ENVIROFI

"ENVIROfying" the Future Internet

THE ENVIRONMENTAL OBSERVATION WEB AND ITS SERVICE APPLICATIONS WITHIN THE FUTURE INTERNET

Data fusion in the environmental domain

Hylke van der Schaaf
Mike Kobernus, Markus Falgenhauer, Jasmin Pielorz, Kym Watson
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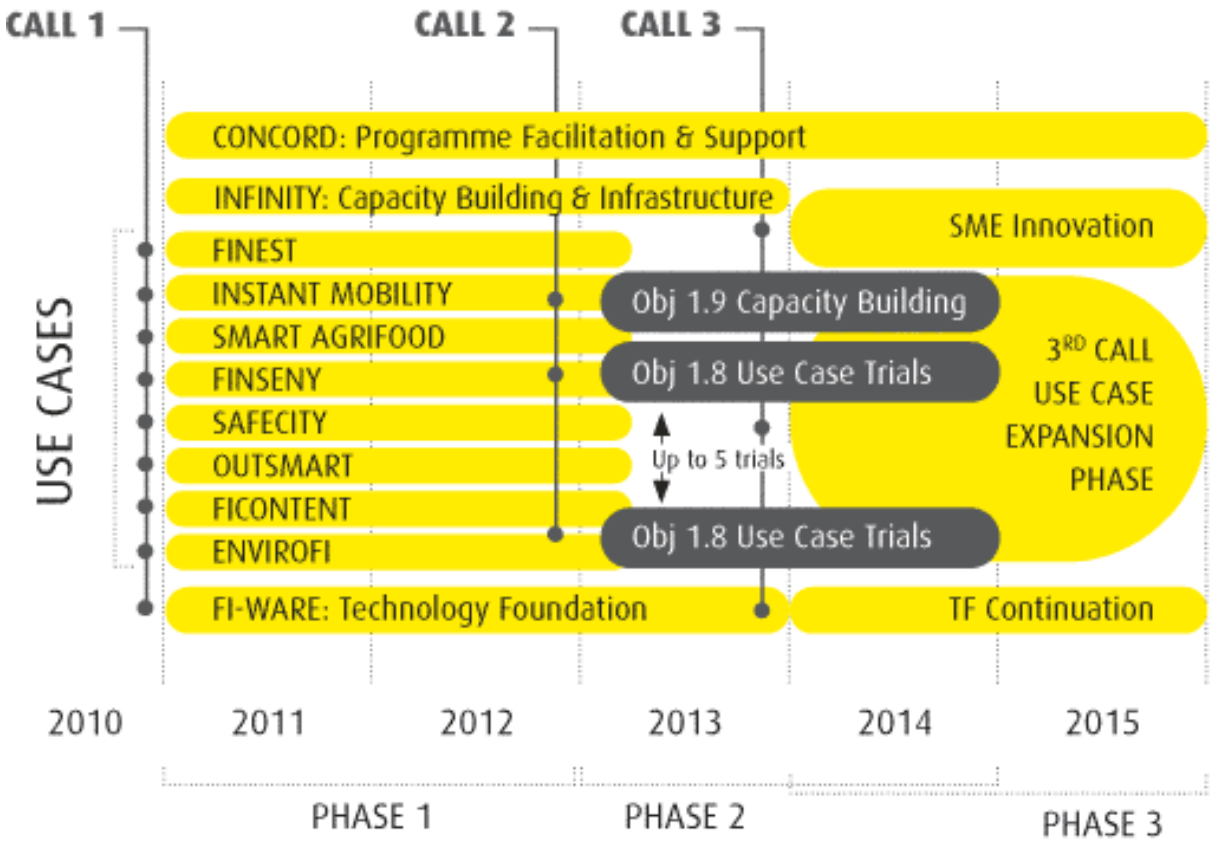
FUTURE INTERNET PPP

SEVENTH FRAMEWORK PROGRAMME

European Commission
Information Society and Media

What is ENVIROFI?

ENVIROFI is part of the FI-PPP Programme:
Future Internet Public-Private Partnership



http://fi-ppp-eu

What is ENVIROFI?

- Goal:
  Consolidate the **Future Internet requirements** from the *Environmental Usage Area* perspective and provide technical **specifications** and **prototypes** of interoperable geospatial Environmental Enablers

- Prototype areas:
  - Biodiversity
  - Marine Assets
  - Atmospheric Condition

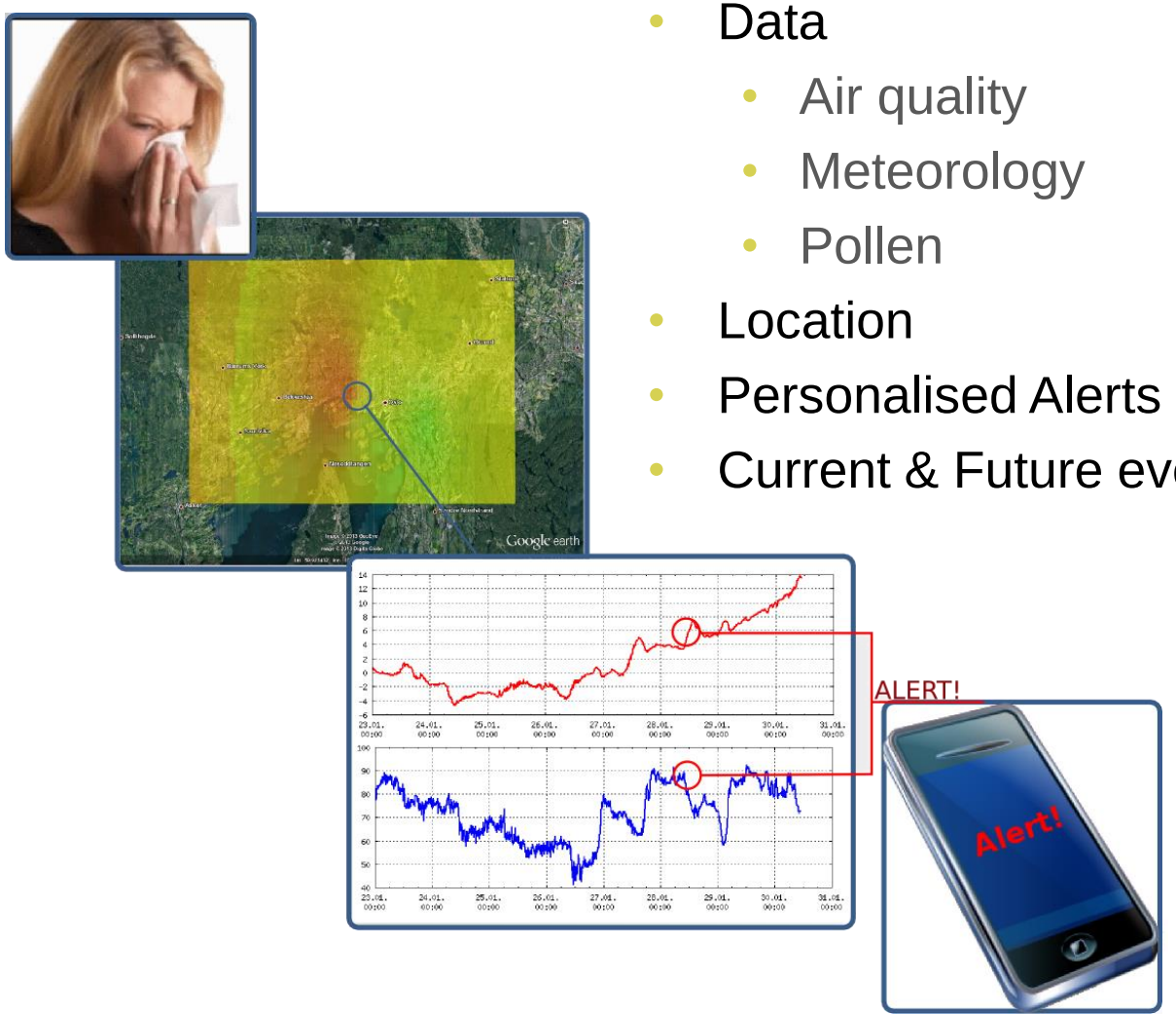
http://www.envirofi.eu

Atmospheric condition

- Everyone breathes
- Each person is different
  - Pollen Sensitivity
  - Asthma
- Current atmospheric information is generic

Personal Environmental Information System

PEIS:
Personal Environmental Information System



- Data
  - Air quality
  - Meteorology
  - Pollen
- Location
- Personalised Alerts
- Current & Future events

Models

- Are used extensively
  - Predict future trends
  - Fill in blanks between measurement stations
- Are generally
  - written by domain experts
  - written in Matlab, R or Fortran
- Require specific inputs and parameters
- Have unpredictable run times
- Do not nicely fit in a Service Oriented Architecture

The Web runs on Services

- Meteorological data
- Air quality data
- Pollen data
- Maps
- User authentication
- Notifications

- Model invocations & results?

OGC Standards

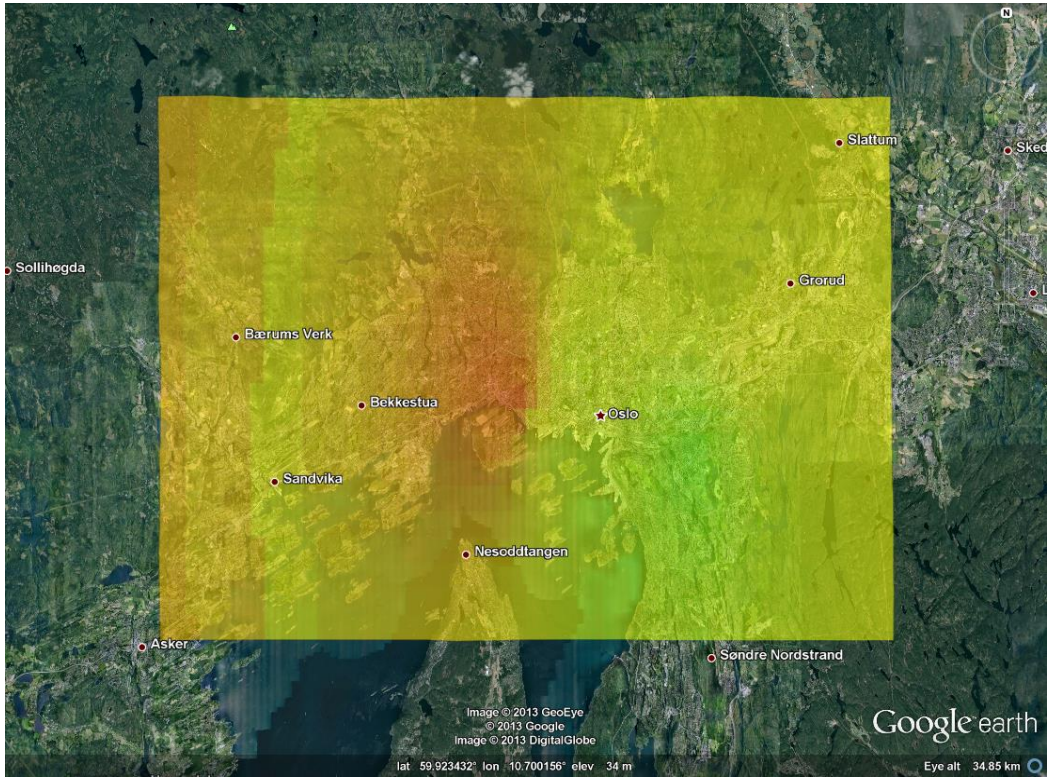
- SOS: Sensor Observation Service
  - Gives access to sensor data
- SPS: Sensor Processing Service
  - Gives access to procedures (sensors)
- WMS: Web Map Service
  - Gives access to maps

Fusion4Decision

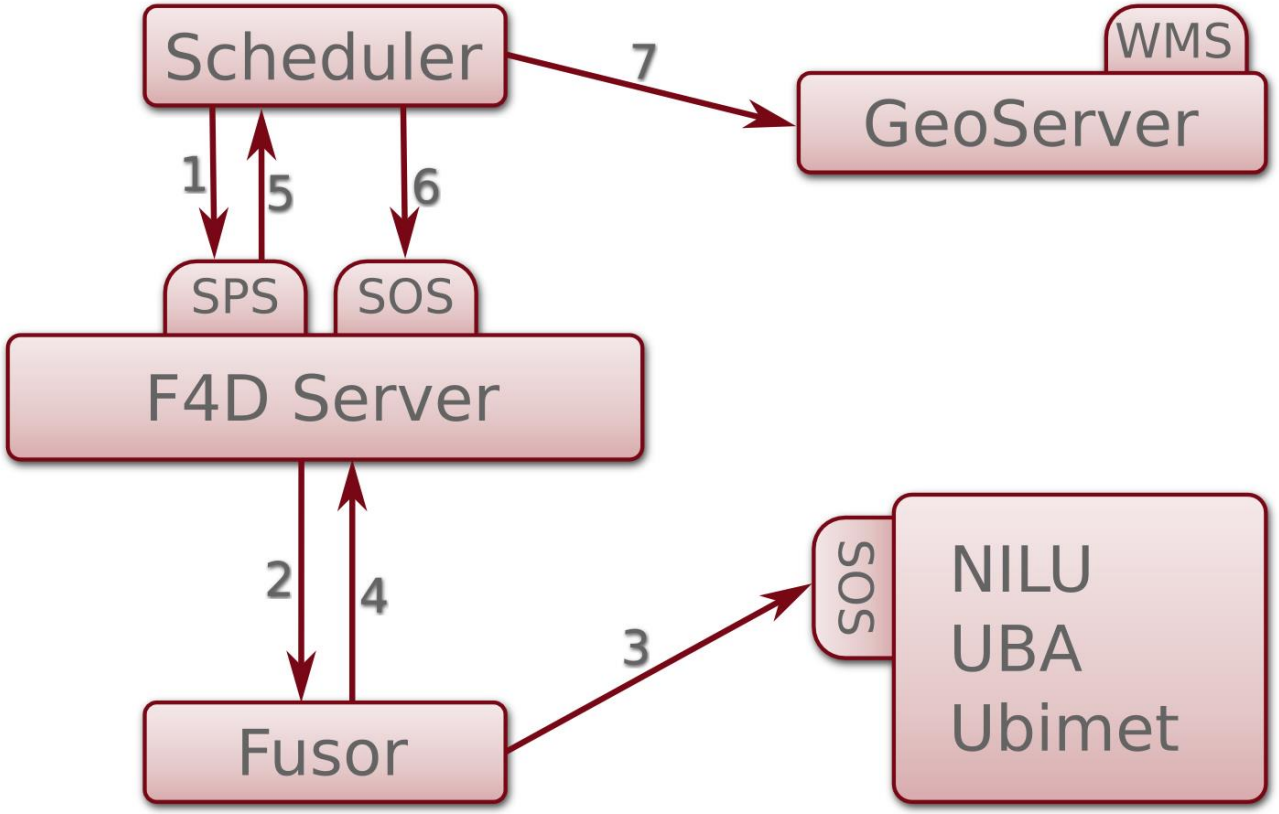
- Treats a model as a sensor
- Makes models available through SPS
  - DescribeTasking
  - GetFeasibility
  - Submit
  - GetStatus
  - Cancel
- Makes model results available through SOS

Fusion4Decision in PEIS Prototype

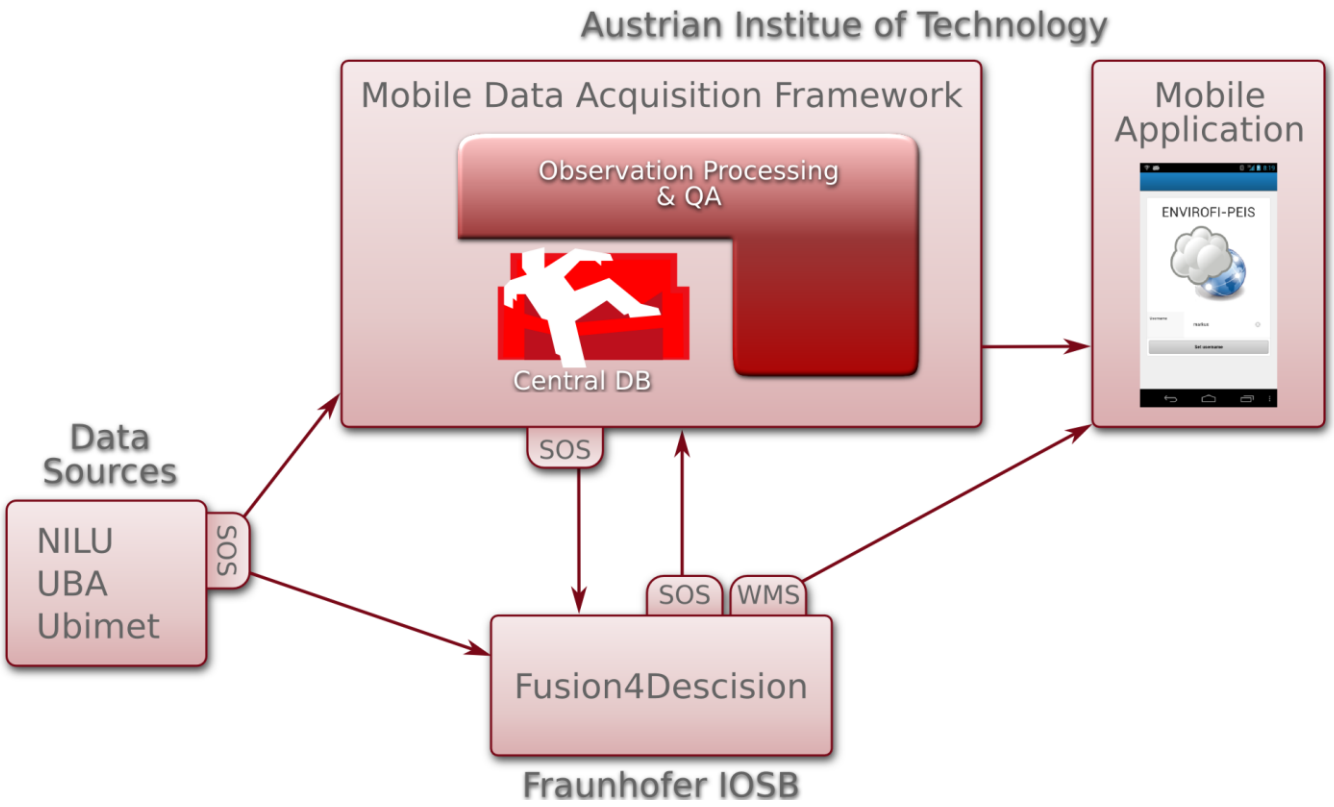
- Download sensor data measured at sensor stations
- Calculate map overlay using Bayesian Maximum Entropy
- Make the map available in a WMS



Fusion4Decision in PEIS Prototype



PEIS Prototype Architecture



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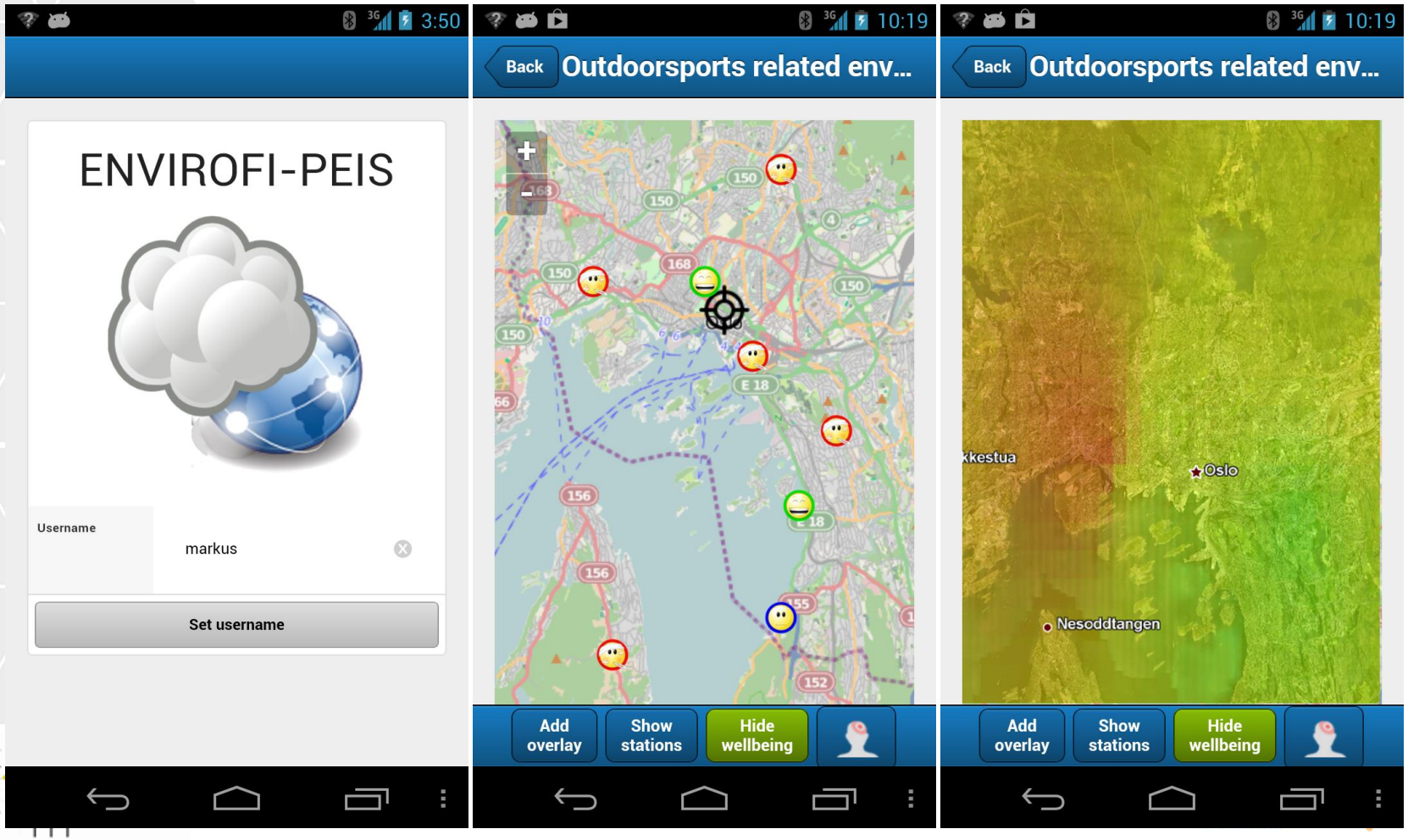

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Thank you for your attention

Hylke van der Schaaf
Hylke.vanderschaaf@iosb.fraunhofer.de
www.envirofi.eu

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