

Using car-generated data to improve road safety

Why safety-related car-generated data?



Starting in 2021, according to the EU delegated regulation No 886/2013, automotive OEMs have the obligation to provide the European traffic authorities with near-time safety related data that is collected by cars on the road. The business and technical specifications are currently being discussed within the international Data Task Force for Road Safety. The car manufacturers send anonymised locations of sensor events including 'hard braking', 'ABS active' or 'fast windscreen wiping' (so-called level 2 data) as well as interpreted event types like 'slippery road' or 'accident' (level 3). According to the regulation, the OEMs must share their information on eight different safety related traffic information (SRTI) events (see table). The aim is to provide the road authorities with a framework and visualisation tools to help them identify problems on the road and improve traffic safety.

Safety-related traffic information (SRTI) – Overview of the eight event type categories



Temporary slippery road



Animal, people, obstacle, debris



Unprotected accident area



Short-term road works



Reduced visibility



Wrong-way driver



Unmanaged blockage of road

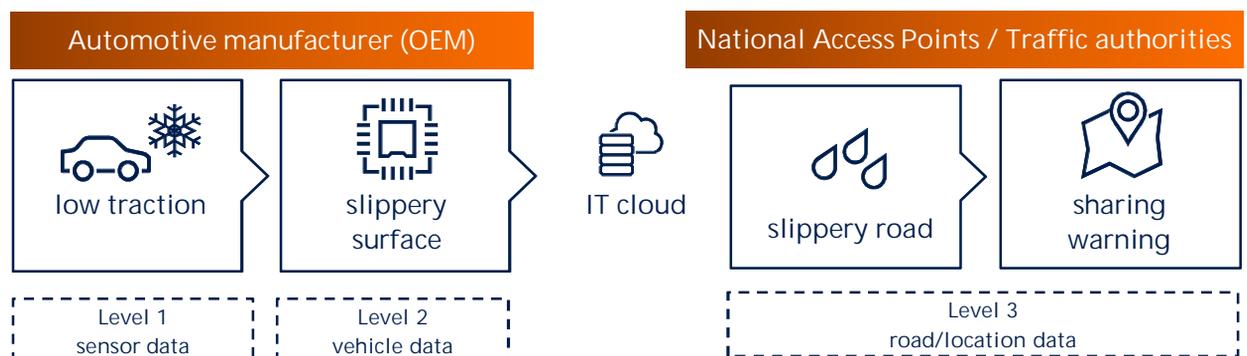


Exceptional weather conditions

Project tasks and challenges



The OEMs are sharing first versions of their data and the road authorities must find ways to interpret the information correctly. This requires methods to standardise the message types of different car manufacturers, filter out incorrect and duplicate data, analyse level 2 data and re-interpret/transform the data to level 3 events in order to obtain usable output for the road authorities.



In the first project phase, the road authorities want to understand the data content and quality and explore potential use cases. The main challenge is the interpretation of the data. For example, an 'ABS active' event could be an indication of either a slippery surface like snow or a near-accident. Furthermore, if only ABS activation events are reported, how can we determine that the road is no longer slippery?

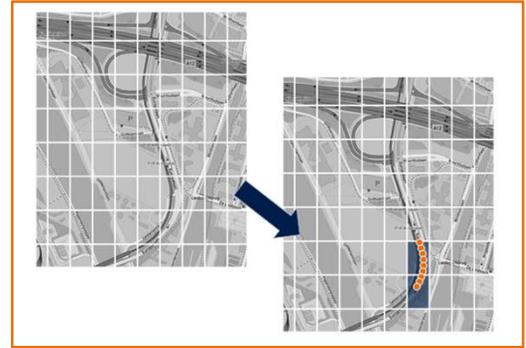
Example use case – Hotspot and end of queue detection



The new event-driven data-source enables a wide range of potential use cases:

- » Hotspot detection, e.g. ABS activations within one month, in order to identify safety-critical surfaces or road layout,
- » End of queue location, e.g. by analysing and identifying a series of hard-braking events on highways,
- » Near-accidents in city centres, e.g. by focussing on combinations of unusual event types within a small time frame,
- » Improving emergency services by providing notifications earlier than current (non-automated) emergency calls.

In order to analyse the car event data, a real-time IT infrastructure needs to be built including data lineage, cleansing, analysis, visualisation and fully automated traffic alert generation.



Analyzing hotspots of ABS activations in a map grid: In its simplest form, events are counted per field in order to identify hotspots.



Get involved and benefit from the future potential of car-generated data!



Example visualization of various safety-related events on a real-time dashboard.

Through the cooperation of local traffic authorities and OEMs, the new data source of car-generated events has the potential to improve road safety by providing higher precision in location and response time. Hence, visualising car generated event data on a map and integrating the new data stream into operation will provide road-authorities with a real-time overview of the current situation on the roads.

If you are interested to learn more about the future potential of car-generated data then get in touch with the project team. We are happy to present additional insights and lessons learned to your organization and get you involved in one of the upcoming projects. Let's create intelligence algorithms together in order to further improve road safety.

This project is performed by NDW in cooperation with d-fine.

NDW

is a cooperation of 19 Dutch public road authorities, which utilise the Dutch national database for road traffic data. It collects, saves and distributes various types of traffic data. Recently, the NDW Data Science Society (NDSS) was initiated, in which Nationale Databank Wegverkeersgegevens (NDW) cooperates with six suppliers on data science projects.

The car generated event data project is performed in close cooperation with the product owners of the experimental phase: Rijkswaterstaat (ministry of traffic and water), KNMI (weather service), Provinces Overijssel, North-Holland and South-Holland, the municipalities of the cities Amsterdam, Utrecht and Zwolle and others.

d-fine

is a leading European consultancy for business analysis and technology services across a wide range of industries. Their consulting approach in mobility is based on strong analytical, quantitative, and technological skills that enable the development of future-proof solutions through sustainable technological implementation. d-fine is supplier in the NDSS.



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