OETWIS

Introduction

Data intensive projects always need a way to disseminate information to stakeholders and end users. In several projects the OpenEarth building blocks have been combined with a front-end to disseminate information in an easy way.

The message broadcasted by OpenEarth data management is that data is the central point of integral and multidisciplinary projects. Data should be unambiguous and should be described well including lineage and not be multiplied over various systems of the project members. Lineage of data which is crucial in data intensive projects with a lot of modelling involved.

As the picture shows it is good to have the option of letting your data be discovered by all stake holders in and outside of projects.

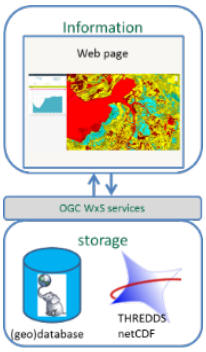
Using open source well established and tested software and methods OpenEarth Water Information Systems are used in a wide variety of projects, which are are multidisciplinary, dynamic in space and time and have high demands on accuracy, performance and visualisations.

OpenEarth Building blocks

One of the pillars of OpenEarth is the use of OpenSource solutions for data management and dissemination. The International exchanges standards formulated by the Open Geospatial Consortium are of major importance in the data traffic between the components used in OpenEarth Water Information Systems.
The building blocks used at the moment are the following:

- PostgreSQL/PostGIS geodatabase for storing vector data
- THREDDS combined with OPeNDAP services for storing raster data and/or very large time series data sets
- Geoserver as middle ware between dissemination platform and data storage and main provider of data exchange services (WMS, WFS, WCS)
- Geonetwork as metadata platform
- OpenLayers for dissemination of data and information
- Web Processing Services (WPS) to create additional functionality in a standardized way

The schematic figure below illustrates how these components are used in Water Information Systems.



The components pictured above form the central part of Open Earth Water Information Systems. The open architecture enables usage of various modules from data entry modules to hydrological models run in an stand alone environment couple via the Deltares FEWS system for Forecast Early Warning Systems.

OETWIS modules

FEWS

A major component in water related projects is FEWS. FEWS can be used in combination with OETWIS as a separate module operated by other members of the project team. FEWS has several roles as the Deltares website on software shows. One of these roles is data ingestion and transformation to some kind of format to by used by models that are run by FEWS. FEWS is able to centralize data in an open database like PostgreSQL/PostGIS. FEWS is well suited to handle, transform and validate timeseries data. Other kinds of data (vector) data like administrative boundaries, well descriptions, etc. are not part of the FEWS data model. The combination of central data storage, the flexibility of PostgreSQL/PostGIS and the robustness and options that FEWS offers give lots of opportunities.

Security

The software described in the building blocks above by default is always open. There are circumstances that it is desired to disable information to be available for non registered users. All building blocks have well described and tested authentication options to fulfill demands on data and information security. It is essential to understand that authorisation of data can essentially be carried out for each record of data in the database or file on the secured OPeNDAP server. In practice this is mostly done at certain levels of data and information. This level of authentication will be discussed with data owners and client.

Project examples

Naivasha

A very good example of a WIS including FEWS, ODK and dissemination of information is the MajiSYS developed within the Integrated Water Resource Allocation Plan of Naivasha, Kenya. FEWS is coupled to the central data management system and imports daily rainfall data from several gauges, validates the data and stores the data in a operational way. Via OGC services stations are made available in the web page. WPS services feed the viewer with information to be displayed on the forms and also return time series data to be displayed in graphs. More information on the MajiSYS methodology and project can be found at the page called Naivasha.

FAST

FAST is a European Union project about effects of vegetation on wave dissipation on various scales using various types of data, from field measurements to the newest satellite imagery (Sentinel x images). The FAST page illustrates in what way OpenEarth techniques are used to host data and disseminate information to end users. Visit the webpage to learn more about this project.