The connected vehicle - how data enables innovation

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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
Big Data @ Geotab

>2 Million
connected vehicles, globally

>40 Billion
data points collected daily
What data are we talking about

- 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...

static <-> dynamic <-> analytic
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
Vehicles Become Sensors on Wheels

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
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 CO₂ 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
View Brochure
Watch Video
Download on Marketplace
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
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
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)
Hyperlocal weather conditions

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
Connected Cars Detect Mexico Earthquake
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/
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
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.

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

Different types, makes, model, years - and data

Multiple OEM and TSP clouds

Multiple data users

Fleet Owner
Charging Providers
LeaseCos
Insurance
ExVeh
Traffic Infrastructure
Smart cities
...
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

Telematics Service Provider

Fleet Owner
Charging Providers
LeaseCos
Insurance
ExVeh
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...