THE PARCEL INDEX MAP
Cadastral Records and Cadastral Management
at the
Lands and Surveys Division,
Trinidad and Tobago
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Land Conference 2011, UWI St. Augustine
April 28-29, 2011
• The Land Legislative Package of 2000

1. Land Adjudication Act
   Systematic ascertainment of all land rights, interest and titles,
   both Private and State land

2. Registration of Titles to Land Act
   Parcel-based register…one folio for each parcel
   Parcels described by UPRN and PIM

3. Land Tribunal Act
   To hear appeals to adjudication and decisions of the Land Registrar
Benefits

For everyone…

- cheaper, quicker, easier and safer transfer of land
- improved tenure security
- access to land and capital
- land use planning
- environmental management & protection
- equitable taxation / tax policy options
- physical planning / development control
- State land administration and management
Support of the Inter-American Development Bank for

- Geodetic/GPS infrastructure for surveying and mapping 2005
- Creation of Parcel Index Map 2005
- Computerisation of deeds 2000
- Aerial survey and Mapping 1994
DIRECTOR OF SURVEYS

- Maintains an archive of cadastral surveys with a Cadastral index using topographic base map (Ward sheets),
- maintains the national geodetic infrastructure
- checks and approves cadastral surveys for registration of titles under RPO, allocates Survey Orders for State lands
- checks and approves cadastral surveys for leasing State lands,
- Hydrographic Surveys
- maintains topographical maps.
PARCEL INDEX MAP CREATION

- Use cadastral Index sheets
  - Topographic map sheets upon which cadastral surveys have been sketched and labelled with a plan or book reference in the Survey Plan Vault
  - Current sheets have over 150 years of cadastral changes
  - Exist in Naparima map datum at three scales
    - 1:10000
    - 1:2500
    - 1:1250

- Create digitised map sheets and add attribute information
- Seamlessly create 3 layers of cadastral index maps (one for each scale)
- Use of topographic base map and orthophoto 1994
- Conversion to WGS84 map datum in anticipation of use of GPS in the Land Adjudication exercise
Unique Parcel Identification Number (UPIN)

County and Ward definitions from the 1927 Division of Trinidad and Tobago Act

Districts to be geographically defined

Example: County of St. George (1), St. Ann’s Ward (2), District 134, Parcel 111
UPIN 1-2-134-111
Map divisions of Trinidad of cadastral sheets

UTM

Cassini

1:10,000

1:2,500

1:1,250

1:10,000
Map divisions of Trinidad of cadastral sheets

UTM

Cassini

1:10,000
1:2,500
1:1,250
Scanning Cadastral Sheets

- Scanning Cadastral Sheets
- 200 - 400 DPI
Georeferencing Cadastral Sheets

Capturing parcel boundaries and coordinates
Georeferencing Cadastral Sheets

Georeferenced cadastral maps with Road and River data captured from 1994 Aerial survey
Georeferencing Cadastral Sheets

- Scanned Cadastral sheet georeferenced to the 1994 orthophoto mosaic
Georeferencing Survey Plans

Survey plan as part of Deed Registration
Georeferencing Survey Plans

Connection between Parcel Map and Survey Plan
Georeferencing Survey Plans

Connection between Parcel Map and Survey Plan
Georeferencing Survey Plans

Connection between Parcel Map and Survey Plan
Final Product

Parcel Index Map
CMIS – Improving Management, Improving Service

- **Automated workflow for cadastral processes in Division**
  - Log transactions
  - Update digital parcel index map
  - Scan submitted documents (plans and notes, etc.)
  - Quality control Survey Content
  - Linkage to RGD for information of registration of interests (Deeds, RPO)
Improving Data Quality

- Surveyors required to provide
  - Parcel location – IMPERATIVE TO THE UPDATE OF THE INDEX MAP
  - Coordination – GPS, Ground Control, Use of topo data
  - Parcel Address
  - ROAD AND RIVER NAMES (NO ‘ROAD AND RIVER RESERVE’)
  - County, Ward, District
  - Title document reference
  - Survey Plan Cross referencing
Improving Data Quality

- Coordinates of a boundary mark required
  - Qualified by source – GPS, ground control, digital topo data
  - and method (resection, traversing, intersection)
  - Qualified by datum
  - Qualified by error statement

- Must be included on plan submission – a requirement of the CMIS
From Cadastral Index to digital Cadastral Map

- 3 layers of graphic data – Scales 10000, 2500, 1250 – The Index Maps

- The digital Cadastral Map
  - Target Error of +/- 2m
  - Use of 1250 layer for updates of lower order error
  - Use of a 4th layer for surveys that meet error target or better
  - Created in the CMIS
  - WGS84 datum
How do you access this dataset?

- Available at L&S LAN at present
  - Plots, digital copy
  - For sale, leasing
- Is shared through the internet by two means namely http and ftp (not officially launched, still in a quasi-testing stage)
  - http://190.213.4.243/tnt - access to live cmis database
  - ftp://190.213.4.243/books - access to scanned survey plans
Potential for CMIS GeoPortal

- Integration with other datasets
  - Improved development planning
  - Improved revenue earnings (taxation)
    - Assign Assessment no., Value, to parcels
  - Improved efficiency of service
  - Development of several applications – Insurance sector, real estate, Emergency Management, Postal Delivery, National Security
CMIS WEB ACCESS – Next Stage

Web User

CMIS (GeoPortal)

NHA, LSA, DRO, LHA

SLMD

VD

LSD

CSO

TCPD

RGD
Future Developmental Plans

- Development of standards for DATA SHARING, DATA ACCESS
- DATA PRICING POLICIES
- Use of GPS CORS sites
- Updating topographic base map – proposed 2012?
- Linking scans to Parcel Index Map
The Challenges

- Dwindling human resource
  - Surveyors – 16/46
  - Draftsmen – 11/66
  - Topographers – 1/4
- Lack of in-house personnel
  - for working on updating the Parcel Index Map through the CMIS – 7 contracted draftsmen
  - IT specialists
- Insufficient financial resource
  - Upgrade of hardware and software
  - Update of topographic mapping base
  - Improvements of the Information System
- Spatial Data Infrastructure Policy
- Slow buy in from staff
The Solutions

- Commitment of external organizations to LSD for provision of Cadastral and Topographic base data – for access to funding from Central Gov’t for continual data update
- Structural Reorganization
- Outsourcing for both staff and services in the short term
Thank You