

Abuja Geographic Information Systems (AGIS) As A Tool For Good Governance in Nigeria

Anthony A. Adeoye and Anthony Mensah
AAC Consulting
Lagos
Nigeria

INTRODUCTION

- Abuja (FCT) covers a total land area approximately 7,315 sq. km.
- This makes it more than twice the area of Lagos State.
- As at now, the Federal Capital City (FCC) is planned to cover an area of about 250 km sq, while the rest of the Territory of the city region covers about 7,065 sq kms.

- Land Administration in Abuja includes processes of land registration, cadastre, valuation and land inventory.
- Traditional approaches to land administration result in design and implementation projects that take a long time.
- However, the introduction of innovative technology such as GIS has been playing a leading role.

- The Abuja Geographic Information Systems offers a very challenging and unique opportunity to reverse the unused and untapped opportunities in Nigeria
- This paper will look into the scientific and operational approaches adopted in the development of the Abuja Geographic Information Systems.

WHY AGIS

- Manual record-keeping has been in use by Land related Departments of the Ministry of the Federal Capital Territory (MFCT)
- and the Federal Capital Development Authority (FCDA) since the inception of the Federal Capital Territory almost 30 years ago

- Several unsuccessful attempts were made in the past to solve the problems.
- The primary reason that has hindered the computerization of the Cadastral and Land Registry records in the past is lack of a strong political will on the part of the authority

EVOLUTION OF AGIS

- The President of the Federal Republic of Nigeria shortly after assuming office in 1999, directed for the computerization of all Land Operations at the Federal Level.

- Following the President Order for the computerisation of all Federal Government Lands Records which should include and not limited to the following:
- The accurate compilation of personal data of applicants for Land
- Storage and retrieval of cadastral information on Layouts

AGIS Mission

To provide a comprehensive, all-inclusive, foolproof and state-of-the-art computerized geospatial data infrastructure for the Federal Capital Territory Abuja Nigeria.

CANCERY Chancery Diplomatic Residential	RECREATIONAL Recreational	AGRICULTURAL
RESIDENTIAL Residential Staff Quarter Housing Estate Life Camp	EDUCATIONAL Educational School University Nursery	COMMERCIAL Commercial Petrol Filling Station Transportation Hotel Guest House Club Motel Restaurant Cinema Shopping Banking Office Workshop Hospital Motor Park Multi-Purpose WareHouse
INDUSTRIAL Industrial Light Industry Heavy Industry Factory	INSTITUTIONAL Institutional Government Inst. Offices Police Fire Station Military Site Parastatal Religious	

AGIS – Record of Interests

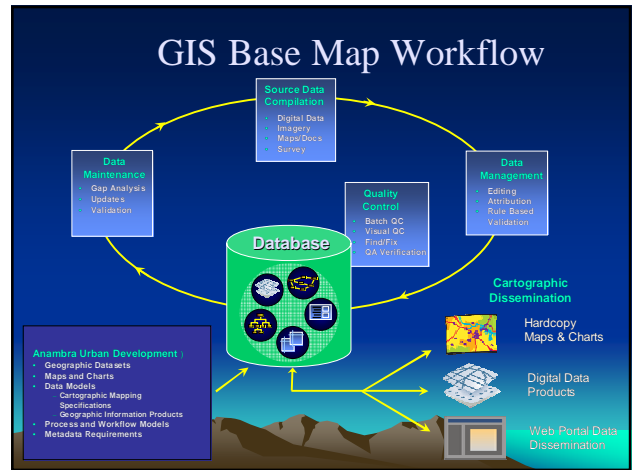
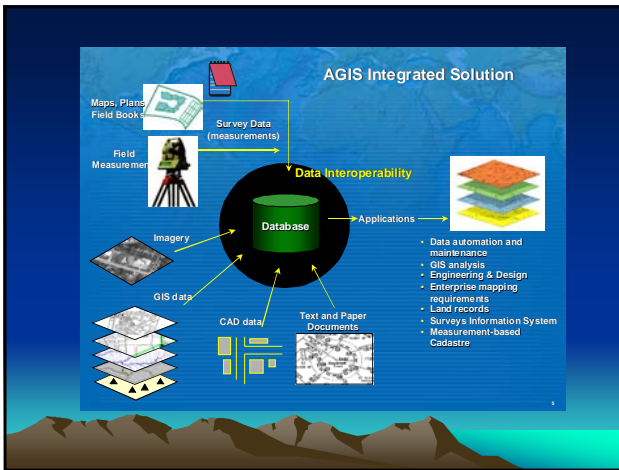
- Survey data
- Ownership (title)
- Assessment (for tax)
- Land Use (zoning)
- Lease
- Land Claims
- Resource Rights
- Rights-of-Way
- Environmental rights



...Built on a GIS

Security and Control of access to confidential land information management data such as

- Acquisitions,
- Assessments,
- Allocations
- Valuations,
- Consents,
- Assignments and
- Registration of land related matters.



COMPONENTS OF AGIS

The AGIS has two components:

- Geographic Information Systems (GIS) and
- Land Information Systems (LIS).

THE AGIS PROGRAMME

The land administration programme includes:

- Faster updating and presentation of data (Spatial & Non-spatial)
- Planning of revenue generation.
- Land acquisition and development.
- Development of existing and planning of new structures.
- Allocation of land for different uses like residential, commercial, industrial, etc.
- Generating of reports for higher officials / management with adequate maps.
- Generating a component for NSDI.

The implementation of the AGIS for land administration in Abuja can be considered under the two major approaches:

- **the scientific approach**
- **the operational approach.**

Scientific Approach

These include:

- concepts
- methodology
- models

Concepts

The overall goal of this project was to design a GIS to facilitate the land administration process such as:

■ Land Valuation

- Determining values, objectives and the legal framework in relation to management of land as a legal, economic, and physical object.
- Basis for building sound land administration infrastructures.

■ Cadastral Systems

- Identification of land parcels and securing land rights
- Facilitate land registration, land valuation, and land-use control
- Underpin sound Land Administration

■ Land Administration Systems

- Administration of land tenure, land value, land-use, and land development
- Facilitate efficient land markets and effective land-use management
- Underpin sound Land Management

■ Land Management

- Management of processes by which land resources are put into good effect.
- Facilitates economic, social, environmental sustainability
- Underpins and implements sound Land Policies

Methodology

For the development of the AGIS, the basic GIS development life cycles adopted are:

- awareness,
- feasibility,
- design,
- development, and
- production.

Awareness

- The awareness process begins with research into the availability of technology in the area of hardware and software.

Feasibility

- The aim of this stage is to establish current map usage and to determine user requirements for digital mapping systems and database design.

This phase exposed:

- What maps are being held and for what purpose
- Frequency of access and time to locate maps
- What kind of information is shown on the maps and how they are depicted

- What changes are made to the maps and at what frequency; how, why and where copies are taken, including volume, material used and sizes; time taken to produce copies; cost of map use

- Where are maps received from and sent to, and
- What map scales are available

■ Design

- The aim of this stage was to produce a detailed and rigorous specification of system requirements and to provide sufficient detail for the logical design of the GIS system.

Development

- The aim of this stage was to provide in detail the question of how the GIS system was to be implemented both
- in terms of the technical environment in which it was to be operated, and
- the development approach used to build it.

Models

- AGIS technology utilizes two basic types of data, namely;
- **Spatial data:** These are described as the absolute and relative location of geographic features.
- **Attribute data:** describes characteristics of the spatial features. Attribute data is often referred to as tabular data.

■ Spatial Data Models

- The AGIS spatial data has been stored and presented in the form of a map. Three basic types of spatial data models have evolved for storing geographic data digitally are:
- Vector
- Raster
- Image

■ Tabular Model

- The simple tabular model stores attribute data as sequential data files with fixed formats (or comma delimited for ASCII data), for the location of attribute values in a predefined record structure

Operational Approaches

- management
- e-governance
- operations

Management

- GIS Management strategies are broad categories of action that are identified for the successful management of the AGIS in order to accomplish the desired objectives. They include:
 - Hardware
 - Software
 - Network
 - Database
 - Personnel

e-governance

- e-Governance is about change of mindset: doing things differently and effectively - and with results

Operations

- Simply put "governance" means:
 - the process of decision-making and the process by which decisions are implemented (or not implemented).

GAINS OF THE AGIS EXERCISE

- Conversion of Analogue Land Data into Digital
- AGIS Products And Services Delivery
- Provision of Accurate and Timely Information
- Abuja Technology Village (ATV)

- Apart from the establishment of AGIS, other gains of the Computerization exercise includes the capturing of over 105,701 application for statutory Right of Occupancy from individuals and organisations.
- The Ministry had granted over 21,420 Certificates of Occupancy as at April 2004 and all are captured into the new System.
- Out of these 21,420 grants, 15,000 were processed and issued Title Deed Plans (TDPs)
- All the TDPs were scanned and over 70,000 Property beacons (PB) coordinates were calculated from the survey data and the TDPs.
- From the above over 11,000 plots were determined and digitised covering the Federal Capital City (FCC) Phases I and II.
- all the existing 87 Register books and 22 Access databases from the Land Department have been harmonized into the new system.
- Detailed information from available files for approvals of building Plans have been keyed into the system.

AGIS SPATIAL DATA INFRASTRUCTURE

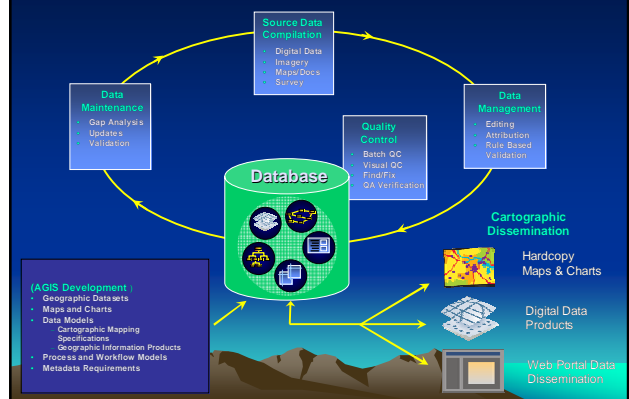
■ Cadastral Core Data

- Cadastral core data is a minimum set of attributes about land parcels that is used for publication and distribution of cadastral information by cadastral data producers

■ Street Address Core Data

- The core set of identification data that describes a facility and the place where it exists will include general identification data and a minimum of two types of locational data (i.e., descriptive information and spatial coordinates).

CHALLENGES OF AGIS WORKFLOW



The challenges facing the AGIS include:

- Capture and maintenance of datasets e.g. street addresses, cadastre, informal settlements and new satellite imagery.
- AGIS Resource management.
- Spatial information awareness for strategic decision-making.
- Managing change in terms of organizational strategies, business processes and integration of systems.



Spatial Data Infrastructure (SDI) Can Help

Improving

- Efficiency
- Communication / Collaboration
- Management
- Decision Making

Creating Better Knowledge
...Better Understanding

Measurement

Databases

Applications

Systems / Services

... Becoming Critical Infrastructure

- Staying informed of the external environment regarding standards, technological developments and international events.
- Cost recovery and customer orientation
- e- conveyancing
- Resistance to change of tradition
- Resistance from those who get facilitation fees for finding deeds
- Fear of Employees losing their jobs
- Dependent on "Local GIS Expert"

RECOMMENDATIONS

- Develop self-assessment procedures to identify institutional capacity needs
- Use of GIS Software with wider and global coverage
- Use of AGIS as one the principles of good governance

Interoperability GIS Software

Geographic Information Software

Web Services

Services

Applications

Tools

Data

- Server Centric
- Portals
- Networked
- Many Clients
- Internet Based
- Loosely Coupled

... Is Evolving

AGIS Is Expanding . . .

- Expanding Needs
- More Awareness
- New Applications & Solutions
- **Improving Tools And Enabling Technology**
- Increased Interest In Enterprise GIS & NSDI
- Organizations Are Working Together

- Promote the understanding of land management as a highly interdisciplinary paradigm
- Promote the need for an interdisciplinary approach to surveying education
- Establish strong professional bodies

CONCLUSION

- The establishment of AGIS implies the creation of a stronger, broader, safer and more sophisticated **Land Data Archives**.

THANK YOU VERY

MUCH FOR
LISTENING

