Spatial Data Management

GeoNetwork opensource: Geographic data sharing for everyone

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GeoNetwork OpenSource

A standards-based Geographic Data and Information Management System for the web.

GeoNetwork OpenSource provides:
- Immediate access to local and distributed distributed environmental data.
- Sharing and reusing of data, graphics, documents, and files.
- Web-based search access to distributed data servers, including GeoServer.
- Extensive data server software support.

InterMap OpenSource

You can combine your existing spatial data management system with GeoNetwork OpenSource to create a powerful, integrated, and cost-effective solution. GeoNetwork OpenSource is available for Windows, Mac OS X, and Linux. It includes a comprehensive suite of spatial data management tools and services.

A Desktop and Server installer for use on any platform.

A powerful and flexible software tool allows you to quickly install and configure your own spatial data management system. GeoNetwork OpenSource is available for Windows, Mac OS X, and Linux. It includes a comprehensive suite of spatial data management tools and services.

Community website

The GeoNetwork OpenSource Community Website provides up-to-date information on the project. It includes a Documentation Center and a Software Center, as well as a forum for users to participate in discussions. The Site contains resources for designers, developers, and others interested in using GeoNetwork OpenSource.

The glue in a Spatial Data Infrastructure

GeoNetwork OpenSource has been designed to align with the needs of spatial data management systems. It includes tools and services for data integration, data management, and data access. The system is designed to be scalable, flexible, and easy to use.

Free and Open Source Software

Following the Open and Public Source Software (ODS) guidelines, GeoNetwork OpenSource provides open access to spatial data and services. It includes a comprehensive suite of spatial data management tools and services.

Software Architecture

GeoNetwork OpenSource is designed to be compatible with a variety of software architectures, including OGC Web Map Services (WMS) and OGC Web Feature Services (WFS). It includes a comprehensive suite of spatial data management tools and services.

GeoNetwork OpenSource is a major step towards faster and better responses to the complex information needs of decision makers.
History at a Glimpse

- Prototyping by FAO
  2000-2001
- Version 1 by FAO & WFP
  2002-2003
- Version 2 by FAO, WFP & UNEP
  2004-2005
- Version 2.1 under active development
Users

- UN: FAO, WFP, UNEP, WHO, OCHA, UNHCR
- Other: CGIAR, ESA, GMFS, FEWSNET, FGDC
- Individual projects in Spain, France, Czech, UK, Australia, South Africa, ...
OGC Portal Reference Architecture
What is GeoNetwork opensource?

- A web based catalogue application
- A component in the Global Spatial Data Infrastructure
- The foundation of a custom site
GeoNetwork’s purpose is:

- To improve access to and integrated use of spatial data and information
- To support decision making
- To promote multidisciplinary approaches to sustainable development
- To enhance understanding of the benefits of geographic information

GeoNetwork OpenSource allows to easily share geographically referenced thematic information between different organizations. For more information please contact: GeoNetwork@fao.org or send us Feedback / comments.
Functionality

- Searching of spatial data resources
- Finding services related to these resources
- Downloading of spatial data
- Online dynamic viewing through OGC compliant services
- Online Printing
- Feedback mechanism to data owners
Global agro-climatically attainable yield for 120 day rain-fed grain maize

2000-05-01 (creation)

First edition.

documentDigital

en

utf8

The Food and Agriculture Organization of the United Nations (FAO) with the collaboration of the International Institute for Applied Systems Analysis (IIASA), has developed a system that enables rational land-use planning on the basis of an inventory of land resources and evaluation of biophysical limitations and potentials. This is referred to as the Agro-ecological Zones (AEZ) methodology.

The AEZ methodology for land productivity assessments follows an environmental approach; it provides a framework for establishing a spatial inventory and database of land resources and crop production potentials. This land resources inventory is used to assess, for specified management of rain-fed and irrigated conditions, and to quantify agro-ecological context.

onGoing

farming

MAIZE.

AGROCLIMATIC ZONES.

Agroecological zones.

World (place).

grid
Functionality

- Management module for data and metadata
- User authentication on search (not required)
- User authentication on metadata and data management services
- Metadata template system
- Search on remote metadata databases (FAO, WFP, UNEP etc... )
Mixed search results

**Monthly water requirement for shallow ponds of Africa for the month of July**

**Abstract**
Monthly water requirement for fish ponds during the dry season. Water requirement was computed using a water budget equation for each grid cell. The equation is based on the difference amongst precipi...more...

**Keywords**
Africa, Water balance, Pond, Fishery, Fish farming, Aquaculture, Africa

**Net annual water requirement for shallow ponds**

**Abstract**
Total amount of water required for fishponds during the dry season. This net annual water requirement was computed using a water budget equation for each grid cell. The equation is based on the diff...more...

**Keywords**
Africa, Water balance, Pond, Fishery, Fish farming, Aquaculture, Africa

**Utilization of Safe Drinking Water by District - Sierra Leone**

**Abstract**
The map is part of the VAM Report on Sierra Leone- "Rural Food Security, Livelihoods and Nutrition Survey & Household Food Security Profiles" - July 2003

**Keywords**
Water, Sierra Leone

**Water availability**

**Abstract**
Spatial distribution of water availability for fish ponds. Map derived from the combined suitability of annual rainfall with density of perennial streams and rivers. Annual rainfall interpreted as ra...more...

**Keywords**
Africa, Water balance, Pond, Fishery, Fish farming, Aquaculture, Africa

12 September 2006

FOSS4G workshop - Session 6 - Slot 1
**Title**

Physiographic Map of North and Central Eurasia

**Date**

Date: 1999-10-01
Date type: publication

**Edition**

First

**Presentation form**

mapDigital

**Language**

en

**Character set**

utf8

**Abstract**

Physiographic maps for the CIS and Baltic States (CIS_BS), Mongolia, China and Taiwan Province of China. Between the three regions (China, Mongolia, and CIS_BS countries) DCW boundaries were introduced. There are no DCW boundaries between Russian Federation and the rest of the new countries of the CIS_BS. The original physiographic map of China includes the Chinese border between India and China, which extends beyond the Indian border line, and the South China Sea islands (no physiographic information is present for islands in the South China Sea). The use of these country boundaries does not imply the official endorsement or acceptance of the claims to territories by any of the countries in question.

**Supplemental Information**


The Basic Building Blocks

- ISO Standards (International Standards Organization)

- OGC Standards (Open Geospatial Consortium)
What is new in GeoNetwork opensource 2?

- Increase in metadata storage capacity
- Support for multiple metadata standards (e.g. ISO19115, FGDC, DC)
- Better validation of metadata
What is new in GeoNetwork opensource 2?

- Standalone, desktop version
- Full OGC Catalog v2.0 support (in v2.1)
- ISO 19139 compliant metadata
- Metadata synchronization
What is new in GeoNetwork opensource 2?

- Community website
  - Documentation center
    - FAQ, Exercises, Manuals
  - Software center
  - Mailing lists for Users & Developers
GeoNetwork opensource Community website

GeoNetwork opensource is a Free and Open Source catalog application to manage spatially referenced resources. It provides powerful metadata editing and search functions as well as an embedded interactive web map viewer. This website contains information related to the use and development of the software.

Current software version: v2.0.2

The software is released under the GPL license and can be used and modified free of charge.

Software and flyer - NEW!!

We have recently created a flyer and CDROM with the GeoNetwork opensource desktop and server installers and all the required supporting software and manuals. The Flyer will give you a good overview of the capabilities of GeoNetwork opensource. The CD contains besides the GeoNetwork opensource software a wide range of other Free and Open Source Software for Windows, Linux and Mac OS X of interest to the geospatial community (GeoServer, MapServer, gvSIG, uDig, QGIS, GRASS, MapBuilder, MapLab, ka-map and PostGIS).
Interpretation of standards can prevent things to nicely work together.

This Rail-track was a really cool driving experience!!!

Only one exploded suspension in the middle of nowhere!
Experts required!
Expanding Community

- Shift from “intentions” to “implementation” by community members
- Australia, France, UK, USA, Czech rep, South Africa all have funded projects & developers started
- Knowledge management - Community website maintenance
- Community building process
Tool interoperability testing
GEOFOSS based SDI Software Architecture

**Client applications**
- Thick (Desktop) Client
  (uDig, QGIS, gvSIG, ArcGIS, Google Earth)
- Thin (Web) Client
  (MapBuilder, InterMap, KaMap, OpenLayers)

**Interfaces**
- Direct Access
- WMS (GIF, PNG, JPG, KML)
- (T-) WFS (GML, Shapefile)
- WCS (TIFF, GeoTIFF,...)
- CSW (DC, FGDC, ISO19115/19139)

**Servers**
- Map Server
  (GeoServer, MapServer, Deegree)
- Catalog Server
  (GeoNetwork)

**Databases**
- (Geo-)Database
  (MySQL, Postgresql/PostGIS DBMS)
- File System
  (Vector data & satellite images)

**Metadata**
- Vector data (both archive and for editing)

GeoNetwork opensource 2006
GeoNetwork opensource Spatial Data Catalogue

Architectural overview
Basic requirements

- Development of XML/XSL based web application
- Platform independent
- Runs on JDBC compliant databases
- Freely available
Requirements

- Separation of presentation (pages) and business logic (services)
- Reusability
- Standard technologies
- Multiple access modes (HTML, XML)
- Multiple data sources
- Controlled team working environment
Solutions

- Standard technologies
  - Java language
  - Servlet environment for web services (Tomcat & Jetty)
  - XML/JDOM data representation
  - XSL for presentation
  - JDBC for SQL database access
  - Multi platform
Solutions

Model 2 architecture

HTML request

Dispatcher

Generic request

Business logic

Generic response

Presentation

HTML response
Workflow

HTTP Request handling

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Search engine

- Uses Lucene to index metadata
- Unified search through stylesheets
- Scalable over big metadata sets
- Remote search using Z39.50 (GEO profile) and OGC Catalogue Services for the Web
Metadata Synchronization
Metadata Synchronization

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Harvesting

Collection → XSL transformation → Collection

XSL transformation

Custom protocol
CSW 1.0
CSW 2.0
Catalog interfaces

- Develop a user interface to administer harvesting
- Close collaboration with OGC, FGDC, UK (EDINA), JRC, ESA in implementing CSW 2.0
- Provide GeoNetwork opensource as an OGC CSW 2.0 reference implementation
- Implement Open Archive Initiative interface (OAI)
What is up for the future?

Towards an OpenSDI Toolkit
Open Spatial Data Infrastructure (OpenSDI)

- Integrate map server administration & metadata management
- Use GeoNetwork to store or provide
  - Metadata for Service Configuration (WMS, WFS, WCS, SLD etc)
  - Data, Feature and related resources level metadata
- Open Source Geospatial Foundation (OSGEO) can be key here
Open Spatial Data Infrastructure (OpenSDI)

- Provide online spatial data editing
- Metadata closely integrated with GeoNetwork opensource
Open Spatial Data Infrastructure (OpenSDI)

- Provide offline spatial data and metadata editing
- Synchronize when back online
Open Spatial Data Infrastructure (OpenSDI)

- Provide efficient extraction of data
- Support Efficient data transfer protocols