Environmental Application Scenarios for the Future Internet

ENVIR⊕FI

"ENVIROfying" the Future Internet

EGU 2011, ESSI13/GI-17

"Open standards and distributed architectures for the Observation Web: from the sensors to the user"

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What is Future Internet Public-Private-Partnership?

- FI-PPP is a major FP7 Initiative for development of the Future Internet Infrastructure and Applications
  - Topics of great economic or societal interest, such as Traffic, Environment, Health, Smart cities, etc.
  - Development of „enablers": web-centric software and hardware infrastructure simplifying the development of FI applications
- 3 FI-PPP Calls in FP7, FP8; Call 1 project starting this week:
  - 8 Thematic IPs, each with 2Y duration provide requirements on FI – core technology and early prototypes of "specific enablers" for their domains.
  - Core IP with 5y duration, develops the core technology ("generic enablers")
  - Two more projects dedicated to cross-Project coordination

FI-PPP Programme: not "Business as Usual"!

FI-PPP is "in-situ experiment" of the EC

- „Euro 0.6 billion project"

Strong coordination & IPR sharing within the programme

- 2x6M€ for Coordination
- Joint FI-PPP Boards
  & „Coordination Agreement"
- Joint review for all projects

„Pathfinder for FP8"

- Only 4 months from proposal
  to project start
- Industry- and Users- driven.

Thematic IP

Thematic P

Thematic IP

Requirements for core-IP;
specific enablers

How does EGU/ESSI fit in?

- **EGU/ESSI community** has expertise in standardization and use of web enabled Physical sensors (Sensor Web), Models and data fusion services (Model Web), and Volunteered Geographic Information (VGI, Human Sensors)

- **FI-core IP** brings in the expertise in internet technologies beyond the current Internet

- **Seven thematic FI-PPP IPs** represent various communities which could profit from both FI-core technology and the expertise we have

- **Eight thematic IP is "ENVIROFI"** represents the environmental informatics and geospatial community

sensor based

citizen based   model based

ICT in the
Environmental Usage Area
for the Future Internet
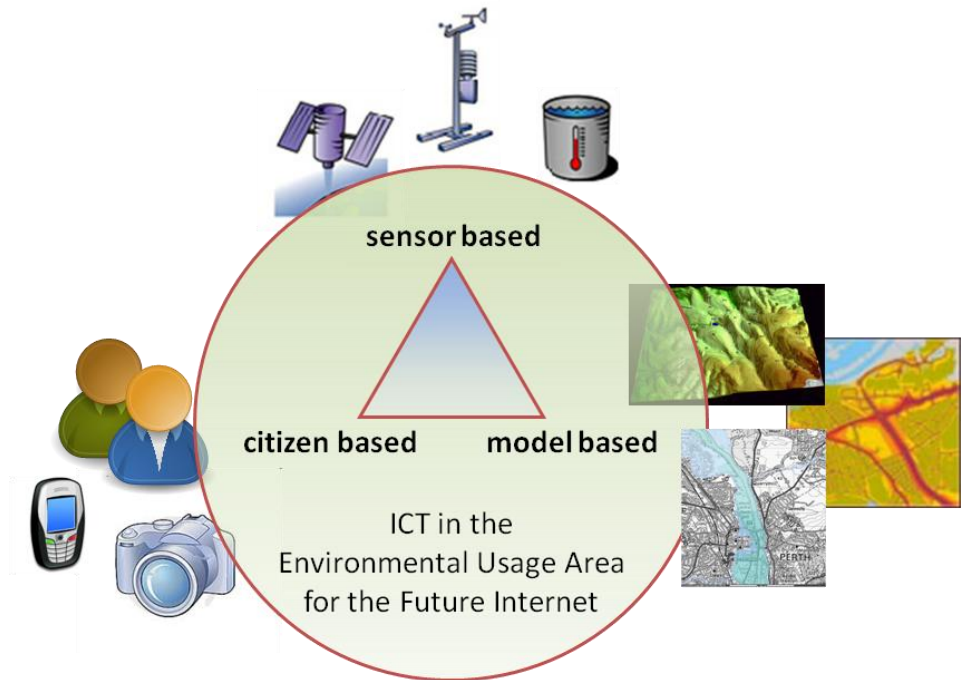
ENVIROFI Project Vision

- We envision…

- **a system with dynamic understanding of the Earth's atmospheric, marine and terrestrial spheres for the benefit of all European citizens**

Three ENVIROFI Scenarios

Bringing Biodiversity into the FI

- Enabled biodiversity surveys with advanced ontologies
- Analysis, quality assurance and dissemination of biodiversity data

Personal Information System for Air Pollutants, allergens and meteorological conditions

- Enhance human to environment interaction
- Atmospheric conditions and pollution in "the palm of your hand"

Collaborative Usage of Marine Data Assets

- Assess needs of key marine user communities
- Selection of representative marine use cases for further trial: leisure and tourism, ocean energy devices, aquaculture, oil spill alert

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ENVIROFI

ENVIROFI: Bridging the Communities

ENVIROFI shall act as a bridge between FI and "environmental usage area", to assure:

- "our" requirements are known at FI-PPP level
- "our" capabilities ("enablers") are known and interoperable with FI-core
- "our" systems can use the advanced FI-PPP capabilities

Expected impacts on FI-PPP:

- Environmental and geospatial enablers
  - Assure these are in-line with "our" standardization
- Links to key stakeholders in the environmental and geosciences domain
  - INSPIRE, GMES, … This includes EGU/ESSI community
- Standardisation impact for FI PPP results beyond IETF, W3C and OASIS:
  - ISO (ISO/TC211, ISO 19119 Service architecture, ISO RM/ODP), OGC (Open Geodata Consortium, OGC Reference Architecture) and OMG (Object Management group) SoaML

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ENVIROFI

… and more challenges…

- Matching the **EU's legal objectives** for reliable and timely discovery, quality, and delivery of environmental information
    - intelligent & context aware services
- Leveraging the innovative ideas through **individualized experimentations**
- Soliciting and **using the VGI** without compromising the **users privacy**
    - Privacy & trust may become a major concern in cross-domain applications

One advanced scenario example:

ENVIROfied holiday planer should propose some outdoor activities, if and only if:

- **The area and season are right**
  - There are no swallows in winter; no ice-skating in summer; we also don't want you to disturb rare animals during mating...
- **Predicted outdoors conditions are agreeable for *you***
  - We want you to enjoy outdoors activities, not to suffer from wind, rain, cold, pollen, ozone, PMx...
- **Other factors which may affect the decision...**
  - Expected traffic conditions, noise levels, water temperature, algal blooms, your health condition, availability of medical care personnel...

But: Sensitivity thresholds differ from person to person!

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  - See: Sensors 2011, 11, 3874-3907; doi:10.3390/s110403874
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Note: TM7 "Future Internet: Opportunities and Challenges for the Geo-sciences community" merged with TM3 „EGU and INSPIRE"

Please join us tomorrow evening (19:00–20:00, Room 4).
Informal discussion on FI and EGU/ESSI shall start from 18:30

Thank you for your attention

- www.envirofi.eu