ECSA & EU-Citizen.Science webinar:

Lessons and insights from WeObserve

30 March 2021, 14:00-15:30 CEST

Data interoperability and standardisation

Using Interoperability Experiments and hackathons to address data related challenges in Citizen Observatories

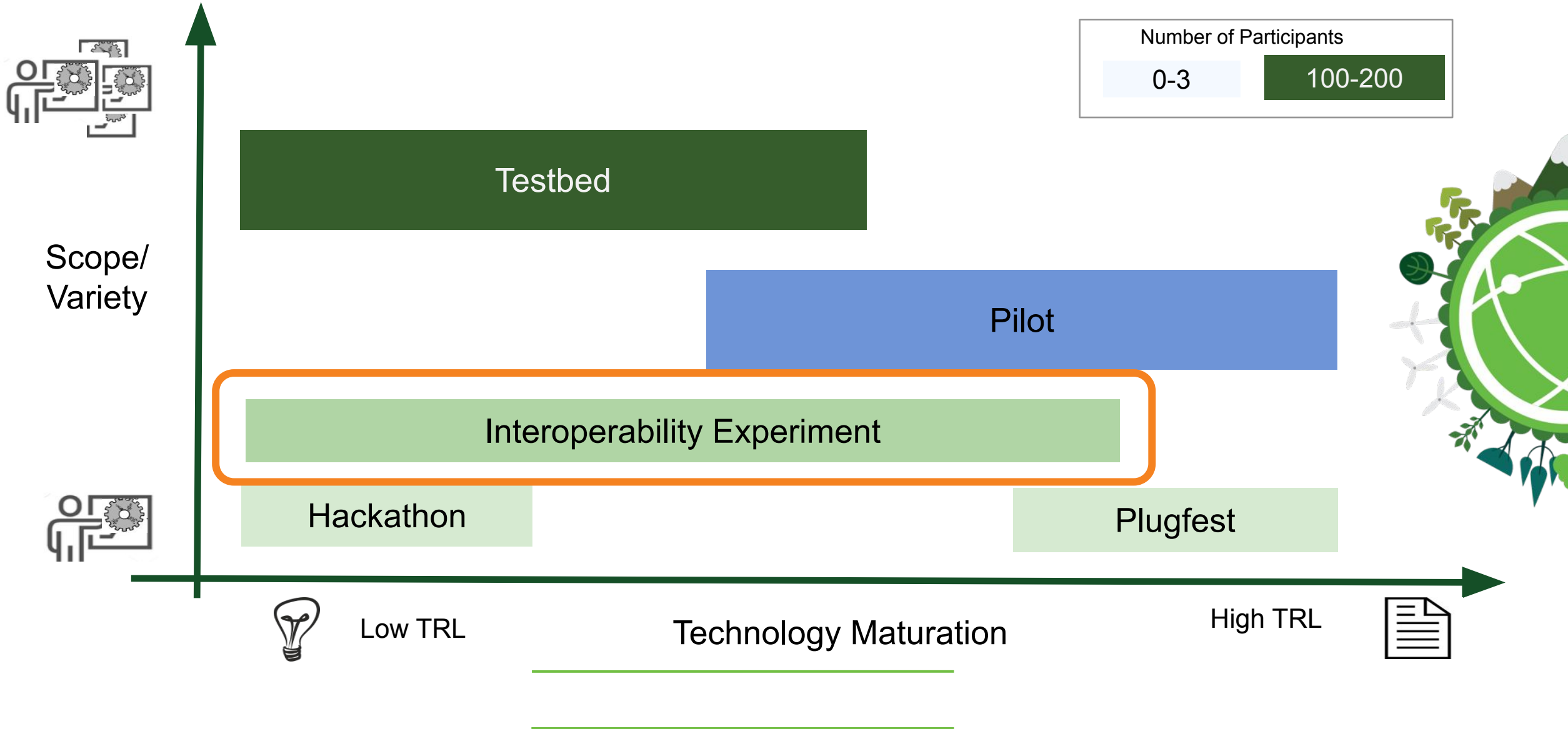**Joan Maso (CREAF), Valantis Tsiakos (ICCS)**
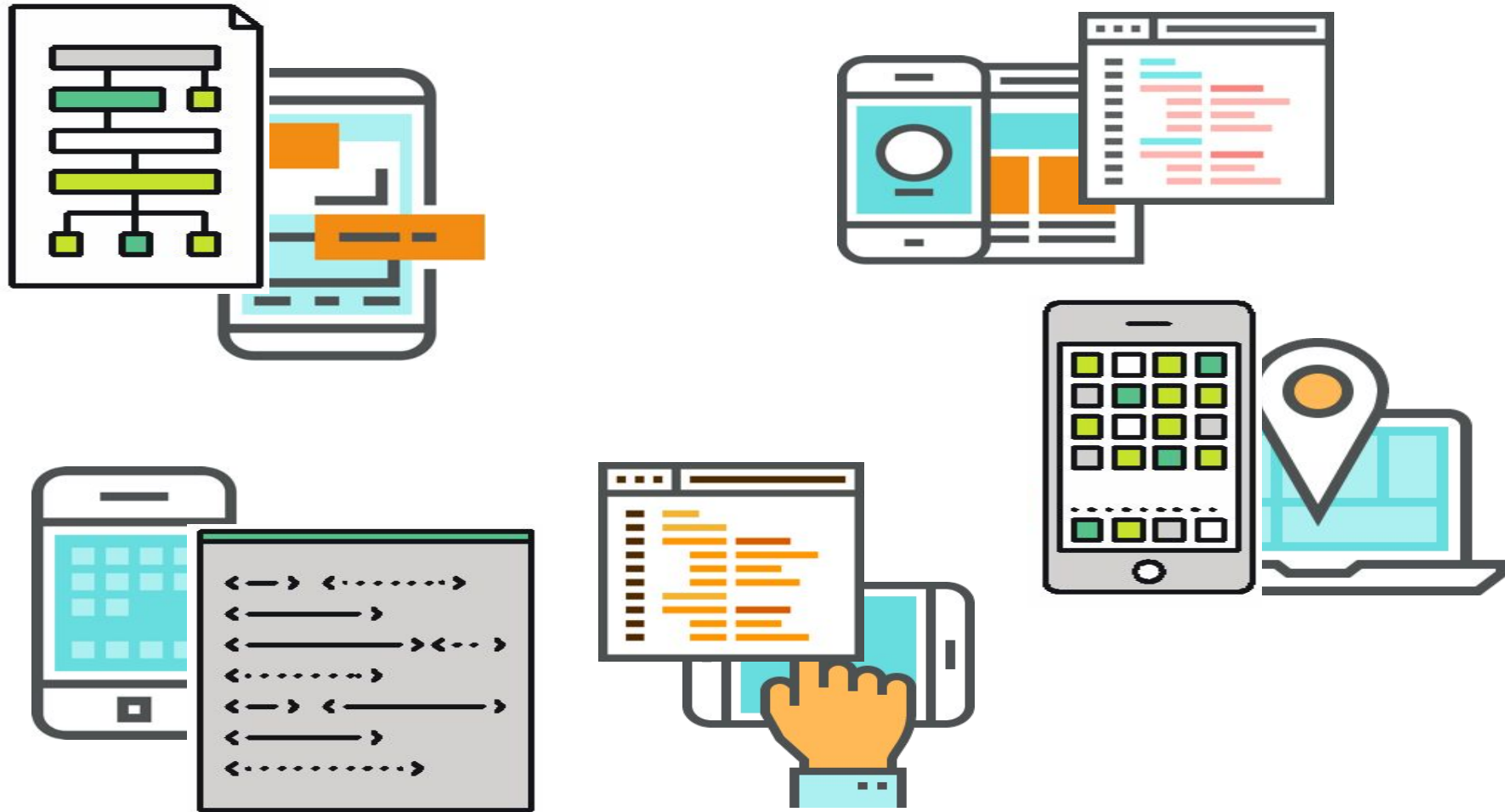
Citizen Science. The new silo?

- The administration is opening data in portals
  - e.g. the INSPIRE directive makes official this obligation in the EU,

- The projects of citizen science give priority to other aspects.
  - There are excellent exceptions like OSM and GBIF

- How to improve?: Experimentation.

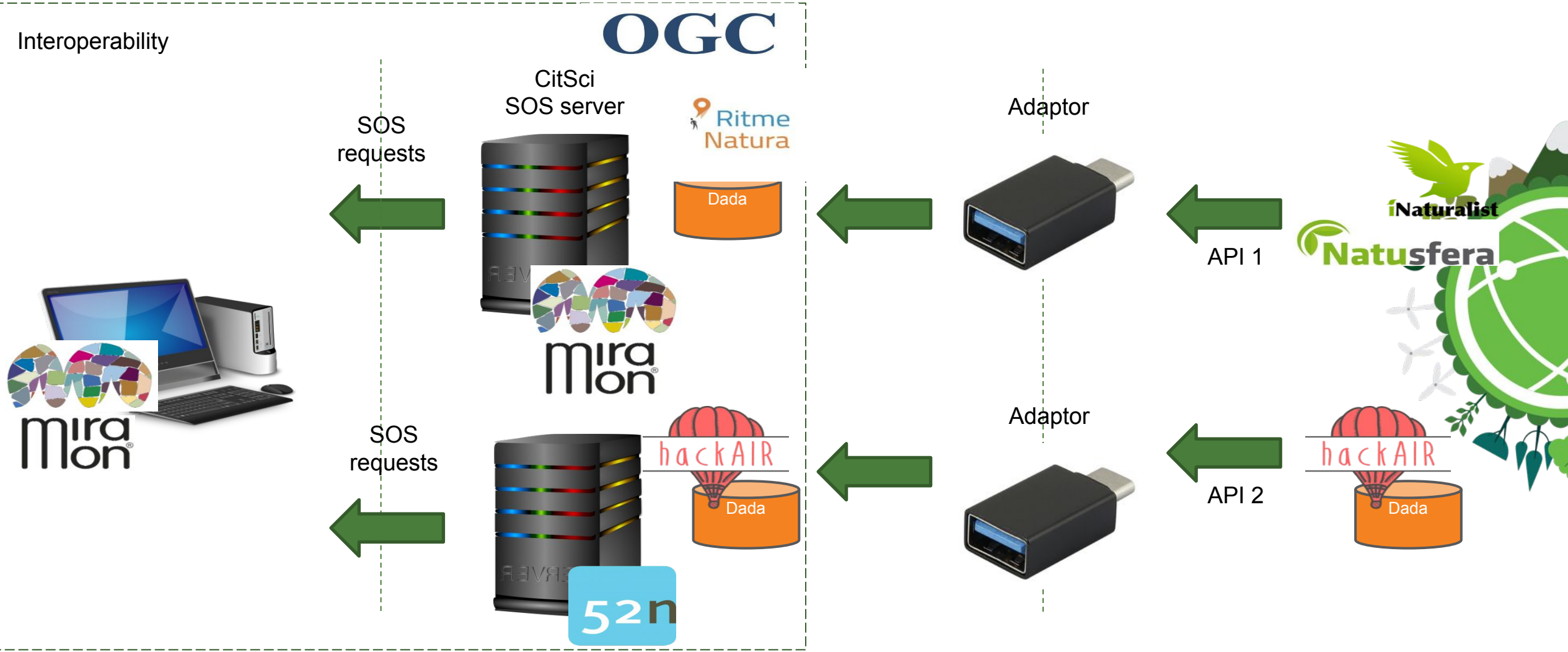# Types of Initiatives – Agile Prototyping
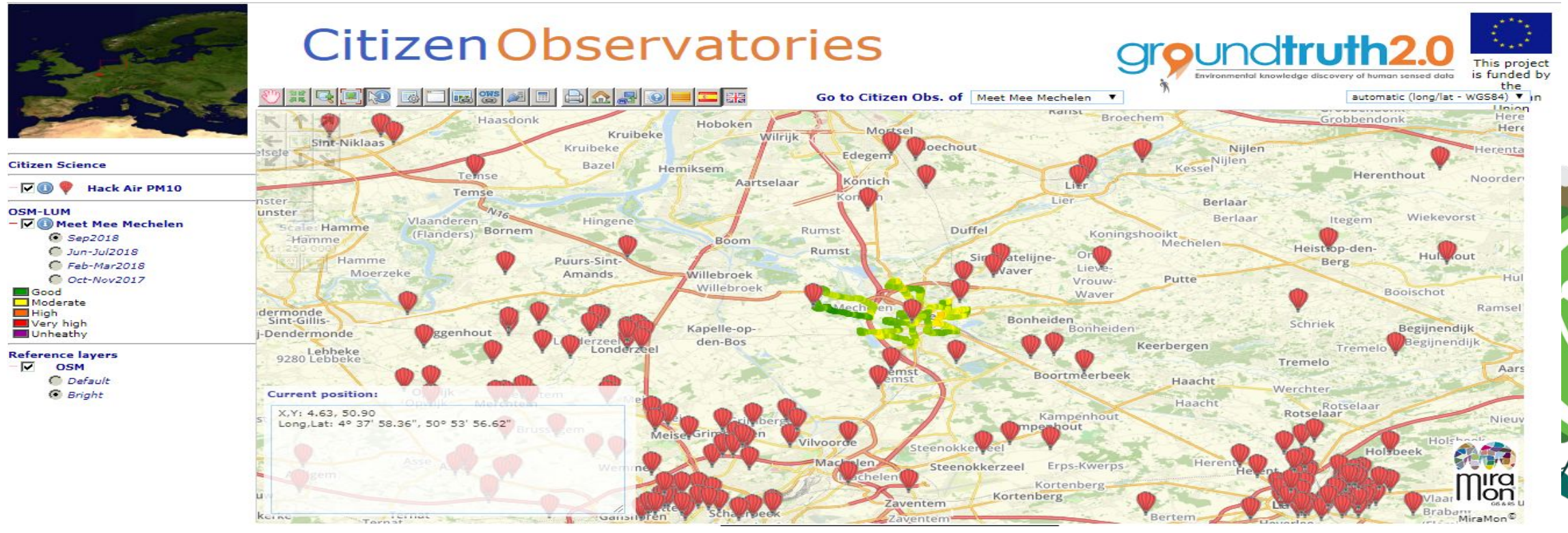
Many Apps, formats and protocols

Source: Ingo Simonis

Combine data using OGC standards

Mapping combinations

http://www.ogc3.uab.cat/gt20/?config=hackair.json

Current IP Initiatives

Interoperable Simulation and Gaming Sprint
3D data & API standards
ogc.org/isg-sprint

UGAS-2020
Automated data model transformation and API documentation
ogc.org/ugas2020

OGC Testbed 16
Shaping the future of location technologies
ogc.org/testbed16

Building Energy Mapping and Analytics
Scope the current state of development of energy mapping and analytics
ogc.org/buildingEnergy

Modernizing SDI: Data Interoperability for Cumulative Effects
Data & services to study cumulative effects
ogc.org/mod-SDI

NextGEOSS
GEOSS powered applications and infrastructure
ogc.org/nextGEOSS

e-shape
Develop Operational Earth Observation Services
ogc.org/e-shape

CYBELE
HPC, Big Data, Cloud Computing and IoT for smart farming
ogc.org/cybele

DEMETER
IoT-based smart farming
ogc.org/demeter

Citizen Science
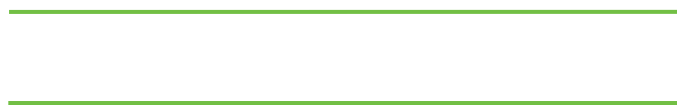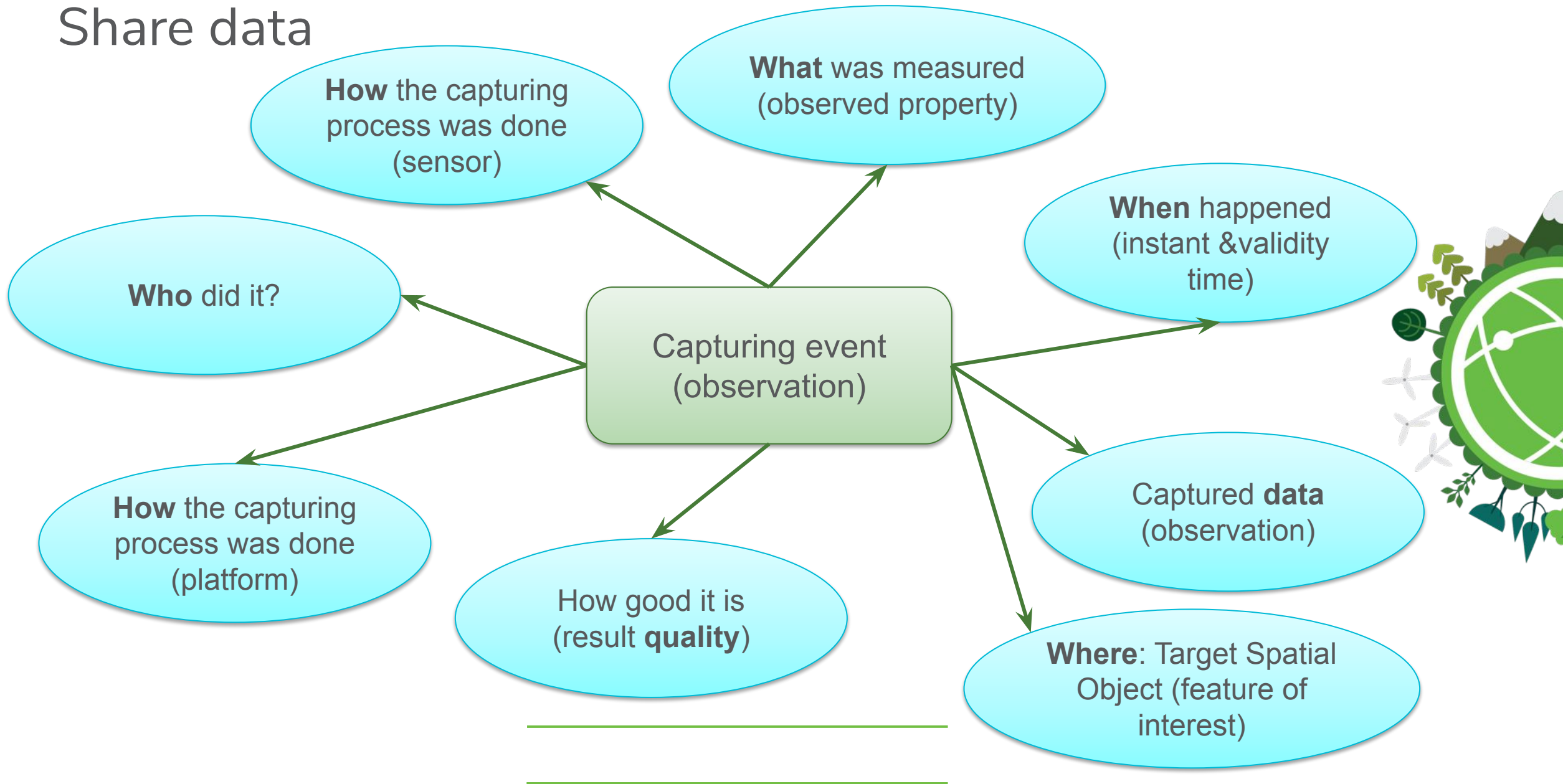Distribute data coming from citizen science observations
ogc.org/citScience

Citizen Science Interoperability Experiment (CitSciIE)

- Share data:
  - The use of OGC standards or (e.g. Sensor Web Enablement (SWE)) to support **data sharing and integration** among CS projects, and with other sources, esp. authoritative data (e.g by following SWE4CS);

- Understand data
  - **Vocabularies for** Citizen Science in particular **project metadata** standards implementation in **catalogues** of CitSci projects.

- Connect Observatories
  - The integration of CS projects/campaigns in **Single Sign-On** system (SSO) federation;

- Quality
  - How to **document** critical metadata, including **data quality** aspects, and generate a data quality label.

Share data

How the capturing process was done (sensor)

What was measured (observed property)

When happened (instant &validity time)

Who did it?

Capturing event (observation)

Captured **data** (observation)

How the capturing process was done (platform)

How good it is (result **quality**)

Where: Target Spatial Object (feature of interest)

Share data

SensorThingsAPI

Sensor Observing Service
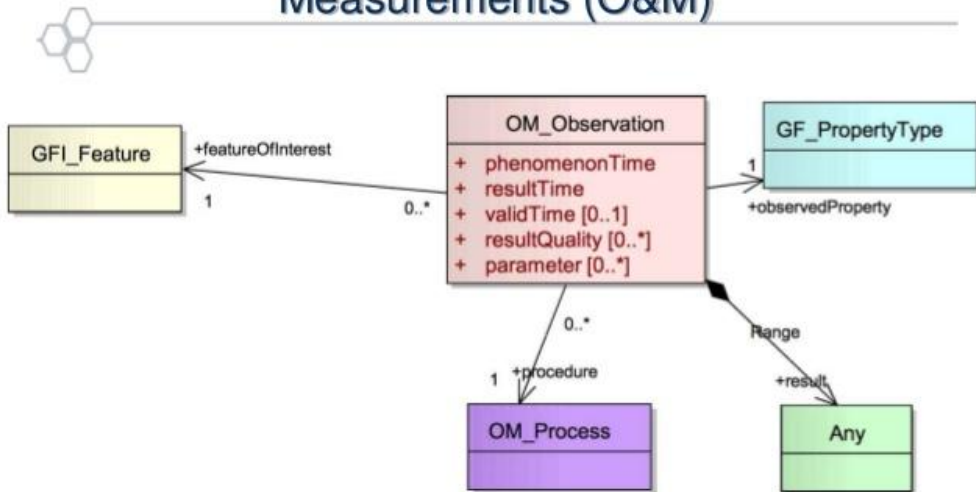
https://portal.ogc.org/files/?artifact_id=70328
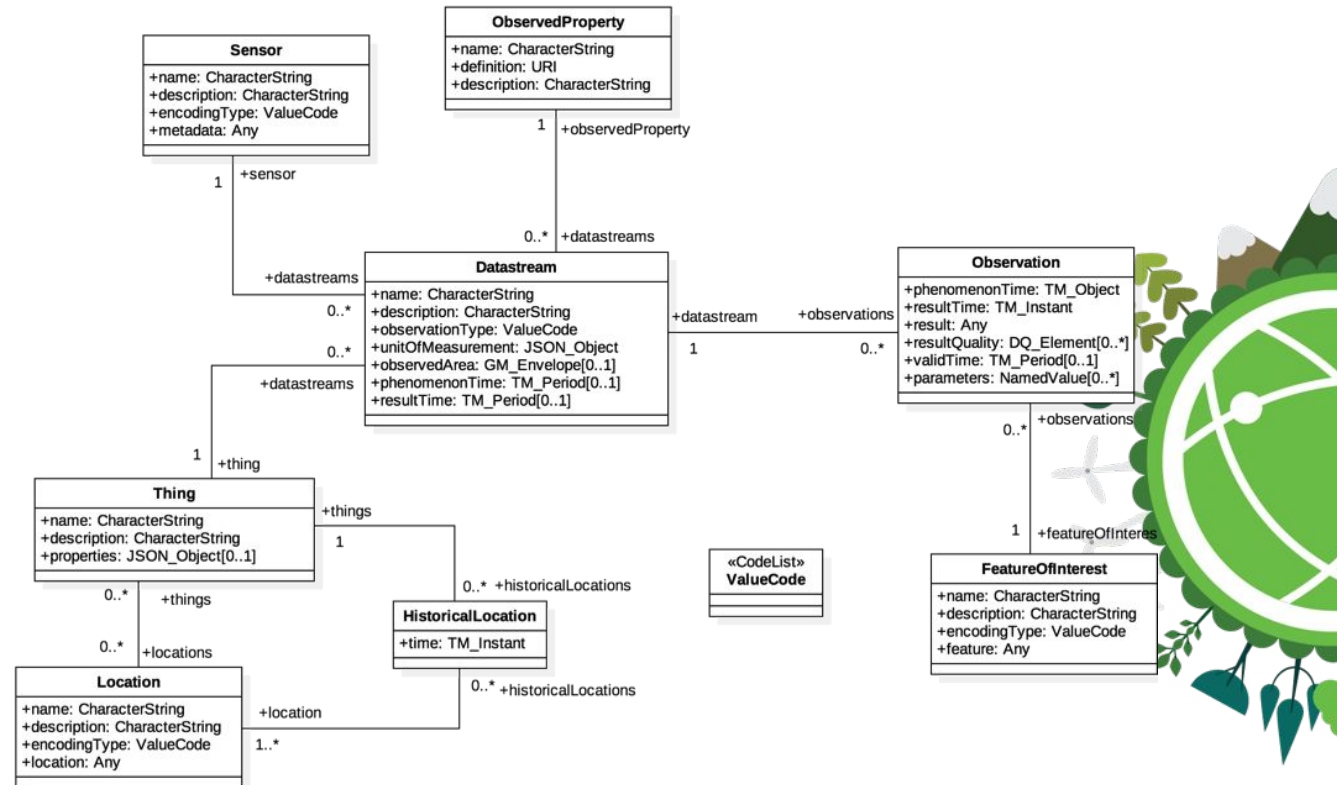
http://docs.opengeospatial.org/is/15-078r6/15-078r6.html#figure_2

SWE4CS

STA4CS

Initiators and supporters

Initiators

Support

Done in two phases

First phase

- 2018-2019
- Focused on SOS
- First Engineering Report
  - Approved by the OGC TC

Second phase

- 2019-2020
- Focused on STA
- Second Engineering Report
  - In progress

https://www.ogc.org/docs/er

OGC Citizen Science Interoperability Experiment Engineering Report	19-083	Joan Masó	2020
This Engineering report describes the first phase of the Citizen Science (CS) Interoperability Experiment (IE) organized by the EU H2020 WeObserve project under the OGC Innovation Program and supported by the four H2020 Citizen Observatories projects (SCENT, GROW, LandSense, and GroundTruth 2.0) as ...Click to continue reading			

Types of Initiatives – Agile Prototyping

OGC

Number of Participants

0-3	100-200

Scope/
Variety

Testbed

Pilot

Interoperability Experiment

Hackathon

Plugfest

Low TRL

Technology Maturation

High TRL
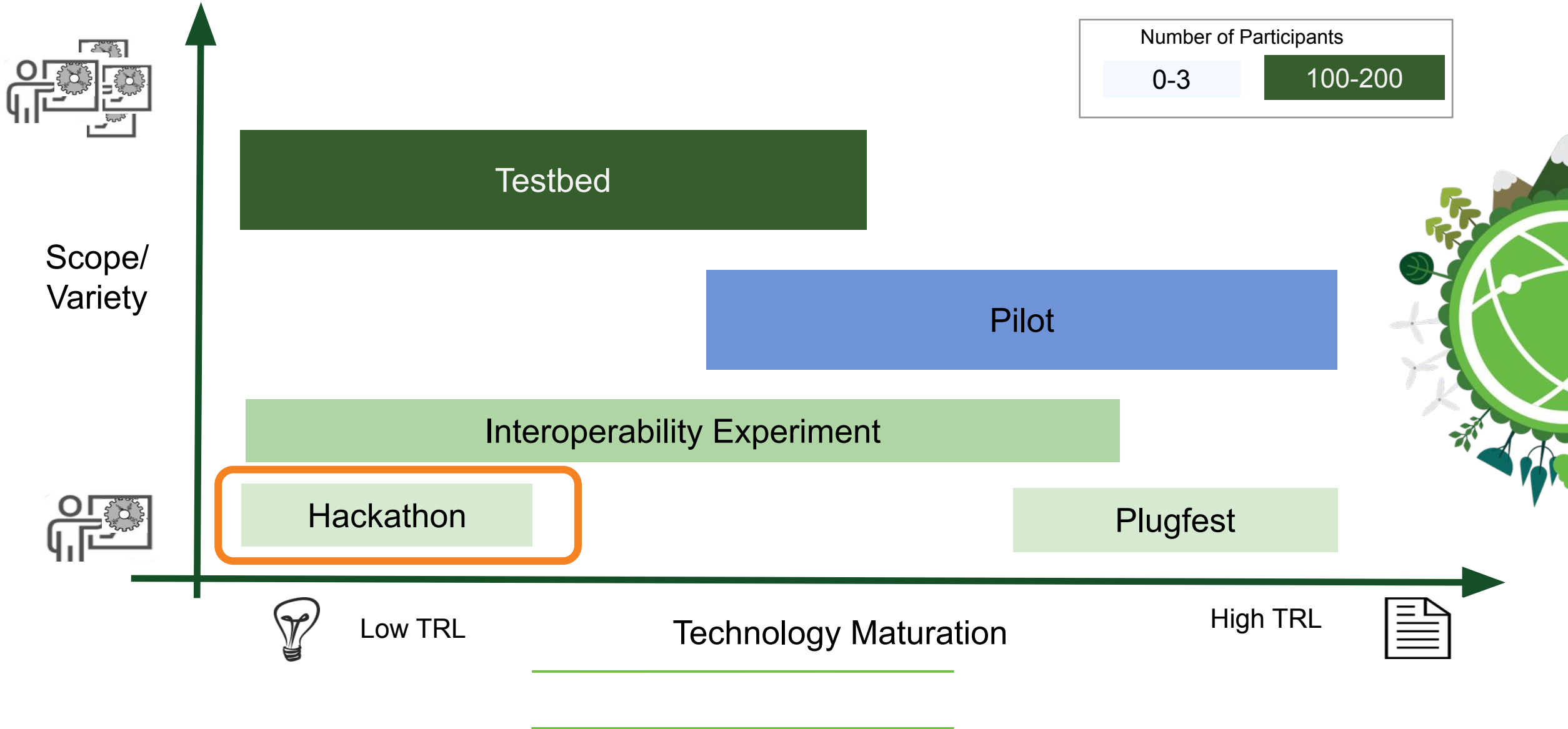
WeObserve Hackathon Challenges

- **Dubrovnik INSPIRE Hackathon**
- **3 citizen science challenges**
- **Aim: improve interoperability between Citizen Observatories & other relevant initiatives and activities**
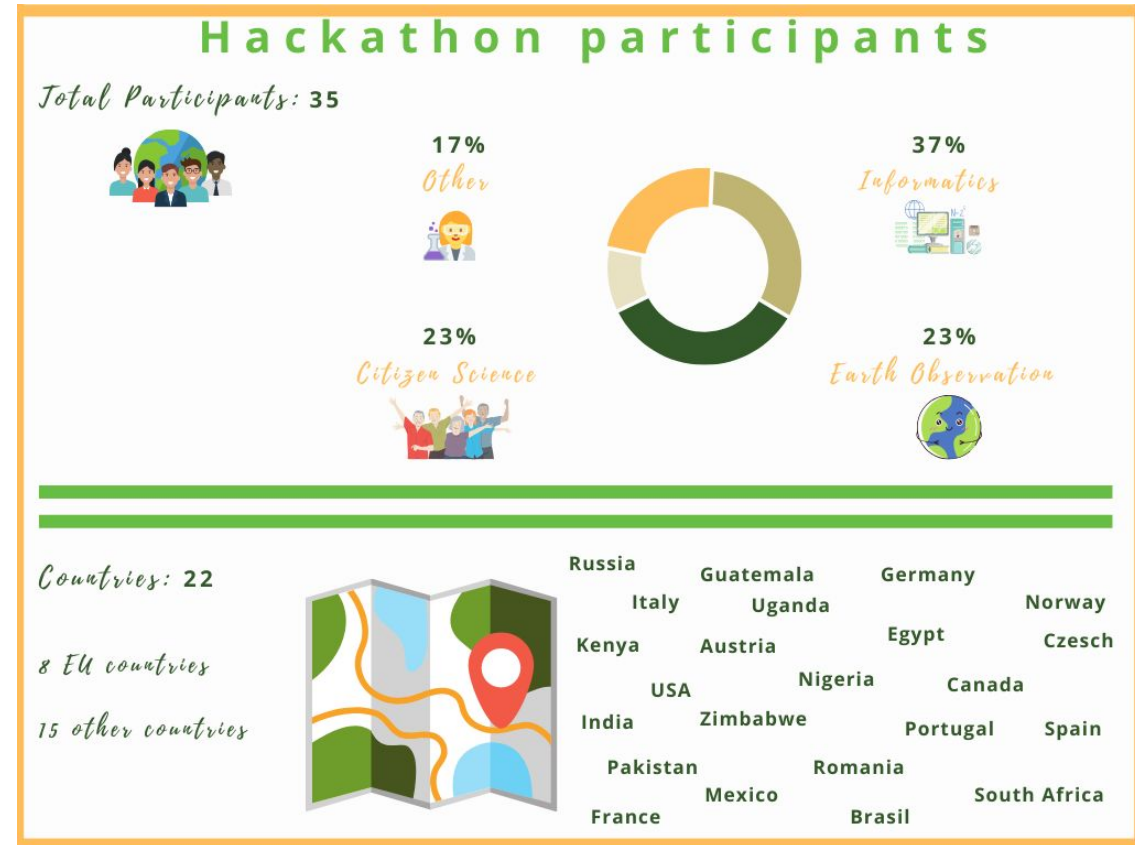
WeObserve Hackathon Challenges - Webinars

"Cataloguing citizens' observatories data and results"

"Improve interoperability between methods for sharing in-situ and citizen-sourced data"
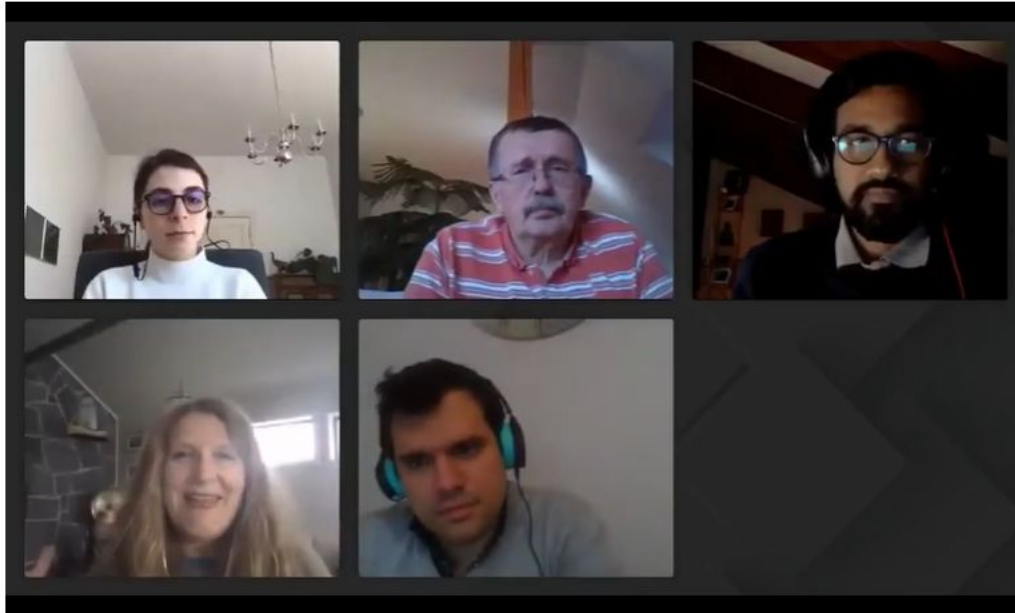
- **Management of citizen-generated data**

- **Data cataloguing**

- **Benefits of using CKAN and OpenSearch API**
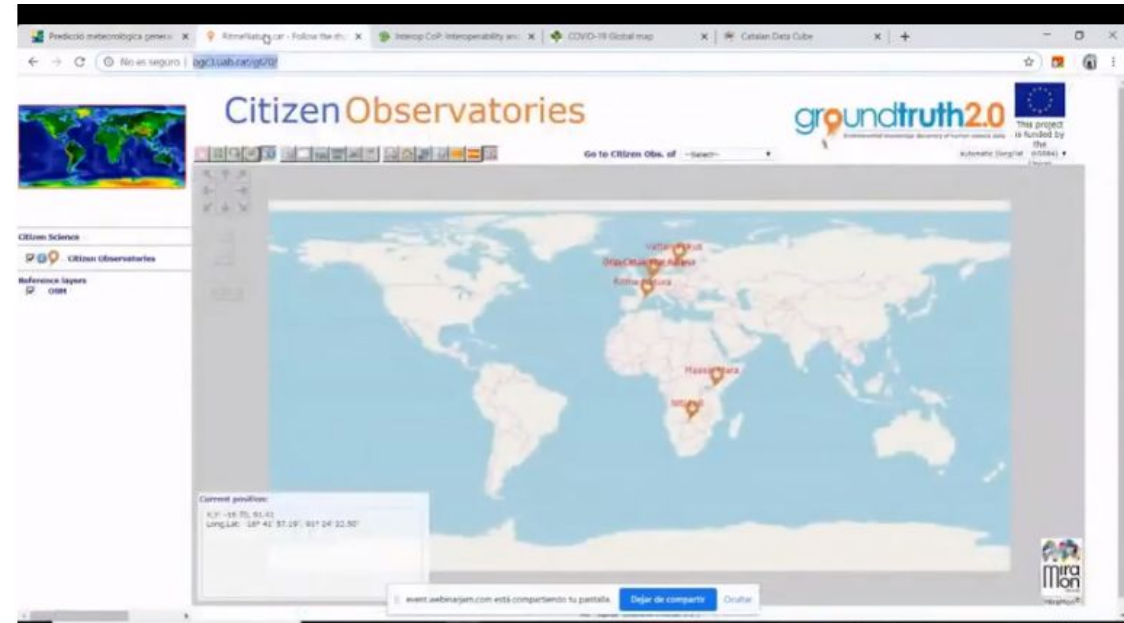
- **Approaches for modelling citizen-science data**

- **Representation and visualization**

- **Solutions for sensor data**

WeObserve Hackathon Challenge #6

Earth observation + Citizen Science = Empowered Society
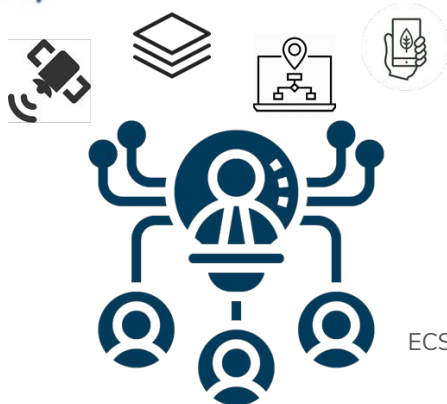
- Enhance geospatial and/or INSPIRE enabled web-based or mobile application so as to connect to either Citizen Science and/or Earth Observation data;

- Improve accessibility to protected resources while also enabling their direct consumption and utilisation by third party applications.

- Front-end JavaScript applications were able to connect with the SCENT Harmonisation platform Identity Access Management system by applying Implicit Grant Type of authorisation.

WeObserve Hackathon Challenge #7

Earth Observation + Citizen Science = Empowered Society

- Address the fragmented landscape of related activities

- Enable the integration of the H2020 Citizen Observatories (i.e. LandSense, GroundTruth2.0, GROW, SCENT) datasets with the NextGEOSS catalogue as an approach to connect citizen science into GEOSS.
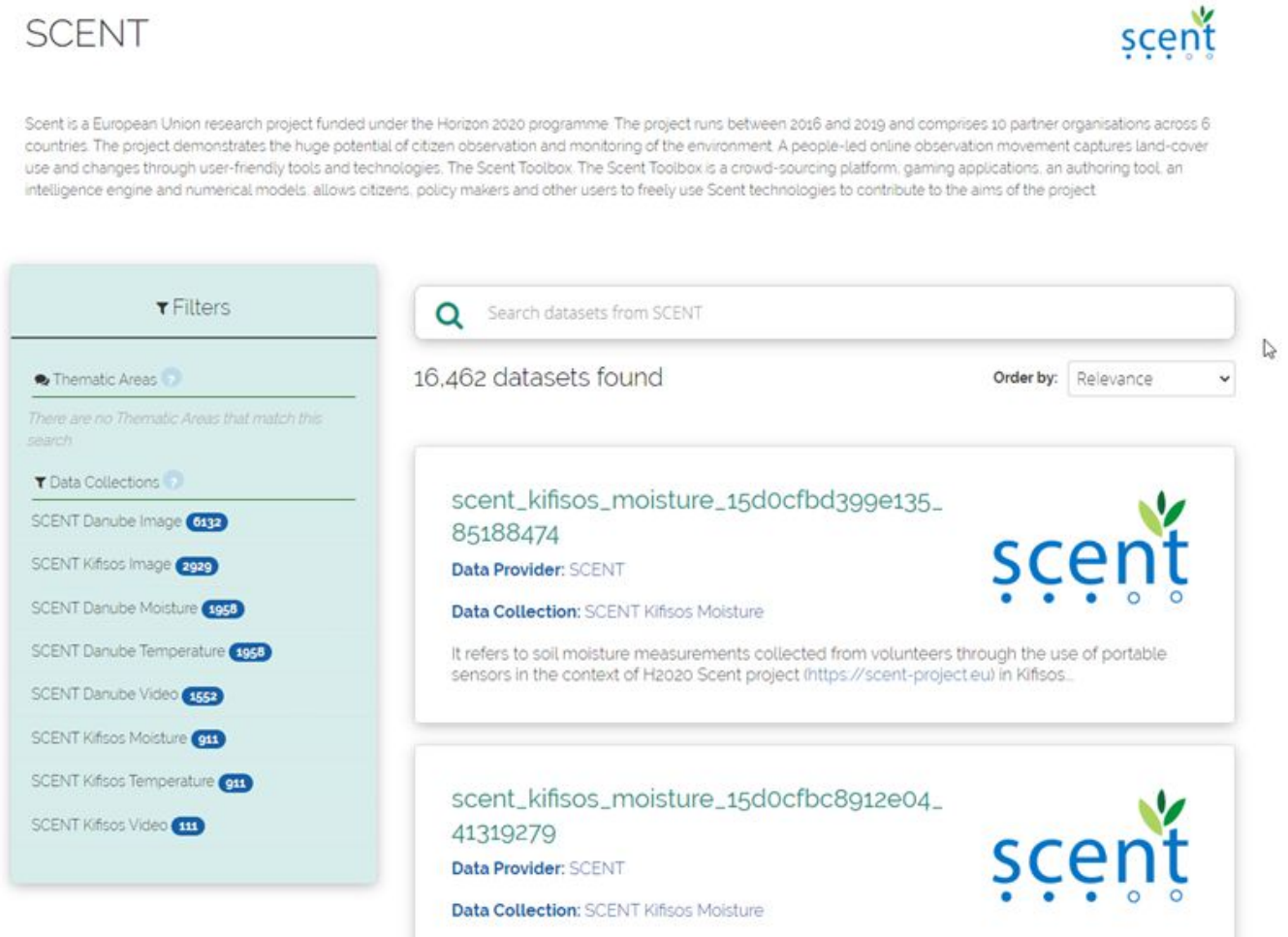
WeObserve Hackathon Challenge #7

- **Analysis of existing infrastructure and endpoints that enable machine-to-machine access to resources.**

- **Compilation of a template /online questionnaire for documenting data and resources involving community-based environmental monitoring citizen science projects.**

- **Implementation, testing and deployment of a data harvester for a part of SCENT citizen-science data, aiming to constitute a prototype for the ingestion of citizen-science resources (metadata) into a centralised catalogue.**

WeObserve Hackathon Challenge #8

Earth Observation + Citizen Science = Empowered Society

- **Improve interoperability and standardised access to citizen-science resources**

- **Design & implementation of "data translators" that will facilitate the conversion of resources exposed from various data models to OGC SensorThings API compatible schemas**

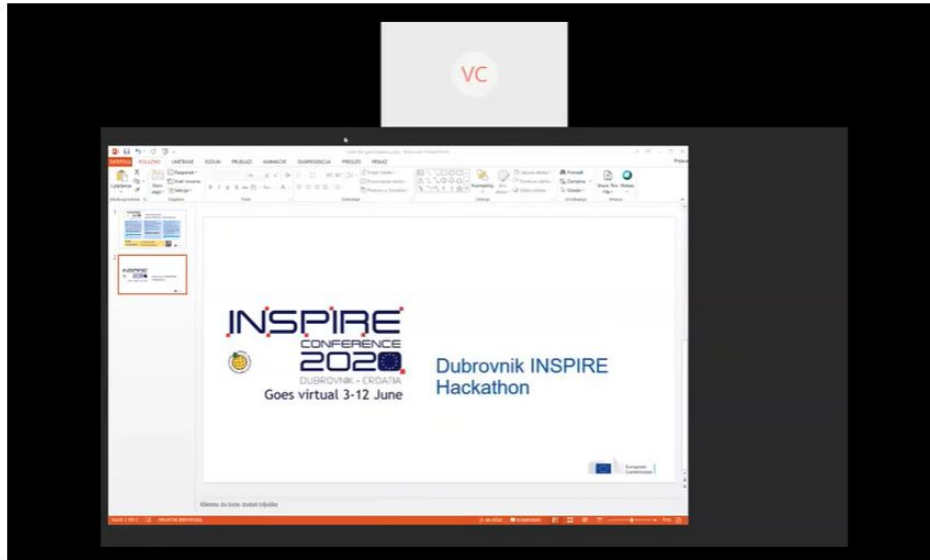- **Integration of different datasets of environmental monitoring by utilization of special "data translators"**

WeObserve Hackathon Challenge #8

- Analysis of the OGC SensorThings API and exploitation of data provided from SCENT Citizen Observatory

- Mapping between data models OGC SensorThings API and SensLog
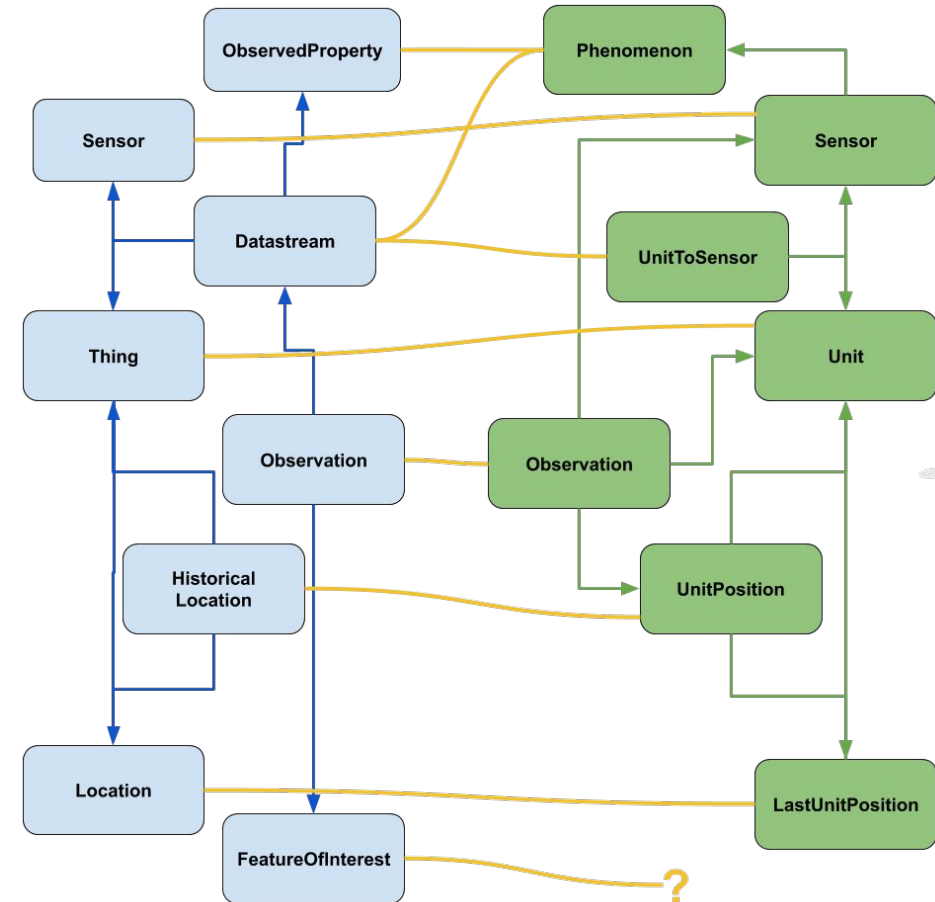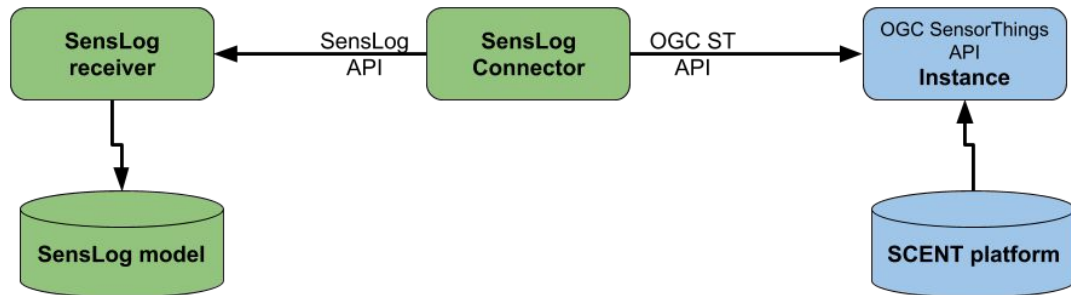
WeObserve Hackathon Final Conference

- **INSPIRE conference - final online workshop**

- **One of the citizen-science challenges (Challenge 7) was awarded the second prize!**

Thank you

weobserve.eu

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