2009 FIG COMMISSION 7 ONE-DAY INTERNATIONAL SYMPOSIUM

KUALA LUMPUR, MALAYSIA
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TOWARDS U-CADASTRE

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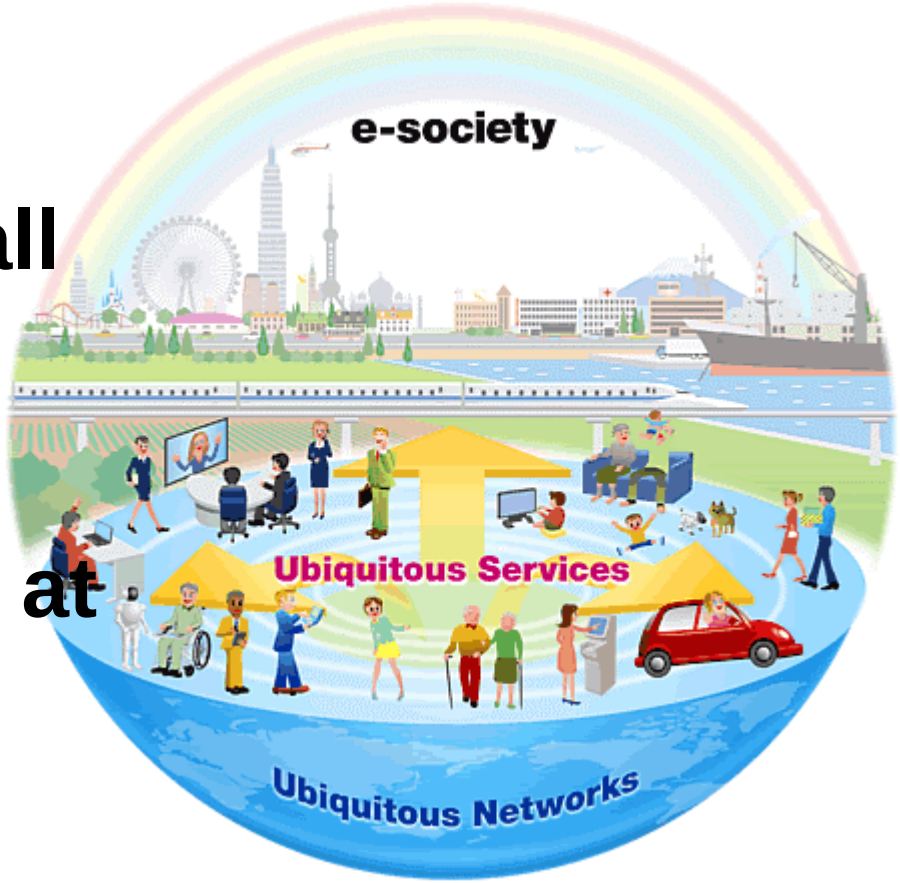
DEFINITION

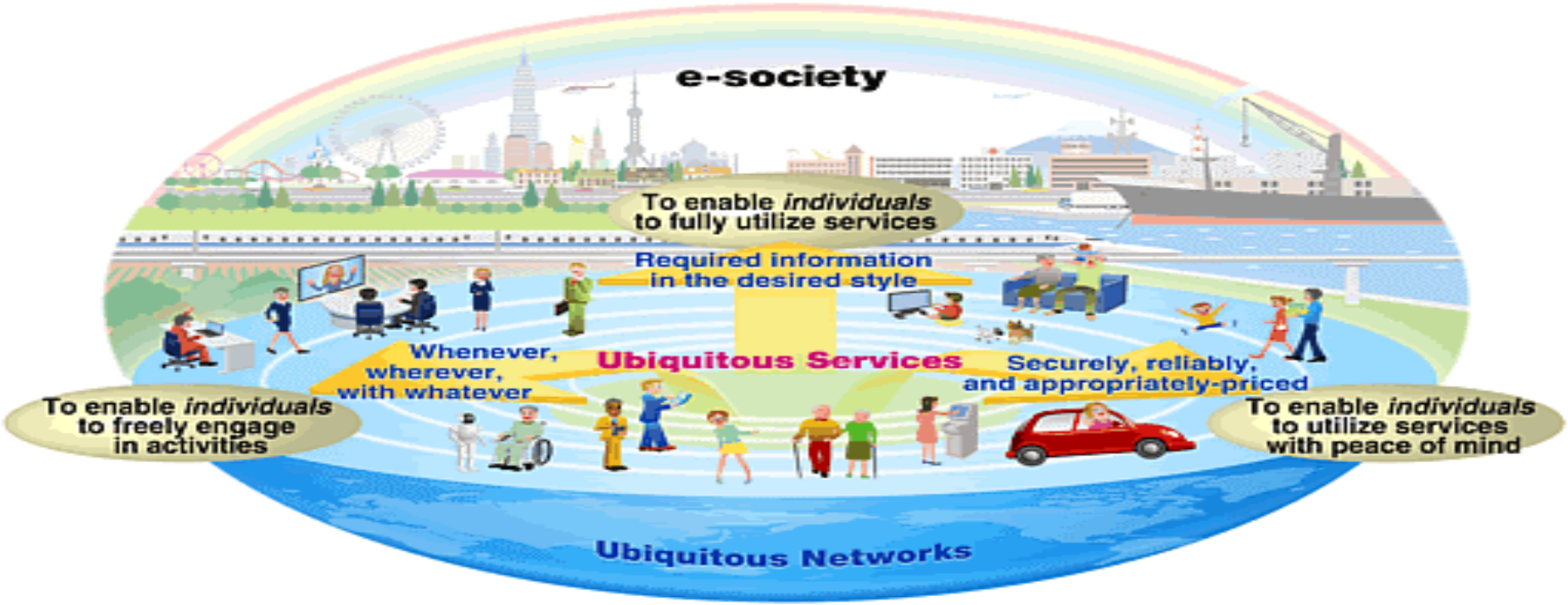
U = Ubiquitous

- **seeming to be in all places**
- **widely present**
- **found everywhere at the same time**



TOWARDS U-CADASTRE

Cadastral information easily available and accessible from anywhere at any time.



MALAYSIA'S VISION 2020

- **To be fully developed country.**

ELECTRONIC GOVERNMENT VISION

- **for government, businesses and citizenry working together for the benefit of Malaysia and all of its citizen.**

E-GOVERNMENT

- **Started since the initiation of Multimedia Super Corridor (MSC) by the Malaysian government in 1996**
- **Seeks to improve government operation and delivery services.**
- **Introduction of new policies and regulations**
  - **Communications and Multimedia Act 1998 [Act 588] and [Act 589]**
  - **Digital Signature Act 1997**
  - **Computer Crimes Act 1997**
  - **Copyright Amendment Act 1997**
  - **Personal Data Protection Act 2004**

E-GOVERNMENT PROJECTS

Under the Electronic Government Flagship Application:

- **Project Monitoring Systems (PMS) – G2G (government to government)**
- **Human Resource Management Information System (HRMIS) – G2G**
- **Generic Office Environment (GOE) - G2G**
- **Electronic Procurement (EP) – G2B (government to business)**
- **Electronic Services (e-Services) – G2C (government to citizen)**
- **Electronic Labor Exchange (ELX) – G2C**
- **E-Syariah – G2C**
- **eKL - G2C**

MY GOVERNMENT PORTAL

MyGovernment Portal www.malaysia.gov.my acts as the one-stop source of Malaysian government information and services for the citizens.

COMPUTERISED INFORMATION SYSTEM

Year	Computerised Information Systems
1970	Sabah Land Data Bank
1973	Sarawak Land and Survey
1983	Quit Rent System Peninsular Malaysia
1985	Computer Assisted Land Survey System
1986	National Forestry Information System
1988	Computer Assisted Mapping System
1989	Property Assessment System
1991	Valuation Information System
1993	Land Use Information System
1993	Demographic Information System
1993	Coastal Erosion Monitoring System
1993	Forest Information System Sabah
1994	Penang GIS (PEGIS)
1994	Public Works System (SUTRA)
1995	Computerised Land Registration System
1999	Cadastral Data Management System (CDMS)
1999	National Property Information Centre (NAPIC)

Establishment of Computerised Information Systems by some Government Agencies

MALAYSIA SDI

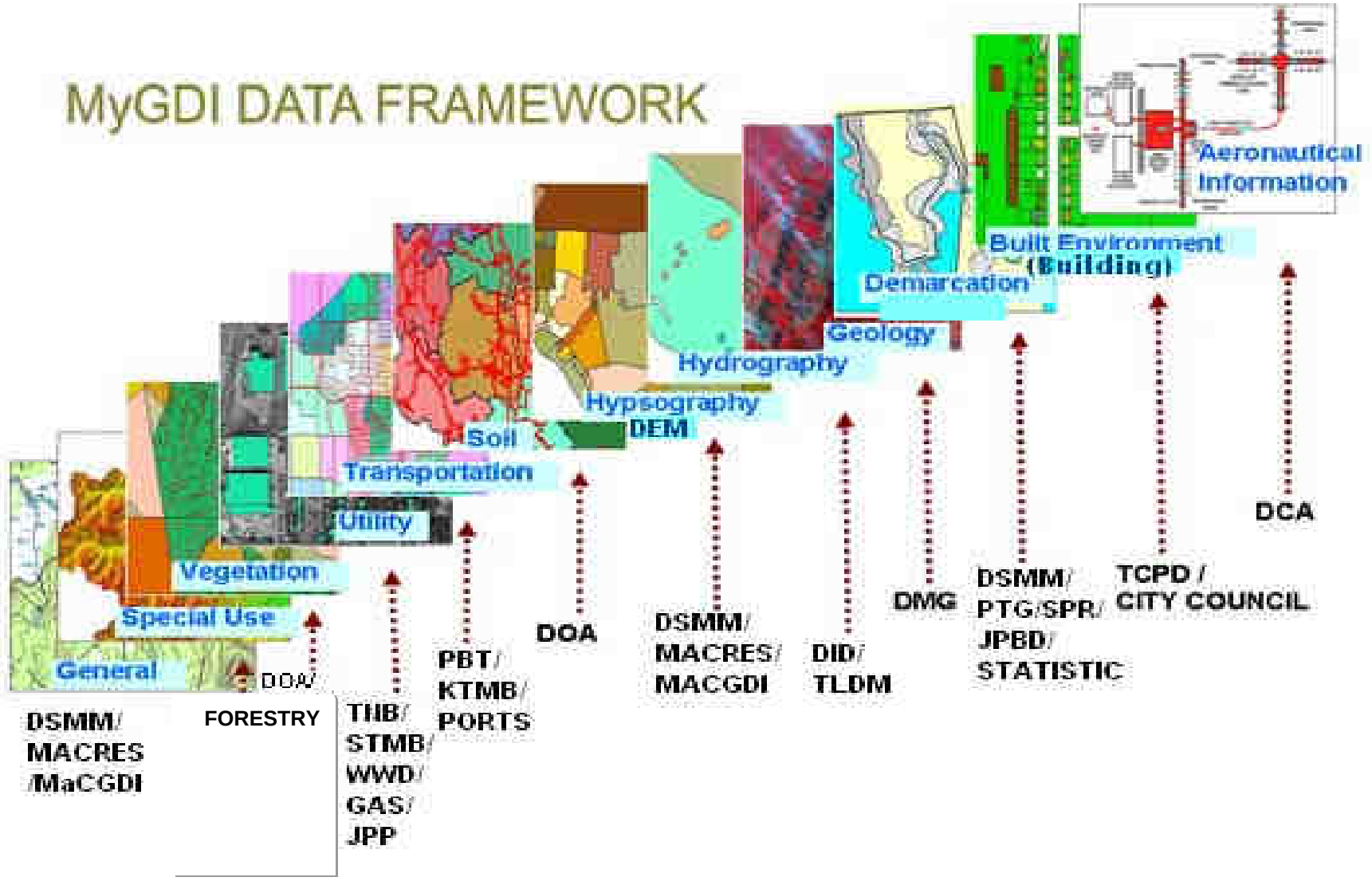
- Formed in 1997, then known as NaLIS (National Infrastructure for Land Information System)

- Purpose :

  - ✓ To promote and facilitate sharing, exchange, dissemination and use of geospatial information among Land Related Agencies
  - ✓ To avoid duplication of effort in collection and management of geospatial information
  - ✓ To ensure accuracy, timeliness, correctness and consistency of geospatial information

- Restructuring in 2002; subsequently named MyGDI

MyGDI FRAMEWORK DATA



STANDARDS

- **Development of Malaysian Metadata Standard**
  - ✓ **Template developed**
  - ✓ **Consistent metadata management tool based on ISO/TC 211 standard**
  - ✓ **Can be used for all data categories**
  - ✓ **Documented and provided to all data providers**
  - ✓ **Free metadata publishing and searching through MyGDI**
- **Development of Malaysian Standard Feature & Attribute Codes (MS1759)**
  - ✓ **Took into consideration the need to use a standard code for features & their attributes in spatial databases.**
  - ✓ **Documented and published in 2004**
- **Unique Parcel Identifier**
- **Standardised Street Addresses**

MALAYSIA CADASTRAL SYSTEM

Historical Outline:

- The Torrens system was introduced into the Federated Malay States (FMS) between the years 1879 and 1890.

- Finds presence for expression in:
  - ✓ The National Land Code, 1965 (NLC) in Peninsular Malaysia.
  - ✓ The Sabah Land Ordinance, in the state of Sabah.
  - ✓ The Sarawak Land Code, in the state of Sarawak.

MALAYSIA CADASTRAL SYSTEM (cont.)

Malaysian cadastral system has essentially two basic components:

1. Land Registration: Administered by the State Land Offices and coordinated by Department of Lands and Mines.

   Textual aspect - the land register furnishes all necessary information, the basic ones being the name of the proprietor and the actual land alienated - through a description of its area and location, and the survey plan showing the limits. Other information include those on owner's rights, encumbrances, express conditions, caveats and prohibitory orders, if any.

MALAYSIA CADASTRAL SYSTEM (cont.)

2. Cadastral Survey: Responsibility of Department of Survey and Mapping Malaysia (DSMM), a federal agency and supported by Licensed Land Surveyors

   (Note: The cadastral survey in the state of Sabah and Sarawak are administered by the respective Department of Lands and Surveys which are state entities.)

   Spatial aspect - the country's cadastral parcel fabric can be conveniently viewed from the cadastral map produced and maintained by DSMM. With the exception of land parcels on qualified titles (awaiting surveys and finalisation of boundaries) the map depict all land parcels (i.e. surveyed) together with their unique lot numbers or identifiers, as well as the certified plan numbers for ease of reference and search.

PURPOSE OF CADASTRAL SYSTEM

- To provide security and simplicity to all dealings on land.
- The title is conclusive proof that the person mentioned therein is the owner of the land described therein.
- Valid titles require an accurate description of boundaries and as such cadastral survey plays an important role in the system.

LAND TITLES

Two type of land titles are issued:

- Qualified titles – (Titles issued prior to survey to speed up land development)
- Final titles - (Titles issued after accurately surveyed and boundary marks emplaced).

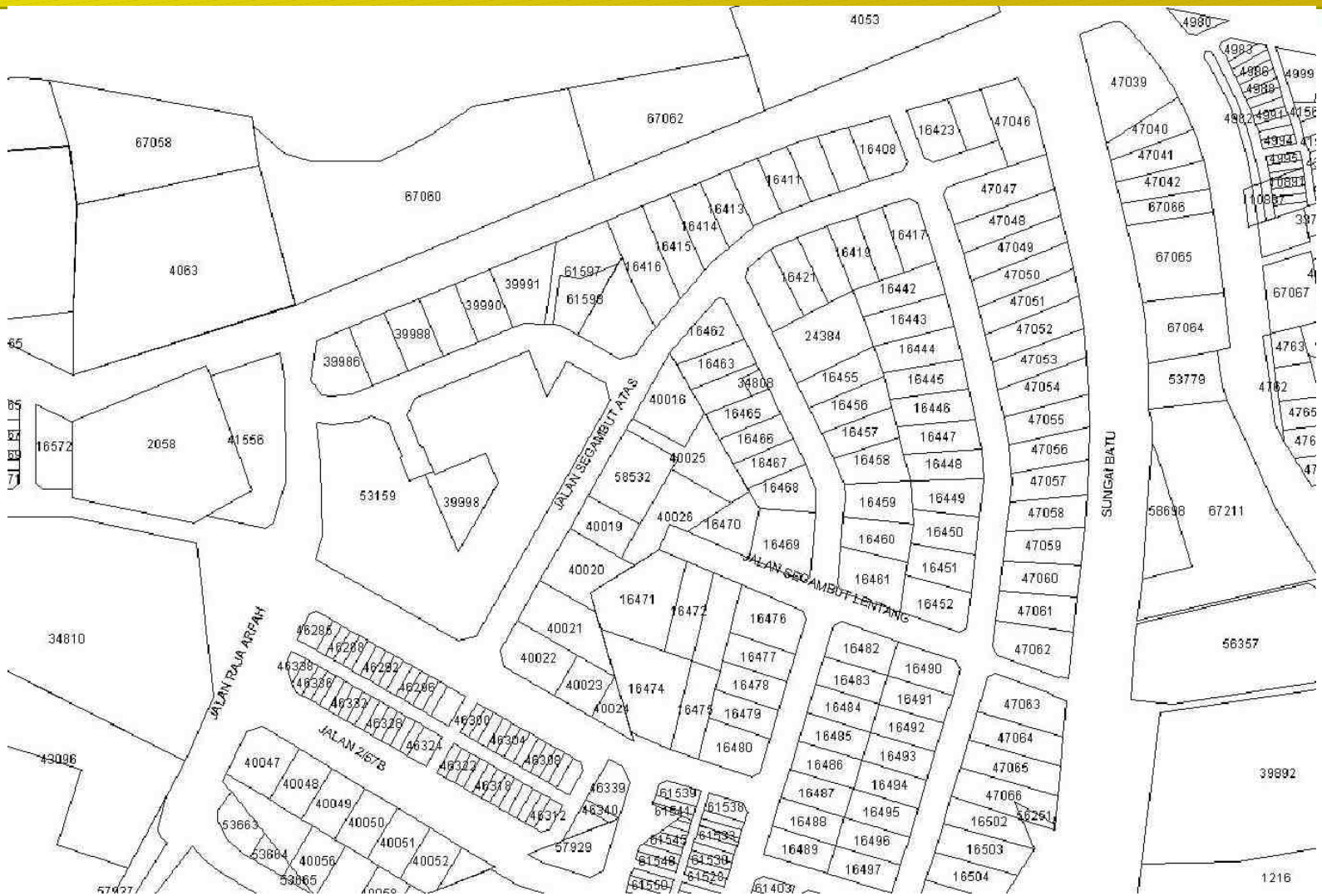
CADASTRAL SURVEY

- Accurate field survey with emplacement of boundary marks.
- Certified Plan Drawn
- Unique Parcel Identifier (lot number)
- Standard Sheet - Cadastral Map

CADASTRAL REFORMS (cont.)

- Computerisation
  - Computer Assisted Land Survey System (CALS)
    - CALS Johor in 1985
    - CALS Pahang in 1990
    - CALS for other States in 1995
  - Creation of Digital Cadastral Database (1997-2002)

CADASTRAL REFORMS (cont.)



Sample of Digital Cadastral Map

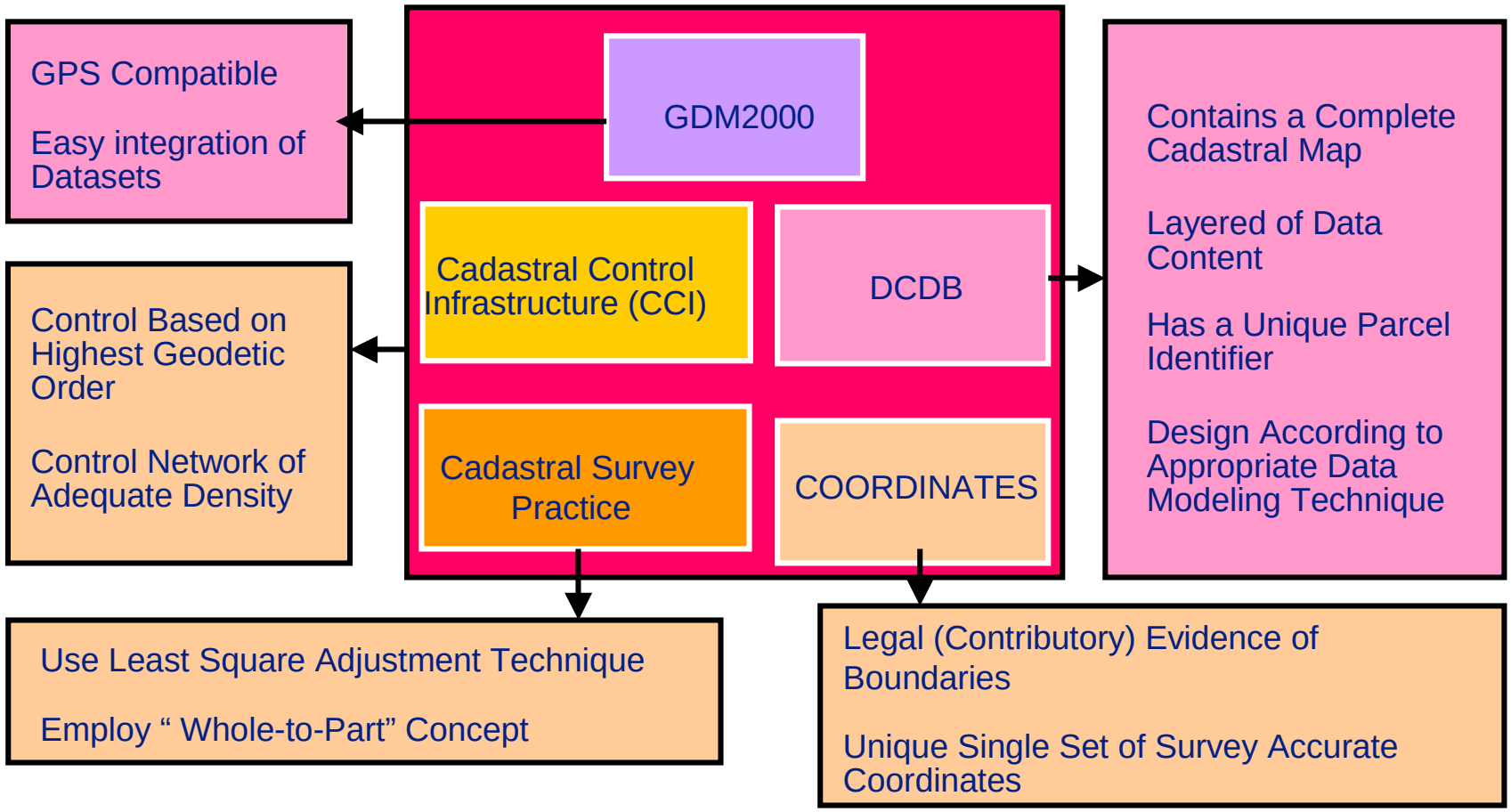
CADASTRAL REFORMS (cont.)

- Feasibility study on Coordinated Cadastral Systems (CCS) – 1996
- Pilot study in the state of Melaka

CCS

1.	1996	INITIAL PILOT STUDY IN THE STATE OF MELAKA - test on the use of an adjustment technique and GPS for Cadastral Controls.
2.	1997 to 2000	FEASIBILITY STUDY ON COORDINATED CADASTRAL SYSTEM FOR PENINSULAR MALAYSIA. MODULE A — The Adjustment of Large Cadastral Network using RSO MODULE B — On The Use of A Global Geocentric Datum MODULE C — Legal Traceability, Standards, Specifications for GPS Surveys.
3.	2000 to 2002	STUDIES TOWARDS THE DEVELOPMENT OF IMPLEMENTATION PLAN OF COORDINATED CADASTRAL SYSTEM FOR PENINSULAR MALAYSIA MODULE A — Definition & Realisation of A Geocentric Datum for Malaysia MODULE B — Methodology for Development of Digital Coordinated Cadastral DB MODULE C — Integrating the Digital Coordinated Cadastral Data with Mapping (CAMS) Data. MODULE D — Institutional Issues: Legal & Organisational Issues.

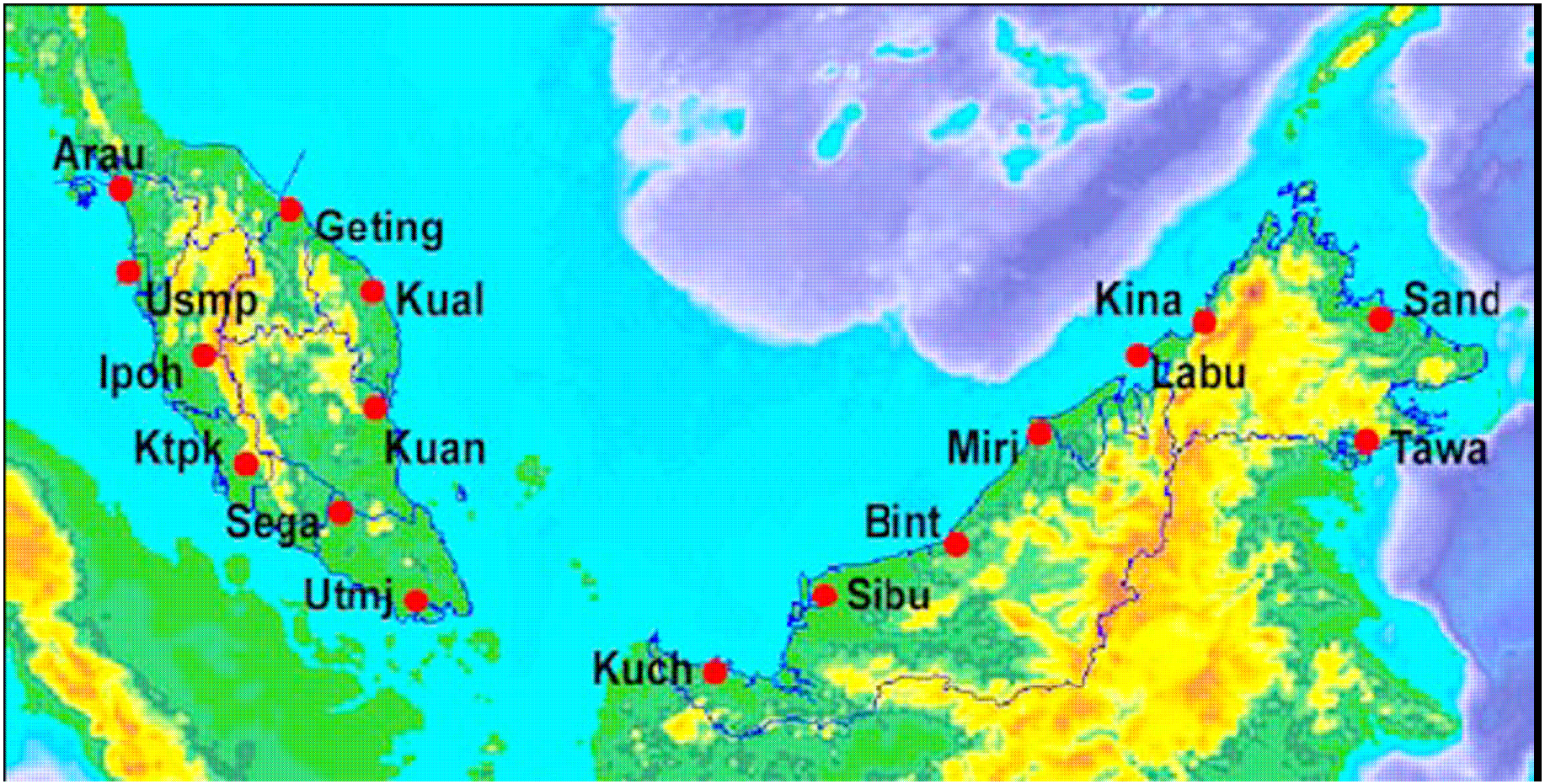
ELEMENTS OF CCS



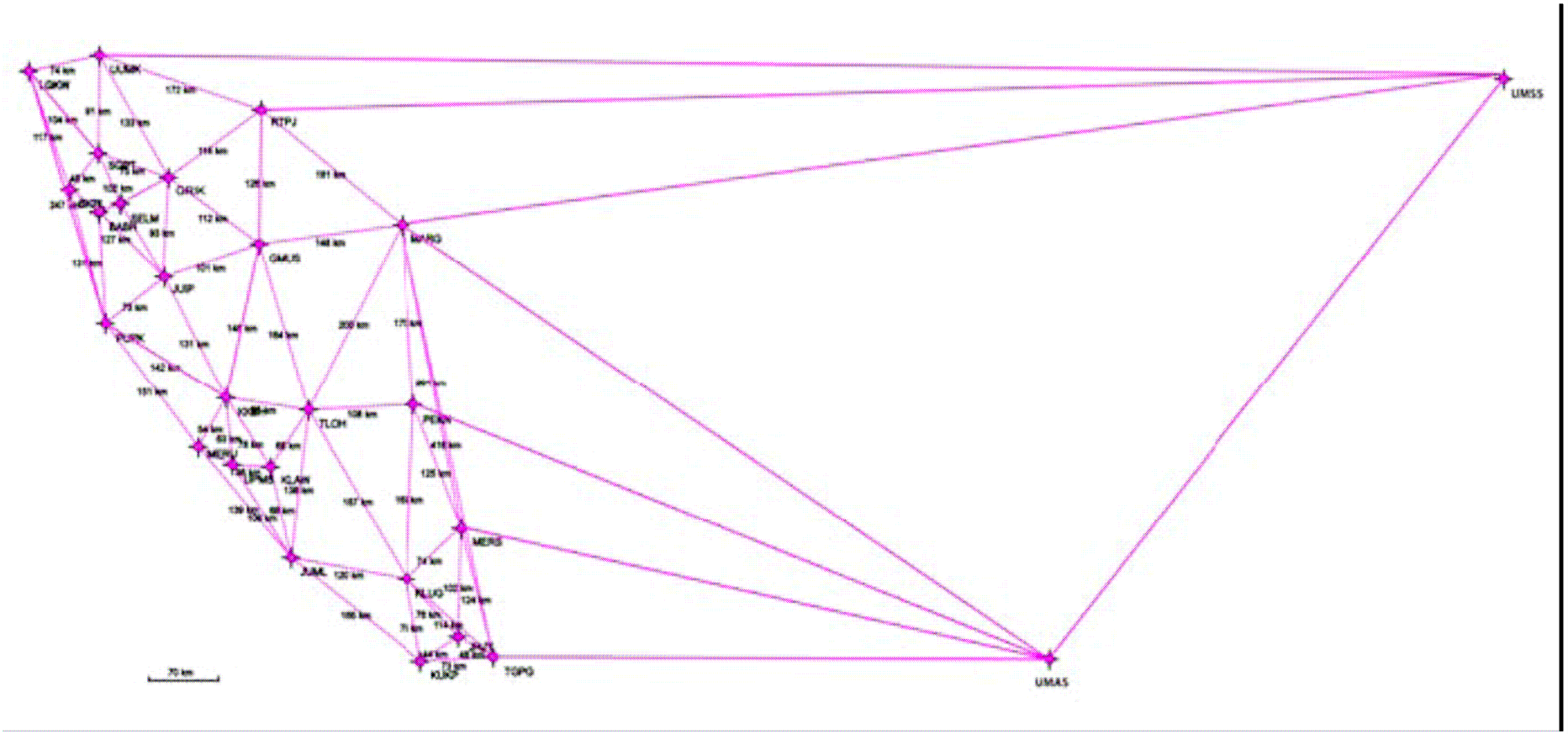
CADASTRAL REFORMS (cont.)

- Use of Global Navigation Satellite Systems (GNSS)
  - Upgrade geodetic network
  - Malaysia Active GPS Network (MASS)
  - Use of Geocentric Datum (GDM 2000)
  - Real Time Kinematic Network (RTK Net)
  - Use of GPS in Cadastral Survey

MALAYSIA ACTIVE GPS NETWORK



REAL TIME KINEMATIC NETWORK (RTK Net)



CADASTRAL REFORMS (cont.)

- Field to Finish Concept - 2002
  - Automation of District Office System
    - District Office Management System
  - Automation of Field Operation
    - Total Station System
  - Automation of Office Operation – upgrading
    - Cadastral Data Management System
    - Digital Signature - 2006

eCADASTRE - Project

- Coordinated Cadastral System (CCS)
- Virtual Survey System

eCADASTRE - Elements

- Create Cadastral Control Infrastructure (CCI)
- Creation of a complete National Digital Cadastral Database (NDCDB).
- Web base integration between field and office using 3G / Internet.
- GLMS (GIS Layer Management Systems).
- Creating database for strata.
- Using GPS to collecting data (RTK Net).
- Coordinate system using Cassini GDM 2000

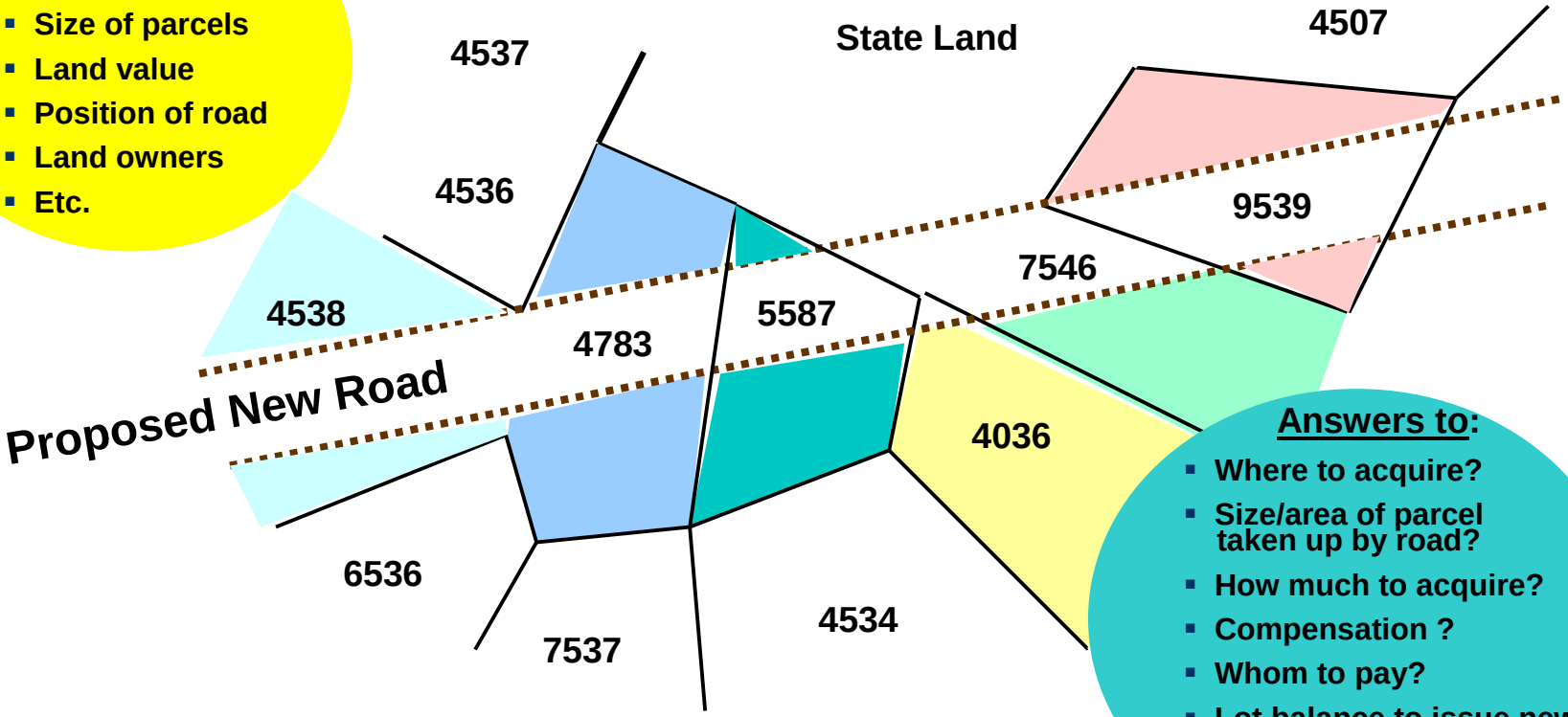
- **NDCDB ACCURACY**

CATEGORY	Std Dev Northing	Std Dev Easting
Urban/ New Development	± 5 cm or better	± 5 cm or better
Semi Urban/Rural	± 10 cm or better	± 10 cm or better

Application Of Cadastral Data For Acquisition Of Land

Data required:

- Location of parcels
- Size of parcels
- Land value
- Position of road
- Land owners
- Etc.

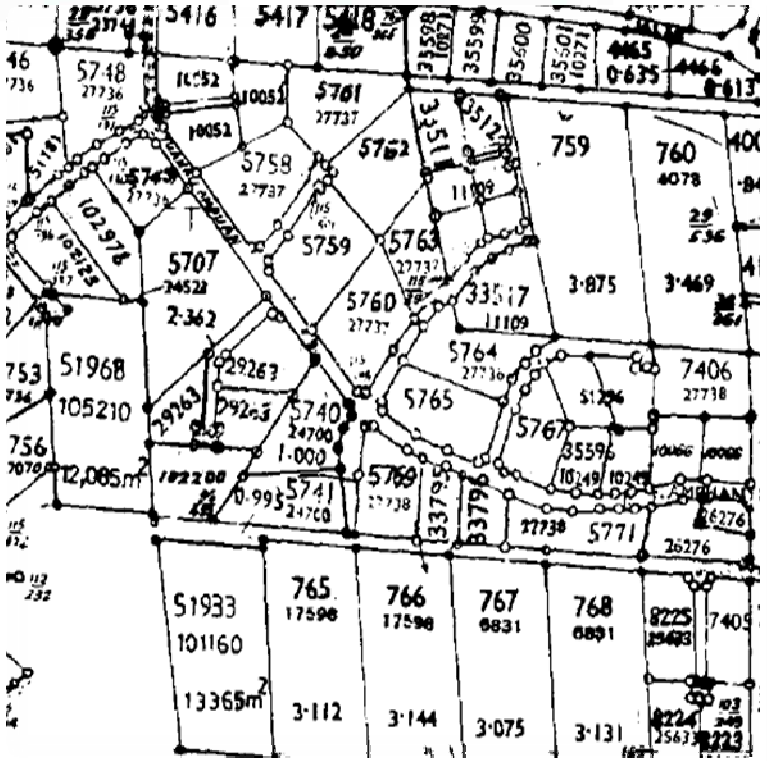


Answers to:

- Where to acquire?
- Size/area of parcel taken up by road?
- How much to acquire?
- Compensation ?
- Whom to pay?
- Lot balance to issue new title ?
- Etc.

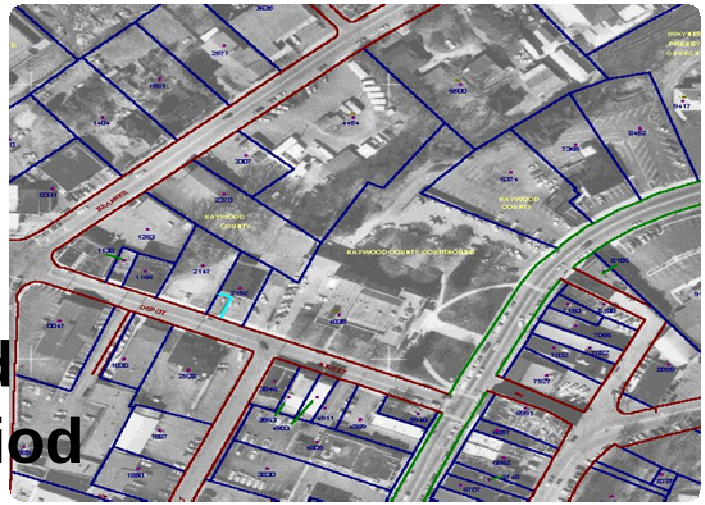
eCADASTRE – Current Issues

- **279,000 LOTS OF LOWER GRADE SURVEYS TO BE UPGRADED**
- **483,000 QTS STILL PENDING TO REQUEST FOR SURVEY**



eCADASTRE -Outcome

- **Accurate NDCDB**
- **Capability to complete survey and prepare final title within short period**
- **Qualified title able to be phased out**



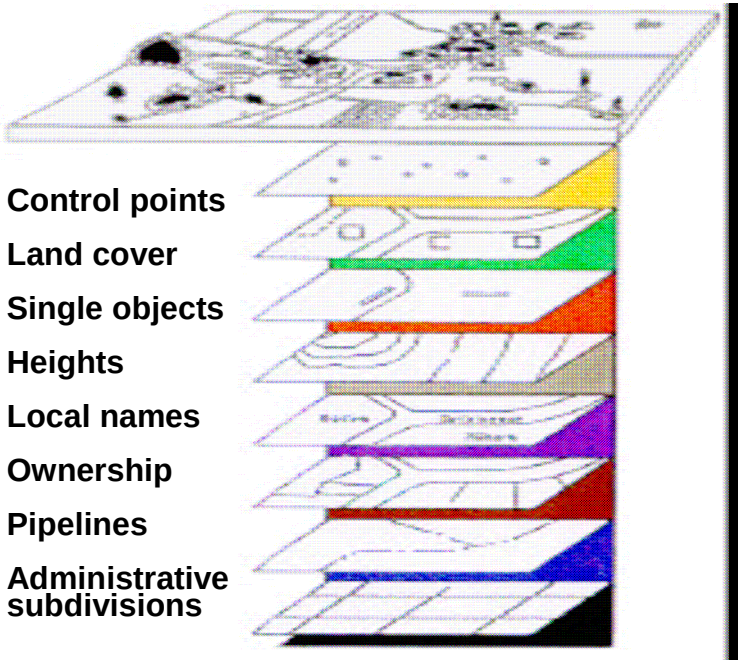
BEYOND eCADASTRE

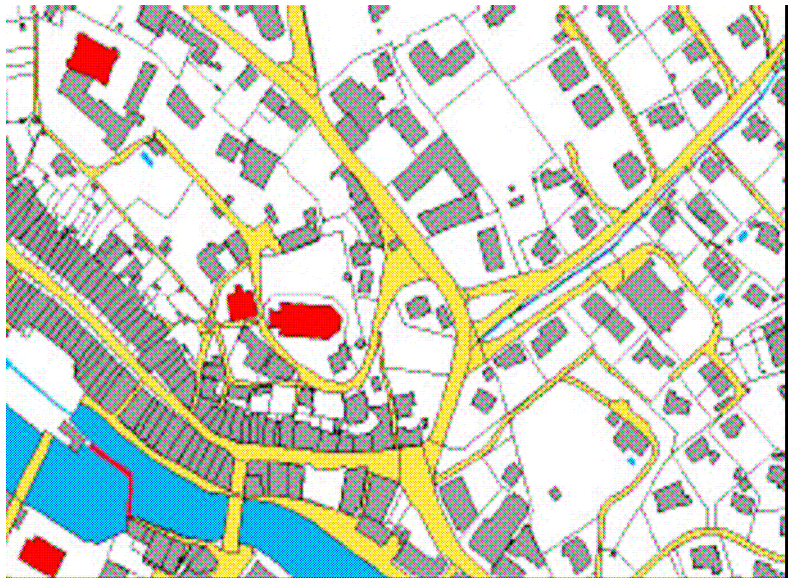
- **Full Integration with other Land related agencies e.g: e-LAND, eLJT and in future eJKPTG**

- **Multipurpose cadastre and large scale mapping**

MULTIPURPOSE CADASTRE AND LARGE SCALE MAPPING

Additional Layers: Buildings, Roads, Hydrographical & Topographical features etc





MARINE CADASTRE

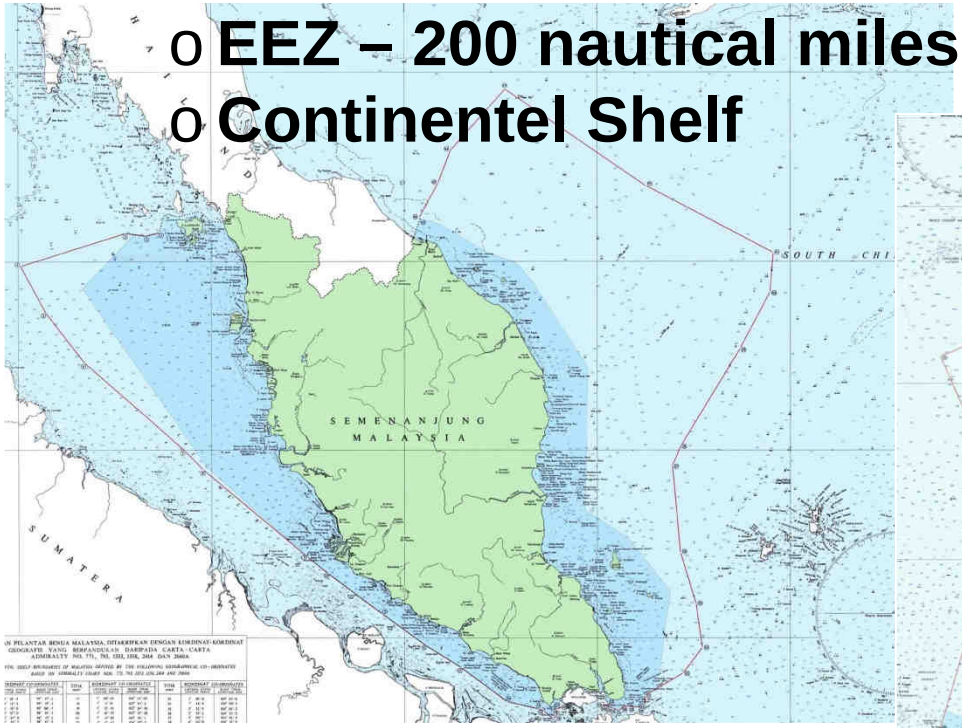
TO COMPLETE SPATIAL DATABASE FOR MARITIME TERRITORIAL

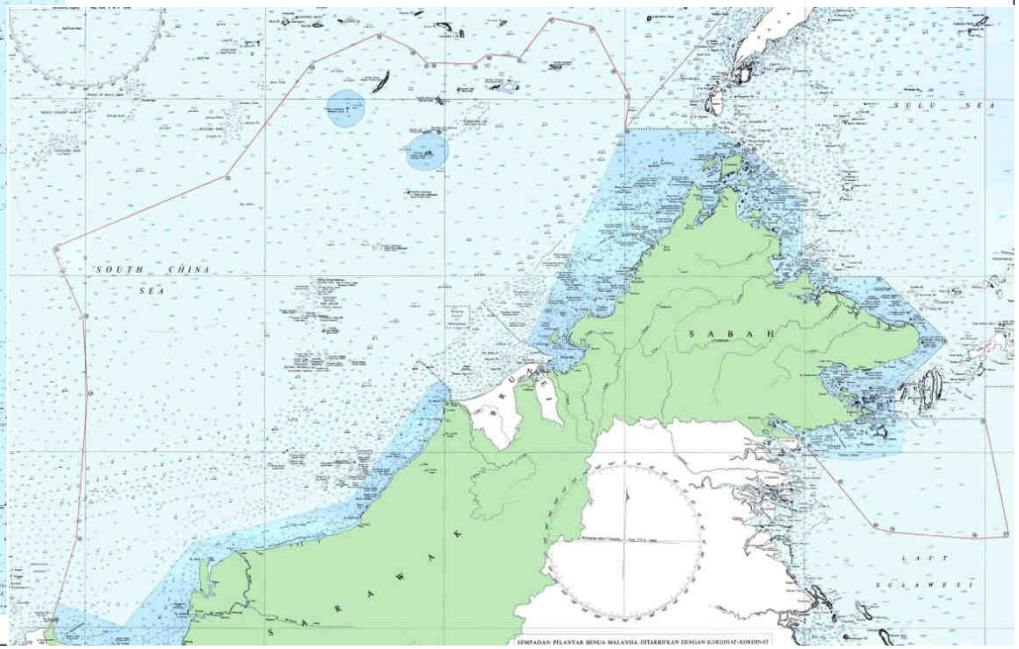
- **MARINE ENVIRONMENT ISSUES;**
  - **Legislative arrangement governing marin environment is complex**

MARINE CADASTRE

MARINE ENVIRONMENT ISSUES:

- **Involves authorities at international, federal and state levels**
  - **State Territorial Waters – 3 nautical miles**
  - **Federal Territorial Waters – 12 nautical miles**
  - **EEZ – 200 nautical miles**
  - **Continentel Shelf**

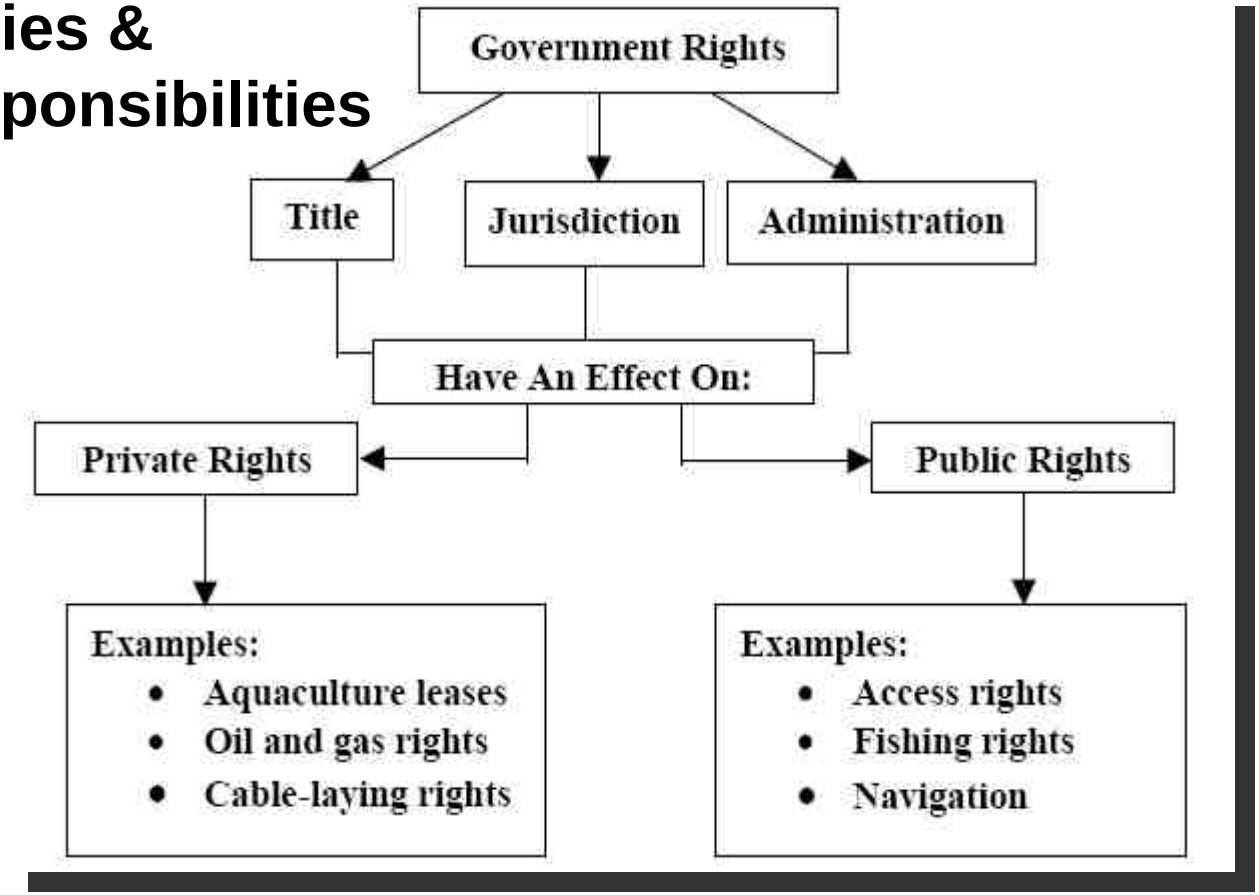




MARINE CADASTRE

MARINE ENVIRONMENT ISSUES;

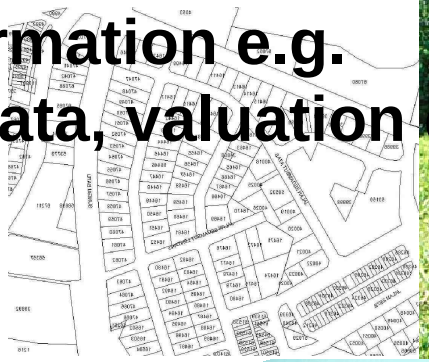
- **Various agencies & overlapping responsibilities**



TOWARDS UBIQUITOUS CADASTRE

ALLOWS UBIQUITOUS ACCESSING OF CADASTRAL DATA FROM ANYWHERE AT ANY TIME WHICH INCLUDES:

- **Spatial and textual land information e.g. survey, land title, planning data, valuation data etc.**
- **Online banking payment**



CONCLUSION

u-Cadastre success depends on:

- Capacity Building
- Full cooperation among private sectors and government agencies.

THANK YOU