The connected vehicle - how data enables innovation

COVESA Fall Virtual All Member Meeting
October 5, 2021

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GEOTAB

Geotab: A world leader in Connected Vehicles

- Engineering company building analytics, fleet management & IoT solutions

- Started in North America in 2000 now has:

  - More than 500 partners and a flourishing ecosystem

  - Over 1,600 Employees and offices in Oakville, Kitchener, Las Vegas, Mexico City, London, Madrid, Paris, Rome, Munich, Aachen, Shenzhen & Adelaide

  - Largest penetration in Fortune 500 companies

- Pushing OPEN standards for Connected Vehicle

- Customer wins through choice

Videos: **Fleet Management**, **Company Overview**
Company News: Visit our **Press Room**

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Big Data @ Geotab

>2 Million
connected vehicles, globally

>40 Billion
data points collected daily

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What data are we talking about

static   **<>**   **dynamic**   **<>**   **analytic**

- Geo positioning
- X,Y, Z-axis (potholes, bumps, harsh braking) accelerometer
- Cranking voltage
- Vehicle identification number (VIN)
- Odometer
- Diagnostic Trouble Codes (DTCs)
- Maintenance related data (e.g. dynamic service intervals, brake pads, liquids, sensors)
- Fuel (Consumption, level, AdBlue etc.)
- Safety-related data (Seat Belt etc.)
- EV-related data (SoC, Charging Status, Consumption, Battery health)
- and many more...
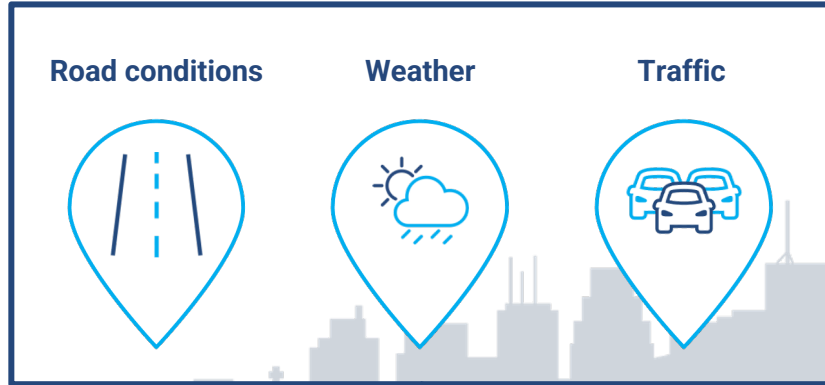
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An example for "analyzed data": Gas Stations in the US

- Over 60,000 fill-ups in a day

- With the right logic, it's easy to have an up-to-date status of the location of gas station

- Over 10,000 more gas stations than OSM

00:00 EDT

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Vehicles Become Sensors on Wheels

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Road conditions

Weather

Traffic

An efficient way to making the vast amount of data available - the Curve Logging Algorithm

- Patented method of analyzing data in the vehicle on the edge in the Geotab GO device allowing for recording and transmitting 'information' (data that has value and has a reason)

- **Key value-add**: The information that has been recorded for a reason is then processed and analyzed efficiently in Geotab servers for rules and notifications for effective data storage and reporting

- **Open-source** with the aim to raise quality and quantity of vehicle data being made available
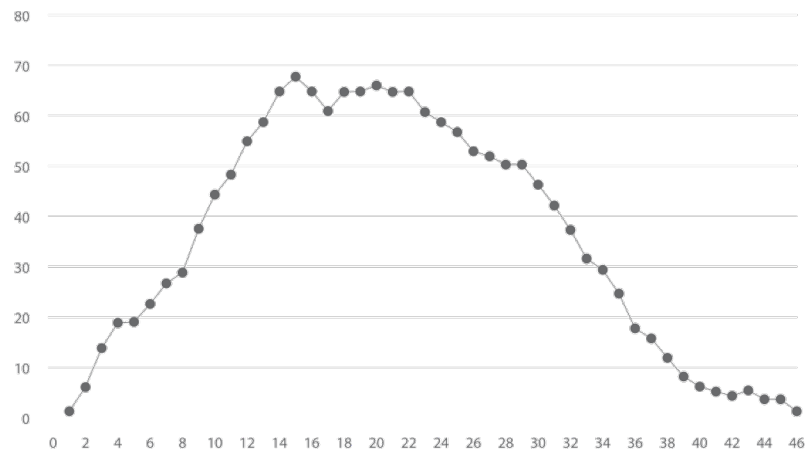
More Info:

How it works (blog post)

Whiteboard video with Neil Cawse
GENIVI resource documents

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Examples

How data creates value

The value of data for fleet customers

Productivity
- Customer service times
- Identify unexpected stops
- Accurate arrival and departure times
- True trip miles

Fleet Optimization
- Increase fuel efficiency
- Decrease idle time
- Track speeding
- Record engine diagnostics
- Vehicle maintenance

Safety
- Collision notifications
- Risk management reports
- In-vehicle coaching
- Seat belt use
- Driving in reverse

Sustainability
- Reduce fuel consumption
- Track CO_2 emissions
- Fleet electrification
- EV performance monitoring and reporting
- GO Recycling

Compliance
- Electronic driver logs
- Tax reporting
- Vehicle inspection reports

Expandability
- Flexible technology
- System integration (Software Development Kit)
- Hardware Add-Ons & Software Add-Ins

Go Electric: Should I dare? The data will tell you!

Geotab can help simplify your fleet's transition to electric vehicles with an EV Suitability Assessment.

- Will an EV be able to perform the required tasks and meet range requirements?

- Which vehicles are the best candidates for replacement by an EV?

- What will the impact be on my fleet's operational budget to switch to EVs?

View Press Release **Watch Video**

View Brochure **Download on Marketplace**

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Electric Vehicle Fleet Management

Effective performance monitoring of both EVs and traditional vehicles in one platform

Operations

- Am I using the EVs (BEV, PHEV) in my fleet in an optimal manner (EV Monitoring)?
- What is my consumption (kWh) and TCO saving?
- AI-based: When is my battery losing capacity?
- What type of EV infrastructure is needed?

Charge Management

- managing both, the load and the charging in an optimal manner (Smart Charging)
- Compare fuel consumed vs energy consumed in the fleet
- A complete charging history of all electric vehicles in the fleet similar to fuel fill ups
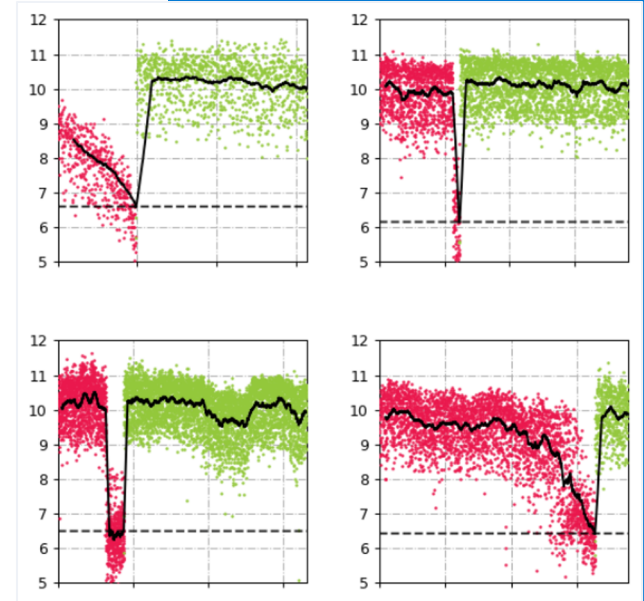- Real-time notifications for charging status and battery charge %
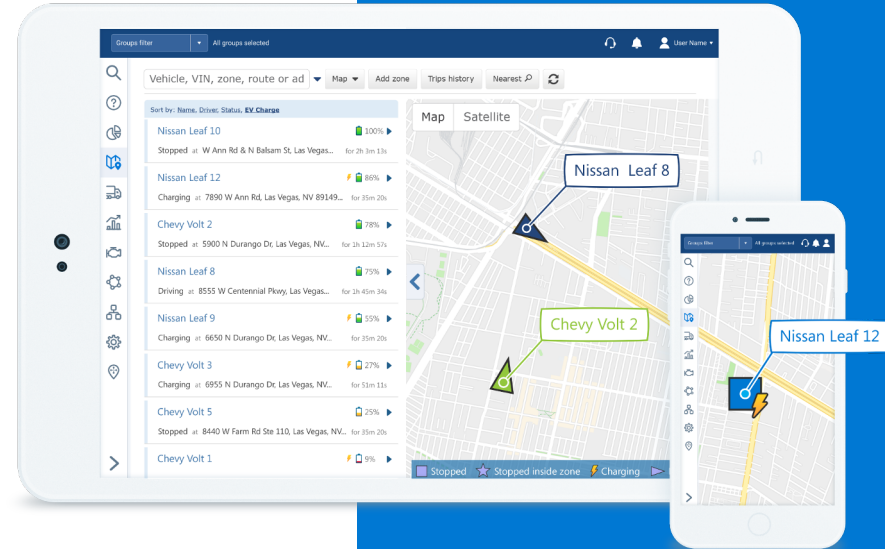
Watch video

*EV charging report and real-time notifications

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Predictive Maintenance helps to reduce unplanned downtime

- Electrical System Rating for battery health (0-100)
- Leverages machine learning to look for patterns of failure due to features like cranking voltage
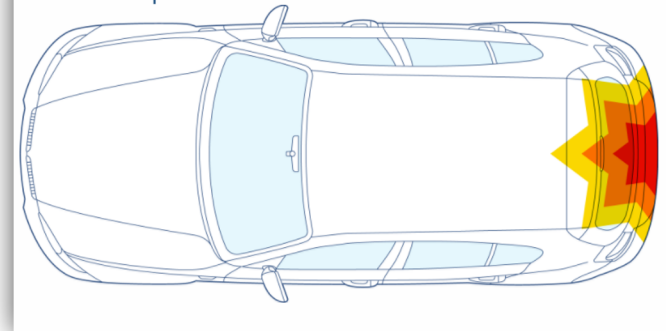
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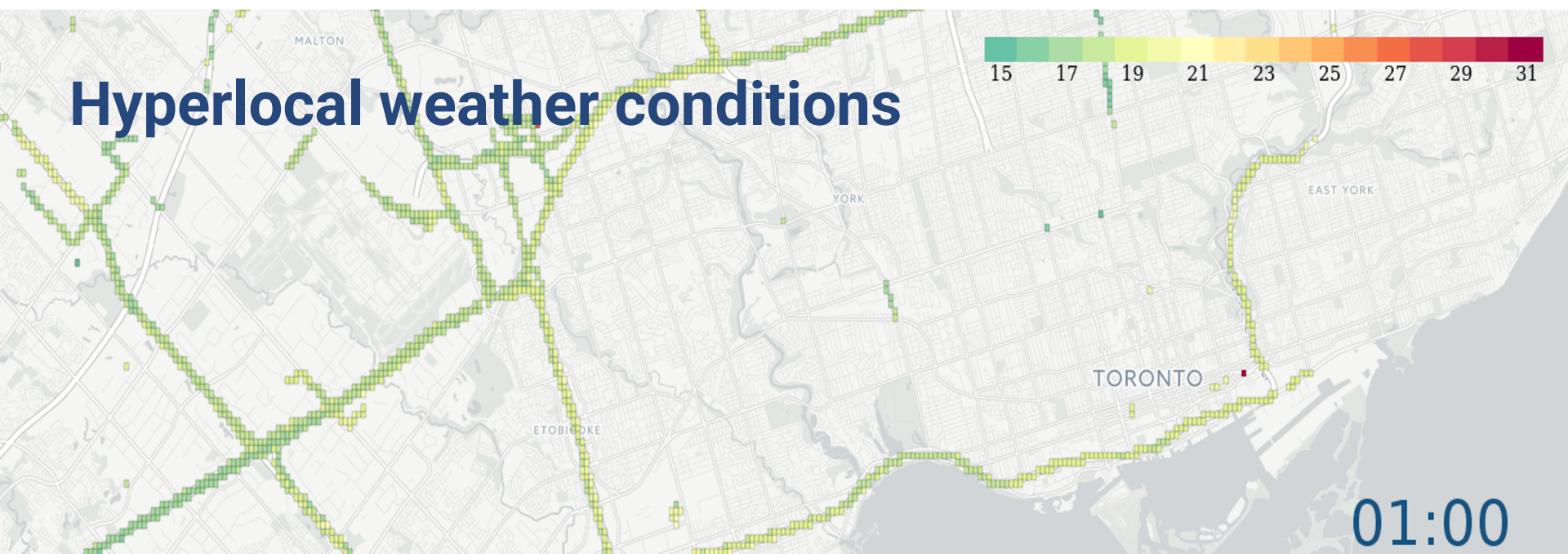# Accident detection and reconstruction

- Detect damages automatically with the GO-device
- Second by second resolution reports of the last 100 seconds of position and speed data The force being applied to the vehicle in any direction is recorded (X-, Y-, Z-axis)
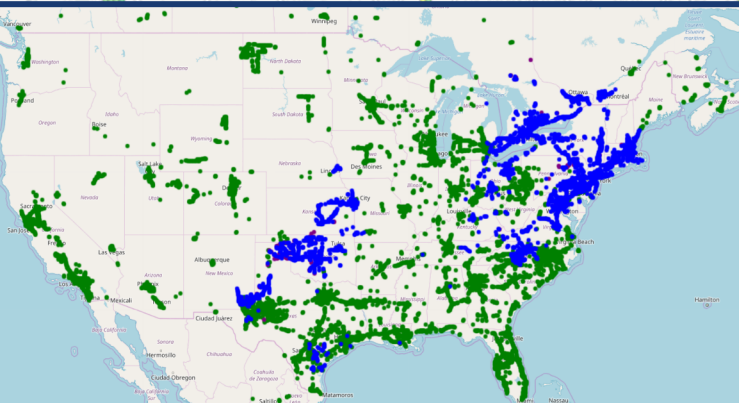

Point of Impact

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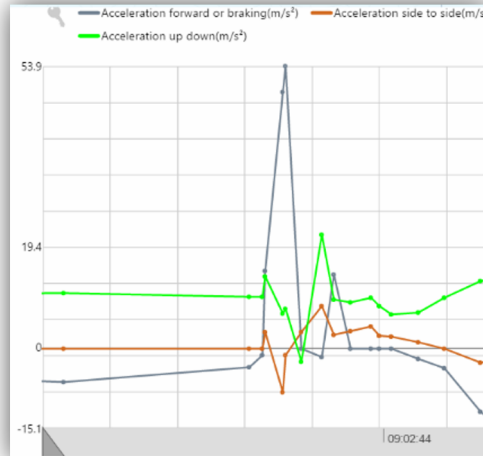
Hyperlocal weather conditions

01:00

For a fleet

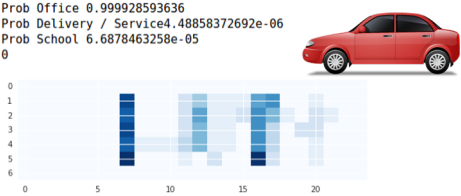Optimized route-planning to avoid bad weather conditions and dangerous roads

For a city

Urban planning and road-hazard alerts
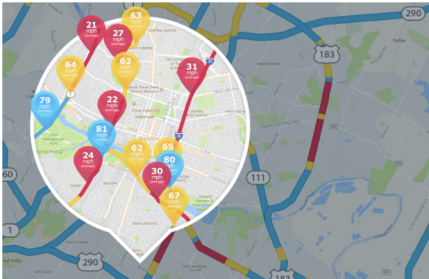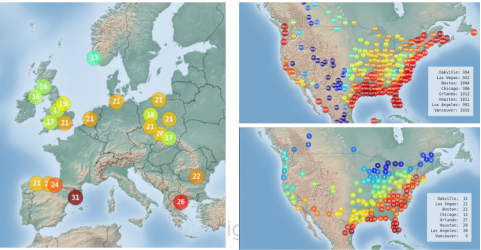
Leveraging big data use-cases

Dangerous roads

Driving patterns

Traffic flow

Weather forecast

Pothole detection
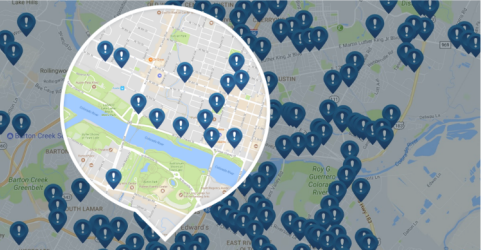
Gas-station fill-ups

TAB.

Connected Cars Detect Mexico Earthquake

September 19, 2017
1:14:00 PM (CT)

Mexico Earthquake - Number of Accelerometer Events
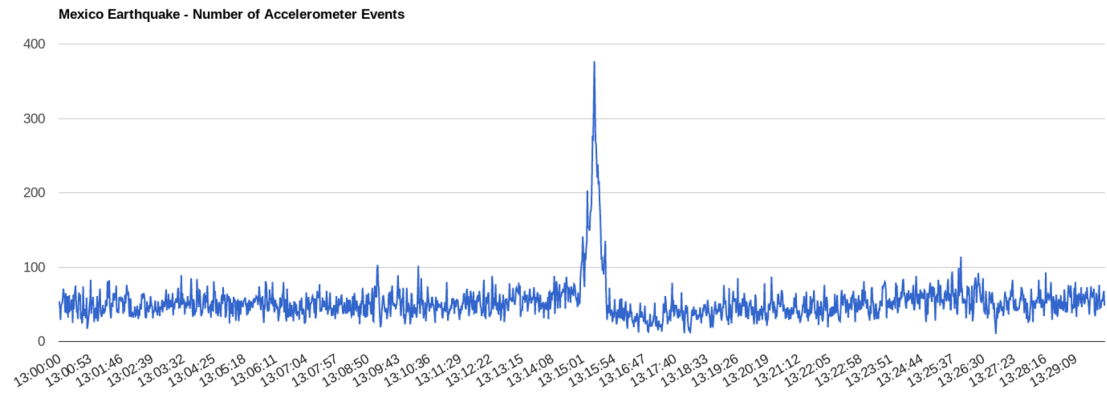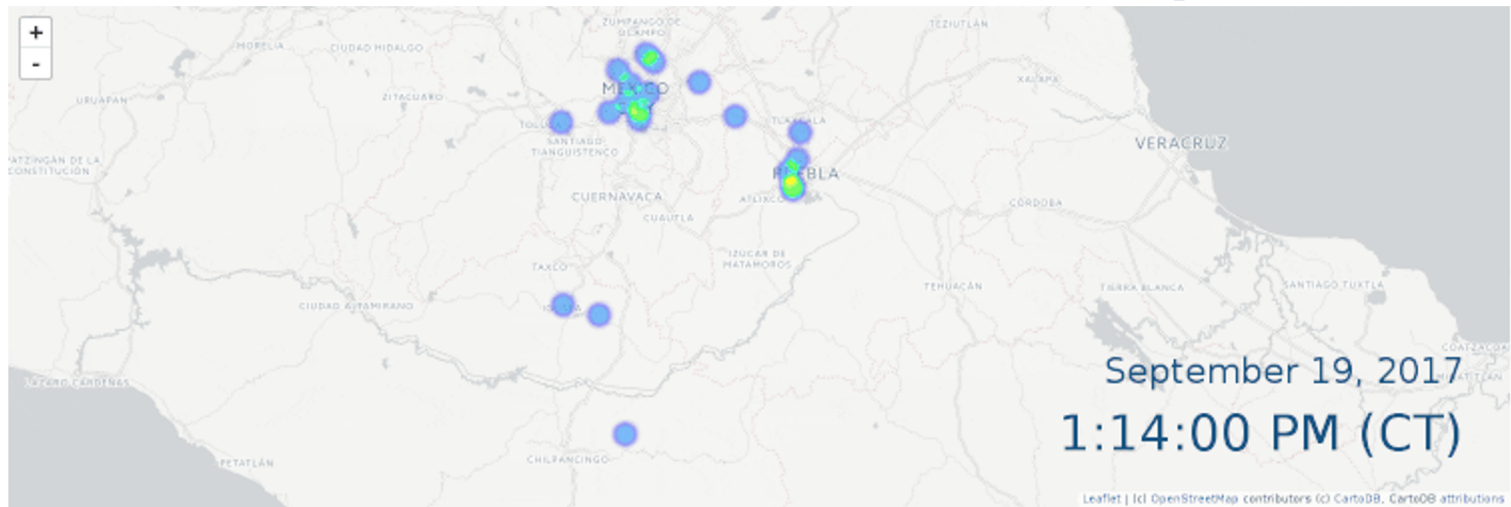
Initiatives "Data for road safety" and "Vision Zero" to improve road safety
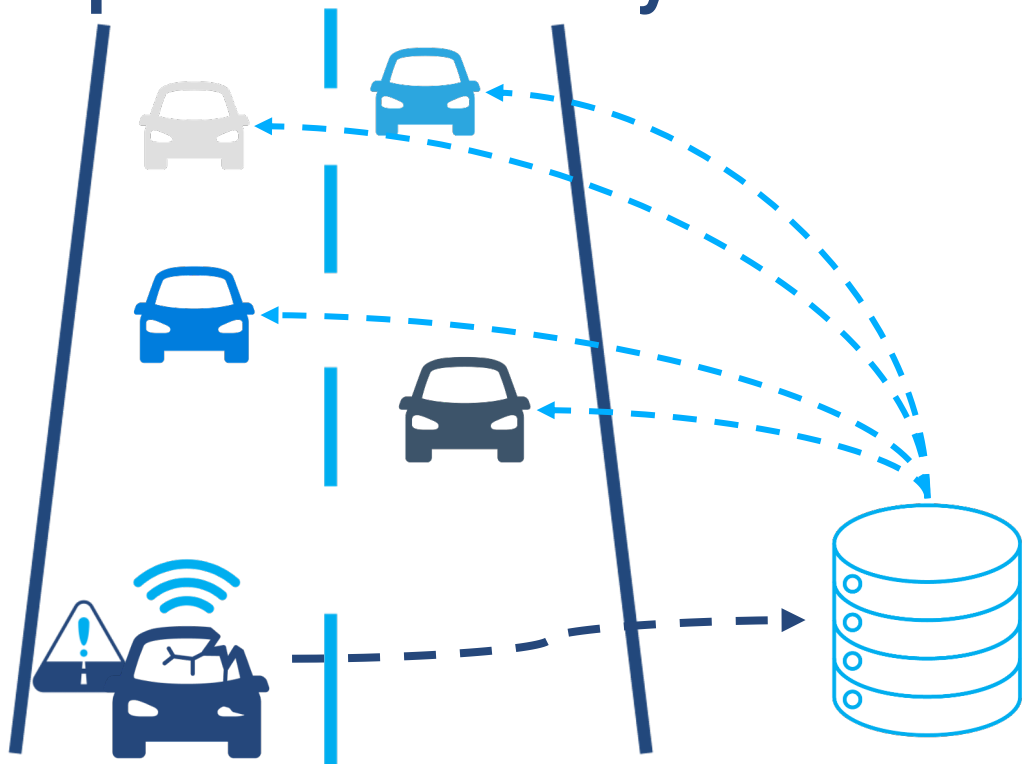
- Unprotected accident area
- Animal, people, obstacles, debris on the road
- Temporary slippery road
- Reduced visibility
- Exceptional weather conditions
- Shortterm road works
- Wrongway driver
- Unmanaged blockage of a road

https://www.dataforroadsafety.eu/
https://visionzeronetwork.org/

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The **where** and the **when** of traffic

What if you could sample millions of vehicles worth of data from a single platform?

- 2.5M connected **commercial** fleet vehicles; 40B raw data records per day
- 12M connected **consumer** vehicles; 80B raw data records per data
- One platform

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The **what** and the **why** of traffic

What if you could label journeys to understand the context behind their existence?

- Commercial vs consumer
- Trip purpose
- Commercial industry segmentation
- GVWR vehicle classifications
- True origin and destination
- Corridor progression indexing
- More

Introducing **Altitude**

A contextualized transportation analytics platform

Origin/Destination

Gain granular insights into social and goods movement patterns, broken down by vehicles class and trip purpose. Get a more comprehensive picture of true origins and destinations, independent of rest stops.
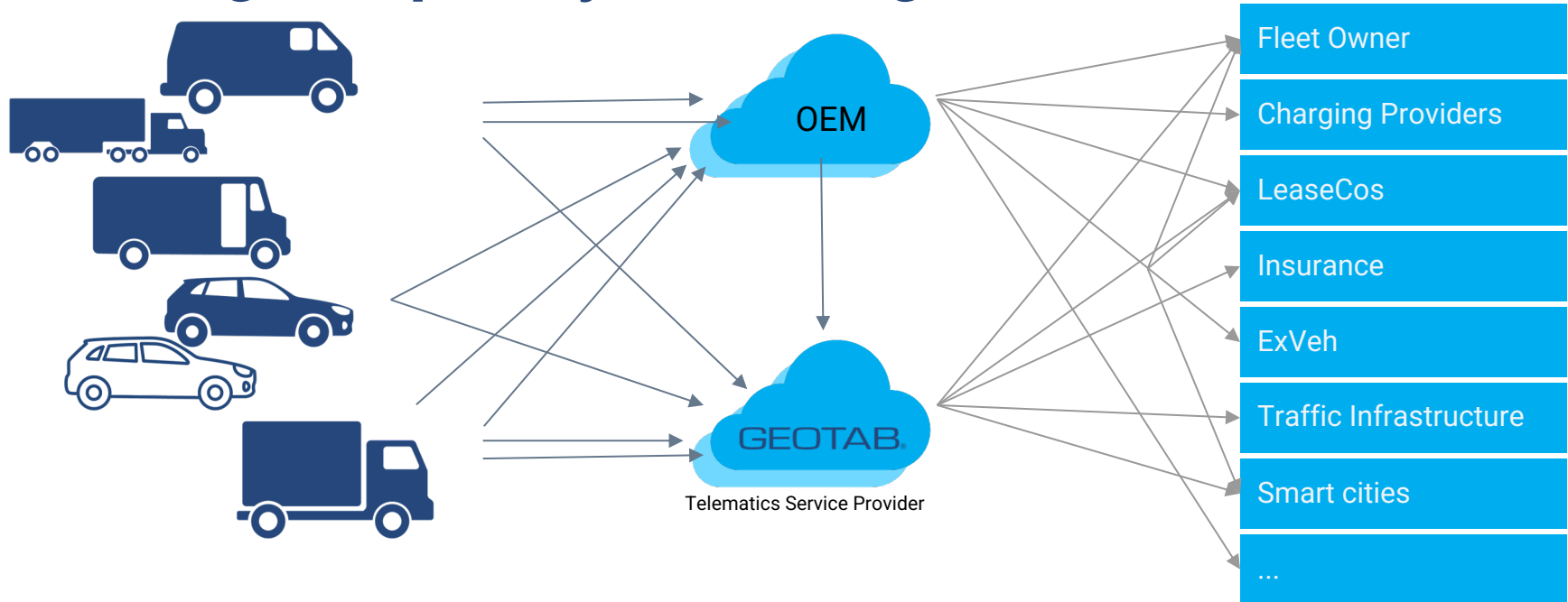
Intersections

Analyze temporal traffic signal performance and corridor synchronization efficiencies, broken down by vehicle class and turning movements. Develop better FSP plans for the movement of goods in your city.

Roads

Identify bottlenecks and other traffic anomalies and characterize the effectiveness of traffic calming efforts and other forms of interventions. Monitor how travel times vary per vehicle class and street segment.

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Today: Not leveraging the value of data, but creating complexity with integration efforts

OEM

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Telematics Service Provider

Fleet Owner

Charging Providers

LeaseCos

Insurance

ExVeh

Traffic Infrastructure

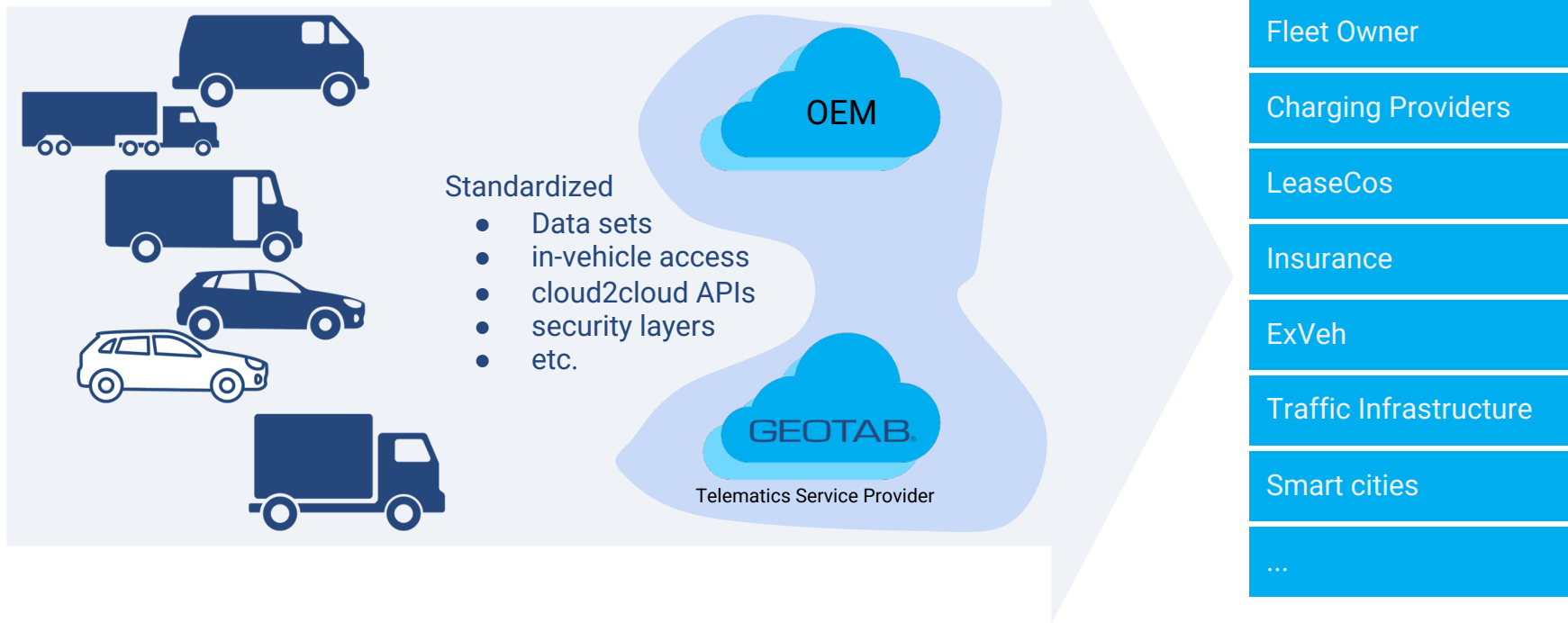Smart cities

...

Different types, makes, model, years - and data

X

Multiple OEM and TSP clouds

X

Multiple data users

Call to action: the less integration effort needed the more value can be created

Standardized
- Data sets
- in-vehicle access
- cloud2cloud APIs
- security layers
- etc.

OEM

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Traffic Infrastructure

Smart cities

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