



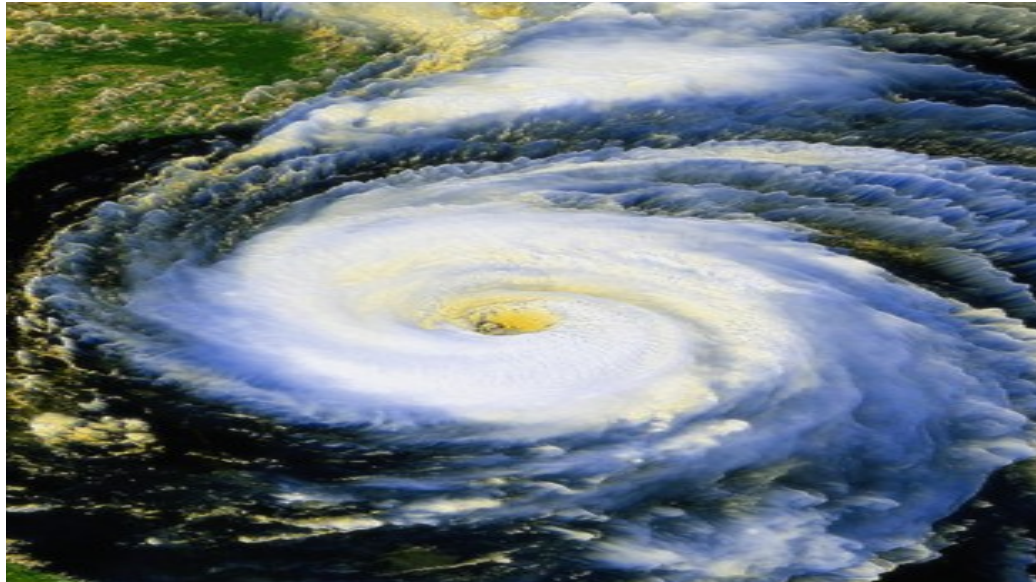
Information Society



European Commission

IPv6 for Disaster risk management for Sustainable growth strategy

Dakkar October 2006



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ICT for the Environment'



General Goal:

To develop a **EU Network Enabled Capability** to support disaster risk management and humanitarian crisis

- Access to information full Geo-Spatial data interoperability
- Effective monitoring ubiquitous sensor systems
- Effective early warning and alert all hazards all media alert systems,
- Effective response shared operational picture and situational awareness between first responders
- Full availability of broadband communications and positioning systems





Our Strategic approach

- **To focus on system architecture rather than specific applications (standards based open architecture)**
- **To support large scale pilot test with end-users**
- **To foster pre-standardisation activities as an integral part of RTD**
- **To promote open source as a mean to improve the uptake of RTD results**
- **To contribute to the relevant EU policies and actions: INSPIRE, GMES, GEOSS, Civil Protection**
- **To cover the whole disaster management cycle**





To cover the whole DM cycle

Why?

- **Successful warning systems depends on the quality of the emergency management chain**
 - Reliable detection of the threat
 - Reliable processing of information
 - Protocol to determine when and how a warning should be issued
 - Effectiveness of the warning system
 - How many people will be reached?
- **But also on a number of non technical issues**
 - Is there an emergency plan?
 - Will they take the expected actions?





the disaster management cycle

Prevention and Mitigation

- Hazard prediction and modeling
- Vulnerability management
- Systemic multi-risk approach
- Building resilient communities..

Preparedness

- Scenarios development
- Emergency Planning maps
- Training

Alert

- Real time monitoring & forecasting
- Early warning
- Public warning
- Scenario identification

Post Disaster

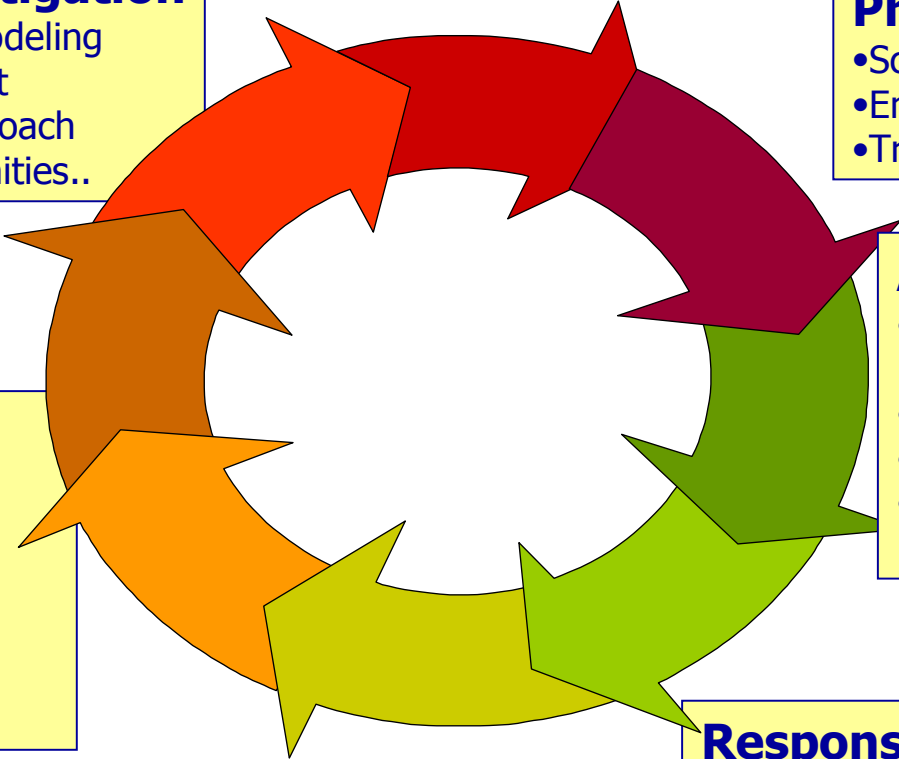
- Lessons learnt
- Scenario update
- Socio-economic and environmental impact assessment
- Spatial re-planning

Recovery

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

Response

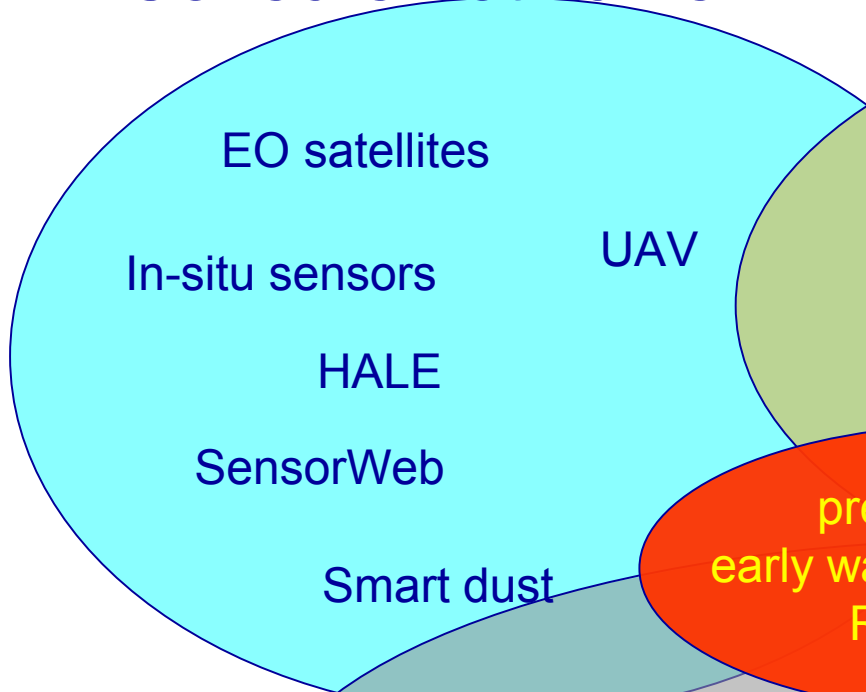
- Emergency telecommunication
- Command control coordination
- Situational awareness, crisis maps
- Information communication
- Dispatching of resources....



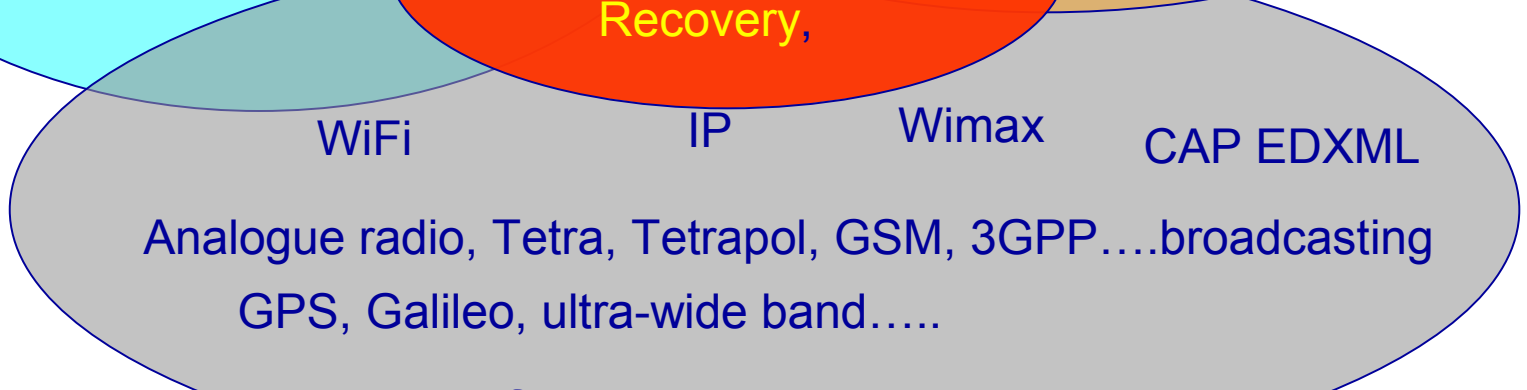
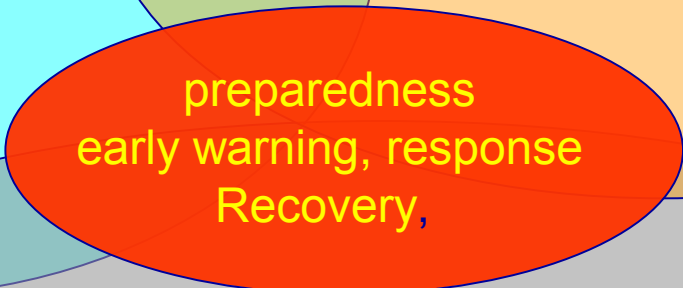
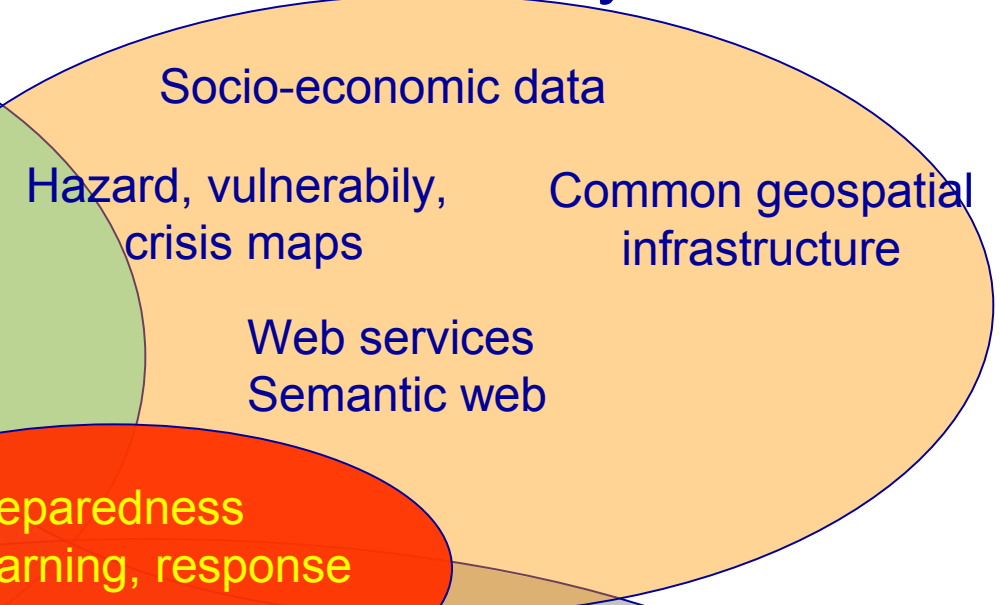


ICT for Disaster Risk Reduction

Sensors networks



Information systems



Public safety telecommunications

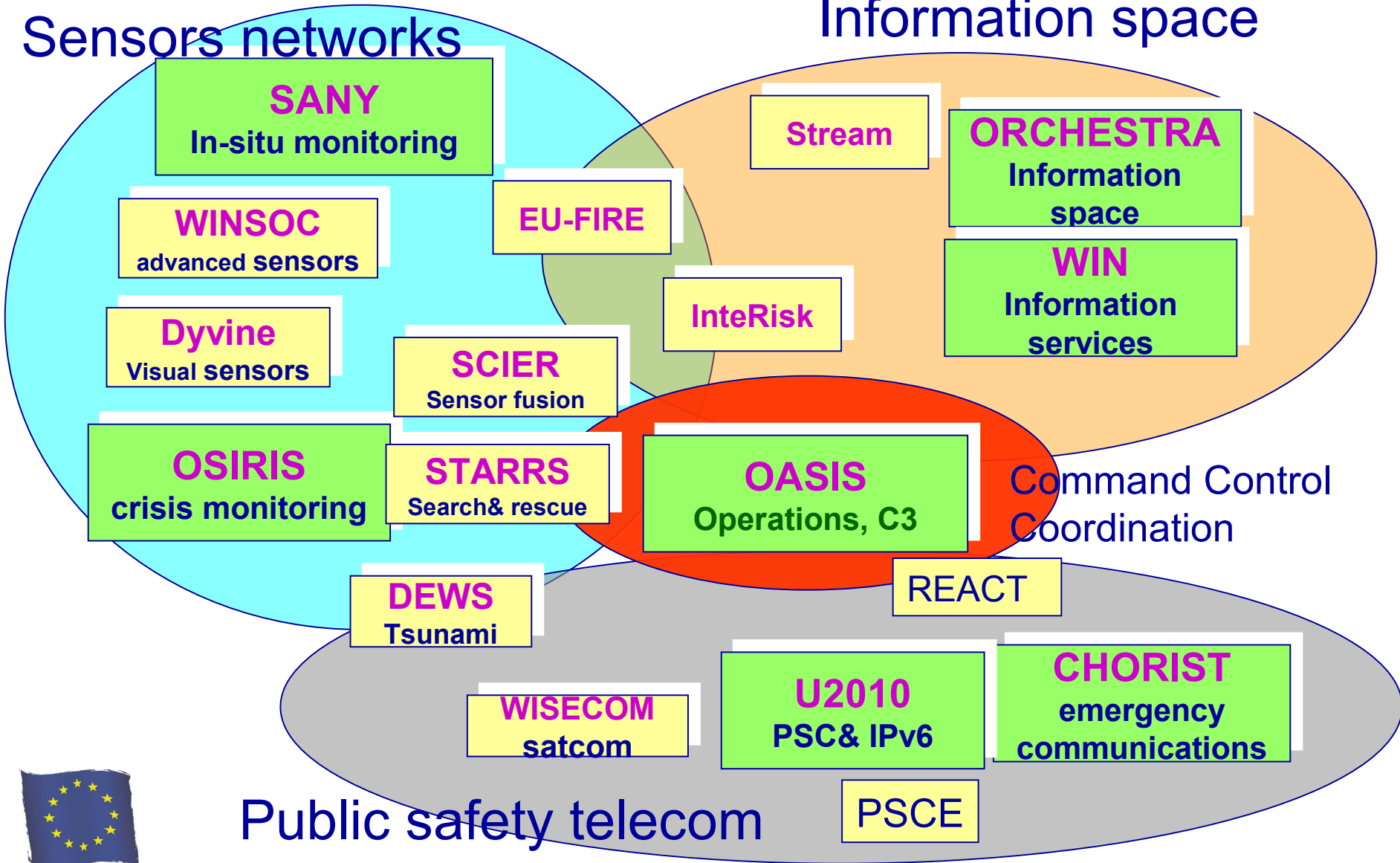




Disaster risk reduction projects

Sensors networks

Information space





Critical requirements

Emergency responders often have difficulty exchanging voice and data communications when adjacent emergency response agencies are assigned to different radio bands, use incompatible proprietary systems and infrastructure, and lack adequate standard operating procedures and effective multi-jurisdictional, multi-disciplinary governance structures.

Effective communications can mean the difference between life and death.





Critical requirements

Critical data distribution raises a number of key infrastructure design challenges

- Survivability of the infrastructure when needed most
- Protection of the alert distribution infrastructure from attacks
- Networks with high scalability and service availability
- Pervasive security and cryptographic capabilities
- Need for common protocols such as CAP, CRP





Critical requirements

- Early warning and alert
 - **Reach everyone at risk, wherever, whenever, doing whatever**
 - **Don't raise irrelevant alarms Easy to use**
 - **Reliable and secure Delivery of *effective warning messages***
 - No single system or technology can ever solve the public warning problem alone:
 - Limits of reliability
 - Limits of reach
 - Need for *corroboration*
 - Best mix: internet + GSM cell broadcasting + broadcasting





- **Three main group of future activities**
 1. Collaborate and Plan
 2. Sense and Share
 3. Command and Communicate





1- Collaborate and plan

- **System of systems approach**
 - Dynamic sharing, collaboration and planning
 - Towards the « Single Information Space for the Environment in Europe»
 - Cross-sector integration of standards
- **Based on emerging technologies**
 - Semantic web
 - Grid, secured gateways, single sign-on, IPv6, QoS etc.
- **Prototype and take-up of 'state of the art'**





2- Sense and share

- **Network centric capability able to sense in real time, interpret and share knowledge**

- **Operationally immature technologies**

- Real-time sensing, simulation, interpretation & decision
 - Specific to each disaster type
 - The citizen as a intelligent moving sensor (112)
- System capability: Scalability, mobility, security
- Continue current work on SensorWeb, intelligent self-healing sensor networks,
- Research supported by ICT for the environment and the security programme





3- Command and Communicate

Example of work in progress

- **interface between emergency agencies for exchanging information during the operations** (Tactical Situation Object)
 - Based on NATO experience in multi lingual operations and based on a rich and expandable dictionary
 - **Identification information:**
 - the identifier, the originator of the information and the date of creation of the TSO
 - **Description of the event:**
 - type of the event, its extent, the number of casualties, the consequences on the environment, its criticality
 - **Description of the resources:**
 - which resources are already used, which resources are available
 - **Description of the missions:**
 - the tasks which are on-going, their status, the teams and resources which are engaged for them, their planning
 - **CAP and TSO are complementary, both can be used for the event description, a mapping between TSO and CAP 1.0 is proposed**
 - TSO is based on a common data dictionary which enhance its capabilities to handle multi-lingual exchange. Cooperation with OASIS will take place





Conclusion

- **Legacy systems prevent a rapid uptake of more cost-effective systems**
- **IP will help solving most interoperability problem**
- **The convergence process (quadruple play: fixe, mobile, broadband IP, broadcasting) combined with the upcoming mobile IP will make an all IP solution feasible.**
- **We are looking for partners outside EU for environmental protection and disaster risks projects**





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