GSI originated in the Cadastral Registration Map Section, Geography Department of the Ministry of Civil Services in 1869. Later the Section developed into Geographical Bureau of the Ministry of Home Affairs in 1877, to be integrated into Japanese Imperial Land Survey of the General Staff Office in 1888. It was reorganized as an institute under the Ministry of Home Affairs in 1945. In 1948 it came under the Ministry of Construction upon its establishment.

The Institute was moved to Tsukuba Science City in 1979. In 1984 it was designated as a special organization of the Ministry of Construction and remains to be so under the newly integrated Ministry of Land, Infrastructure and Transport due to the central government reorganization in 2001.
Mission

GSI makes national maps and establishes control points as a basis for all the surveys, which serve as the primary data for all the efforts of national land development and infrastructure building. We continue to play this crucially important role by pursuing four strategic goals in a relevant and comprehensive way.

Planning of policies related to survey
GSI makes plans including long-term plans of basic survey and develops policies related to survey to improve and strengthen the survey system of Japan as an administrative authority that manages the Survey Act. Efforts are continued to bring a highly transparent and fair system.

National land information infrastructure and Research & Development efforts
GSI develops the national land information infrastructure and Research & Development efforts to bring a highly transparent and fair system.

Guidance and coordination for public survey
Based on the Survey Act, GSI gives guidance to and coordinates highly precise survey operations (public survey) executed by the national and local governments in order to avoid duplication and ensure survey accuracy.

International activities related to survey and mapping
As the only administrative organization responsible for land survey, GSI is actively involved in the international activities of survey, mapping and earth sciences researches.
## The Budget for FY2005

<table>
<thead>
<tr>
<th>Item</th>
<th>1999</th>
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<th>2002</th>
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<td>Total budget</td>
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<td>12,622</td>
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<td>4,796</td>
<td>4,755</td>
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<td>Science and technology expenses</td>
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<td>50</td>
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<td>224</td>
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<td>Facility development expenses</td>
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<td>175</td>
<td>158</td>
<td>153</td>
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<td>3,397</td>
<td>200</td>
<td>0</td>
<td>500</td>
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</table>

## Budgets in the past seven years

[Graph showing budget allocations for the past seven years]
Planning of policies related to survey

Outline of The Sixth Long-Term Plan of Basic Survey

Surveys by private sector
Housing maps, road maps
Public surveys
Surveys by local governments
Public surveys
Surveys by the central government

Basic surveys conducted by GSI support all the other surveys

Control point survey(GPS-based control points, triangulation points, benchmarks), cartographic activities(digital mapping, topographic maps of 1/25,000), etc
1. Promote development, utilization and application of geo-referencing information infrastructure

- Create an environment where accurate positional information is readily available.

(Target)
Develop a positioning system with precision of 10cm anywhere in five years and make the system operable indoors and underground of the strategic areas in ten years.

2. Promote development, application and utilization of Digital Japan fundamental information

- Develop and provide updated geographic information
- Create an appropriate environment for ready access to and use of multi-dimensional geographic information

(Target)
Provide updated map data of the national land and local landscape within one month of the change in five years and develop an internet environment for easy access to the changes of the national land and local landscape in ten years.

3. Promote development, application and utilization of geographic information for disaster prevention and mitigation

- Continuously monitor crustal movement
- Create an environment to accommodate strengthened measures for disaster prevention and mitigation

(Target)
Detect crustal movement to a cm precision and contribute to the countermeasures against earthquake and volcanic eruption.
Efforts to bring the concept of Digital Japan (Denshi Kokudo) into reality

Digital Japan

GPS-based control stations
Various thematic maps
Various databases
Aerial photographs
Old maps
Environmental information
Road and river information
Public survey data

Data sharing and overlaying through Digital Japan

Acceptance
Confirmation
Data entry

Through Digital Japan

Applicant

Data sharing
Planning of policies related to survey

Geographic Information System (GIS) popularization and promotion initiatives

Promotion of earthquake surveys and researches

GIS Liaison Committee of Ministries and Agencies

Initiative to the Japanese Geodetic Datum 2000

Development of beautiful national land and promotion of tourism

Access to the regional information from local governments and citizens
Development and provision of geo-referencing information

The National Land Information Infrastructure and R Development and provision of geo-referencing information

National land information infrastructure and R

National land information infrastructure and R

National land information infrastructure and R

Development and provision of geo-referencing information

Tsukuba

Nihon Keiido Genten (the origin point for the horizontal datum of Japan)

Longitude

Latitude

Nihon Suijun Genten (the origin point for the vertical datum of Japan)

Longitude

Latitude
Research & Development efforts

Provision of the latest positional information for users

Geo-referencing information database of control points

Creation of new businesses

Control points information obtained by various surveys

Z
XY

Control points information obtained by various surveys
Development and publication of Base Geographic Information for Digital Japan

Preparation and publication of topographic maps for national land management

Development and publication of Spatial Data Framework
Development of national land history archives

Acquisition and dissemination of the up-to-date geographic information
**Development and provision of geographic information for disaster prevention and mitigation**

As a Designated Administrative Organ, pursuant to the Disaster Countermeasures Basic Act, GSI promotes earthquake prediction research, observes crustal deformations, and prepares geographic information to be used as the basic information for disaster countermeasures.

GSI also develops landform classification data, precise topographic data, etc., as basic information for disaster prevention and mitigation.

- **Monitoring of crustal movement by GPS continuous observation**
  
  By continuous observation at GPS-based control stations distributed around the country, detailed data of crustal movements in the Japanese Archipelago are monitored in detail, where earthquakes and volcanic activities are frequently observed.

- **Detection of crustal movement by Synthetic Aperture Radar (SAR)**
  
  Spatial distribution of crustal movement can be understood in terms of area through SAR Interferometry combined with survey data, which enables detection of crustal movement.

Observation data: From January to December 2004,
A fixed station: Fukaura, Aomori Prefecture

- **Preparation of geographic information used for preparation of hazard maps**

  GSI prepares thematic maps and precise elevation data through the airborne laser scanning survey as basic information source to be used for various hazard maps, which contribute to disaster management.
In response to a disaster GSI quickly conducts emergency survey investigations and aerial photograph taking and the obtained geographic information and crustal movement data are released without delay to the public and to all the Ministries and local government offices concerned. Our data support and strengthen disaster prevention efforts at all levels.

Response to a large earthquake

Disaster map of the Chuzetsu Earthquake of 2004

Conceptual map of fault model estimated from the crustal movement observed at the time of the Chuzetsu Earthquakes of 2004.

Response to volcanic activities

Radar observation around the crater of Mt. Asama by an aircraft and cross sections

Continuous monitoring by the GPS observation points established around Mt. Asama

Response to disasters caused by heavy rain

Map of flood area by high tide due to the typhoon #16 in 2004 (Takamatsu City)

Map of flood area due to the heavy rains in Nigata-Fukushima in 2004 (Mitsuke, Nigata)
Research & development related to survey and mapping

Various relevant activities are under way for higher efficiency in survey and mapping, effective promotion as well as for earthquake researches, and promotion of international researches of geo-sciences.

- To contribute to development of sciences related with the earth and land
- Of map making

Modeling of crustal movement

- Estimate of interpolate movement
- Simulation based on finite element analysis

- Clarify crustal movement characteristics of earthquake cycle
- Improve prediction accuracy in terms of medium to long term forecast for trough type earthquakes

- To support survey activities and administrative policies

Overlaying of ortho-photo onto map data

- Rapid preparation of ortho-photo map
- Advancement in survey and mapping technologies

Maintenance of geodetic reference system

- Conventional type of GPS
- Monitor changes in depth of aquifer and layer of little permeability

- To contribute to environmental preservation and disaster prevention

National Land Information Infrastructure

- Application and utilization of historical geographic information
- Landscape restoration based on historical geographic information
- Understanding of environmental changes of the national land
- Contribution to beautiful nation building

- Clarify the vertical change mechanism (ground surface elasticity change)
- Monitor secular changes of ground condition on a medium- to long-term basis
- Develop technology for a fixed type control point to be established on the stable ground

Dual-pipe observation well to detect ground condition changes

- Stable stratum
- Aerial photograph colorization

- To support survey activities and administrative policies

- To contribute to environmental preservation and disaster prevention
Highly precise surveys executed by the national or local governments are called public surveys. GSI is responsible for guidance and coordination as is stipulated in the Survey Act to ensure accuracy and avoid duplications in the public surveys.

**Guidance and coordination for public surveys**

- Application of new survey technology
  - Airborne laser scanning survey
  - Network type RTK-GPS survey
- Accuracy verification
- Preparation of a manual
- Incorporation into the operational regulations
- Establishment of technical standards
- GSI prepares standard working manuals required for introduction of new survey technologies (e.g. Airborne laser scanning survey) into public surveys.
International Activities Related to Survey and

Development of Global Map

Establishment of geographic information standards consistent with international standards

ISO/TC211
Geographic information/Geomatics

WG4 Geospatial services
WG6 Imagery
WG7 Information communities
WG8 Location based services
WG9 Information management

ISO/TC211 national committee
Drafting of international standards
**Participation in IVS (International VLBI Services) and promotion of international joint observation and researches**

Participation in IVS (International VLBI Services) and promotion of international joint observation and researches. The document highlights the importance of international collaboration in the field of survey and mapping.

**Participation in various international conferences on survey and mapping organized by the United Nations and other international organizations**

Participation in various international conferences on survey and mapping organized by the United Nations and other international organizations. The document showcases the involvement of experts in the field of survey and mapping.

**Technical assistance (dispatch of experts and acceptance of trainees) to developing countries**

Technical assistance (dispatch of experts and acceptance of trainees) to developing countries. The document emphasizes the importance of sharing knowledge and expertise with developing countries.

**Participation in the Antarctic Research Expedition**

Participation in the Antarctic Research Expedition. The document highlights the role of experts in the field of survey and mapping in conducting research in the Antarctic region.
Announcement of examination and the license system of surveyor and assistant surveyor

A registered surveyor is responsible for planning and execution of surveys, while an assistant registered surveyor conducts surveys based on the plans the registered surveyor has drawn. Under the Survey Act those who engage in the basic surveys and public surveys are to be registered surveyors or assistant registered surveyors.

As of March 2005 the number of registered surveyors is roughly 210,000 and that of assistant registered surveyors is about 450,000.
Science Museum of Map and Survey

Where to contact

<table>
<thead>
<tr>
<th>Where to contact</th>
<th>Address</th>
<th>Phone</th>
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<tr>
<td>Information service</td>
<td>〒106-8243 東京都港区赤坂1-7-6</td>
<td>03-3580-3511</td>
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<td>Exhibition Hall</td>
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<td>Permanent Exhibition (B1)</td>
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<td>Airplane for survey, Kunkaze (D)</td>
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GEOGRAPHICAL SURVEY INSTITUTE
Railway and Bus
1. JR Joban Line about 60 min.
2. JR Joban Line about 65 min.
3. JR Joban Line about 70 min.

Bus (for Tsukuba Center) about 20 min. (every 30 min.)
Bus (for Tsukuba Center) about 20 min. (every 30 min.)
Bus (for Tsukuba Center) about 25 min. (every 15 min.)

Bus (for Building Research Institute, Shimobukuro) about 15 min.
About 10 min. by taxi

Highway Bus
1. Bus (for Tsukuba Center) about 100 min. (every 70 min.)
2. Bus (for Tsukuba Center) about 100 min. (every 90 min.)
3. Bus (for Tsukuba Center) about 70 min. (every 10 min.)

Bus (for Mt. Tsukuba) about 80 min. (every 120 min.)

Motor car
1. Metropolitan Highway
2. Joban Motorway
3. Tsukuba JCT
4. Ken-O Highway
5. Tsukuba Ushiku IC
6. Ordinary roads

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