

ECONOMIC AND SOCIAL COUNCIL

Seventeenth United Nations Regional Cartographic
Conference for Asia and the Pacific
Bangkok, 18-22 September 2006
Item 7 of the provisional agenda*

INVITED PAPERS

DATA DEVELOPMENT IN BRUNEI DARUSSALAM

Submitted by Survey Department, Brunei Darussalam **

* E/CONF.97/1

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Data Development in Brunei Darussalam



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- **Introduction**
 - **Activites in Survey Department**
 - **Data Development Progress**
 - **Conclusion**

- Brunei Darussalam is located 443 km north of equator with a total area of 5,765 sq. km
- The country has made an astounding leap to prosperity over the last quarter of a century
- Visitors to Brunei are able to see numerous on-going infrastructure projects.
- Despite the economic downturn in 1998, the Survey Department was able to progress significantly.





- Survey Department is the national geospatial mapping agency and the custodian for all mapping data
- The Department published maps, plans, aerial photographs, digital plans, data, cadastral plans, topographical maps and Photomaps for the use of other government ministries, departments, private and general public
- Survey Department is the first and only Government Agency certified by ISO 9001 since 1998



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Activities in Survey Department

An aerial photograph of a city, likely in Brunei, showing a large lake in the foreground, a stadium, and various buildings and infrastructure. The text 'Activities in Survey Department' is overlaid on the image.



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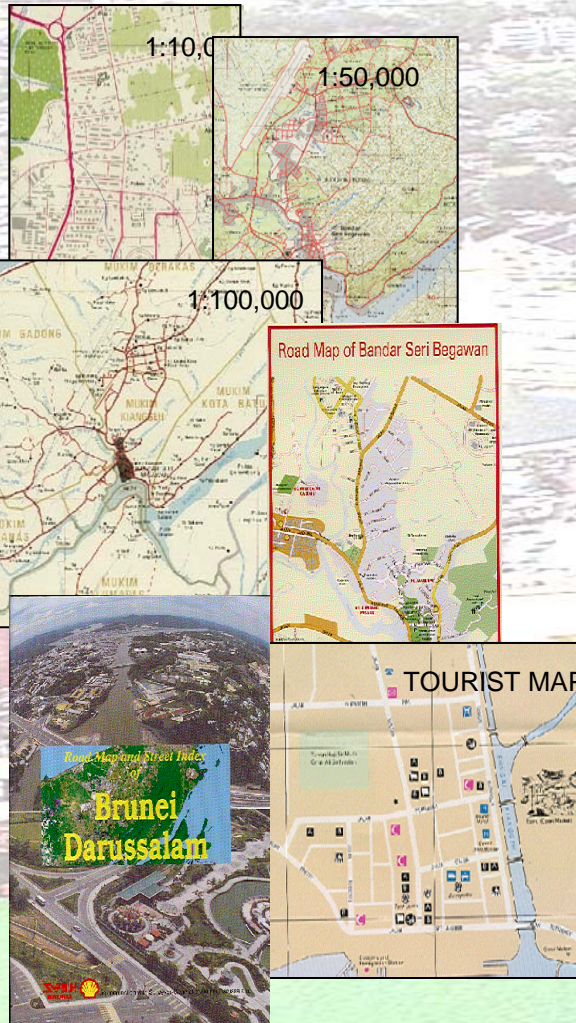
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Cartographic Activities

Existing printed map



Automated Cartography



- Expedite the process in preparing a more efficient customized maps used for project planning.
- Produce separate layers which enable only specific information to be retrieved from the digital map database.
- Currently, the functionality of graphical database is limited to basic map printing, pan and zoom navigation, identifying information about a polygon feature or line.



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Digitizing Activities

- Most maps and plans are converted into digital form and stores into graphical database for use of Land Information System
- All existing maps and plans are being digitized using Arc Info both on pc and w/s.

Digitized maps and plans :-

Cadastral (1:2,500)

Topographical (1:1,000 , 1:10,000 and 1: 50,000)

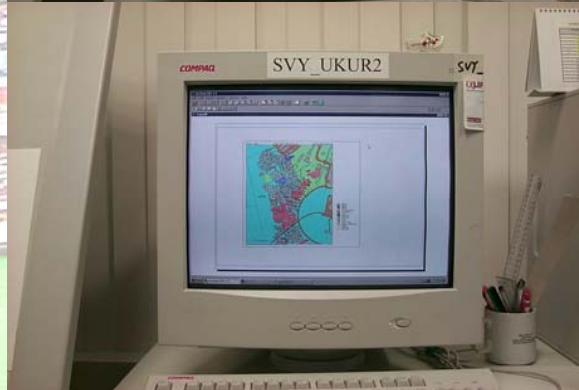
Geological maps (1:63,360)

Comprehensive Development Plan (1:10,000)

National Development Plan (1:100,000)

Utilities plan (various scale)

Topographical plan (1:2,500)





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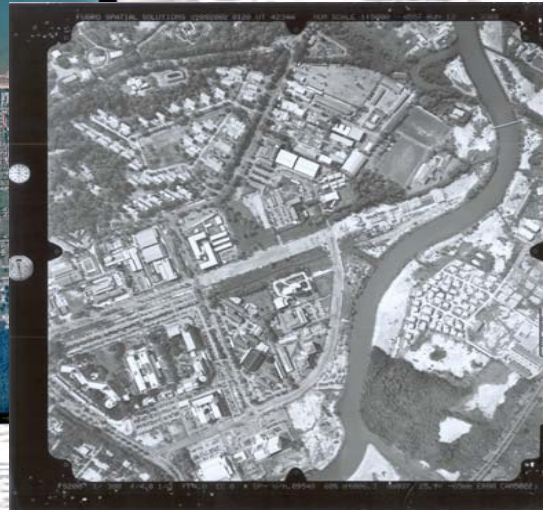
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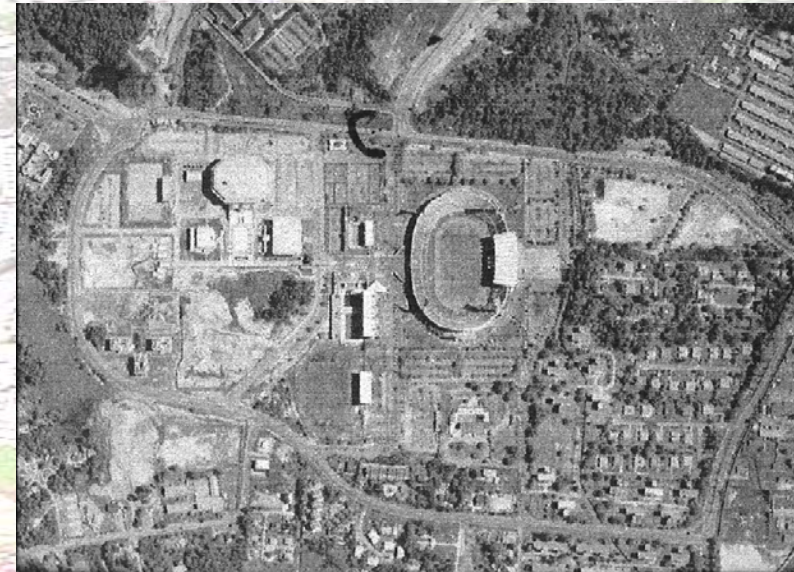
Photogrammetric Activities



Aerial Photograph



Orthophoto



- Photogrammetric activities mainly producing base topographic map
- In the past, most of the work are using analogue system
- Penciled photogrammetric plots were produced from stereo aerial photographs
- Late 1991, a project 1:10,000 digital mapping were first started
- Now, Digital Video Photogrammetry was used to produce orthophoto



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Remote Sensing Activities

SPOT XS

Acquisition Date: 13.04.1999

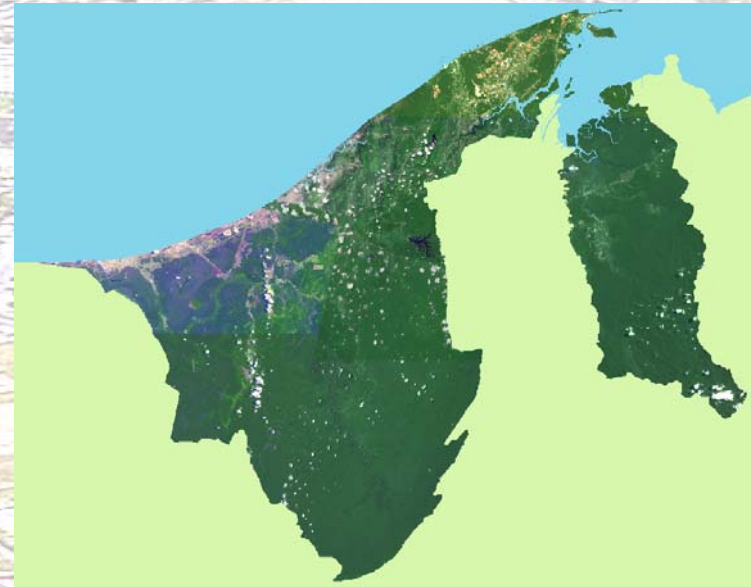
Resolution: 20 metres



SPOT5 (Mosaic Image)

Acquisition Date: July-Sept 2003

Resolution: 2.5metres



- Used of SPOT images to derive Land cover maps and to monitor changes in land use.
- Updating 1:50,000 map using remote sensing technology for the whole of Brunei



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Remote Sensing Activities

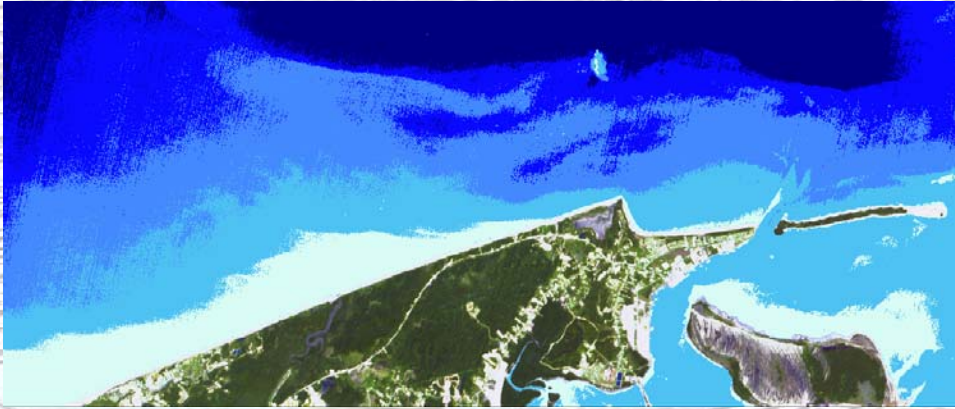


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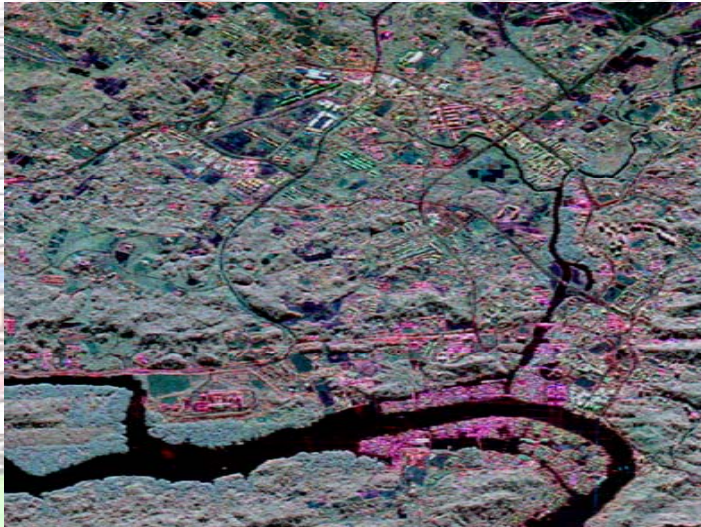
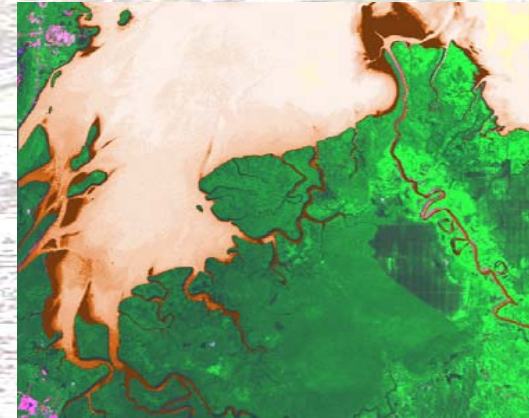
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Bathymetry Map



Sedimentation Map



DEM Map



Landcover



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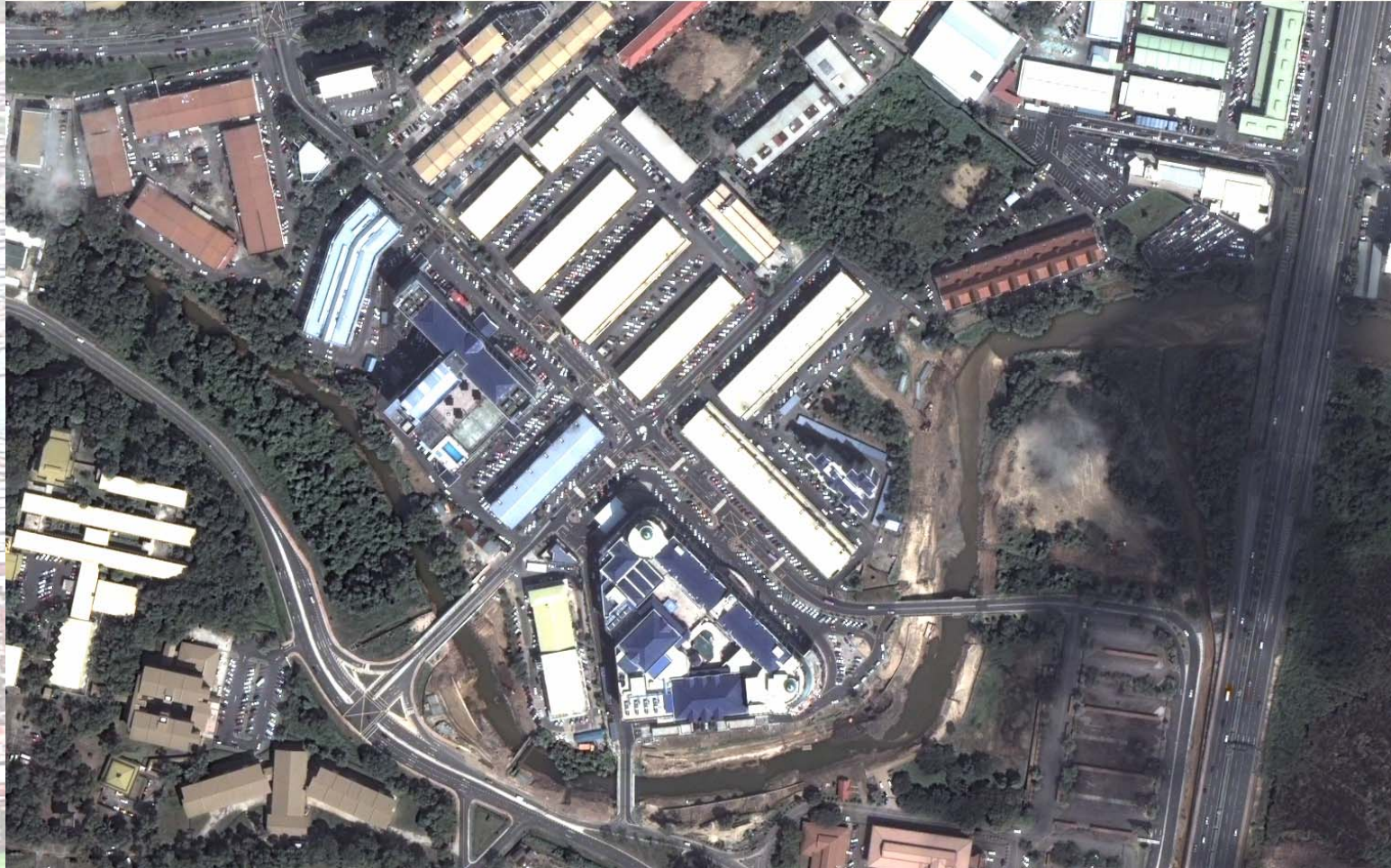


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Remote Sensing Activities



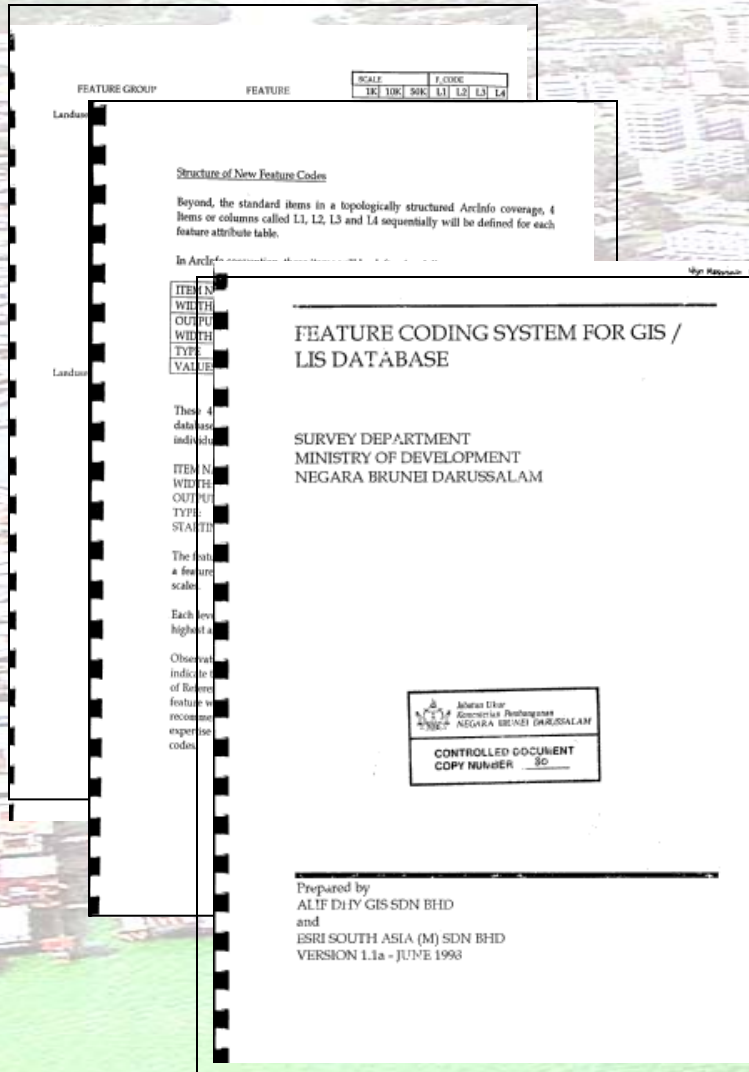
QUICKBIRD

Acquisition Date: 17.01.2005

Resolution: 0.6 metres

Data Dictionary

- A Data Dictionary was formulated to develop LIS
- This is to rationalize its current feature-coding system
- The new structure satisfies a wide range of uses of digital map data across GIS/LIS ranging from the generalized to the detailed
- Currently, all existing digital data are converted to the new feature coding before they are stored in the library.



- **House Numbering system**

The ministry of Development has taken positive step to establish a systematic and orderly house numbering scheme that would serve the whole country.

Adopting the house numbering concept that aims to form a uniform and methodical numbering system.

An information database related to the house numbering project is now compiled and kept in Survey Department.

- **Geographical names**

A National committee on Geographical names.

Collecting geographical names, adopting rules for naming and investigating any proposed alteration of a place name.

Publishing approved name in the National Geographical Names Gazetteer

- **Field To Finish**

Pilot project has been proofed successful and currently the Department is purchasing the software

- **Bar Coding**

Implementation of the system to monitor the flow of Geomatic informations from the Geodetic Information Center.

- **Hydrography**

Two (2) tide gauges were installed and one(1) will be this year. Activities currently is Data acquisition and compilation of Tidal data from other Agencies.

- **Plan submission**

All submission from Private surveyors which relate to cadastral, topographical survey and mapping has to be in Digital Form.



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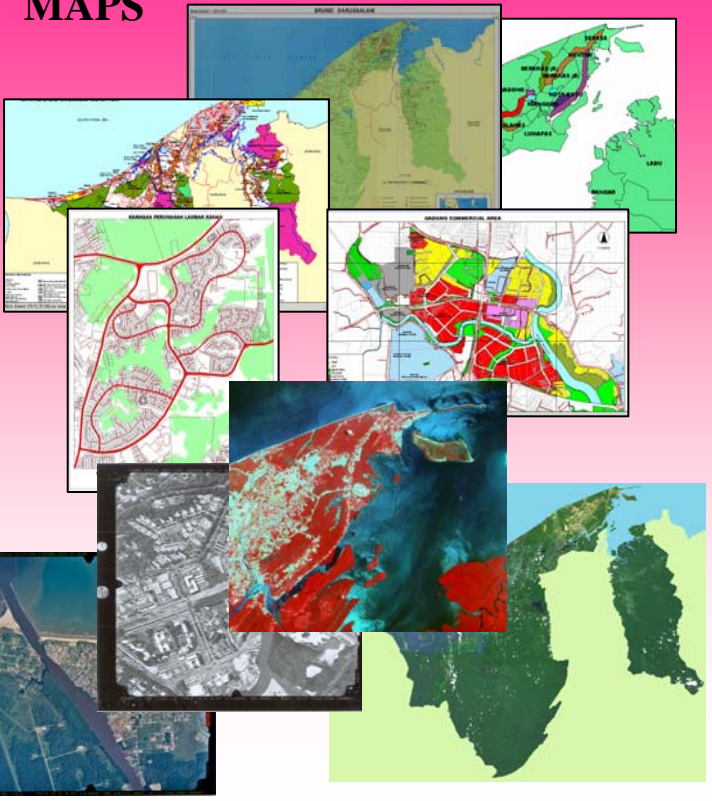
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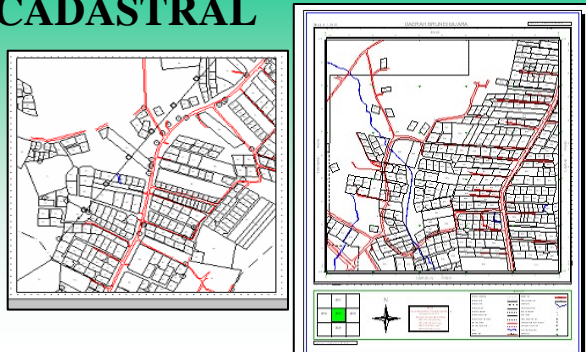
Data Development Progress

Graphic Data

MAPS

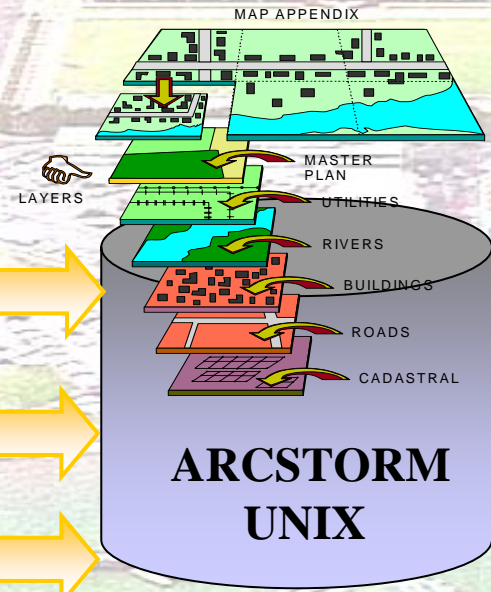


CADASTRAL



DATA DICTIONARY

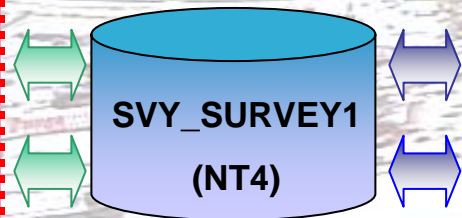
- ANNOTATION
- BOUNDARY
- CADAS
- CTL_PT
- TOL
- GAZETTE
- BUILDING
- CONTOUR
- ELECTRICAL
- HYDRO
- LANDUSE
- MINERAL
- MISCELLANEOUS
- OILGAS
- ROAD
- SEWER
- SOIL
- TELECOM
- TERRAIN
- VEGETATION



Applications

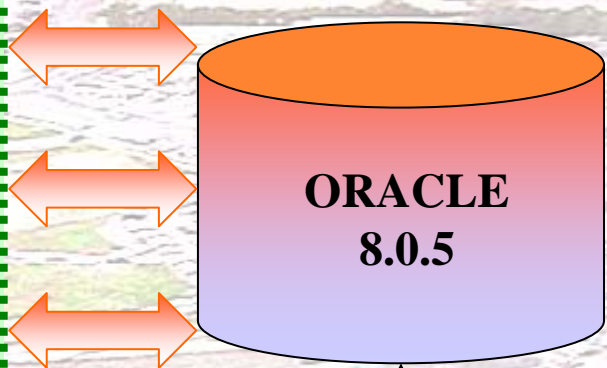
4 FOTRAN SYSTEM

- Cadastral 200
- Cadastral 500
- LEVEL
- GEOPAN



22 ORACLE SYSTEMS

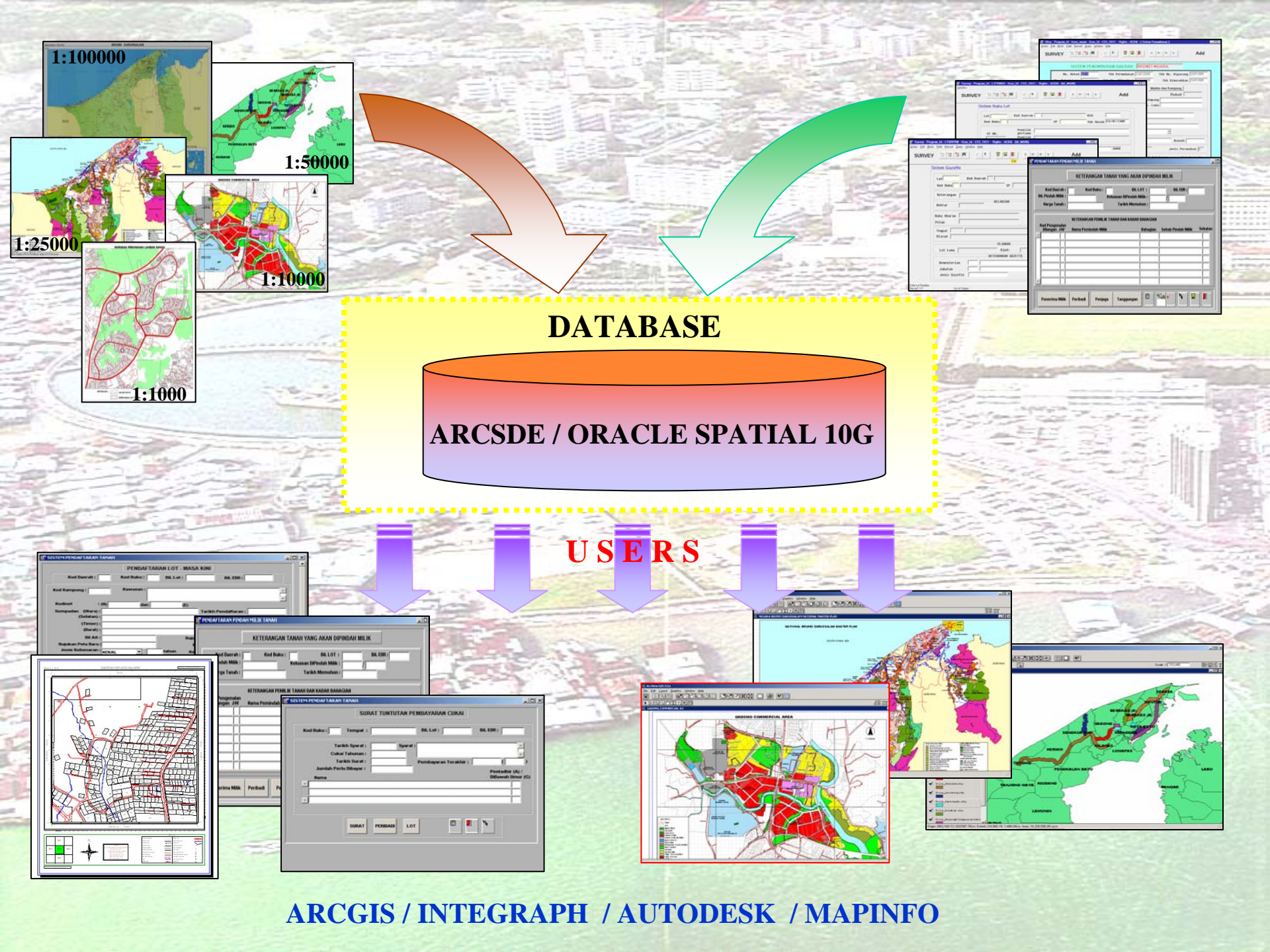
Toponomy	Geodetic
Map Isu	SP Geodetik
House Numbering	NEI
Lot Book	Attendance
TOL	User Admin
Point DB	Error Messages
SPM	Inventory
Convert	Training
JUA Kontrak	Mailing
SD Query	Personal
HOS	TPOR



4 Proposed Systems

- BarCode
- Data Processing
- ICT Hardware
- Aduan

4 Proposed Systems



1:100000

1:15000

1:25000

1:10000

1:1000

DATABASE

ARCSDE / ORACLE SPATIAL 10G

USERS

ARCGIS / INTEGRAPH / AUTODESK / MAPINFO



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Conclusions

- **New Data Center**
- **e-citizen**
- **web enable**
- **National SDI**

Thank you