

Citizens' observatories – CITI-SENSE approach

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Presentation Outline

- **General info of the CITI-SENSE**
- **R&D questions**
- **CITI-SENSE citizens' observatories approach**
- **R&D challenges**
- **Opportunity for solutions**

Basic data

- CITI-SENSE is a collaborative project
- Call: FP7-ENV-2012.6.5.1
- Starting date: 1 October 2012
- Duration: 48 months
- Partners organizations: 28, 12 countries
- Grant agreement n°: 308524
- Web portal: <http://www.citi-sense.eu>
- Citizens' observatory central web portal: <http://co.citi-sense.eu>



Objective

- **To develop Citizens' Observatories to empower citizens to**
 - Participate in environmental monitoring
 - Influence community policy & decision making
 - Contribute to Global Earth Observation System of Systems (GEOSS)



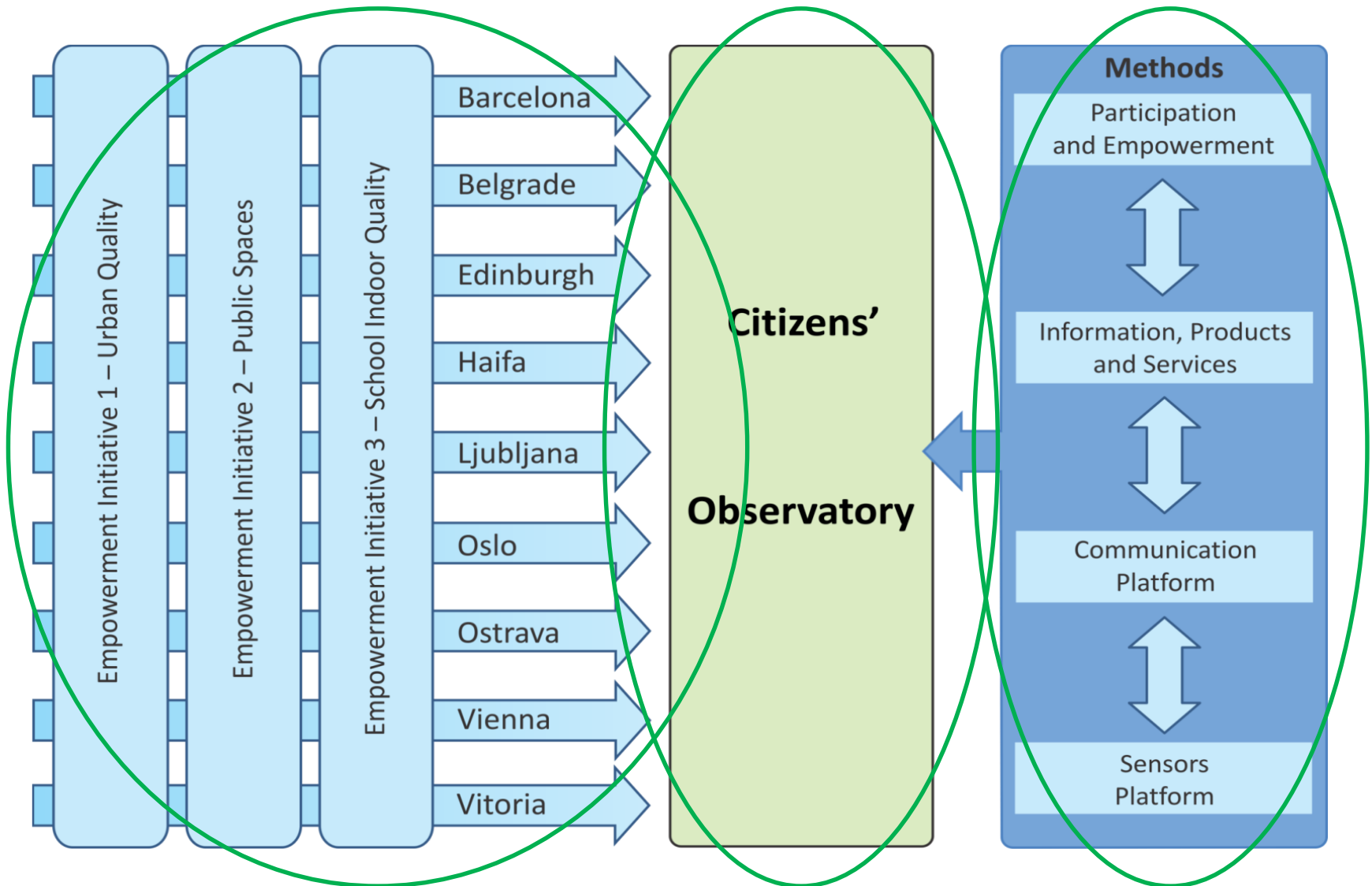
R&D questions

- Is citizens' observatories needed as a support system for community-based environmental governance?
- How to recruit and retain citizens to participate in environmental governance?
- How can sensor data complement other data sources?
- How can sensors lead to a greater involvement of citizens?
- How can citizens' data be used in science?
- How will raised citizens' awareness of pollution affect behavior?
- How will CITI-SENSE contribute to improve urban life quality?



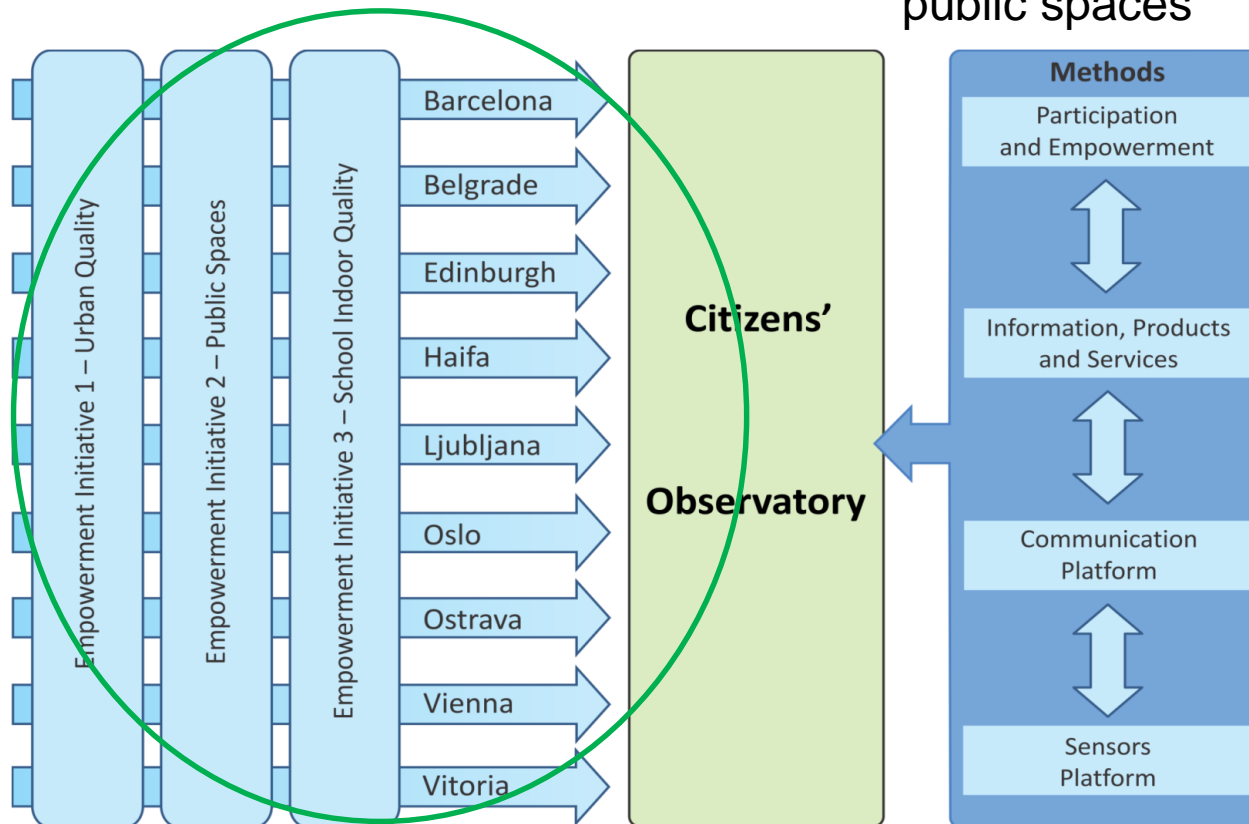
CITI-SENSE approach

- To answer the R&D questions, what is CITI-SENSE approach?

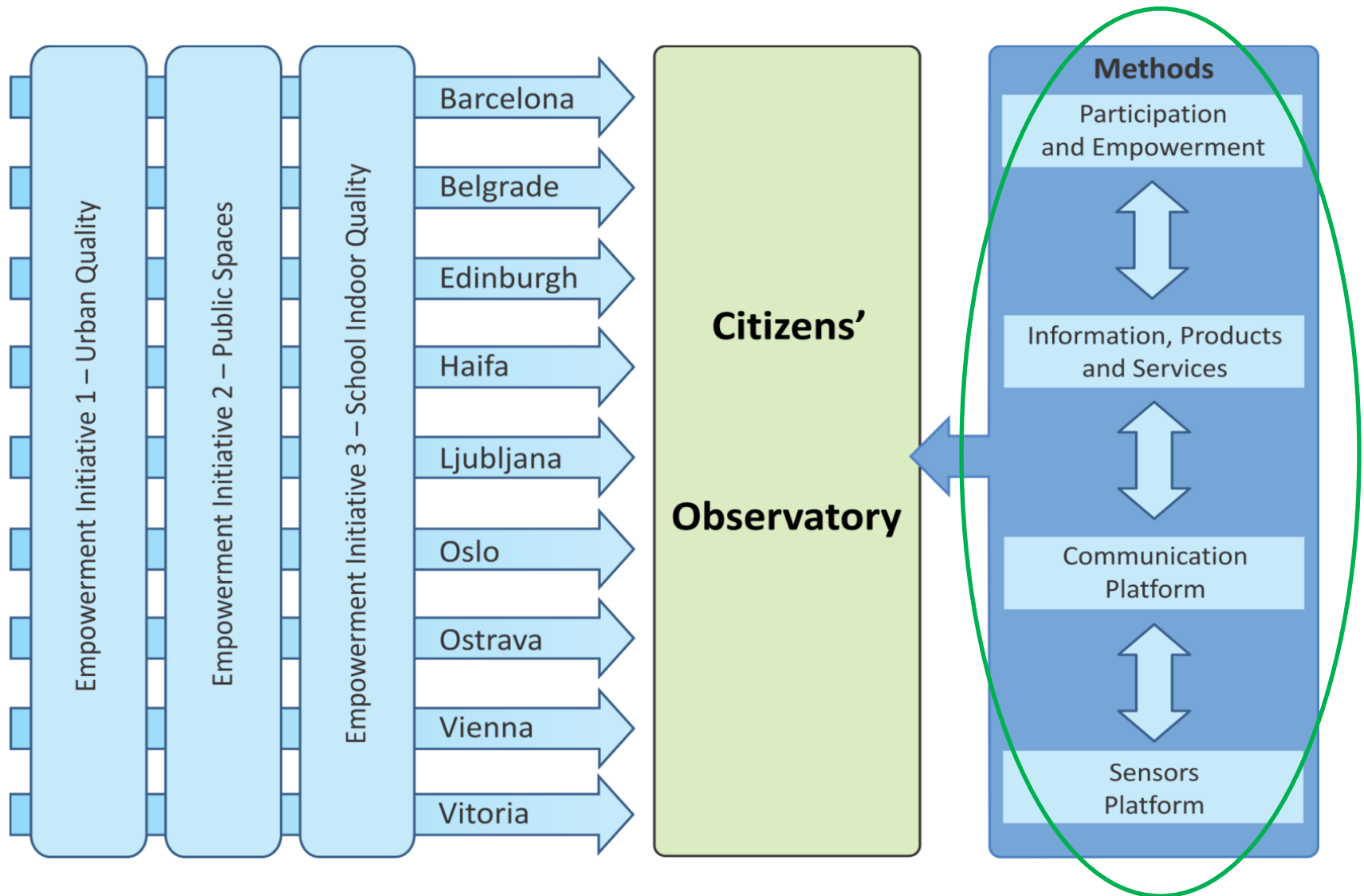


Citizens' observatories initiatives

- Three empowerment initiatives
 - Outdoor AQ
 - Indoor AQ in schools
 - Personal comfort in public spaces
- More than 20 citizens' observatories across nine cities
 - Eight for outdoor AQ
 - Up to 10 for indoor AQ in schools
 - Four for personal comfort in public spaces



sensor-platform-products-users



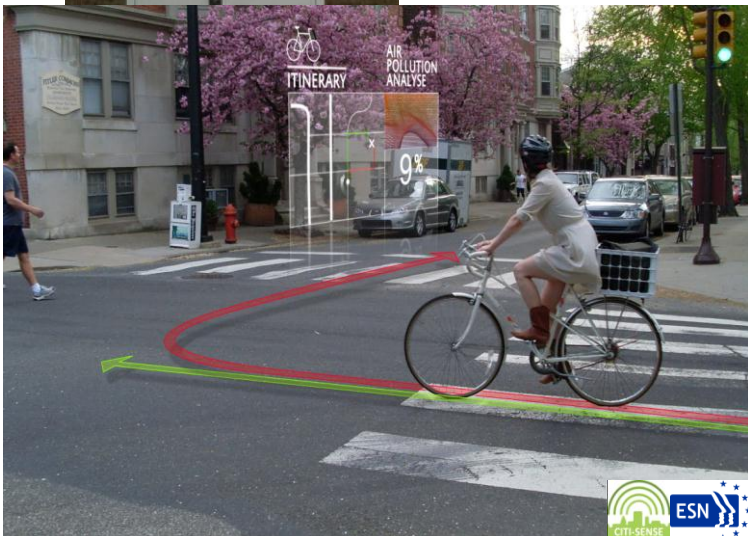
Innovative technologies

- High technology environmental sensors, innovative data fusion and communication paired with scientific analysis and efficient communications with users and the public



Innovative technologies

- Deploy static (fixed) and mobile (personal) sensors to monitor various environmental components.



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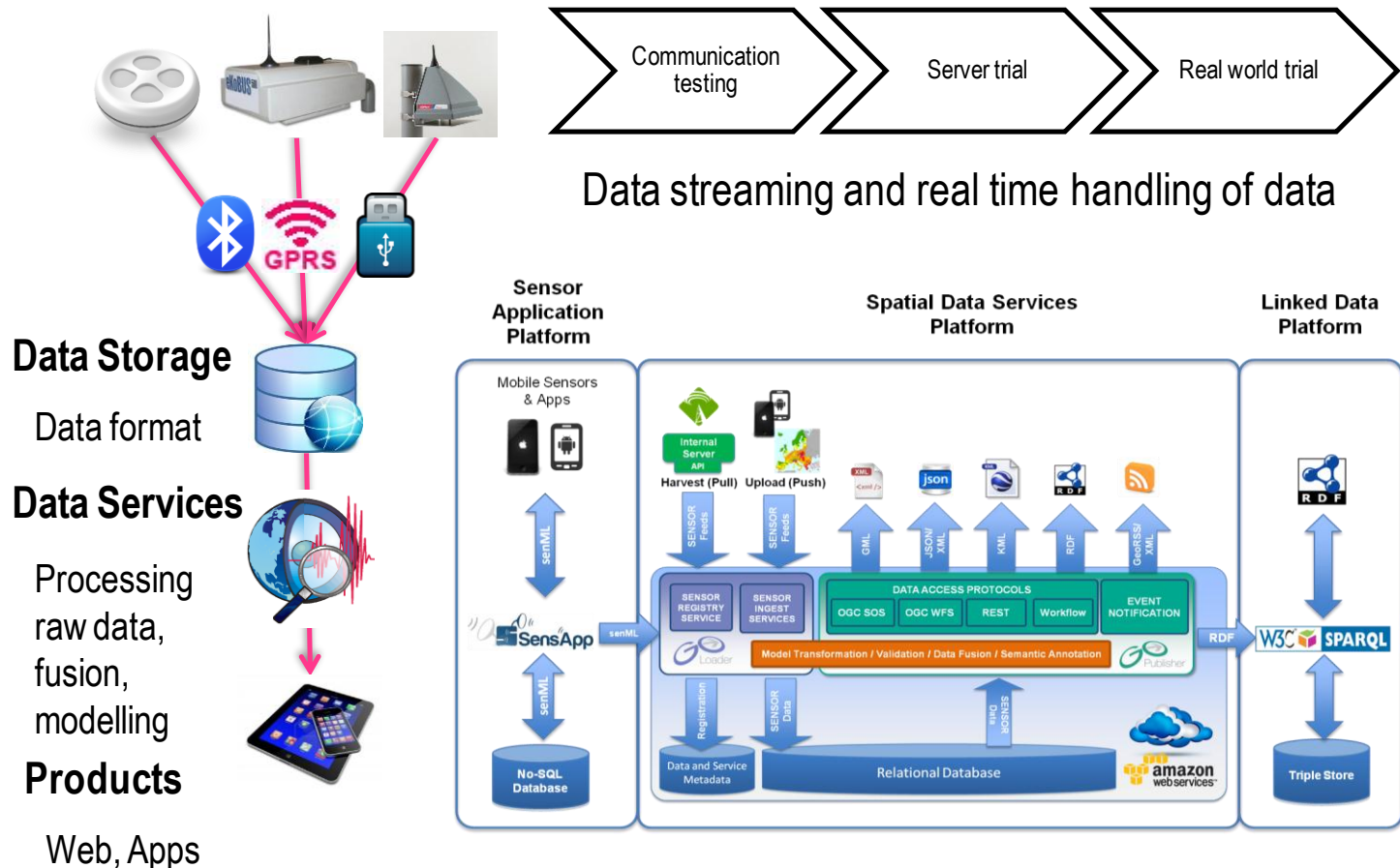
AQ
Temp

UV



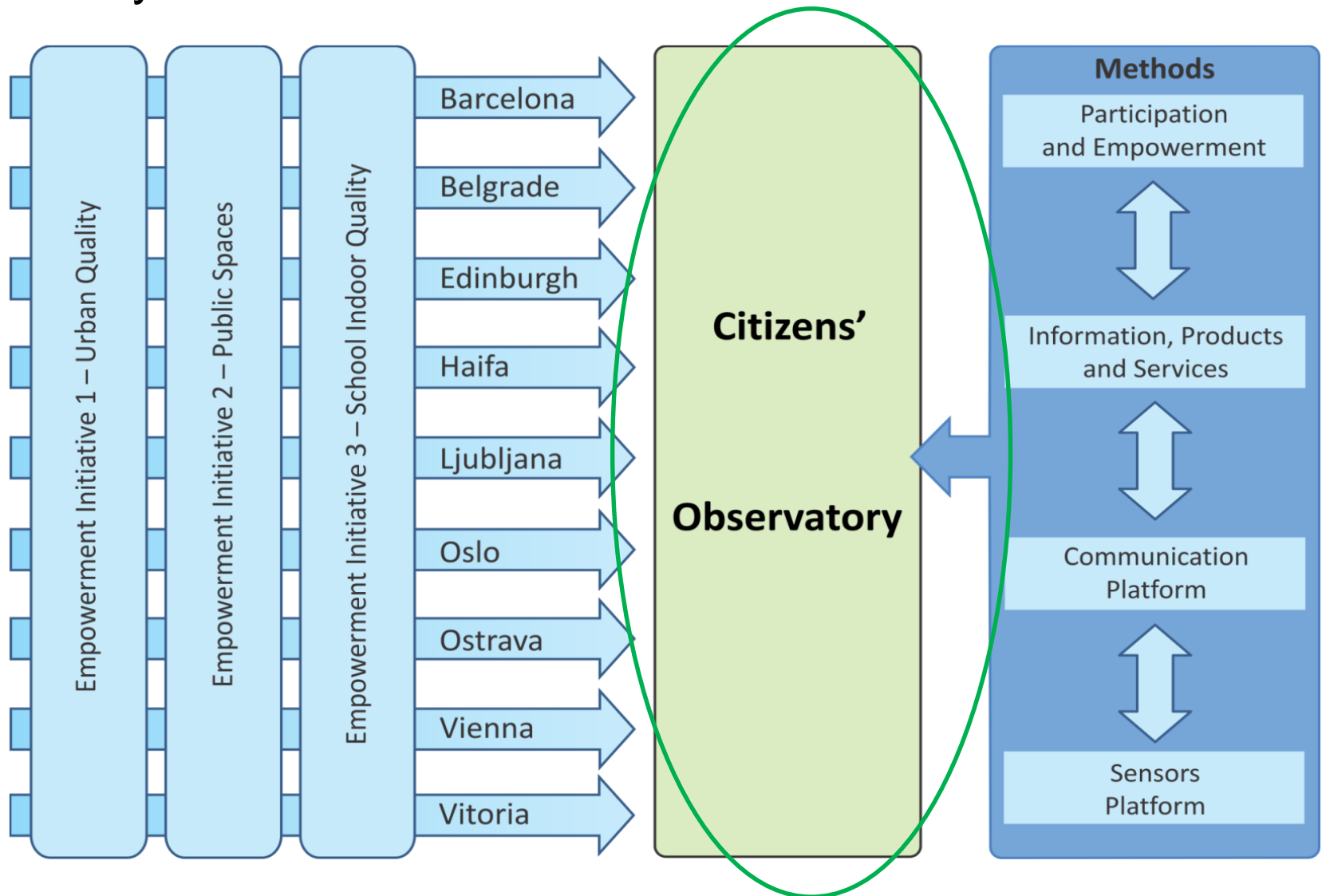
Innovative technologies

- Combine new sensing technology, ICT platforms and participatory methods into useful products.



Citizens' observatory central portal

- Gateway to the various citizens' observatories



Citizens' observatory central portal

- <http://co.citi-sense.eu>
- Access to various citizens' observatories
 - Outdoor AQ
 - Indoor AQ in schools
 - Personal comfort in public spaces
 - Citizens' objective voices
- Access all project sensor data in one interface
- Open API enables GEOSS functional integration into citizens' observatories central web portal

The screenshot shows the Citi-Sense central portal website. At the top, there is a green logo with a stylized city and the text 'CITI-SENSE'. To the right, a quote reads: 'Tell me and I will forget. Show me and I will remember. Involve me and I will understand. Ancient Chinese proverb'. Below the logo is a navigation bar with links: HOME, ABOUT US, COMMUNITY, EMPOWERMENT INITIATIVES, and CONTACT US. The main content area features a large image of many hands holding up smartphones, with the text 'Make a contribution' overlaid. Below this image is a paragraph explaining the portal's purpose: 'The CITI-SENSE public portal is designed to enable citizens to not only have access to real-time environmental information provided by a wealth of sensors, including personal sensors, mobile sensors and static stations, but also to provide a forum for discussion, debate and sharing of YOUR own personal observations on the environment, and how it affects and impacts you in your daily life. Your contributions are important and the Citizens' Observatory is yours!'. Below the text is a search bar and a 'Go' button. The main content area is divided into two columns. The left column features a large globe with a map of Europe, showing various sensor locations. The right column lists search results for 'special:charter:UPPER AIR, pressure level 500 hPa'. At the bottom, there are four small boxes: 'Indoor Air Quality in Schools' (with a photo of children), 'City Air Quality' (with a photo of a city street), 'Public Spaces' (with a photo of a building), and 'Decision Making' (with a photo of a group of people). The footer contains the copyright notice 'Copyright 2013 by Citi-Sense | Privacy Policy', the name 'Mike Kobernus', a 'Logout' button, and flags for the United Kingdom, Germany, and France.

R&D challenges

- Alignment across a variety of R&D disciplines
 - Natural science, social science, sensor technology, ICT
- Efficient dialogue with citizens
- Efficient citizens participation and empowerment
- Bridging information demand and supply
- Integration across data types and cities
- New knowledge on how urban pollution affects citizens



- Technological development
 - Sensors modified for CITI-SENSE
 - Performance of most sensors is unknown
 - Long-term reliability is unknown
 - Citizens' mobile apps
 - Real-time information
 - Cutting edge visualization
 - Innovative monitoring approach

The challenge is our goal

- Opportunity for solutions

Challenges in data quality, data interpretation and communication



Responsible use of air pollution sensor data

Evaluation of low-cost sensor for critical pollutants: validation and calibration, assessing uncertainty

Visualizations will be helpful for making sense of data

Development of IT infrastructure and new data streams

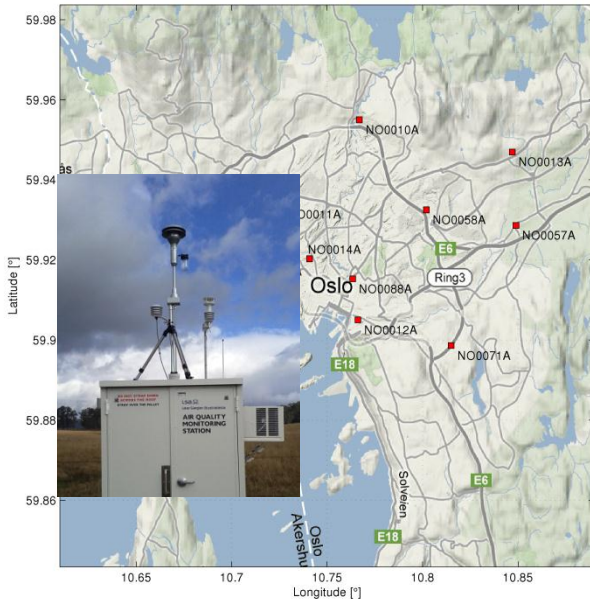
Big Data: expand the amount of information



Integrating the information with other relevant information: data assimilation

Guidance and advice on sensor use and data interpretation

Opportunities



Small, lower-cost sensors bring new challenges but along with these challenges come great opportunities to improve air quality management and public health.

Supplementing routine ambient air monitoring networks

Monitoring personal exposure

Air quality sensors can be coupled with physiological sensors

3S principle: Increasing

- Sensitivity
- Selectivity
- Stability



Opportunities



Monitoring at the source

Stimulate participation and encourage the dialogue

- Gamification
- Augmented reality



Opportunities

- Cooperation with other four cluster projects

- Citclops
- COBWEB
- Omniscientis
- WeSenseIt



- All five projects focus on different environmental topics, but share common goal
- Share common challenges
- Projects overview: <http://www.citizen-obs.eu>
- Knowledge from public

facebook.com/int.cit.obs

Citizens'
Observatories





Thank you for your attention!

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