Applying standards to ICT models, tools and data in Europe to improve river basin networks and spread innovation on water sector

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This work describes the strategy of the European Horizon 2020 project WaterInnEU. Its vision is to enhance the exploitation of EU funded ICT models, tools, protocols and policy briefs related to the water sector and to establish suitable conditions for new market opportunities based on these offerings. The main goals are:
• Connect the research results and developments of previous EU funded activities with the already existing data available on European level and also with to the companies that are able to offer products and services based on these tools and data.
• Offer an independent marketplace platform complemented by technical and commercial expertise as a service for users to allow the access to products and services best fitting their priorities, capabilities and procurement processes.
One of the pillars of WaterInnEU is to stimulate and prioritize the application of international standards into ICT tools and policy briefs. The standardization of formats, services and processes will allow for a harmonized water management between different sectors, fragmented areas and scales (local, regional or international) approaches. Several levels of interoperability will be addressed:
• Syntactic: Connecting system and tools together:
Syntactic interoperability allows for client and service tools to automatically discover, access, and process data and information (query and exchange parts of a database) and to connect each other in process chains. The discovery of water related data is achieved using metadata cataloguing standards and, in particular, the one adopted by the INSPIRE directive: OGC Catalogue Service for the Web (CSW).
• Semantic: Sharing a pan-European conceptual framework
This is the ability of computer systems to exchange data with unambiguous, shared meaning. The project therefore addresses not only the packaging of data (syntax), but also the simultaneous transmission of the meaning with the data (semantics). This is accomplished by linking each data element to a controlled, shared vocabulary. In Europe, INSPIRE defines a shared vocabulary and its associated links to an ontology. For hydrographical information this can be used as a baseline.
• Organizational: Harmonizing policy aspects
This level of interoperability deals with operational methodologies and procedures that organizations use to administrate their own data and processing capabilities and to share those capabilities with others. This layer is addressed by the adoption of common policy briefs that facilitate both robust protocols and flexibility to interact with others.
• Data visualization: Making data easy to see
The WMS and WMTS standards are the most commonly used geographic information visualization standards for sharing information in web portals. Our solution will incorporate a quality extension of these standards for visualizing data quality as nested layers linked to the different data sets.
In the presented approach, the use of standards can be seen twofold: the tools and products should leverage standards wherever possible to ensure interoperability between solution providers, and the platform itself must utilize standards as much as possible, to allow for example the integration with other systems through open APIs or the description of available items.