Methodologies and best practices for the participation of the stakeholders involved in flood risk prevention,
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The stakeholders involvement in the hydro-geological risk prevention activities: rules and methodologies

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Presentation will include:

1. Natural disasters induced by climate change
2. World wide stakeholders in disaster management (UN and EC)
3. Regional stakeholders
4. National/local stakeholders

All levels rules and methodologies for disasters prevention

5. Conclusions

1. Climate change threats :

1. It is necessary to make a start on adapting to climate changes. The principal features of the climate scenarios, despite uncertainties, are sufficiently robust to be used as a basis.
2. The risk of floods, landslides and erosion in many areas is increasing to such an extent that stronger initiatives for preventive measures are justified. A government climate adaptation appropriation should be established in support of large scale costly initiatives and of regional-continental plan of measures.
3. The warmer climate will affect health and lead to more deaths due to heat waves and increased spread of infection.
4. The rate of forest growth will increase sharply. There is, however, a need for adaptation measures to minimize damage and preserve biodiversity.
5. There is a risk of dramatic changes in ecosystems (including Mediterranean and the Baltic Sea). Climate change will exacerbate the present-day situation, and efforts to reduce emissions should be intensified.
6. There will be an adverse impact on water quality in lakes and watercourses, which will make efforts to maintain good drinking-water quality necessary.

Reduction of the climate change impact

- The reduction – avoidance and limitation– of unacceptable climate impacts on individuals and societies can be achieved by:
  - reducing the hazards associated with climatic change (‘climate hazards’) and
  - lowering the vulnerability of the individuals and societies in question.

2. World wide stakeholders involved in disasters prevention

- Since the adoption of the UN Framework Convention for Climate Change (FCCC) in 1992, the issue of reducing potential climate hazards through emission mitigation has figured prominently in the multilateral negotiations, culminating in the Kyoto Protocol and its operationalisation in the Marrakech Accords.
- the UN General Assembly gave its support to an emerging consensus in disaster management that is ‘measures designed to avoid (prevention) or limit (disaster impact mitigation and preparedness) the adverse impact of natural hazards’ by creating an International Strategy for Disaster Reduction
- WMO plays a key role in data and methods exchange

International Strategy for Disaster Reduction :

- The international and countries administrative boards should be given a key role in climate adaptation efforts. A special climate adaptation panel should be established at each regional/county administrative board, to provide enhanced support for the municipalities in particular.
- **Disaster response should be enhanced, as a result of extremes events will hit regions**

UN-OCHA

- Making more effective the collective efforts of the international community, in particular the United Nations system, in providing humanitarian assistance was appointed a Disaster Relief Co-ordinator at the Under-Secretary-General (USG) level ‘to mobilize, direct and co-ordinate the relief activities of the various organizations of the United Nations system.
- In 1998, the General Assembly created the Office for the Coordination of Humanitarian Affairs’ (OCHA) caring out the institutional reform programme, a complementary reform of the piece-meal voluntary funding mechanisms and the concomitant co-ordination between governments and aid agencies.

UN – EU collaboration

- the EU humanitarian aid and civil protection assistance provided to third countries should always be needs-based and in accordance with fundamental humanitarian principles of humanity, neutrality, impartiality and independence, in line with the MCDA6 and Oslo guidelines7 and consistent with existing **international response mechanisms**, with the United Nations, and in particular UN OCHA, in the central and overall coordinating role

EU Civil Protection Mechanism

- establishment in 2007 of an improved civil protection legal framework, which includes the **Civil Protection Financial Instrument** and the **Community Civil Protection Mechanism**, and the joint statement in 2007 on the **European Consensus on Humanitarian Aid** form the basis for Disaster Response Mechanism at the EU level
- 16 June 2008, Luxembourg - Council of the European Union 2878th GENERAL AFFAIRS Council meeting Conclusions on **Reinforcing the Union's Disaster Response Capacity** - towards an integrated approach to managing disasters and the use of the whole range of relevant instruments of the European Union - a balanced approach **guided by two principles**: national responsibility, whereby each Member State takes appropriate preventive and operational measures for the protection and safety of people, the environment and property, and EU solidarity, which is the basis for the provision of assistance rendered on request to Member States and third countries and their people, when affected by a disaster that exceeds their response capacity.

EC-MS mechanism for risk reduction

- **at the national level** by establishing links between international early warning systems such as the Global Disaster Alert and Coordination system (GDACS) and national disaster management agencies, with the aim of speeding up decision-making and factoring early warning systems into contingency planning and public awareness, education and training programmes.
- by ensuring the participation of disaster-prone countries and responding countries in **international response networks** such as UN Disaster Assessment and Coordination team (UNDAC), the International Search and Rescue Advisory Group (INSARAG) and the Environmental Emergencies network.
- Enhancing national skills and developing national standards in this way reduces overall risk.

3. Regional Level - Danube Basin – main stakeholders involved in disaster prevention

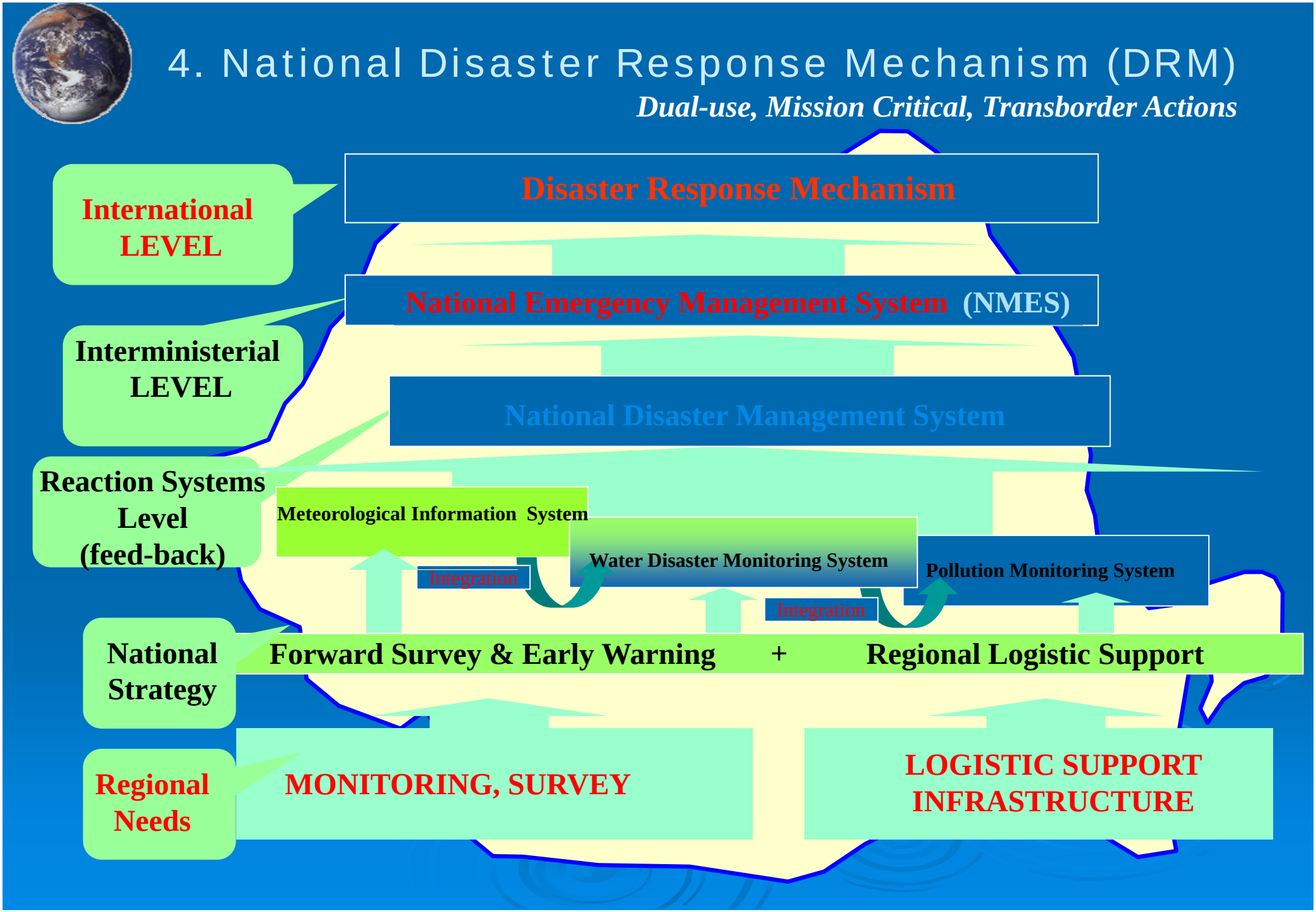
- A special challenge is posed to flood management and disaster reduction and response in **shared river basins - regional cooperation is needed**.
- Sharing data and information related to hydro-meteorological data, weather forecasts (**European Centre of WMO**), hydrological forecasts (**JRC-EFAS**), reservoir operation as well as major changes in land use (**GMES** mission) and water use management (**ICPDR and national water services**) are important steps to improving flood disaster reduction and response of riparian countries in shared river basins.
- Consideration should also be given to regional training programs (universities) and disaster assistance (EMS).

Disaster Response Mechanism:

- In order to plan Response Mechanism for regions and countries, the lessons learnt from past experiences were taken into account, identifying the common element of response.
- DRM has a multi-hazard approach and incorporates the 'Culture of Quick Response'.
- Acting based a trigger mechanisms that identify the sequence of events after a disaster and the L concept that identifies four levels of response, namely L0, L1, L2, L3
  - maintain close monitoring of L2 as well as L1 disasters that have occurred all over the world;
  - plays a supportive role to State governments for L3 level of disasters by the Natural Disaster Rapid Response Mechanism.

4. National Disaster Response Mechanism (DRM)

Dual-use, Mission Critical, Transborder Actions



Coordination between agencies for emergency system organization

Emergency Committee

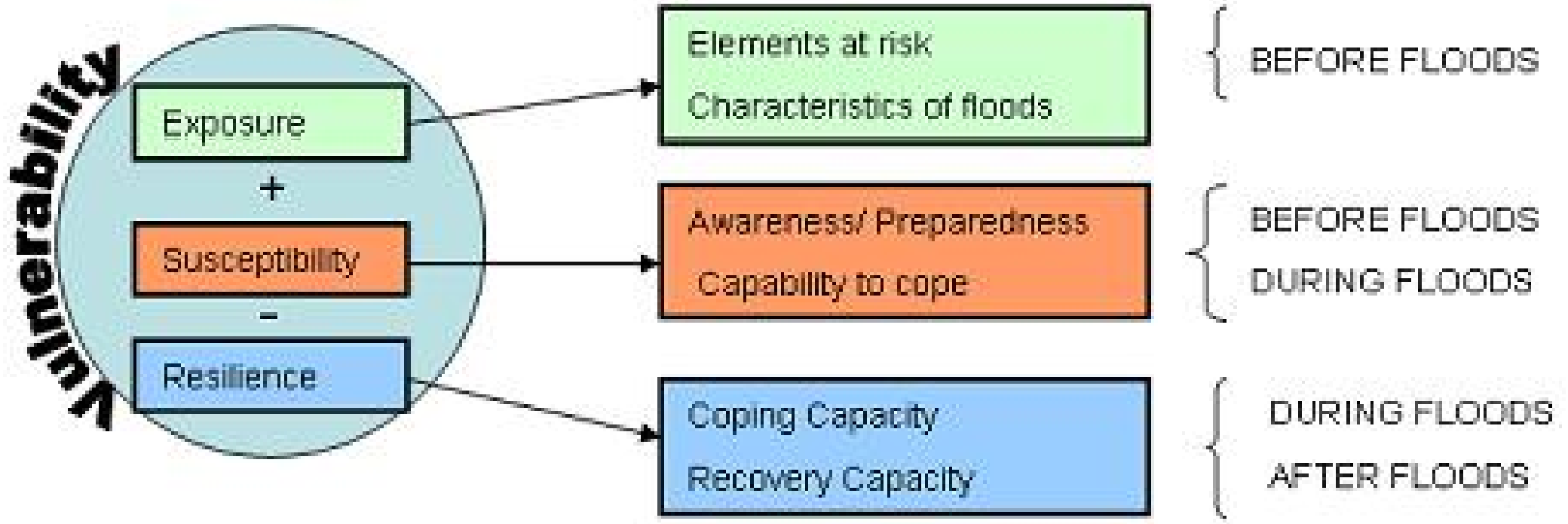
General Inspectorat for Emergency

Public emergency services and technical team for intervention

Action Commander

Operative centers for emergency

Increasing resilience for localities and population



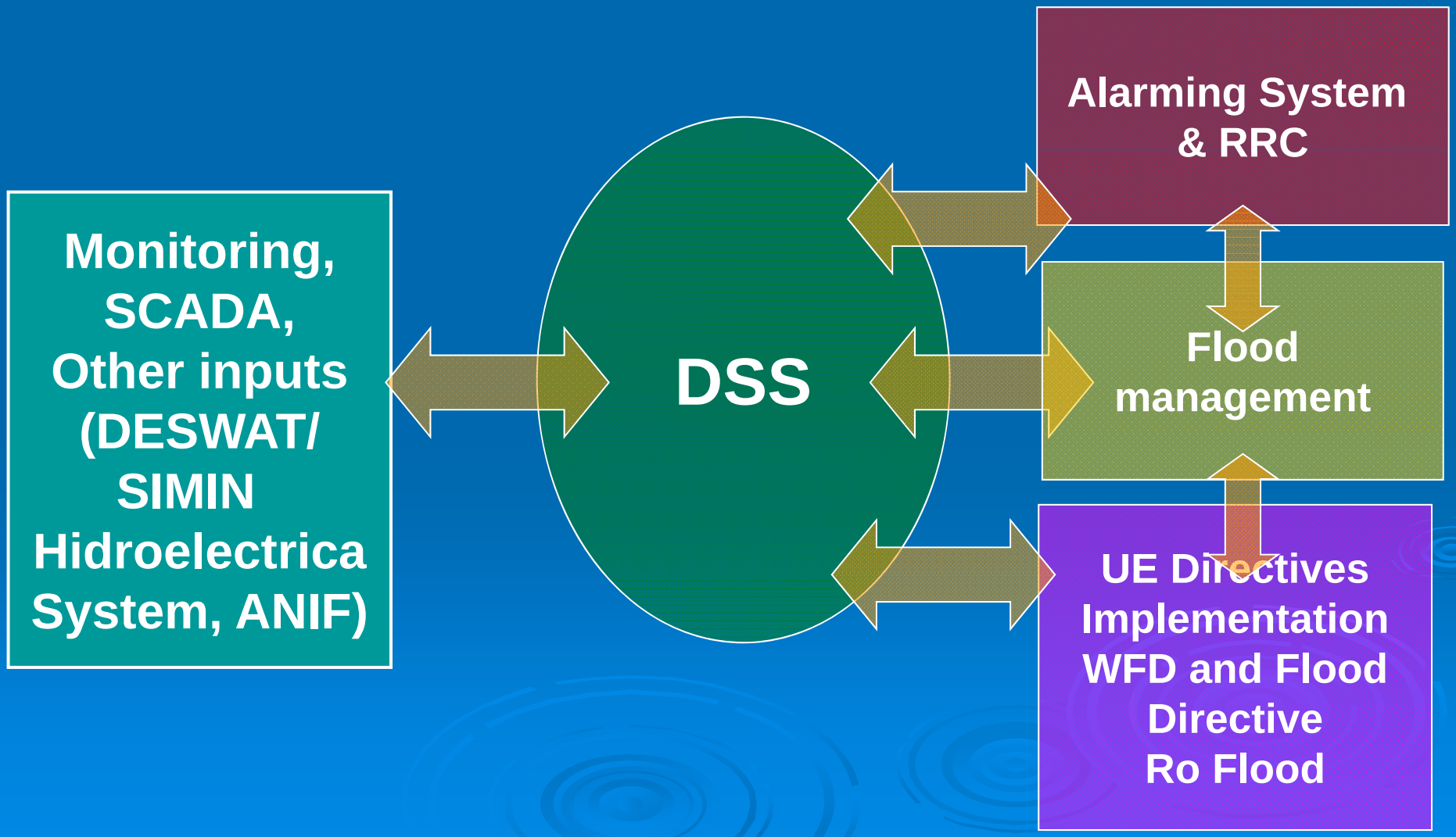
Expected results at local level:

- **Improves ability to respond to emergency situations (floods & spills)**
  - **Improving warning system**
  - **Improving dam management and maintenance**
  - **Optimizing flood control structures**
  - **Installing alarm system and sirens**
  - **Bringing adequate intervention and remedial equipment**
- **Increases efficiency of water allocation and use**
- **Improves environmental health and ecosystem integrity**

Strengthening of organizational structure of disaster management and reorienting existing organizational and administrative structures

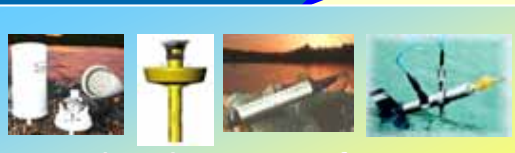
National Hydro-geological risk prevention

Warning system and alarming & action planning for flood prevention



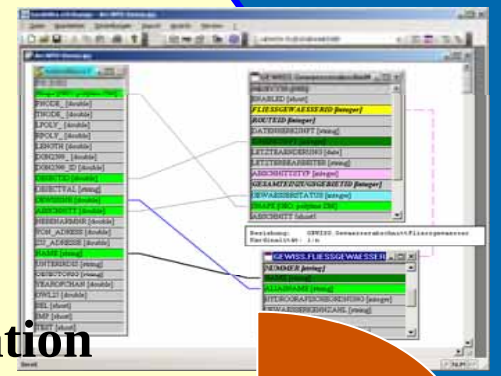
DRM National Platform

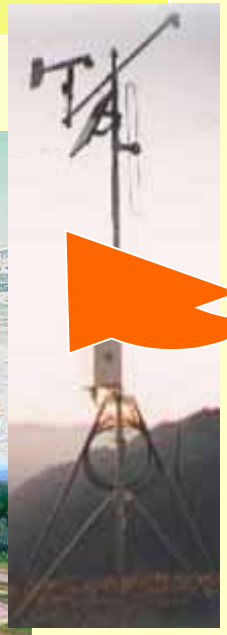
1.Informational System for Water Management



WATMAN automated stations

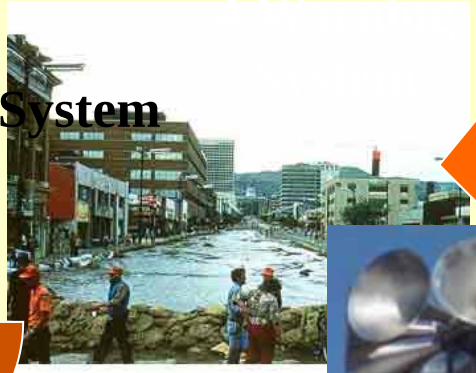
2.Expert System-DSS





3.Communication System

4.Alarming System



5.Rapid Response Centers

WARNING SYSTEM

PREPARATION

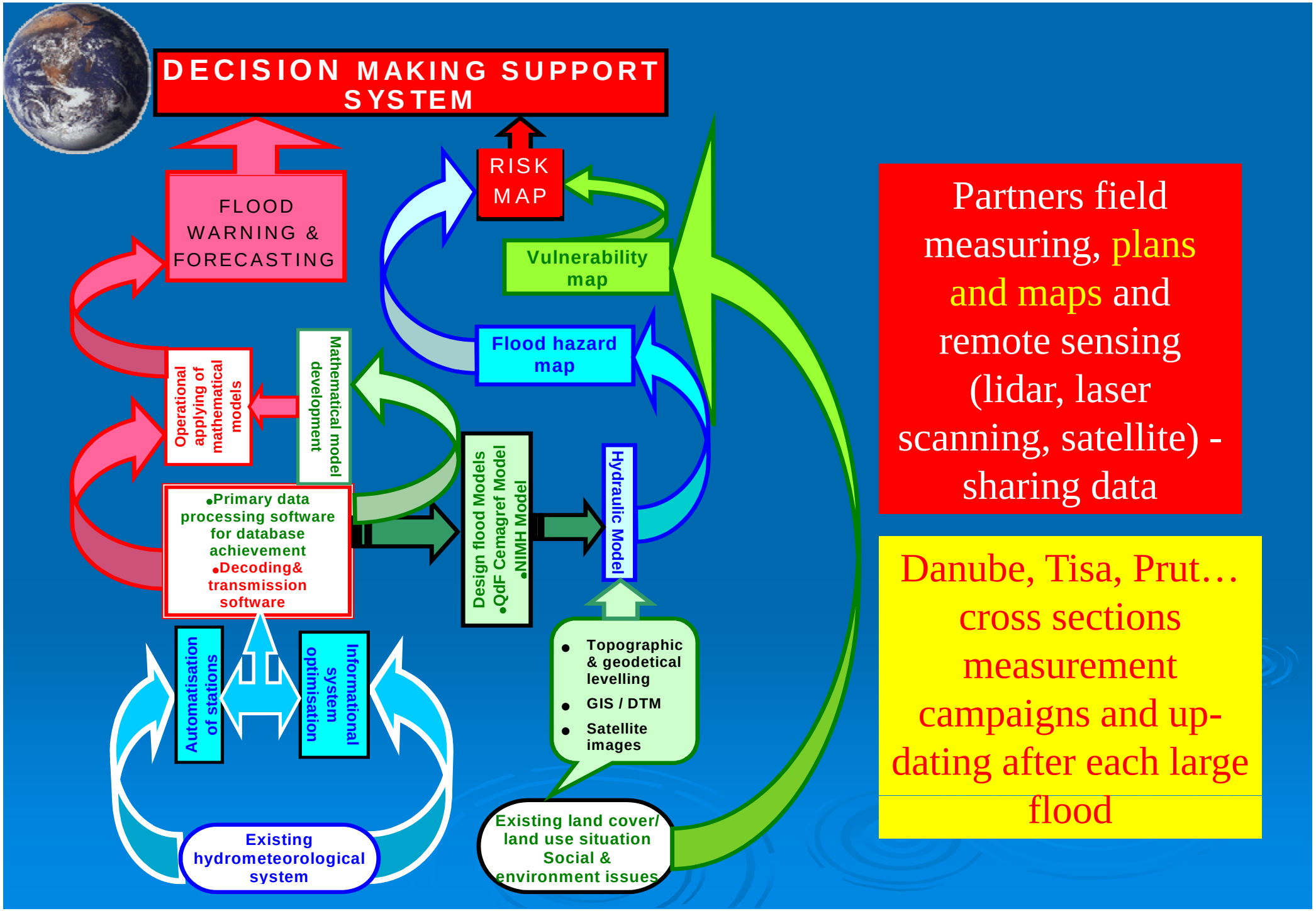
- Risk mapping
- SIRENS AND COMMUNICATIONS

INTERVENTION

- R.R.C.

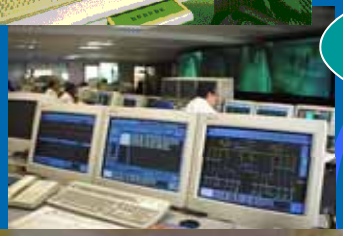
REHABILITATION

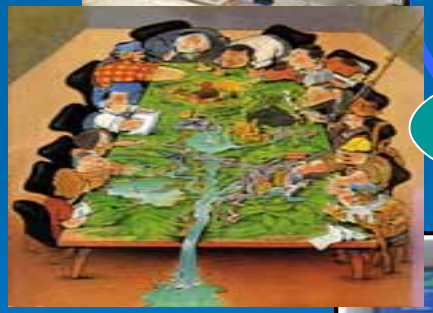
- DAMAGE EVALUATION INSTRUMENTSAND VULNERABILITY IDENTIFICATION


DECISION MAKING SUPPORT SYSTEM
FLOOD WARNING & FORECASTING
RISK MAP
Vulnerability map
Flood hazard map
Operational applying of mathematical models
Mathematical model development
•Primary data processing software for database achievement
•Decoding& transmission software
Design flood Models
•QdF Cemagref Model
•NIMH Model
Hydraulic Model
Automatisation of stations
Informational system optimisation
Existing hydrometeorological system
Topographic & geodetical levelling
GIS / DTM
Satellite images
Existing land cover/ land use situation
Social & environment issues
Partners field measuring, plans and maps and remote sensing (lidar, laser scanning, satellite) - sharing data
Danube, Tisa, Prut… cross sections measurement campaigns and up-dating after each large flood

DECISION SUPPORT SYSTEM

Infrastructure control,
Institutional policies & incentives
Warnings, Alarms





Precipitation, Temperature, Humidity, Streamflow
Water Quality, Groundwater, Snow pack,
Evapotranspiration

Decision Implementation

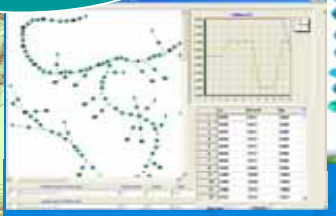
Data Measurement

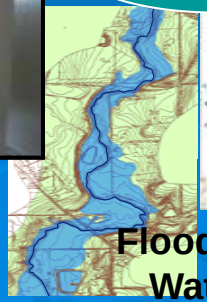
Decision Support System

Decision Making

Data Processing & Archiving

Analysis



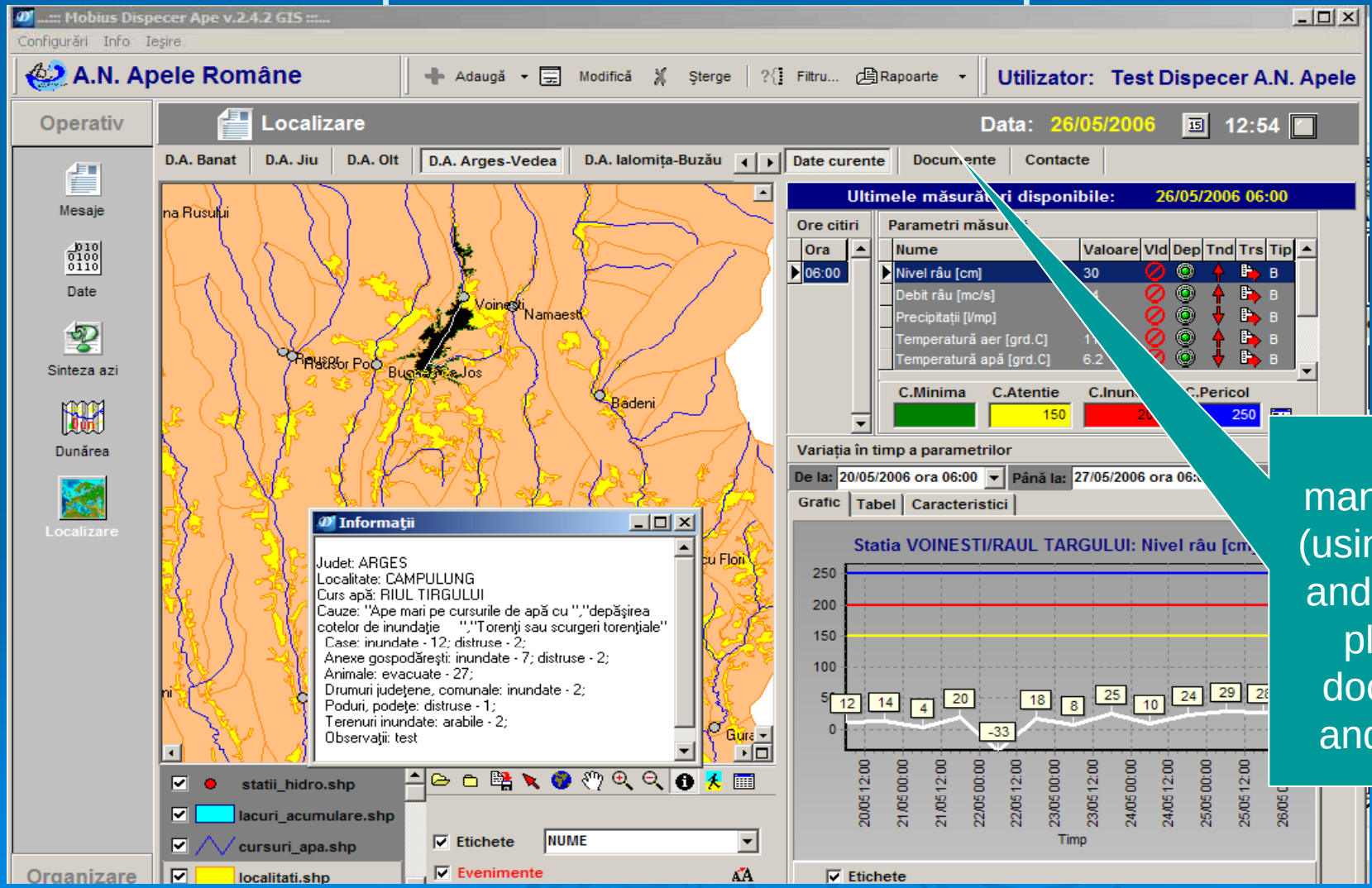


MC&DM
Operating rules
Expert system
Optimization, Warnings
Risk management,
Dispute Resolution

Rainfall/runoff,
Flooding, Hydraulics, Water Allocation,
Water Pollution, Environmental Flows

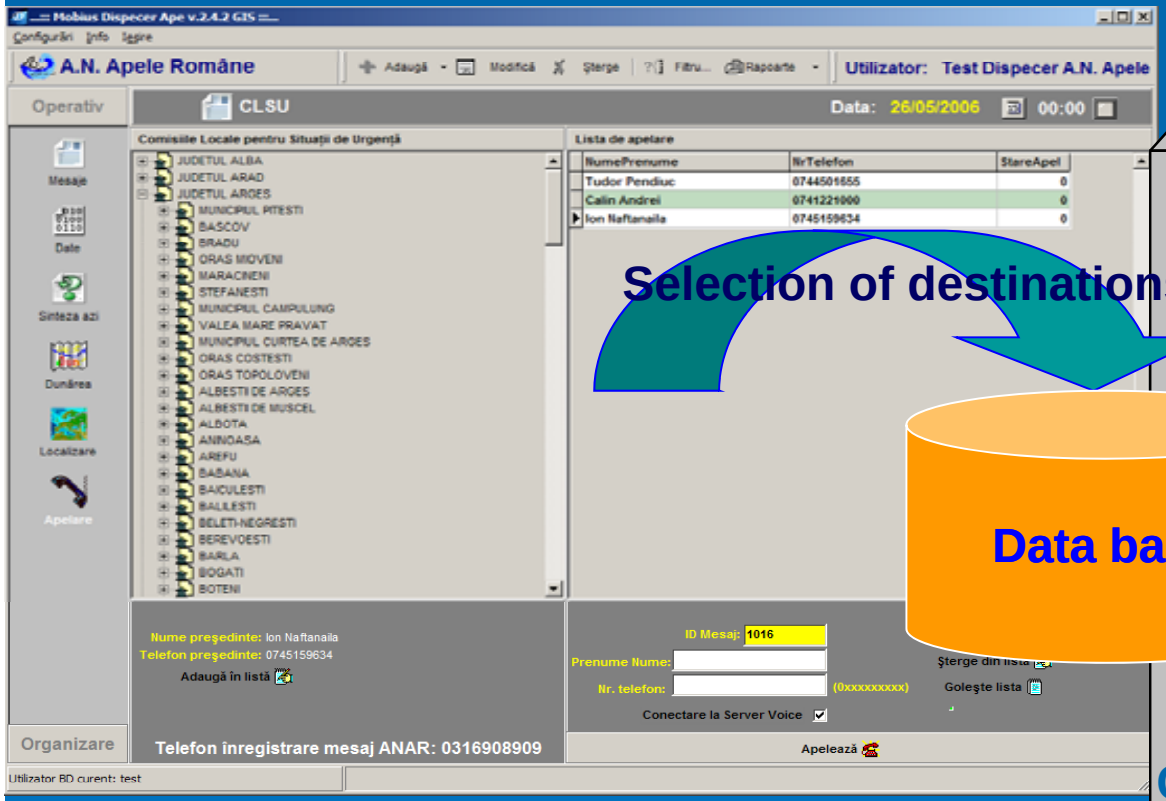
Data base
Data model
Data display

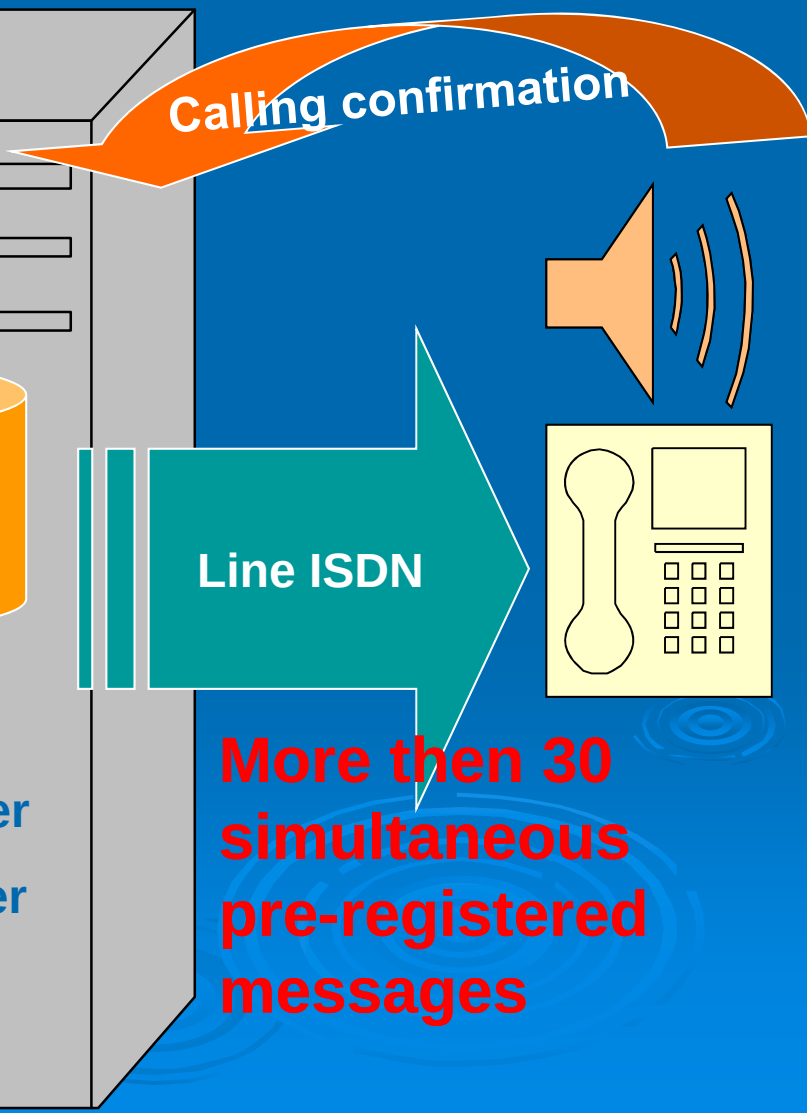
Automate mapping of flooding areas and of potential/produced losses using the data base input and the field reports



Index management (using indices and thematic plans) of documents and reports

Dispatch/decision center, calling the implicated persons/ answering 112





Warning population,

Warning by mapping products,

Intervention decision

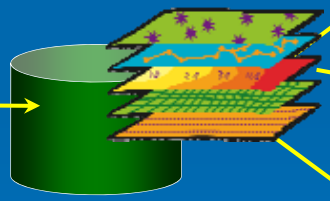
More then 30 simultaneous pre-registered messages

Using a new interoperable process

Integration and dissemination of the local, county, regional/basin, national and stability pact partners data

Data model

Data and Services



Thematic Data

Data sets on DVD

Data sets
- Local administration
- County-prefectura
- Basin/Regional
- Commercial

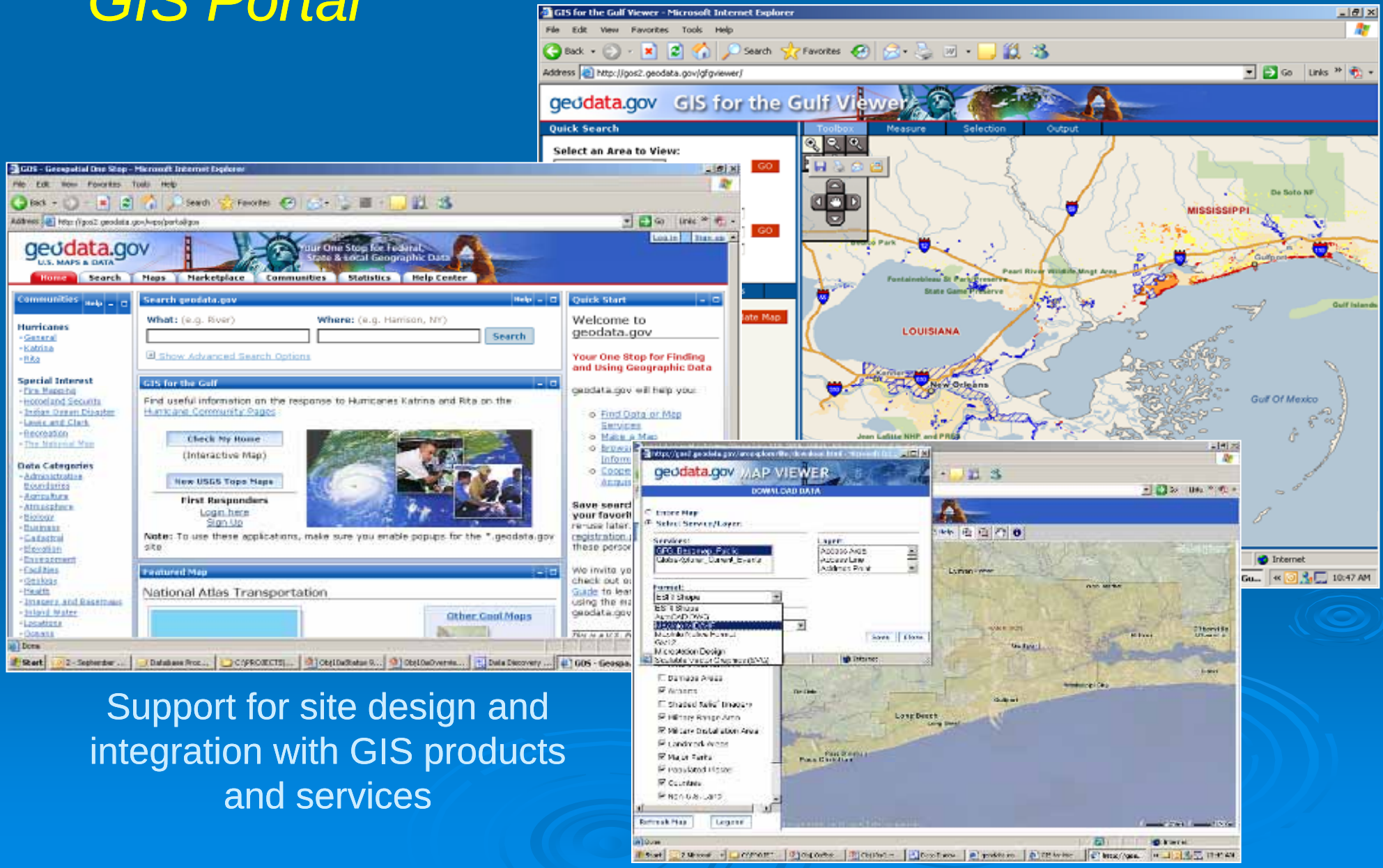
Spatial ETL
- Transformation
- Conversion
- Integration

Data Base and Server

Multi user System Implementation

Data dissemination using Web page

GIS Portal



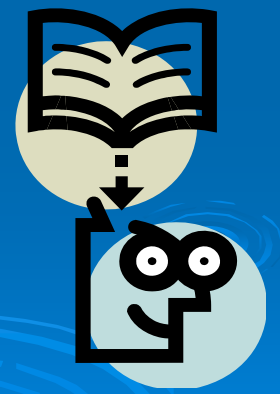
Support for site design and integration with GIS products and services

RRC Centers action and technical support activities

Activities of inspection and rapid intervention (experts data base)

Inspection and rapid intervention assume:

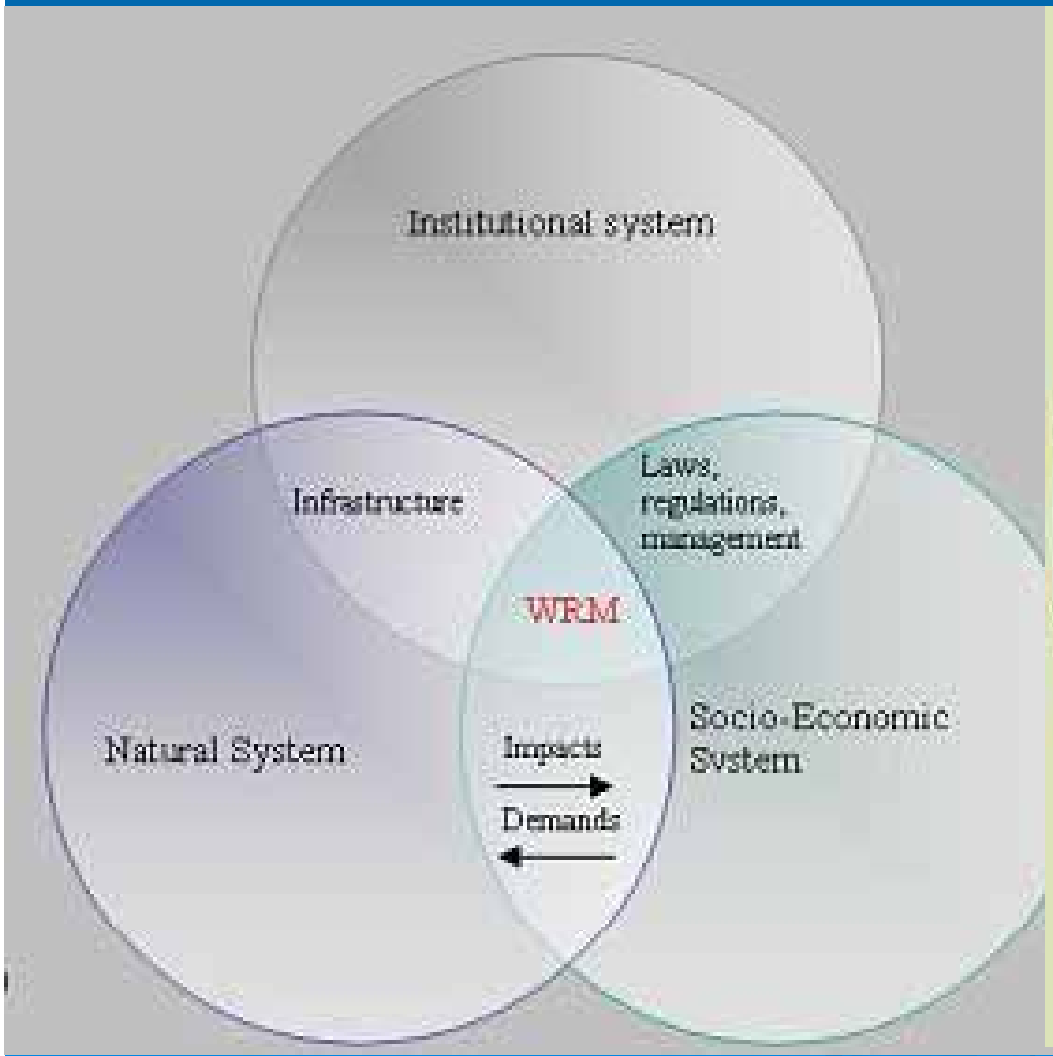
- Planning/preparing actions (modeled scenarios)
- Training personal
- Adequate equipment
- Warning/alarming Systems interconnected at the regional level

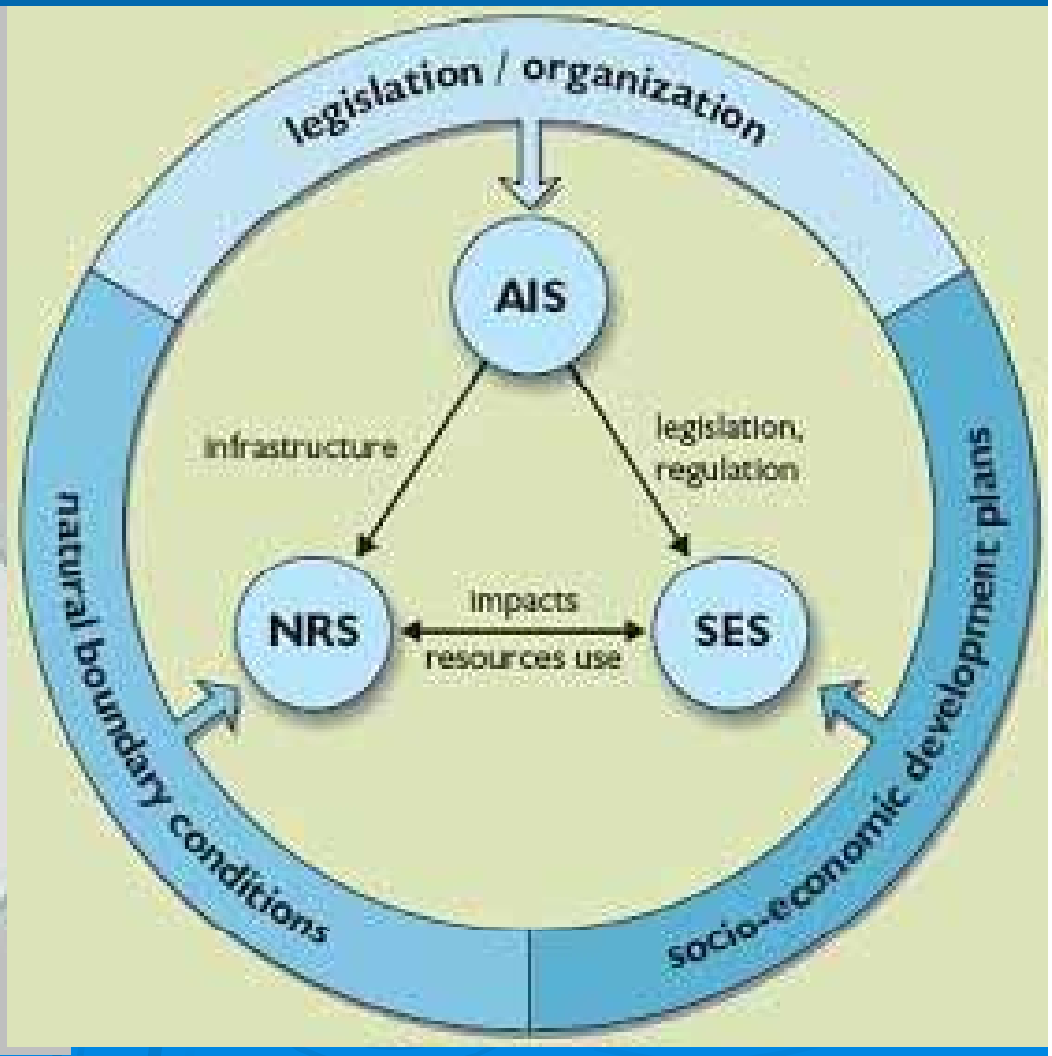


Conclusions: Identify the interactions of different actors or components within certain defined boundaries

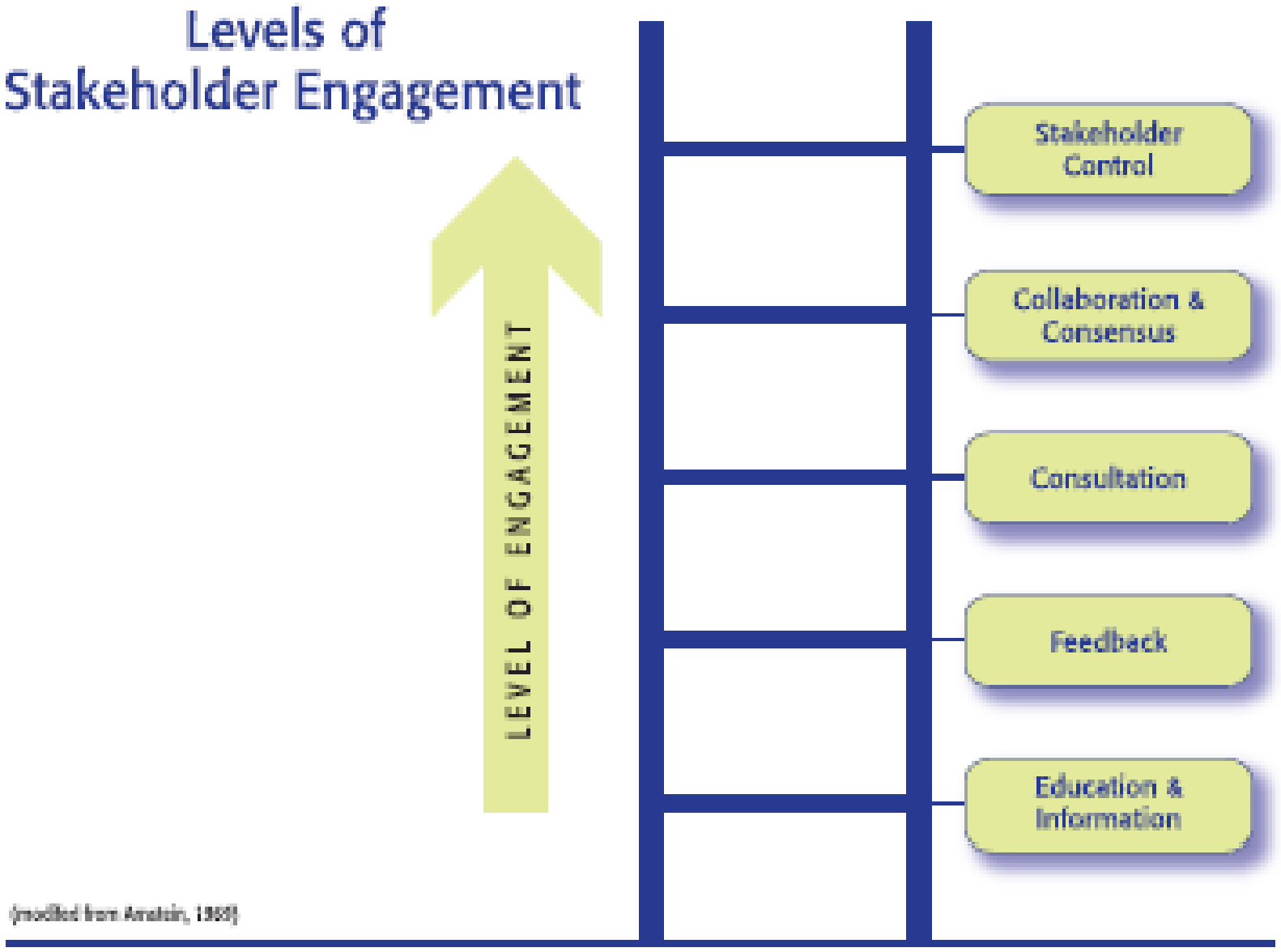
- The natural river subsystem **NRS**, in which the physical, chemical and biological processes take place
- The socio-economic subsystem **SES**, which includes the societal (human) activities related to the use of the natural river system
- The administrative and institutional subsystem, **AIS** of administration, legislation and regulation, where the decision and planning and management processes take place

Conclusion: Floods, landslides can be considered as a disruption in a normal functioning of a water resource system. There are three main systems that are affected by floods, with boundaries depending on the scale: the river basin system, the sub-catchment system and the urban system.

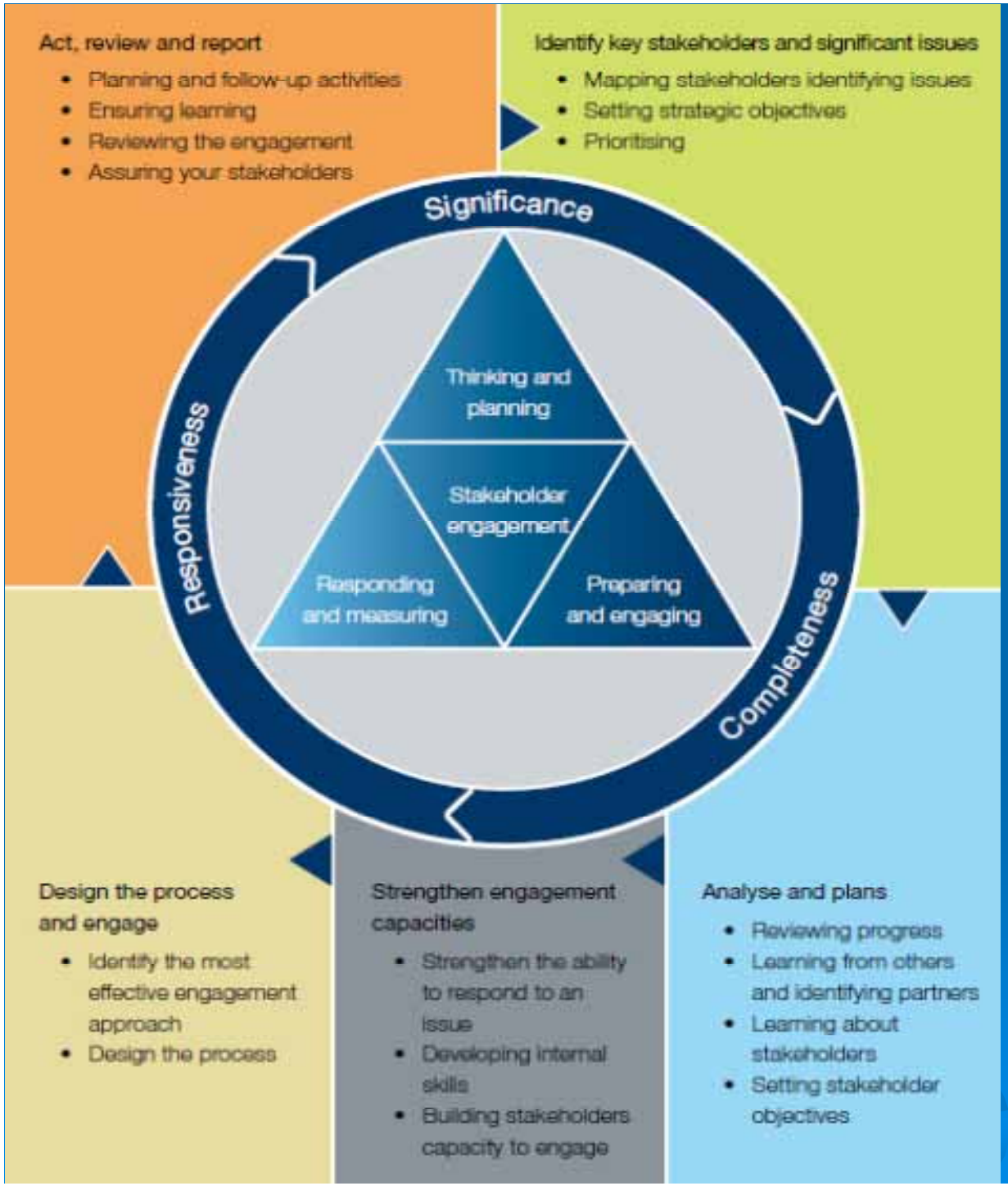


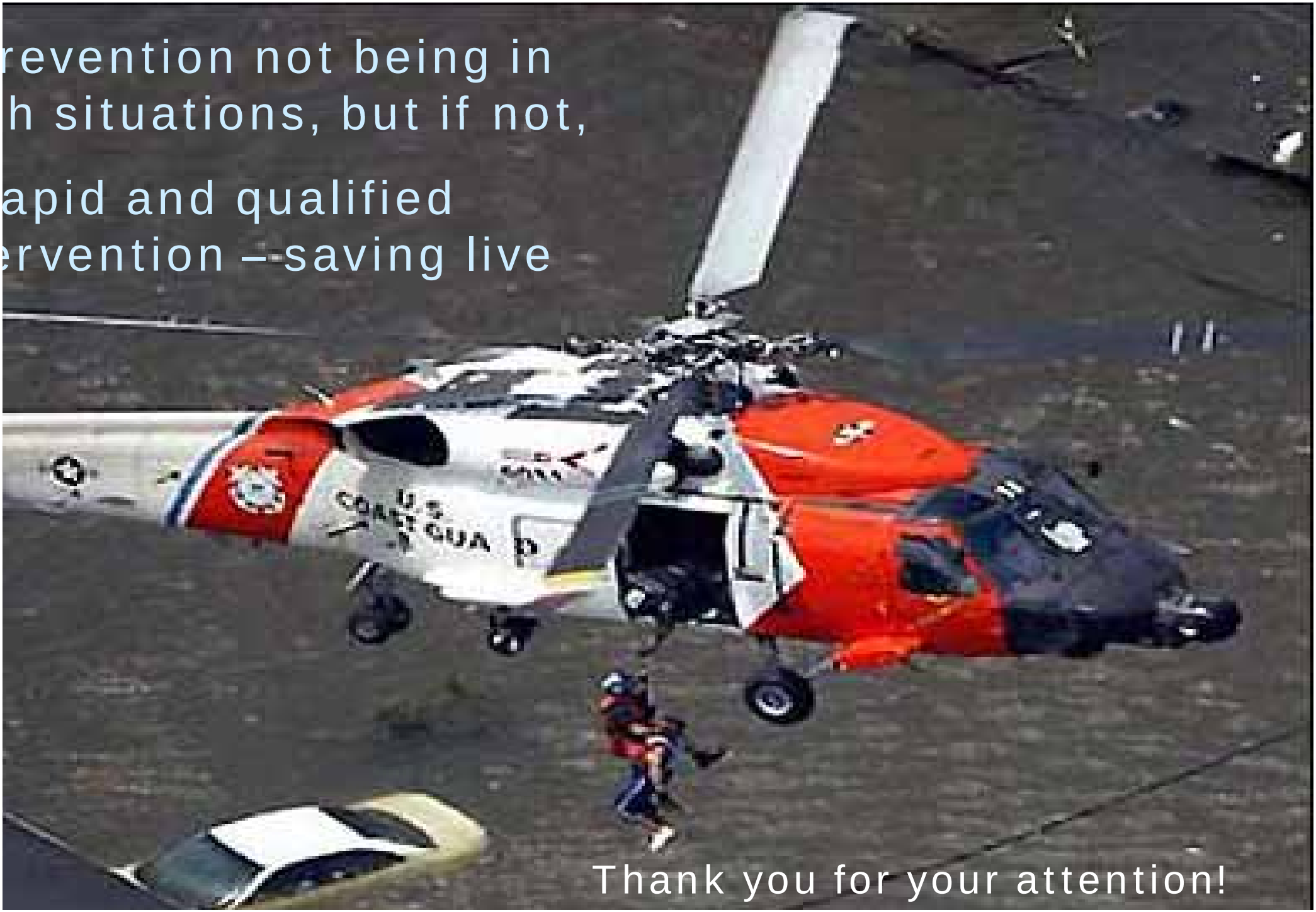


Conclusions



Five stages stakeholders involvement

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Thank you for your attention!