



Break out session 1.3

Social revolution: Crowdsourcing movement, Citizens Observatories and Earth monitoring

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Content:

- **Drivers: data revolution & social evolution**
- **Citizens in EU environmental policies**
- **Citizens' engagement in research**
- **Citizens' science & observatories**
- **Horizon 2020 examples**
- **Lessons learned**
- **GEOSS Strategic Plan 2016-2025 (interim)**

Data revolution

- ✓ **Data revolution: data are bigger, faster, more detailed (IEAG to the UN on a data revolution for sustainable development)**
 - ✓ **90% of all data in the world has been collected during the last two years (SINTEF)**
 - ✓ **Ever-changing technologies such as big data analytics, cloud technologies, the Internet of Things**
 - ✓ **Worldwide open data trend**
 - ✓ **EO data are growing exponentially in size and variety**
 - ✓ **More satellite missions and higher volumes of satellite data**
Shift towards bringing users & processing to data
 - ✓ **New data flows from drones, sensor-enabled objects**
 - ✓ **Citizens observatories, volunteered geographic information, other crowdsourced data (including from social media)**
- More EO data, large heterogeneity, variable quality**

Social evolution

- ✓ **Societal challenges appear to be complex and global**
 - ✓ **Multi-disciplinary approach, multi-stakeholder partnerships**
 - ✓ **Perception of lack of individual influence could lead to an increased risk of citizens disengagement**
- ✓ **European Commission 2014-2019:**
"This is the last chance to win back the citizens"
 - ✓ **"Either we succeed in bringing European citizens closer to Europe or we fail."**
(President Jean-Claude Juncker, EP Brussels, 22 October 2014)
- ✓ **Gap between society, science and policy making**
 - ✓ **Possible disagreement about the evidences but also the questions. Need for co-design, co-implementation**
 - ✓ **Governmental information channels put into questions**
Parallel channels of information from and to the citizens
 - ✓ **Untapped potential; not just a matter of technology or data, it requires building a dialogue**

Citizens in EU environmental policies

European
Commission

- **1998 - Aarhus Convention:** recognises that public participation in decision-making enhances the quality and the implementation of decisions
- **2003 – EU Directive on Public Access to Environmental Information:** towards openness and transparency to the widest extent as possible, by guaranteeing the right of access to environmental information.
- **2013 - SEIS Implementation Outlook Staff Working Document:** *Citizens are recognized as information providers (not only recipients of information); recognition that crowds of citizens are well-placed to monitor the state of the environment.*
- **2014-2020 - 7th Environment Action Programme:** *"Union environment policy is notably based on citizen science' initiatives; Call to strengthen the science-policy interface and citizen engagement at EU and international levels.*

Citizens engagement in Horizon 2020

European
Commission

Horizon 2020:

- ✓ One of the biggest R&I programme publicly funded worldwide and the most open to international collaboration
- ✓ Influences the way science is organised, researchers collaborate, knowledge is shared
 - ✓ Research is becoming more **open, data-driven, people-focussed**
- ✓ Promotes public engagement and responsible research and innovation agendas
 - ✓ To better align the outcomes of scientific research to the **expectations of European citizens,**
 - ✓ To reinforce **confidence in science,**
 - ✓ To facilitate **societal uptake** of scientific and technological solutions
- ✓ Promotes **open access** to knowledge (publications & data)

Citizens' science & observatories

- ✓ **Not new**: established tradition in environmental science of engaging volunteers to collect environmental data
- ✓ **New**: Pervasive ICT deployment gives rise to an **internet of connected people, low cost miniaturised sensors**
- ✓ **Unprecedented opportunities for "citizens observatories"**:
 - ✓ Means to **engage citizens** in monitoring, reporting, decision making, intervention
 - ✓ Collaborative environment between volunteered citizens, public authorities and the industry
 - ✓ To increase situation awareness (hybrid networks)
- ✓ **eParticipation in local governance**
 - ✓ Raises awareness, reinforces "participatory democracy".
 - ✓ Empower citizens (informed decisions by the citizens)
 - ✓ Enhances in-situ monitoring and supplement traditional authoritative monitoring networks

Horizon 2020 phased approach to Citizens observatories

- ✓ Builds on initial RTD activities launched in 2012:
 - ✓ **Development of novel** EO technologies and applications enabling effective participation by citizens in environmental stewardship.
 - ✓ 5 projects, 20 Mio €, 50+ partners, 15+ pilots across the EU
- ✓ **2015 - Innovation actions :**
 - ✓ Further development, testing and **demonstration in real conditions, wider deployment and commercialisation** by the private sector and greater user acceptance.
 - ✓ 20 Mio €, ongoing call (deadline on 21st April 2015)
- ✓ **2017 - Coordination and Support Action**
(tbc: under discussion with the EU MS):
 - ✓ **Strategic approach to sustaining uptake** of citizens' observatories in Europe based on a review of best practices for engaging citizens, sustaining activities, ensuring interoperability, dealing with data management, data privacy.

OMNISCIENTIS: "Odour Monitoring and Information System based on Citizen and Technology Innovative Sensors"

- ✓ **Project approach successfully tested in the context of a Belgian paper mill industry (Burgo Ardennes)**
- ✓ **Participatory approach (living lab) between local citizens (watchmen), the city authority and the Burgo Ardennes**
 - ✓ **Co-design in a context of clear common interest**
- ✓ **Mixed network of e-noses, human sensors, meteo stations**
- ✓ **Odomap mobile app (designed with/for local users)**
- ✓ **Development of a near real-time odour dispersion model**
- ✓ **Information system fed by thousands of observations and measurements, including from 30 local watchmen.**
- ✓ **Quasi real-time operational forecasting of odour nuisance**

Example: WeSenseIt



- ✓ **Flood wardens in the UK and civil protection volunteers in Italy can take tagged pictures of flooded areas, exchange river levels data, provide real-time information when deploying mobile hydraulic barriers in case of floods.**
 - ✓ **Everyday use in Doncaster by Emergency Services**
 - ✓ **Technology and approach adopted by the City Council and Civil Protection in Vicenza**
 - ✓ **Proposed as key measure for implementing the EU Flood Directive in the Italian Oriental Alps District**
- ✓ **Evacuation of part of the city of Vincenza (IT) due to the discovery of a World War II bomb (1800 kg)**
- ✓ **Emergency services and control rooms for large events :**
 - ✓ **Glastonbury Music Festival (200,000 people)**
 - ✓ **Bristol Harbour Festival (250,000 visitors)**
 - ✓ **TBC: Display of the Holy Shroud in Torino (IT) (over 2 Mio people)**
- ✓ **Other applications (e.g. Sheffield hospital)**

Citizens' Observatories: Empowering European Society



A number of challenges remains:

- ✓ **Shift from RTD projects to systemic, sustained observatories**
 - ✓ **Ephemeral nature of many projects' data**
- ✓ **Engagement of broader spectrum of society**
 - ✓ **Feedback and reward mechanisms**
- ✓ **Recognition of scientific value**
 - ✓ **Guarantees for action on findings**
- ✓ **Quality of data, fitness for purpose, trust and traceability**
- ✓ **Security concerns (privacy due to geolocation of citizens)**
- ✓ **Integration of volunteered data in official information flows**

Citizens' Observatories: Empowering European Society



What needs to be done?

- ✓ **Cross-cutting meta-studies, cross-border benchmarking, need for a common semantic framework**
- ✓ **Promote shared open repositories, structures to ensure data curation, preservation**
- ✓ **Citizens observatories supplement but do not replace conventional monitoring systems**
- ✓ **Start from well-defined (often local) problems**
- ✓ **Find the right balance between ICT and face-to-face collaborations**
- ✓ **Low barrier of entry is required for use by non IT experts**

Citizens' Observatories: Empowering European Society



What needs to be done? (continued)

- ✓ **Care about a two way communication scheme**
 - ✓ **First attempt and feedback to citizens are critical**
- ✓ **It takes time to develop a collaborative behavior and to get a clear understanding of the respective roles**
- ✓ **There are cultural differences across the EU**
- ✓ **Main attention should first go to the citizens (instead of the technology)**
- ✓ **Local communities are critical to ensure that citizens science projects keep running**

GEOSS Strategic Plan 2016-2025

- ✓ **Addresses global societal challenges**
 - ✓ **From local to global scales, what co-design with the citizens in GEOSS?**
 - ✓ **What involvement in future GEOSS Work Programmes?**
- ✓ **Supports a vision of coordinated and sustained Earth observation to support informed decision making**
 - ✓ **What in situ observational gaps should be filled in by citizens' observatories? What link to essential variables?**
- ✓ **Foresees the technical inclusion of citizens' observatories in the GEOSS information chain**
 - ✓ **What interoperability arrangements, open reuse cases and data management of volunteered data?**
- ✓ **Foresees partnerships involving citizens in support to agreed policy frameworks**
 - ✓ **Do we need a Community of Practices on citizens' observatories?**

MYGEOSS First Call For Innovative Apps in the environmental and social domains.

Context and challenge

MYGEOSS is launching an open call for development of innovative applications (mobile or web-based) using openly available or crowd-generated data in different domains addressing citizens' needs. The pool of open data for use includes but is not limited to the Data Collection of Open Resources for Everyone ([GEOSS Data-CORE](#)) made available by the Group on Earth observation (GEO) through the Global Earth Observation System of Systems (GEOSS), as well as open data from EU-funded projects.

The Focus

The focus of this call will be on developing applications of European relevance that will provide users with quantitative or qualitative information on the changing environment, e.g. change detection in climate, biodiversity, water bodies, coastal areas, built environment, green areas, forestry, agricultural land and crops, and atmospheric composition. Other areas of application will be considered providing they address broad environmental or social themes across geographic scales.



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Applications till 30 April 2015

<http://digitalearthlab.jrc.ec.europa.eu/mygeoss/call.cfmt>



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