



National Water Information Systems (NWIS)

Some key points related to their implementation

**Regional workshop on
“NWIS & EMWIS”
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Paul Haener – IOWater

Manager of the Water Information System Division
International Cooperation Directorate
p.haener@oieau.fr



Office
International
de l'Eau



Needs : Why NWISs are so important?

- **Knowledge of the resource and of its status is a major stake for water policy:** regarding either regulatory actions, planning, risk management or public information, the administrators of water resources need to have reliable, updated and relevant information at their disposal in a lasting manner.
- Whereas public action concerns, in the highest degree, the national territory, and sometimes that of local authorities, **water issues are global and concern, in most cases, a simultaneous combination of various levels of action: local, basin, regional, national, international, etc.**
- The right organisation of **water Information Systems (IS)** allows the enhancing of existing data and information at the various levels of action with an overall approach which benefits to all the stakeholders. These information systems thus often constitute **one of the priority tools to be implemented in order to support an efficient policy for water resources management and risk prevention.**



Definition : What is a NWIS ?

- There is no official definition for a “National Water Information System - NWIS”
 - However, if one considers the following definition of the information systems :
 - **“An information system is a set of social stakeholders which memorises and transforms representations via information technologies .”**
- => a NWIS should include, above all, all the stakeholders, directly or indirectly concerned with the water sector, who agree to exploit information technologies with common objectives.

Potential uses of NWIS in the Mediterranean countries: a NWIS to do what?



- National / Local (basin, administrative unit, etc.) uses for :
 - IWRM/planning (implementation follow-up/ impact)
 - Operational management (dams, aquifers, etc.)
 - Risk Prevention (Flood, drought, prevention of conflicts of uses, etc)
 - National regulations (follow-up complying with impact)
 - Public information
 - Others (environment, territory management, etc.)

- International monitoring and information exchange related to:
 - Millennium Development Goals
 - Mediterranean strategy for sustainable development (Monit. strategy and impact)
 - Eurostat/OECD, medstat/EU
 - EMWIS (**E**uro-**M**editerranean **I**nformation **S**ystem on the know-how in the **W**ater sector)
 - ESCWA (Economic and Social Commission for Western Asia - environmental stat)
 - PRSP (Poverty Reduction Strategy Papers)
 - Bilateral co-operation
 - Others

Characteristics of water data management situation in the Mediterranean countries

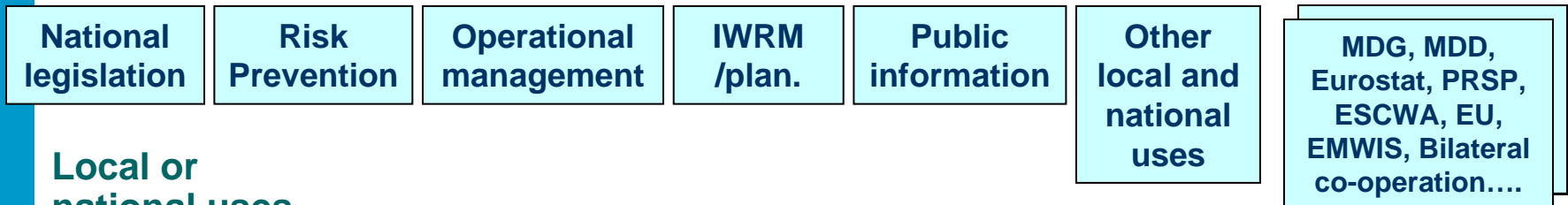


- **Multiplicity of topics to consider:**
 - Water description and water status: surface water, ground water, quantity, quality, rainfall, etc.
 - Water uses and impacts (industrial, urban, agricultural, etc.),
 - Water infrastructure characteristics
 - Water management: laws, institutions, investments, monitoring actions
- **Various types of information needed:** documents, real time data, validated data, geographic information, synthetic information, etc.
- **Multiple levels for water management and water information uses and multiplicity of stakeholders at each level:**
 - Local: local producer level, administrative level, water management level
 - National
 - International and Regional (Africa/Euromed/ etc.)
- **The necessary Information is heterogeneous and dispersed between various organisations:** each organisation has developed its information system to meet its own requirements without taking into account the constraints linked to data exchange and transmission to others
- ...

Multiple information sources for multiple needs : a typical situation in most countries



Main stakeholders data /info sources



Local or
national uses

Regional /
international uses



How to efficiently meet the needs: scenario 1

Main stakeholders data /info sources

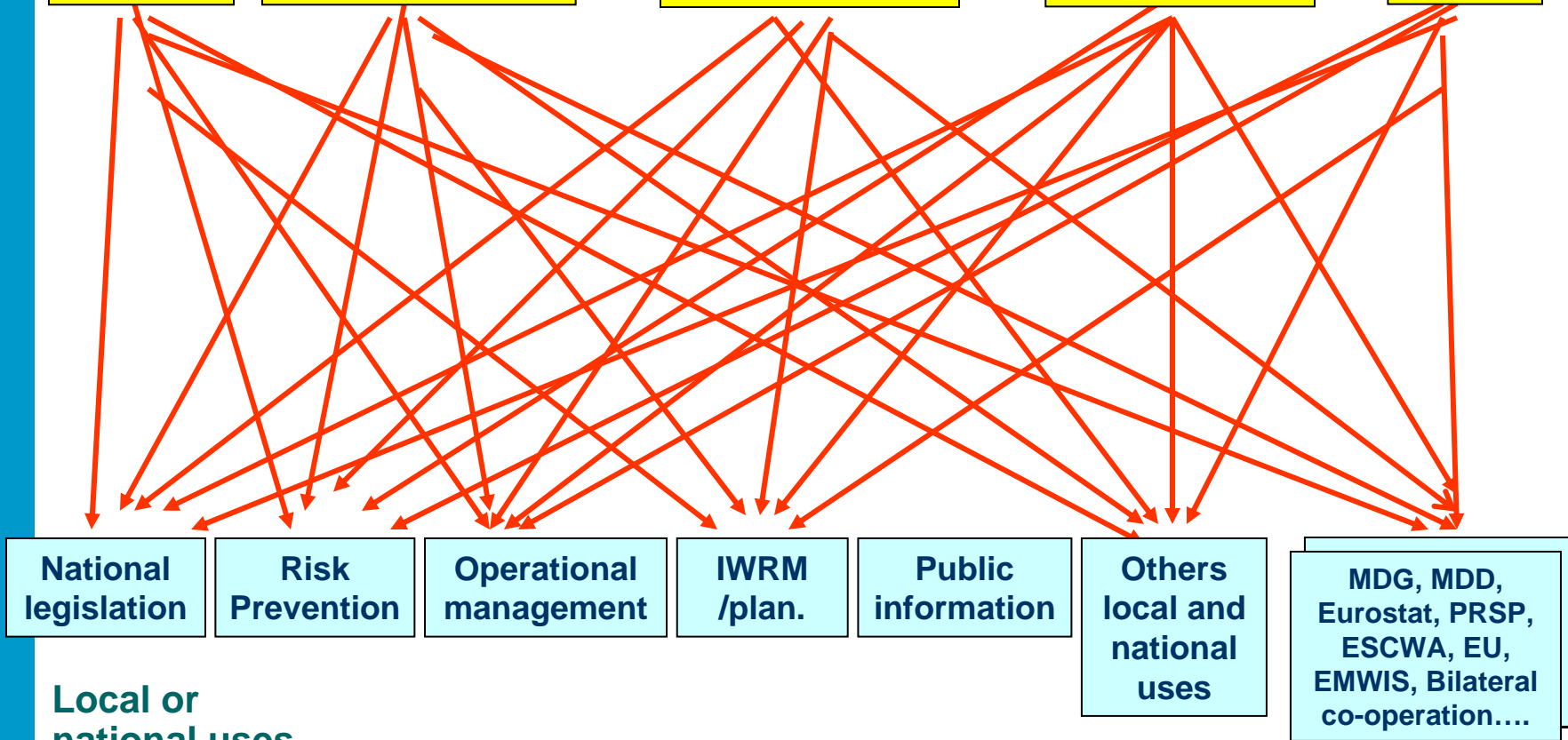
National
water
authority

Basin/regional
water authority

Ministries
Health
Agriculture
Industry,
Interior ...

Institutes
stat.,meteo
hydrology
Geology
cartography

Others

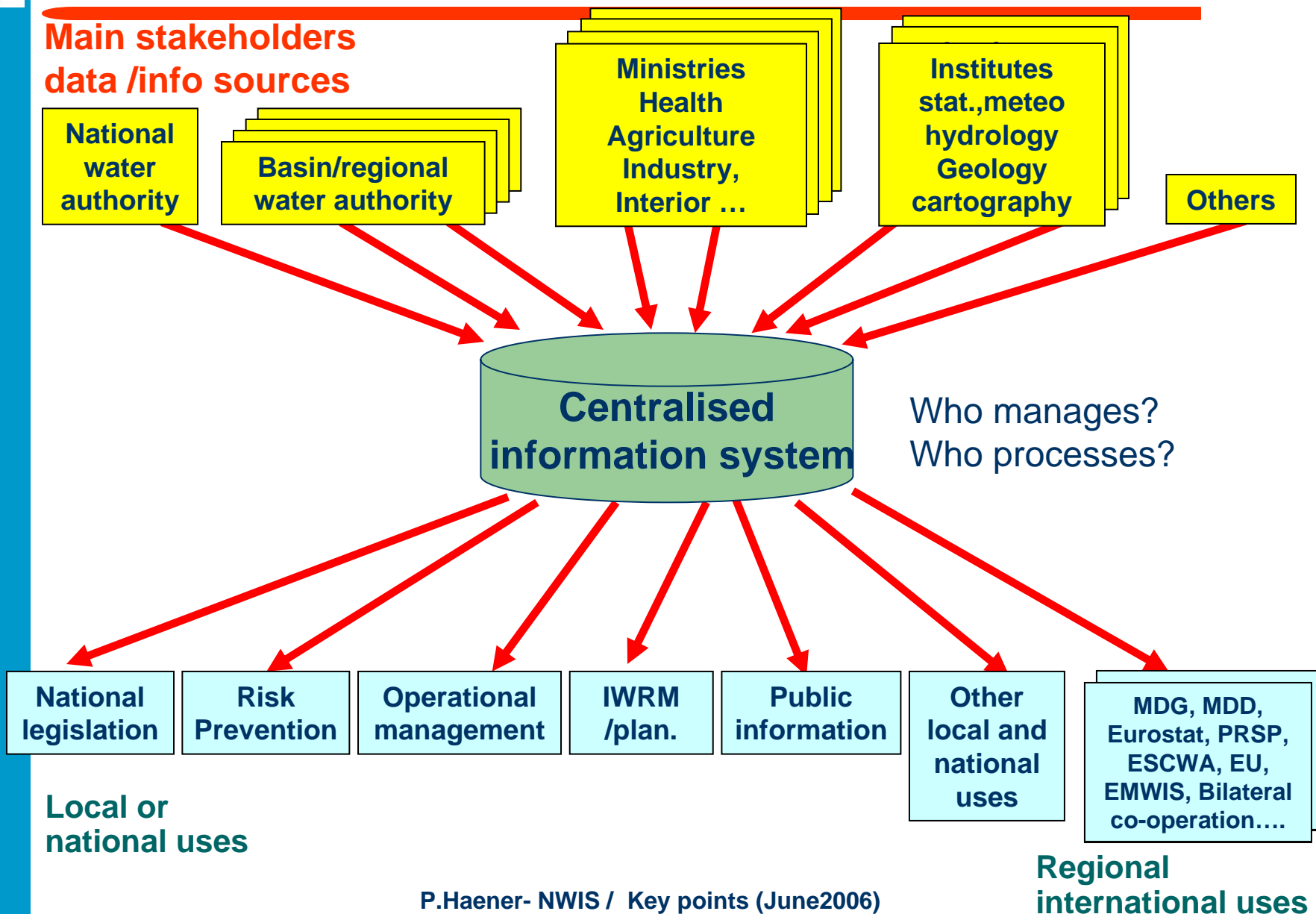


Local or
national uses

Regional /
international uses

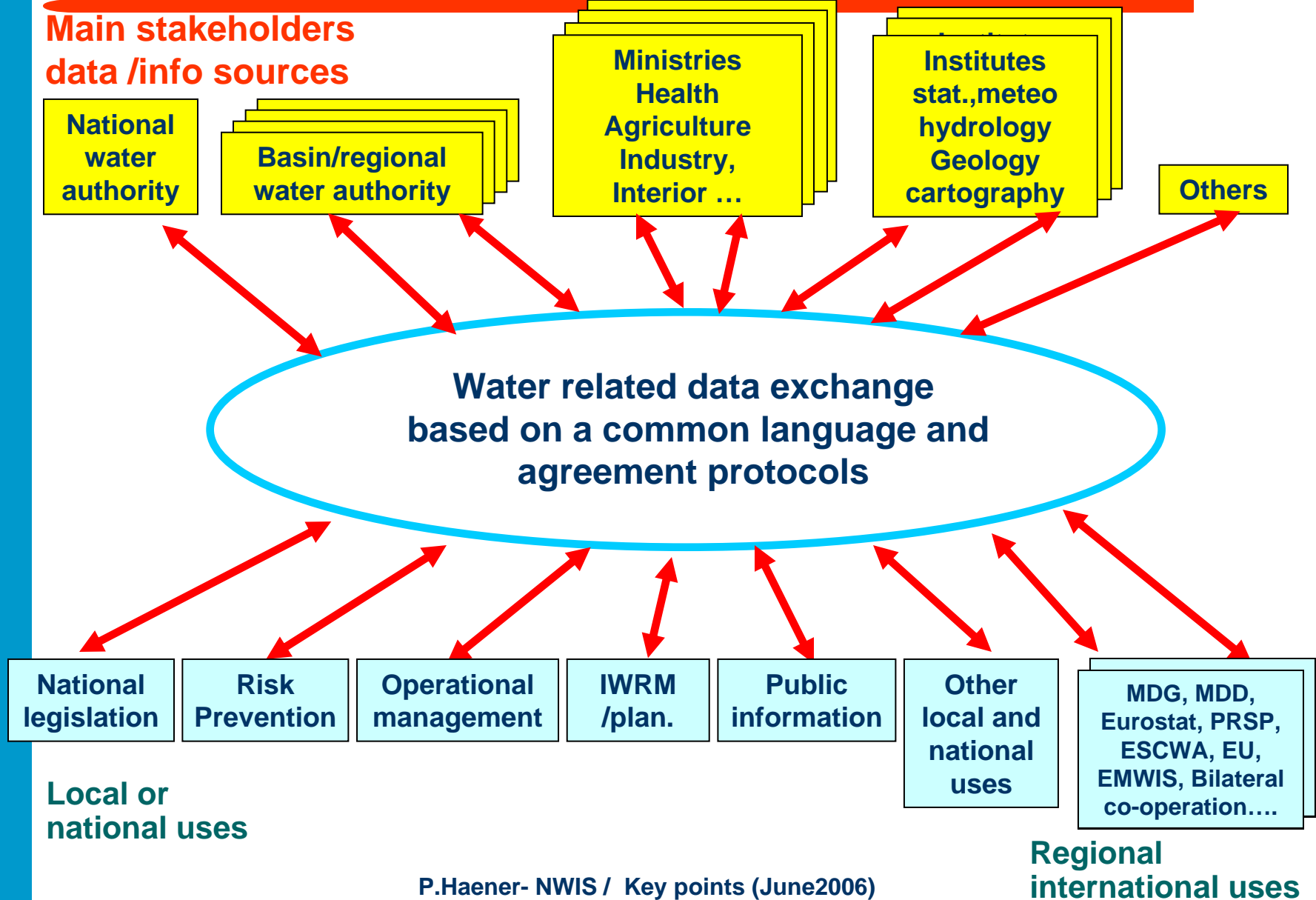


How to efficiently meet the needs: scenario 2



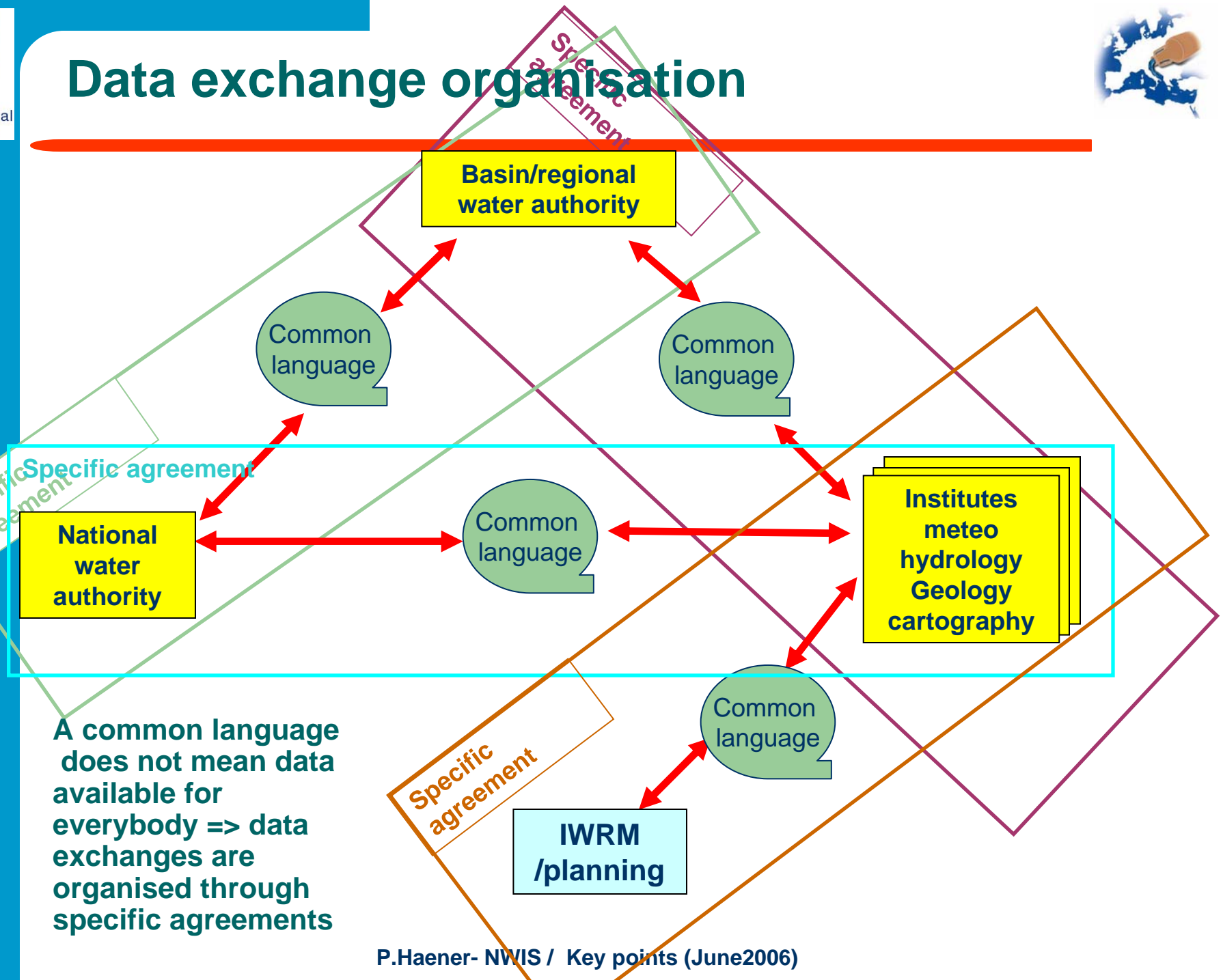


How to efficiently meet the needs: scenario 3





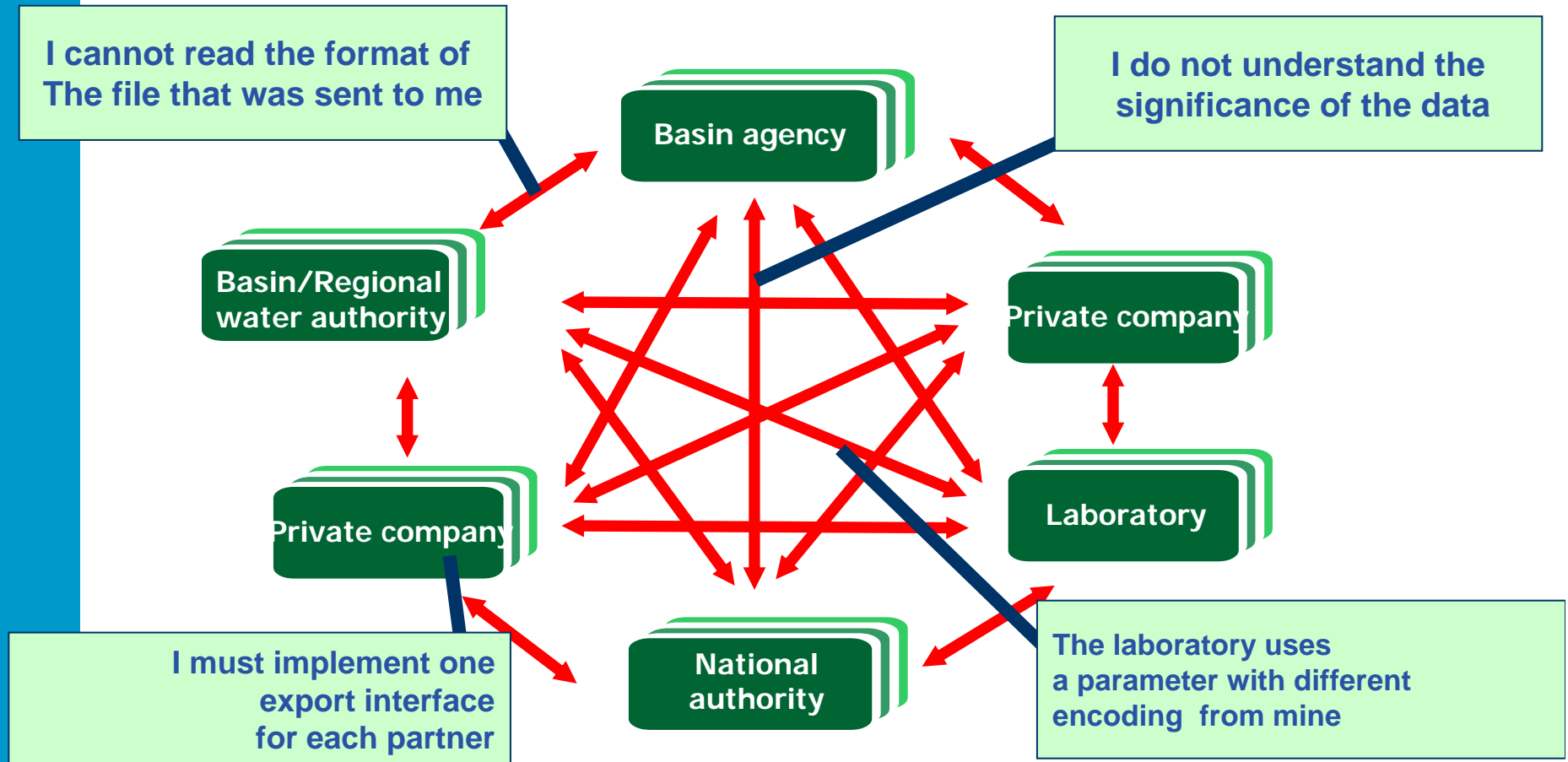
Data exchange organisation



A common language does not mean data available for everybody => data exchanges are organised through specific agreements

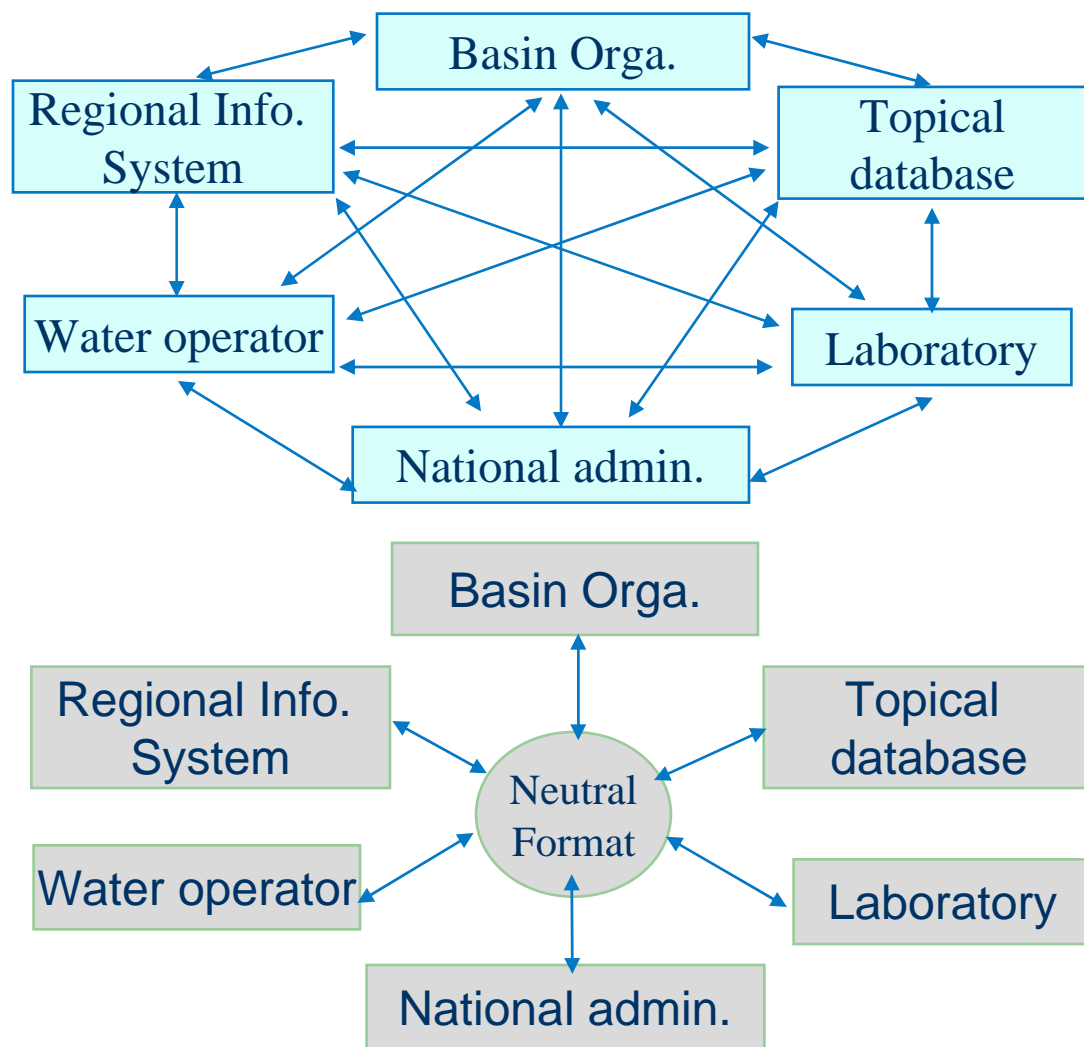


Which problems when you exchange data ?





Neutral data exchange format





Components of the common language

- **Data Dictionaries**
 - **Conceptual data models**
 - **Description of concepts**
 - **Description of attributes (information)**

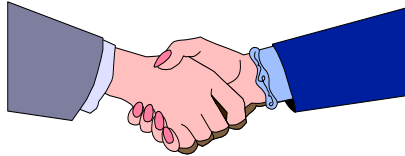
- **Common alphanumeric and geographic reference frames**
 - **Common codification lists (rivers, basins, parameters, methods, etc.)**
 - **Common referential layers (administrative limits, hydrography, etc.)**

- **Data exchange format**



Main collaboration process recommended at local national and/or international level

**Framework
Agreement
(main objectives)**



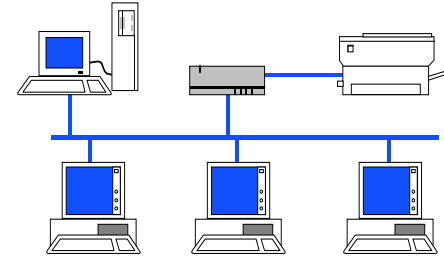
**Common
language**



**Specific need
definition /
agreements
on procedures**



**Development
of interconnection
system capacities**



**Exchange, production and dissemination
of information and knowledge
meeting the needs**



Among the main key points for NWIS development

- Organisational aspect (framework objectives, specific agreements, inter-institutional co-operation, facilitation and management of the system, etc.)
=> **Workshop 1**
- Organisation of the access to basic data and information (identification of data sources, common language definition, etc.)
=> **Workshop 2**
- Production and dissemination of useful information and knowledge (identification of needs, which concrete outputs to meet the needs, etc.)
=> **Workshop 3**
- NWISs are economically profitable but need financial resources to impulse activities and organisation to insure sustainable functioning
=> **Round table on “Financing National Water Information Systems”**

Key points confirmed by the answers to the questionnaires send when preparing this seminar



- 11 answers returned from 9 countries
- Between 8 to 16 main stakeholders are identified by the countries => need to organise inter-institutional co-operation (workshop 1).
- Expressed needs related to the 3 workshops:

W1	« Support to the improvement of its information system, the regulatory aspect in particular / Support to the development of Information Systems for each institution/ NWISs should offer a Framework for strengthening information systems in each institution »
W2	« Facilitation of exchanges / harmonisation of the exchange format / No common code/ Organised Access to existing Information / Catalogue on information Sources / Development of Metadata and documentation on the national level/ Data Dictionary at the National Level/ Data Harmonisation or standardised formats for data exchange/ Elimination of data duplication/ One source of information/ Definition of a common dictionary for economy, extractions /Facilitation of access and exchanges of data on water, irrigation and sanitation »
W3	« Definition of common indicators /Definition of common indicators for surface and ground water quality/ Development and extension of the information system. »



**Thank you
for your attention!**

