



Report on the OpenSense round table - COST Action CA20136

Date: 6th February 2024, 10:00-12:00 CET

Place: Online, MS teams

Objective:

- Bring to one table different OS stakeholders
- Improve common understanding of challenges and opportunities related to Opportunistic sensing

Participants:

- A list of participants is attached as an appendix to this document

Appendixes:

- List of participant
- Meeting program
- Export of brainstorming interactive board

Important abbreviations:

personal weather station (PWS), Commercial microwave link (CML), satellite microwave link (SML), opportunistic sensing (OS), World Meteorological Organization (WMO), National Meteorological and Hydrological Services (NMHSs), European Meteorological Network (EUMETNET)

Brainstorming and discussion summary

The discussion was CML-focused, nevertheless, many of the challenges and opportunities apply to all OS data types, in particular, OS with CMLs and SMLs face very similar issues. Successful examples of PWS application (e.g. in nowcasting) mentioned especially by representatives of Norwegian and Dutch NMHSs show relatively high maturity of PWS technology. Furthermore, business models for monetarizing this data already exist, at least in the case of Netatmo.



The key topics for end users are OS data quality, accessibility of OS data in real-time, and long-term availability of these observations. Furthermore, they require that the benefits of using OS, which can significantly depend on the quality control of their data, are worth the costs. High expectations of OS exist especially for data-scarce regions. In the Global South, OS in combination with satellite data could improve operational forecasts but also climatological models. Nevertheless, verification of OS observations is difficult in these regions. Data quality standards for new opportunistic sensors approved by WMO might improve the uptake of OS observations.

Researchers would appreciate better access to OS data for research purposes and consider data quality as an important research topic. They also see knowledge gaps in understanding how different network and rainfall characteristics in the Global South affect the accuracy of CML/SML rainfall estimates. Permission to share data for research purposes, while having clear conditions deemed safe by data providers, would ease OS research.

For telecommunication operators OS data are potentially interesting as a new revenue, nevertheless, business models which would be worth the effort to give access to OS data to third parties are still missing. The companies are revenue-driven. Moreover, it is difficult to arrange with the three parties that are often required, i.e. data provider, someone who processes data and the end-user). The argument of social responsibility might not be enough to convince management to provide OS data. Regulations and incentives might do part of the job but operators do not prefer this approach. From a technical point of view, access to data in near real-time (latency in minutes) is still a challenge for some operators. Another challenge is tracking the dynamically evolving network and a data acquisition system that is reflecting these changes.

Data owners, researchers, and end users would appreciate a transparent pricing model at the pan-European level. An interesting example of a data-sharing model is an aircraft weather data program coordinated by EUMETNET, where airlines are paid (a very small fraction of their total revenues) for providing weather data collected by aircraft. In the case of CMLs, it is a question if the sharing of data is feasible without regulations or incentives from national regulators. Education about the value of CML data and both technical and legal support when establishing a data acquisition system and access to data by researchers or third parties might work as a soft bottom-up incentive.

Conclusions

The major challenge to boost uptake of OS data is data quality and accessibility. Concerning data quality, quality control methods and WMO-acknowledged standards are needed. Technical solutions and business models exist in the case of PWS (Netatmo). Real-time access to CML and SML data is still in a rather experimental phase in most countries, and business models are mostly not



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developed. However, they are required for sustainable long-term access to the data. An important topic is also education and legal and technical support facilitating data acquisition and access to OS data by third parties. Regulations and incentives might also play a role; nevertheless, this approach is not preferred by data owners. A transparent pan-European pricing policy, as e.g. by aircraft weather program coordinated by EUMETNET, might be attractive for all the stakeholders: data owners, end users, and also researchers. Researchers would also appreciate permission to share data for research purposes, and guidelines to do so in a manner deemed safe by data owners.

All the stakeholders, who have filled in the feedback form, are interested in participating in future OpenSense round tables on specific topics related to OS.



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