A Regional Collaborative Network to Improve Spatial Information Sharing in Australia

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Outline of Presentation

- Introduction
- Objectives
- Theoretical Perspectives
- Regional Collaborative Network and Spatial Information Sharing
- Survey and Case Study
- Findings
- Concluding Remarks
Introduction

- Spatial data can assist for many NRM decisions
- State Government Organisations are the main spatial information providers
- NRM groups are also collecting a significant amount of spatial information

Themes:
- Climate Change
- Weed Management
- Biodiversity
- Erosion
- Agriculture
- Water
Introduction

Many portals available
Introduction

Federal

State
(6+2)

Local
(560)

Government

Natural Resource Management

Community Groups

Land care Groups
>5000

56 Regional NRM Bodies/CMAs

Land Managers

Land Holders
Introduction

Cอกลคลาบอริจิเนียลมันไงค่ะ

(Lawrence, 2002)
Collaborative networks are characterised by a stable networks with well defined roles and minimal coordination (Camarinha-Matos et al., 2008)

Networks operate through links between individuals and shared interests

Network is often used to describe many forms of inter-organisational relationships

The collaborating partners are linked together by a variety of relationship (Nohria & Eccles, 1992)

A network can be simply an executive’s personal network of professional contacts or could describe virtual corporations consisting of many organisations (Warnest, 2005).
Objectives

- To explore the theoretical basis for collaborative networks and examine its applicability to sharing of spatial information between regional NRM groups/catchment management authorities and government organisations.
Theoretical Perspectives:
Collaborative networks

Institutional / Organisational Theory

Network Theory

Collaborative Network Theory

Collaboration Literature
# Spatial Information Sharing Components

<table>
<thead>
<tr>
<th>Components</th>
<th>Attributes</th>
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<tbody>
<tr>
<td>Governance</td>
<td>mission, goal, objectives, stakeholders (data producers and users), leadership, custodianship, roles and responsibilities, rights and restrictions, governance methods</td>
</tr>
<tr>
<td>(The environment influencing sharing)</td>
<td></td>
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<tr>
<td>Policy</td>
<td>laws, rules and regulations, policies and procedures, protocols, accessibility, privacy, liability, copyrights, IPRs</td>
</tr>
<tr>
<td>(The rules for sharing)</td>
<td></td>
</tr>
<tr>
<td>Technology</td>
<td>data model, standards, software, security, tools/mecchanism, data quality, metadata, resource, interoperability</td>
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<tr>
<td>(The capability to enable sharing)</td>
<td></td>
</tr>
<tr>
<td>Culture</td>
<td>trust, motivation, communication, adaptation during circumstances changes, reciprocity, relationship</td>
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<tr>
<td>(The will to share)</td>
<td></td>
</tr>
<tr>
<td>Economics</td>
<td>funding, incentives, pricing, cost recovery, transaction cost</td>
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<tr>
<td>(The value of sharing)</td>
<td></td>
</tr>
<tr>
<td>Component</td>
<td>Existing Information Sharing</td>
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<tr>
<td><strong>Governance</strong></td>
<td>Agency-led approach, Government controlled, Hierarchical structure, focus on agency’s goals</td>
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<tr>
<td><strong>Policy</strong></td>
<td>Formal agreement, rigid rules and protocol for sharing</td>
</tr>
<tr>
<td><strong>Technology</strong></td>
<td>Mandated standards and protocol, standard data quality</td>
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<tr>
<td><strong>Culture</strong></td>
<td>Less flexible, Follow rules and regulations, less trust</td>
</tr>
<tr>
<td><strong>Economics</strong></td>
<td>Top-down approach, Less incentive for sharing, Government funding</td>
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</table>
Regional Collaborative Network and Spatial Information Sharing

Relationship between ANRII and ASDI

ANRII

ASDI

Australian Natural Resource Information Infrastructure

Australian Spatial Data Infrastructure
Role of Collaborating Network for SDI

Regional Collaborative Network and Spatial Information Sharing

Strategic Challenges (Adopted from Masser et al 2006)

Data Sharing → Governance → Collaborative Network

- Policy
- Technology
- Culture
- Economics

Natural Resource Information Infrastructure
Findings: NRM Survey

Questionnaire: 56 Regional NRM Bodies
Response rate: 100%

Map Source: ERIN, DEWHA- NRM Regions (2009)
Findings-1

Spatial data user: 20%
Spatial data provider and user: 78%

Spatial information used: 40-60% staff within organisation

GIS/spatial information used for NRM activities: 5-10 years (45%)

GIS activities: Outsource some 74%
Findings-1

Spatial data requirements

- **Most significant**
  - Vegetation
  - Cadastral data
  - Watershed/Catchment Boundary data
  - Land use/Land cover data
  - Topography/DEM/Imagery

- **Less significant**
  - Administrative boundary data
  - Infrastructure and utilities
  - Geology
  - Weather data
  - Mineral resources

- **New Areas**
  - Google maps, OpenStreetMap, Wikimapia, etc.
  - High Resolution Imagery, LIDAR, etc.
  - Project specific data
  - Land holder’s custodianship
Catchment cross over a number of local as well as state government boundaries and create management difficulties

Agree-36%
Neither -35%
Disagree-18%

Role of spatial data for NRM decisions
Very Significant - 58%
Significant -42%
Many community-driven volunteer activities

- Landcare
- Watercare
- Birdwatch
- Coastcare

**Motivation Factors**

- Environmental awareness/concern - 91%
- Long standing love of the land and/or water - 71%
- Social interaction - 64%
- Personal benefits - 56%
- Self esteem - 53%
Findings-1

Spatial Information Policy and Funding
• Spatial information management
• Data use and re-use
• Custodianship
• Pricing and access
• Value adding
(Varies from NRM bodies to NRM bodies)

Funding
• Federal-69%
• State-38%
• Land owners/individuals -36%
Findings-1

Funding providing
• Landowners/individuals- 42%
• Indigenous groups- 36%
• Land care groups- 36%
• Academia- 24%

Spatial information providing
• Community organisations

Importance (spatial data provider)
State government -88% and Federal -29%
Case Study

Knowledge and Information Network (KIN) Project (QLD)

- **Purpose**: to examine the collaborative network approach for NRM spatial information sharing between government agencies and NRM groups
- **Methods**: Interview, workshop visits, questionnaire, documents study, etc.
- **Analysis**: A descriptive analysis
- **13 Regional NRM Bodies, Regional Group Collective and DERM are the project partners**
Case Study

- Knowledge and Information Network (KIN) Project (Queensland)
  - History and Motivations
  - Constraints (policy, technological, organisational, cultural, and economic)
  - Linking mechanism
    - KIN project and existing SDI activities
  - Emerging SDI activities
  - Governance, Policy, Technology, Culture, Economics
## Findings-2

<table>
<thead>
<tr>
<th>Components</th>
<th>Characteristics</th>
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<tbody>
<tr>
<td>Governance (+)</td>
<td>Focus on collective goals, Shared responsibilities, Network structure, State government facilitator, community ownership</td>
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<tr>
<td>Policy (+)</td>
<td>Aligned with the Australian Government’s policy, Open access to project partner, Negotiable rules and protocol for sharing</td>
</tr>
<tr>
<td>Technology (-)</td>
<td>Different capacity of managing geospatial technology, both open and proprietary software, dedicated section or personnel for managing spatial information, limited use of technology</td>
</tr>
<tr>
<td>Culture (+)</td>
<td>Stakeholders/community engagement, Trust among partner, information sharing through personal contact</td>
</tr>
<tr>
<td>Economics (-)</td>
<td>State government and member organisation funding, No incentive for sharing</td>
</tr>
</tbody>
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Concluding Remarks

- **Collaborative Network is hybrid of Organisational and Technical Components**
  - Backed with organisational theory, network theory and collaboration literature
  - A recognised concept for the collaboration and partnership across industry sector and less utilised in spatial information sharing and management

- **Findings**
  - Majority of Regional NRM Bodies are spatial information provider and user (both)
  - The state government organisations are also interested to get access of spatial information collected by NRM groups - Room for collaboration
  - The network-based approach gives a new way to access, use and share spatial information and knowledge which crosses administrative boundaries
Concluding Remarks

- **Case study**
  - Characteristics of Knowledge and information Network (KIN) Project activities satisfies closely with collaborative network concept
  - This concept can be utilised to improve the data sharing between regional NRM bodies and state government agencies
  - Many spatial portals are available however the people component plays an important role to access and share spatial information - networking

- **Further research**
  - is required to utilise regional collaborative network approach to improve the data sharing between regional NRM bodies and state government agencies throughout Australia
Thanks for your attendance

Discussion!