Institutional Strengthening to Stimulate Geospatial Industry Growth in China

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Introduction: Government Reform

- China is aiming to build a socialist market with
  - Legal system
  - Democracy
  - Scientific decision.

- Government reform to reflect limited functions:
  - macro-economy adjustment
  - market supervision
  - community administration
  - public service

- The new reform is to:
  - Decrease the number and size of organizations
  - Decrease intersections between ministries
  - Increase the coordinating functions to authorities
Introduction: ToR and SBSM

- Term of Reference approved by the State Council:
  - Responsibilities
  - organization structure
  - number of personnel.
- SBSM is under the supervision of the Ministry of Land and Resources.
- SBSM has new features:
  - Mapping for emergency
  - Coordination of geospatial industry
  - A chief engineer and more personnel
  - A new department of Science, Technology and International Cooperation.
Introduction: GI Overview

- Geospatial information products have been widely used in government, enterprises and community.
- Geospatial Industry Overview (2008)
  - >10000 enterprises and institutes
  - >400000 people employed
  - >production RMB 60 billion Yuan
  - increasing rate > 20% annually
  - A few enterprises to be listed in the stock market
  - Merging and acquisition
Strengthening Unified Supervision

- SBSM founded in 1956, Provincial BSM established in early 1970
- Administration Levels:
  - National
  - Provincial
  - Municipal
  - County.
- Institutions of surveying and mapping
  - State teams
  - Provincial teams
  - Municipal teams
  - Professional teams
  - Enterprises
Supervision: Legal System

1st Level
- Constitution

2nd Level
- Law of Surveying and Mapping
- Map Publishing
- Survey Record Management
- Survey Monument Protection

3rd Level (Statute)
- Provincial Bylaw of Surveying & Mapping
- Provincial Bylaw of Survey Record Management

Local Law (Bylaw)
- Quality Control Regulation
- Geospatial Data Administration Regulation

Department Regulation

regulation on the publication of government information
ToR of the SBSM (1)

1. To draft legal documents, national plan of surveying and mapping, administrative policy and standardization.
2. To manage basic mapping, boundary survey, cadastral survey and national key projects of surveying and mapping, as well as maintenance of the national datum.
3. To draft plan, standard of cadastral survey and certificate cadastral survey records.
4. To regulate surveying and mapping market, including administration of Certificate of Surveying and Mapping, supervision of the surveying activities and mapping quality, coordination of security of geospatial information.
ToR of the SBSM (2)

5. To organize public service and emergency despondence of surveying and mapping.

6. To manage national records of basic surveying and mapping, supervise and monitor all types of surveying and mapping records and survey marks.

7. To administrate various maps, including the supervision of map market, cartographic works, technical supervision of public map products, and to compile national standard boundary map.

8. To be responsible for innovation of science and technology of surveying and mapping as well as international cooperation.
Geospatial Information Resources and Utilization

- Technology revolution of surveying and mapping
  - Analogue
  - Digital
  - Informatization
- The national datum: Planimetric and Vertical
- National Standards of Surveying and Mapping
- Fundamental Geospatial Data and DBMS
- Applications
Geospatial Referencing Systems

1. Triangulation Network
2. Levelling Network
3. Absolute Gravity Network
5. GPS Network CORS

Geodetic Origin:
- Xi’an 1980
- Beijing 1954
- Huanghai 1985
A standard system for traditional surveying and mapping
- Revisions to support digital surveying and mapping
- A new series of standard to meet the urgent need of the DCGF
- Three types: GB for enforcement; GB/T for Suggested National Standards; CH for SBSM drafted standards.
• **Full coverage** 1:100million, 1:50000 and 1:25000.
• 90% coverage 1:50000, to be full coverage next year.
• A few provinces covered 1:10000.
• All cities covered 1:2000 and 1:500.
• Remote sensed image fully covered.
• Aerial photography covered 80%.
• **Land Map of China second version end of this year, renewed annually.**
Vector Data (DLG)

Digital Raster Graphics (DRG)
Digital Othophoto Map (DOM)
Digital Elevation Model (DEM) and Landcover Data
Geographic Names and Meta Data

The Data to describe data:
• Identification,
• Quality,
• Reference,
• Data Sources, and so on.
Fundamental Geographic Database
Digital China and Applications

- Digital China Geospatial Framework
  - Nationwide
  - Provinces
  - Cities
  - Counties and Villages
- Applications of RS, GPS, GIS in natural disasters
Key Projects

1. Updating project of geospatial information at 1:50000.
2. Western China Mapping Project to produce geospatial information at 1:50000.
3. The surveying and mapping of countryside.
5. Ziyuan-3 stereoscopic mapping satellite.
Surveying and Mapping Base of China

- Surveying and Mapping of China named by Premier Wen Jiabao
- The new building has total area of 75000 m², acts as...
Human resource and Institutes

- Geospatial education
  - >100 universities
  - >4000 young talents graduated annually
- Scientific Research
  - Academy of surveying and mapping
  - Related research institutes in geosciences
- Geospatial Information Centers: 31 +
- A Geospatial Industry Garden established
Current Situation of GI

1. GIS software: SuperMap, GeoStar and MapGIS
2. Digitized surveying instruments: South China, SWDC
3. Advanced digital geospatial data processing software: DP-Grid, PixelGrid
4. Software customization and system integration
5. Personnel navigation products: NavInfo, AutoNaV
6. Internet-based geographic information service: MapBar, MapAbc, Baidu, Sohu
7. Value added service: SouFang, FanTong
Remote Sensing and Aerial Photography

- As the state government purchases aerial photos and remote sensed data in the open market, many satellite remote sensing companies and aerial photography companies prosper.
- Equipped with film aerial camera, digital camera, LIDAR and InSAR, these companies supply aerial photos and remote sensed image data covering lands of 3 million square kilometers each year.
To meet the public demand for geographic information, the industry of data processing of surveying and mapping grows rapidly.

Data processing services are provided not only by mapping institutes but also by companies.
System Integration of Geographic Information

- Application of GIS developed in China
- Redevelopment of popular GIS
- GIS system integration
  - GeoWay
  - SuperMap
  - Careland
Development of Maps and Navigation Systems

- **Map Publishing**
  - China Map Publishing Group to be formed
  - A number of private-owned publishing firms

- **Navigation Systems**
  - Licensed enterprises and institutes: 11
  - Pre-installed: NavInfo, AutoNav,
  - Post-installed: CareLand, Ritu, EMapGo,
  - Personnel navigation devices (PND): CareLand, Lingtu, CityExpress
  - Companies performing well to be listed in stock market.
Geographic Information Service

- Digital Map Provider: Vector data, Image data
- Web GI Service provider: Map + System + POI
- WebMap Value Added Services: real estate, logistic companies, restaurant seeking
Comprehensive Engineering Surveying

- Geodetic survey
- Precision engineering surveying
- Underground pipelines surveying
- Boundary surveying
- Cadastral surveying
- Photogrammetry

- In response to international monetary crisis
- Interior demands incentive and active financial policy
- Surveying institutes have high speed of development
Manufacture of Surveying Instrument

- China imports surveying and mapping HW/SW
- Enterprises develop surveying instruments
  - SouthChina
  - Suzhou FIOF
  - Beijing BOIF
  - Kelida
- Instruments and software developed
  - Total stations
  - GPS receivers
  - Digital aerial camera
  - UAV
  - Digital photogrammetry system
  - GIS
  - Remote sensing image processing software.
Opportunities and Challenges

- Legal environment and political support
- Active use of geographical information
- Open the state-owned geographical information to private enterprises.
- Innovation of surveying and mapping technology
- Construction of information-based mapping system
- A public geographical information service platform
- More digital cities.
O&C 1. Wide GI Applications

- IT revolution in the whole society
- Internet Access: more than 338 million people
- Mobile subscribers: 600 million people
- Mobile Internet Access: 150 million people
- Location service:
  - digital map
  - WebGIS
  - Navigation system
  - GPS embedded mobile phones
O&C 2. 3G mobile communication

- 3rd Generation Mobile Communication
  - China Mobile  TD-SCDMA
  - China Telecom  WCDMA
  - China Unicom  CDMA2000
- The wide bandwidth supports
  - video calls
  - IPTV
  - navigation.
- Wi-Fi network
  - Airports
  - Hotels
  - Conference centers
O&C 3. Digital Cable TV

- Integration of three networks
  - Telephone net
  - Internet
  - Cable TV net
- Digital Audio Broadcasting (DAB)
  - Beijing
  - Shanghai
  - Shenzhen
- Digital Terminals at home
  - Digital TV set
  - PC
  - Set Top Box
O&C 4. E-Gov GIS

- *The Regulation on the Disclosure of Government Information*
- E-government project includes fundamental databases
  - Natural resources and geographical information
  - People information
  - Organization information
  - Macro-economy information
- Professional GIS
  - Urban planning and management
  - Land and resources
  - Public security
  - Forestry
  - Agriculture
  - Transportation
  - Environmental protection
  - Emergency commanding
  - Statistics
  - Etc.
O&C 5. Globalization

- Globalization
  - Industrial relocation
  - Monetary flow
  - Information interchange
- Geographic information outsourcing
  - Surveying and mapping engineering
  - Data processing
  - Software engineering services
- Joint Ventures in China
- Going out to the World
O&C 6. Enterprise Acquisition

- Reform of the public institution produce more firms
  - Change to government divisions
  - Change to companies
  - Keep as public institute
- Geospatial Industry deep divided
- Heavy investment in GI
- Acquisition and merging
  - leading companies
  - supporting enterprises
  - channel enterprises
Conclusions

- New governance of surveying and mapping
- Unification
- Authorization
- Legalization
- Standardization
- Open policy
- New IT infrastructure of surveying and mapping
- New roles of enterprises in geospatial industry
- New social requirement of GI products

New SBSM
New Era of GI in China!

Thank You!