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Citizen Science for Traffic Management and Safety

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Traffic quality, safety and related emissions are broad fields of research with implications on various resolutions. Official measurements are often sparse and can only provide rather general insights. VGI allows to collect and analyse traffic data on an individual, track based level. The open citizen science platform enviroCar allows to record car driven tracks annotated with relevant engine parameters via an OBD-bluetooth adapter.

The combination of track recordings with information on detailed energy consumption allows to not only assess the traffic quality (e.g. traffic flow, stop times) but also to evaluate the environmental impact of different driving styles and traffic regulations. Participating drivers can analyse their private tracks, but also the set of contributed anonymised tracks to assess traffic parameters or compare for instance their own energy consumption with the community consumption. The often emotionally discussed issue of speed limits could for instance be jointly evaluated within this framework by citizens, planners and policy makers.

Furthermore, an automated near real-time analysis of track data can provide insights on actual threads based on anomalies in the data e.g. due to icy spots on the road. However, retro-perspective analysis of individual tracks can also reveal road segments with regular near accident situations, while official statistics often only record severe accidents. This allows to address issues of road safety before actual accidents need to occur. While the link to the engine provides environmental data, the driver can also act as a sensor by invoking warning sequences to explicitly point to dangerous spots and circumstances.

These are only few use cases where VGI and citizen science can contribute to solve real world problems. We will present the enviroCar platform that serves as a prototype to evaluate the above analyses and discuss implications of the use cases.