



Co-ordination committee seminar of the national focal points

National Water Information Systems Towards a Mediterranean model

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Agenda



- **Current status:** *based on the "Technical and financial feasibility studies of the National Water Information Systems in Mediterranean Countries" by EasyInfo in 2006*
 - Definition and need for NWIS
 - Current NWIS status
 - Identified barriers to NWIS
 - Identified opportunities to NWIS
 - EMWIS countries NWIS assessment
- NWIS Common **base line requirements**
 - Data handling
 - Structure
 - Interoperability
 - Development requirements
- Proposed **conceptual model** for a common NWIS development
 - Introduction to NWIS Framework
 - Common vs. Local
 - Development principles
- Implementation roadmap
- Funding and timing requirements



Current Status

Definition and need for NWIS



- Definition of NWIS
 - Acronym: **N**ational **W**ater **I**nformation **S**ystem
 - System that stores and processes information shared between the main national water stakeholders in a country.
- Need for NWIS
 - Is one of the main instruments of national water policy
 - Existence of high-value NWIS would bring to EMWIS:
 - Would improve and harmonize information exchange and sharing within participating countries
 - Will have a direct impact on the quality, availability and flow of information from participating countries to EMWIS

Current NWIS status in EMWIS countries



- Different countries use different systems to warehouse water data and information (manual or computerized)
- WIS are managed by main stakeholders of each country and are not unified at national level
- Local WIS do not take advantage, in most cases, of state-of-the-art technologies and developments (web, data warehouses, SOA, XML, GIS, etc)
 - Low level of automation and functionality
- Most of the countries feel the need to develop NWIS although
 - Only Algeria is developing a true National Water Information System
 - Some other countries have only engaged preliminary actions towards its development

Identified barriers to NWIS development



- Data availability
 - Some data are not measured or collected from the field
 - Some data are not computerized > unreliable, unusable
 - Some data is proprietary, confidential or has a commercial value
- Resource availability
 - Lack of Staff within the stakeholders to develop and manage NWIS
 - Lack of financial resources
 - Lack of IT infrastructure
- Organizational framework
 - Lack of awareness of NWIS benefits
 - Poor or non-existent relationships between stakeholders
 - Absence of a political decision to establish such a system
 - Lack of the institutional structure and technical infrastructure to collect, store, and share data: unclear rules and responsibilities for data exchange, lack of data access policies...
 - Political situation

Identified opportunities for NWIS development



- Availability of in-country IT know-how
 - Although not available at the stakeholders or the number of staff available are not adequate and are overloaded with other responsibilities
- Acceptance of NWIS concept during consultation visits
 - Willingness to share information under NWIS
 - On-going donors projects in some countries
- Availability of utilizable IT infrastructure
- Legal obligation to data sharing in some countries
- New organizational restructuring projects engaged in some countries
- Available funds in some countries: Cyprus, Tunisia and Turkey
- Obligations in EU countries to provide water information:
 - WFD reporting, EIONET, etc.

NWIS Readiness assessment



- Most NWIS Ready
 - Algeria, Tunisia and Morocco
- Medium to high NWIS Ready
 - Cyprus, Israel and Jordan
- Medium to low NWIS Ready
 - Turkey and Malta
- Still to be developed
 - Palestine and Lebanon



NWIS Identified Requirements

NWIS Common base line requirements



- **Multiplicity of topics**

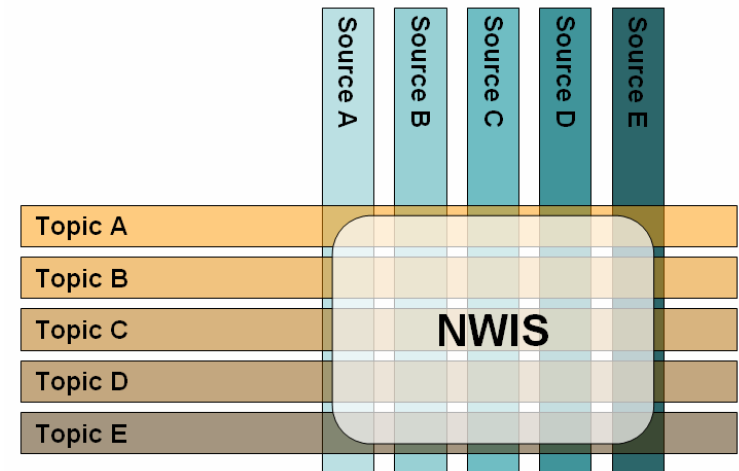
- Water description and water status: surface water, ground water, quantity, quality, rainfall.
- Water uses and impacts: industrial, agriculture, urban
- Water infrastructure
- Water management: laws, institutions, investments, monitoring actions.

- **Multiplicity of information types**

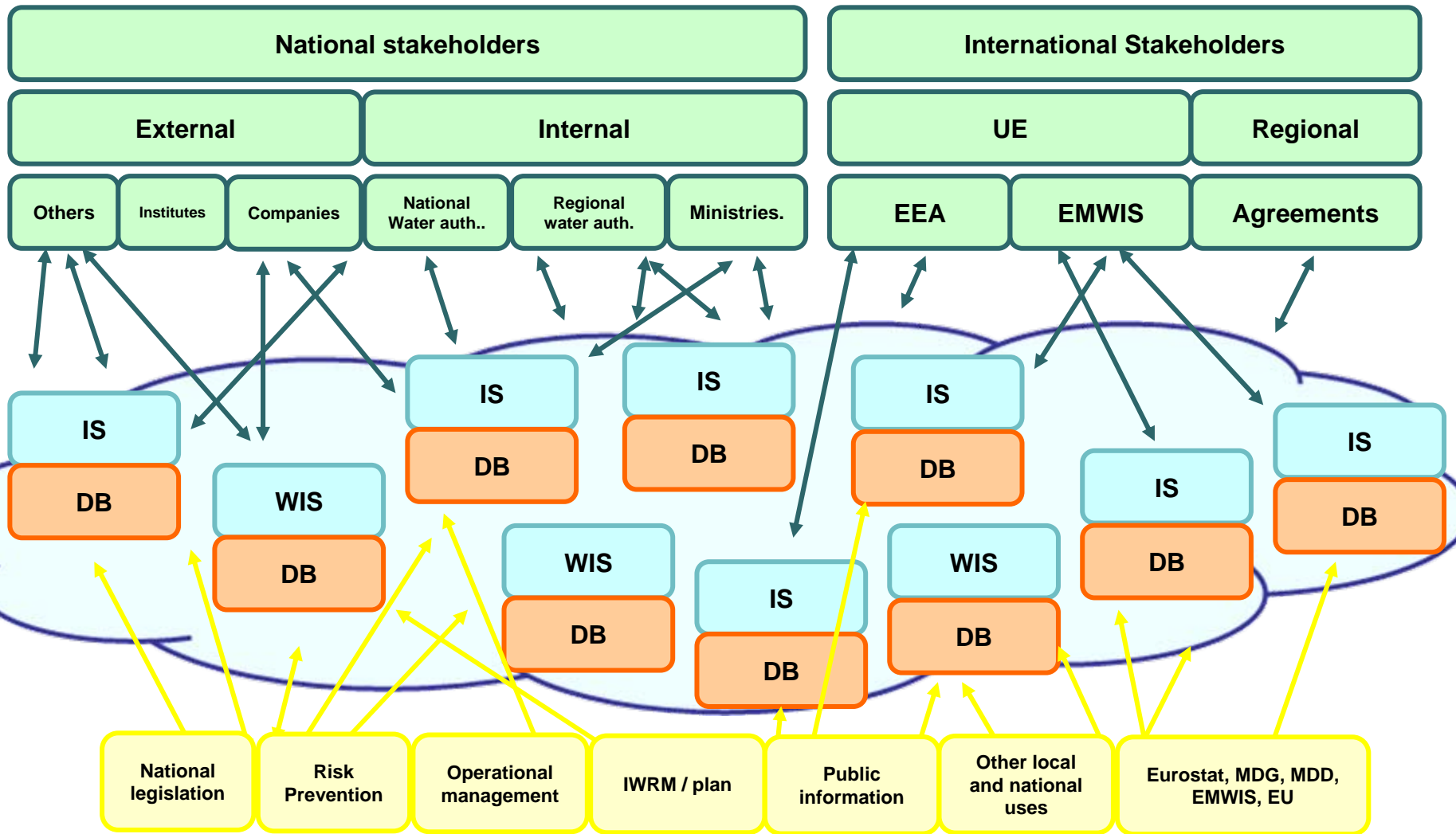
- Documents
- Real time data
- Validated data
- Aggregated data / indicators
- geographic information

- **Multiplicity of focus levels**

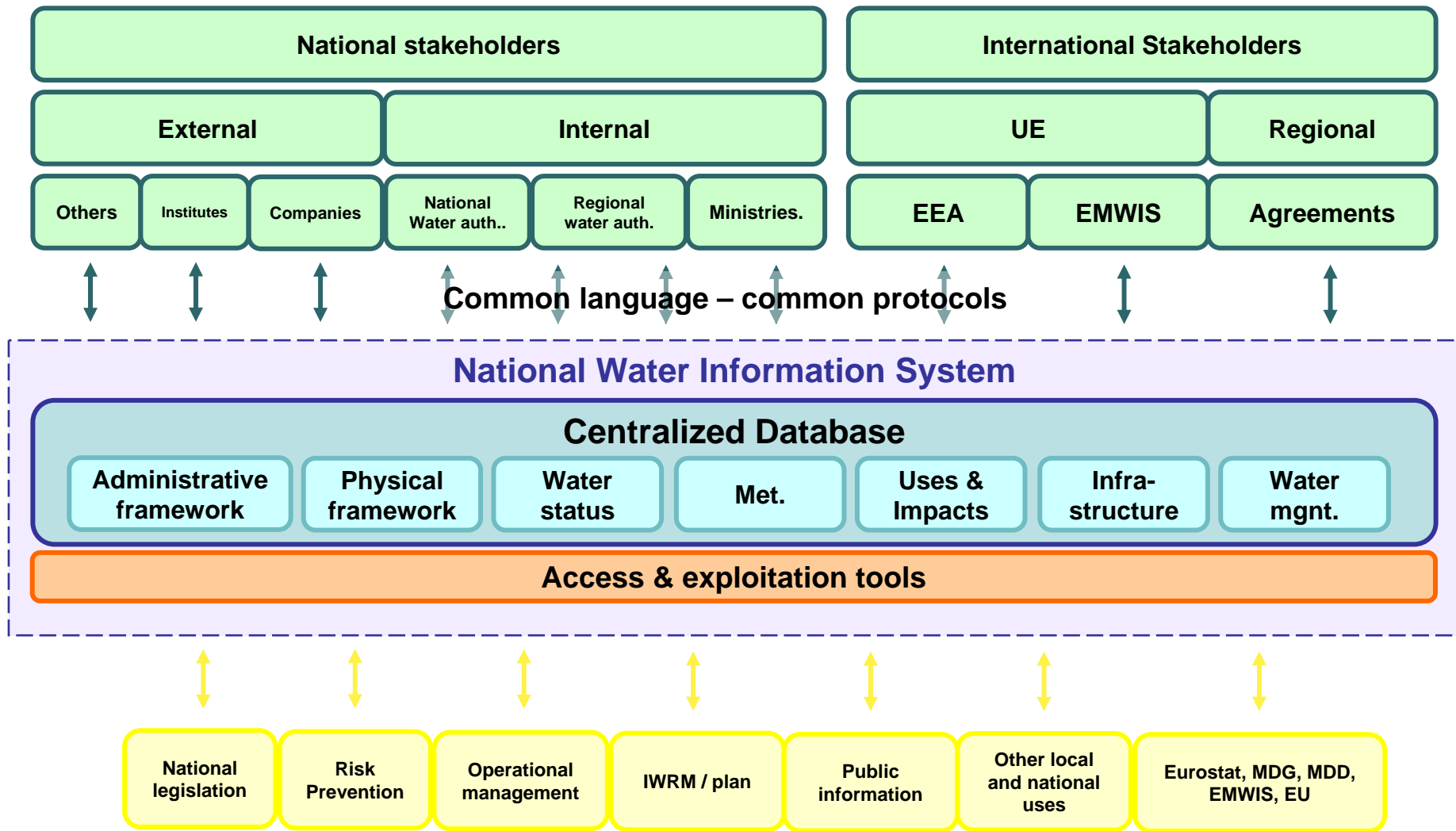
- Local
- National
- International / regional



NWIS Common base line requirements



NWIS Common base line requirements



NWIS Common base line requirements



- **Interoperability**

- Common agreement protocols
 - Both internal (national level) and external (regional / international level)
- Common language
 - Common data dictionaries
 - Conceptual data models
 - Description of concepts
 - Description of attributes
 - Comparable data structures
 - Common alphanumeric and geographic reference frames
 - Common encoding protocols
 - Common referential layers
 - Data exchange format
- Common standardized procedures
 - SOPs for data collection, validation, etc.
- Common infrastructure
 - Interconnection capability (network and communications)
 - Interoperable system's architecture and tools (based on international standards)

NWIS Common base line requirements

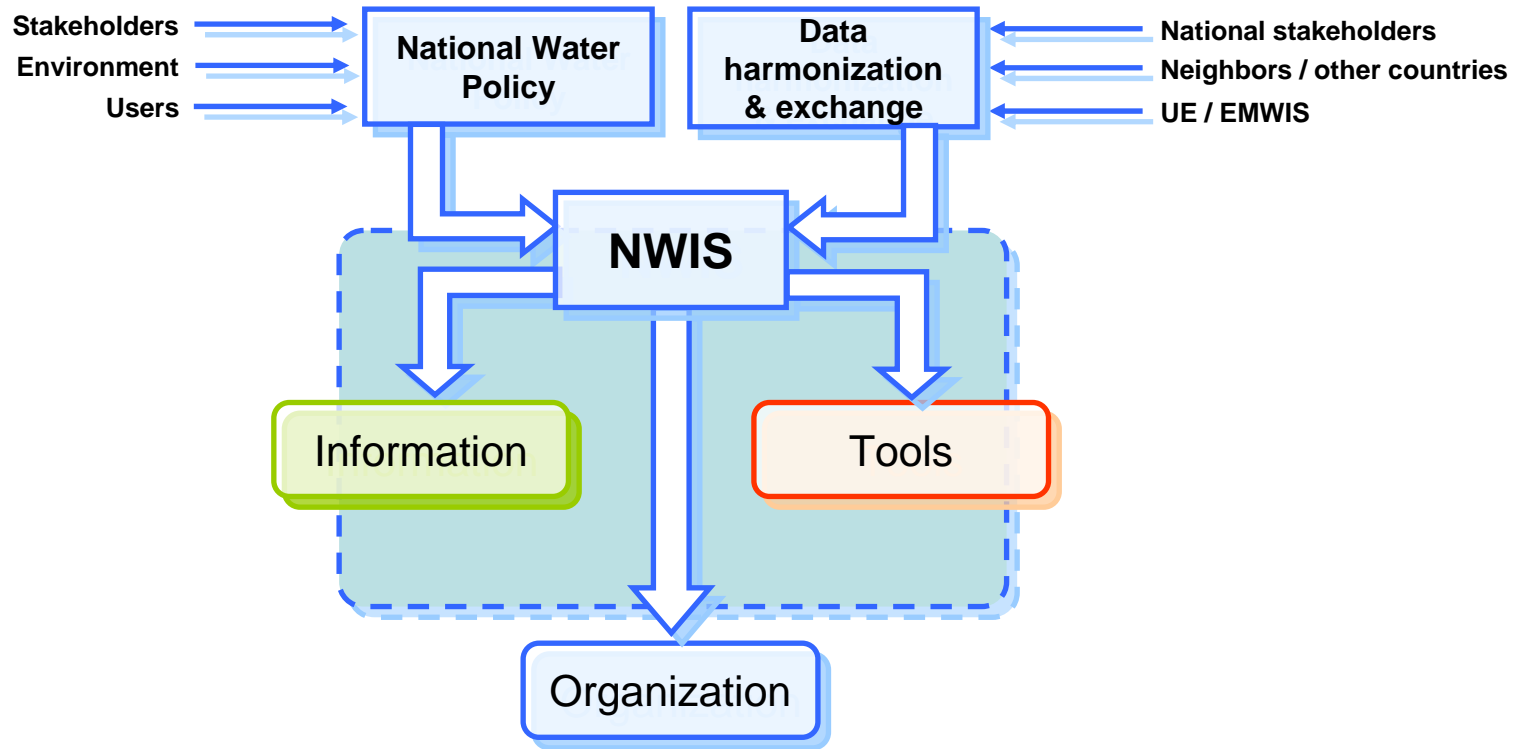


- **Maintainability**
 - Minimize acquisition cost
 - Minimize development cost
 - Minimize maintenance and support costs
- **Extensibility**
 - Open: database, data model and tools
 - Based on standards: OGC, etc.
 - Open source license
- **Accessibility**
 - Web Based
 - Service Oriented Architecture
 - Common tools to access geographical + alphanumerical data

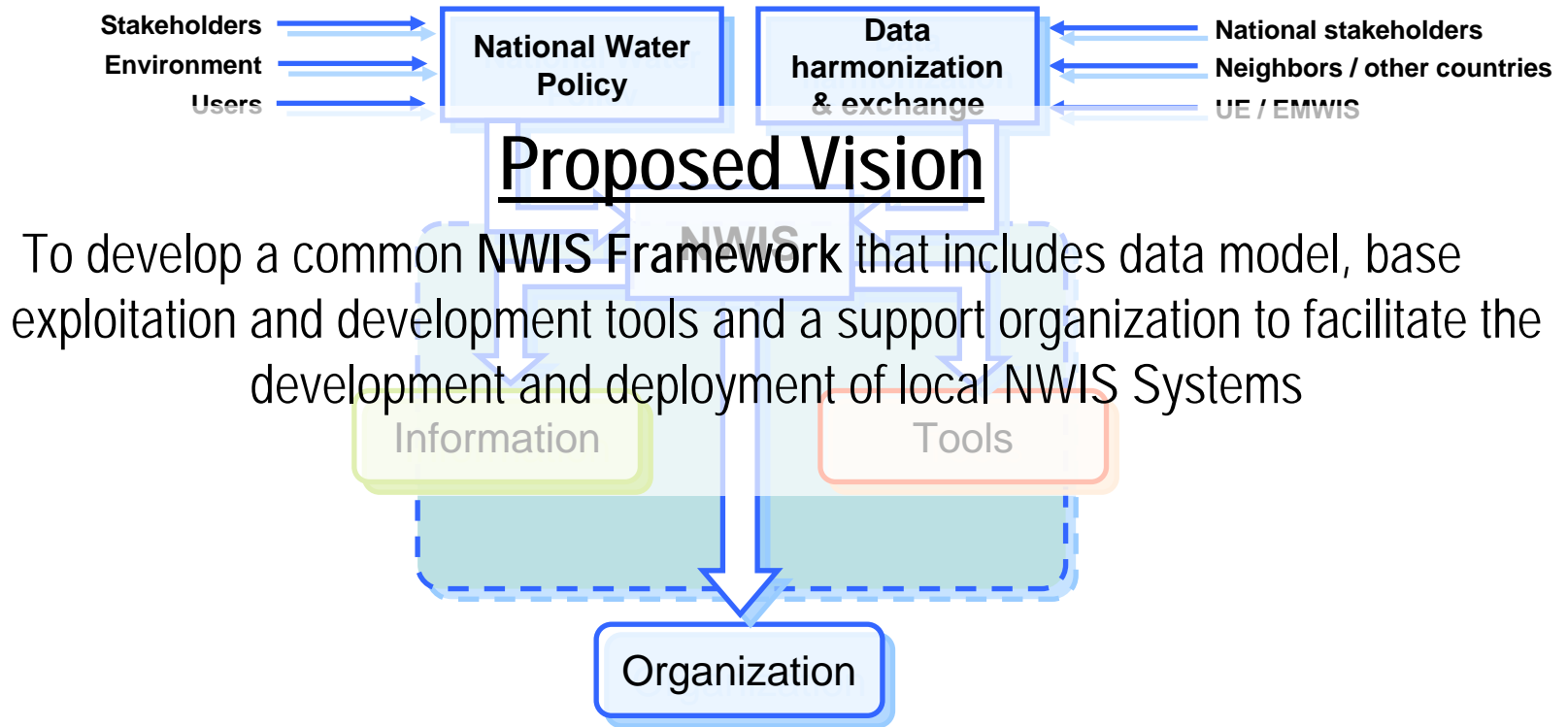


Development Proposal

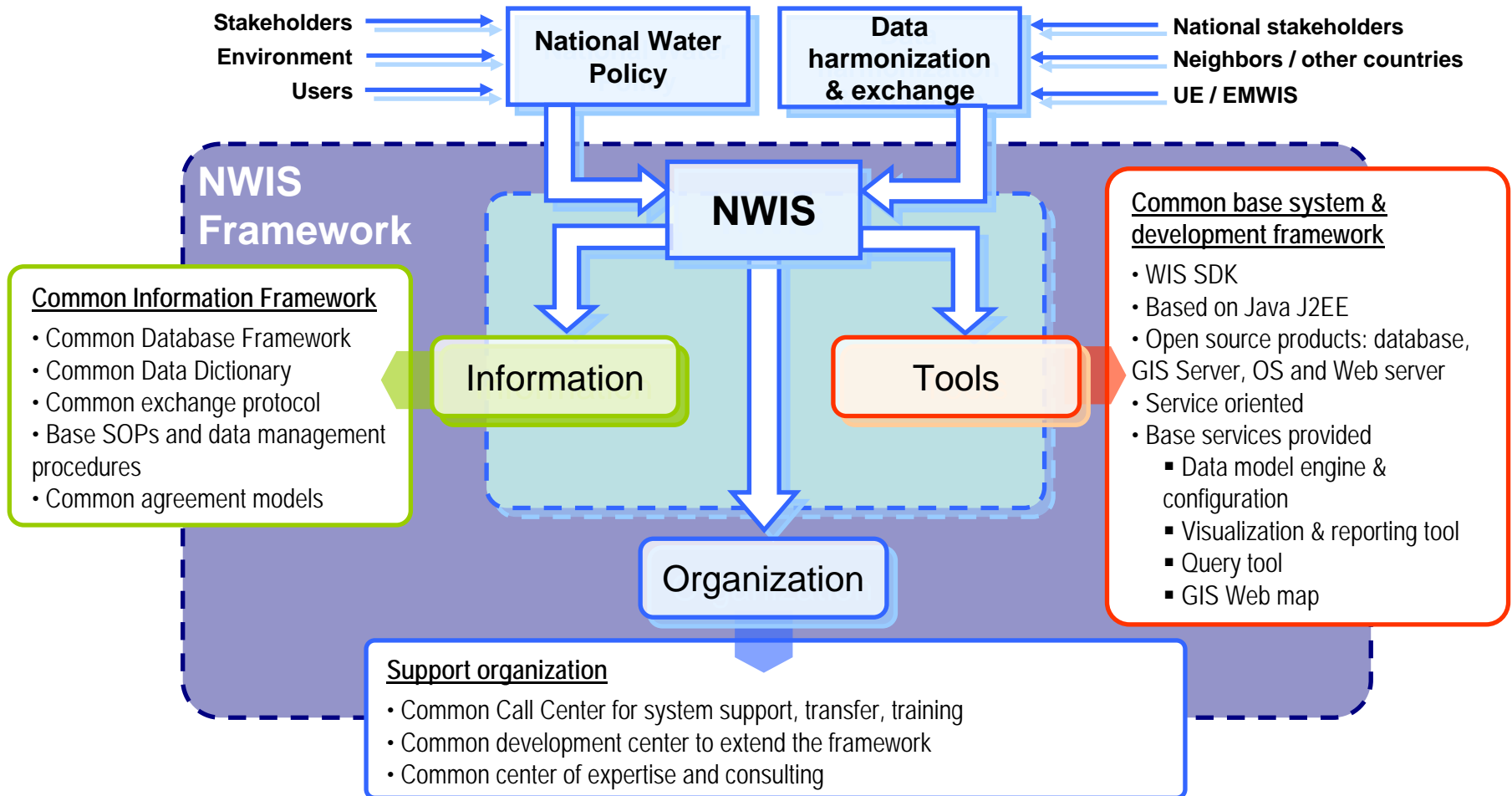
NWIS Conceptual model



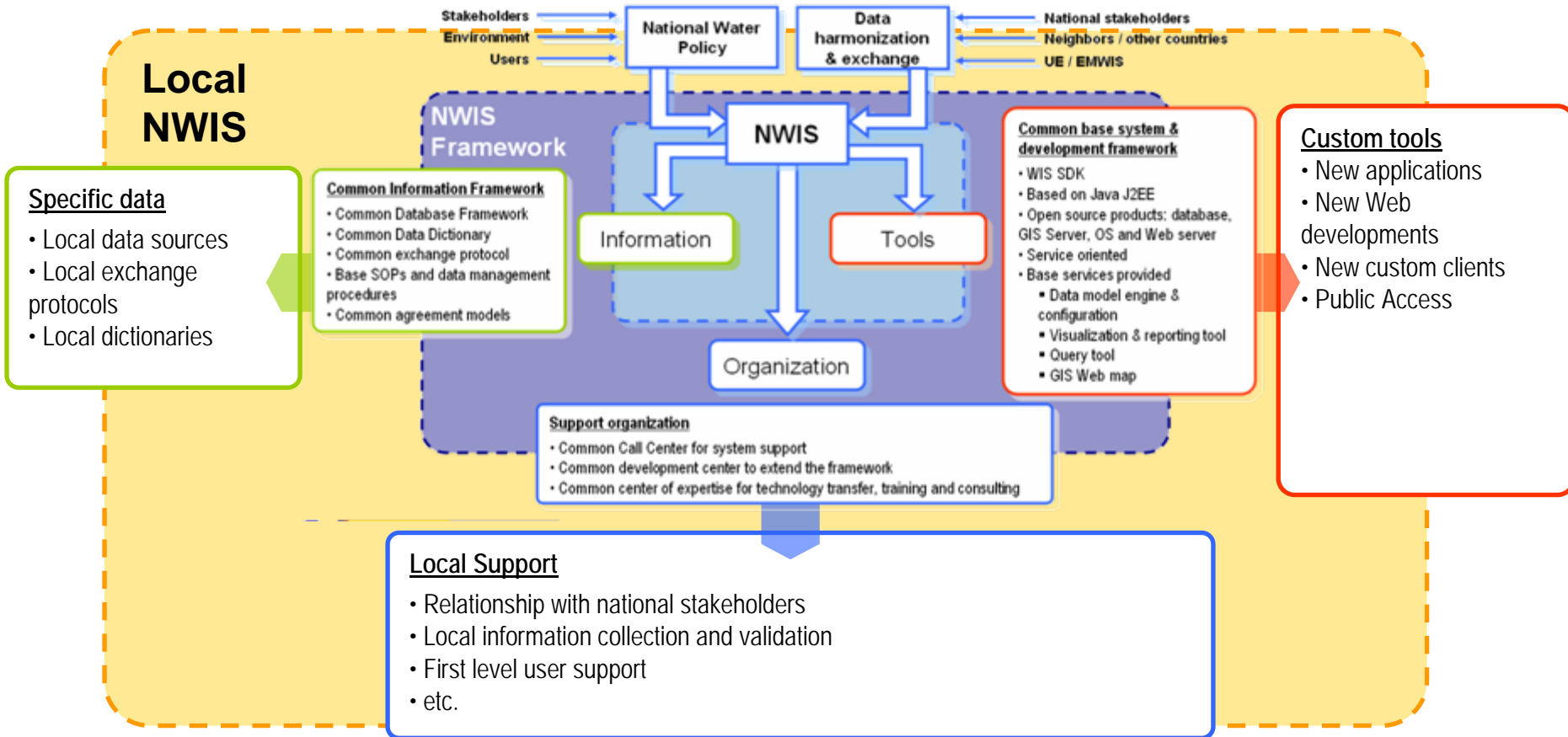
NWIS Conceptual model



NWIS Framework



NWIS Local Architecture

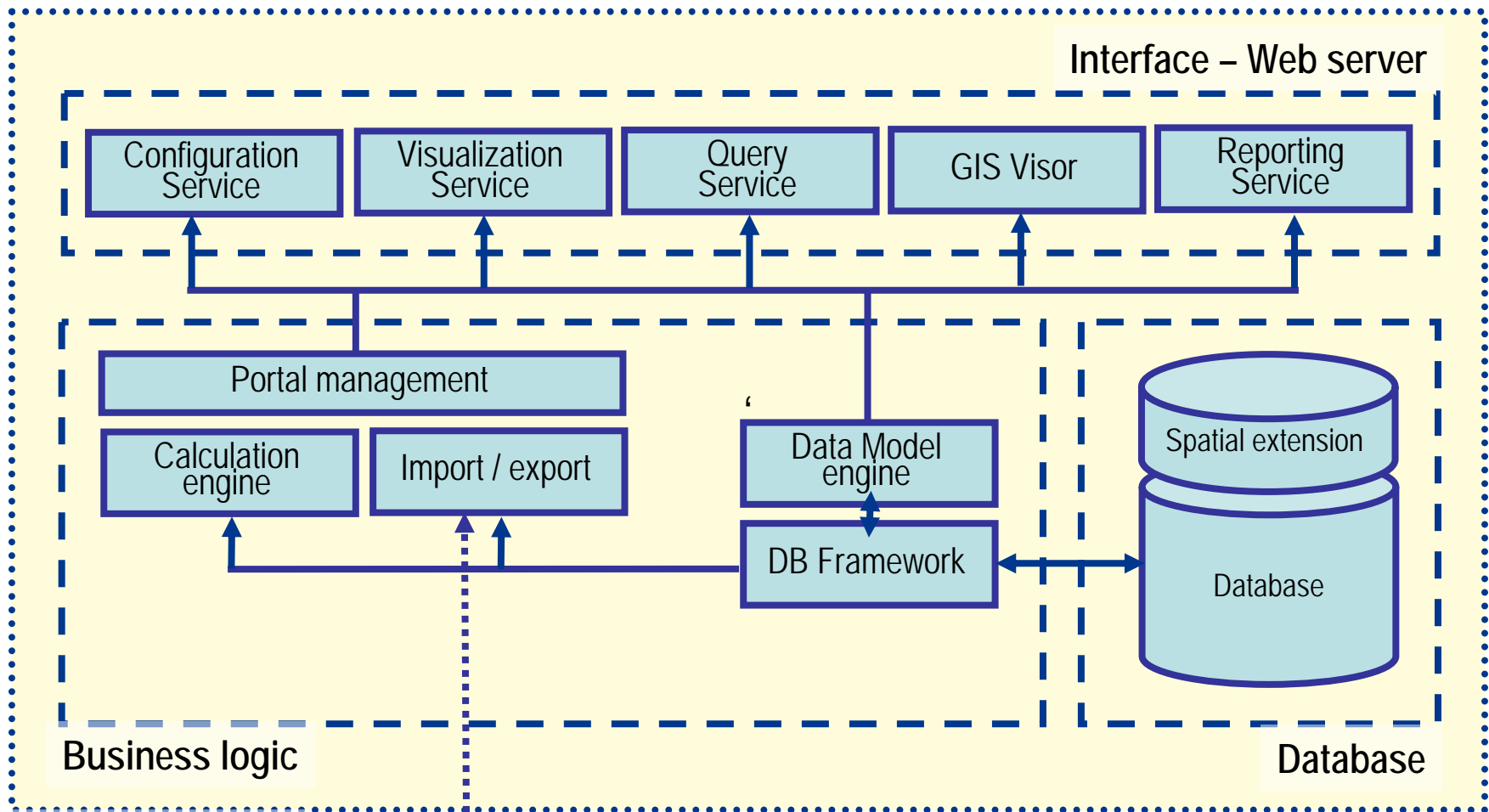


NWIS Framework Development Principles



- Open source software package
- Based on open source platforms too
 - Linux OS
 - PostGRE Database
 - PostGIS Geospatial Database support
 - MapServer for GIS Support
 - J2EE based WIS SDK and core components (base services)
- Conceptual and standardized data model based on WFD principles
 - Water Body concept
 - Pressures, impacts
 - Common Implementation Strategy guidelines
- Open and supported on OGC and ISO standards
 - INSPIRE - Spatial Data Infrastructure Node
 - ISO 19115 & ISO 19139 Metadata structures

NWIS Framework Logical Architecture

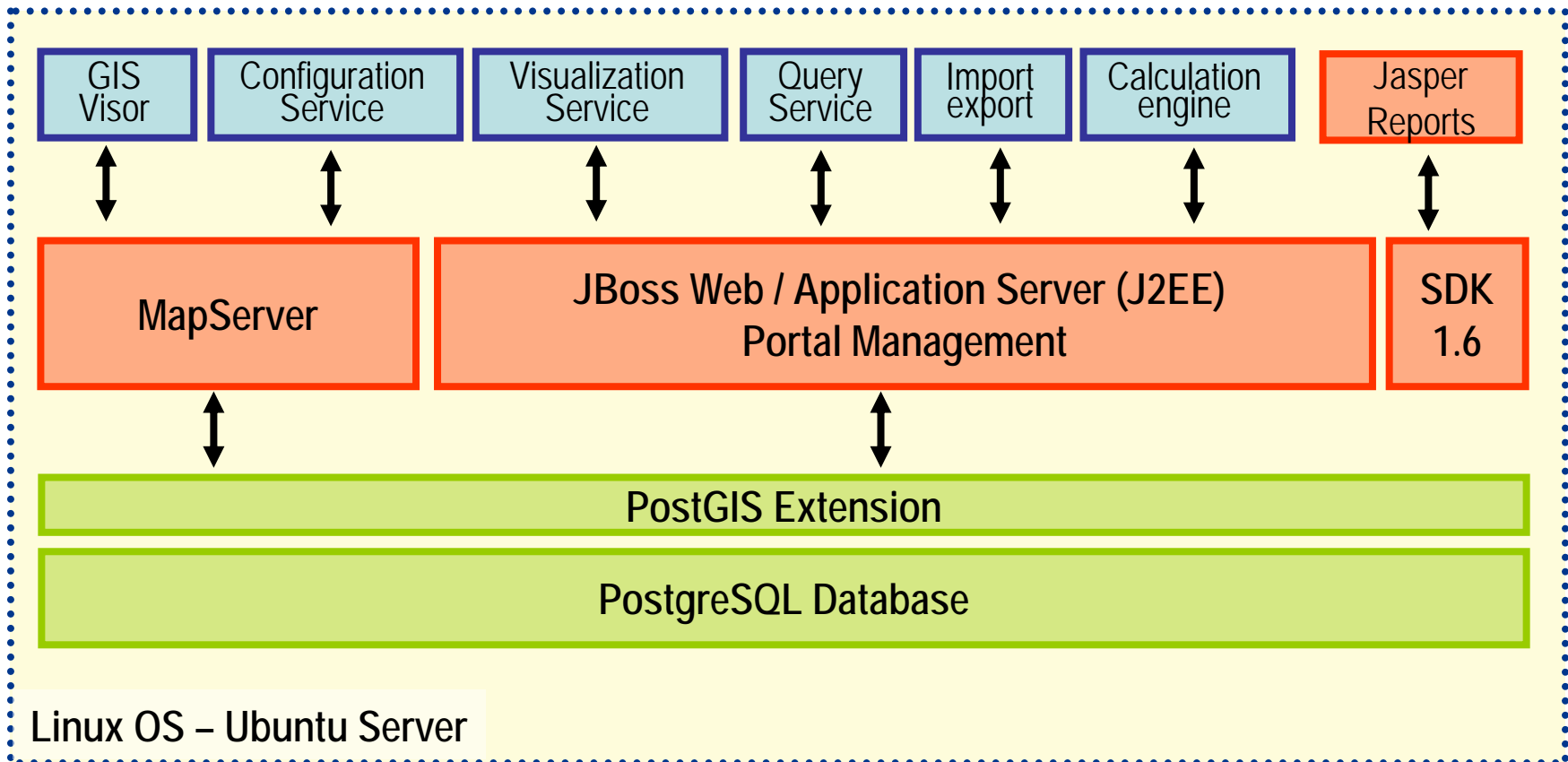


NWIS Framework

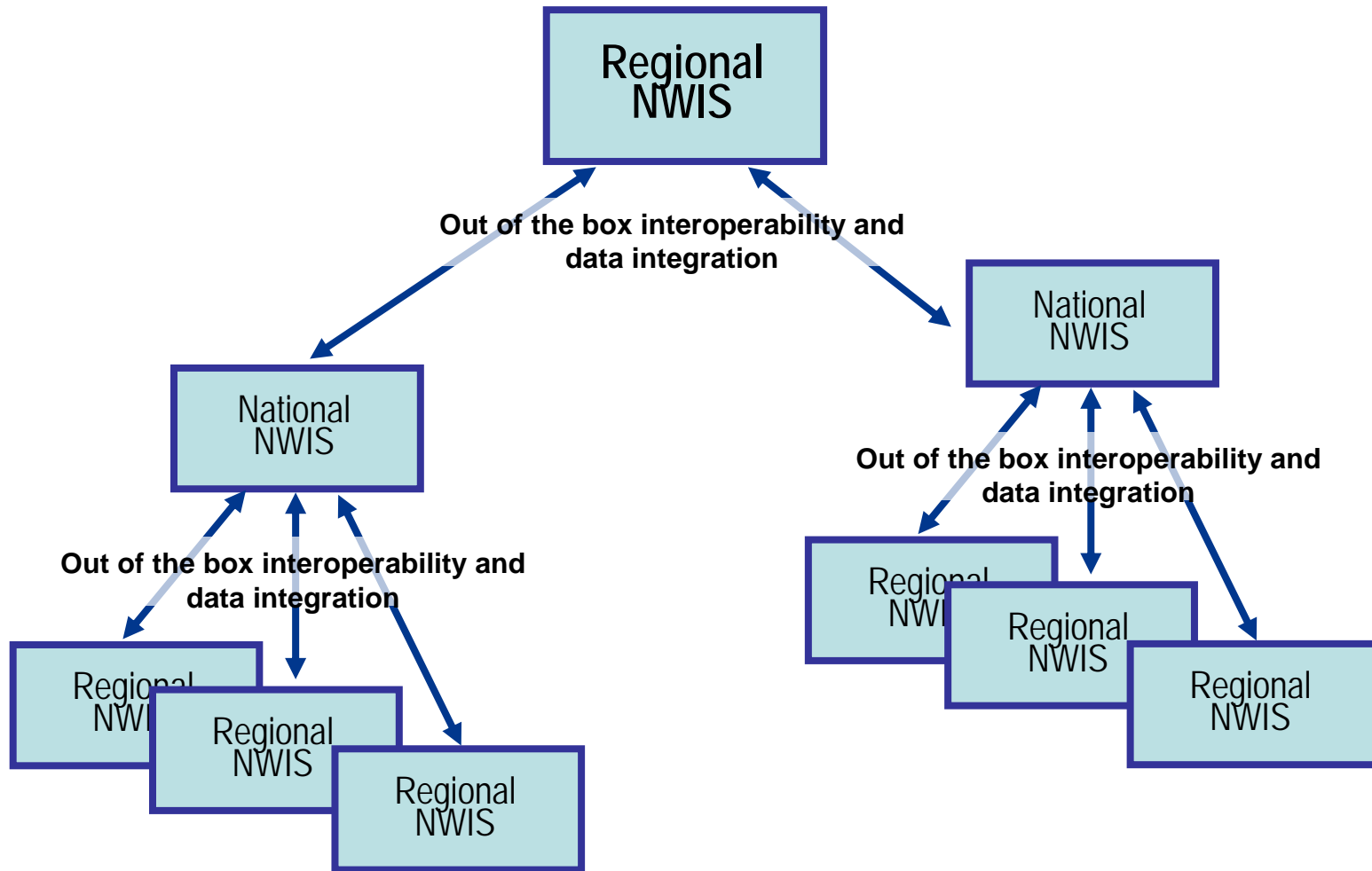
Other NWIS based system



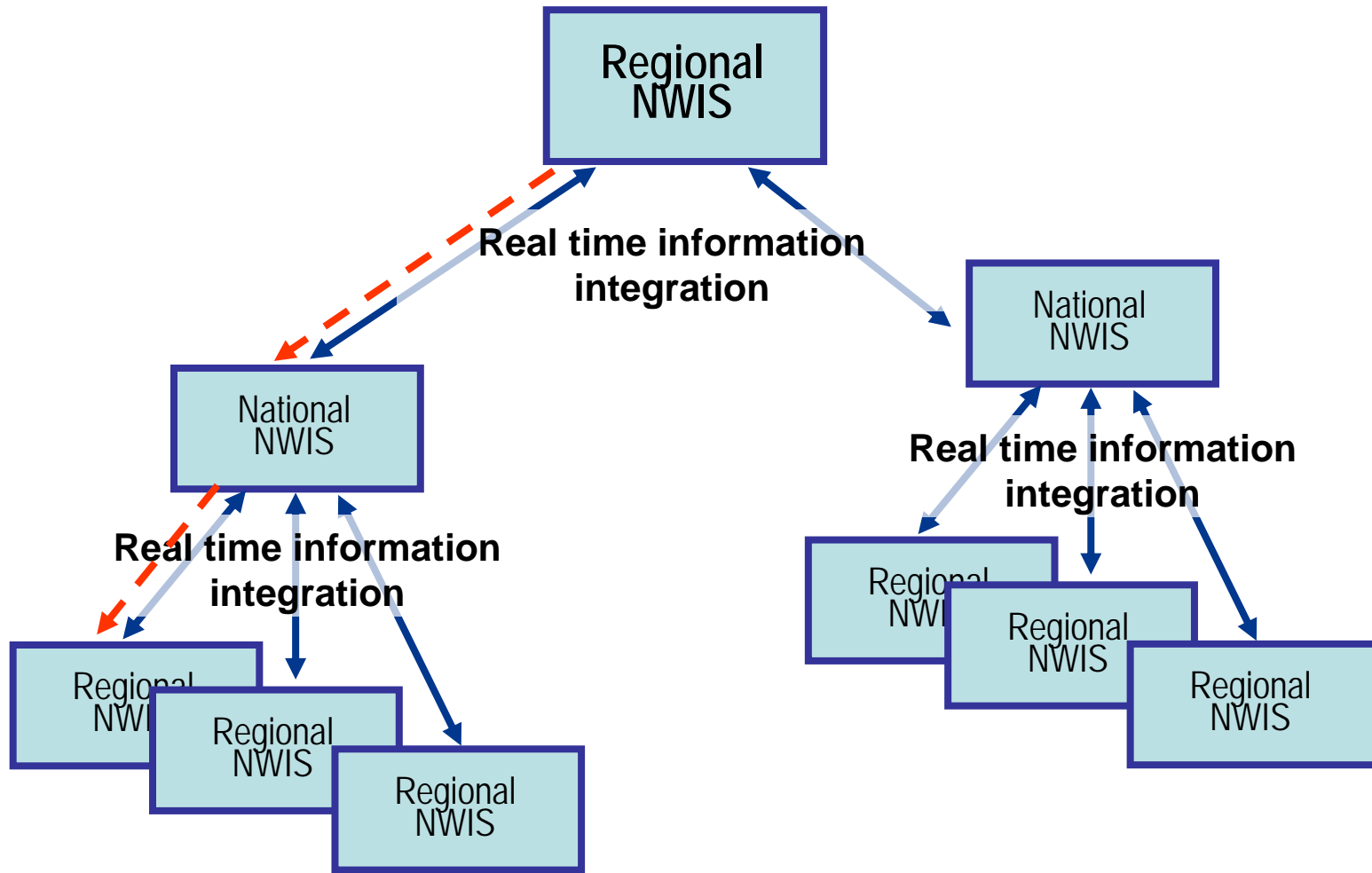
NWIS Framework Software architecture



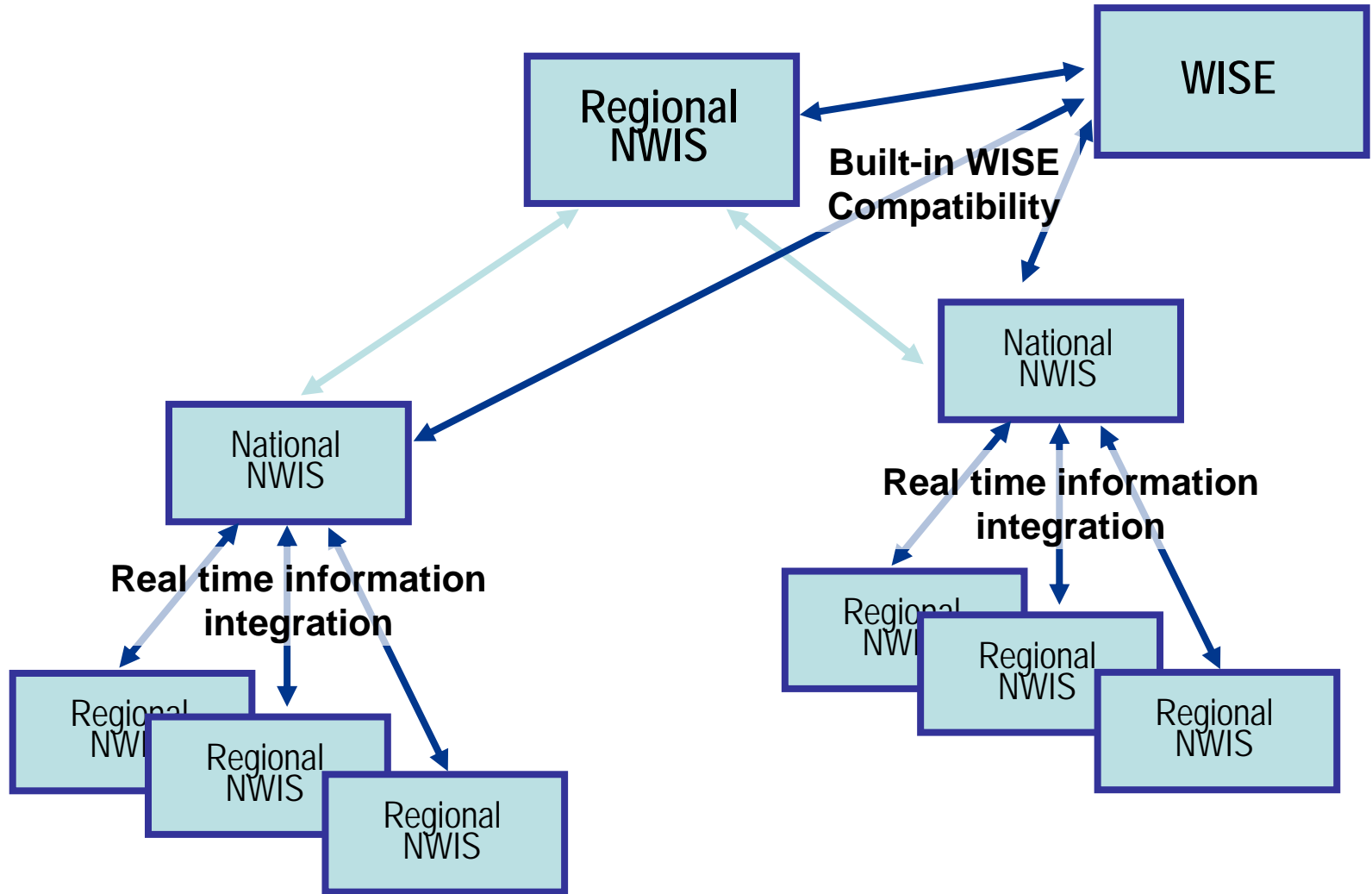
NWIS Framework interoperability



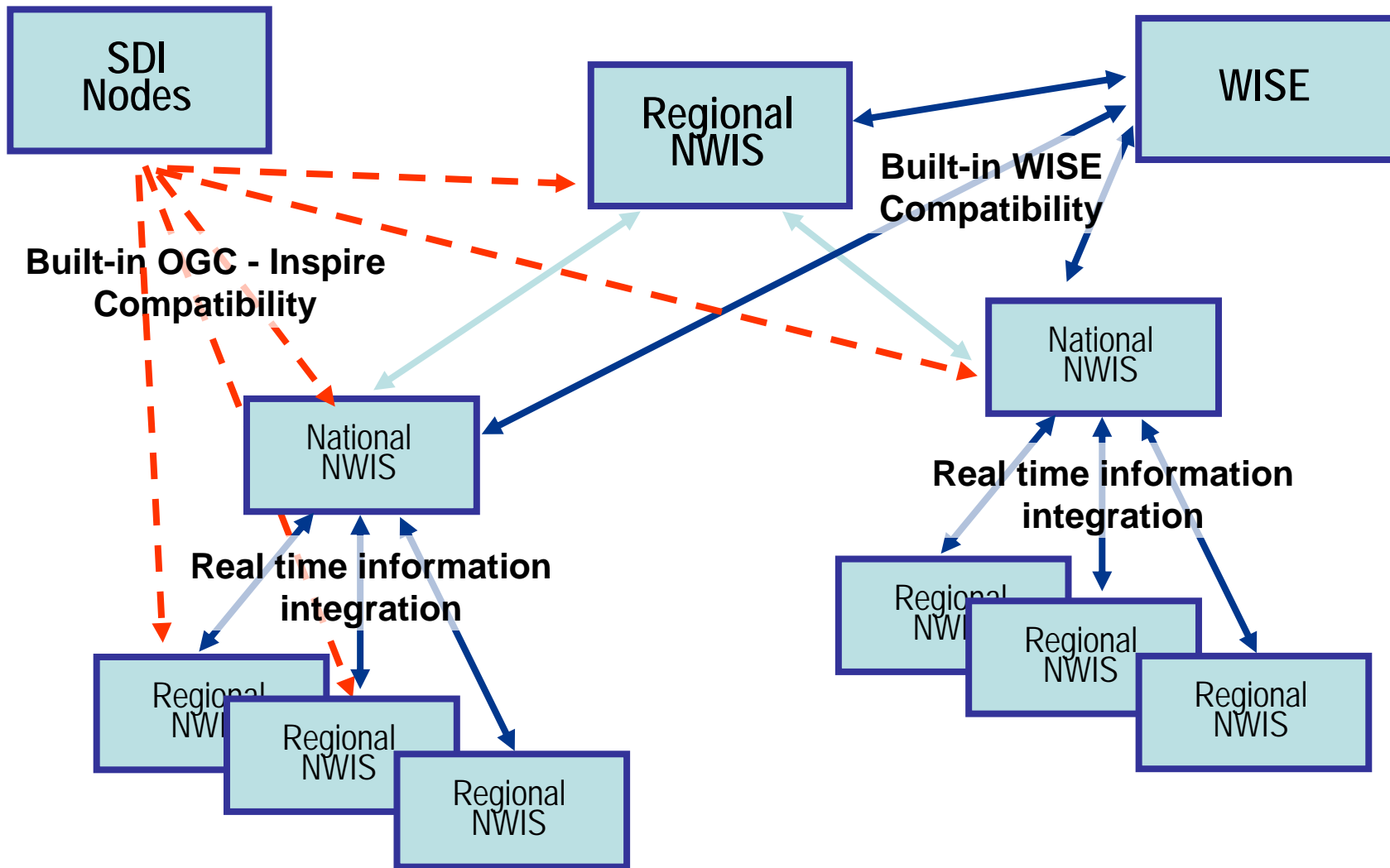
NWIS Framework interoperability



NWIS Framework interoperability



NWIS Framework interoperability



NWIS Framework support organization



- **Support center**
 - Call center support
 - Technology transfer
 - Training
 - Central system administration
- **Development center**
 - New functionality development
 - Error tracking and bug fixing
 - Platform update: new releases, versions, etc.
- **Center of expertise**
 - Hydrological consulting
 - GIS Support
 - Data validation support
 - Data dictionary, SOPs and protocol administration

NWIS Framework



- Typical implementation road map:

Activity	Who	Duration	Where
Preparation and administrator training	Administrator	1 week	Support center Center of expertise
Installation and configuration of the system	Administrator	1 weeks	Support center Center of expertise
Definition of local DB model	Administrator	2 weeks	Country
Data population	Administrator Users	4 to 12 weeks	Country
User training	Users	1 week	Country
System Validation	Administrator Users	1 week	Country

NWIS Development cost estimation



- NWIS Framework development
 - 300.000 €
 - 6 to 9 months
- Pilot System
 - 150.000 €
 - 2 to 3 months
- Support organization set-up
 - Set-up cost: 60.000 €
 - Yearly cost: 400.000 €
- Deployment (7 countries, 1 system per country including hardware and licenses)
 - 50.000 € / country

NWIS Development cost estimation



Total cost estimation summary

Development	1 development	300.000,00 €	300.000,00 €
Pilot	1 pilot	150.000,00 €	150.000,00 €
Deployment	7 countries	50.000,00 €	350.000,00 €
Support set up	1 time	60.000,00 €	60.000,00 €
Support	3 years	400.000,00 €	1.200.000,00 €
			2.060.000,00 €