Invited Paper

Geographic data clearinghouse activity in GSI

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Abstract

Preparation of geographic metadata and development of geographic data clearinghouses take a very important role to promote dissemination of Geographic data. We would like to introduce GSI's activity to develop the clearinghouse, according with ISO23950 and Japan Metadata Profile (JMP) for the first time in Japan. ISO23950 is an international standard concerned with information search and retrieval protocol. Using this protocol, users can query simultaneously with respect to plural physically distributed clearinghouse nodes.

Keywords: clearinghouse, metadata, geographic information standard, ISO23950, ISO19115, Japan Metadata Profile

1 Introduction

The clearinghouse in Geographic Survey Institute (GSI), which is national mapping organization of Japan, is a search engine composed of many database server distributed onto the Internet, through transmission protocol ISO23950.

We use the Metadata; JMP1.1a, which is fundamental data prepared for search and is compliant with the draft metadata standard on geographic Information discussed under ISO/TC211 (International Standard Organization / Technical Committee).

Since early time, we have taken an important activity for facilitation to circulate geographic data.

2 History

In 1995, GSI starts on development of the standard of Metadata for search engine, as part of "Research on Development of Geographic Information Directory Database". Toeing the line on the ISO/TC211 starting earlier, GSI in collaboration with 53 private companies published the standard of Metadata in Japan in 1999, which is the first for geographic information in Japan. This collaboration is, from FY 1996 to FY 2001, established on the institution, "the Collaborative Research Program with Private Sector organized by former Ministry of Construction (presently, Ministry of Land, Infrastructure and Transport)". Some of items in this Metadata version 1.0 was taken up for clearinghouse, then this set was named "JMP". Today, the latest version of the Japanese Metadata Standard and JMP are 1.1 and 1.1a according to committee draft of ISO/TC211 Metadata.

When the JMP was available, GSI opened the system to support with search for data to of geographic data to desire, involved by "Standard and Development Plan of National Spatial Data Infrastructure (Liaison committee of Ministries and Agencies, 1999)". However this system was simple search engine, that from only one database server can ever retrieve at once. Thus using ISO23950, we developed the second generation system to enable to request to multiple database servers around the network over the world. It has been available since March, 2000.

At present, 18 node servers (including 7 servers abroad) are registered in our clearinghouse, main providers are national bodies. There are the list of national bodies in this following.

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1) Geographical Survey Institute
2) Ministry of Public Management, Home Affairs, Post and Telecommunications
3) Ministry of Economy, Trade and Industry
4) Ministry of Land, Infrastructure and Transport
5) Japan Coast Guard
6) Ministry of Environment
7) National Spatial Data Infrastructure Promoting Association
8) Japan Construction Information Center

3 Two standards for clearinghouse

Two standards are referred in our clearinghouse. One is ISO23950, which is enable to search at one for multiple data around the network, and the other is ISO19115 in progress for International Standard, which is basic copybook for JMP for our clearinghouse system in Japan.

3.1 ISO23950

ISO 23950-1998 "Information Retrieval Service Definition and Protocol Specification" originates from "ANSI/NISO Z39.50" in the American National Standard, which was compiled into the Japanese Industrial Standard (JIS X 0806 (1999)) in Japan.

ISO23950 transmission protocol works client and server on network, with this following specifications.

1) enable to search at once for distributed database servers around the network
2) enable to specify the conditions for search by assigning many of attributes
3) enable to communicate between different system with data stream by the BER encoding
4) stateful : enable to hold on the line, when a result of search is re-used

3.2 ISO19115 and JMP

At present, the International Standardizaion of metadata on geographic information is on going. We in Japan are revising the edition of JMP, in line with the latest of ISO19115.

4 Isite application on system

The clearinghouse in GSI is powered by the Isite application.

4.1 Node server

"zserver" and "Iindex" program of the Isite package work as database server on WindowsNT system. Firstly, Japanese sentence with seamless string needs to analyze and decompose into some of fragments of word meaningful; it differs from languages such as English. Secondly, JMP metadata is transformed into the data corresponding to the search attribute set of GEO profile designed by FGDC in America. Thirdly, "Iindex" stores the data on deposit.

4.2 Gateway

"zgate" and "zcon" of the Isite package works as user interface installed on UNIX system. These are cgi program, which is serving as a intermediary between HTML interface for operation and multiple node server registered via ISO23950 line

5 Future

Hereafter GSI will provide the next version clearinghouse system in applicable to next JMP2.0 in conformity with the issued ISO19115 and prepared with metadata for this system. we also have plan to research how to search the metadata documented in different language with synonym.

6 References

1) Committee for Standardization of Spatial Data (1999) : National Geographic Information Standard (version 1.2) in Japanese

2) Liaison Committee of Ministries and Agencies concerned with GIS (1999): Standard and Development Plan of NSDI in Japanese

3) International Organization for Standardization (1998): Information and documentation – Information retrieval (Z39.50) – Application service definition and protocol specification

4) GEO Profile : http://www.blueangeltech.com/Standards/GeoProfile/geo22.htm

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