Citizens' observatoriers – CITI-SENSE approach

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CITI-SENSE consortium, http://www.citi-sense.eu

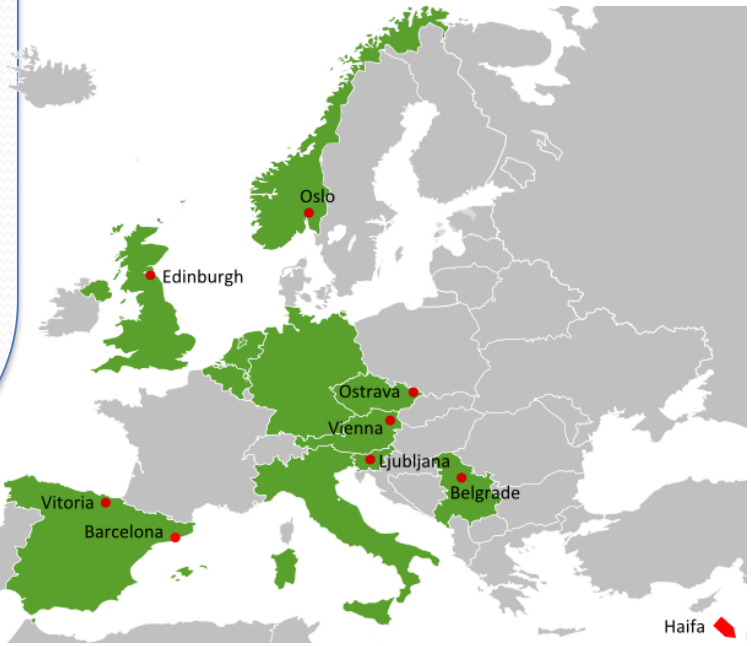
NILU SINTEF European Commission CITI-SENSE

Presentation Outline

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

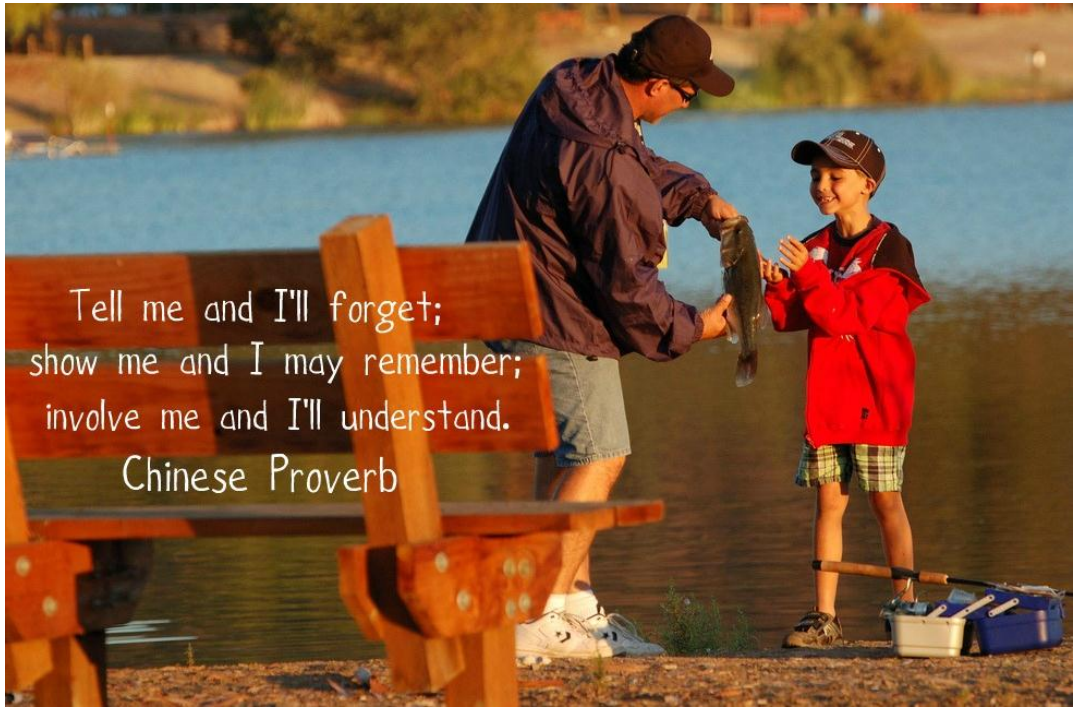
Basic data

- 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 nº: 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)

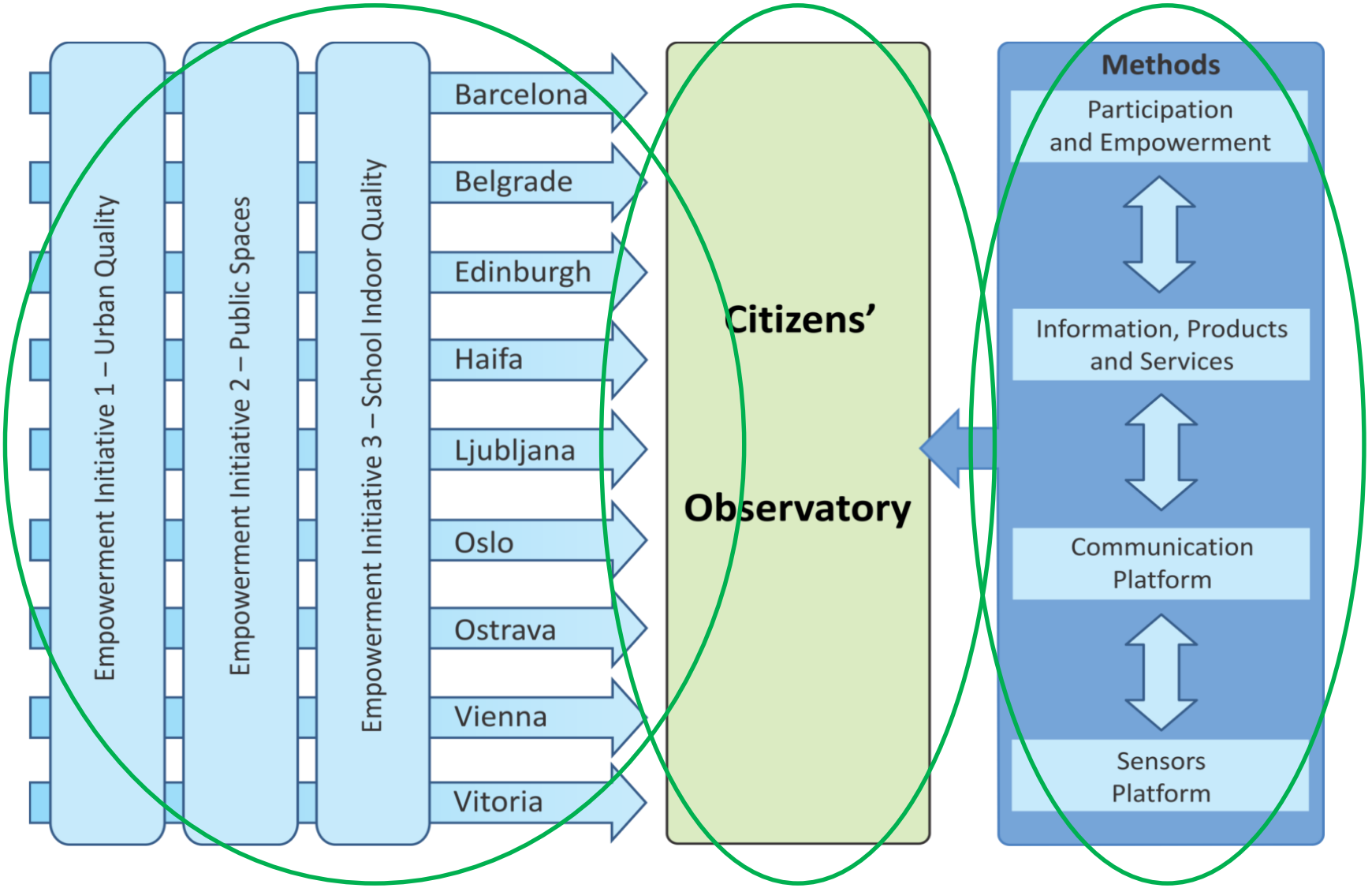


R&D questions

- 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?

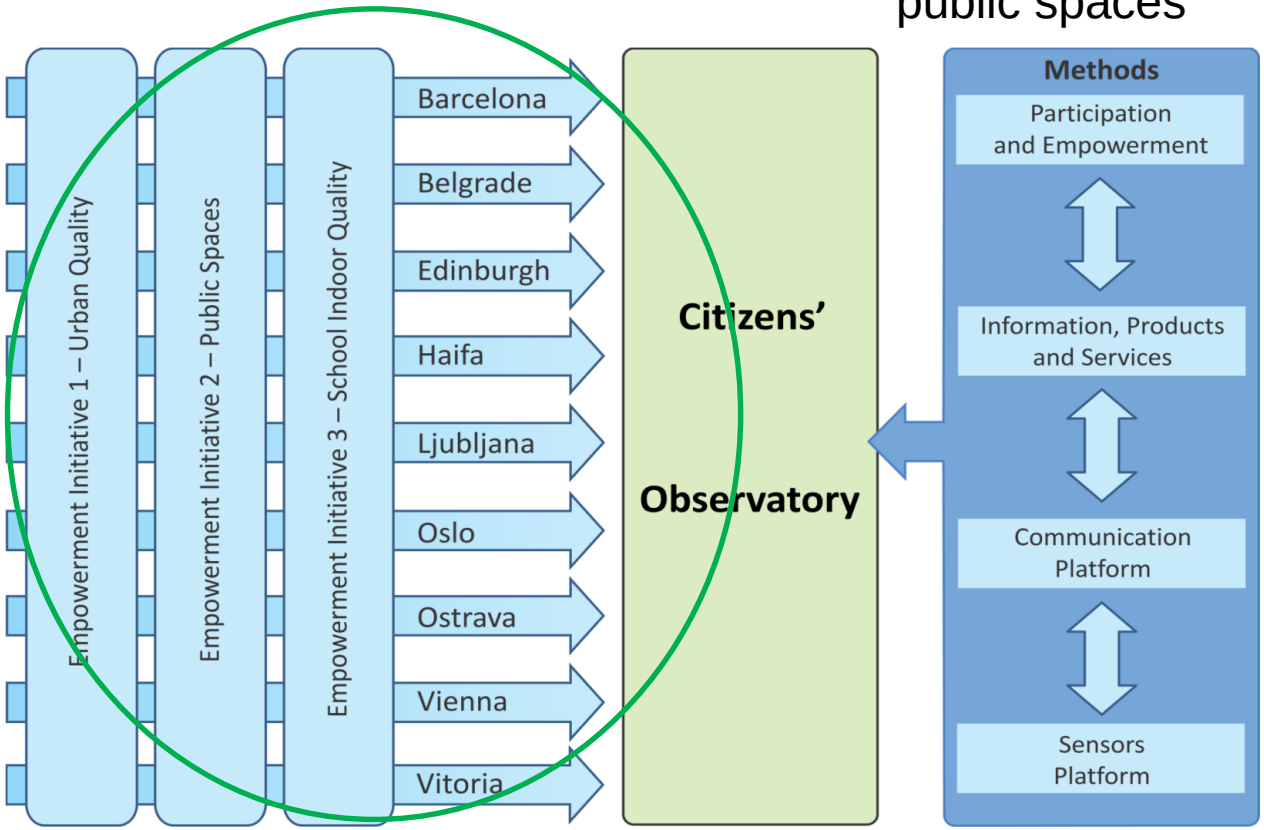
CITI-SENSE approach

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

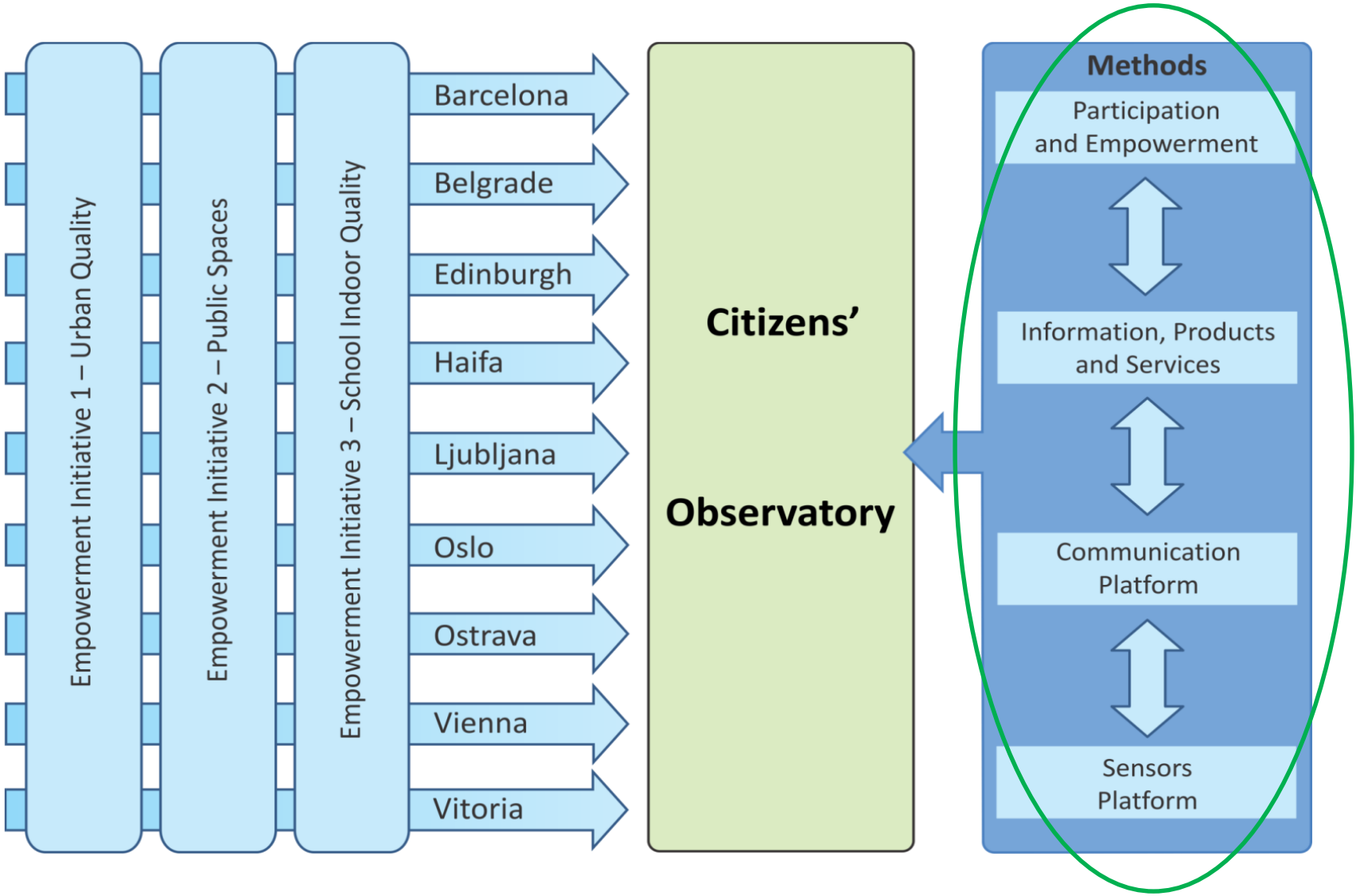


Citizens' observatories initiatives

- 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

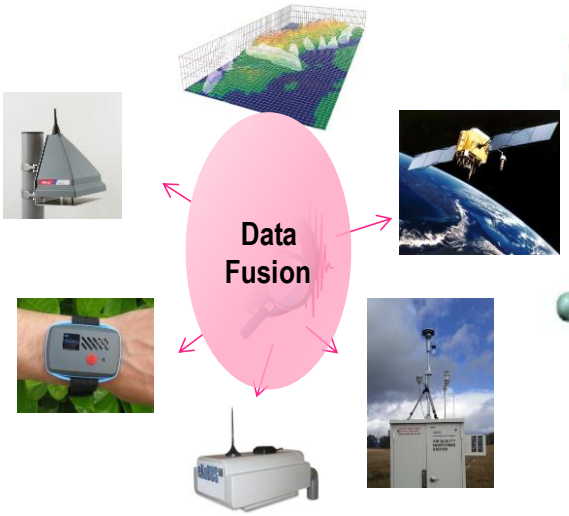


sensor-platform-products-users



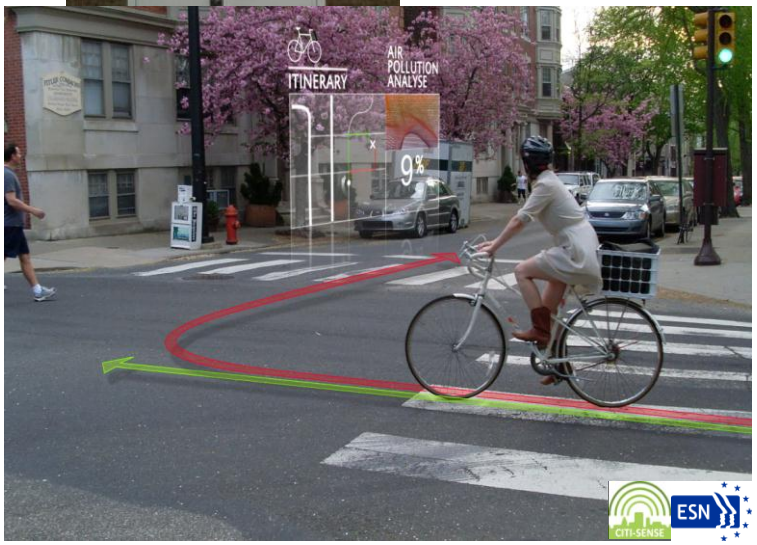
Innovative technologies

- 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.



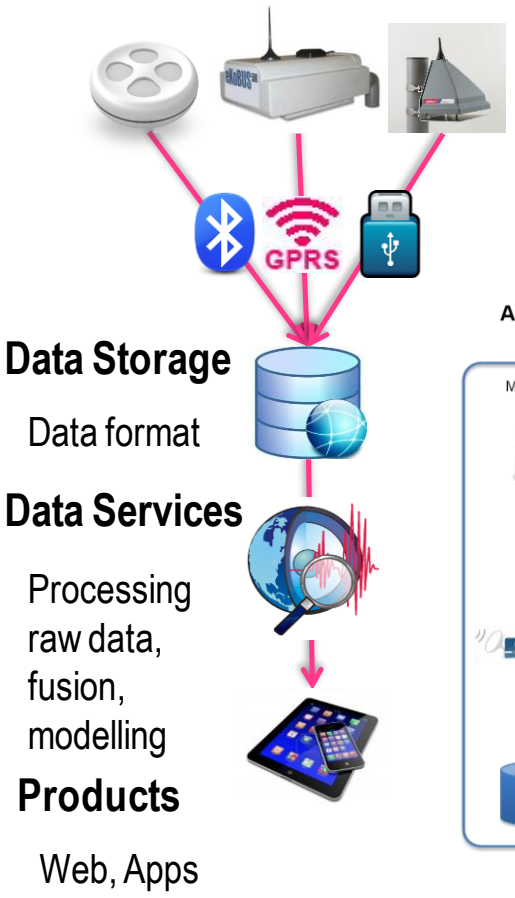
NO_2+O_3

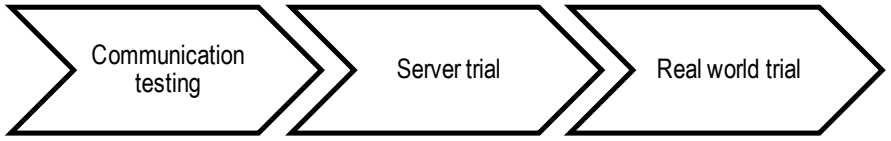
AQ
Temp

UV

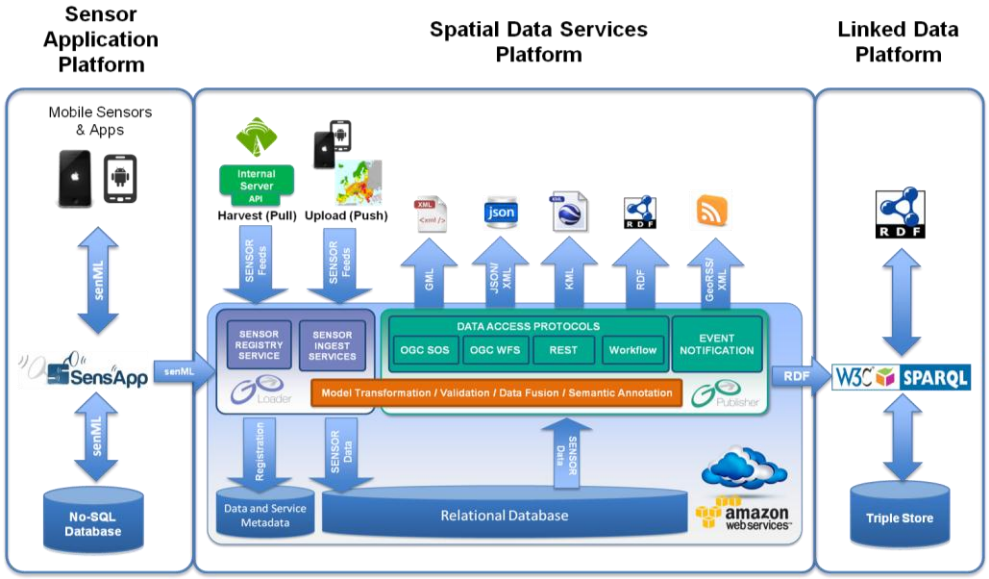
Innovative technologies

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



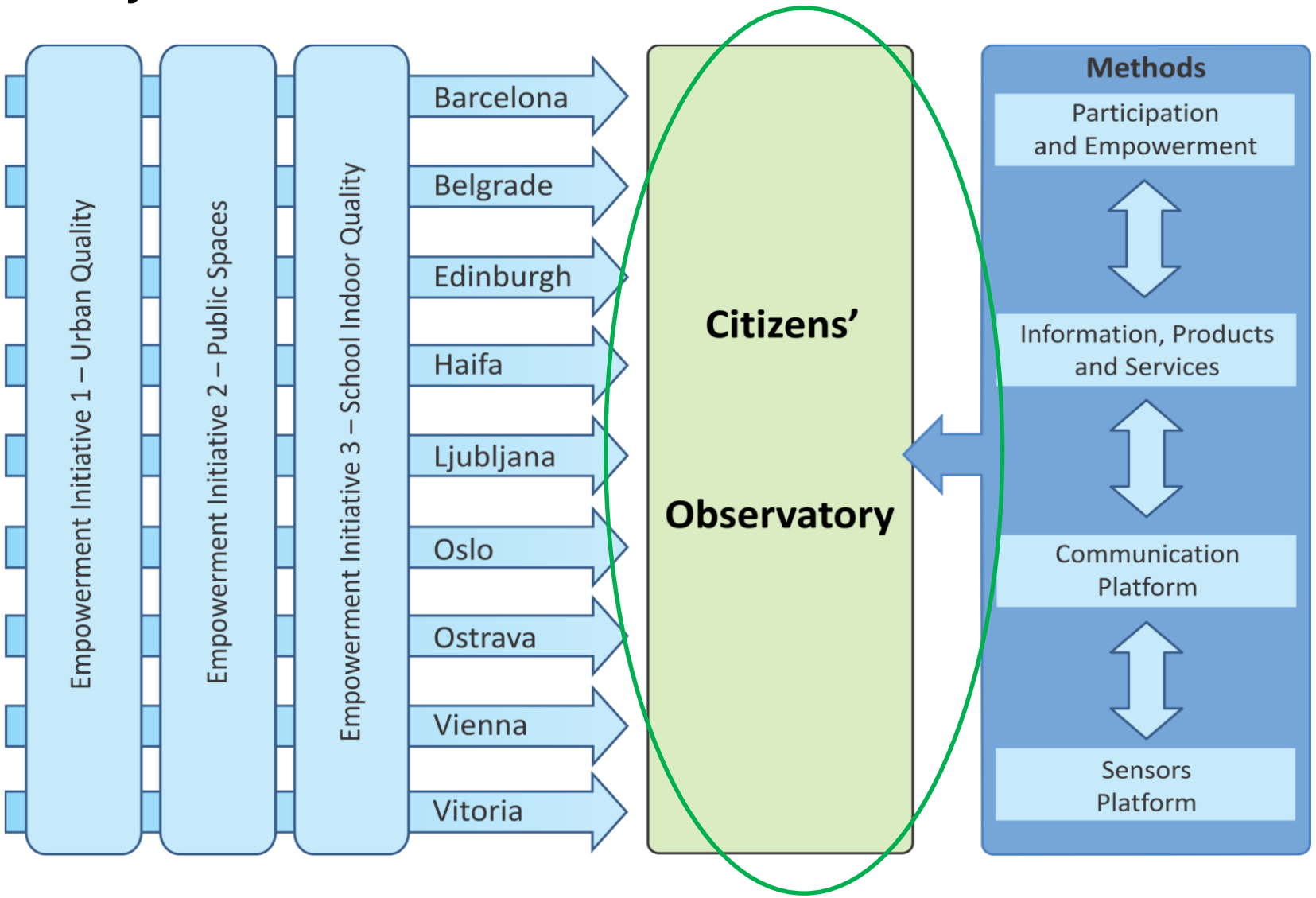


Data streaming and real time handling of data



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

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

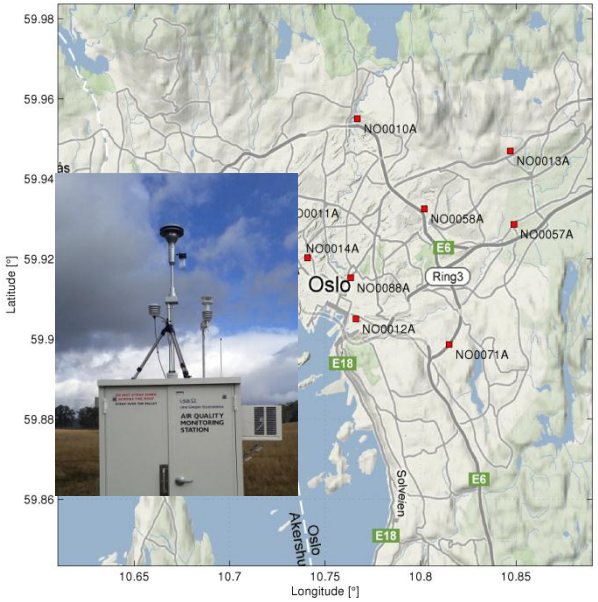
- Responsible use of air pollution sensor data
- Evaluation of low-cost sensor for critical pollutants: validation and calibration, assessing uncertainty
- Visualizations will be helpful for making sense of data

Big Data: expand the amount of information

- Development of IT infrastructure and new data streams
- 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

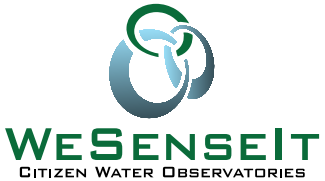
Stimulate participation and encourage the dialogue

– Gamification

– Augmented reality

Opportunities

- Cooperation with other four cluster projects
  - Citclops
  - COBWEB
  - Omniscientis
  - WeSenseIt



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

Thank you for your attention!

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