
Spatial Data Infrastructures – The Asian Scenario

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Definition SDI (Gupta 2005)

- “Spatial Data Infrastructure encompasses the data sources, systems, linkages, processes, standards and institutional arrangements involved in delivering spatially-related information (both commercially and publicly held) to the widest possible group of potential users”

The Goals of an SDI

- How can SDI be used to promote, disseminate and sell public geodata to achieve higher use and better cost recovery? (Government administration perspective)
- How can SDI be used to provide necessary spatial data with minimal costs and efficient usage to generate income? (Business perspective)
- Can we use spatial information to interest the public for product placement (Infotainment perspective)
- How can we use available spatial information for our scientific research (e.g., climate modeling, environmental monitoring, economic forecasting) (Scientist perspective)
- How can SDI be used to reach out to the general public to make geoinformation available for decisions that affect our day-to-day life? (Citizen perspective)

Ref: GLOBAL INFORMATION TRENDS AND SDI
Manfred Ehlers
Institute for Geoinformatics and Remote Sensing – IGF

Background:

International Trends in the Area of National Geographic Information Infrastructure -

- Governments throughout the world are coming to recognize that information is one of the most critical elements underpinning decision making for economic and social development, and the need to assign resources to establishing an effective information infrastructure.

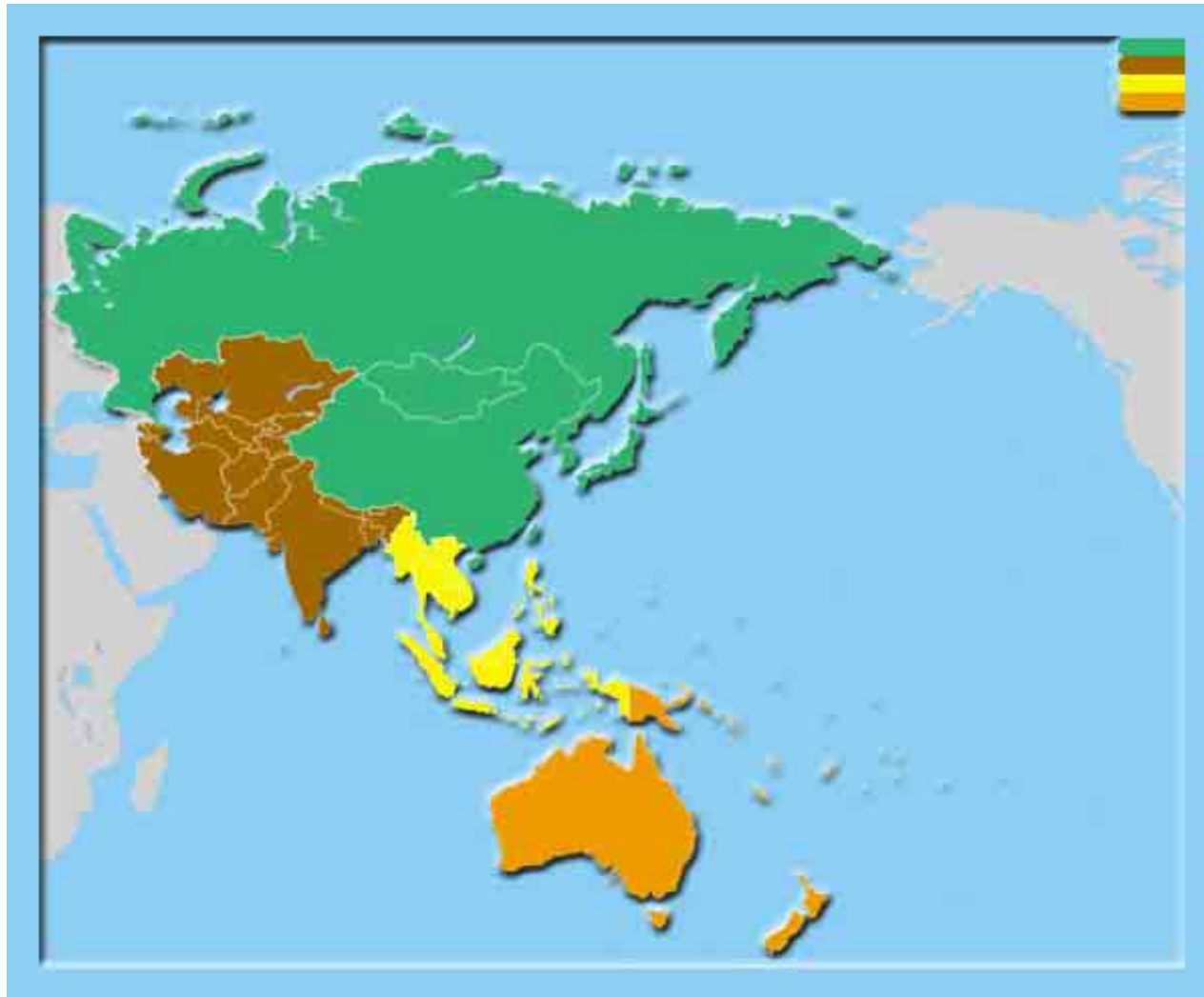
Background -

- April 1994 the President United States of America issued an Executive Order that implemented a National Spatial Data Infrastructure.
- The European Community has developed detailed policies and strategies for a European Geographic Information Infrastructure.
- Similar steps are being taken in South Korea, Japan, Indonesia, Malaysia, China, India and other countries in Asia.

In ASIA

- The Permanent Committee on GIS Infrastructure for Asia and the Pacific (PCGIAP) was established by the United Nations Regional Cartographic Conference for Asia and the Pacific.
- In October 1996, PCGIAP held its inaugural plenary meeting in Sydney to address the needs and strategies for a regional Geographic Information infrastructure.
- As of April 2006, out of the 36 nations about 10 countries have established their NGII's or NSDIs while more were reported to be in the planning stage such as SriLanka, Bhutan.

PCGIAP Domain



Asian nations under PCGIAP (36)

- Afganistan
- Armenia
- Azerbaijan
- Bangladesh
- Bhutan
- Brunii Darussalam
- Cambodia
- China
- Georgia
- India
- Indonesia
- Iran
- Japan
- Kazakhstan
- Korea
- Kyrgystan
- Laos
- Macaou
- Malaysia
- Maldives
- Mongolia
- Myanmar
- Nepal
- Pakistan
- Papua New Guinea
- Philippines
- Russian Federation
- Samoa
- Singapore
- SriLanka
- Tajikastan
- Thailand
- Turkey
- Turkemenistan
- Uzbekistan
- Vietnam

Aiding NDSIs – The Global Mapping Project.

The Specifications -

- Spatial resolution: 1km
 - equivalent to 1:1,000,000 scale □
- 8 layers
 - Vector data □ point, line, area □
 - Boundaries □ Administrative/Coast □, Drainage
 - Rivers/Lakes □, Transportation
 - Roads/Railways/Airport □, Population centers
 - Raster data □ grid □
 - Elevation, Land Cover, Land Use, Vegetation

Aiding NSDI's - The Global Mapping Project – Status till date:

- 18 countries from Asia are participating and till date 12 have completed the project, the remaining have a deadline till 2007.
 - 2000: Singapore, Japan, Nepal, Sri Lanka, Thailand,
 - 2001: Bangladesh, Mongolia, Philippines.
 - 2003: Kazakhstan, Kyrgyz, Myanmar.
 - 2005: Iran

SDI - Singapore

- **Singapore Land Data Hub (LDH) was established in 1989.**
- **Land Data Hub**
There are 2 main programmes under LDH - LandNet (Land Information Network Infrastructure) and INLIS (Integrated Land Information Services).



SDI - Singapore

- **LandNet**

LandNet facilitates integration and online delivery of spatial data across heterogeneous networks and GIS environments. It allows government sectors to exchange and access land databases online. LandNet also enables the exploitation of the land information for the provision of value added land information services to the public and private sectors.

- **INLIS**

INLIS integrates and packages useful information services from land related departments across the civil service and offers a one-stop for land information to the public. INLIS tells you "What's In and Around There".

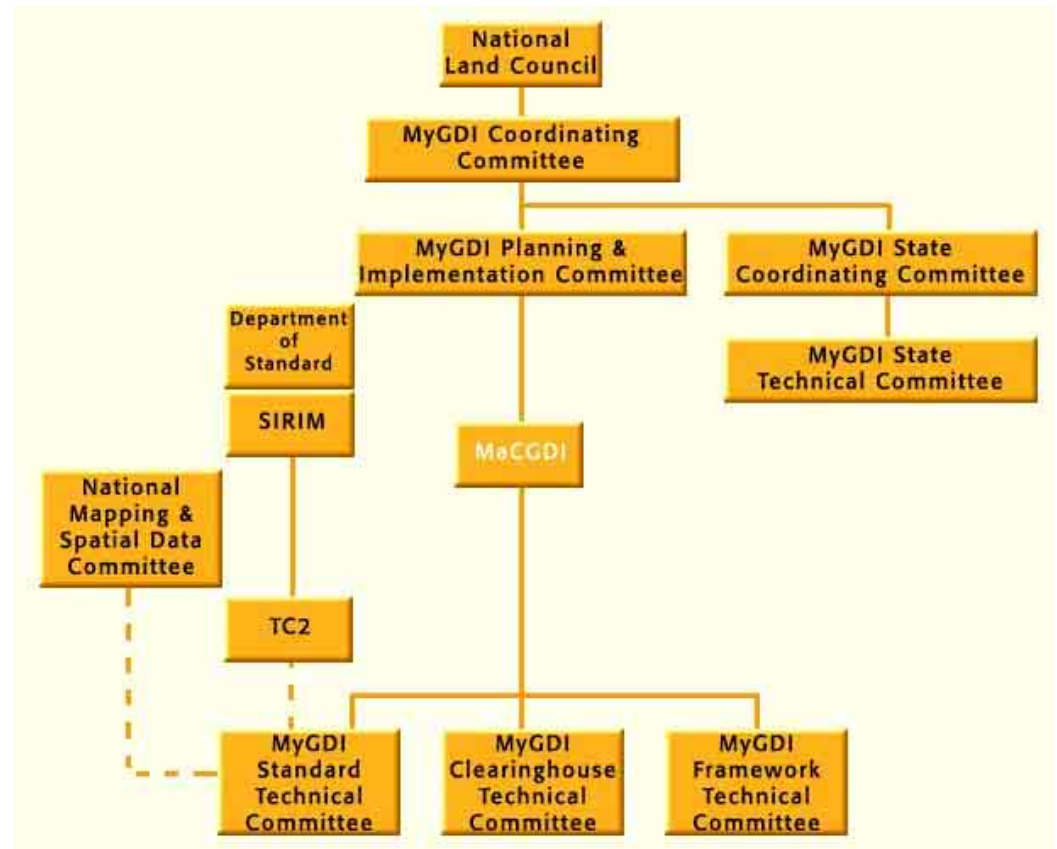
NSDI - Thailand

- Feasibility study completed in 2004
- Relevant Business cases identified were –
 - Executive Level Decision Support Systems
 - Management of Land Tenure
 - Planning of Resource Management for Sustainable Economic Development
 - Emergency and Disaster Management and Mitigation.

MyGDI – the Malaysian NSDI

Feasibility study to establish a National Infrastructure for a Land Information System in Malaysia has been made since 1992.

Subsequently, in October 1989, the Ministry of Land and Cooperative Development had taken the idea to develop a **National Infrastructure for Land Information System (NaLIS)**



MyGDI – Present Status

- Policy- Deals with data custodianship and data pricing.
- Standards – Evolving.
- Data search engine
- Unique Parcel Identifier
- Metadata – Presently under revision to comply with ISO 19115.
- Geographical Name Data base
- MyGDI Clearinghouse

NSDI - INDIA

Richness of Legacy Data Assets (over 200 years of systematic data archives)

Impediments in their use

- Lack of Metadata
- Data in analogue form
- Reluctance to share the data
- Data not interoperable
- Policies of Government

Solution- Spatial Data Infrastructure
(established in 2001)

NSDI – India : work done

(Top-Down initiatives)

- Release of NRIS – node Design and Standards and Meta Data standards
- National Map Policy
- Policy on Aerial Photography and High Resolution Imaging
- NSDI portal set up

(Down –Top initiatives)

- Village level mapping
- Initiatives like ‘Neighbourhood Mapping’

NSDI – India : work done

(Capacity Building)

- 5 day course on SDI being conducted at STI twice a year.
- An annual workshop is conducted with national and international participation
- All major events in India such as Map India and activities of professional organisations include exclusive sessions on NSDI.
- Training institutes of member agencies are also conducting courses/seminars on SDI

SDI - Philippines

National Geographic Information Infrastructure

The Philippines NGII is in place. It was **initiated in 2001** under the umbrella of the National Geographic Information Council (NGIC). The member agencies forming the NGIC includes:

- Department of Environment and Natural Resources (DENR)
- Department of Science and Technology (DOST)
- Department of Agriculture (DA)
- Department of Public Works and Highways (DPWH)
- Department of Transportation and Communications (DOTC)
- Department of Defense (DOD)
- Department of Justice (DOJ)
- National Economic and Development Authority (NEDA)
- Department of Finance (DOF)
- Department of Agrarian Reform (DAR)
- Department of Interior and Local Government (DILG)
- National Mapping and Resource Information Authority (NAMRIA)
- Land Registration Administration (LRA)
- National Statistics Coordination Board (NSCB)
- Housing and Land Use Regulatory Board (HLURB)
- League of Leagues of Local Government Units

In addition the private GIS industry is represented in the Council by a nominee from a representative organization.

SDI – Philippines - NGII

A few of the projects implemented by the NGII

- Land Registration Administration Computerization Project (**This Project, is being implemented through the Build-Operate-Transfer (BOT) scheme**)
- Enhancement of the Philippine Reference System (PRS 92)
- Land Administration and Management Project (LAMP)
- Roads Information and Management Support System Project (RIMSS)
- Address Mapping Project
- Geographic Names Inventory and Updating Project
- Tax Mapping Project
- Census Tracts Mapping Project
- Forest Resource Inventory

NSDI-Turkey

- 1999 a governmental commission presented a vision paper for the National Geographic Information Infrastructure of Turkey a national commission is now working on a proposal for a law on the organization of an NSDI.

Conducive Policies towards the implementation of an SDI -

- Public –Private Partnership between the public and the private sector for the operation of the cadastre are accepted in theory, but are not fully operational yet.
- Policy and legislation on access to public sector information (PSI) in place from October 2003.
- Legal protection of GI by intellectual property rights

NSDI - Japan

- Geographical Survey Institute began work on the Spatial Data Framework in 1995 and completed it in 2003.

Work Done –

Geodetic Work – Setting the Geodetic Network, Very Long Baseline Interferometry (VLBI), Large Scale Survey

NSDI - Mongolia

First International conference on NSDI for Mongolia was held in Ulaanbaatar, Mongolia – 8-10 September 2006.

- It recommended
 - ❑ That a National Committee for Spatial Information be set up as soon as possible and should include representatives from all relevant Government Ministries and Agencies, from industry, Academia, from a Professional Association
 - ❑ a suitable Mongolian professional organisation is identified which will take the lead in co-ordinating NSDI activities.
 - ❑ identify ways for government agencies lacking direct mapping mandates to
 - ❑ contribute to national geodata initiatives
 - ❑ Develop a model (or adapt an existing one) of multi-agency data development and user Participation that includes local, provincial, and national players.
 - ❑ Re-evaluate clearing house technology (and security aspects) to provide easier public access to data.

Where SDI's do not exist – (Ref: UNGIWG)

- The concept of REUSE –
 - REUSE
 - data
 - technical capabilities
 - skills developed
 - invested intellectual effort and capital
- To start with, resort to 'Cloning'
 - Financial / Political difference to be considered
 - Learn from the mistakes of others

NSDI Challenges in Asia

- Technology – low penetration of ICT in rural areas
- Human Resources – need for capacity building.
- Policies – SDI's are low priority on the political agenda and hence no specific directives.
- Inter Departmental / Agency cooperation for data – Rare if not absent.
- All stake holders not taken into confidence

GoogleEarth – an iGSDI (informal GSDI...)

- Seamless spatial data for the entire earth
- Available to public – Open
- Follows community generating - local attribute data

Thank You