New Legislation in Japan on NSDI$^+$
Basic Law for the Advancement of Utilizing Geospatial Information

$^+$: National Spatial Data Infrastructure

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• Geographical Survey Institute (GSI: National Mapping Organization)
  – Geodetic survey: 100k base control points + 1,200 GPS-based control stations (real-time monitoring of ground surface movement).
  – National mapping: 1:25,000 scale + smaller scale maps. → Mostly digitized.
  – Project budget of GSI is only 1 % of the total surveying and mapping businesses in Japan, providing minimum, yet essential geospatial data to the nation.
GPS-based Control Stations

GEONET (Continuous GPS Network)

Ground surface movement for one year period
Apr. 2003 – Mar 2004

A few cm per year

Over one meter displacement possible when a big earthquake strikes

GERMAN PLATE

N. American Plate

Eurasian Plate

Pacific Ocean Plate

Philippine Plate

2 cm
Animation of Crustal Movement for a Year
(Exaggerated by 400,000 times) *: Ground Surface
Paper Maps → GIS Data

1:2,500-scale Urban Planning Maps

Digitization

1:25,000-scale Topographic Maps

GIS Data
Public Sector (State & local governments)
- A total of approx. 1 million geodetic control points.
- Large-scale mapping for their mandated businesses including urban planning and facilities management: 1:500, 1:1,000, 1:2,500, 1:5,000 scales.
  • Most surveying & mapping projects are contracted out.
  • Some maps are still in paper form, not necessarily well updated, though more digital data are growingly produced.
  • Not many government offices take advantage of GIS.
    - Lack of educated staff on GIS (mostly generalist staff)
      -> Low priority on digital maps/GIS -> Lack of budget
      -> Slow in introduction of GIS into their daily businesses
Road Management Map

1:500-scale Road Management Map
• Private Sector (about 14k registered firms)
  – Ranging from small (a few employees) to large (with expensive equipment).
  – Mostly relying on surveying and mapping contracts from the public sector.
    • Budget reduction in public works has significantly reduced the market, causing heated competition in bidding.
  – Large companies are highly advanced in the latest technologies (GIS, digital cameras, digital data processing, laser profiler, etc.).
  – Map compilation companies work with the car navigation industry to provide up-to-date digital map data.
    • In light of declining businesses with paper maps due to the widespread use of car navigation and geoweb services, they are shifting their focus more toward on digital domain.
New Legislation: Background
GIS Development in Japan

• GI-related businesses have been rapidly growing with the widespread use of geospatial information in car navigation systems, cell phones and other portable devices as well as on the Internet.

  – Lots of digital geospatial contents information even related to individual houses is collected, distributed and widely used.

  – Private businesses are seeking more detailed, accurate and up-to-date geospatial framework information that is commonly available to all.
They (Internet companies) are also turning the Web into a medium where maps will play a more central role in how information is organized and found.

(NY Times, 27 July 2007)
GeoWeb Services

GeoMovie

Map Satellite Hybrid

Google

Map data ©2007 ZENRIN - Terms of Use
New Legislation: Background
GIS Development in Japan

• Demand for detailed, accurate, and updated *geospatial framework information*
  – Ideal sources of *geospatial framework information* should be the public sector where information of their jurisdiction and their public facilities is supposed to be collected, processed and maintained.
  – In reality, most government offices still do businesses using paper maps and aren’t willing to share their information with the other offices or outside.
  – Different mapping/cartographic companies are competing in enhancing and updating their base geospatial data products that may not necessarily align with each other when overlaid.
New Legislation: Background
Satellite-Based Positioning (SBP)

• Variety of services using GPS have become indispensable part of daily lives and businesses.
  – Navigation (aircraft, vessels, automobiles & people), emergency responses, high precision surveying and construction works, etc.
• Consequently, GPS is now an important infrastructure, while being totally dependent on the services provided by the US.
• Growing interests exist and new projects are emerging on SBP in countries and regions including EU, Russia and China.
• Strategic approach on SBP is urgently needed for the country to ensure stable SBP services.
New Legislation: Vision of some MPs

Geospatially-enabled Society

- Synergetic integration of Government policies on GIS and SBP (Satellite-Based Positioning.)
- Development of a common seamless geospatial framework information database that provides positional control for all geospatial information.
- Stable and more accurate services of SBP
Vision of NSDI Law: Geospatially-enabled Society

Ubiquitous access at any time by anybody to all geospatial information

Rescue Facilities
Aged Wooden Houses
Single Senior Residents
Blocked Roads

Geospatial Framework Information
All geospatial information is supposed to be registered to the Geospatial Framework Information
New Legislation: A New Bill on NSDI Submitted by MPs

• Initial submission of the bill during the June 2006 Diet Session: Basic Law for the Advancement of Utilizing Geospatial Information (NSDI Law). (Dr. Shibasaki has been playing a role in this process.)

• Resubmitted by MPs from two ruling and one opposition parties in May 2007 during the last Diet Session and enacted by all parties except one opposition party.

• Will be put into effect on 29 August 2007.
New Legislation
Basic Law for the Advancement of the Utilization of Geospatial Information (NSDI Law)

• Definition: Geospatial Information
  – “Information consisting of either item (i) or a combination of items (i) & (ii).
    • (i) Information that represents the position of specific point or extent in geospace including its temporal information (hereinafter, ‘positional information’).
    • (ii) Any information associated with the information in the previous item of this Article”
  – Any information related to a position in 4D space.
Definition: **Geospatial Framework Information**

- “Positional information, in digital form, that belongs to features, which provide positional reference to geospatial information on a digital/electronic map, including geodetic control points, coastlines, boundaries between public and private areas, administrative boundaries and others listed in an ordinance of the Ministry of Land, Infrastructure and Transport (hereinafter, ‘MLIT’), and that also meets the criteria defined by an ordinance of MLIT.”

- Two ordinances define **Geospatial Framework Information**, i.e. list of items & quality criteria.
New Legislation: NSDI Law
Basic Principles

• Develop an infrastructure that enables the maximum use of geospatial information.
• Take comprehensive measures to enhance the synergy between GIS and SBP.
• Ensure stable and reliable SBP services.
• Improve efficiency and enhance functionality of administrative management.
• Pay due attention to the national security and personal information.
National Security

1:25,000-scale topographic map

1:2,500-scale base map for urban planning
New Legislation: NSDI Law
Basic Policies

• Capacity building and enhanced use of GIS in governments.
• Development, timely update, distribution of *geospatial framework information* by State and local government offices.
  – Technical standards for enhanced interoperability are to be developed by the Government.
• Use of *geospatial framework information* in preparing maps that are mandated to governments.
• Liaison and coordination with organizations that operate global SBP systems.
New Legislation: NSDI Law
Action Program

• Will be developed around the end of the year by the Government to implement the basic policies.
• Supposed to be endorsed by the Cabinet Members.
• Will list specific actions of the Government to bring about tangible outcomes for the development of NSDI.
Definition of Geospatial Framework Information

• Draft ordinance of MLIT for information items
  – Geodetic control points, Coastlines, Boundaries of public facilities, Administrative boundaries, Road edge line, River bank edge line, Center line of rail tracks, Shorelines, Building outlines, Street block outlines.

• Draft ordinance of MLIT for quality criteria
  – Must be prepared by public surveying & mapping.
  – Horizontal accuracy < 2.5 m (SD) for designated areas for urban planning (25 m for outside)
  – Vertical accuracy < 1.0 m (SD) for the designated areas for urban planning (5.0 m for outside)
Technical Standards for Enhanced Interoperability

• Procedures on
  – how existing geospatial framework information is to be used when developing or updating another.
  – how existing geospatial framework information is to be seamlessly connected to adjacent data.

• List of ISO and JIS standards
  – ISO19100 series and JIS X7100 series.
NSDI Law: What’s Next?

• The law was just enacted and still at the beginning stage of its implementation.
• The promulgation of two ordinances and technical standards will trigger substantive discussions on how the law should be put into practice in the real world.
• Discussions on Action Program involving all sectors will hopefully provide some insight on the future practice of the law.
• Amount of funding from the Government could also define how far we could get the ball rolling toward the geospatially-enabled society.
Thank you for your attention.

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