Personal Data

US Framework

Sensitive Personal Info (SPI)
Medical data, race, religion, etc

Personally Identifiable Info (PII)
Name, address, etc

Customer Proprietary Network Info (CPNI)
Phone number, IP address

EU GDPR Framework

Personal Data

Article 4(1) defines "personal data" as follows (all emphasis added unless otherwise stated):
'personal data' means **any information relating to an identified or identifiable natural person** ('data subject'); an identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person;

Article 9(1) states, the following types of personal data may not be processed:
- Race and ethnicity
- Political, religious, or philosophical beliefs, including union membership
- Health, sex life, and sexual orientation
- Genetic and biometric data (for the purpose of uniquely identification)

10 Exemptions

Explicit Consent	*Employment*
Vital Interests	*Membership Organizations*
Publicly Disclosed data	*Legal Proceedings*
Substantial Public Interest	*Medicine*
Public Health	*Research*

Key Rights of Individuals: Right to be (of)…
Informed; Access; Rectification; Erasure (Forgotten); Restrict Processing; Data Portability; to Object; related to Decision-making/Profiling

Vehicle data

Vehicle Data

Car type and characteristics (length, width, bumper height, etc)
Time stamp
Speed and heading
Car acceleration and yaw rate
Turn signal status
Brake status
Stability control status
Driving wheel angle
Car steering
Tire pressue
Traction control state
Wiper status and run rate
Exterior lights
GPS and vehicle position (lat/long)
Obstacle direction
Obstacle distance
Road friction
Current and average fuel consumption
Emissions data
Air temperature and pressure
Weather info
Electronic stability control
Key used

Infrastructure Data

Roadway characteristics
- Friction coefficient
- Road geometry and markings

Road conditions
- Surface temp
- Subsurface temp
- Moisture
- Icing
- Treatment status

Road surface weather conditions
- Air temp
- Wind speed
- Preciptation
- Visibility

Intersection status
- Current operational status
- Signal phase and timing (SPaT)
- Intersection geometry
- Approaching vehicle info (position, velocity, acceleration, turning status)

Field equipment status
- Dynamic message signs
- Variable speed limit signs
- Dynamic lane signs or control devices
- Ramp meters

Parking information
- Location of facilities
- Spaces available

Transportation Management Data

Traffic speed
Travel times
Volumes
Occupancy
Density
Origin and destination data (optional)
Incident status
Video images

Traveler Data

Trip information (origin, destination, timing, intermediate stops)
Personal data (address, trip records, profile data, contacts)
Service information (tolls, parking, ridesharing)
Vehicle occupancy
VMT by vehicle, time and location

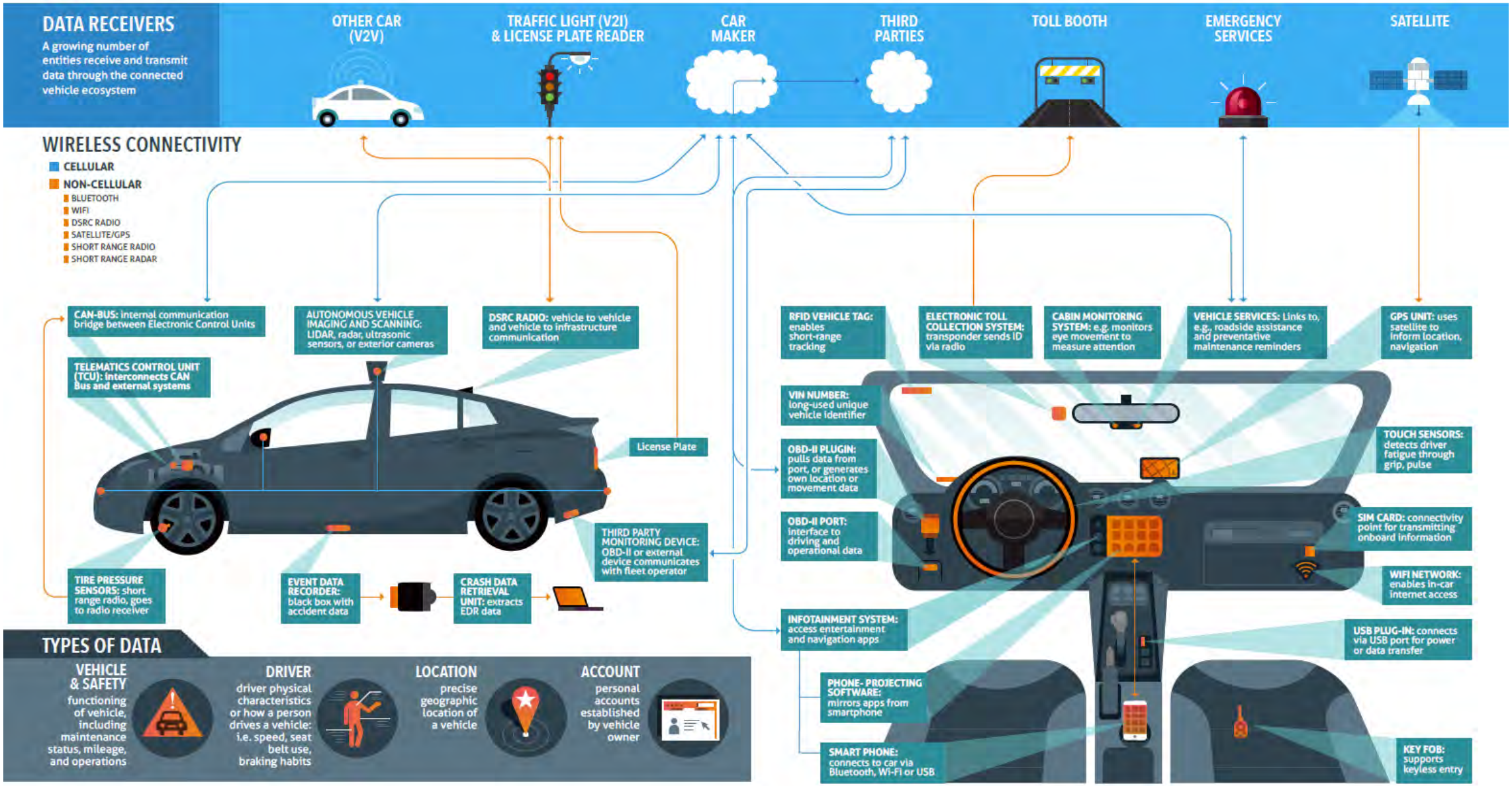
http://www.cargroup.org/wp-content/uploads/2017/02/CONNECTED-V.-AUTOMATED-VEHICLES-AS-GENERATORS-OF-USEFUL-DATA.pdf

DATA and the CONNECTED CAR

Version 1.0

Today's connected technologies are making transportation safer and more convenient. Many new features are enabled by the collection and processing of data. Cars are becoming part of a trusted mobile ecosystem that ensures data flows between a network of carmakers, vendors and others to support individuals' safety, logistics, infotainment, and security needs. This visual represents devices that may be employed in today's connected cars; no single vehicle will have all of these features, but most new vehicles have some. Much connected car data is protected by technical controls, laws, self-regulatory commitments, privacy policies, and other emerging mechanisms or controls.

Produced by FUTURE OF PRIVACY FORUM FPF.ORG



https://fpf.org/wp-content/uploads/2017/06/2017_0627-FPF-Connected-Car-Infographic-Version-1.0.pdf

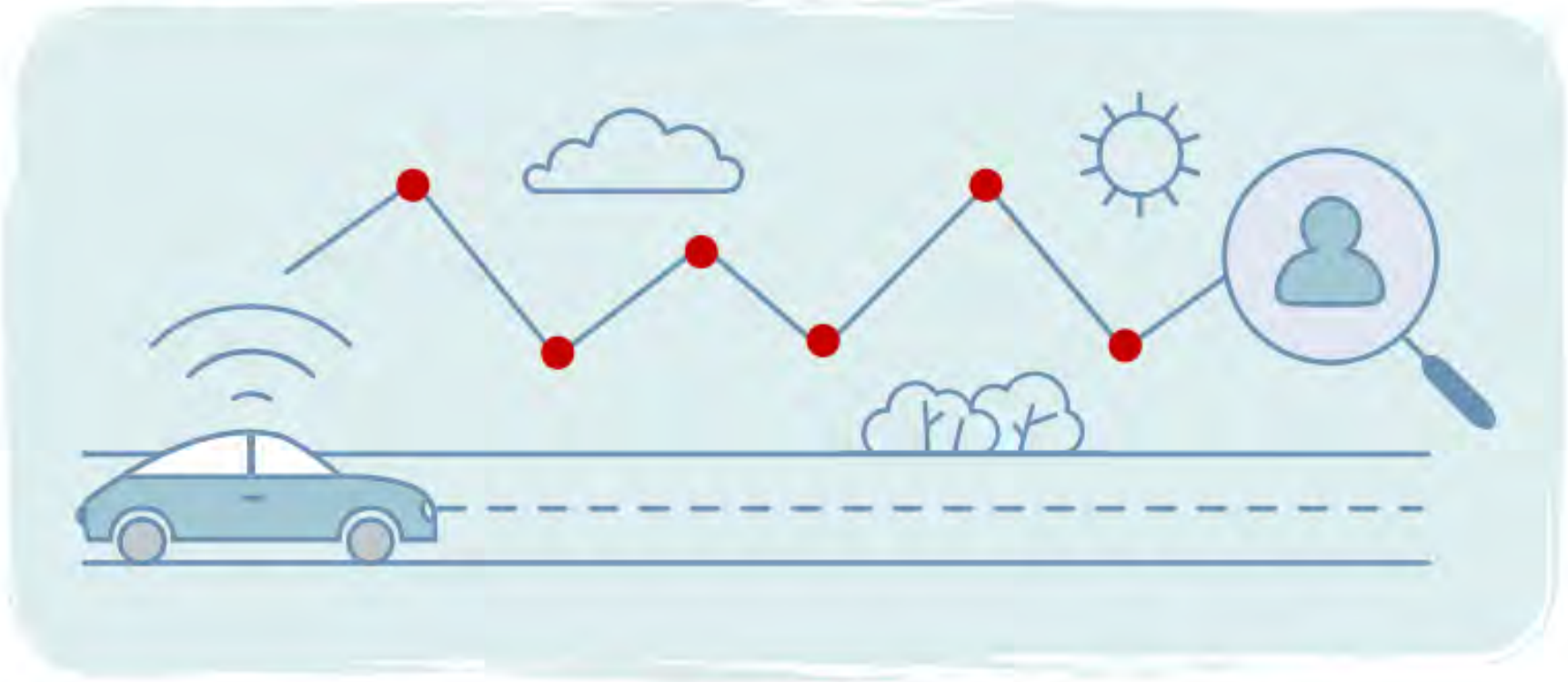
Vehicle data ownership

“Drivers should be aware of who actually owns and controls the data. The OEMs own and control the data because when most people purchase vehicles they have to sign contracts which give the new owners the right to the vehicle- but not the data within the vehicle. Because of this the car data is owned by the OEM, not the driver.” -https://www.rtinsights.com/data-ownership-in-the-age-of-the-connected-vehicle/

“A joint publication of the German Automotive Manufacturers’ Association (VDA) and German Data Protection Authority defines all data associated with a vehicle identification number (VIN) as personal data. This includes almost all data held by service workshops, including diagnostic results and trouble codes, repair data and warranty information.” - https://www.automotive-iq.com/autonomous-drive/articles/mobility-and-the-gdpr-an-important-but-uneasy-partnership

Vehicle Analytics - Descriptive

1. Descriptive Analytics

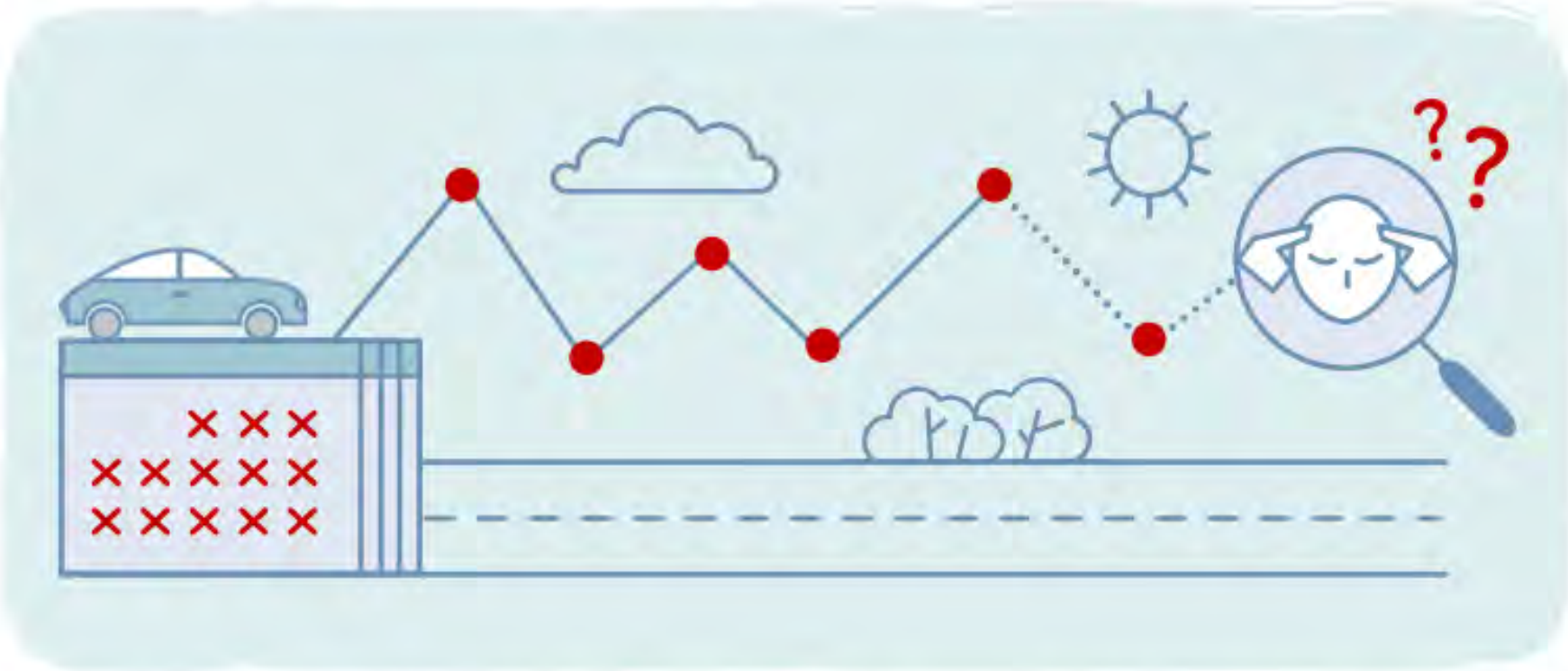


Descriptive analytics apply to the moment-by-moment driving patterns and road behavior of all individuals who get behind the wheel of a particular vehicle. These patterns can be evaluated, linked to safe or risky behaviors, and combined with other data sources and vehicle information.

Source: https://www.intellimec.com/ims-blog/connected-car-analytics

Vehicle Analytics - Predictive

2. Predictive Analytics

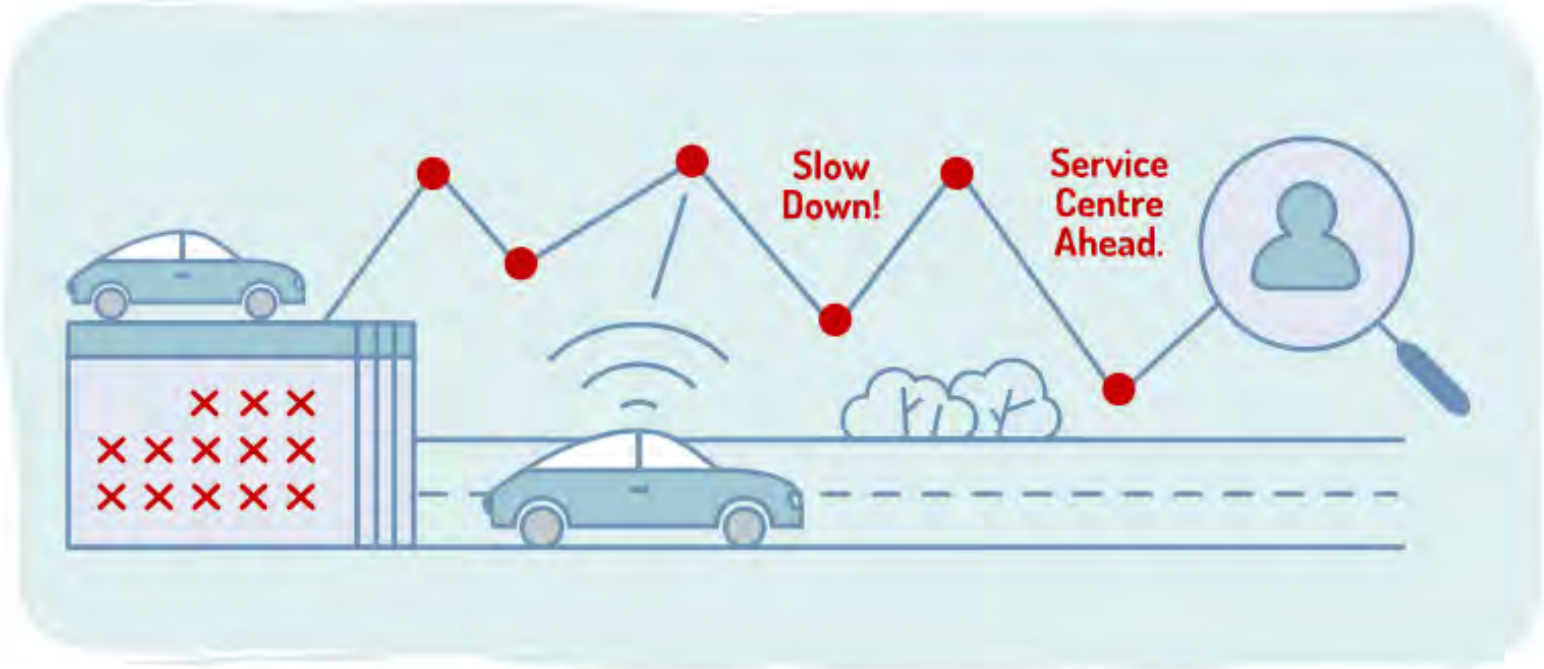


Predictive analytics assess past patterns and driving behavior to make an informed judgment on the likelihood of various future possibilities. Some examples include where a driver is likely to drive on a given day, or the predicted risk of the driver given past behavior.

Source: https://www.intellimec.com/ims-blog/connected-car-analytics

Vehicle Analytics - Prescriptive

3. Prescriptive Analytics



Prescriptive analytics combines intelligence from both descriptive and predictive analytics and issues recommendations, guiding driver behavior to suit the situation based on past experiences. Examples include coaching guidance to specify where an individual should start slowing down to safely navigate a curve on the road or guidance to ensure the vehicle is being well maintained at a convenient location. By understanding a driver's regular behavior, prescriptive analytics can cause changes in that driver's behavior to take an action outside of the normal routine (to the benefit of the OEM).

Source: https://www.intellimec.com/ims-blog/connected-car-analytics

Exhibit 6

The car generates different macrocategories of data, each of which with different levels of perceived privacy sensitivity by the customer

Macrocategory	Car-related use case examples: Today	Car-related use case examples: 2020 - 25
External road and environmental conditions (e.g., ice warning on the road from ESP, fog from camera/sensors' feed)	▪ Real-time maps	▪ Preventive safety car adaptation ▪ Live road conditions reports
Technical status of the vehicle (e.g., oil temperature, airbag deployment, technical malfunctions report)	▪ Car repair diagnostics ▪ Automatic emergency call (e-call)	▪ Predictive, remote service booking
Vehicle usage (e.g., speed, location, average load weight in the trunk)	▪ PAYD insurance ▪ Toll/road tax payment	▪ Reduced engineering costs ▪ Trunk delivery
Personal data and preferences (e.g., driver/passengers' identity, preferred radio station, use patterns of applications)	▪ Vehicle settings "memory" based on key presence at entry	▪ E-commerce in the car ▪ Targeted advertisements
Direct communications from the vehicle (e.g., calendar, telephone, SMS, e-mail)	▪ Speech control of messaging and e-mail	▪ Proactive navigation and services ▪ Virtual assistant/ concierge services

- **Highly linked with data/profiles from personal electronic devices, e.g., smartphone**
- **Enablers for next-generation services**

SOURCE: McKinsey

https://www.mckinsey.com/~/media/McKinsey/Industries/Automotive%20and%20Assembly/Our%20Insights/Monetizing%20car%20data/Monetizing-car-data.ashx

Important considerations

- “Owned” vehicles are much different from Transportation Services
- Digital privacy constraints on TaaS providers are distinct
  - In EU, GDPR applies to all
  - In US, no central law so patchwork of sector-specific and local laws
- Example of vehicle trip and notice of need to repair vehicle item
  - If the driver is known, then highly personal
  - If the driver’s details are communicated to repair shop, then highly personal
  - If only vehicle data is sent repair shop, then possibly less personal
  - But who has access to that data .. today .. tomorrow?
- Caruso / Otonomo