Item 9 of the provisional agenda

Activities relating to the Working Group on Toponymic Data Files and Gazetteers

Development of Digital Japan Basic Map
(Geographical Name Information) *

Summary

In Japan, the Basic Act on the Advancement of Utilizing Geospatial Information was established in 2007.   Accordingly, the Geospatial Information Authority of Japan (GSI) revised the Long-Term Plan for Basic Survey based on the Survey Act and started to develop a new geographical name database.

1   Background

The Basic Act on the Advancement of Utilizing Geospatial Information was established in 2007 for the purpose of promoting measures and policies in a comprehensive and systematic manner to utilize geospatial information.   This Act also stipulates that a digital map that becomes a framework to be shared by the whole of society shall be developed and utilized.   This digital map is called the "fundamental geospatial data" and includes some information related to geographical names.

In addition, in response to the establishment of the Act, GSI revised the "Long-Term Plan for Basic Survey" in 2009.   This is GSI's basic survey plan for the next 10 years, which is required to be stipulated by the Survey Act.   In this Plan, new development of the "Digital Japan Basic Map" was determined.   This map will be created based on the fundamental geospatial data and consists of the following three types of data: map information, orthophotos and geographical name information.

2   Fundamental Geospatial Data

Fundamental geospatial data is used as reference information of position in various digital maps.   Sharing this data throughout society will enable us to promote the mutual use of various pieces of geospatial data and improve the efficiency of data development.

2.1   Data Items

Fundamental geospatial data consists of 13 types of data that are necessary for reference information of positions, such as road edges, building outlines, railroad track centerlines and shorelines.   It also includes the following two items related to populated place names:

1) Community boundaries and representative points
2) Street block boundaries and representative points

These are data about smaller administrative districts which prefectures and municipalities are divided into.   Names of these districts are defined in the "Local Autonomy Act" and the "Act on Indication of Residential Address."

2.2　Positional Accuracy

The positional accuracy of the fundamental geospatial data is a scale of higher than 1:2,500 of approximately 100,000 square kilometers of the city planning areas (city areas) stipulated in the City Planning Act.　For other areas, the information is on a scale of higher than 1:25,000.

2.3　Development Plan

Fundamental geospatial data is being developed based on a five-year plan from 2007 to 2012.　The development will be completed in 2012 for most area.

2.4　Data Specification

Fundamental geospatial data is developed in compliance with the ISO191XX series (geographic information/geomatics), the ISO standard for geospatial information.

3　Digital Japan Basic Map

Digital Japan Basic Map is geospatial information developed based on fundamental geospatial data and consists of the following three items: map information, orthophotos and geographical name information.

Digital Japan Basic Map

| Map Information | Orthophotos | Geographical Name |

Digital maps based on fundamental geospatial data

Aerial photographs that overlap corresponding maps
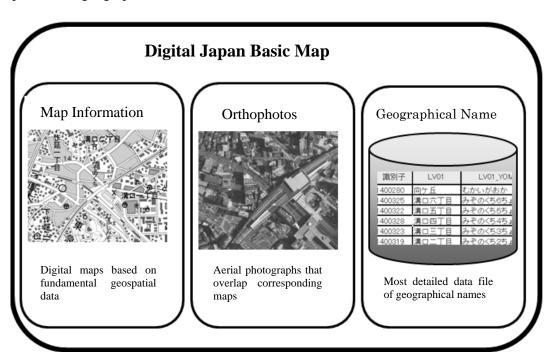
Most detailed data file of geographical names

Figure 1. Items of Digital Japan Basic Map

3.1 Digital Japan Basic Map (Map Information)

Map information is map data that includes topographic map information (vegetation, cliffs, rocks and structures, etc.) with fundamental geospatial data as its framework. This map information has approximately the same kinds of data items as general topographic map information. Positional accuracy varies according to the area (a scale of 1:2,500, 1:5,000 and 1:25,000), but it is seamless.

3.2 Digital Japan Basic Map (Orthophotos)

Orthophotos are pieces of image information developed in line with the development of aerial photographs. They are easy-to-use pieces of geospatial information that overlap corresponding maps created by adding positional coordinates to aerial photographic images and making images with no distortion.

3.3 Digital Japan Basic Map (Geographical Name Information)

Geographical name information, such as populated place names as well as natural feature names, is data about geographical name with positional information and is the most detailed data file of geographical names that covers the entire country.

This geographical name information is essential for utilizing geospatial information and is mainly used as a key in searching positions. In addition, GSI plans to utilize it in managing the geographical names used in various maps and materials.

4 Development of Digital Japan Basic Map (Geographical Name Information)

GSI started to develop data of populated place names in 2010 and plans to develop data of natural feature names in series. GSI also started to examine a method to add a unique ID (geographic identifier) to each record.

4.1 Existing Populated Place Names

The data file of populated place names that GSI has developed so far is a computerized database of geographical names listed in topographic maps of the scale of 1:25,000. Geographical names listed in these topographic maps are those sorted out by the editors from the lists submitted by local governments. The standard for displaying geographical names in these topographic maps is for use in paper-based maps. Therefore, existing data has the following issues:

1) Duplication of geographical names

Geographical names of areas around borders of map sheets also exist in each map sheet.

2) Selection of indication

Since paper-based maps have a restriction on display range, geographical names are sometimes omitted. Therefore, levels and degrees of density of populated place names displayed vary according to the region.

3) Existence of conventional names

There are two versions of populated place names in Japan, official names and conventional names. Official names are legally-established names, on the other hand, conventional names aren't provided legally but actually used. These two names are indicated on maps.

4.2   Newly-Developing Populated Place Names

4.2.1   Policy for Development

To solve the issues listed in 4.1 above and to promote utilization of information on geographical names, GSI started to review and develop populated place names according to the following policy.

1) To organize redundant geographical names

Confirm and organize redundant geographical names to ensure that one geographical name has one record.

2) To collect all populated place names

Collect all populated place names that were not shown due to the restrictions on the display range of paper-based maps.

3) To clarify categories

Check newly gathered lists and maps of populated place names from local governments and categorize them into official names and conventional names.

4) To acquire polygon data

Acquire positional information such as representative points and range information for indication in map information.

5) To attach geographic identifier

Attach a unique code number (geographic identifier) to each record with a geographical name as a search key.

4.2.2   Data Updating

New populated place names may be created while old ones may be abolished, and sections may change. Since existing geographical name information has been developed based on topographic maps, its updating took time (updating cycle of topographic maps: 1 year (city area) to 10 years (mountain area)).
GSI plans to establish a system to acquire update information from municipalities and update the data within three months after geographical names have changed.

5   Future Issues

A new database of geographical names just started in 2010, and GSI plans to develop it while reviewing the following issues:

1) Geographical names help encourage the mutual use of various pieces of geospatial information by becoming a key to such information. To effectively implement it, GSI considers an appropriate geographic identifier (ID system) to attach to each record and plans to maintain and manage it.
2) GSI plans to promote development for natural feature names as well as populated place names.
3) GSI plans to further develop the environment for using information by developing software to effectively utilize the geographical name database in various scales maps.

Lastly, GSI has established the Geographical Name Information Division. GSI intends to actively and systematically work on developing geographical name information.

Reference

Basic Act on the Advancement of Utilizing Geospatial Information
http://www.gsi.go.jp/kokusaikoryu/kokusaikoryu-e30004.html