Benchmarking Spatial Data Infrastructure Development in Hong Kong

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Scope

This is a HKIS sponsored research study to

- provide a comparison study between the advanced SDIs and the current status of the Hong Kong SDI, and
- promote developments of Spatial Data Infrastructure in Hong Kong.
National Policies on Geospatial Information:
Spatial Data Infrastructure, Regulatory Practices, Information Management Issues

- United Nations initiative
  - Dept of Economic and Social Affairs
- Role of government – regulator, implementer
- Legislation & regulatory framework
  - Links to Australia, Bahrain, Brazil, Canada, Chile, China, India, Japan, Portugal, Korea, Spain & USA.

Web access from [http://ggim.un.org/sdi.html](http://ggim.un.org/sdi.html)

The Infrastructure
(regulatory framework)

- Legislation + Government Administration
  - USA, European Union, Japan, Korea,…
- Government Administration
  - Australia, Canada, China,…
USA National SDI Policy

- 1994 President Decree - Clinton
  - Executive Order 12906 established executive branch leadership for development of the coordinated National Spatial Data Infrastructure, and called for development of a National Geospatial Data Clearinghouse, spatial data standards, a National Digital Geospatial Data Framework and partnerships for data acquisition.

- Federal Geographic Data Committee FGDC
  - Chairman – Secretary of the Interior
  - Vice Chairman – DD of Office of Management & Budget
  - Web access from http://www.fgdc.gov/participation/

Legislation


Web access from http://inspire.jrc.ec.europa.eu/
GIS law in Spain (2007)

- Royal Decree 1545/2007, Chapter VI reorganizes the National Geographic High Council
  - Advisory group
  - Coordination of Cartography and GI
  - Representatives
    - 14 Ministries
    - 17 Regional Governments
    - 6 from Federation of Local Authorities
  - Technical Secretariat: IGN Spain

GIS law in Spain (2010)

- Law 12/2010
  - Geographic information infrastructures & Services in Spain
  - Spanish NSDI (IDEE) Web access from www.idee.es

GIS law in Korea (2000)

- Implementation & Utilization of the NGIS
- Act (2000 April, Law No. 6201)
- Enforcement Decree (2000 July, President Decree No. 16890)

Reference: GI Section, MOCT, Gwacheon-City, Gyeonggi-Do, 427-712, Korea
The Geospatial Information Authority of Japan (GSI) is the only national organization that conducts basic survey and mapping and instructs related organizations to clarify the conditions of land in Japan and that provides the results of surveys to help improve this land.

Web access from http://www.gsi.go.jp.html

The House of Representatives of Indonesia passed the Geospatial Information Act. The GI Bill has been prepared in the 1990s.

Reference: www.futuregov.asia/articles/category/government-gis/
The Infrastructure (regulatory framework)

- Legislation + Government Administration
  - USA, European Union, Japan, Korea,…
- Government Administration
  - Australia, Canada, China, Singapore…

Canada – SDI regulatory framework

- 1988 Inter-Agency Committee on Geomatics (IACG)
  - Steering Committee - Assistant Deputy Minister from 18 departments
  - Working Groups – Directors from 14 departments
- 1996 Canadian Geospatial Data Infrastructure Initiative
  - To enable timely access to geospatial data holdings and services in support of policy, decision making and economic development through a co-operative interconnected infrastructure of government, private sector and academia participants.
- 2001 Canadian Geomatics Accord
  - Canadian Council on Geomatics (CCOG)
Canadian Geospatial Data Infrastructure

- Online access to government information
- National framework data
- International standards
- Data partnerships
- Data distribution - Supportive policy


Easy & cost effective access to spatial data

- Australian Spatial Data Directory
  - online metadata

- Standards
  - Content (data dictionaries, land use codes, ..)
  - Access (ISO TC211 GI series and information retrieval; OpenGIS Consortium & FGDC)
  - Exchange (Geography Markup Language, Scalable Vector Graphics, Uniform Resource Identifiers)

China provides 1:4,000,000 digital topographic data

- Data Dictionary
  - Data Layers
- Standard and Specifications
- Metadata
- Data Browsing
- Service
- Documents

Web access from [http://nfgis.nsdi.gov.cn/nfgis/english/default.htm](http://nfgis.nsdi.gov.cn/nfgis/english/default.htm)

China’s national SDI regulatory structure

Reference: [Ji, 2009]
China’s national SDI framework

Reference: [Ji, 2009]

Singapore SDI regulatory framework

- 1984 Civil Service Data Administration Program
  - Land Data, Population Data & Business Data

- 1989 Land Data Hub
  - From CD rom data in 1990s to online delivery in 2004
  - INLIS – sale office

- 2007 LandNet web based

- 2010 Integrated Government
NSDI – benchmark components

- Policy
  - Executive branches
  - Development plan
  - Fundamental Geographic Information (Data types)
  - Data sharing – partnerships

- Geospatial Data Clearinghouse
  - Data access through internet
  - Operating procedure

- Data Standard
  - Data collection, exchange, storage
- SMO is the SDI government representative organization in Hong Kong

Government SDI Policy (1)


- 2004 - Data Alignment Measures
  - Slope, Building, Lot, Road Contour line & TPU/SB
Government SDI Policy (2)

Ref.: HPLB(P&L) 6-15/17

Housing, Planning and Lands Bureau
Murray Building
Garden Road
Hong Kong

28 June 2007

HOUSING, PLANNING AND LANDS BUREAU
TECHNICAL CIRCULAR (PLANNING AND LANDS)
NO. 2/2007

Administration of Digital Geographic Data

• Background
  ○ A department may own several GISs
  ○ Still many GISs are developing
  ○ Data Alignment Measure for 15 departments

• The Policy
  ○ To appoint a GIS Manager for each department and a GIS Administrator for each GIS in the same department.
  ○ GIS Manager is to formulate and implement strategy for developing GIS.
Government SDI Policy (3)

- 14 May 2008
- Legislative Council Questions 15 : Spatial Data Infrastructure

  - In collaboration with the Lands Department, the Office of the Government Chief Information Officer (OGCIO) plans to provide geo-spatial information services to the public through GovHK supported by a geo-spatial information hub.

By 2008, Google Maps are seen in HK

![Google Maps Hong Kong Polytechnic University, Hong Kong](image)
HK Government launches open data portal

- Launched on 31 March 2011 (1.5 year pilot scheme)
- Web-based open data portal - data.one.gov.hk.
- The pilot open data initiative aims to encourage the wider dissemination of geo-referenced government facility data and traffic-related data across the community.

Data.One is a portal to facilitate the dissemination of Public Sector Information (PSI) for value-added re-use.
- Geo-referenced data & real-time traffic data for free download.

Supply image, not the map data

GeoInfo Map

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**Government Depts with SDI Data**

- Architectural Services Department
- Buildings Department
- Census and Statistics Department
- Civil Engineering and Development Department
- Drainage Services Department
- Electrical and Mechanical Services Department
- Environmental Protection Department
- Highways Department
- Housing Department
- Lands Department
- Land Registry
- Planning Department
- Rating and Valuation Department
- Transport Department
- Water Supplies Department
Facility Data

- Joint project – 12 participants (facility corporations & government departments)
- **Computerized information exchange system**
- System development: Joint Utility Policy Group
- Mass Transit Railway appointed the contractor: UtilityINFO Limited

Reference: [Li & Cheng, 2010]

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Individual Departmental Databases

- Data with different structure, quality and standard.

Developed after [Seifert, 2007]
Geospatial Information Hub

Data circulation within the Government

Reference: [Sung, 2007]

HK SDI Development

Data Integration

- Legal, institutional, policy & social issues amongst government departments and facility corporations (data providers)

- Technical Problems

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<tr>
<th>Semantic heterogeneity</th>
<th>meaning/interpretation</th>
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<tr>
<td>Structural heterogeneity</td>
<td>data structure</td>
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<tr>
<td>Syntactic heterogeneity</td>
<td>search &amp; query</td>
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Reference: [Mohammadi, 2007]
Summary

- Hong Kong is a rich society with a wealth of SDI data.
- The policy on SDI is rather preliminary, as compared with the advanced societies.
- A legal structural development for SDI is preferable because it legally defines the data and settles the arrangement amongst data providers.

References

Thank You