

EU activities in the field of ICT for the environment



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Overview

- **European Policy Context (Climate Change)**
- **ICT for Sustainable Growth (Who we are)**
- **Community Programmes & Instruments**
- **ICT for Environmental Sustainability**
 - **Scope, Vision, Projects**
- **Conclusions (ICT for monitoring Climate Change)**





Policy context in Europe

Integrated climate and energy policy

Brussels European Council (8/9 March 2007)

- An **integrated climate and energy policy** is of vital importance
- EU leaders set **combined targets**:
 - Reduction of GHG emissions in the order of 20% by 2020 compared to 1990
 - 20% for renewable energy sources by 2020 compared to the present 6,5%
 - Saving 20 % of the EU's energy consumption compared to projections for 2020



Policy context in Europe

EC green paper on adapting to climate change

“Adapting to climate change in Europe Options for EU action” (COM(2007)354)

« *We need to fight the battle of climate change on **two fronts** »
(Environment Commissioner Stavros Dimas, June 2007)*

- To limit climate change by **reducing GHG emissions**
- To adapt to current and future climate change in order to **lessen the adverse impacts on people, the economy and the environment.**



ICT for Sustainable Growth Unit



ICT for SUSTAINABLE GROWTH

ICT for
Environmental
Management

ICT for
Disaster
and Risk
Management

ICT for
Energy
Efficiency

EU Sustainable Development Strategy & EU Lisbon Strategy

Research and technological development

Pilot deployment and policy support





Sustainable growth

A panoply of converging instruments

AN OVERALL STRATEGIC FRAMEWORK FOR COMMUNITY ACTION



- To devise and implement adequate European policies
- To support RTD on next generation of ICTs contributing to sustainable growth
- To raise awareness and deploy ICT-based solutions for environmental sustainability

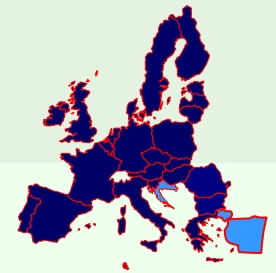
Domain of activity: ICT for Environmental Sustainability

- **Vision of ICT contributing to a cleaner, safer and healthier global environment**
- **Focus on unsustainable trends in Europe:**
 - Degraded environment
 - Exposure to diverse pollutants
 - Exposure to ever more frequent disasters
- **Targets a consolidated European capacity** of mastering, predicting and managing the environment and its resources, making use of ICT that interoperate in **a single information space for the environment in Europe**
- Urban environment earmarked as a possible priority test bed



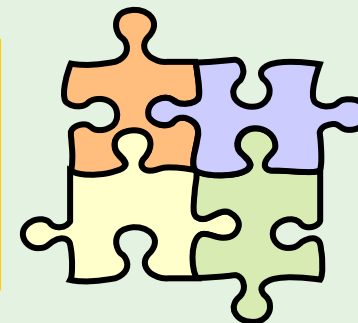
Expected impact

- Innovative applications and breakthrough ICT solutions in environmental monitoring and management
 - Towards an integrated information space in Europe



- World-best technological capability to respond adequately to major environmental threats

- To improve international cooperation in the development of interoperable ICT solutions



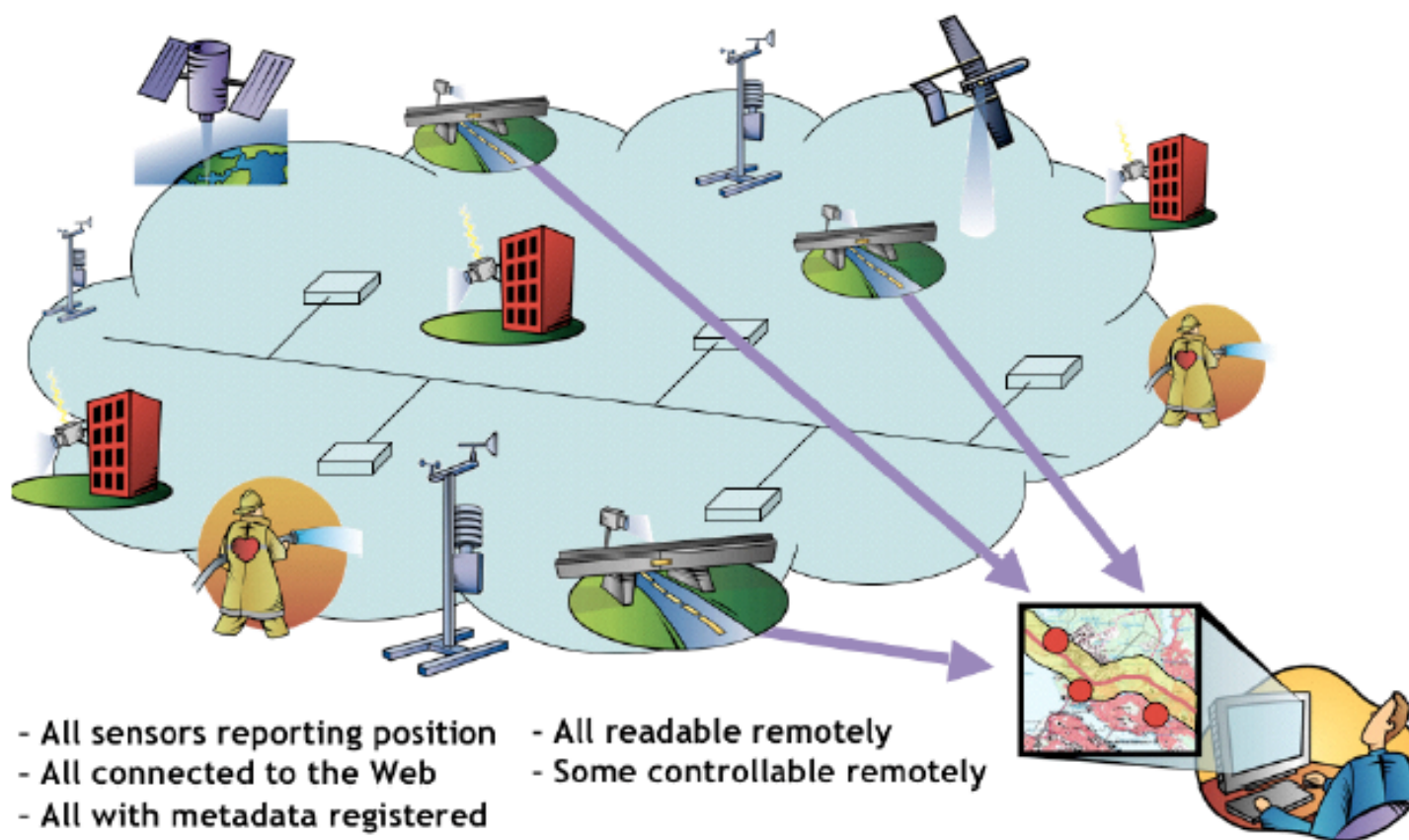
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ICT for Environmental Management

Strategy (1/3) – Smart Monitoring

Towards a dynamic management of heterogeneous sensor networks for full situation awareness

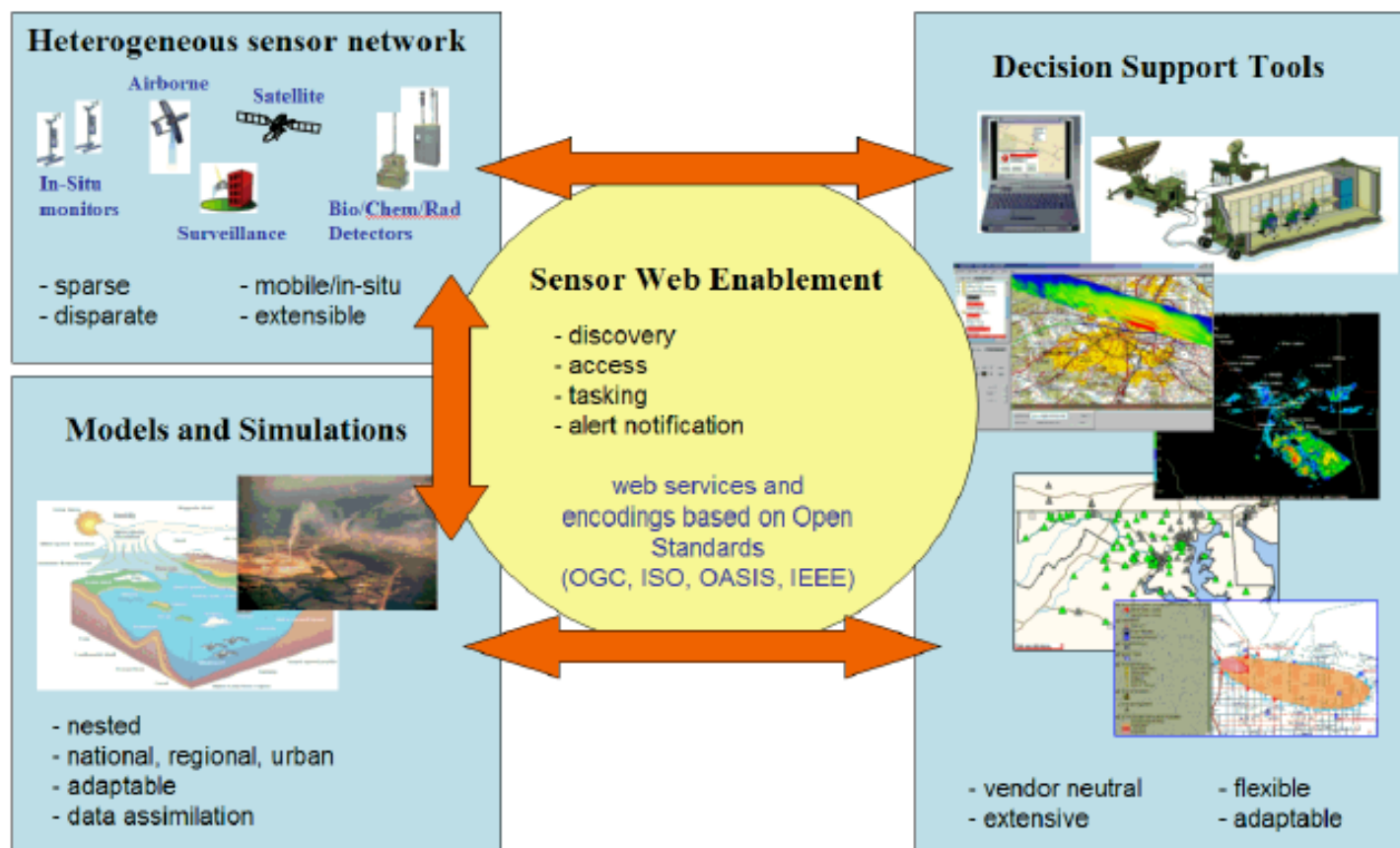


Sensor Web Concept (OpenGIS® White Paper)

ICT for Environmental Management Strategy (2/3) – Collaborative Information Systems

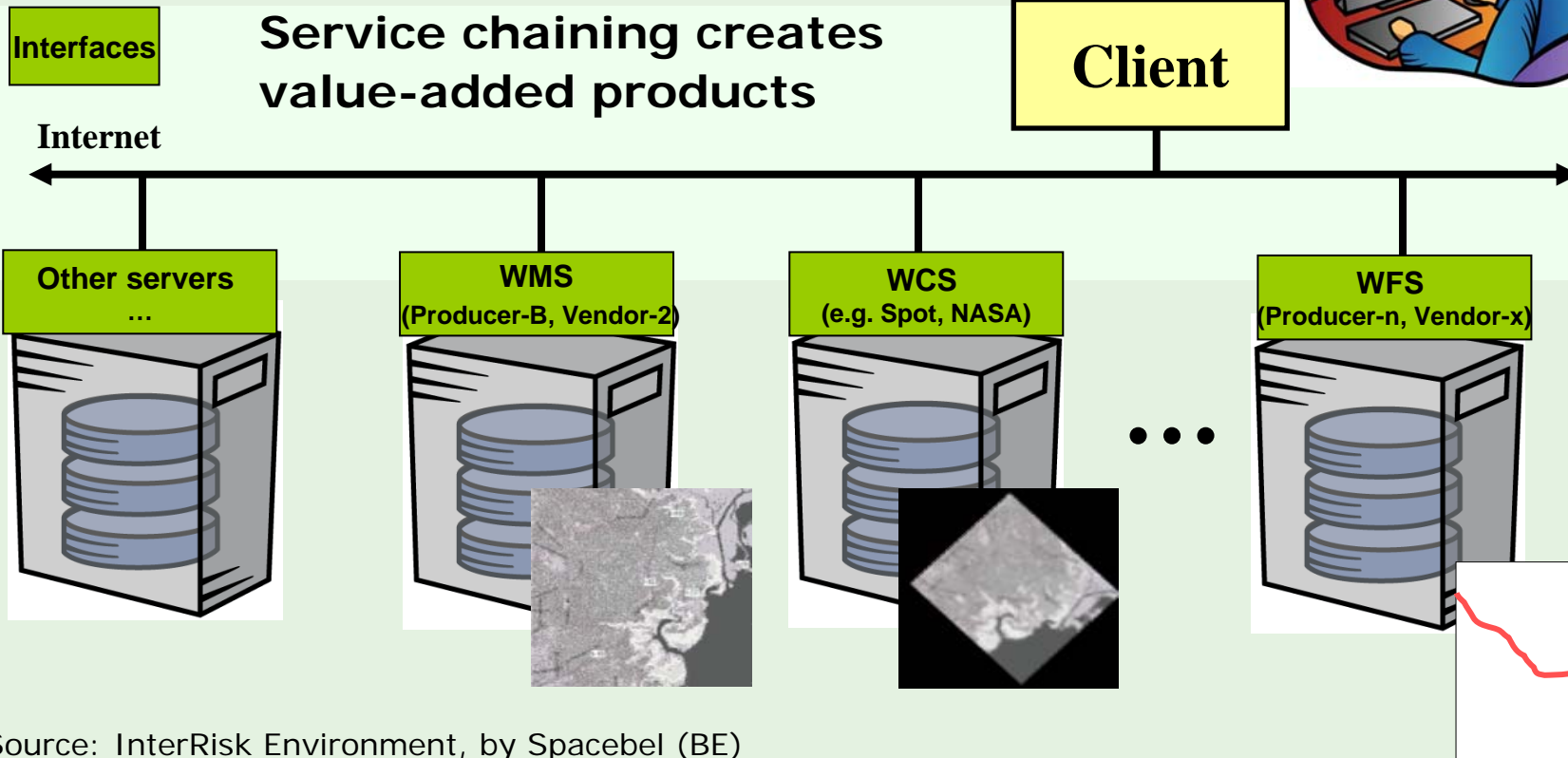
Towards dynamic data flows from monitoring to reporting, alert and response

The role of the Sensor Web Enablement framework (OpenGIS® White Paper, M. Botts, 2004)



ICT for Environmental Management Strategy (3/3) – Dynamic Chaining of Services

Towards on-demand access to
and chaining of services on the Web



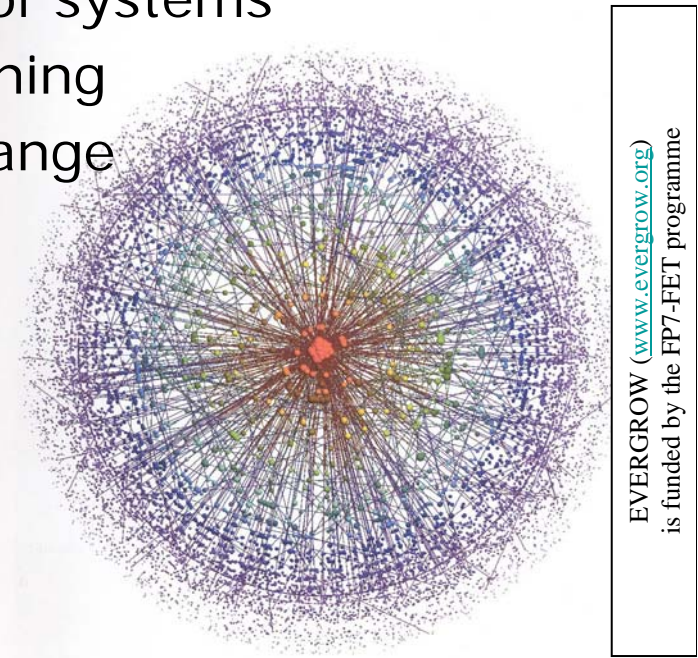
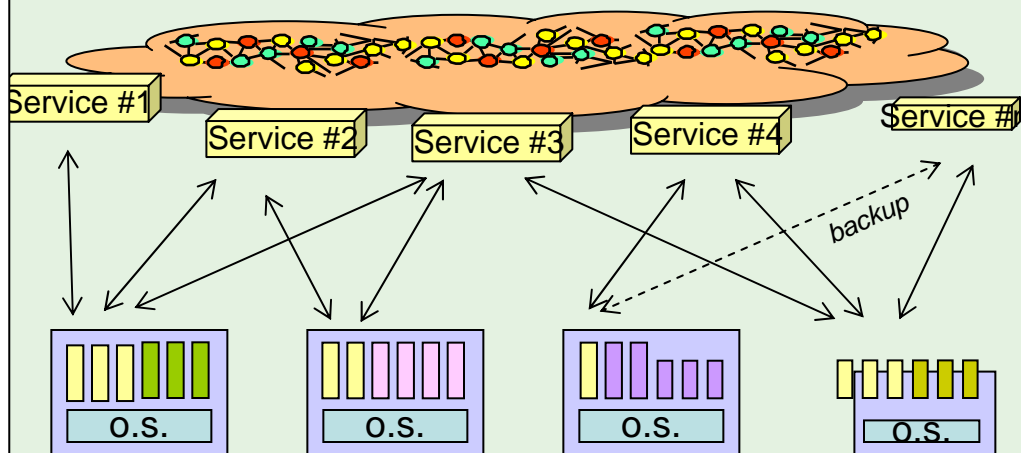
Source: InterRisk Environment, by Spacebel (BE)

SISE vision: ICT research and deployment to build a Single Information Space in Europe for the Environment

Tools and systems enabling a collaborative "Information Space" on the Web

- Where users plug in their own use cases
- Requires a transparent backend system of systems
- Allowing ad hoc, on demand service chaining
More than measurements and data exchange

ORCHESTRA (www.eu-orchestra.org) is funded by the FP7-ICT programme



Map of the Internet at coarse grained level (courtesy Yuval Shavitt & Eran Shir)

EVERGROW (www.evergrow.org) is funded by the FP7-FET programme

ICT activities for Disaster Management

Prevention and Mitigation

- Hazard prediction and modeling
- Risk assessment and mapping
- Spatial Planning
- Structural & non structural measures
- Public Awareness & Education..

Preparedness

- Scenarios development
- Emergency Planning
- Training



Disasters



Alert

- Real time monitoring & forecasting
- Early warning
- Secure & dependable telecom
- Scenario identification
- all media alarm

Post Disaster

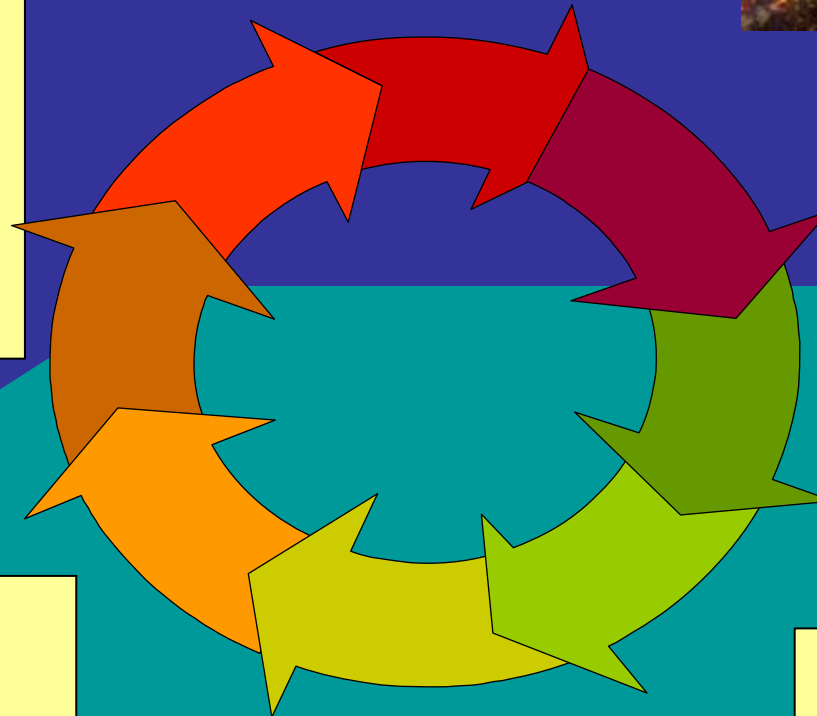
- Lessons learnt
- Scenario update
- Socio-economic and environmental impact assessment
- Spatial (re)planning

Recovery

- Early damage assessment
- Re-establishing life-lines transport & communication infrastructure

Response

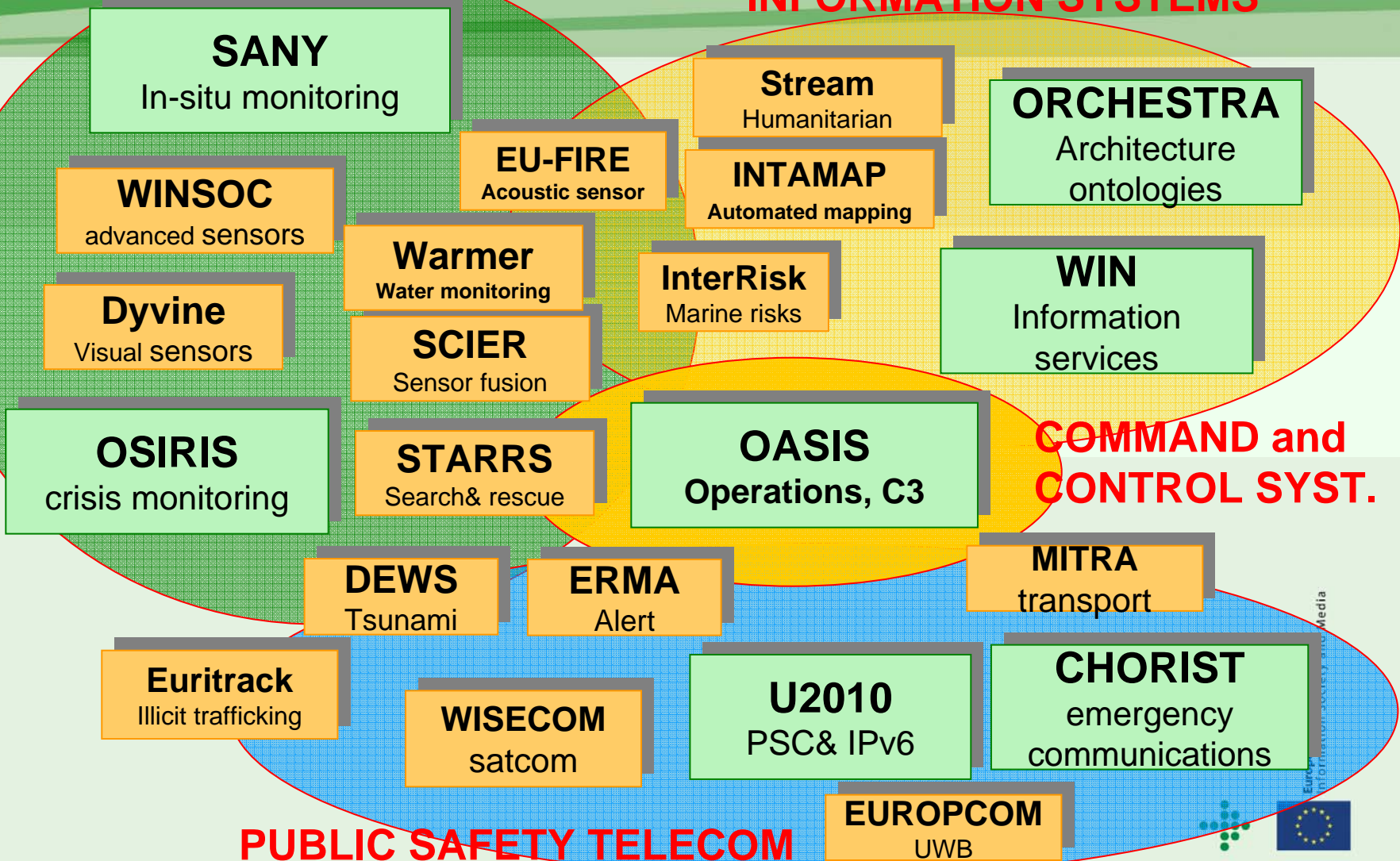
- Dispatching of resources
- Emergency telecom
- Situational awareness
- Command control coordination
- Information dissemination
- Emergency healthcare



Recent/ongoing projects

SMART MONITORING SYSTEMS

INFORMATION SYSTEMS



PUBLIC SAFETY TELECOM

COMMAND and CONTROL SYST.

Recent/ongoing projects

Public safety communication

- Integration of early warning and all media alert systems (**CHORIST**)
- Location based services
 - GSM, UMTS for search and rescue, TETRA TETRAPOL for rescue team safety (**STARRS**)
 - Ultrawide band com for indoor positioning (**EUPOPCOM**)
- Rapidly deployable communication systems for crisis management
 - Satcom + WiMax, Tetra, UMTS (**WISECOM, CHORIST**)
- Making best use of existing infrastructures
 - IPv6 federating network (**U2010**)
- Public Safety Communication Forum (**NARTUS**)

Smart monitoring systems

- Advance self organising networks (**WINSOC**)
- General architecture SensorWeb (**SANY**)
- Integration in-situ, UAV, HAP, mobile sensors (**OSIRIS**)
- Application specific
 - Forest fire (**DYVINE**)
 - Water pollution (**WARMER**)

Information systems

- Reference model architecture, ontologies, semantic web approach (**ORCHESTRA**)
- Cooperation services, EO support multi-linguality, workflow (**WIN**)
- Command & control (**OASIS**)
- Marine services (**InterRisk**)

Facilitating technical interoperability amongst other major environmental initiatives

- **INSPIRE**

EC Directive establishing an infrastructure for spatial information in the Community



- **GMES**

EC-ESA initiative for the Global Monitoring of the Environment and Security



Global
Monitoring for
Environment and
Security

- **GEO**

Intergovernmental partnership of 70+ Nations to build GEOSS, the Global Earth Observation System of Systems

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In conclusion Monitoring climate change...

ICT!

... needs to exploit
trends towards cheaper and higher
computing power and data storage



In conclusion Monitoring climate change...

ICT!

... needs to exploit

the advent of Web services

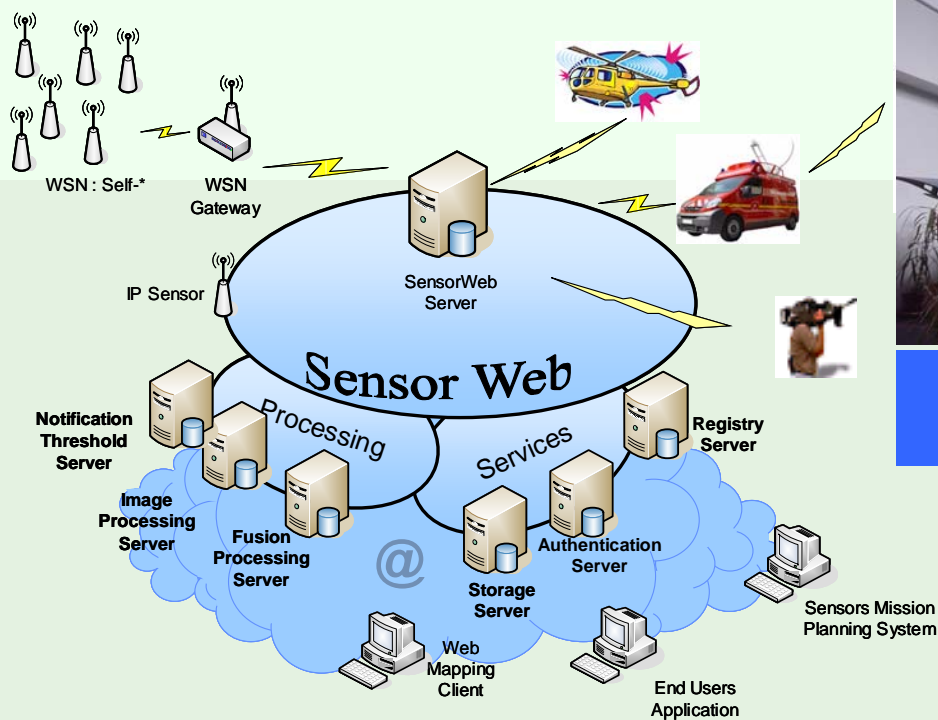


In conclusion: Mitigating impact of climate change...

ICT!

... will also require to address
the real-time challenge

e.g. OSIRIS project (FP6 IP)
2006-2009



Mercator-1 prototype : ~16 m wingspan, ~2 kg payload (VITO)

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Further Information & Contact

- **CDRom** (on demand)
- **Research on ICT for the Environment**
<http://cordis.europa.eu/ist/environment/projects.htm>
- **ICT2008 conference**, Lyon (FR), 25-27/11/2008
 - Sustainability sessions I & II will address ICT for climate change mitigation/adaptation
- **DG INFSO Unit "ICT for Sustainable Growth"**
Email: INFSO-ICTforSG@ec.europa.eu
<http://ec.europa.eu/ictforsg>



Thank you
for your attention



ONLY ONE EARTH

**Don't
waste it!**

