“ENVIROfying” the Future Internet

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

Data fusion in the environmental domain

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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

- F4D Server
  - SPS
  - SOS
  - Fusor

- Scheduler
  - 1
  - 5
  - 6

- GeoServer
  - 7

- WMS

- NILU
- UBA
- Ubimet

1. 
2. 
3. 
4. 
5. 
6. 
7. 
PEIS Prototype Architecture
PEIS: Personal Environmental Information System
Thank you for your attention

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