



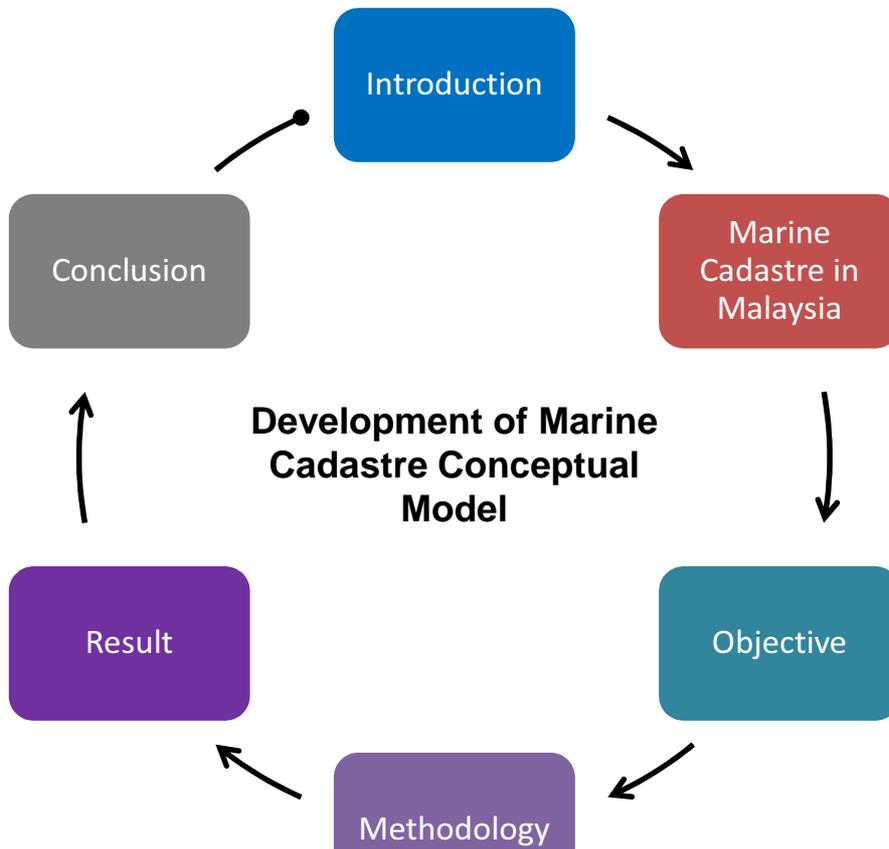
THE DEVELOPMENT OF MARINE CADASTRE CONCEPTUAL MODEL FOR MALAYSIA

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Commission No. 4



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Malaysia Maritime Zone

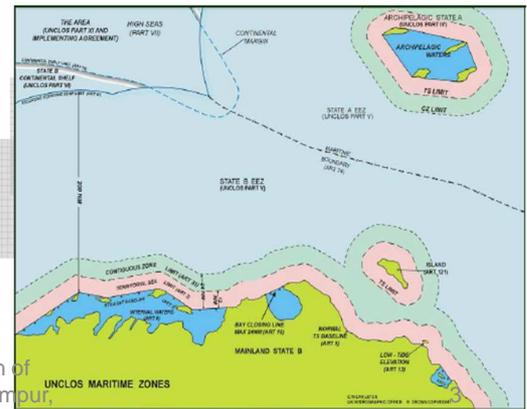
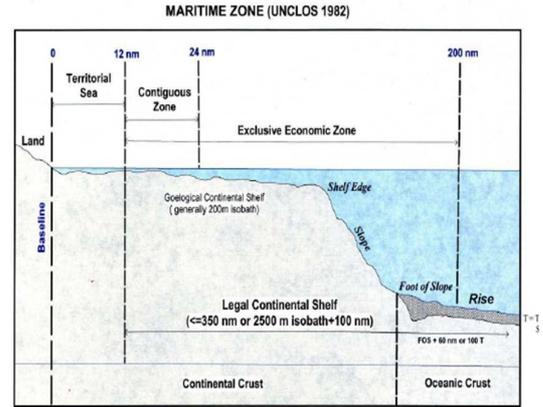


Marine Resources Management
(97,306.83 KMSq- Internal waters)

•International Understanding- UNCLOSS 1982

National Understanding – National Land Code 1965, State Land Rule 1966..etc.

Based on the Territorial Water Bill 2012, the state control up to 3 nautical miles from low water mark whilst the federal government has jurisdiction and management responsibility from the said 3 nautical miles limits to the outer edge of the EEZ and continental shelf.



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MARINE CADASTRE ?



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MARINE CADASTRE
@ MARINE TITLE
@ THE ALIENATION ON WATER SURFACE
@ THE ALIENATION AT COASTAL
@MARINE SPATIAL PLANNING
@MARINE ADMINISTRATION

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FIG MARINE TENURE CONCEPT



- No exist in Malaysia under proper procedure
- But the Philosophy stated- Ocean is freedom - the right of people to enjoy the ocean.
- Several issues in customary land (isolated issue)



ISSUE :

Revenue(Income for government)

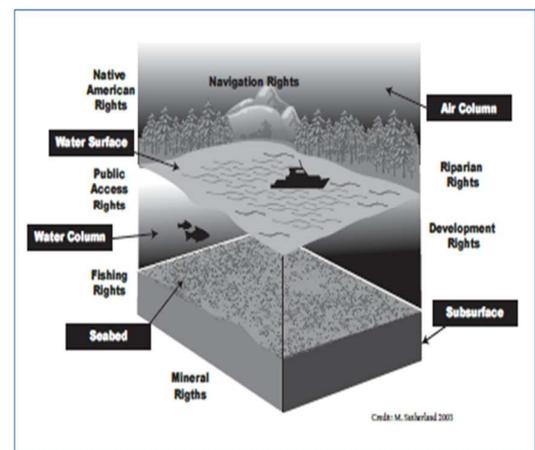
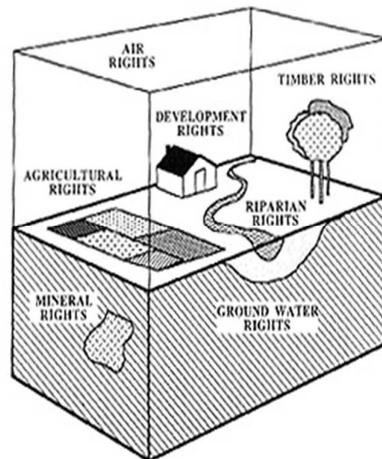
Right Issue

Responsibility Issue

Restriction Issue

Administrative + Legal

Technical Approach



LAND CADASTRE:
2D / DEMARCATED/MORE ACCURATE IN PRACTICES/ 3D IN 3 PILLAR – 3R / DOCUMENTED/ LEGAL CLARIFY/ VARIETY OF ACTIVITIES / BEEN SUCCESSFULL

MARINE CADASTRE:
3D / DELIENATION / LOW ACCURACY IN PRACTICES/ 4D IN CAD. CONCEPT-TIME FACTOR/ NON DOCUMENTED/ NOT IN LEGAL / LIMITED ACTIVITIES/ NEED TO MORE STUDY.

1. Examines the current issue of marine cadastre in Malaysia perspective.
2. Define the suitable methodology in development of marine cadastre conceptual model.
3. Propose the marine cadastre conceptual model for implemented with approach in legal and technical aspect.



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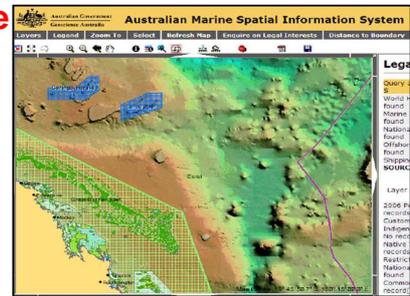


ISSUE	MARINE CADASTRE (A.Ashraf et. al.(2012))	LAND CADASTRE
Legal/Regulations	Territorial Water Act 2012 - Need to amend to National Land Code	National Land Code 1965 State Land Rule 1966
Stakeholders to alienation	Suggested to State and District/ Land Office	State/ Land and District Office
Technical stakeholders	Suggested to JUPEM	JUPEM
Authorities	3Nm – State Authority > 3 Nm – Federal Authority	State Authority
Area Covering	From LAT towards to Marine Area	From HAT toward to Land Area
Presentation of applications	Using the GIS Platform	Using the existing method – paper and e-map
Data required	GPS, water dynamic model, sonar, current, hydro graphic, tidal data, remote sensing Image	GPS, topography, Remote sensing/satellite image
Technical Issue		
• Boundary	Delimitation and Delineation	Demarcated
• Datum - Horizontal	Suggested to used the GDM 2000	Using GDM 2000/Cassini and GDM 2009/ Cassini
• Datum - Vertical	Suggested to used the My Geoid within 3 nautical mile only	Using – MSL for Engineering and Mapping
• Physically demarcated	No	Yes
• Uncertainty	Yes	No
• Dimensions	3D (aquaculture leases requiring depth) and 4D (introduction of time) boundaries needed in the marine environment.	2D - there are instances where 3D is needed (e.g. strata title) but the solution has been to establish 2D on top of 2D.
• Overlapping boundaries	Common	Rarely
• Implementations	Not systematic	Systematic

- i. Review of marine cadastre development worldwide and national and international legal aspects.
- ii. Interview and discussion.
- iii. Colloquium, discussion and final resolution
- iv. Testing through questionnaire for local authorities (Langkawi)

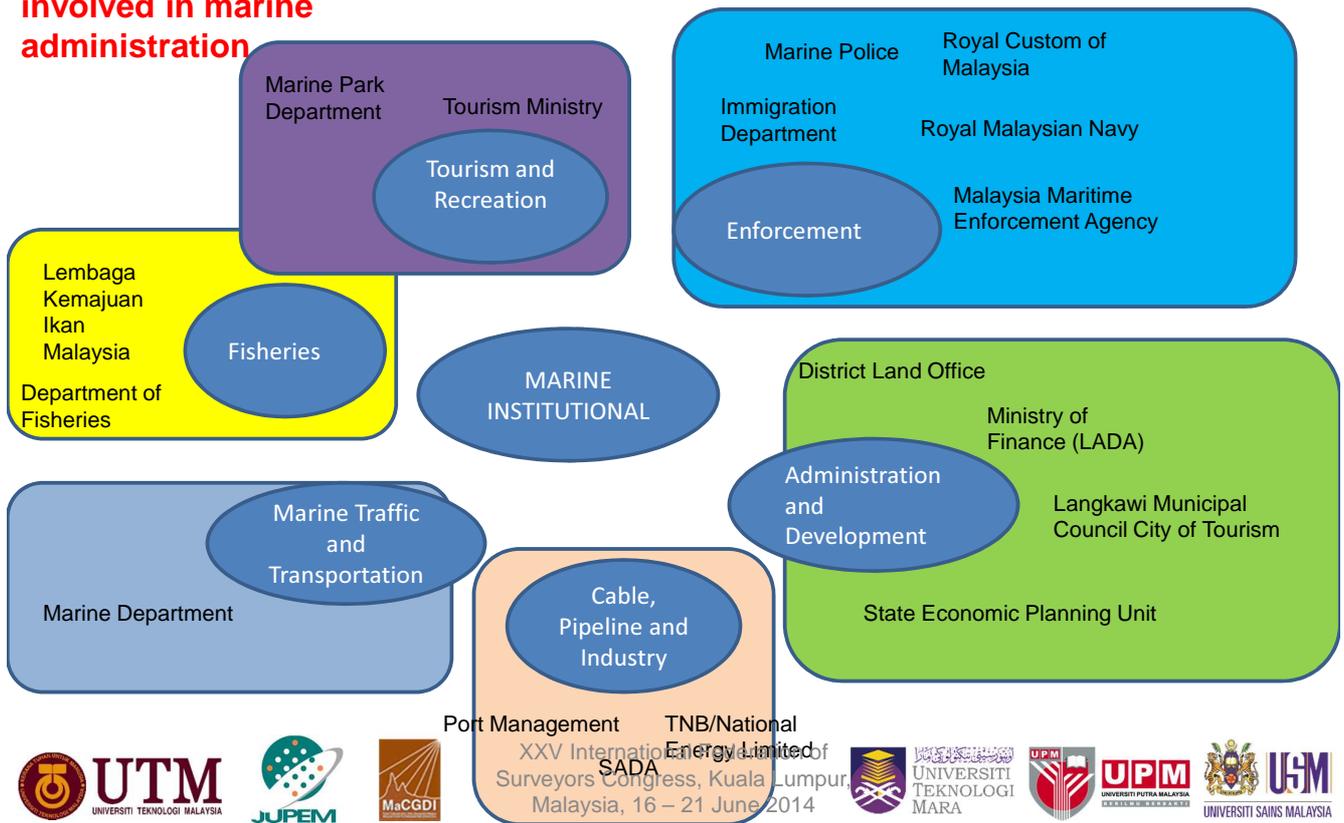
i. Review the marine cadastre paper in the world and national legal aspects.

found with various backgrounds with marine activities as their business. In this development, the essence of the interview was based on feedback directly related to marine cadastre general definition and also elements deemed logical and appropriate for the definition of the Malaysian marine cadastre



Interviews with 23 of government agencies involved in marine administration

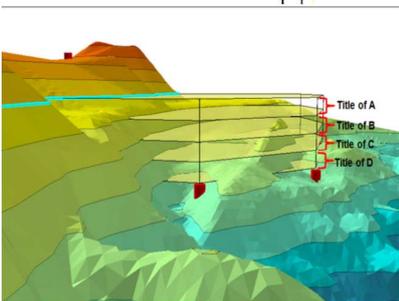
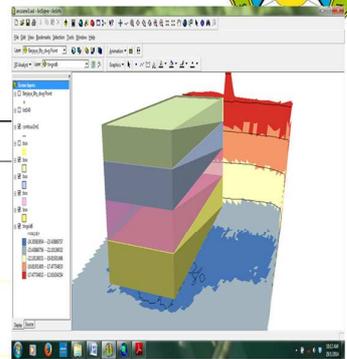
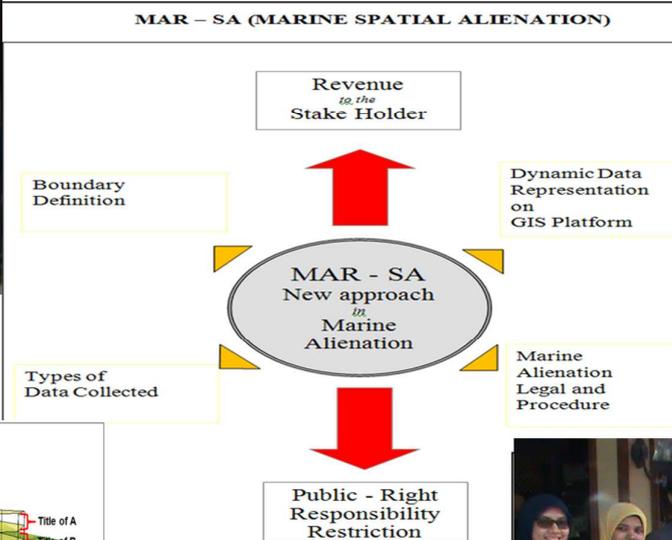
ii. Interview and discussion



Port Management TNB/National Energy Limited of SADA
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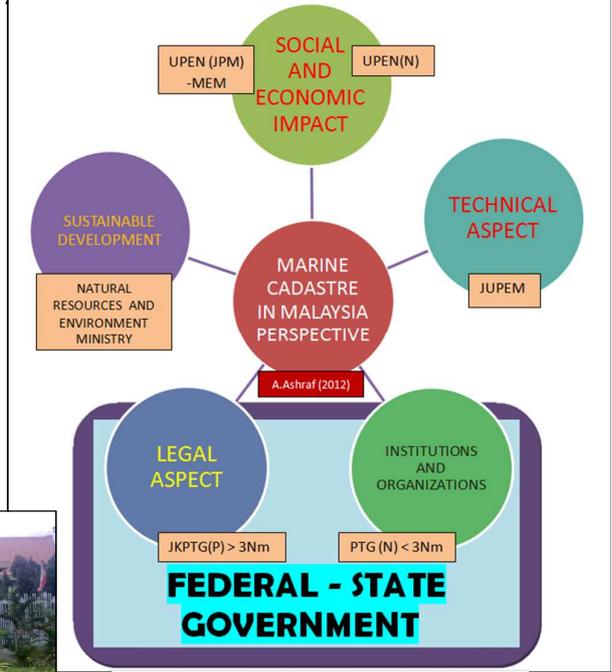
- iii. Colloquium, discussion and produce the resolution



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- iv. Testing through questionnaire for local authorities (Langkawi)



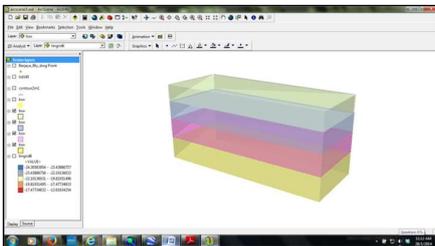
BERJAYA



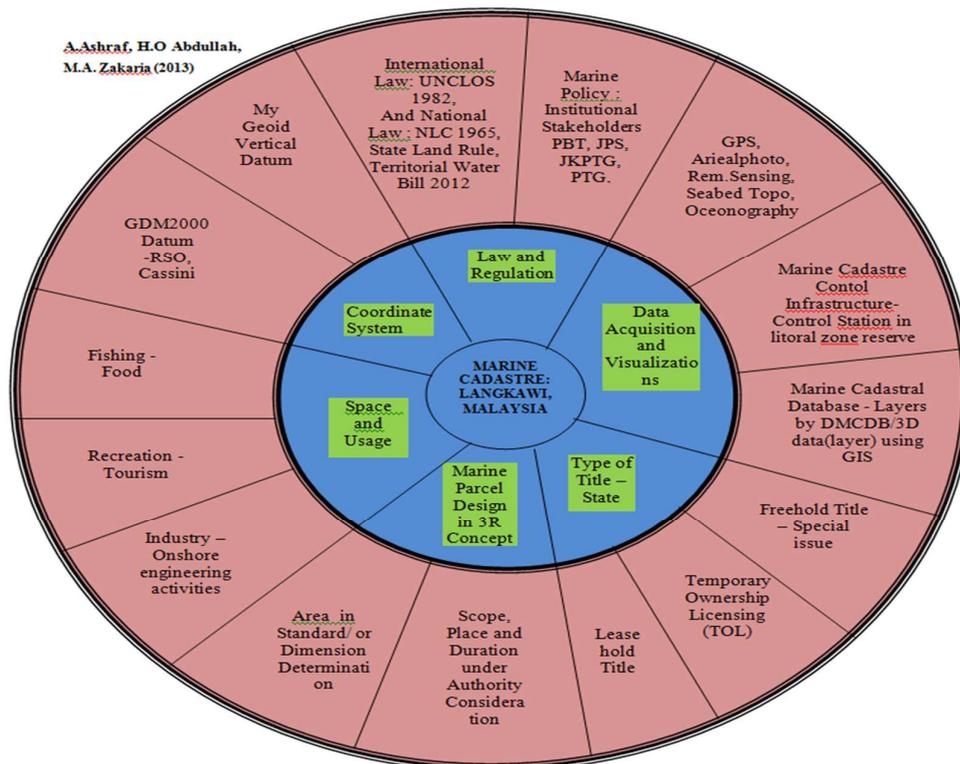
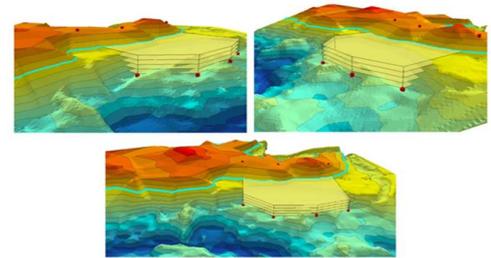
AUSTRALIA (ROBERTSON, 1999) - A marine cadastre is a system to enable the boundaries of maritime rights and interests to be recorded, spatially managed and physically defined in relationship to them boundaries of other neighboring or underlying rights and interests

CANADA, (SUE NICHOLS, 2001)- A marine information system, encompassing both the nature and spatial extent of the interests and property rights, with respect to ownership, various rights and responsibilities in the marine jurisdiction.

A marine cadastre is a 3D marine parcel administration system with respect to the legal and systematic technical arrangement of marine spatial rights, restrictions and responsibilities for marine space activities



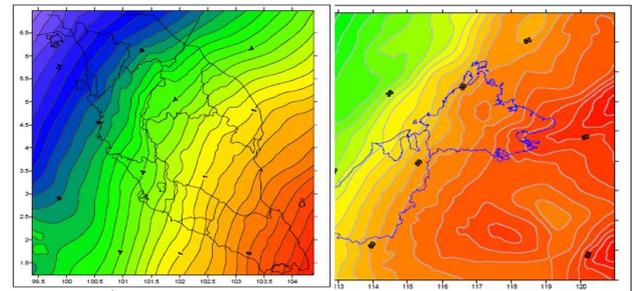
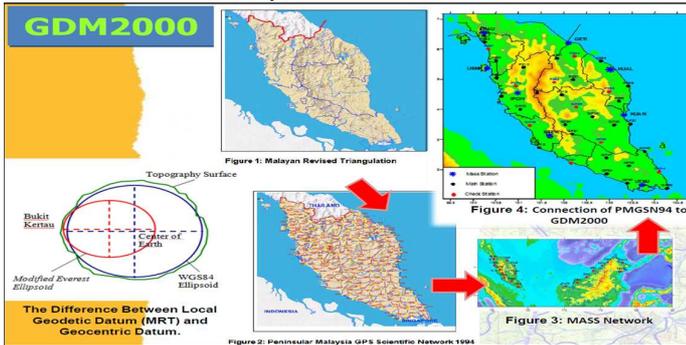
Marine parcel – a part of space in marine environment which may include air space, water column and seabed profile defined by legal boundary created for Malaysia.



- ❖ The GDM2000 and RSO/Cassini Datum Projection is seen as suitable datum for marine cadastre application especially to integrate between land and marine.
- ❖ The GDM2000-compatible with global coordinates obtained from GPS and with other coordinate systems adopted. It will also allow an efficient exchange of data and linking of products from various information systems.

❑ A Seamless Vertical Datum -Malaysian Geoid Model – MyGEOIDA seamless vertical datum is one that does not vary over time or location and can relate the height measurement in topographic and bathymetric surveying (El-Rabbany, R. Adams, 2004).

❑ A stable reference surface which could be considered suitable for this is myGeoid surface. As the myGeoid has already fitted to MSL, it also can derive the orthometric height. Thus, this study will henceforth use myGeoid as the seamless vertical datum.



- ❑ The marine cadastre concept will be successful if supported by the appropriate law and regulation on marine management and practice for marine parcel.
- ❑ Two components: national and international.
- ❑ Examines under marine elements in
 - ✓ National Land Code 1965
 - ✓ Continental Shelf 1966
 - ✓ Territorial Sea Act 2012
 - ✓ State Land Rule
 - ✓ Baselines of Maritime Zones Act 2006.
- United Nation Convention Law of The Sea 1982
- Convention on the Territorial Sea and the Contiguous Zone 1958.

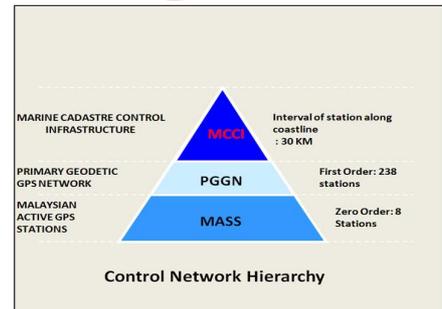
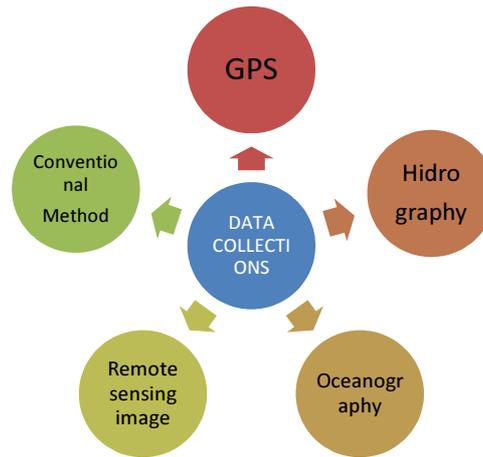


NATIONAL PERSPECTIVE

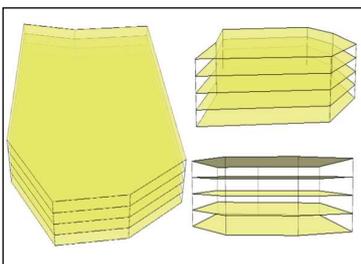
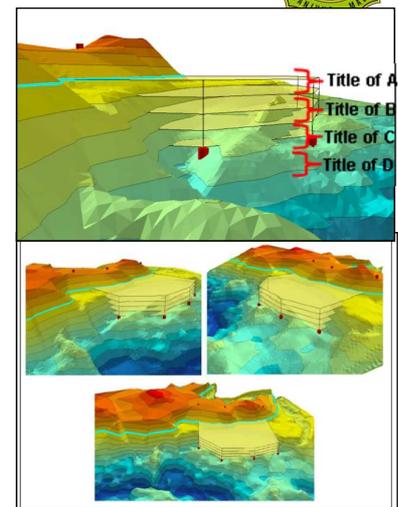
INTERNATIONAL PERSPECTIVE

FOR MALAYSIA MARINE CADASTRE - SUGGESTION TO REVIEW THE NLC1965 IN RELATING TO MARINE CADASTRE PURPOSE

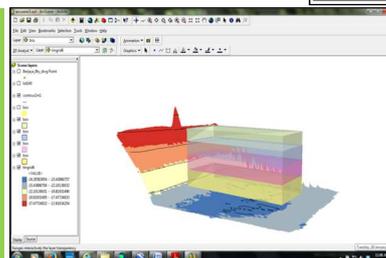
- Data component is crucial in supporting the marine cadastre, following is the attribute in this component:
- **Data collection** - basic requirement in marine cadastre and in relevant method
- **Digital Marine Cadastre Database** using the GIS to fulfill requirements of data presentation. More in marine spatial data management.
- **Marine Cadastre Control Infrastructure (MCCI)** – establishment of marine cadastre control infrastructure adopt from CCI implementation but be adapted in marine.



- The parcel design is required to define the marine parcel for marine alienation, administrative and record. It is not such in land application.
- Marine parcel layers arrangement to clarify the 3R concept and minimal conflicting with stakeholders.
- Marine Parcel in standard area is specified proposed by government to ensure management of marine parcel can be avoiding the conflict at the profitable area.
- Marine Parcel Design by Applicants Application (Scope) under SA consideration and depending the marine activities want to be and not conflict with other stakeholders.



Marine stratum with the rights of owner by specific depth.

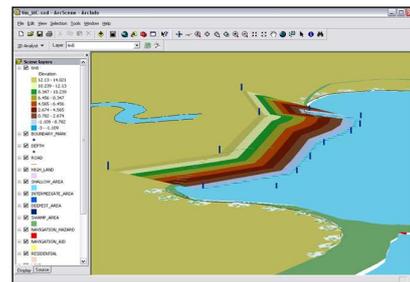


- **Recreation** – The tourism perspective have a good impact and generate high revenue and an indirectly become main contributor for government. The exploitation of marine sources need the sustainable planning in developments.
- **Fishing** – Malaysia aims to increase fisheries production by one third from Malaysia income sources. So that, the marine spatial issue in defining this aim and necessity cause the marine cadastre as the platform. To encouraged the development of the aquaculture industry.
- **Industry** – Various offshore engineering activities, covering wide range of goods and services based on the maritime sector. It would thus cover the activities that are resource based including cabling, monumentation and marine biotechnology activities.



Suggestion the marine alienation under Registrar Office under State.

- **Final title** – suggestion for special marine activities and generate for well-being of the community. Such as TNB and SADA (Kedah water company)
- **Lease hold** – suggestion to 30 to 60 years only based on authority consideration for related parties investing in marine sector.
- **Temporary Ownership Licensing (TOL)** can be adapt from land cadastre and approved by State Government.



- The Definition of Marine Cadastre - ISG2013
- Marine Cadastre from Malaysia Legal Perspective- COAST2013.
- Methodology of Development Marine Cadastre Conceptual – FIG2014
- Marine Cadastre Legal Framework – Marine Policy Journal
- Technical in Marine Alienation for Marine Cadastre

ACKNOWLEDGMENT

- ▶ Financial assistance from Malaysian Peninsular Land Surveyors Board (LJT)
- ▶ eScienceFund – Ministry of Science, Technology and Innovation (MOSTI)
- ▶ Department of Survey and Mapping Malaysia (DSMM)
- ▶ State Authority of Kedah
- ▶ Director of Land and Mines Kedah
- ▶ Universiti Teknologi Mara (UiTM)
- ▶ Universiti Teknologi Malaysia (UTM)



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