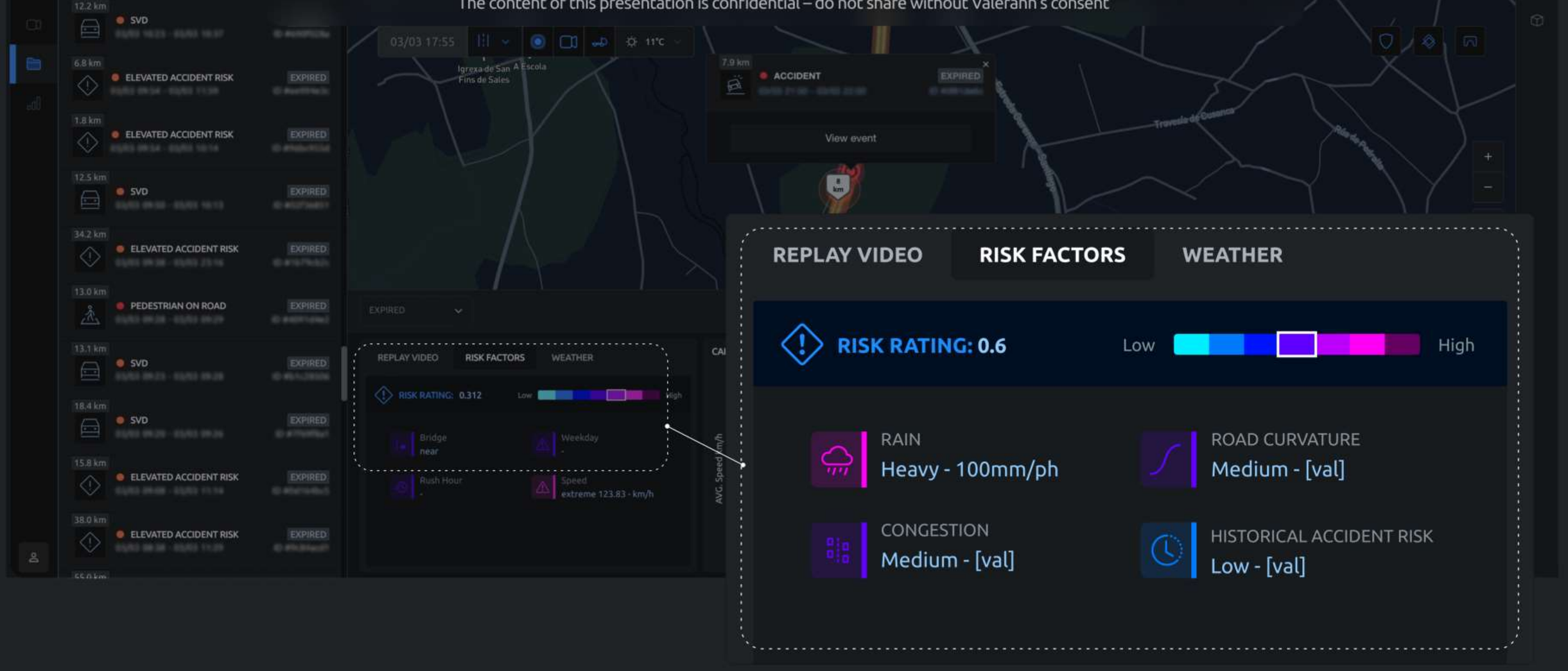

Easy to understand **risk factors** in plain english

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Tool #2:
PROVIDE CONTEXT

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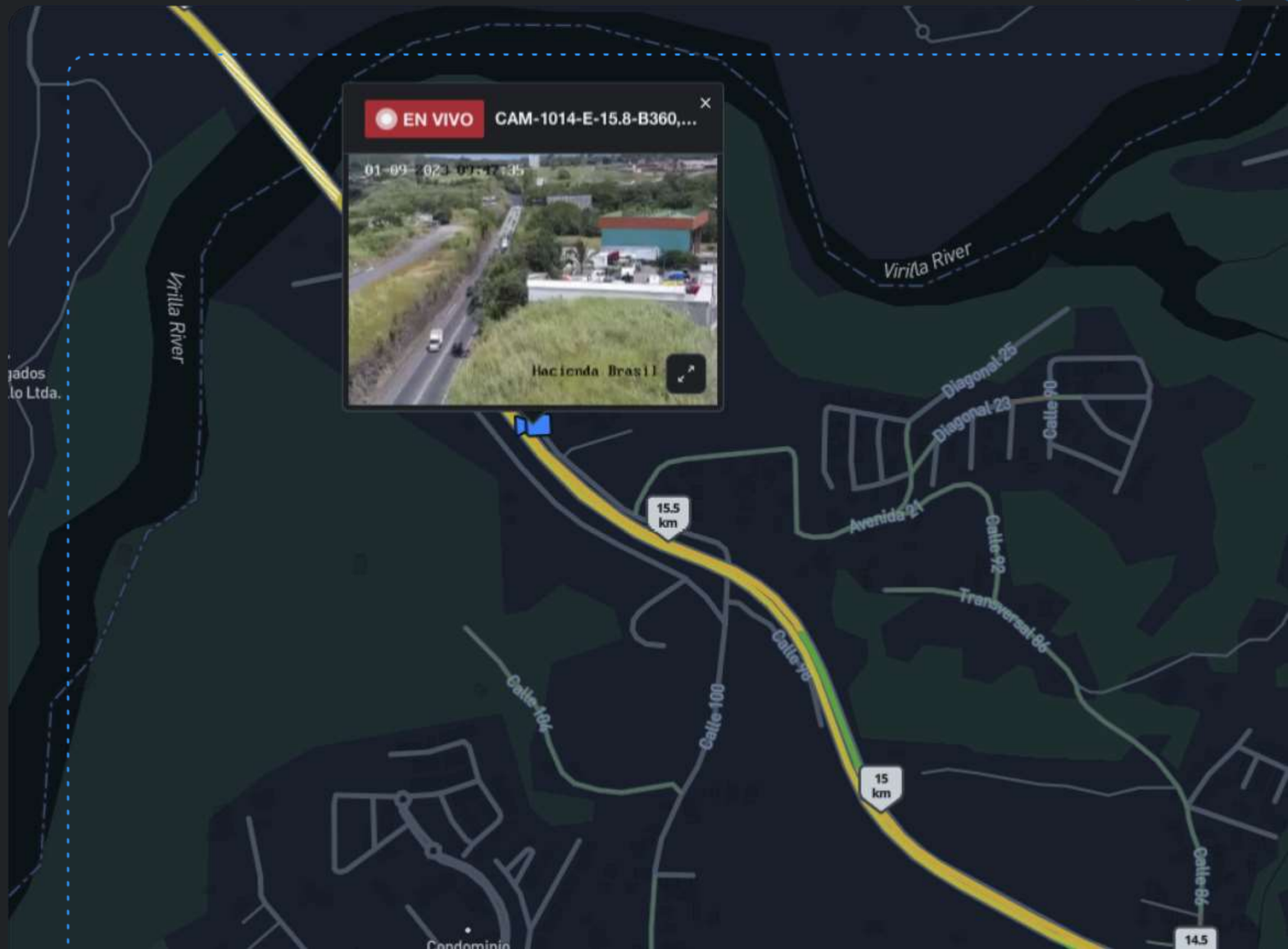
Provide Context

- Severity of an accident is context dependent
- Traffic flow and weather are highly localised



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Weather Fusion

- Visibility from Cameras
- Integration with Weather Station
- Integration with APIs

Trigger Warning:
High Speed Car Crash

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Traffic Fusion

- Vehicle counts from Loops and Cameras
- Local speeds from APIs
- Fill in blind spots

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Tool #3:
REDUCE NOISE

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Big data has led to information overload & alert fatigue

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50,000,000
Objects detected via Computer Vision

10,000,000
Vehicle data points

1,000,000
Vehicle counts

10,000
Weather reports

1,000
Mentions

100
Phone calls

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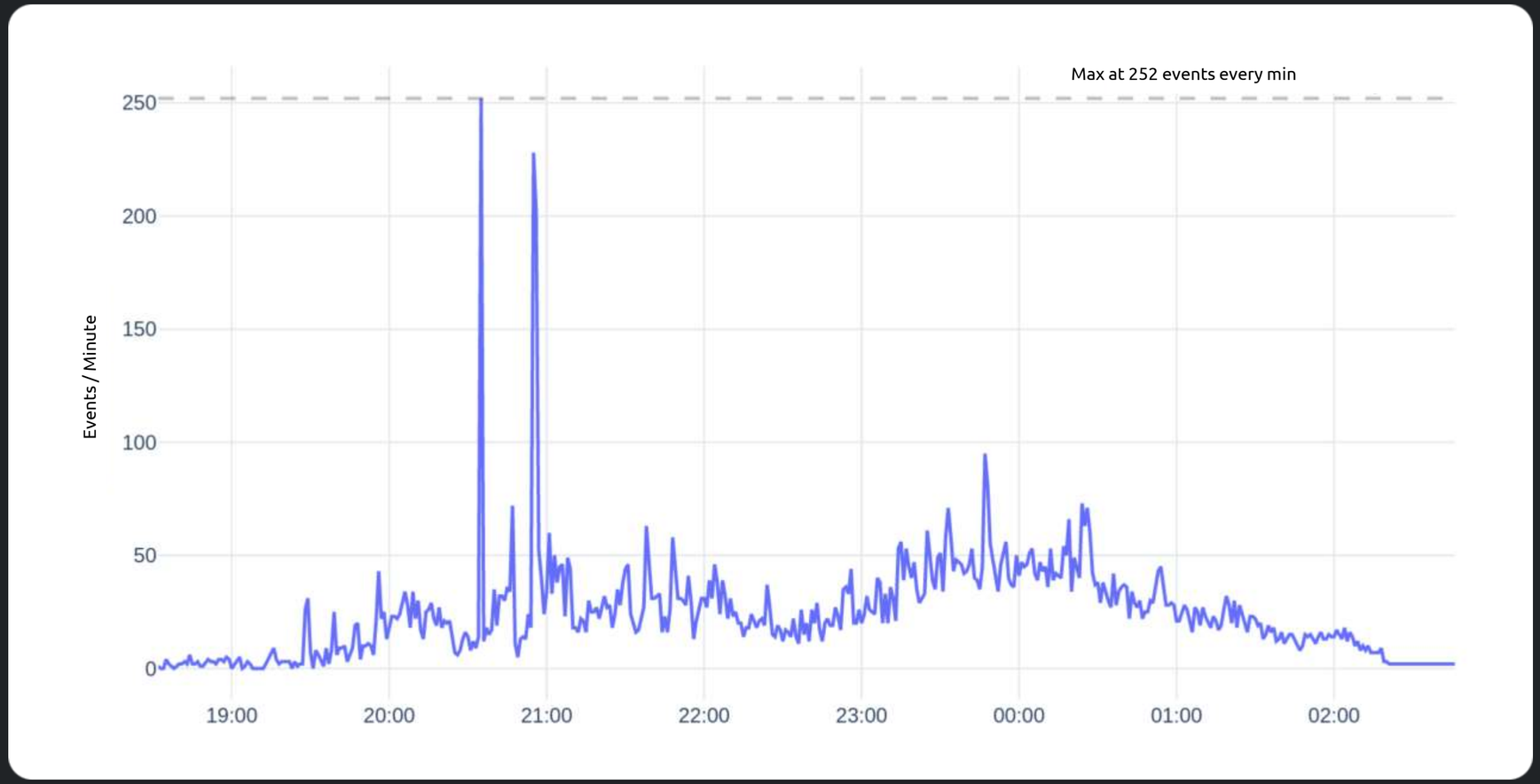

200+ peak events per minute, nearly 1 events every second sustained over hours.
Information overload without Fusion

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Trigger Warning:

High Speed Car Crash

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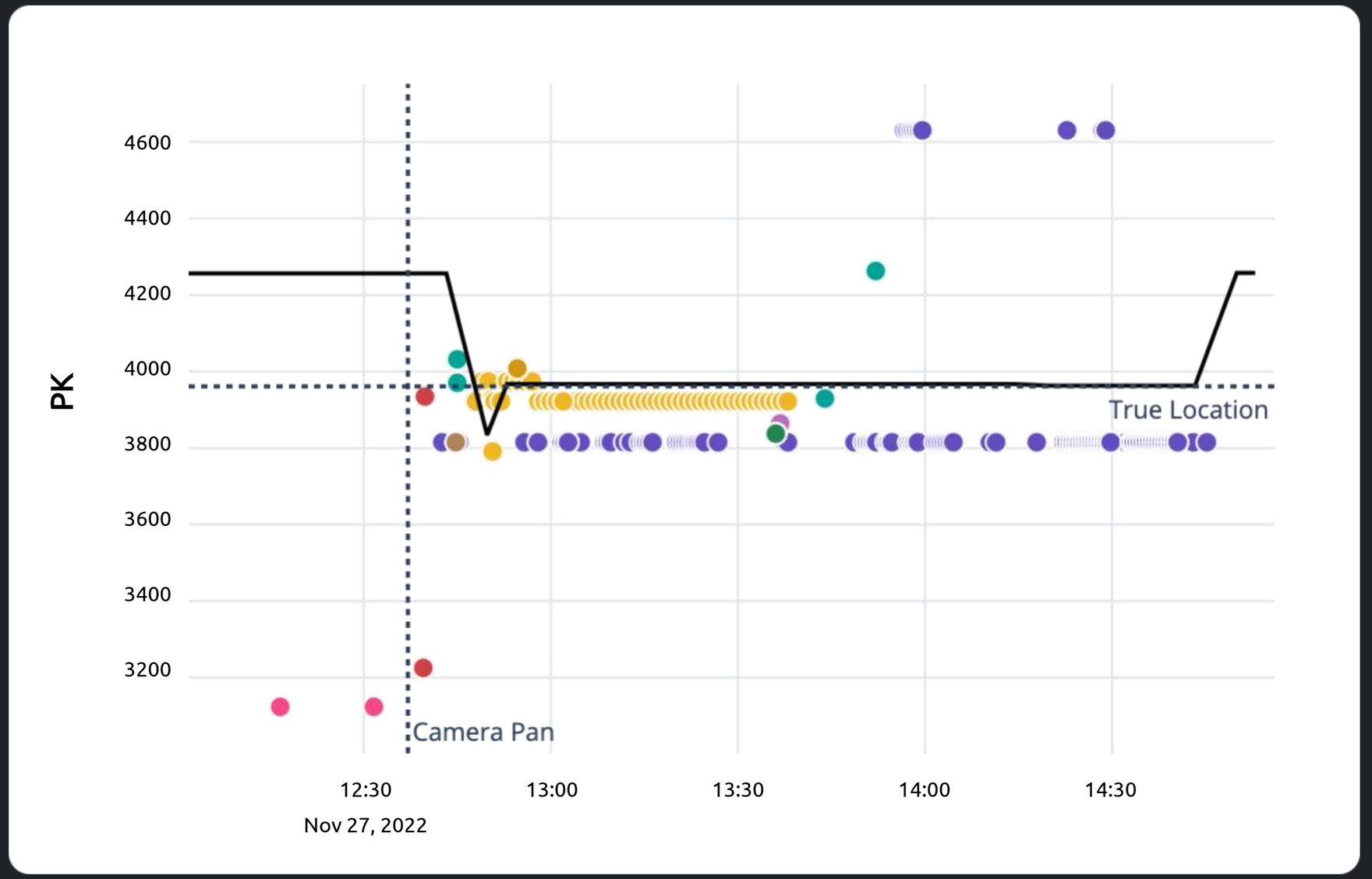

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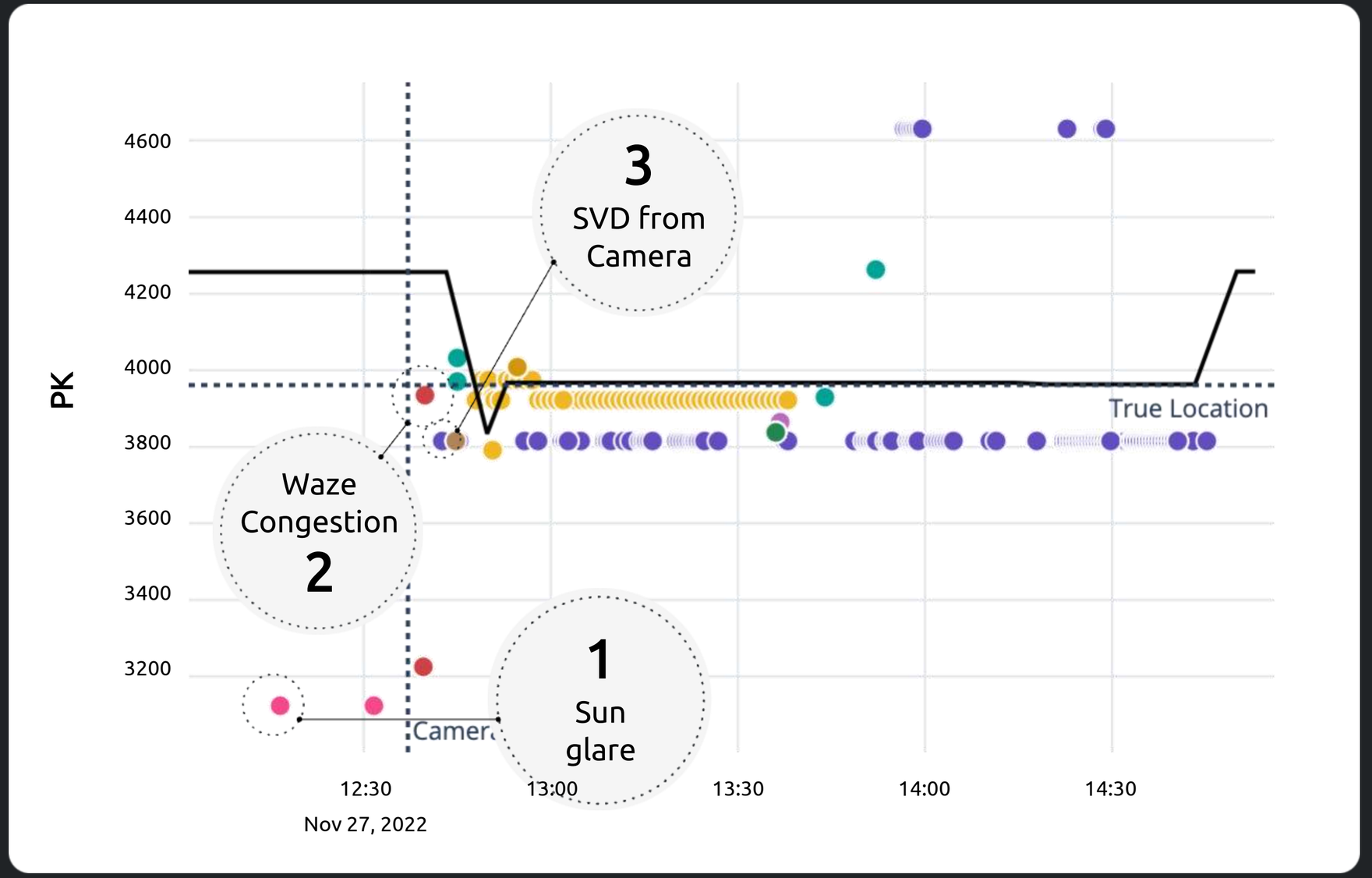

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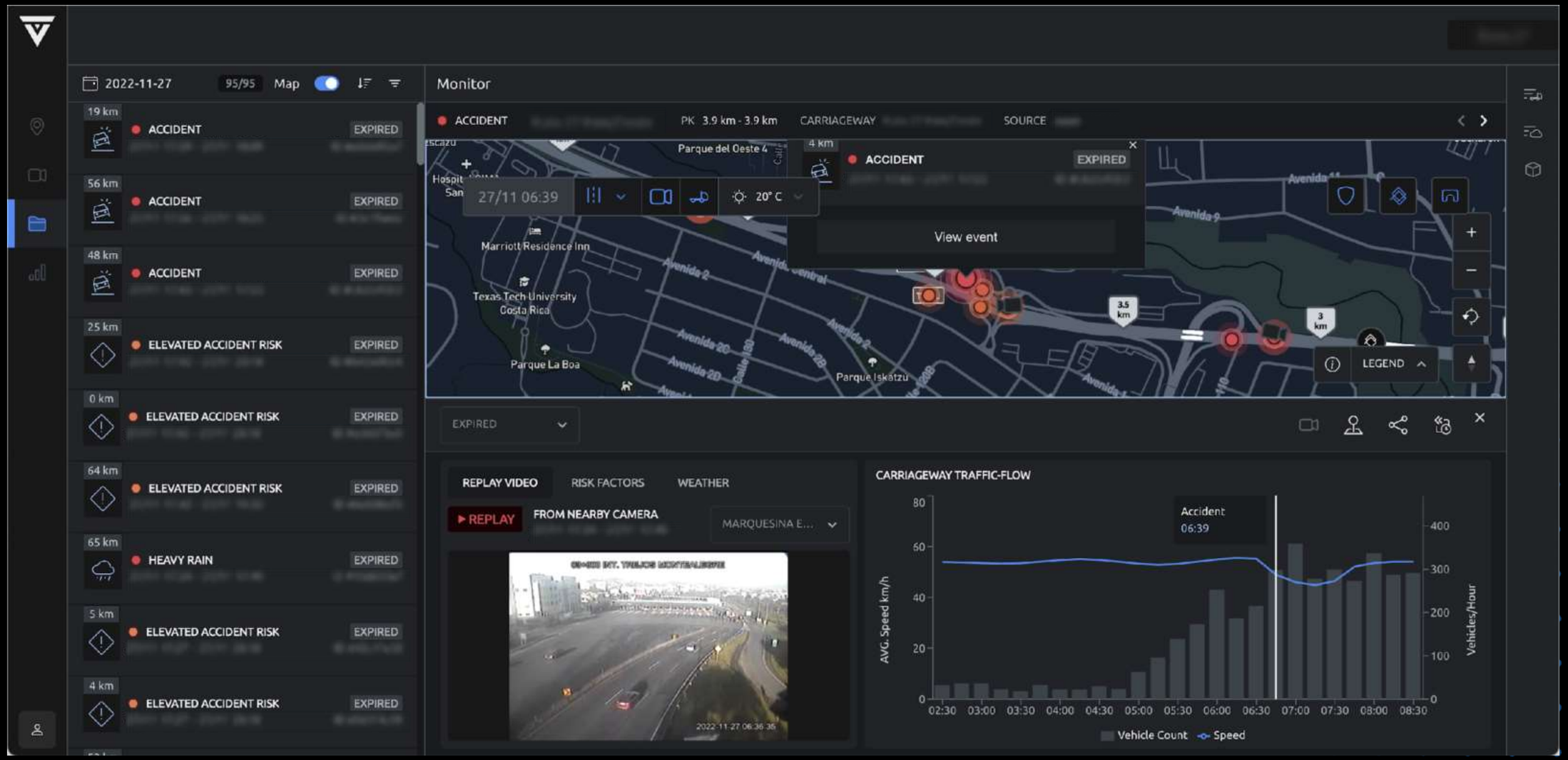

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Reduce Noise

- 93% compression mitigates alert fatigue
- Fuzzy logic Fusion Engine allows infinite customisation

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Results

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A LANTERNN BY VALERANN™ USER:

"By having early road incidents notifications, we are able to shorten our response time, also on parts of the road where we don't have ITS infrastructure"

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88%

Improvement in response relevance

25%

Improvement in response time

95%

Incidents raised to Operator within 5 minutes

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THANK YOU

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