



Co-ordination committee seminar of the national focal points

Basic Principles of WISE interoperability

Eduardo García – ADASA Sistemas
Madrid - Spain



Agenda



- **WISE vs NWIS**
 - WISE
 - NWIS
 - Regional System vs. National System
- Base of WISE Interoperability
 - Principles of Interoperability
 - WISE Interoperability
 - The WISE Technical Committee & the GIS Guidance Document
 - Current and future WISE interoperability
- WISE Interoperability in non WFD countries
 - Common principles

WISE System



- WISE System
 - Acronym: **Water Information System for Europe**
 - "**Your Gateway to water**": European database encompassing all water-related data across the continent. .
 - Initial focus centered on mandatory reporting elements associated to WFD implementation. Progressively moving towards a wider approach: EIONET (SOE), INSPIRE, etc.
 - It compiles a number of data and information collected at EU level by various institutions or bodies which has either not been available or only been fragmented over many places
 - Maintained and developed by the
 - **DG Environment**: strategy, legislation, mandatory reporting obligations
 - **EEA**: water data centre and host the public WISE web page which has as a central feature the section on "themes and data".
 - **JRC**: is responsible for the data synchronisation and has developed a number of useful tools, including the CCM2 database.
 - **Eurostat**: is collecting water statistics and provides significant input in the development of the GIS part of WISE and in particular ensuring the link to INSPIRE
 - SEIS Strategy
 - WISE is part of a broader vision towards interoperable Environmental Information Systems (water & non-water)



NWIS Systems

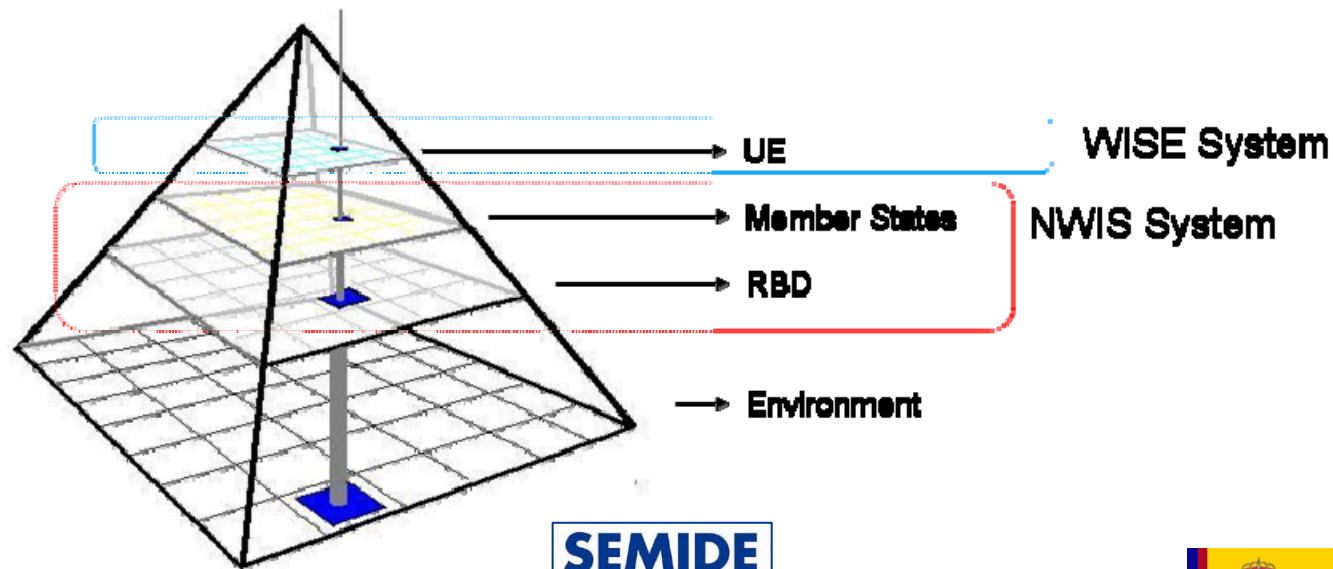


- Definition of NWIS
 - Acronym: **N**ational **W**ater **I**nformation **S**ystem
 - System that stores and processes information shared between the main national water stakeholders in a country.
- National water information systems have been develop across European States. Those systems typically comprise:
 - **Data**: base element to national system. Not necessarily in a single centralized database. It could be spread across the country and integrated trough computer tools and communication systems. Could be capture manually or automatically.
 - **Tools**: databases, Web interfaces, GIS systems, etc. needed to manage and utilize the information stored in the system.
 - **Support**: supporting information management requires qualified and dedicated people that maintains the data and the tools up to date.
- Need for NWIS
 - Is one of the main instruments of national water policy. Key element in national decision making process
 - NWIS will be the base of a data-driven scientific strategic analysis on national water policies
 - 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

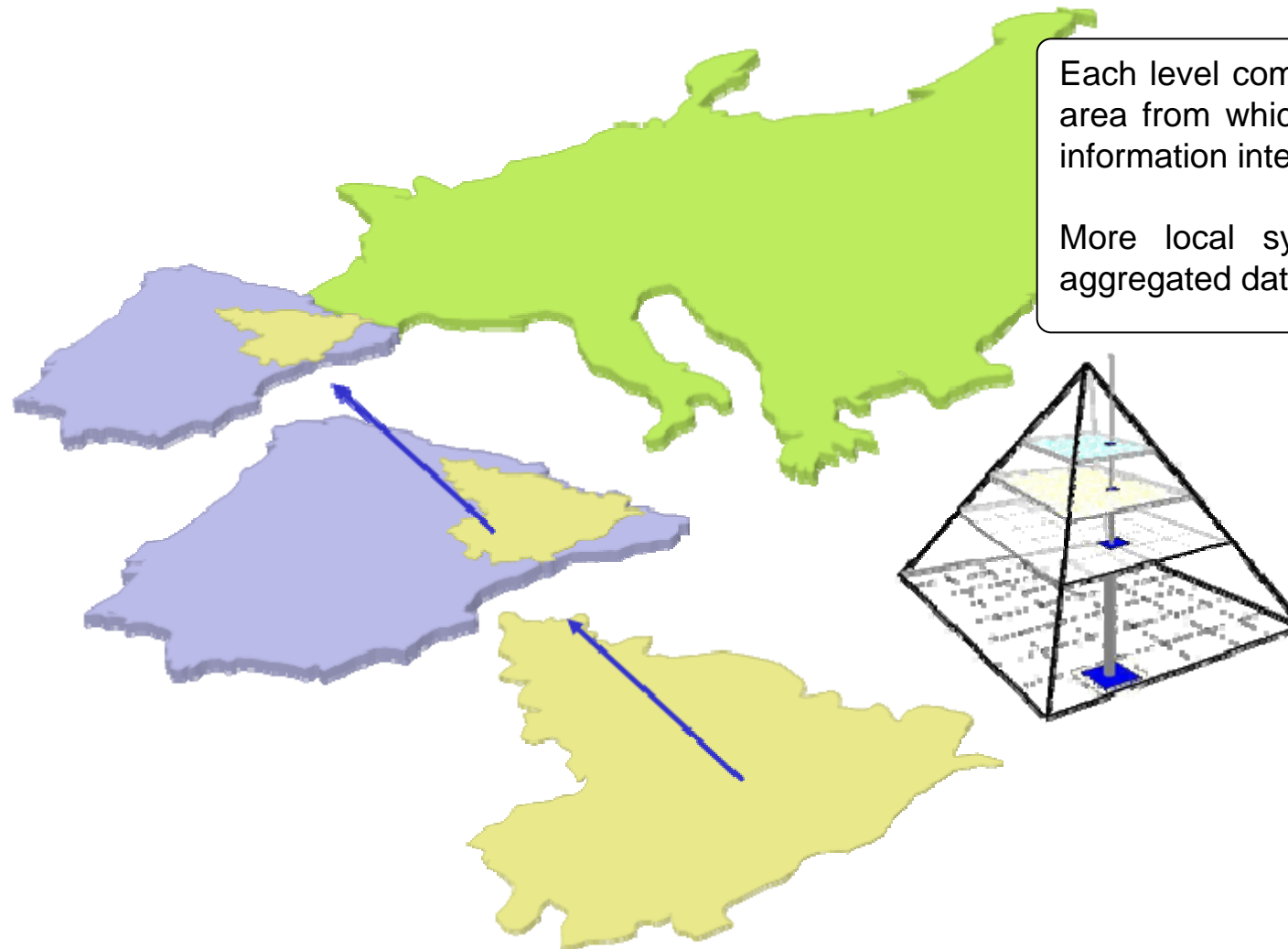
WISE vs. NWIS



- Regional vs. national focus
 - National systems are typically focused on management and control. The level of granularity of data is defined accordingly:
 - Control is a RBD responsibility: measured data, observational data, etc.
 - Management is usually at State level: analyzed data, indicators, etc.
 - Regional systems are centered on information sharing, reporting, benchmarking and policy effectiveness analysis.
 - Highly aggregated data for key environmental and WFD indicators.



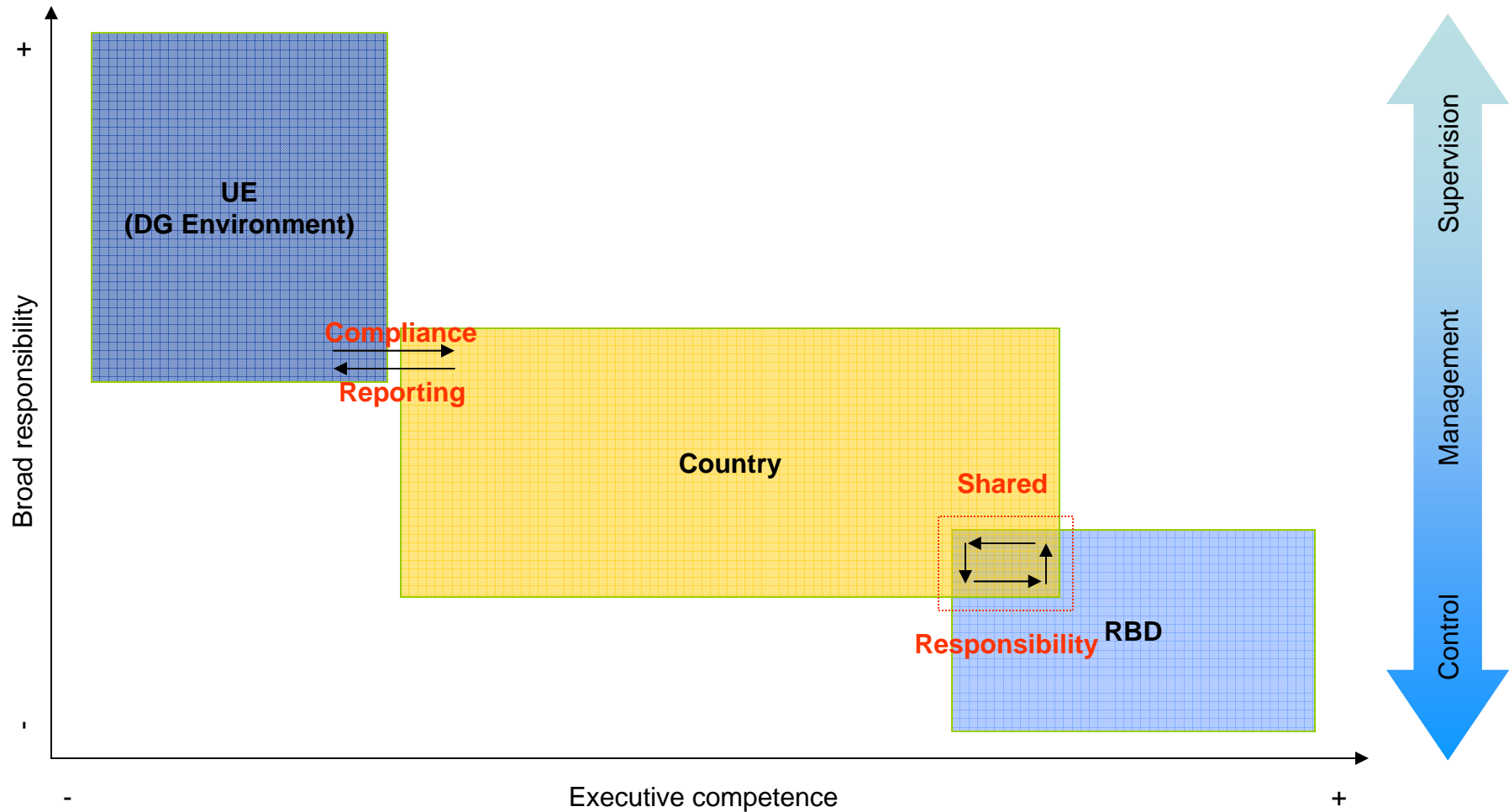
WISE vs. NWIS



Each level comprises a geographical area from which derives the level of information integration required.

More local systems manage less aggregated data

Regional vs. national



Base of WISE interoperability



- Interoperability according to ISO [CEN technical Report 15449^[1]] “is the capability to communicate, execute programs, or transfer data among various functional units in a manner that requires the user to have little or no knowledge of the unique characteristics of those units.”
- Interoperability can be built at various levels:
 - network-protocol interoperability allows **communication** between components;
 - standard interface specifications can enable clients to perform **procedures** on a remote system;
 - **data transfer** interoperability allows access to data, sharing of geographic databases and other services independent of the proprietary format;
 - **semantic interoperability** concerns an application’s ability to interpret data consistent for common representation or processing.

WISE Interoperability



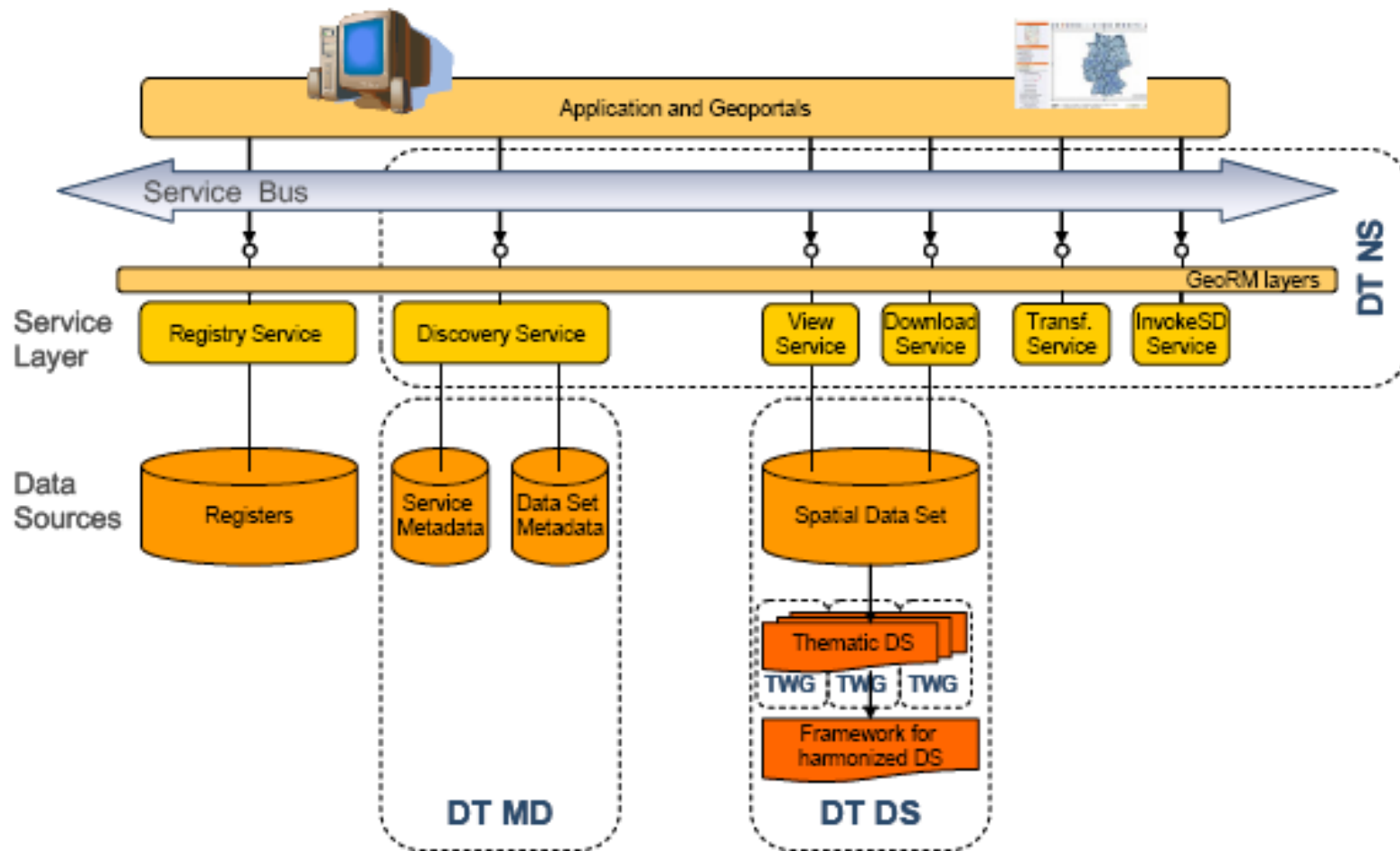
- Currently, WISE interoperability is based on compliance of data exchange formats (data transfer): XML schemas based on WFD reporting obligations
 - Data is replicated
 - Data Models are not consistent across countries: even if XML are compliant there is room for ambiguity.
 - No real time integration: XML are typically uploaded only twice a year
 - Time consuming and not very effective but easy to implement at NWIS level
- In the future, WISE interoperability will mean direct, real time integration of systems (semantic & network integration):
 - No need for a centralized repository for all data (only aggregated)
 - Data will be accessed where it is produced when it is needed
 - Much more robust and integrated system
 - This interoperability is being defined collectively and together with INSPIRE
 - The requirements towards NWIS are much more strict and complex

WISE Interoperability implementation



- Group of experts that define the requirement of a future true interoperability between NWIS systems
 - The outcome of their conclusions is developed in the “GIS Guidance Document”
- The base elements of this future interoperability are:
 - **Network & procedures:** use of OPEN GIS Specifications (from OGC)
 - WFS, WMS, etc.
 - **Semantic**
 - Use of ISO 19100 family of standards for geographic information (projection, metadata, etc.)
 - Definition of a pan-European water data model
 - Coding
 - Hierarchies
 - Structures
 - Symbols
 - etc.

WISE Future Interoperability



WISE Interoperability at EMWIS Countries



- Basic WISE interoperability principles are valid to non-WFD countries
 - **Network & procedures:** OGC Open GIS Specification
 - **Semantic:**
 - ISO Standards
 - Data model will comprise all WFD reporting obligations
 - It could be simplified to match only the basic set of data required
- Interoperability principles are a safe bet for future NWIS development
 - Complies with INSPIRE principles
 - Are based on international well recognized solid standards
 - A good starting point for a local implementation
 - Allow to easily exchange data within national and international institutions
- At this point, implementing regional interoperability has lower cost than developing non-interoperable strategies
 - Capability to take advantage of European / International developments and tools
 - More likely to raise funding for a regional program
 - Not reinvent the wheel: focus on collecting and maintaining an up-to-date, high quality set of data.

References



- CIRCA:
http://circa.europa.eu/Public/irc/env/wfd/library?l=/framework_directive/w-wise_background/11062008_consolidation&vm=detailed&sb=Title
- WISE: <http://water.europa.eu>
- INSPIRE: <http://www.ec-gis.org/inspire/>
- OGC: <http://www.opengeospatial.org/>

- Spanish NWIS (SIA):
 - <http://www99.mma.es:120/siagua/visualizacion/lda/index.jsp>
 - <http://www99.mma.es:120/siagua/consultas/>

WISE vs. NWIS



- Level of granularity

