

# What does it mean to be a data researcher and platform facilitator of crowdsourced weather observations?

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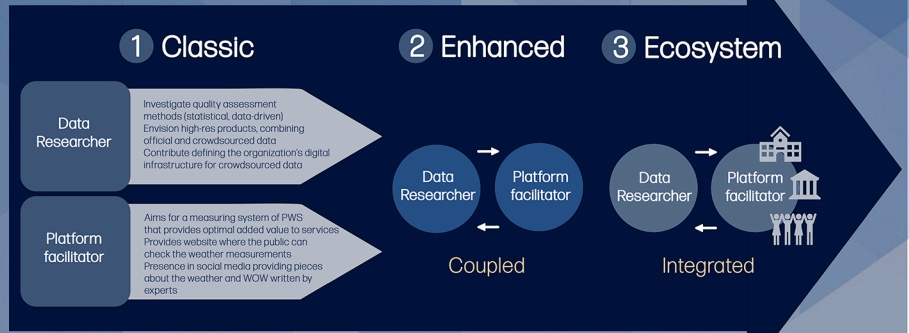
## 1. Crowdsourced weather observations at KNMI

What is WOW-NL?

- Personal weather stations**: Affordable instruments capable of measuring the weather. Measurements are contributed to the WOW platform.
- National monitoring**: 1000+ personal weather stations. 300+ million observations collected (2015-2022).
- Quality assessment**: Inspected temperature, rainfall, windspeed. Quality is reasonable after statistical checks.



## 2. Transitioning towards a crowdsourcing ecosystem

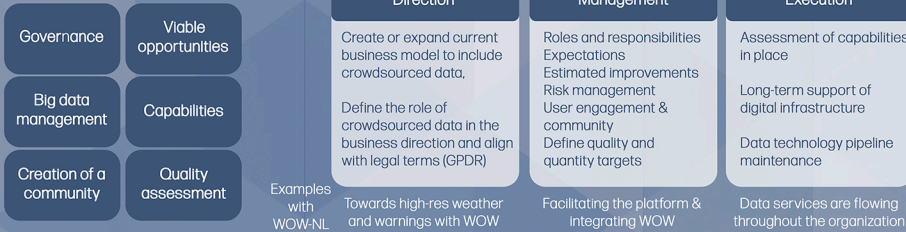


### What are the challenges of this transition?

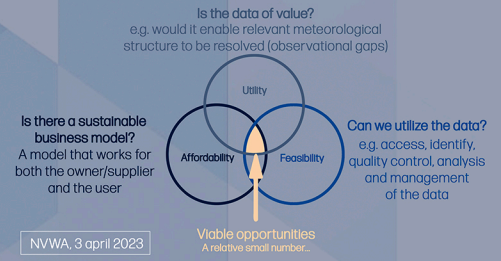
- How to couple most optimally these two roles and move towards a seamless integration?
- How can we expand the Platform Facilitator role, to stimulate and provide guidance for citizens to obtain quality of crowd sourced data most optimal for our science and services?
- How to enable the Data Researcher role to deliver peer-reviewed scientific content to a broader audience and in a real-world set up?
- How to establish a dialogue with the users to create a community ensuring long-term data provision for national meteorological services?

## 3. Application of crowdsourced data

Creating a business model for crowdsourced data



## 5. Looking for viable opportunities: 3PD challenges



## 6. Big data management and capabilities

Technical → Big Data engineering:

Digital infrastructure needs to handle the 5 V's of Big Data: volume, value (observational gaps), variety (space and time), velocity and veracity (structures, formats, qualities). Enable data analysis via virtual research environments installed at the top of crowdsourced data stores. Allow the rapid development of prototypes, apps and data services.

Social → User engagement:

Creating a team of social scientists to handle the community Hub between the organization and the community.

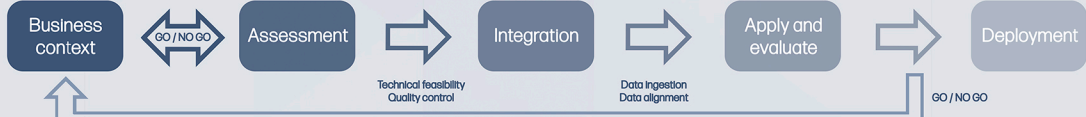
## Creating a community



## 7. How to integrate crowdsourced data in the organization?



## Third-party data life cycle



## References

- Chen et al. (2020) Quality control and bias adjustment of crowdsourced wind speed observations. <https://rsmets.onlinelibrary.wiley.com/doi/full/10.1002/qj.4146>
- (de Vos et al., 2019) Quality Control for Crowdsourced Personal Weather Stations to Enable Operational Rainfall Monitoring <https://agupubs.onlinelibrary.wiley.com/doi/abs/10.1029/2019GL083731>
- (Garcia-Marti et al., 2022) From proof-of-concept to proof-of-value: Approaching third-party data to operational workflows of national meteorological services <https://rsmets.onlinelibrary.wiley.com/doi/full/10.1002/joc.7757>
- (Overreem et al., 2023) Merging with crowdsourced rain gauge data improves pan-European radar precipitation estimates. Submitted to QJRM.