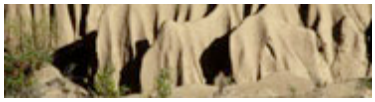

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FAO breaks new ground in geographic data management

Free, open-source software targets information needs of developing countries

21 July 2004, Rome - For decision-makers tasked with designing and implementing strategies to reduce hunger and rural poverty, geographic information is crucial in identifying problems and suggesting possible solutions.

According to John Monyo, Assistant Director-General of FAO's Sustainable Development Department, advances in remote sensing and geographic information system (GIS) technology have led over the last decade to a dramatic expansion in the geographic information available - from satellite imagery and spatial databases to interactive maps - yet access to this information remains limited.

To help put this information in the hands of those who need it, FAO has developed GeoNetwork, a spatial information management system that provides access via the Internet to a wide range of geographically referenced data from a variety of sources.

GeoNetwork is designed to harmonize and improve access to FAO's spatial databases to support decision-makers in agriculture, forestry, fisheries and food security and to promote multidisciplinary approaches to sustainable development by allowing FAO, other UN agencies, non-governmental organizations and research institutions worldwide to share and distribute geographically referenced information more easily.

Bridging the "digital divide"

GeoNetwork is unique in that it is designed specifically to help developing countries improve their capacity to manage spatial information.

Its use of free, open-source software minimizes costs to users - a particular plus for those in developing countries, who can use, modify and redistribute the system source code and do not need to rely on foreign suppliers or costly proprietary software.

A multi-layered view

GeoNetwork's InterMap viewer, developed jointly by FAO and the World Food Programme (WFP), allows users to overlay map layers from multiple servers housed at development institutions worldwide to create a customized thematic composite map on their own computer.

Each layer typically illustrates one or more variables - for example, biophysical (vegetation density, soil quality, rivers), demographic (population density), economic (gross national product per capita, poverty measures), infrastructural (administrative boundaries, human settlements, roads, water reservoirs) or human capital resources (health facilities, food distribution points).

By overlaying various map layers, InterMap can illustrate the spatial relationship between a series of variables. It can suggest, for example, the extent to which a poor transport infrastructure is keeping a region with a rich agricultural endowment in poverty.

Contact

Teresa Buerkle
Information Officer, FAO
teresamarie.buerkle@fao.org
(+39) 06 570 56146

Technological advances have led to an increase in geographic data, such as satellite imagery, but access to it remains limited.

Related links

- GeoNetwork
- Spatial information management for food and agriculture
- METART spatial information management tools

Seamless data integration

Because international standards are applied throughout the system in the metadata and the Internet map services GeoNetwork uses to describe and provide access to maps and other geospatial information, this data can be easily exchanged by FAO and its information partners.

Metadata is basic information used to describe data, such as its content, quality, date, conditions of use, source, ownership and other characteristics. This information allows users to assess whether a certain dataset is suited for their purposes.

Jelle U. Hielkema, Senior Remote Sensing Officer in FAO's Environment and Natural Resources Service and GeoNetwork focal point, describes what distinguishes GeoNetwork from other information management tools: "There are three concepts: international standards, open-source software and interoperability. The system was designed to fit seamlessly with existing applications."

In the past, such technologies have been developed independently of one another, often without regard for compatibility. The result is that much of the spatial data stored in the archives of various UN agencies and in development institutes worldwide cannot be accessed or used properly because, in many cases, datasets are incompatible.

But GeoNetwork metadata conforms to standards set by the International Organization for Standardization (ISO), the leading institution in the development of international technical standards and specifications, comprising members from 148 countries.

"Adherence to ISO standards means that the data generated on one server with software A can be read with ease on another server using software B and can also be used by another user with software C," says Hielkema.

Working together

"FAO has taken a lead role in the area of spatial information management, not just in the UN system but generally," says Monyo. "Other organizations value our experience in this area and seek our expertise in enhancing their own information management systems."

In addition to its collaboration with WFP, FAO has recently signed an agreement with the United Nations Environment Programme (UNEP) to adapt GeoNetwork's search capabilities and architecture for use by UNEP.net - a Web portal that brings together environmental information from the global scientific community to help develop integrated solutions to environmental problems.

Casting a wide net

In addition to its installations at FAO and WFP headquarters, where a variety of technical units are using it and adding their own information to its data repositories, GeoNetwork has proved its effectiveness in the field.

In Mozambique, 12 government and international agencies working on agriculture, food security and humanitarian issues have been using GeoNetwork since September 2003 to share information and avoid duplication of work, which has led to important synergies between partners in the development of food security information systems. WFP has furthermore implemented the system in its regional bureaux in Senegal, South Africa and Uganda.

"Sustainable development decisions are inherently multidisciplinary," says Monyo. "The accomplishments of the Mozambique project, which was recently further enhanced by a dedicated training course, have clearly demonstrated that GeoNetwork can enhance communication across sectors by integrating different databases in a standardized system and by providing powerful tools for storage, access and analysis of multisectoral data."

Contact:
Teresa Buerkle
Information Officer, FAO
teresamarie.buerkle@fao.org
(+39) 06 570 56146