



## **Open Data, Open Specifications and Free and Open Source Software: A powerful mix to create distributed Web-based water information systems**

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We are in an age when water resources are increasingly scarce and the impacts of human activities on them are ubiquitous. These problems don't respect administrative or political boundaries and they must be addressed integrating information from multiple sources at multiple spatial and temporal scales. Communication, coordination and data sharing are critical for addressing the water conservation and management issues of the 21st century. However, different countries, provinces, local authorities and agencies dealing with water resources have diverse organizational, socio-cultural, economic, environmental and information technology (IT) contexts that raise challenges to the creation of information systems capable of integrating and distributing information across their areas of responsibility in an efficient and timely manner. Tight and disparate financial resources, and dissimilar IT infrastructures (data, hardware, software and personnel expertise) further complicate the creation of these systems. There is a pressing need for distributed interoperable water information systems that are user friendly, easily accessible and capable of managing and sharing large volumes of spatial and non-spatial data. In a distributed system, data and processes are created and maintained in different locations each with competitive advantages to carry out specific activities. Open Data (data that can be freely distributed) is available in the water domain, and it should be further promoted across countries and organizations. Compliance with Open Specifications for data collection, storage and distribution is the first step toward the creation of systems that are capable of interacting and exchanging data in a seamlessly (interoperable) way. The features of Free and Open Source Software (FOSS) offer low access cost that facilitate scalability and long-term viability of information systems. The World Wide Web (the Web) will be the platform of choice to deploy and access these systems. Geospatial capabilities for mapping, visualization, and spatial analysis will be important components of these new generation of Web-based interoperable information systems in the water domain.

The purpose of this presentation is to increase the awareness of scientists, IT personnel and agency managers about the advantages offered by the combined use of Open Data, Open Specifications for geospatial and water-related data collection, storage and sharing, as well as mature FOSS projects for the creation of interoperable Web-based information systems in the water domain. A case study is used to illustrate how these principles and technologies can be integrated to create a system with the previously mentioned characteristics for managing and responding to flood events.