我が国における地理空間情報活用推進施策の現状について

大木章一

Present status of NSDI policy of Japan

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Abstract: On August 29, 2007, the Basic Act on the Advancement of Utilizing Geospatial Information (NSDI Act of Japan) came into effect. At the same time, the ordinance of the Ministry of Land, Infrastructure and Transport (MLIT) and the Public Notice of the MLIT, which are both related to the NSDI Act and Fundamental Geospatial Data (FGD), also came into force. On April 15, 2008, the Cabinet decided on the Basic Plan of Advancement of Utilizing Geospatial Information, to carry out measures prescribed under the NSDI Act in a well-planned manner. This article shows you the outline of this plan and related measures undertaken by GSI, including the development and provision of FGD.

Keywords: Basic Plan for Advancement of Utilizing Geospatial Information, Fundamental Geospatial Data, Geospatial Information

1. Introduction

On August 29, 2007, the Basic Act on the Advancement of Utilizing Geospatial Information (NSDI Act) that is enacted on May 23, 2007 came into effect. At the same time, two regulations under the Act ('Ordinance of the Ministry of Land, Infrastructure and Transport (MLIT) No. 78' and 'Public Notice of MLIT No.1144') also came into force.

In 2007, to promote Geographic Information System (GIS), Geographical Survey Institute (GSI) has played a fundamental role in the legislation of the NSDI Act and in the amendment of the Survey Act, which formalizes digital publication of GSI's survey results. We believe that this legal framework will accelerate the utilization of geospatial information.

Required on Article 9 of NSDI Act in order to carry out measures concerning "Advancement of Utilizing Geospatial 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, 2007.

As a secretariat of the Committee, GSI has developed the Basic Plan with the Cabinet Secretariat and the National and Regional Planning Bureau of MLIT.

This article gives you an outline of the Basic Plan for AUGI and related measures undertaken by GSI.

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2. The Skeleton of the Basic Plan for AUGI

The Basic Plan consists of 2 sections. In Section I, the significance and goals of AUGI are highlighted 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 3 chapters. In Chapter 1, general measures related to AUGI are given. In Chapter 2, measures related to GIS are stated. In Chapter 3, measures related to Space-based PNT are presented. The Basic Plan is supposed to be implemented during the period of fiscal year 2008-2011.

3. 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.

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 Geographic Information System (GIS) and Space-based Positioning, Navigation and Timing (Space-based PNT).

GIS and Space-Based PNT 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. 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 4 specific types of geospatial information applications.

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

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

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.

5. Standards Related to the Development and Provision of Geospatial Information

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 the latest ISO standards and incorporating them into JSGI.

According to the Basic Plan, the national government will continuously play a major role in the creation of JIS standards from ISO standards and incorporate them into JSGI, and will play a leading role in utilization of JSGI

and GML (ISO 19136) on geospatial information development. In response, GSI participates in the General Assembly and the National Committee of ISO TC/211 (Geographic information/Geomatics) and provides geospatial information complying with JSGI and GML.

6. 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 Fundamental Geospatial Data (FGD) with each other, so that their products 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 consider how best thematic maps, urban planning maps and topographic maps developed in various administrative fields can be developed in digital form, and develop them 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 isolated islands, and will promote the development of ortho images, which are photographs that can be overlaid on maps.

7. 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 revised the Specifications for Public Surveys so that they can provide an operational model for surveys 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.

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 expected 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 in accordance with 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 virtually complete it by fiscal year 2011.

8. Provision and Distribution of Geospatial Information

The geospatial information developed by the national and local governments includes a lot of information that has value not only to the public sector but also to the 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 just a small fee.
2) To promote utilization of such geospatial information, services of web mapping (e.g. the Denshikokudo) shall be promoted, thus general users will be allowed not only to peruse geospatial information but to add

original information on it through their web browsers. Aerial photographs taken by the national and local governments shall be also accessible to more general users by such means 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, generally without charge. Since April 2008, GSI has been providing gratis FGD of which scale is equivalent to 1:2,500 and 1:25,000.

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 prepared 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.

9. 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. copyrights.) On top of this, some geospatial information, when disclosed, could cause much effect on national security.

Therefore, the Basic Plan requires an establishment of rules for providing geospatial information with considerations to these concerns, to allow people to use geospatial information appropriately with security.

10. Measures 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 U.S. 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 shall 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 support measures that use data from the GPS continuous monitoring system.

11. Conclusion

GSI is going to undertake various important measures stated in the Basic Plan for the Advancement of Utilizing Geospatial Information, such as development and update of FGD, provision of FGD thorough the Internet, and formulation of rules for FGD distribution.

To realize an Advanced Geospatial Information Utilization Society, GSI is committed to carry out these important measures.

References

Basic Act on the Advancement of Utilizing Geospatial Information (Act No. 63 of 2007)

Ordinance of the Ministry of Land, Infrastructure and Transport No. 78 on August 29, 2007

Public Notice of the Ministry of Land, Infrastructure and Transport No. 1144 on August 29, 2007

Basic Plan for the Advancement of Utilizing Geospatial Information (Cabinet Decision, April 15, 2008)

Japan-United States joint statement on cooperation in the use of the global positioning system (September 28, 1998)