

BMDV-Workshop Series “Data Innovations for Smart Mobility in Europe”

[Workshop No. 10: Geodata innovations for safe and sustainable mobility infrastructure](#)

Date: Wednesday, 3 August 2022  
Time: 09.30 – 12.00 h (CET)

Location: Virtual Room (Zoom)

## Summary

Geodata can improve the efficiency, sustainability and safety of mobility. Furthermore, it allows for optimal use, planning and maintenance of infrastructure for all modes of transport. The projects presented in this workshop showed the broad use of geodata, especially considering its potential for safer and more sustainable mobility infrastructure. Through active exchange among participants, the innovations using geospatial data presented were discussed from different perspectives, uses and experiences.

### *Opening and welcome*

Tim Rittmann (Federal Ministry for Digital and Transport, BMDV) welcomed the participants to the 10<sup>th</sup> mFUND workshop of the Data Innovations for Smart Mobility in Europe series. Among the activities carried out by BMDV to support smart mobility in German are the annual mFUND Conference and Startup Pitches. The 4<sup>th</sup> BMDV Startup Pitch will take place on 13 September 2022 in Berlin as part of the mFUND conference. Young entrepreneurs, start-ups and founders are invited to present their ideas and solutions to a top-class jury and audience. The three teams with the most convincing pitches will receive from the mFUND programme EUR 10,000 in funding for the implementation of their ideas. Additionally, an audience award will grant EUR 10,000 in funding for the most popular pitch.

### *Innovative solutions*

Erlinda Biescas (Telespazio, United Kingdom) presented a thematic keynote on “The Importance of Geospatial Data in the Transport Sector”. By analysing and visualising data for geographical positions, computer-based Geographical Information System (GIS) facilitates planning, monitoring and management of transport infrastructures. GIS helps to determine capacity enhancements, improving operations, and identifying the most strategic investments for keeping the transportation system in any country running optimally.

Silas Eichfuss (Federal Institute for Research on Building, Urban Affairs and Spatial Development, Germany) started the project pitches with the presentation of project INCORA. INCORA focusses on the 11<sup>th</sup> Sustainable and Development Goal (SDG) adopted by the United Nations, “Sustainable Cities and Communities”. In connection with this SDG, the

German strategy for sustainable development calls for a careful use of soil and land. In order to better plan and monitor settlements and transport infrastructure reliable data for land use are necessary. INCORA processes data collected by the Copernicus Sentinel satellites to derive spatial development indicators using innovative cloud computing capacities. The results show that remote sensing from open-data can be used to assess the development of built-up areas, soil sealing and vegetation, but resolution and classification quality are not yet sufficient to replace official statistics.

The session continued with the presentation of ESRIUM by Martina Uray (Joanneum Research, Austria). ESRIUM is a Horizon 2020 project focusing on the safety and resource efficiency of transport on European roads. ESRIUM's key innovation is the creation of a digital map of road surface damage and road wear by combining data coming from cameras, sensors and EGNSS-enhanced localization devices. Road operators can communicate driving recommendations to balance the road usage to better manage traffic and avoid safety risks. Furthermore, road operators can also optimize their maintenance planning. Additionally, different systems for communication with car automated vehicle drivers and truck fleet operators to increase their safety by driving on undamaged roads are currently being tested.

Jessica Bollenbach and Robert Keller (Kempten University of Applied Sciences, Germany) presented the mFUND project FEB-NAFV. This project deals with occupancy forecasting for sustainable tourism, as overtourism at touristic points of interest (POIs) lead to increased CO<sub>2</sub> emissions during travels. Through use of open data from sensors at POIs surroundings, models can be created for the forecasting capacity utilization and identify new, alternative transport modes. Several models have been tested in the project and predictions differed considerably, therefore the prediction range is decisive for the use case.

Erlinda Biescas took once more the stage to present the Horizon 2020 project FORESEE. FORESEE aims to provide cost-effective and reliable results to improve resilience of transport infrastructure. FORESEE covers several disruptive events, including earthquakes, landslides, flooding, fog, wind, accidents, fires and cyberattack and uses cases studies in different countries and infrastructures to develop its toolkit. The work is centered in the use of Satellite Structural Health Monitoring (S-SHM) to provide structural health monitoring assessment using satellite data, offering a reliable and long-term asset monitoring tool to support asset managers' decisions.

The last presentation, Quality Assessment of Open Street Map's (OSM) Point of Interests with Large Scale Real Data, was given by Michael Heilig (Platomo GmbH, Germany). Open Street Maps are used for several purposes, such as POI search, route planning, accessibility analysis and overview, and traffic demand modelling. Having the importance of OSM in mind, Heilig and colleagues decided to check how reliable the OSM data are. The work focused on completeness of POI for two types of business (shopping and private) and

compared the data with real-world information for these two types. Considering the data analyzed for Germany they concluded that the POI data is not complete in OSM for all types of business and areas and that intrinsic indicators can be used to detect possible quality issues. Further work will aim at collecting more real-world data (also from rural areas) and developing a prediction model of the deviation of POI in OSM regarding real-world POI.

### *Discussed topics*

After each presentation, time was reserved for questions and answers and several topics were discussed. One of the questions raised was about transferability of results. Some projects already test their innovation in different use cases, as it is the case of FORESEE and ESRIUM, and others need to adapt the models or compare the available and quality of data to be able to implement the created solutions in other sites, as it is the case of FEB-NAFV, which started to create the models using a well know and monitored location. The quality of data in different countries and urban densities was pointed out as one of the challenges for transferability. The prototype used in ESRIUM for the road damage monitoring raised interest for use in the bike paths, for example. The current prototype is still too heavy and large to be mounted on a (cargo) bike, but the consortium is currently working on the reduction of the prototype size and weight and this could be feasible in the future.

Concern was expressed towards the influence of the information received by autonomous vehicles concerning road damage and the decision-making process of e.g. changing lanes, which could cause safety issues. This matter is considered by the projects and no radical decision should be made by the vehicle unless eminent safety issues arise.