Co-ordination committee seminar of the national focal points

MedWIS Geographical References

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Agenda

- Objective of MedWIS geographical reference definition
- WISE geographical references
- Basis of the proposal
  - Specificities of Mediterranean environment and water management
  - WISE vs. MedWIS differences and conditionals
- Data model structure: meta-model
  - Classes
  - Elements
    - Features
    - Variables
- Elements of geographical reference proposal

Objective

- Identify a set of relevant features to observe water-cycle status in the Mediterranean countries

- Agree upon these set of features and its characteristics to enable semantic interoperability of water information between Mediterranean countries

- Provide the backbone data specifications for building the data infrastructure of the Mediterranean water information system and for national water information systems in the Mediterranean

WISE Geographical reference datasets

- WISE current datasets:
  - **Spatial data submitted by MS according to Directives**:
    - Named by the Directive e.g. "WFD River Basin Districts".
  - **WISE Reference GIS datasets**:
    - Aggregated from MS submissions
  - **Background GIS datasets:**
    - refer to datasets such as administrative borders of the Member States, coastline, main cities/towns and roads. They provide the background and context for mapping the WISE Reference GIS datasets
  - **External GIS datasets:**
    - these can be used to support further analysis and the visualisation of the WISE Reference GIS datasets, such as CCM2, Corine Land Cover and EEA European River Catchments

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WISE Geographical reference datasets
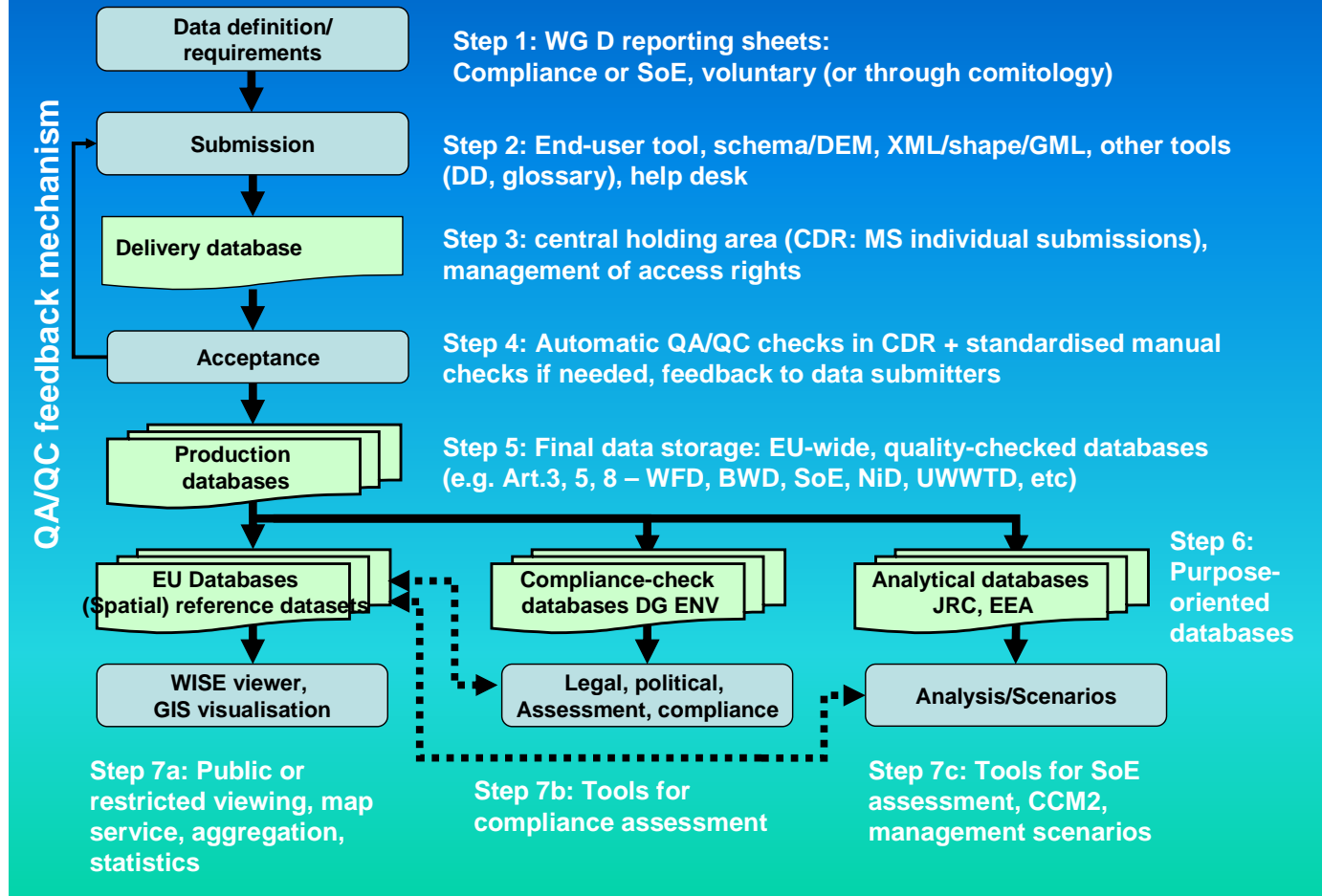
- **Spatial data submitted by MS according to Directives**:
    - Defined according to WFD reporting sheets
    - Used for compliance checking of MS
    - All data specifications compiled in a pan-European water data model defined by the CIS WorkGroup D "*Guidance on Implementing the Geographical Information System (GIS) Elements of the EU Water policy*" document
        - Coding
        - Hierarchies
        - Structures
        - Symbols
        - etc.

WISE Geographical reference datasets

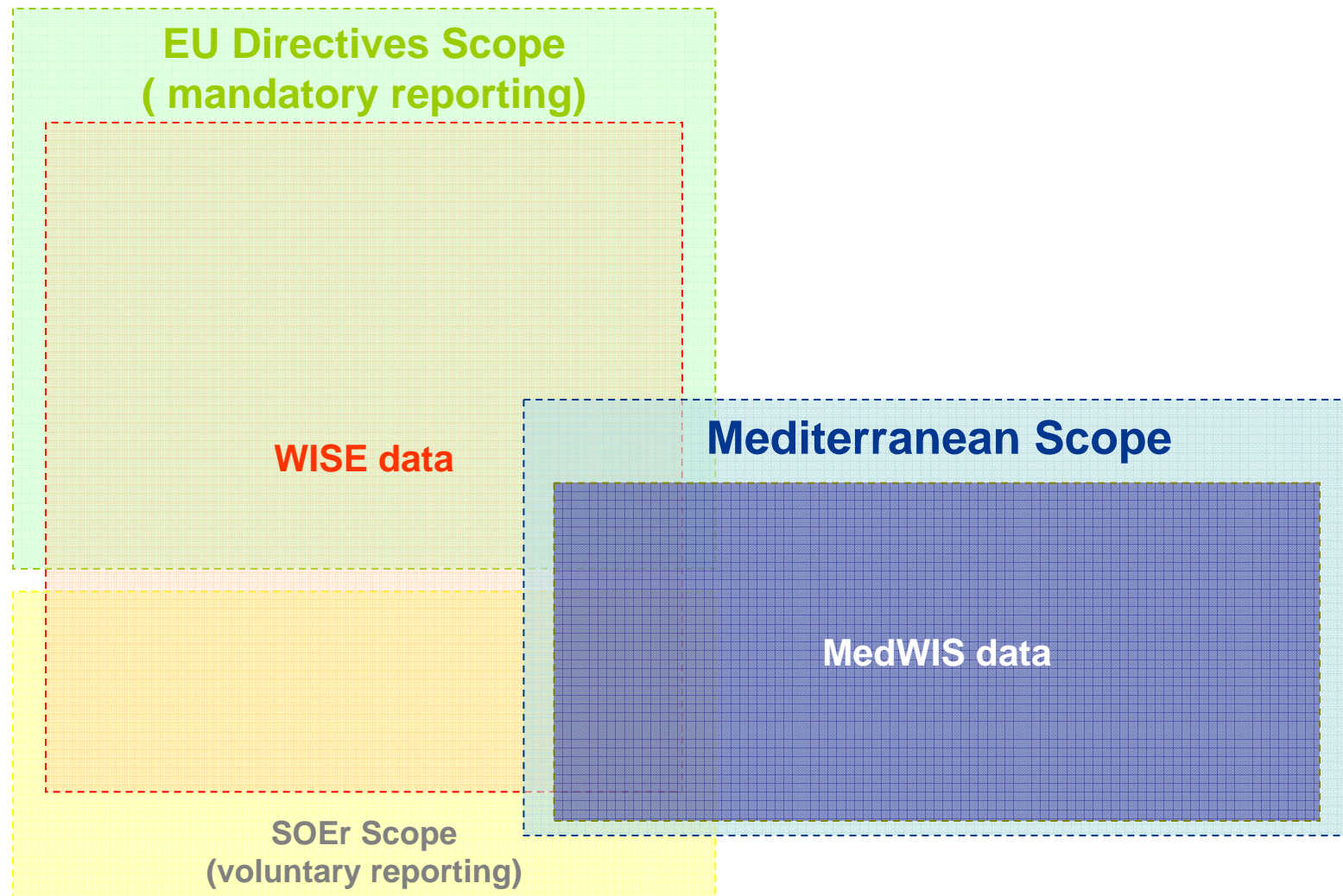**WISE data flow** (all steps involve QA/QC)

Version of 04/09/08

QA/QC feedback mechanism

| Data definition/ requirements | **Step 1: WG D reporting sheets:** Compliance or SoE, voluntary (or through comitology) |

| Submission | **Step 2: End-user tool, schema/DEM, XML/shape/GML, other tools (DD, glossary), help desk** |

| Delivery database | **Step 3: central holding area (CDR: MS individual submissions), management of access rights** |

| Acceptance | **Step 4: Automatic QA/QC checks in CDR + standardised manual checks if needed, feedback to data submitters** |

| Production databases | **Step 5: Final data storage: EU-wide, quality-checked databases (e.g. Art.3, 5, 8 – WFD, BWD, SoE, NiD, UWWTD, etc)** |

| EU Databases (Spatial) reference datasets | Compliance-check databases DG ENV | Analytical databases JRC, EEA | **Step 6: Purpose-oriented databases** |

| WISE viewer, GIS visualisation | Legal, political, Assessment, compliance | Analysis/Scenarios |

Step 7a: Public or restricted viewing, map service, aggregation, statistics

Step 7b: Tools for compliance assessment

Step 7c: Tools for SoE assessment, CCM2, management scenarios
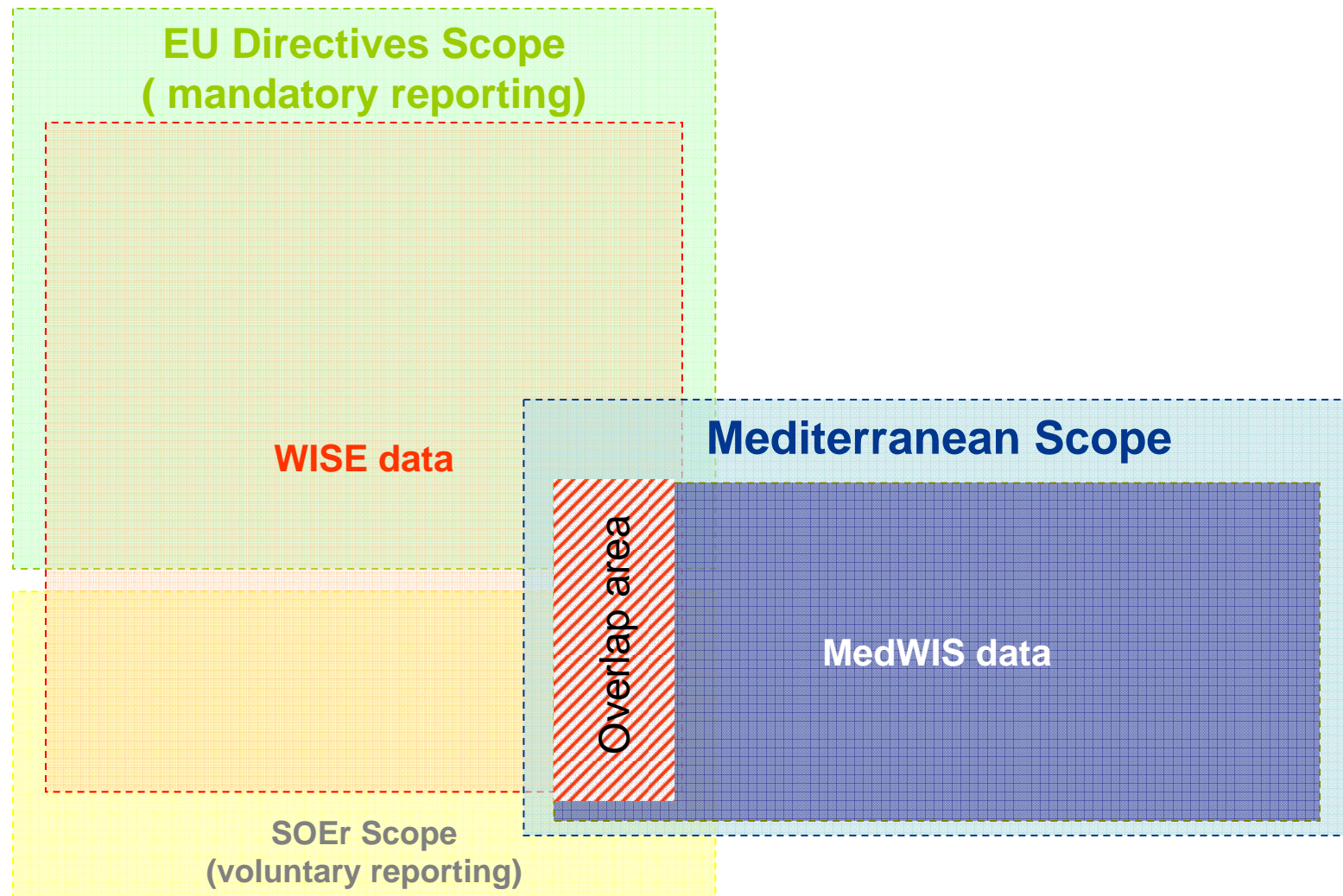
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- Why can't we use the same WISE reference dataset for MedWIS?
    - There's no reporting obligation associated to Mediterranean information
        - Core WISE data is derived from WFD implementation mandatory reporting from Member States which does not apply to Med Countries.
    - Water management problematic is substantially different in Europe than in the Mediterranean countries
        - Only southern European countries face similar situations
        - WFD does not focus on southern European issues
            - WFD does not refer to drought nor drought management and monitoring
            - Little references to regenerated water
            - …
    - Resources of UE MS larger than Mediterranean countries
        - Is not feasible to use the same standards and requirements
        - Complexity of capturing environmental data in med countries
            - Environment
            - Flow regime of rivers
            - Etc.

WISE vs MedWIS Datasets

**EU Directives Scope
(mandatory reporting)**

WISE data

Mediterranean Scope

MedWIS data

**SOEr Scope
(voluntary reporting)**

WISE vs MedWIS Datasets

**EU Directives Scope
(mandatory reporting)**

WISE data

Mediterranean Scope

Overlap area

MedWIS data

**SOEr Scope
(voluntary reporting)**

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WISE vs MedWIS Datasets

	WISE datasets	MedWIS datasets
Obligation	Mandatory	Voluntary
Legislation	WFD centric	Non-WFD centric
Complexity	High	Low
Main focus	Water good status	Water availability & good status
Aggregation level	Medium	Small – Medium - High
Local capability	High	Has to be developed

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- MedWIS / WIS data compatibility principles
  - Common datasets are compatible at a high aggregation level
  - Metadata is compatible
  - Data models are compatible
  - Feature definition is coherent
  - MedWIS data could be use 'out-of-the-box' for SOEr reporting
  - MedWIS and WISE share technical interoperability
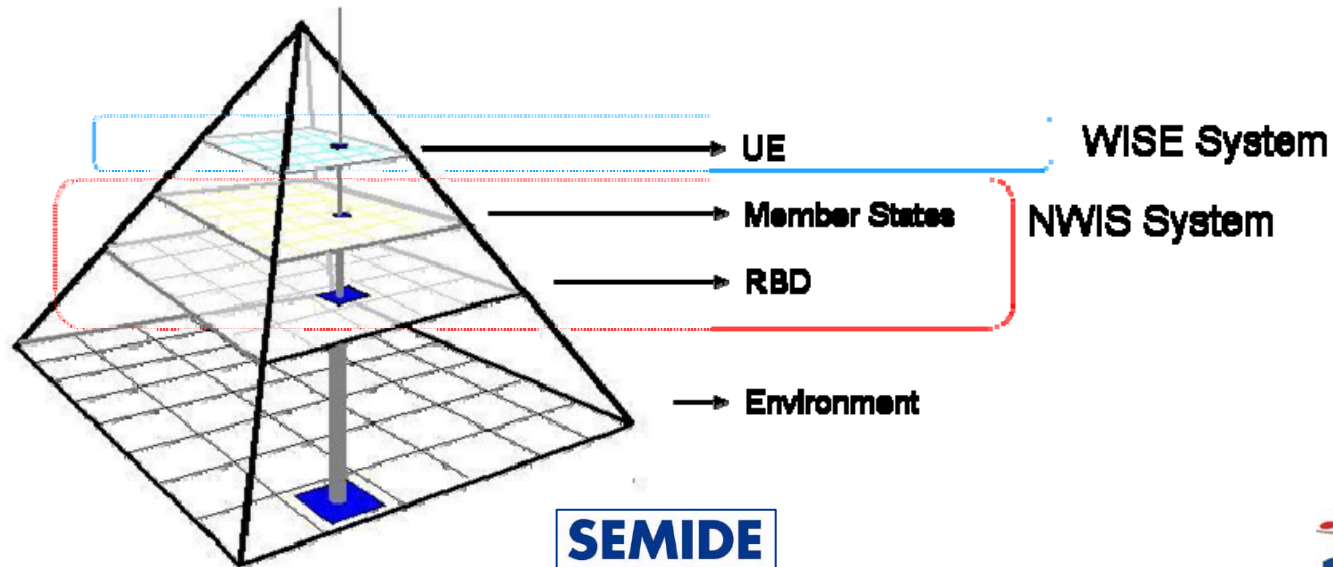
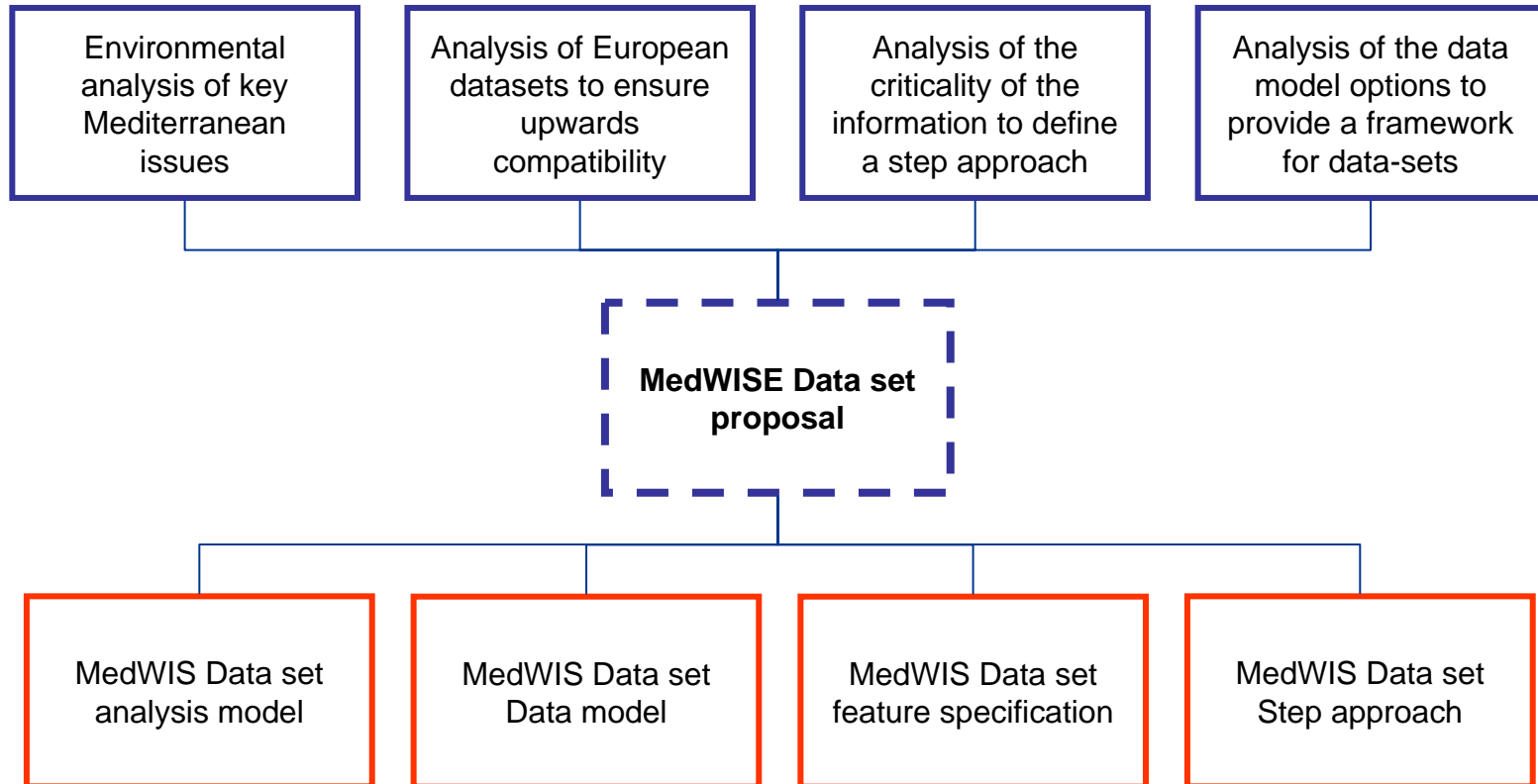# Proposal for MedWIS data sets

- Basis for the proposal
  - Analysis of the Mediterranean problematic
    - Derive a classification / analysis model to data-sets
  - Analysis of European Datasets to ensure upwards compatibility
    - WISE
    - INSPIRE
  - Analysis of the criticality of the information
    - To define a step approach
  - Analysis of a meta-data model to frame the proposed data-sets
    - Based on WISE experiences
- Components of the proposal
  - A data-set classification / analysis model based on the Mediterranean water management issues
  - A data model proposal supporting the data-set organization and normalization
  - A data-set detailed specification
  - A step approach to define an implementation path (different levels of compliance)

Proposal for MedWIS data sets

INPUTS

Environmental analysis of key Mediterranean issues	Analysis of European datasets to ensure upwards compatibility	Analysis of the criticality of the information to define a step approach	Analysis of the data model options to provide a framework for data-sets

MedWISE Data set proposal

MedWIS Data set analysis model	MedWIS Data set Data model	MedWIS Data set feature specification	MedWIS Data set Step approach

OUTPUTS

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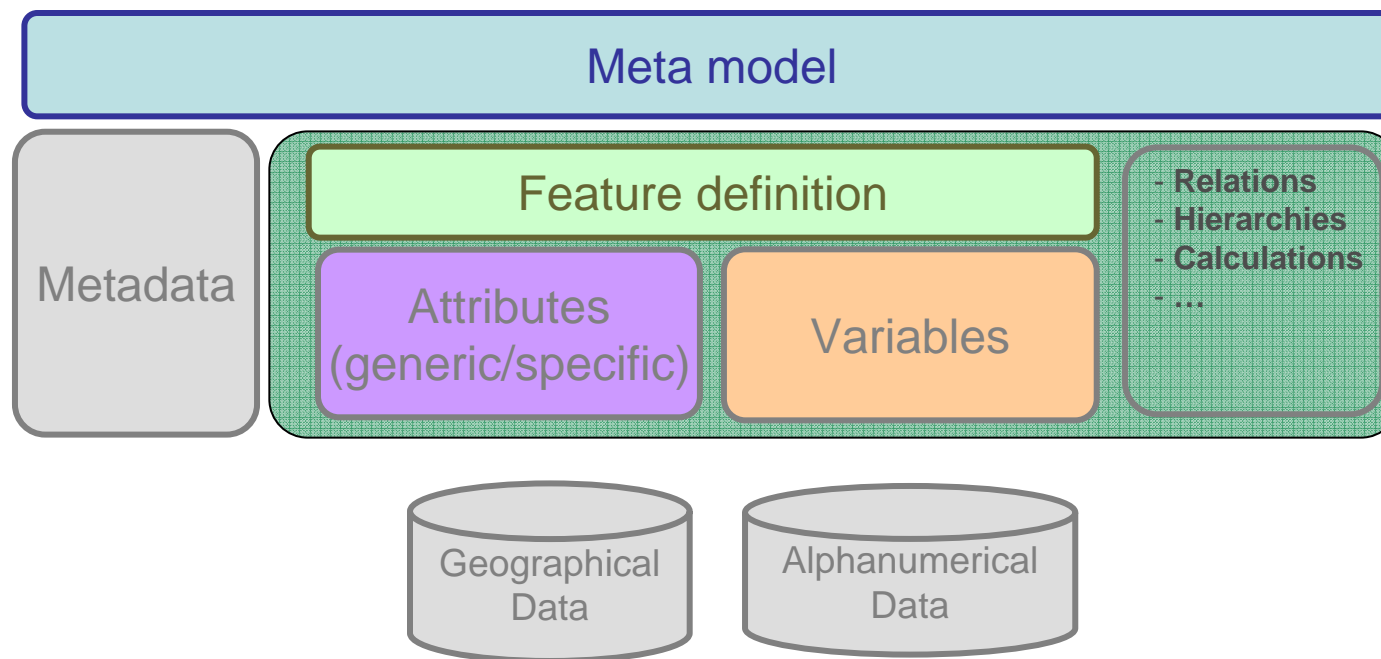# Key elements of the proposal

- Analysis model
    - <u>Reference information</u>: definition of the environment that has impact over the water cycle but it's not direct part of it
    - <u>Pressures</u>: human conditionals on the water cycle
    - <u>Hydrological information</u>: natural elements of the water cycle
    - <u>Monitoring</u>: water management tools
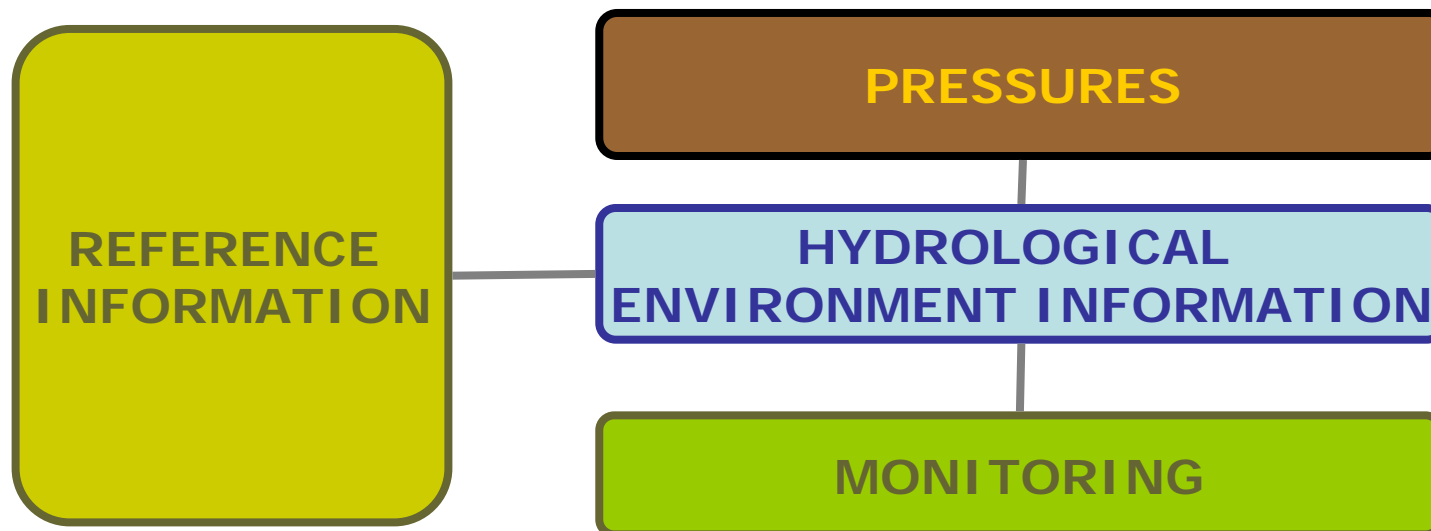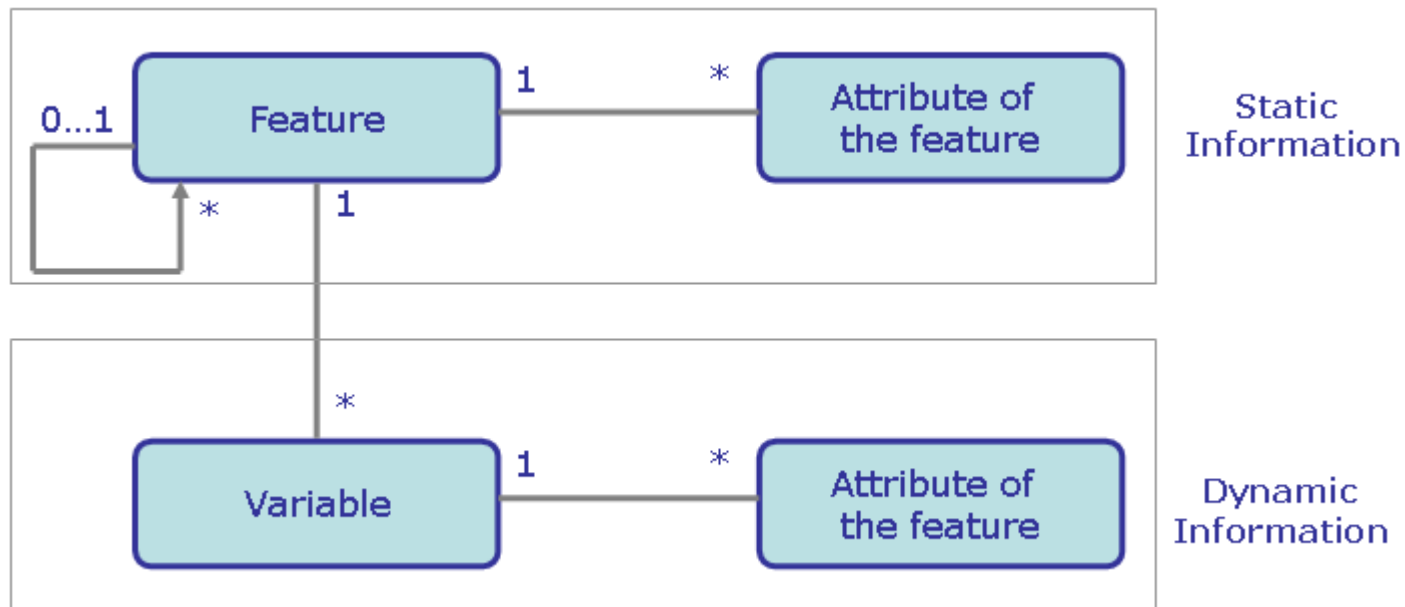
Key elements of the proposal

- Data model
  - All data elements to be classified as features / attributes / variables
    - Feature: data element of a predefined type
    - Attribute: characteristic properties of a feature
   - Variable: measure of a characteristic of a feature

Meta model

Metadata

Feature definition

Attributes (generic/specific)

Variables

- Relations
- Hierarchies
- Calculations
- …

Geographical Data

Alphanumerical Data

Key elements of the proposal

- Management information model:
  - Feature / Attribute of the feature
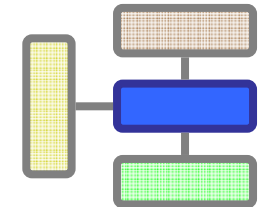 - Variable / Attribute of the feature

- Step approach:
  - All elements to be classified based on its degree of criticality
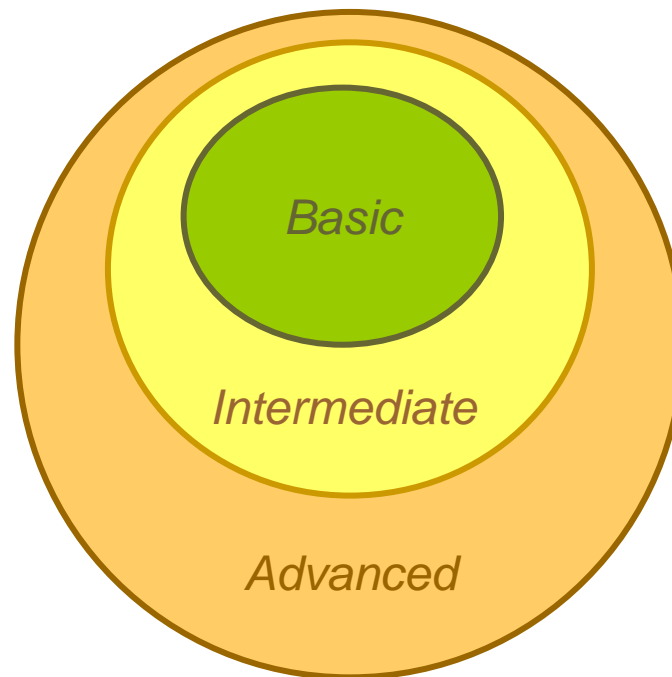
Key elements of the proposal

- Data set definition

HYDROLOGICAL ENVIRONMENT INFORMATION

REFERENCE NETWORK	ANALYSIS AND MANAGEMENT
River basin	Drinking Water Protected Areas
Sub basin	Water body
River	River basin district
Lake	Recreational waters
Transitional waters	Supply protection perimeter,
Coastal water	Economically Significant Aquatic Species Protected Areas
Aquifer	Nutrient-sensitive areas
Flood risk areas	Protected wetlands
Ecoregion	Habitats protection areas

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Key elements of the proposal

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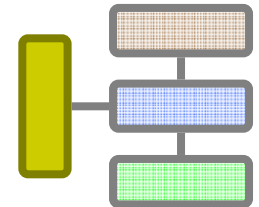
REFERENCE INFORMATION

ENVIRONMENT

- Elevation model
- Marine cartography
- Geology
- Edaphology

ENVIRONMENT MANAGEMENT

- National administrative boundaries
- Regional administrative boundaries
- Sub-regional administrative boundaries
- Local administrative boundaries
- Public hydraulic domain

Key elements of the proposal

- Data set definition

PRESSURES	
Urban agglomeration	Irrigation system
Wastewater treatment plant	Hydroelectric plants
Discharge point	Industry
Dams and lowhead dam	Dredging
Longitudinal alterations	Aggregates extraction
Water abstraction points	Coastal morphological alterations
Land use	Mining
Animal husbandry	Non-native species
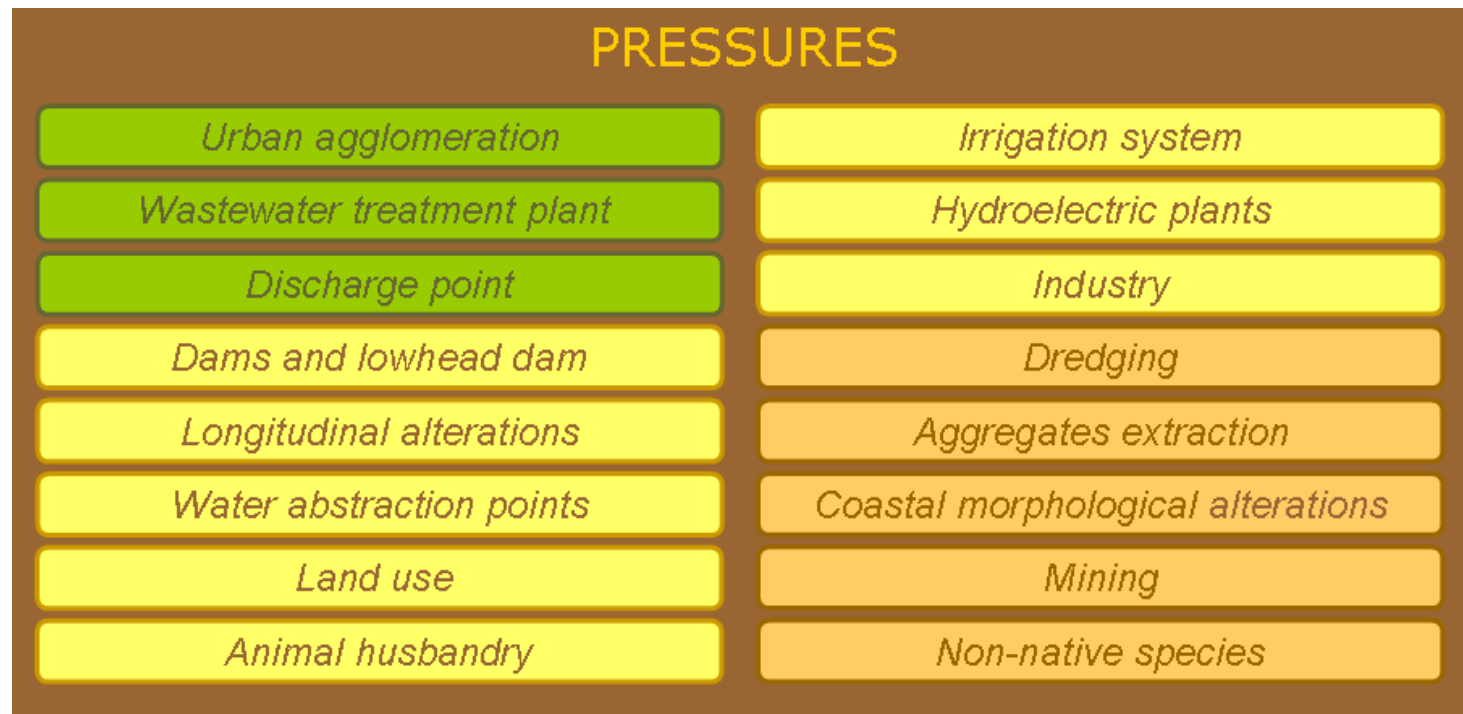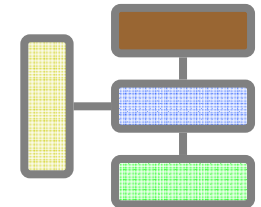
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REFERENCE

ENVIRONMENT

- Elevation Model
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- Edaphology

MANAGEMENT

- National boundaries
- Regional boundaies
- Comarcal boundaries
- Local boundaies
- Public hydraulic domain

PRESSURES

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HYDROLOGICAL ENVIRONMENT INFORMATION

REFERENCE NETWORK

River basin	River	Coastal water	Aquifer	Ecoregion
Sub basin	Lake	Transitional waters	Flood risk areas	

ANALYSIS AND MANAGEMENT

Drinking Water Protected Areas	Recreational waters	Nutrient-sensitive areas
	Supply protection perimeter	Protected wetlands
Water body	Economically Aquatic Species Protected Areas	Habitats protection areas
River basin district		

MONITORING

Monitoring sites	Monitoring network

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Key elements of the proposal

- Data set definition: for each feature a detailed definition sheet is proposed including
  - Name
  - Unit name
  - Category
  - Description
  - Levels of resolution
  - Data type
  - Attributes (General / Specifics)
  - Associated variables to be captured
- In the following versions some reference will be provided for:
  - Coding
  - Symbols
  - Trans-border matching requirements

- Data consistency:
  - Spatial Reference System:
    - Geographical dispersion of the Mediterranean zones

ENTITY	River		
UNIT	Environment		
CATEGORY	Reference Network		
DESCRIPTION	Body of inland water flowing for the most part on the surface of the land but which may flow underground for part of its course		
RESOLUTION	1:25.000		
	1:50.000		
	1:200.000		
	watershed 10km2		
	Discharge 100 l/s		
	75% of the months discharge > 0		
DATA TYPE			
ALPHANUMERIC	X		
CARTOGRAPHIC	X		
ATTRIBUTES			
GENERAL	Emwis code		
	Country code		
	Name		
	Country		
	Sub-Type: River		
	State: natual / artificial / very modified		
	Longitude of the centroid		
	Latitude of the centroid		
	Remarks		
	Database insert date		
SPECIFIC	Stream max height		
	Stream min height		
	Length of the channel		
	Sloop of the stream		
	Watershed area		
	Annual mean discharge l/s		
PARAMETERS	Metric derivative (index, contribution,...)		
	Diagnosis historical series		