



River Basin Standards Interoperability Pilot

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There is a lot of water information and tools in Europe to be applied in the river basin management but fragmentation and a lack of coordination between countries still exists. The European Commission and the member states have financed several research and innovation projects in support of the Water Framework Directive. Only a few of them are using the recently emerging hydrological standards, such as the OGC WaterML 2.0.

WaterInnEU is a Horizon 2020 project focused on creating a marketplace to enhance the exploitation of EU funded ICT models, tools, protocols and policy briefs related to water and to establish suitable conditions for new market opportunities based on these offerings. One of WaterInnEU's main goals is to assess the level of standardization and interoperability of these outcomes as a mechanism to integrate ICT-based tools, incorporate open data platforms and generate a palette of interchangeable components that are able to use the water data emerging from the recently proposed open data sharing processes and data models stimulated by initiatives such as the INSPIRE directive.

As part of the standardization and interoperability activities in the project, the authors are designing an experiment (RIBASE, the present work) to demonstrate how current ICT-based tools and water data can work in combination with geospatial web services in the Scheldt river basin.

The main structure of this experiment, that is the core of the present work, is composed by the following steps:

- Extraction of information from river gauges data in OGC WaterML 2.0 format using SOS services (preferably compliant to the OGC SOS 2.0 Hydrology Profile Best Practice).
- Model floods using a WPS 2.0, WaterML 2.0 data and weather forecast models as input.
- Evaluation of the applicability of Sensor Notification Services in water emergencies.
- Open distribution of the input and output data as OGC web services WaterML, / WCS / WFS and with visualization utilities: WMS.

The architecture tests the combination of Gauge data in a WPS that is triggered by a meteorological alert. The data is translated into OGC WaterML 2.0 time series data format and will be ingested in a SOS 2.0. SOS data is visualized in a SOS Client that is able to handle time series. The meteorological forecast data (with the supervision of an operator manipulating the WPS user interface) ingests with WaterML 2.0 time series and terrain data is input for a flooding modelling algorithm. The WPS is able to produce flooding datasets in the form of coverages that is offered to clients via a WCS 2.0 service or a WMS 1.3 service, and downloaded and visualized by the respective clients. The WPS triggers a notification or an alert that will be monitored from an emergency control response service.

Acronyms

AS: Alert Service

ES: Event Service

ICT: Information and Communication Technology

NS: Notification Service

OGC: Open Geospatial Consortium

RIBASE: River Basin Standards Interoperability Pilot

SOS: Sensor Observation Service

WaterML: Water Markup Language

WCS: Web Coverage Service

WMS: Web Map Service

WPS: Web Processing Service