Issues and Challenges in Managing Malaysia's Marine Spatial Information Sharing

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Content

Introduction

- Many agencies currently manage and admin the marine boundaries and resources.
- Data that related to marine and coastal area has been collected and manages by different agencies with different purpose, format and different system.
- This has resulting in autonomous, heterogeneous and distributed data storage and management.
- Problem occur when the data need to be integrate or share with other institution for decision making, or other purposes where the data structure, format, reference etc. with current information management and system cannot support spatial information sharing

LITERATURE REVIEW

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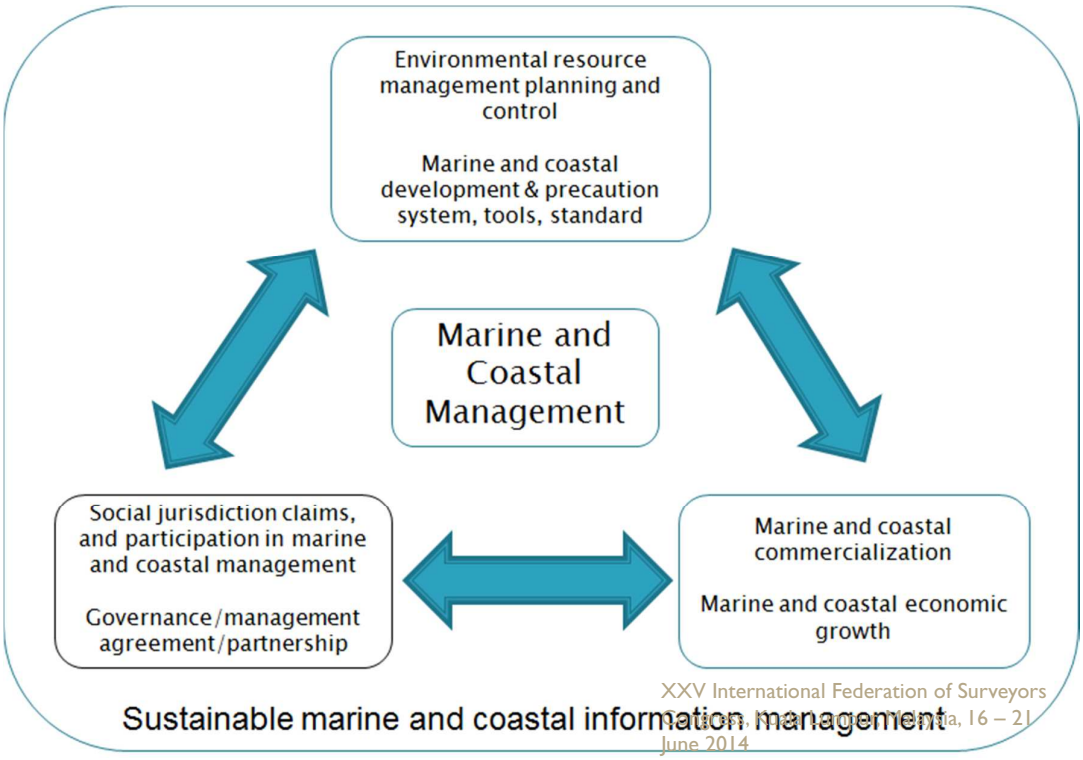
Malaysia Maritime Areas	Area
Total Land area	332,800 km²
Maritime areas	
- **Exclusive Economic Zone**	475,600 km²
- **Malaysia's Territorial Waters**	148,307 km²
- **Total**	623,907 km²
Length of Coastline	
- **Peninsular Malaysia**	1737 km
- **East Malaysia**	2753 km

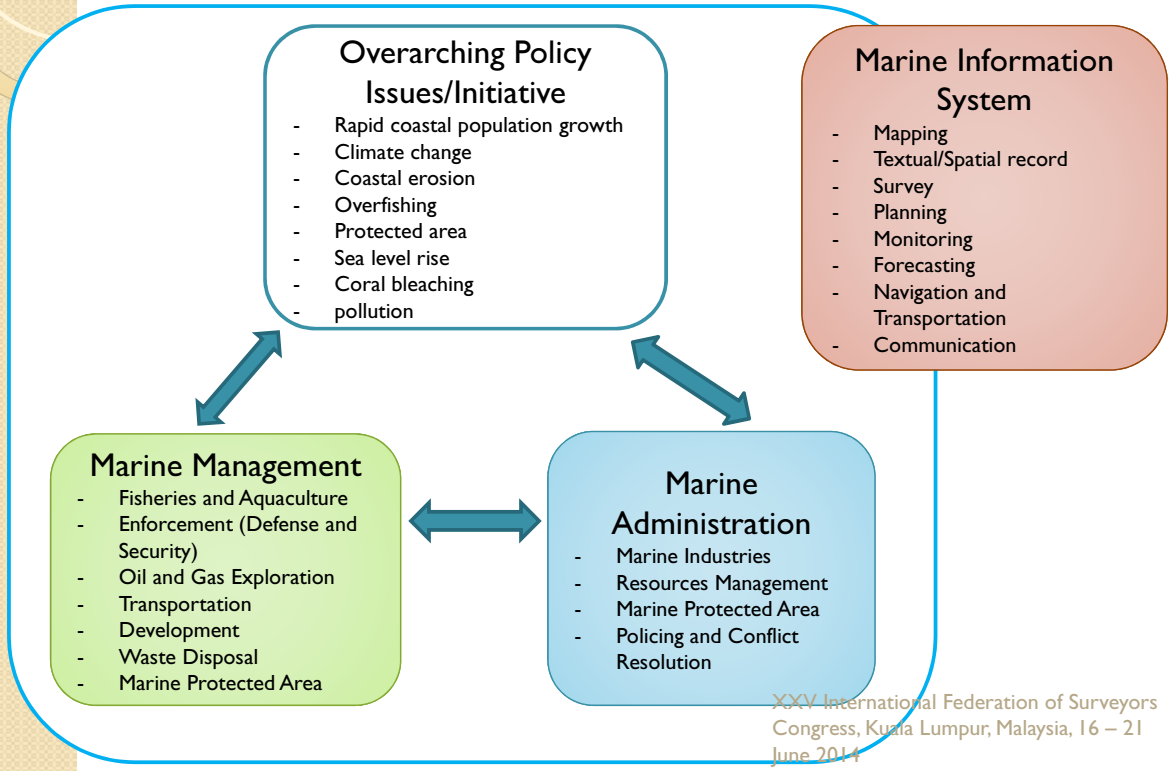
Malaysia's maritime challenges in different areas (Basiron, 2012)

Sea Areas	Challenges	Mitigating efforts
Strait of Malacca	Ensuring safety of navigation Overexploitation of fisheries recourse Piracy	Ongoing application of various safety of navigation tools Malacca Straits Patrol
South China Sea	Overlapping claims and maritime boundary delimitation Environmental degradation Encroachment of foreign vessels	Signing of DOC and bilateral negotiations Regional cooperation and national actions Stricter enforcement activities
Gulf of Thailand	Overlapping claims	Joint development of hydrocarbon resources
Sulu Sea	Smuggling and human trafficking Movement of transient population Kidnapping by separatist or terrorist group Use of destructive fishing methods	Implementation of integrated security measures under Ops Pasir Continued enforcement
Sulawesi Sea	Maritime boundary delimitation with Indonesia Naval tension	Bilateral negotiation INCSEA

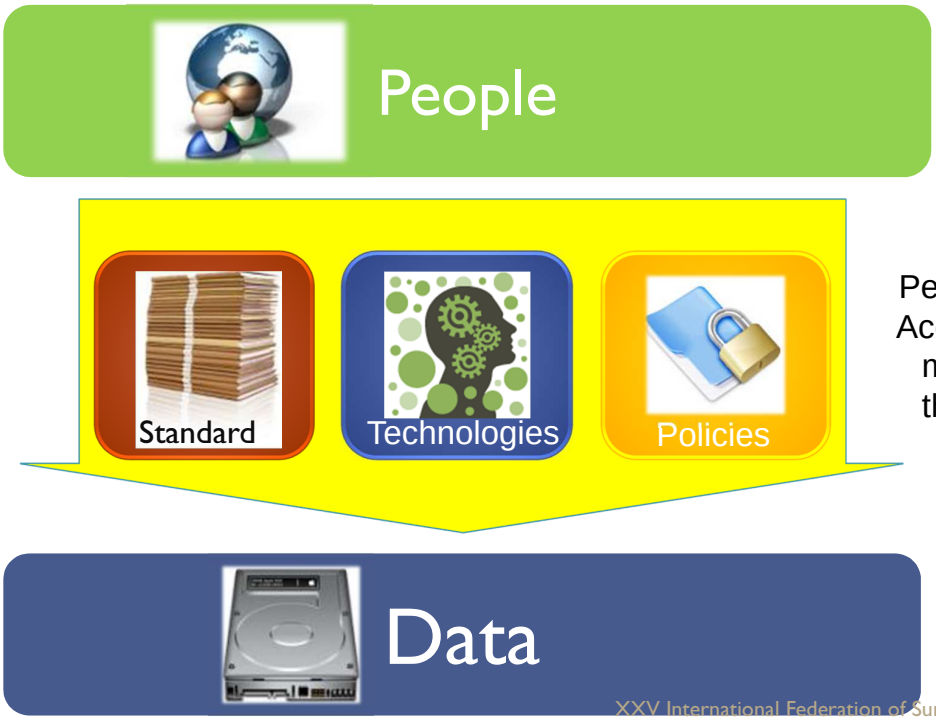
The need for sustainable marine spatial information management



Good information needed for decision making and good governance (adapted from (Fuziah, 2013))



Spatial Data Infrastructure (SDI)



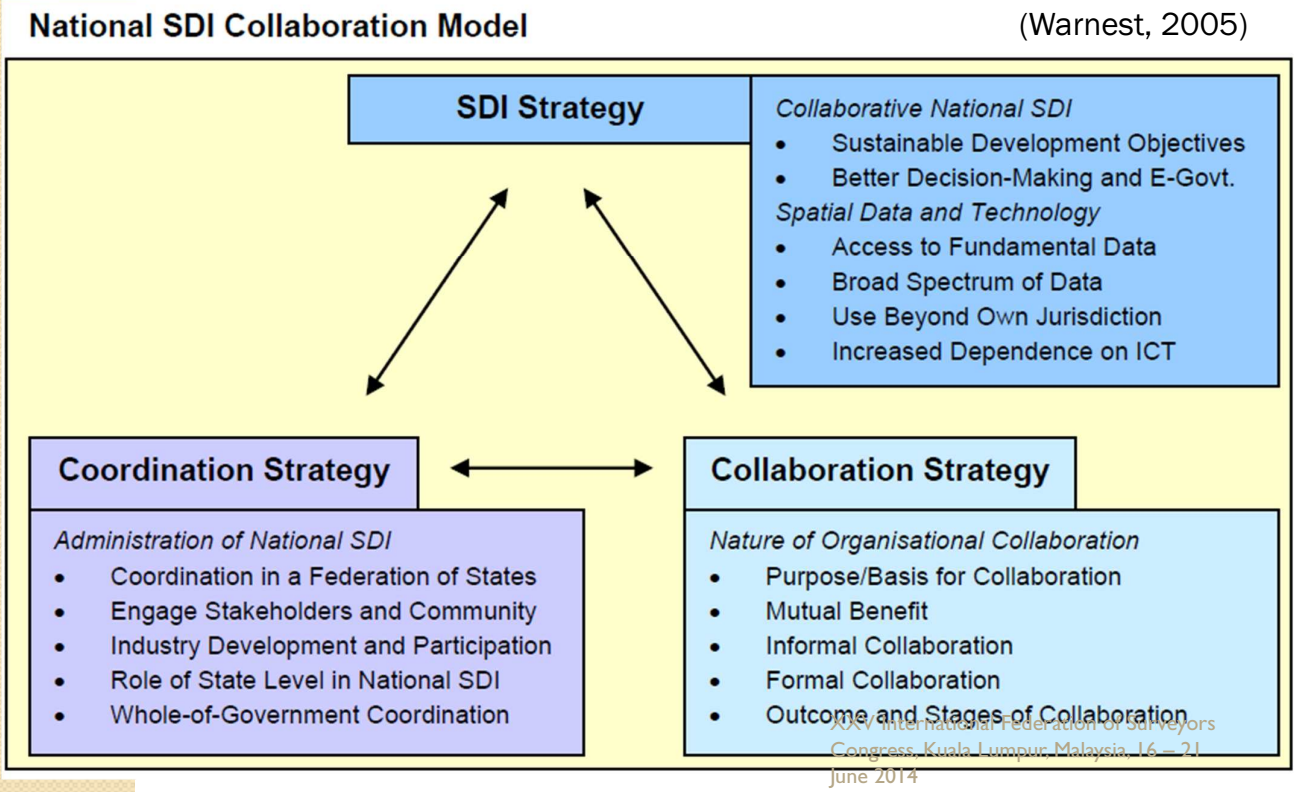
Aims:
People can Access and manage the data

Coleman and McLaughlin (1998)

The need for collaboration

- The administrators and stakeholder organisations do not know how they need to collaborate to develop SDI (Warnest, 2005)
- There's a gap in understanding of the structure and operations of large coordinated data sharing partnerships, particularly their management and sustainability in a dynamic political, economic, legal and social environment (McDougall, 2006)

National Spatial Collaboration Model



Literature Review's Summary

- There's a need for marine spatial information management to manage issues and challenge in marine and coastal area
- For sustainable marine planning, development and management, a spatial data infrastructure is needed to enable marine spatial information sharing, which are manage autonomously, heterogeneous and distributed between each other
- Spatial information sharing will leads to a collaboration between organizations and need proper planning and implementation to avoid miscommunication and misinterpretation between organizations

Research Aims

The aim of this research is to develop the marine spatial data sharing collaboration framework for spatial information sharing, managing and distributing between marine agencies and hence contribute to Marine SDI development focusing in Malaysia's marine organizational context.

Research Objectives

1. Evaluate existing concept and practise in marine information management, marine spatial data infrastructure and organizational collaboration. Specifically focusing on Malaysia's marine organizations.
2. Develop marine information sharing collaboration framework for comprehensive marine stakeholder engagement to enable marine information sharing toward seamless spatial information sharing.

RESEARCH METHODOLOGY

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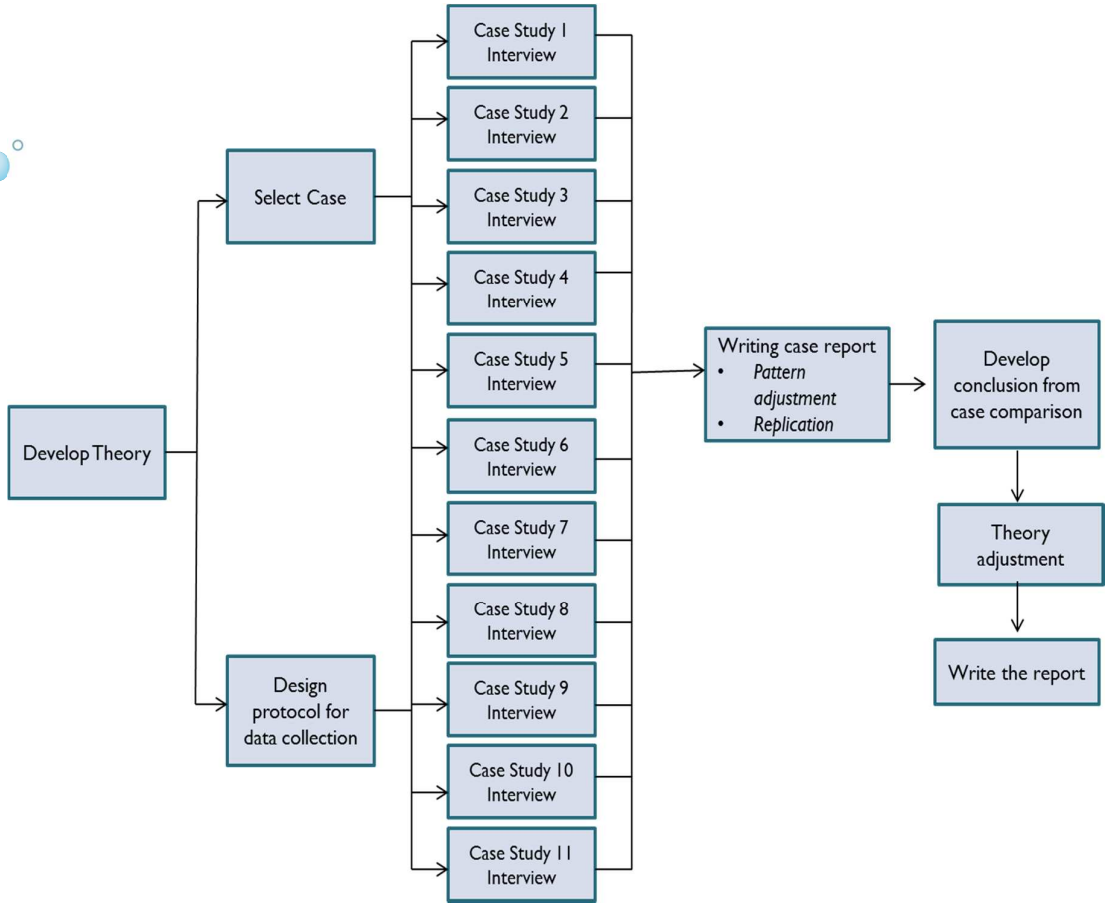

Qualitative Method

- Semi Structured Interview
  - Semi structured interview has been chosen in order to get the open and new ideas from the interviewees
- Objective of the Semi Structured Interview
  1. Identify the current information being stored, process and manage in the agency
  2. Identify cooperation between unit, division, department or agency related in managing information system
  3. Seek views on cooperation between units, divisions, departments or agencies related, which are need in enhancing current information system
- Interview session has been done with 11 agencies
- For analysis, domain analysis method and SWOT analysis has been used to code the information into several theme

RESULT AND DISCUSSION

Interview (Domain Analysis and SWOT Analysis)

SDI Component	Strength	Weakness	Opportunity	Threads
Technologies / Access Network	1. Have a system with GIS (7) 2. Have a system (2)	1. Not enough hardware (3) 2. Don't have centralized database, database on each divisions (1) 3. Standalone system (1) 4. No system (1) 5. Old Hardware (1)	1. Need more integrated system with GIS (3)	
Data/Standard	1. Collect data in-house (9) 2. Data enough for current purpose (8) 3. Have geospatial data (5) 4. Have data catalogue (1)	1. GIS data not detail/full (5) 2. Data not updated (4) 3. Data have error/not accurate (2) 4. Data in hardcopy form (2) 5. Have different data format (1) 6. Not fully using GIS (1) 7. Not sure have GIS data (1)	1. Data from other agencies (9) 2. Give data to other agencies (2) 3. Data standardize (1)	1. Data ownership (7) 2. Data security (3) 3. Data availability (2) 4. Data redundancies (1)
People	Have long-term cooperation (8) Have short-term cooperation (5)	1. Not enough personnel to handle (8) 2. Staff don't have enough knowledge on GIS (2) 3. Not familiar with technologies (1) 4. Don't have integration with other divisions (1)	Have formal cooperation (9) Have informal cooperation (5) Need steering committee (3) Need proper planning (1) Need frequent meeting (1) Need awareness program (1)	1. Weak communication with other agencies (4) 2. Don't have lead agency (4) 3. Budget (2) 4. Time constrain (1) 5. Bureaucracy (1) 6. No political will (1)
Policy/Legal	Have good communication within organization (1)		1. Need formal cooperation, MoU (7) 2. Need to compliment with OSA (1)	1. Information protection (1)

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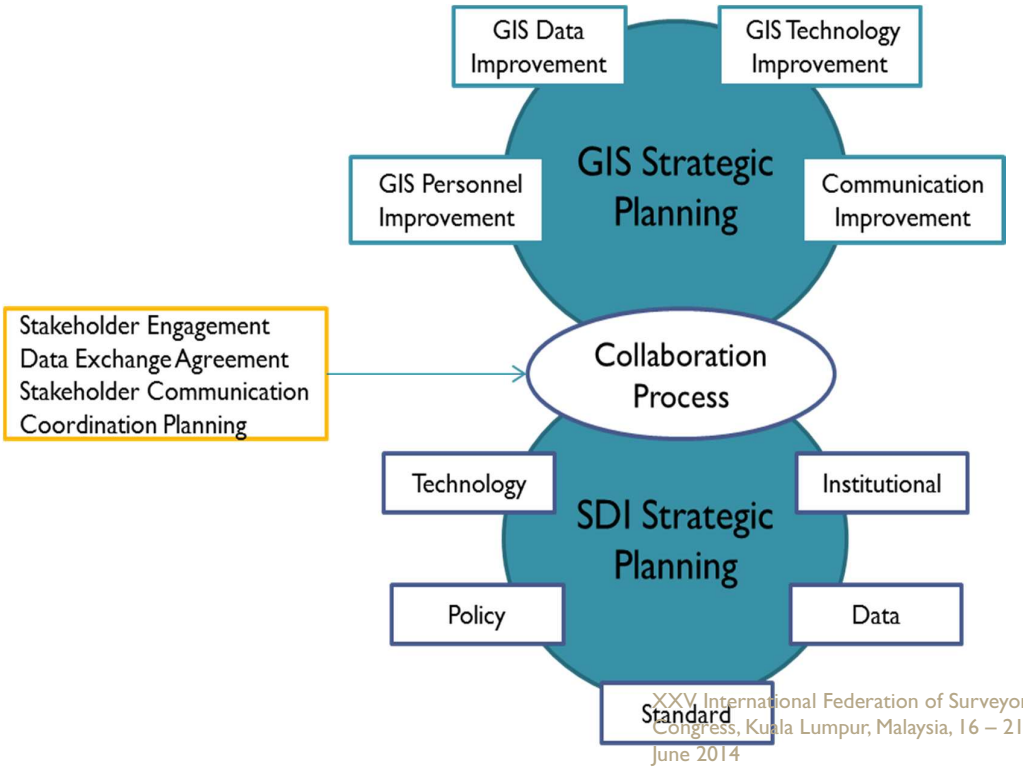
Summary of analysis;

- There's a need for GIS strategy to be implement in the organization to strengthen the information technology
- A spatial information sharing are important to improve and facilitate the spatial information development
- A collaboration framework need to be plan and develop to improve the communication between organizations and improve information exchange within and between organizations

The Integration Framework



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Conclusion

- *This research will help in manage and provide solution in facilitating collaboration for geospatial information sharing between marine agencies, thus improving current practice in marine information management and administration*

Publication

- Journal Paper;
  - ***Zakri Tarmidi,*** *Abdul Rashid Mohd Shariff, Ahmad Rodzi Mahmud and Zelina Zaiton Ibrahim, 2013, "The Important of Information Integration in Marine Management: A Review", World Applied Sciences Journal, Volume 22 (6), 870-876*
- Conference Paper
  - ***Zakri M. Tarmidi,*** *Abdul Rashid Mohd Shariff, Ahmad Rodzi Mahmud, Zelina Zaiton Ibrahim, Abdul Halim Hamzah, 2013, Review of Spatial Information Sharing in Managing Marine Information, International Symposium of Digital Earth, August 26 – 29, Sarawak, Malaysia*

Terima Kasih

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