Creating an effective Spatial Data Infrastructure

WETWIN

Factsheet 5

www.wetwin.eu

Durable data management vital for wetland monitoring

Making decisions based on geography is basic to human thinking in our day-to-day life. By understanding geography and people's relationships to locations, we can make informed decisions about the way we live on our planet. Geographical information can be defined as geospatial data or information specifying something about a location on earth.

Defining Spatial Data Infrastructure

The term 'Spatial Data Infrastructure' (SDI), was invented in 1993 by the United States National Research Council to represent a framework of technologies, policies and institutional arrangements that together facilitate the creation, exchange and use of geospatial data and related information resources across an information-sharing community. Such a framework can be implemented narrowly, to enable the sharing of geospatial information within an organization, or more broadly for use at a national, regional or global level.

The components of SDI

How useful a data set is depends on information about the data set itself (metadata). When it comes to an SDI, the effective use of a spatial data set is influenced by the following factors (UNECA 2005):

- clearly defined core or base data sets;
- adherence of the spatial data sets to known and accepted standards;
- documentation of the spatial data sets (metadata);
- policies and practices concerning the access and use of the spatial data; and
- adequate technology and human resources to collect, maintain, manipulate and distribute spatial data.

The main tools used in SDI

The tools used to provide functionality are the catalogue service for the web (Figure 1), web map service, web feature service, web coverage service and web processing service.

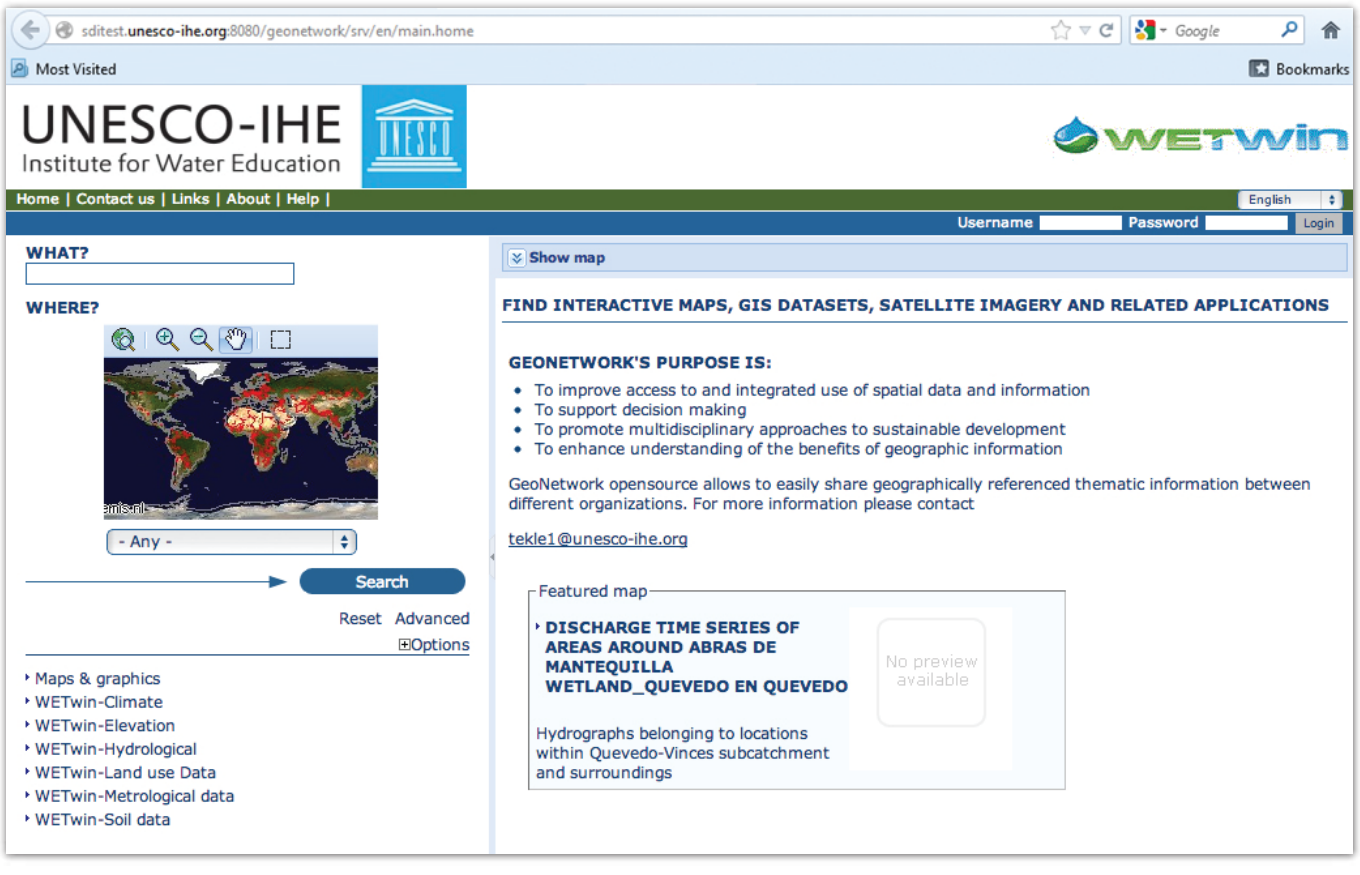


Figure 1: GeoNetwork catalog system

Link: http://sditest.unesco-ihe.org:8080/geonetwork/srv/en/main.home

- **GeoNetwork:** the catalog application shown in Figure 1, which has an easy-to-use interface to manage spatially referenced resources. It provides powerful metadata editing and search functions as well as an embedded interactive web map viewer
- **GeoServer:** an open-source software server written in Java that allows users to share and edit geospatial data (Figure 2)
- **Data storage:** Data is the core for SDIs. There are a lot of different ways to store data, such as File system, MySql, PostGreSQL/ArcSD and PostGreSQL/PostGis.

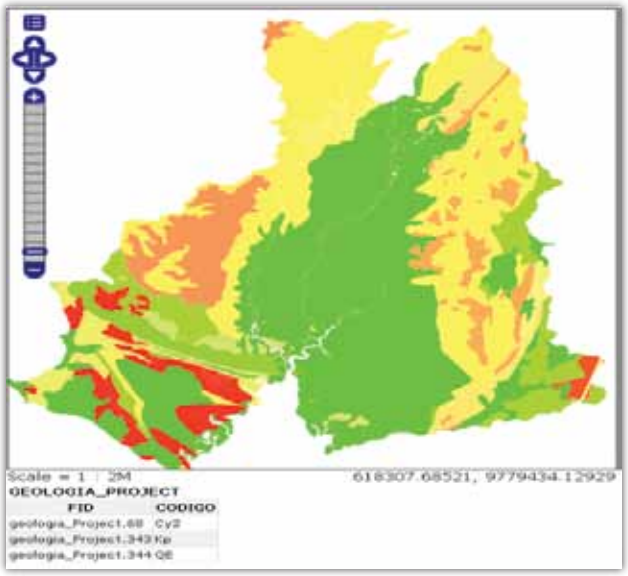


Figure 2: GeoServer map displayer

Elements of SDI used in WetWIN

The following elements of SDI were implemented in the WETwin project:

- catalogue service for the web, where the available metadata in the WETwin database is presented; and
- web map services to graphically present some geographically referenced data.

The following steps were followed to build the components of SDI within WetWIN:

- **Identifying data sets with metadata information:** In WETwin, the data is organized in a file system and all partners store data related to the project in subfolders at an FTP site (Figure 3). FreeMind software (http://freemind.sourceforge.net/wiki/index.php/Main_Page) is used to map the database directories to simplify the task of locating data and metadata information (Figure 4).

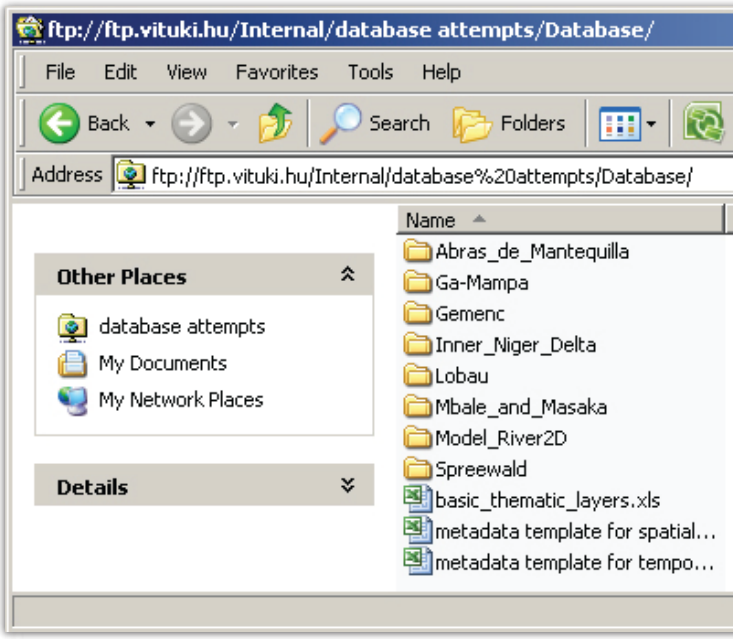


Figure 3: WET
ftp://ftp.vituki.hu/Internal/data

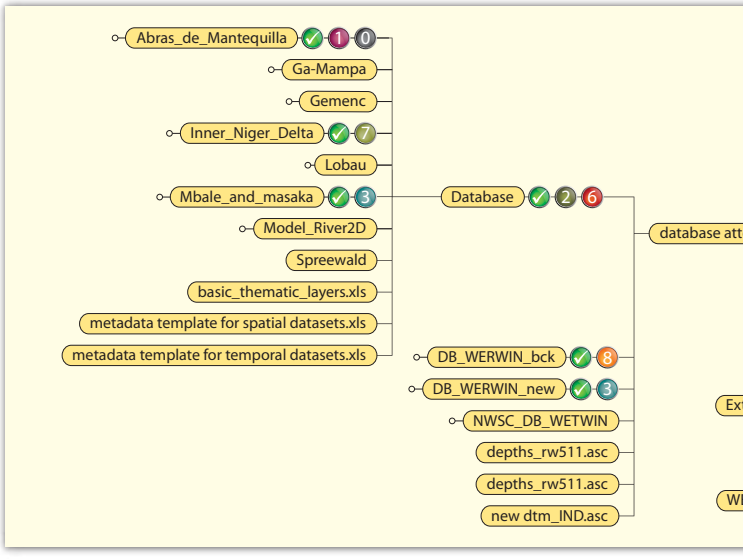
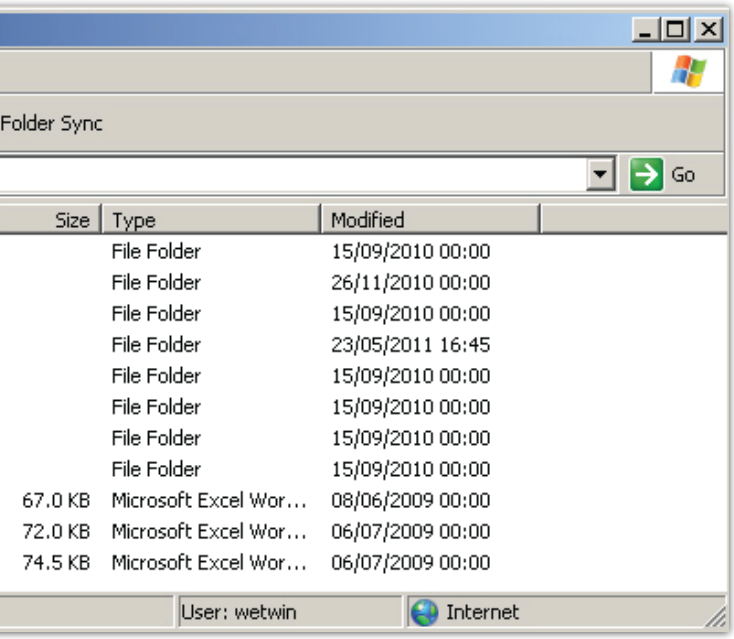


Figure 4: Map of subf

- **Building the metadata catalogue:** GeoNetwork running under Tomcat Server is used to build the web metadata catalogue. After inserting the metadata based on the standard format, additional attributes are added by editing the xml file of the metadata. This allows project partners to upload the metadata user group and provides the capability to insert and edit metadata.
- **Uploading layers in GeoServer:** The spatial data sets (mainly shape files) are uploaded using the GeoServer tool embedded in GeoNetwork. The first step is to create a work space; the next is to store the data in it. In WETwin, only ESRI shape files were uploaded. After the data is uploaded, it is listed under layers and from there coordinated system information can be adjusted and published by choosing a style.

Author: Ann van Griensven



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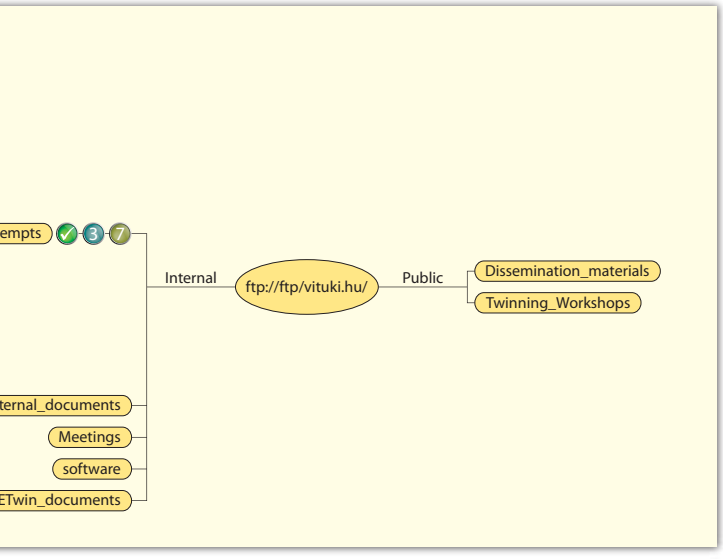
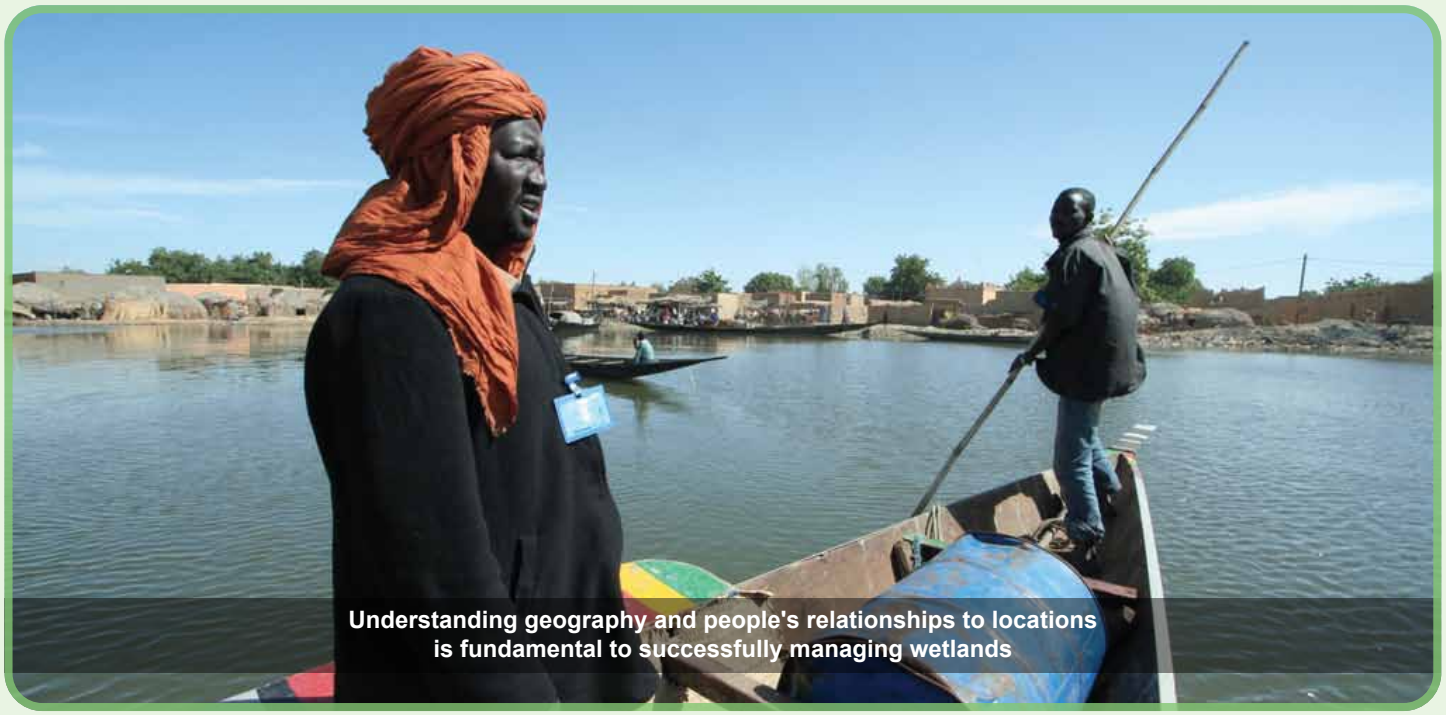


olders in the database

Project partners upload and edit metadata relevant to their field sites

References

UNECA (United Nations Economic Commission for Africa) (2005) *SDI Africa: An Implementation Guide.* http://geoinfo.uneca.org/sdiafrica/default1.htm



Understanding geography and people's relationships to locations is fundamental to successfully managing wetlands

About WETwin

The WETwin project aims to enhance the role of wetlands in integrated water resources management for twinned river basins in the European Union (EU), Africa and South America in support of EU water initiatives. The objective is to improve community service functions while conserving good ecological status.

Partners

VITUKI Environmental and Water Management Research Institute, Hungary (coordinating partner)
Wetlands International, Mali
Antea Group, Belgium
Potsdam Institute for Climate Impact Research, Germany
WasserCluster Lunz, Austria
UNESCO-IHE Institute for Water Education, the Netherlands
National Water and Sewerage Corporation, Uganda
International Water Management Institute, South Africa
Escuela Superior Politécnica del Litoral, Ecuador

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Factsheet topics

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3: Devising a Decision Support Framework
4: Balancing ecology with human needs in wetlands
5: Creating an effective Spatial Data Infrastructure
6: Wetlands in a catchment context
7: Assessing vulnerability of wetlands to change
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9: Case study: Lobau wetland, Austria
10: Case study: Ga-Mampa wetland, South Africa
11: Case study: Abras de Mantequilla wetland, Ecuador
12: Case study: Gemenc floodplain, Hungary

Contacts

For further information, email:
István Zsuffa: info@wetwin.eu
Tom D'Haeyer: tom.dhaeyer@anteagroup.com