

SPATIAL DATA INFRASTRUCTURE IN BRUNEI

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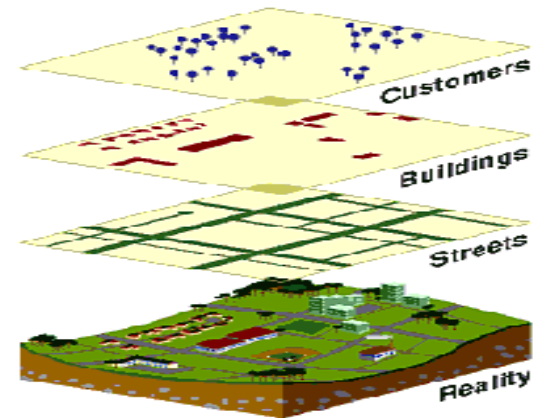
CONTENTS

Entirely based on literature review

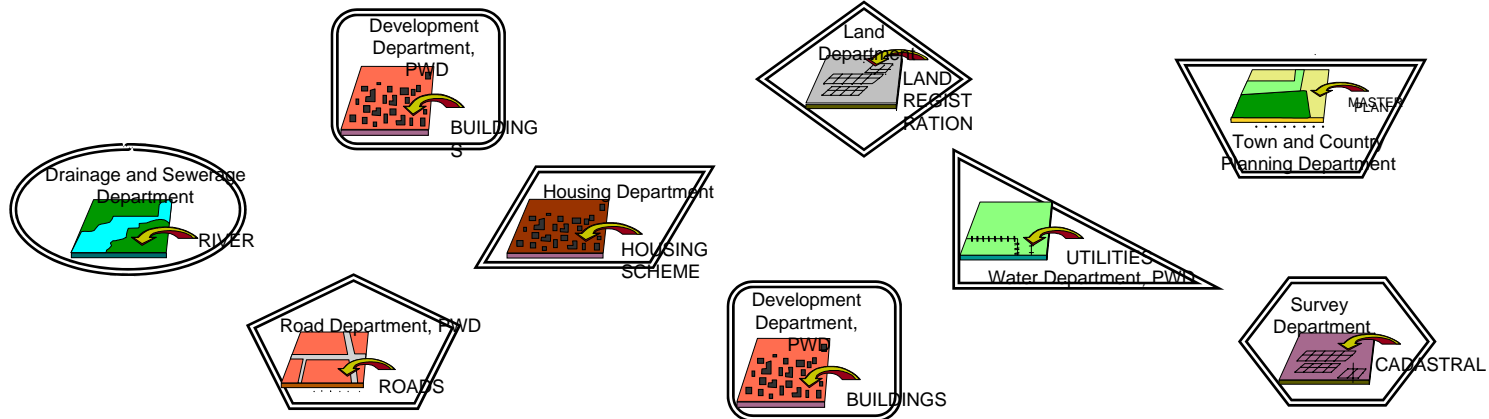
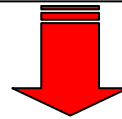
- **Background**
- **Discussion on literature review**
- **Conclusion**
 - **Findings**
 - **Contributions to knowledge**

SPATIAL DATA ?

- Information that is defined spatially (in location) by four dimensions (geometry and time) related to the earth (Groot & McLaughlin, 2003)
- Accurate, up-to-date and accessible spatial data plays an important role in many social, economic and political decision.



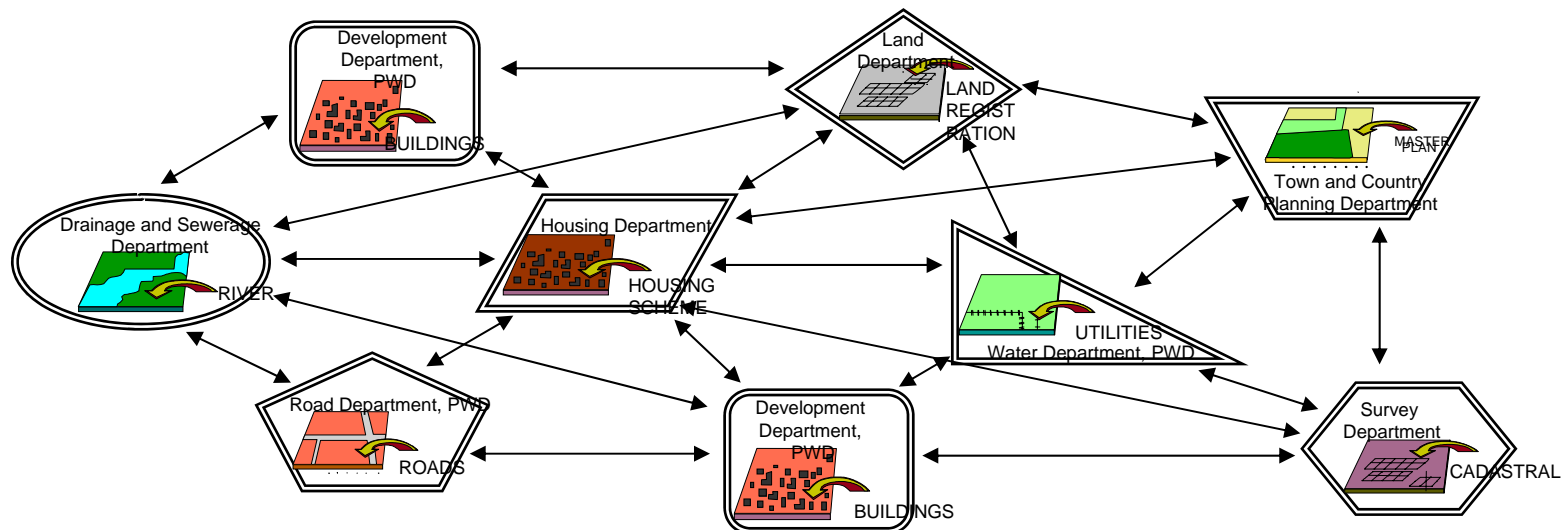
<http://www.rockvillemd.gov>



- Different organisation has different sets of spatial data, which has resulted ‘island of spatial data’. This data sets need to be linked and shared to fully realise its potential benefits.

SPATIAL DATA INFRASTRUCTURE (SDI)?

- Is often used to denote the relevant base collection of technologies, policies and institution arrangements that facilitate the availability of access to spatial data (GSDI cookbook, 2004).
- The aim is to facilitate and coordinate the sharing of spatial data between stakeholders



WHAT CAN WE BENEFIT FROM SDI ?

- Reduce duplication of data , effort, time and cost
- Provide efficient services
- Increase the value and quality of data
- Easy access to up-to-date data
- Better management

WHERE BRUNEI IS ?



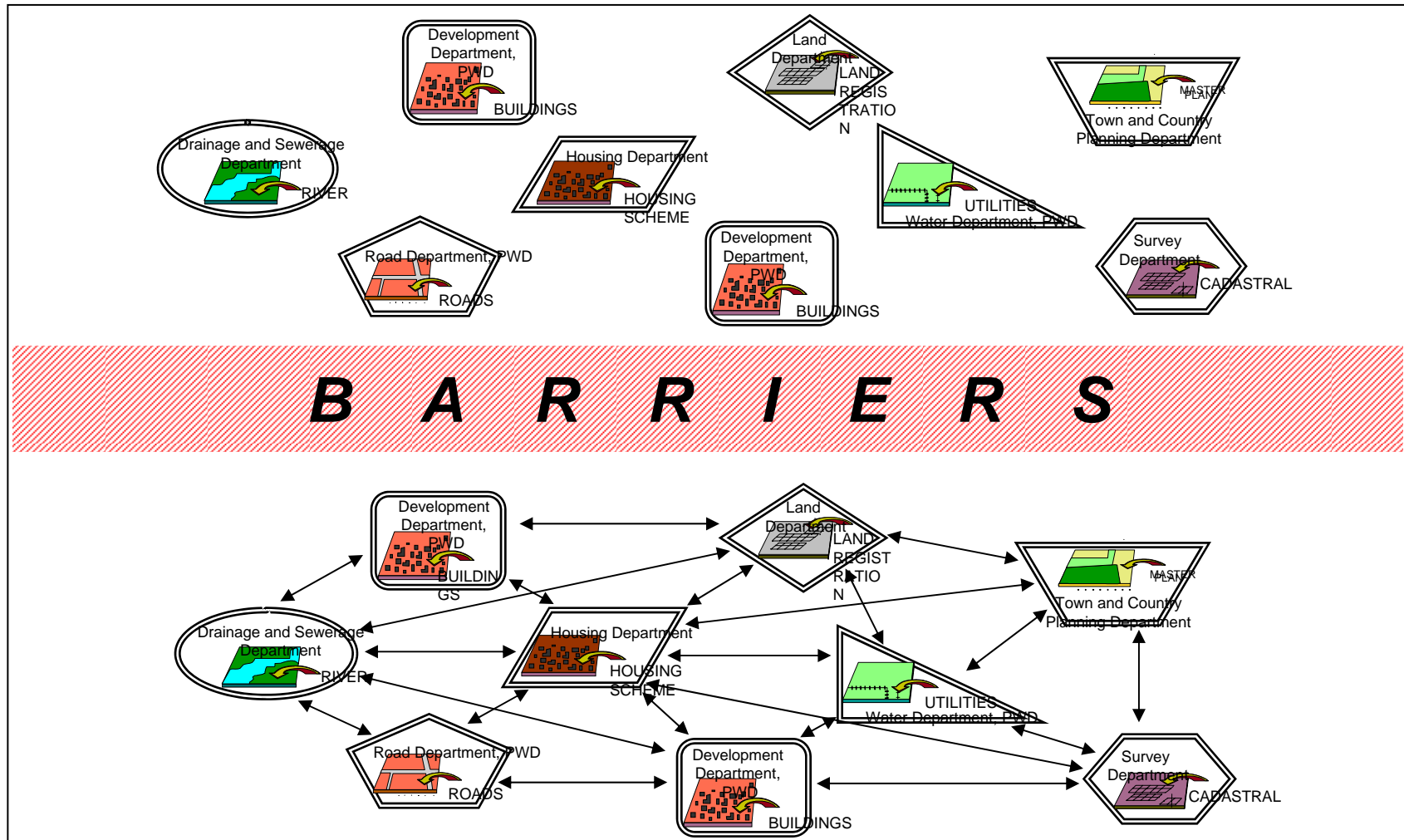
<http://gislounge.com/printablemaps>

- Location** : North Eastern part of Borneo island
- Area** : 2,226 sq miles (5,765 sq km)
- Population** : 400,000 people

BRUNEI DATA

- About 85% of the data are in digital form.
- Almost all map data produced by government departments. Data are categorised as restricted and non-restricted
- Survey Department is the only mapping agency in Brunei.
- The 8th National Development plan (2000/2005), B\$950 million (£300 million) has been allocated for e-government project.
- After the announcement of the 8th NDP, most ministries and government departments have had their technologies upgraded and network setup.
- Some established their own computerised systems to expediate related activities
- Increasing number of spatial data producers for different aspects of management
 - Difficulty to access data due to various factors including security, compatibility, pricing and others.
- All systems exist as standalone systems which resulted 'island of information' with different purposes.
- Brunei needs to go for SDI

BACKGROUND



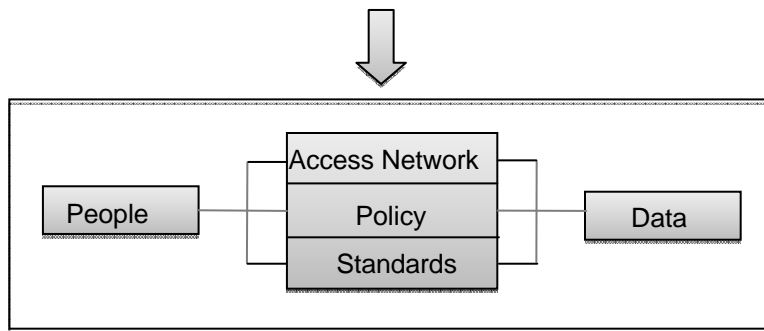
- “Data sharing is easier to advocate than to practice” (Azad and Wiggins, 1995)
- “Building SDI is a complex task not because of the evolving nature of the SDI concept but of the social, political, cultural and technological context to which such development must respond”. (Williamson, 2003)

RESEARCH AIM

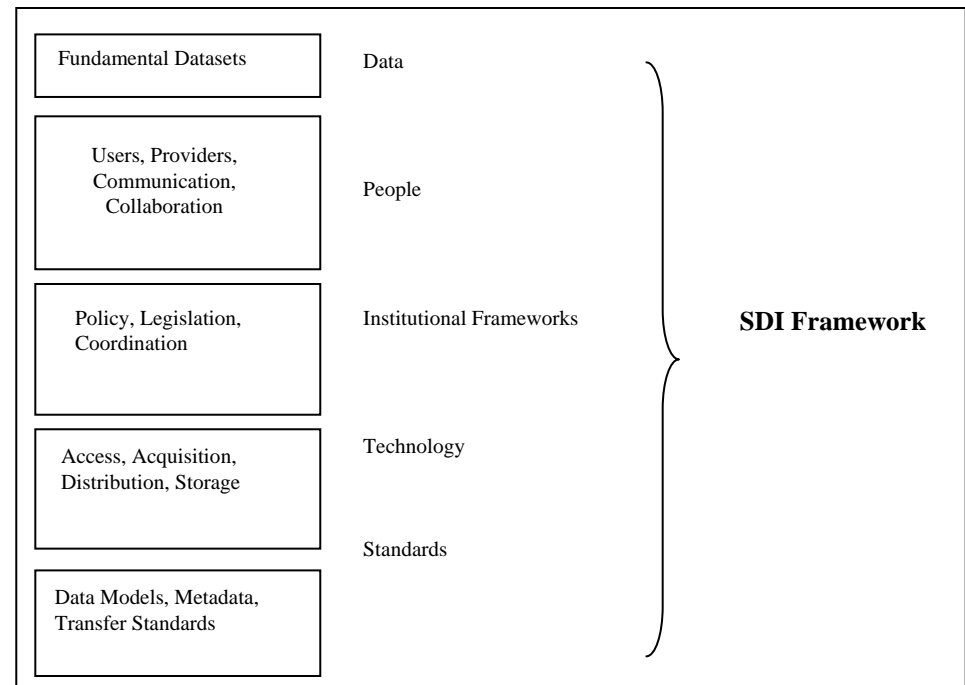
'to develop a data sharing partnership model which support the sharing and maintenance of spatial data within Brunei.'

WHAT HAVE I LEARNT ?

- SDI aim to facilitate and coordinate the sharing of spatial data between stakeholders.
- Different stakeholders from different disciplines viewed SDI differently. However, most definitions emphasise the key components of data, people, policy, standard and access technology.
- Rajabifard et al. (2003) put forward a useful model for SDI components. The author highlighted “interaction between people and data is governed by the dynamic technological components of SDI”
- Warnest (2005) highlighted that the SDI components and attributes are strongly related and often overlap



Components of SDI (Rajabifard et al. 2003)



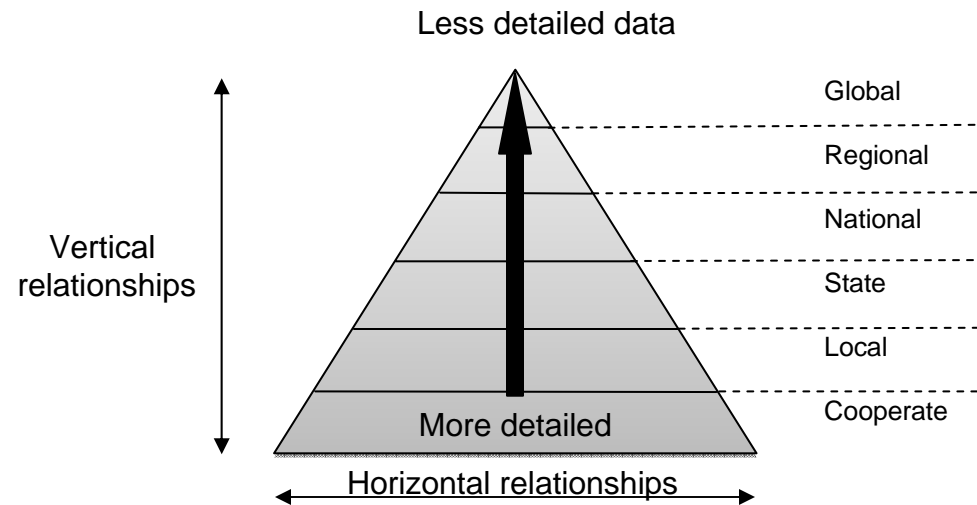
Core components of an SDI framework (Warnest, 2005)

DISCUSSION

- SDI first emerged in 1980 (Williamson, 2003) which was described as 1st generation
- The ultimate goal of the 1st generation is “to promote economic development, to stimulate better government and to foster environment stability. (Masser, 1998)
- Rajabifard (2003) described the 1st generation as ‘project based’ with the key aim is to link the existing datasets. The driving force is the data.
- The shift 2nd generation took place in 2000, when a change of focus on SDI development involved developing concept from the beginning. (Rajabifard et al., 2003).
- The author described it as ‘process based’ where the use of data and the need of users are the driving force.

SDI HIERACHY

- A useful perspective by Rajabifard et al. (2003) to describe the complete vertical and horizontal relationships between the political and administrative level of SDI.
- The authors' highlighted the importance of communication within and between the different SDI level with corresponding of data detail from cooperate to global level



Hierachical nature of SDI (Rajabifard et al., 2003)

SPATIAL DATA SHARING MODELS

Author	Models concept	Findings
Obermeyer & Pinto, 1994	Data sharing in terms of antecedents and consequences	Conceptual model and based on organisation theory
Calkins & Weatherbe, 1995	Taxonomy based on organisational characteristics, data type, data exchange and constraints.	The frameworks only cover the organisational issues and nature of exchange
Kevany, 1995	Data sharing model by identifying 30 factors influence data sharing and classified them into 9 broad areas.	Based on personal experience and not supported by theoretical foundations (McDougall et al.,2007)

SPATIAL DATA SHARING MODELS

Author	Models concept	Findings
Azad & Wiggins, 1995	Typology based on inter-organisational relations (IOR) and dynamic	<p>Lack of justification on the initial premise that leads to loss of autonomy and independence (Montalvo, 2003)</p> <p>Lack of empirical evidence (McDougall, 2007)</p>
When de Montalvo, 2003	Spatial data infrastructure frameworks from the human behaviour context.	Model is predictive (by design) may not be directly applicable to the analysis of existing initiatives. (McDougall et al., 2007)
Mc Dougall, 2007	Use mixed method approach for evaluating data sharing partnership	Comprehensive approach but the output yet to be verified.

FINDINGS

- **Most common issues in the published literatures are :**
 - **Poor structure of partnership**
 - **Lack of awareness on benefits of ownership**
 - **Lack of responsibility each partnerships**
 - **Fear of losing of control of the data**
 - **Trust**
 - **Pricing**
 - **Funding**
 - **Cost recovery**
 - **Copyright**
 - **Legal liability**
- **In most literatures highlighted that the key to successful SDI are ‘data sharing and technology’. Although technology plays an important role in SDI but nevertheless non-technical issues seem to be more problematic. In other words, technical inconsistency is arises from non-technical problems.**
- **SDI is the biggest ‘cultural change’ and may give enormous impact on organisations and the society which may also lead to consequences for security.**
- **SDI framework cannot be easily transfer from one country to another. This is because of different legal and organisational background.**
- **Contributions on collaboration, cooperation and coordination remain incomplete and still leaves the questions of how to successfully initiate and maintain SDI coalitions among diverse stakeholders. (Budhathoki and Budic, 2006)**

AIM of the research

“to develop a data sharing partnership model which support the sharing and maintenance of spatial data within Brunei”

CONTRIBUTIONS :-

- **A data sharing partnership model that will help improve the management of spatial data , and hence contribute to the development of spatial data infrastructure in Brunei**
- **A generic framework for the ‘best practice’ and most applicable to Brunei**
- **The model will help to improve the government services in many disciplines**
- **The model will contribute to the development of Brunei NSDI and hence will allow Brunei to participate Regionally (RSDI) and Globally (GSDI)**

Thank you