

# The future of SDIs

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# Presentation

- Considers two questions relating to the future development of SDIs throughout the world
  - *Where have we got to now?*
  - *Where should we go from here?*
- Identifies four key issues for future

# Before this - What is a SDI?

- The GSDI definition
  - “The Global Spatial Data Infrastructure supports ready global access to geographic information. This is achieved through the coordinated actions of nations and organisations that promote awareness and implementation of complimentary policies, common standards and effective mechanisms for the development and availability of interoperable digital geographic data and technologies to support decision making at all scales for multiple purposes.”

# Four main components

- Overriding objective to maximise the use of national geographic information assets
- This requires some form of coordinated action on the part of government
- It must be user driven ‘to support decision making at all scales for multiple purposes’
- This involves a wide range of activities including technical and institutional matters and human resource development

# Where have we got to now?

- Section
  - Describes some milestones in SDI development
  - Presents a global view of SDI developments so far
  - Assesses achievements so far

# Milestones - 1

- 1986 Australian ALIC set up
  - To coordinate the collection and transfer of land related information between the different levels of government
- 1987 Chorley report to UK government
  - Handling geographic information
- 1990 US FGDC set up
  - To coordinate the development, use, sharing and dissemination of surveying mapping and related spatial data

# Milestones - 2

- 1993 Creation of EUROGI
  - First regional SDI body
- 1993 US MSC report
  - ‘Toward a coordinated spatial data infrastructure for the nation’
- 1994 Clinton Executive Order 12906
  - Coordinating geographic data acquisition and access: the National Spatial Data Infrastructure
- 1996 First Global Spatial Data Infrastructure (GSDI) Conference in Bonn, Germany

# The diffusion of SDIs

- 1999 First generation of NSDIs study identified 11 nations as implementing NSDIs in 1996
- 1998-2000 53 countries/projects responded to GSDI survey
- 2003 120 countries considering SDI projects (ie more than half the countries in the world)

# A SDI phenomenon?

- These survey findings suggest that a critical mass of SDI users has been built up throughout the world
- A product of the last ten years
- Needs a word of caution
  - Considering not necessarily doing
  - Doing not necessarily everything
- But a phenomenon nevertheless

# A global overview of SDIs

- Europe
  - The Americas
  - Asia and the Pacific
  - Africa
- 
- Note –sources vary and some players omitted

# Europe

- Proliferation of studies of SDIs linked to European Commission concerns
- SDIs classified into
  - National data producer led
    - Users involved versus no users involved
  - Non national data producer led
    - Formal mandate versus no formal mandate
- Distinction between Western and Eastern European countries in terms of wealth



# The Americas

- Distinction between Northern and Southern America (and Caribbean) in terms of wealth and resources
- SDIs classified according to
  - Countries with a formal mandate
  - Countries with no formal mandate



# Asia and the Pacific

- The largest and most diverse region of all
  - In terms of wealth
    - Rich countries - Australia, Japan and Korea
    - Poor countries - Nepal
  - In terms of size
    - Very large countries – China and India
    - Very small countries – island countries in the Indian and Pacific oceans
- Difficult to make generalisations



# Africa

- Distinction between north and sub saharan countries
- Latter includes some of world's poorest countries
- Strong environmental/regional dimension
- Problems of political support/stability
- Reflected in funding – role of international donor agencies



# Similar driving forces

- Growing importance of geographic information within an information society
- The need for governments to coordinate data acquisition and availability
  - ‘GI is crucial to promote economic development, improve our stewardship of resources and to protect the environment’ (Landmark Clinton Executive Order)
- Other factors
  - Opportunities created by recent technological developments eg WWW and LBS
  - Modernising government - eGovernment

# But differences in the institutional context

- Variations in size and population
  - US 1000 times the size of Qatar
- Differences in wealth
  - Both developed and less developed countries
- Contrasting systems of government
  - Federal systems with varying degrees of devolution of responsibilities for GI
  - Non federal systems where most of GI responsibilities dealt with centrally

# Also differences in approach

- National data producer led
  - Degree of user involvement – central government (USA), public sector (Australia), multi sector (Canada)
- Non national data producer led
  - Need for formal mandate - Chile and the USA. India and South Africa?
  - Outgrowth of existing coordination activities - Australia and the Netherlands

# Achievements

- The creation of a critical mass of users in all parts of the world
- The first stage of regional and global institution building is also complete – CODI – Geo
- A growing body of SDI related literature and research

# Where should we go from here?

- Section
  - Summarises some of emerging trends in SDI implementation
  - Presents the findings of a SWOT's analysis
  - Identifies some key issues for future SDI development

# Emerging trends - 1

- Shift from product to process model
  - From data producers to data users
  - From database creation to data sharing
  - From centralised to decentralised structures

# Emerging trends - 2

- Because of the number of stakeholders involved SDI outcomes will be more like a collage or a patchwork quilt rather than a uniform picture
- Key issues
  - The multi level structure of SDIs
  - The governance of SDI implementation
  - The emergence of new organisational structures

# The multi level structure of SDIs

- The top down vision
  - emphasises the need for standardisation and harmonisation
- The bottom up vision
  - emphasises the importance of diversity given the very different aspirations of the various stakeholders and the resources at their disposal.
- The challenge
  - to find ways of ensuring some measure of S and H while taking account of the diversity of interests involved. Requires a sustained mutual learning and adaptation process for all those involved

# The governance of SDIs

- Shift to more inclusive models of stakeholder governance
  - Ongoing US FGDC Future Directions initiative – proposal for a National Geospatial Coordination Council to work alongside FGDC
  - Creation of Industrial and Professional bodies alongside ANZLIC in Australia – shift to a ‘whole of industry model’
  - Geoconnections in Canada - a cooperative organisation involving all levels of government, the private sector and academia

# The creation of new organisational structures

- Options include
  - Restructuring within existing state and local governmental structures
  - Creating new public bodies external to government structures
  - Consortiums of data producers
  - Joint ventures by key data users
  - Joint ventures by a wide range of data producers and users

# SWOTS analysis

- Useful way of identifying strategic options
  - Strengths
  - Weaknesses
  - Opportunities
  - Threats

# Strengths

- SDIs facilitate access to wide range of diverse spatial data sets by users
- An integrating concept that straddles existing professional, disciplinary and administrative sectoral boundaries
- Exploits emerging GIS technologies and the Internet

# Weaknesses

- Dependent on data sharing which may require radical changes in existing organisational cultures
- Problems of creating consensus among different professional and sectoral groups
- Difficulties of sustaining political support/commitment over time

# Opportunities

- Growing recognition of the Information Society
- Growing demands for commercial exploitation of public sector data
- Emerging new technologies for data collection and transformation

# Threats

- Same as opportunities
- Potential loss of identity within wider information society debates
- Unique qualities of spatial data not adequately dealt with

# Key issues for future

- In order of priority
  - Creating appropriate SDI governance structures
  - Facilitating access
  - Building capacity
  - Making data interoperable

# Creating appropriate SDI governance structures

- Highest priority
  - Need for governance structures that are understood and accepted by all stakeholders
  - Large number of stakeholders involved
  - Need to explore hierarchical structures
    - Eg ANZLIC, US 50 States initiative
  - Need to be inclusive from the outset of a SDI initiative

# Facilitating access

- Second highest priority
  - Biggest user problem is lack of information about what data is available
  - SDIs unlikely to realise their potential without appropriate metadata services
  - Metadata services one of success stories of SDI development
    - FGDC Clearinghouse has 300 nodes
  - Spatial portals open up new possibilities for sharing data

# Building capacity

- Third priority
  - Need to build up capacity to exploit benefits of SDIs
  - Capacity building initiatives should run parallel to SDI development
  - Particularly needed in less developed countries
    - ESRI Global Map/GSDI initiative, Intergraph Open Interoperability grants
  - Also needed in more developed countries especially at the local level

# Making data interoperable

- Last priority
  - Because SDIs involve more than data base creation
  - Heavily dependent on the distribution of data collection responsibilities in each country
  - Conventional digital topographic data set creation is expensive and takes a long time
  - Necessary to exploit alternative sources such as remotely sensed data

# Summary

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