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COUNTRY REPORTS

GIS POLICY IN JAPAN AND EFFORTS TAKEN BY NATIONAL AND REGIONAL PLANNING BUREAU, MINISTRY OF LAND, INFRASTRUCTURE AND TRANSPORT

Submitted by Japan **

GIS Policy in Japan and Efforts taken by National and Regional Planning Bureau, Ministry of Land, Infrastructure and Transport

National and Regional Planning Bureau
Ministry of Land, Infrastructure and Transport (MLIT)

1   Introduction

GIS has been widely used in public governments, private businesses, and citizen's lives and has produced diverse significances in Japan.

2   Government efforts

To prepare a user environment for GIS and promote its use, it is essential to address many issues such as digitizing geographic information, preparing a compatible user environment, standardizing relevant technologies, developing efficient GIS applications, and providing technical instruction and information. For this purpose, it is extremely important that relevant organizations such as the national government, local authorities, public organizations, private companies, universities, etc., work together. Therefore, the national government established GIS Liaison Committee of Ministries and Agencies and established GIS Promotion Association of Government and Private Sectors to coordinate the work of relevant organizations and integrate policies.

2.1 GIS Liaison Committee of Ministries and Agencies
2.1.1 Purpose of the Committee

Given the lessons that had been learned from such events as the Great Hanshin-Awaji Earthquake of January 1995, the Committee was established to establish closer ties among government ministries and agencies, and to promote the effective development and use of GIS.

2.1.2 Make-up of the Committee

Chairman: Assistant Chief Cabinet Secretary; Office: Geographic Survey Institute, National and Regional Planning Bureau(MLIT); Membership: Related bureau directors of ministries and agencies

2.1.3 Main policies advocated by the Committee

September 1995	Establishment of GIS Liaison Committee of Ministries and Agencies

December 1996	Adoption of the "Long-term Plan for Building a National Spatial Data Infrastructure and Promoting the Use of GIS"
	
	     Period of plan: 1996-2001
	     Basic guidelines for government efforts were confirmed and given specifics
	     First half: Fundamental development such as standardizations related to the National Spatial Data Infrastructure
	     Second half: Completion of Data Infrastructure and the dissemination

March 1999	Adoption of "National Spatial Data Infrastructure Standards and Development Plan"
	
	     Period of plan: 1999-2001
	     "National Spatial Data Infrastructure Standards" was adopted. Technical standards were adopted to enable the use of the National Spatial Data Infrastructure and standard items were chosen as data that should be shared as NSDI. Also the "National Spatial Data Infrastructure Development Plan" was adopted to address what national government should do, and future challenges.

October 2000	Memorandum of agreement "Measures for Future Development and Dissemination of GIS" To promote the rapid development and dissemination of GIS, it was arranged that the government formulate policies that emphasize the digitization and provision of its database.

February 2002	Adoption of "2002-2005 GIS Action Program"
	     In addition to enhancement of the base environment for GIS use, measures were planned for the effective utilization of GIS by the government itself. (For details, refer to the next section.)
	     Partially revised in April 2003 and April 2004

April 2003	Memorandum of Agreement "Guidelines for the Provision of Government Geographic Information" Guidelines proposed methods for disseminating government geographic information to the general public.

2.1.4 The current development

In September 2005, the Committee on the Advancement of Satellite-Based Positioning and Geographic Information System, consisting of the executives from government ministries and agencies, was established to maintain close contact and cooperation among organizations involved with positioning and geographic information systems, and to promote comprehensive and effective use of these systems. In conjunction with this, the GIS Liaison Committee of Ministries and

Agencies was abolished, but its work has been continued by the new committee, and next GIS program for 2006 will be planned by this committee.

2.2 GIS Promotion Association of Government and Private Sectors

2.2.1 Purpose of the Association

This Association was established to promote close ties between government and the private sector for the purpose of efficiently developing and sharing GIS.

2.2.2 Make-up of the Association

The Association is composed of the Assistant Chief Cabinet Secretary, bureau directors from the three main ministries involved with GIS (Ministry of Internal Affairs and Communications; Ministry of Economy, Trade and Industry; MLIT), and vice-chairmen, vice-presidents, etc., from 15 private companies.

2.3 e-Japan Priority Policy Program

The e-Japan 2004 Program (adopted by the IT Strategy Headquarters on June 15, 2004) is the foundation of the government's IT policy. In this plan, GIS is given an important role in improving the efficiency and effectiveness of governments and private businesses, for creating new business models, and promoting the diversity and enhancement of people's everyday lives. The following items are described for achieving these goals:

- Standardization of National Spatial Data Infrastructure and promotion of government taking a leading role to improve the efficiency of administrative services
- Promotion of digitization and sharing of geographic information
- Support for full-scale deployment of GIS
- Use of GIS to enhance administrative efficiency and to provide higher quality services

2.4 Overview of the GIS action program for 2002-2005
- Plan of action for enhancing people's lives through use of GIS-

2.4.1 Period of plan

4-year plan (2002-2005)

2.4.2 What the plan should promote

The plan promotes the following items to prepare for the Information Age:

(1) Increasing the efficiency, speed and quality of administrative services

(2) Creating new business models and new jobs in private sectors

(3) Provide low-cost, high-quality services for citizens.

2.4.3 Purpose of the plan

The following goals were established considering the role that the national government should play.

(1) Development of the basic environment for using GIS

   -Standardization related to National Spatial Data Infrastructure and the pioneering uses by government

   -Establishment of systems and guidelines to help promote digitization and sharing of geographic information

   -Finish digitizing the data of National Spatial Data Infrastructure and provide them widely

   -Support the full-scale use of GIS.

(2) GIS should be effectively used in all fields of government to provide more efficient and higher quality services.

2.4.4 Main government measures for implementation

This plan contains 70 extremely important measures for promoting the development and widespread use of GIS. The following is a list of some of these measures.

(1) Standardization related to National Spatial Data Infrastructure and the pioneering uses by government

  - Setting Japanese Industrial Standards (JIS) for geographic information

  - Proposing international standardization of G-XML (Geospatial-eXtensible Markup Language) , which is one of Japanese geographical standards

  - Expand use of geographic information standards and G-XML, with government take a leading role

(2) Establishment of systems and guidelines to help promote digitization and

sharing of geographic information

- Regarding the 19 types of maps important to promote the use of GIS, systems and applications should be compatible with electronic maps
- Implementation of specific policies for achieving electronic delivery
- Establishment of guidelines by the government to provide geographic information

(3) Promoting digitization and provision of geographic information

- Periodically update digital maps (2500, 25000) and Residential bloc level Location Reference Information
- Promote the provision of digital maps (such as 25000) on the Internet
- Formulate quality evaluation for private data, and investigate new types of contracts
- Digitize and provide basic spatial data and digital images

(4) Full-scale use and support of GIS

- Support widespread use of integrated GIS
- Support local efforts to implement GIS
- Promote technical development of GPS, 3D GIS, etc.
- Create an environment where new GIS based business models can be created
- Enhance GIS popularization activities and promote international cooperation

(5) Improve efficiency of government and enhance quality of government services using GIS

- Regarding maps that must/should be attached to permit applications or reports to government, research common items that should be investigated (map forms, etc.) from a GIS perspective.
- Concerted use of GIS for disaster prevention, traffic safety, education, agriculture, forestry, fishery, environment and other fields

3 GIS-related policies of the National and Regional Planning Bureau

The National and Regional Planning Bureau (NRPB) of the MLIT is addressing the following issues to enrich people's lives through the widespread use of GIS.

3.1 Coordination among government agencies and between public and private sectors

- NRPB was the secretariat of the GIS Liaison Committee of Ministries and Agencies and is main active participant for the Committee on the Advancement of Satellite-Based Positioning and Geographic Information System, and has provided full support for GIS policy-making.
- NRPB also has been in charge of the government's side of the GIS Promotion Association of Government and Private Sectors and has provided support for the operations.

3.2 GIS model district experiments

During the course of 3 years, from 2000 to 2002, the MLIT, the Ministry of Internal Affairs and Communications, and the Ministry of Economy, Trade and Industry had worked together for designated model districts in 7 prefectures. The national government, working closely with local governments, private organizations, etc., organized "GIS model district experiments" to arrange and distribute data, develop associated technologies and test applications under various operations environment.

3.3 Projects for getting GIS use established

A 3-year, publicly announced project entitled "Getting GIS use Established" was launched in 2003 to help establish GIS use in various aspects of everyday lives. The project defined various types of user attributes, analyzed improved convenience and enhanced quality of lives through GIS utilization by a large number of users.

"Project for Getting GIS use Established"

URL (Japanese only): http://www.gisteichaku.jp/

Menu of "Project for Getting GIS use Established"
- "Our Reconstruction" project (Great Hanshin-Awaji Earthquake)
- GIS that anyone can use and new jobs are produced: Map website
- National bird-watching network
- Educational Web GIS where everyone can meet and learn

Example of national bird-watching network

(Tokyo map of National Swallow Watcher's Network)

3.4 Providing applications

Applications were being developed to help formulating national and regional plan making, etc.
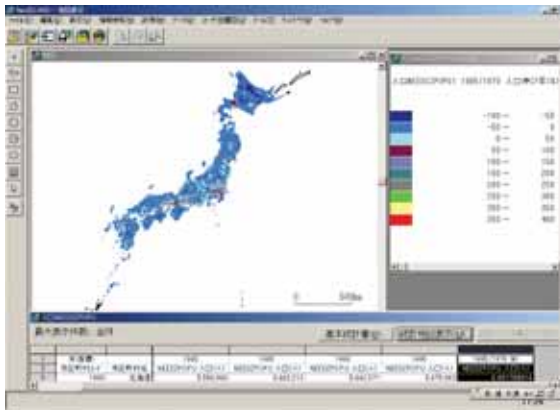
Example of output of spatial digital information and management system (providing various display functions using spatial digital information, image information, statistics, map data etc.)

Other than that, ten types of applications were being developed to promote family and classroom use of GIS and had been provided without charge at the "Useful GIS Toolbox" web site until March 2006.
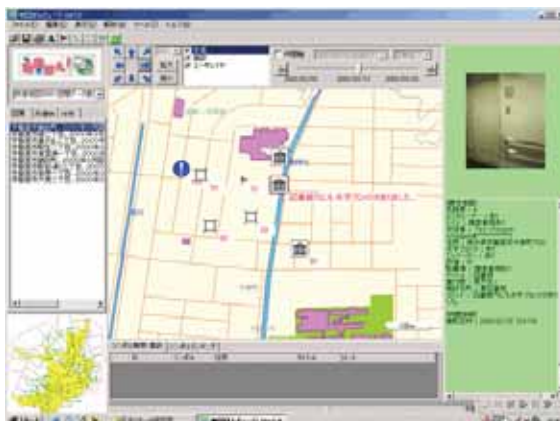
Example of application "Chizupon", the software to input photos taken by GPS cell phone/camera on the map

3.5 GIS-related surveys and publicity campaigns

- Organizational surveys for promoting GIS
- Case studies of successful GIS adoption
   Other surveys related to data development
- Seminars
- Publicity videos
- Publicity campaigns through various media

3.6 Preparing data and providing services regarding the national land

3.6.1 Spatial Digital Information

With the establishment of the National Land Agency in 1974, Spatial Digital Information Development Project was started to arrange basic information regarding our territory, to prepare the data that forms the base for national comprehensive development plans. Spatial digital information related to topography, land use, public facilities, roads, railroads, etc., was arranged under this project. Our territory can be also analyzed using the large amount of mesh data in conjunction with population and other statistical data. Arranging these data in time series enables time series analysis.

These data can be downloaded from the Internet and can be used with GIS. (URL (Japanese only) : http://nlftp.mlit.go.jp/ksj/)

3.6.2 Residential bloc level Location Reference Information

Coordinate data (latitude and longitude, plane rectangular coordinates) at residential bloc level are developed and updated every year.

For various types of statistics and ledger data (such as addresses), locational coordinates can be easily assigned using Residential bloc level Location Reference Information. Because displays and analyses of locations can be easily made using GIS, it is one of the government's core technologies for providing geographic information.

This reference information can be downloaded free of charge from the Internet. (URL (Japanese only) : http://nlftp.mlit.go.jp/isj/)

Examples of Spatial Digital Information (As of June, 2006)

	Data name	Data type	Data year(s)	Contents
Designated areas	Urban planning zones	Polygon	1985, 1990	Administrative codes, sub-district codes of designated areas
	Planning districts of 3 metropolitan areas	Polygon	1990, 2003	Administrative codes, sub-district codes of designated areas
	Environmental conservation areas	Polygon	1985	Administrative codes, sub-district codes of designated areas
Coastal regions	Bays and harbors	Point	1990	Harbor names, the administrators, annual data (trade volume, etc.)
	Bridges	Line	1984	Bridge names, road width, railway linkages
	Coastal mesh	Mesh	1990	Water depths, sea bed quality, swirling current, tides
	Airports	Point	1984, 2004	Administrative codes and categories, the administrators, scheduled flights
Nature	Elevation and slope mesh	Mesh	1981	Average elevations, slopes
	Land category mesh	Mesh	1981	Topographic categories, surface quality, soil types
	Climatic data	Mesh	1987	Observational data on precipitation, temperature, snow accumulation, etc.
Land	Land prices	Point	1995 -2005	Place names, locations, prices, land use, zoning area
	Prefectural land price surveys	Point	1995 -2005	Place names, locations, prices, land use, zoning area
	Land use mesh	Mesh	1976, 87, 91, 97	Land-use categories (15categories in 1976; 12 in 87; 11 in 91, 97)
National infrastructure	Roads	Line	1995	Administrative categories, road types, road names
	Railroads	Line	1995, 2005	Administrative categories, railway lines, station names
	Administrative boundaries, coastlines	Polygon	1995-99, 2005	Municipal boundaries, coastlines
	Road density, road length mesh	Mesh	1978, 2003	Total road length within mesh
Facilities	Public facilities	Point	1990	Names, types, addresses, the administrators
	Electrical power plants	Point	1995	Locations, types, output, names of power plants, dates of start-up
Industrial statistics	Commerce statistics	Mesh	1979, 82, 85, 86	Number of shops by type, number of employees, sales, floor area
	Agricultural census	Mesh	1975, 80	Population, area cultivated, machinery used, number of livestock
Water resources	Dams	Point	1995	Name, size, capacity, date completed
	Lakes and ponds	Polygon	1975	Name, administrative codes
	Lake and pond mesh	Mesh	1982	Name, surface elevation, maximum depth
	Stream channels	Line	1977	Stream code, elevation of stream bed, type

3.6.3 Spatial Information Web Mapping System

This is a service that allows Spatial digital Information to be easily browsed from a browser. Data can be selected and overlaid on one another, and maps can be enlarged, reduced, or moved to allow users to make their own maps. This information can also be overlaid on orthographic aerial photos. (URL (Japanese only) : http://w3land.mlit.go.jp/WebGIS)

In addition, color aerial photos taken from 1974 to 1990 can be searched and browsed.

Land image information (color aerial photos)

Area	Time	Number
Hokkaido	1975-1985	61,064
Tohoku	1975-1984	63,219
Kanto	1974-1990	63,259
Chubu	1974-1988	68,560
Kinki	1974-1987	39,569
Chugoku	1974-1988	38,211
Shikoku	1974-1981	15,295
Kyushu	1974-1987	43,907
Okinawa	1977-1978	3,041
Total		396,125

3.7 Promoting National Development Plans

Efforts are being made to upgrade national land planning using GIS.

"Monitoring of land, the gathering, analysis, sharing, and disclosure of information"

[Information is regularly gathered and analyzed on socioeconomic conditions, land use, natural environment, infrastructures, related policies and their effects, etc. Information technologies such as GIS are then used by government agencies and local public organizations to disclose this information to the general public.]

Extract from the report of Basic Policy Section of National Land Council (2002)