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Country Reports**

Present status of NSDI policy of Japan^{*}

*** Prepared by the Government of Japan**

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1. Introduction

The Basic Act on the Advancement of Utilizing Geospatial Information (NSDI Act of Japan) came into effect on August 29, 2007. At the same moment, the ordinance of the Ministry of Land, Infrastructure and Transport (MLIT Ordinance 78, 2007) and the Public Notice of the Ministry of Land, Infrastructure and Transport (MLIT Public Notice 1144, 2007), which are both related to the NSDI Act and Fundamental Geospatial Data (FGD), also came into force.

Required on Article 9 of NSDI Act in order to carry out measures concerning “Advancement of Utilizing Geo- spatial Information” (AUGI) in a comprehensive and well-planned manner, the Basic Plan for AUGI (Basic Plan) has been discussed in the Committee on the Advancement of Satellite-based Positioning and GIS and authorized by the Cabinet on April 15, 2008.

This article explains the outline of Basic Plan and related measures undertaken by Geographical Survey Institute (GSI) including development and provision of FGD.

2. NSDI Act

The purpose of the NSDI Act is to advance policies concerning the AUGI in a comprehensive and well-planned manner by establishing basic principles and clarifying the responsibilities of State and local governments as well as defining basic elements for policies on AUGI, in view of the fact that AUGI is essential in establishing the economy and society in which the people can live their lives securely and abundantly at present and in the future.

3. The Ordinance of MLIT and Public Notice of the MLIT

Ordinance on the information items of and the requirements for FGD that is referred to in Article 2, Paragraph 3 of the NSDI Act, and the information items of FGD shall be those showed in the following Fig.1.

Public Notice on the Technical Standards, provided in Article 16, Paragraph 1 of the NSDI Act, for the development of FGD, which is defined in Article 2, Paragraph 3 of the NSDI Act, shall be prepared for the purpose of promoting GIS through the improvement of the sharing of FGD by providing guidelines for the maximum use of FGD and for the development of seamless FGD as well as by setting standards for data interoperability.

4. Basic Plan for AUGI

4.1 The Skeleton of the Basic Plan for AUGI

The Basic Plan consists of two sections. In Section I, the significance and goals of AUGI are posed in the first place. After that, current issues are pointed out, and then concluded with important points for the implementation of the plan. Section II consists of three chapters. In Chapter 1 general measures related to AUGI are given. In Chapter 2, measures related to GIS are stated. In Chapter 3, policies related to Space-based Positioning, Navigation and Timing (Space-based PNT) are presented. The period of the Basic Plan is fiscal year 2008-2011.

4.2 The significance of AUGI

Various phenomena that we experience in our daily lives and economic activities are understood

through when and where they take place, and hence can be acknowledged by associating them with specific places, areas, points of time, and time periods.

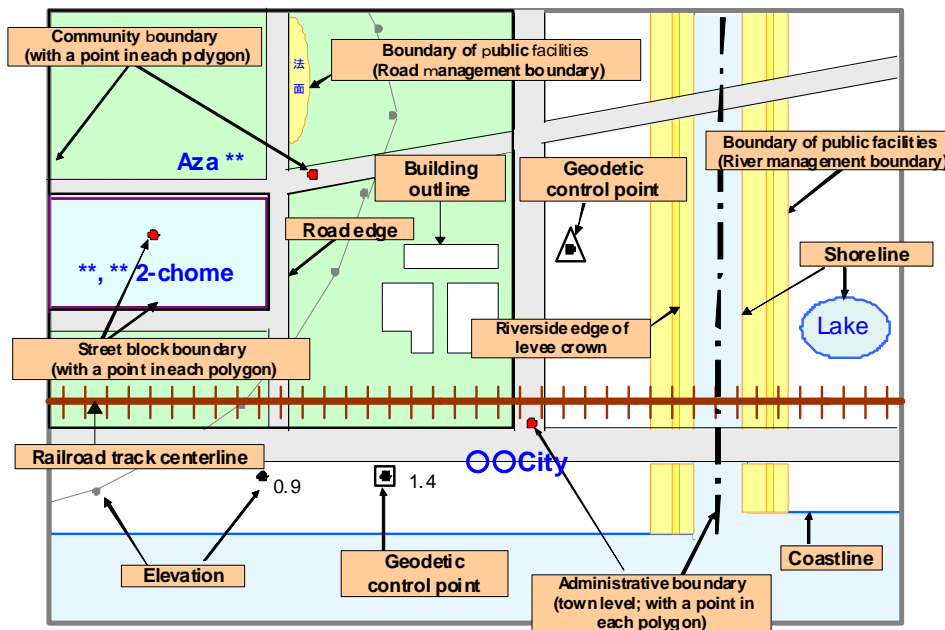


Fig. 1 Information Items of FGD

Positional information including time data, and information about various phenomena associated with positional information are defined as geospatial information. The important tools that can allow us to make the advanced use of geospatial information are GIS and Space-based PNT. They should be considered as tools that provide us with appropriate information for behavior selection, by connecting information on various phenomena with location and time. Furthermore, to deal with information explosion, it is becoming necessary to manage data by arranging them in time and space. In summary, advanced utilization of geospatial information using GIS and Space-based PNT is highly important to achieve the economic society that could help people to lead safe and rich lives for the future.

4.3 Goal to be Achieved – Realization of an Advanced Geospatial Information Utilization Society

In the Basic Plan, it is mentioned that “Given the advance of the Information Age and the needs of society, we are now working to create an advanced geospatial information utilization society where anyone will be able to use geospatial information at anytime, anywhere, and to acquire useful data derived from sophisticated analyses for their activities.” The Basic Plan introduces four specific types of geospatial information application as shown in the following Fig.2.

1) Promotion of Utilization, Development, and Preservation of the Land

GIS is used in development of land-use plans, maintenance of public facilities and infrastructure, etc. At the same time, the Space-based PNT is used to preserve remote islands which are decisive to specify vast territorial waters of Japan, and expected to be used on maintenance of public facilities.

2) Streamlining and Sophistication of Administration

By integrating and sharing fundamental map data, administrative organizations can significantly reduce

their mapping costs. Furthermore, the sharing of administrative information combined with location information will enable them to save labor for document collection and reference, and put more energy on other necessary services.

3) Advancement of Security and Convenience of People's Lives

To enhance safety and security of people's lives, GIS is being used for disaster prevention, such as hazard map provision. Meanwhile, Space-based PNT is applied to the system that enables mobile phones to transmit its location information to the police and the fire departments etc., concurrently with emergency calls.

Moreover, GIS and Space-based PNT are expected to make people's daily lives more convenient through advanced commercial services e.g., car navigation systems and personal navigation assistant.

4) Creation and Development of New Industries and Services

A common base map would make various contents data to be prepared spatially aligned with others. For digital contents industry, it would reduce development costs, and help distribution expansion and facilitate integration between different types of contents, and thus expand business opportunities.

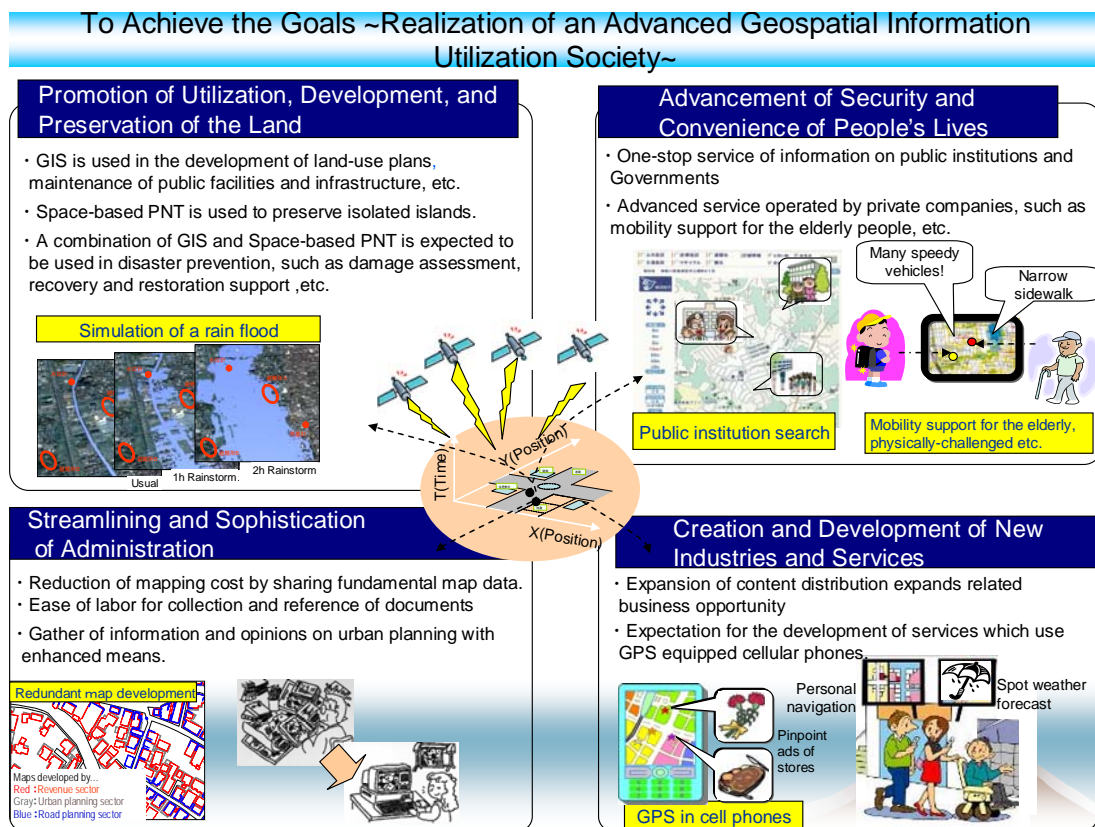


Fig. 2 Goal to be Achieved – Realization of an Advanced Geospatial Information Utilization Society

4.4 General Development of Geospatial Information

Geospatial information contains various types of information including thematic maps, urban planning maps, topographic maps and aerial photographs, among others. These types of geospatial information are used by many people for diverse purposes. It is particularly desirable that the national and local governments digitize information which is developed and updated by them and useful for the public.

When the national and local governments develop geospatial information, they must make efforts to use

existing FGD with each other, so that the product could be spatially aligned with other geospatial information. The Basic Plan requires the national and local governments to develop and update their geospatial information including plenty of GSI products in the following manner.

The national government will discuss digitization of thematic maps, urban planning maps and topographic maps developed in various administrative fields, and carry out when necessary. The government will also work to use FGD to develop and update its geospatial information, so as to make it more useful and to facilitate reciprocal utilization with other geospatial information. In the field of aerial photography, the national government will regularly take pictures of the national land including small islands, and will promote the development of ortho-images, which are photographs that can be overlaid on maps.

To standardize data exchange methods that will enable mutual utilization of data developed by various parties, the national government has worked with industry and academia to develop Japanese Standards for Geographic Information (JSGI) as a domestic standard compatible with ISO standards. It has also been bringing the Japanese Industrial Standards (JIS) in line with ISO standards and incorporating them into JSGI.

4.5 Development and Update of FGD

As defined under Article 2 paragraph 3 of NSDI Act, FGD is a positional reference to geospatial information on electronic maps. Because of this, FGD should be provided with a consistent quality according to geospatial information standards, thus the specification of FGD is regulated by the Ordinance of MLIT No. 78 and the Public Notice of MLIT No. 1144.

To facilitate national and local governments' FGD developments which meet these regulations, GSI has made the specifications for public surveys provide an operation model for survey related to FGD development. To develop, update and provide FGD as smoothly as possible, the Basic Plan prescribes that FGD shall be developed and updated in the following manner. Fig.3 shows GSI's scheme for development and update of FGD.

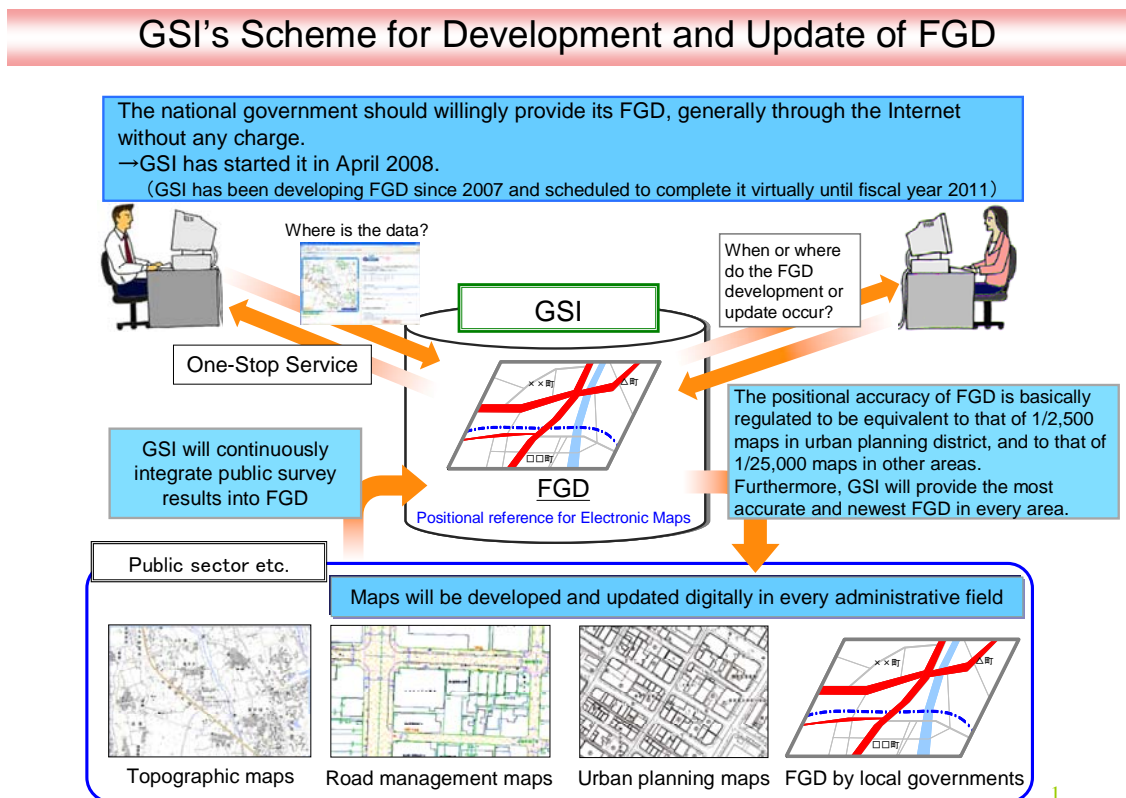


Fig. 3 GSI's Scheme for Development and Update of FGD

- 1) GSI shall develop and update 1:25,000-scale topographic maps that contain items related to FGD. Other national government organizations shall comply with standards and rules for FGD development, when they develop maps containing FGD-related items, and keep timely update as necessary.
- 2) Local governments are desired to develop and update their maps which contain FGD-related items electronically. The national government shall provide them with technical support so that the maps are accurately and digitally developed and are frequently updated under the standards.
- 3) To make FGD common among various parties as the reference of geospatial information, GSI will seamlessly integrate large-scale map data provided by the national and local governments with Digital Maps 2500 and 25000 held by GSI into a national FGD by efficient means e.g. using ortho-images. GSI will make the national FGD to be highly versatile and generally complete it by Japanese fiscal year 2011, ending March 2012.

4.6 Provision and Distribution of Geospatial Information

The geospatial information developed by the national and local governments includes a lot of information that has value to not only public but also private sector, so the national and local governments must make a concerted effort to make its geospatial information available to the public. The Basic Plan links this issue with GSI through the following measures.

- 1) The national government shall design and carry out a scheme to provide its geospatial information as much as possible, generally over the Internet, for free or for a small fee.
- 2) To promote utilization of such geospatial information, services of web mapping (e.g. the Denshikokudo) will be promoted, thus general users will be allowed not only to look at geospatial information but to add original information on it through their web browsers. Aerial photographs taken by the national and local governments will be also accessible to more general users by means such as expansion of provision over the Internet.
- 3) In order to make FGD commonly used as a positional reference on electronic maps throughout the society, the national government shall provide its FGD over the Internet, usually without charge. Since April 2008, GSI has been providing gratis FGD of which scale is equivalent to 1:2500 and 1:25000.
- 4) GSI will also work to upgrade the clearinghouse that enables FGD search and cooperate with related organizations to offer “one-stop services” so that various FGD obtained by the national and local governments through public surveys can be smoothly distributed.

To enable effective use of FGD, plans of development and update of FGD are needed to be announced. Therefore, GSI will provide information about the locations and schedules of basic and public surveys, over the Internet.

4.7 Concerns that should be Considered When Utilizing Geospatial Information

In some cases, geospatial information includes personal information. In other cases, geospatial information is protected under intellectual property rights (e.g. patents, copyrights.) On top of this, some geospatial information is concerned about the effect of its disclosure on national security. Therefore, the Basic Plan requires an establishment of rules for providing geospatial information with considerations to these concerns,

to make people use geospatial information appropriately with security.

4.8 Policies Related to Space-based PNT

According to the Basic Plan, to assure the stable use of GPS which is a Global Navigation Satellite System (GNSS) managed by the United States, the Japanese government shall cooperate with the United States through the plenary meetings of the United States-Japan Consultations on the Use of the Global Positioning System which has been held regularly since 2001 to review and discuss matters of importance regarding the use of GPS. Japan shall also participate in the International Committee on GNSS (ICG) established by the UN Committee on the Peaceful Uses of Outer Space (COPUOS), and follow up on the state of development and use of GNSS in various countries. Furthermore, Japan shall establish closer contacts with each GNSS provider.

The Basic Plan also stipulates that the national government will undertake technical research and development related to high-accuracy positioning using Quasi-Zenith Satellite System (QZSS). The Ministry of Education, Culture, Sports, Science and Technology will formulate a plan for technical and demonstrational verification of QZSS, and promote the plan in collaboration with the Ministry of Internal Affairs and Communications, the Ministry of Economy, Trade and Industry and the Ministry of Land, Infrastructure, Transport and Tourism.

The Basic Plan describes some examples of Space-based PNT application in administrative fields, such as crustal movement observation in seismic research and acquirement and provision of GPS observation data in the GPS continuous monitoring system. Regarding these measures, GSI will participate in technical development for high-accuracy positioning correction for surveying, and in measures that use GPS continuous monitoring system.

5. G-Spatial Action Plan

To promote measures formulated in this Basic Plan, the Action Plan for the Advancement of Utilizing Geospatial Information (G-Spatial Action Plan) was enacted in August 2008. Under the G-Spatial Action Plan, GSI is carrying out a number of diverse important measures including the improvement, upgrading, provision, and standardization of geospatial information such as FGD.

References

- Basic Act on the Advancement of Utilizing Geospatial Information (Act No. 63 of 2007)
<http://www.gsi.go.jp/common/000002047.pdf>
- Ordinance of the Ministry of Land, Infrastructure and Transport No. 78 on August 29, 2007
<http://www.gsi.go.jp/common/000045631.pdf>
- Public Notice of the Ministry of Land, Infrastructure and Transport No. 1,144 on August 29, 2007
<http://www.gsi.go.jp/common/000045632.pdf>
- Basic Plan for the Advancement of Utilizing Geospatial Information (Cabinet Decision, April 15, 2008)
<http://www.gsi.go.jp/common/000043664.pdf>
- Japan-United States joint statement on cooperation in the use of the global positioning system (September 28, 1998)
- Hiroshi MURAKAMI, "National Spatial Data Infrastructure Act," *GIM International* 22. 2. 15-17
- Shoichi OKI, "Present status of NSDI policy of Japan" (17th GIS Association of Japan, October 23, 2008)