

Computerised Land Management Systems as a tool for Good Governance

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SUMMARY

Land is at the basis of all societies; in appropriate land policies can constitute a serious constraint on economic and societal development. Sound land policy regulates the access to land and the management of land, and as such is considered an important factor in the realisation of government policy objectives pertaining to, for example, economic growth, food security poverty reduction and housing.

Every country in the world now pursues the activities of Land reform in one form or another. Developing countries particularly, Nigeria is challenged by the poor land management and administration, and aim at enhancing these services in the provision of relevant land information as support to good governance. Experience has shown that Good governance and sustainable development are not attainable without sound land management or – more broadly – sound land management.

Land Management includes processes of land registration, cadastre, valuation and land inventory. Traditional approaches to land management result in design and implementation of land related projects that take a long time. To this end, the immediate Past President of the Federal Republic of Nigeria shortly after assuming office in 1999, directed the computerization of all Land Operations at the Federal Level. The decision of the Mr. Past President was informed by: Society's changing priorities, Globalization and Information technology revolution. Considering the successes recorded by the past administration in Computerization of land records the present Administration has also shown the need for continuity in the computerization of land records.

This paper will examine in details the Computerized Land Management Systems as part of the Land reform policy in Nigeria which is one of the **7 Points Agenda of President Umaru Musa Yar'adua – The Servant Leader** as a **Tool** for Good Governance.

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1. INTRODUCTION

Manual record keeping has been in use by Land related Departments of the various Federal and State Ministry of Lands. The Land records in these Ministries have been expanding rapidly beyond projections. With this rapid expansion, manual record-keeping is becoming inefficient, time-consuming and prone to abuses. Several unsuccessful attempts were made in the past by various Federal and State Ministry of Lands to solve the problems. The attempt failed because of the gross under estimation of the gravity of the problems, the ill-defined scope of the project and lack of a strong political will on the part of the authority.

The United Nations Millennium declaration addressed the issues of values and principles, peace, security and disarmament, development and poverty eradication, protection of our common environment, human rights, democracy and good governance so as to bring about economic emancipation and growth for all sectors of the economy. Therefore, immediate Past 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. The decision of the Mr. Past President was informed by: Society's changing priorities, Globalization and Information technology revolution.

1.1 7 Points Agenda of President Umaru Musa Yar'adua – The Servant Leader

1. Power and Energy: Adequate power supply to facilitate industrialization
2. Food Security: Agriculture and water resources to ensure adequate food supply for local consumption and export
3. Wealth Creation: Diversification of revenue base and increased production to provide jobs
4. Transport Sector: Development of rail, road, air and water transportation to facilitate movement of persons, goods and services
5. Land Reforms: Review of existing land laws to ensure equitable use of the nation's land assets for socio-economic development
6. Security: Adequate attention to the provision of security of lives and property
7. Education: Reform of the education sector to improve skills and enhance standards.

The actualisation of all the 7-point Agenda, will definitely result in Good Governance. This is because Good Governance refers to the manner in which power is exercised by governments in managing a country's social, economic, and spatial resources. It simply means: the process of decision-making and the process by which decisions are implemented. This indicates that government is just one of the actors in governance. The concept of governance includes formal as well as informal actors involved in decision-making and implementation of

decisions made, and the formal and informal structures that have been set in place to arrive at and implement the decision.

Good governance is a qualitative term which may be difficult to achieve. The term includes a number of characteristics e.g. as identified in the UN-Habitat Global Campaign on Urban Governance. The characteristics or norms are as follows (adapted from UN-Habitat, 2002):

- **Sustainability:** Balancing social, economic and environmental needs while being responsive to the present and future needs of the society.
- **Subsidiarity:** Allocation of authority at the closest appropriate level consistent with efficient and cost-effective services
- **Equity of access:** Everybody especially Women must participate as equals in all decision making, priority setting, and resource allocation processes
- **Efficiency:** Public services and local economic development must be financially sound and cost-effective.
- **Transparency and Accountability:** Decisions taken and their enforcement follows rules and regulations. Information must be freely available and directly accessible.
- **Civic Engagement and Citizenship:** Citizens must be empowered to participate effectively in decision-making processes.
- **Security:** All stakeholders must strive for prevention of crime and disasters. Security also implies freedom from persecution, forced evictions and provision of land tenure security.

Experience has shown that Good governance and sustainable development are not attainable without sound land administration or – more broadly – sound land management.

2. WHAT IS GIS?

The term GIS can be defined as follows:

“The technology that deals with the acquisition, storage, processing, presentation and dissemination of spatial information”

“Configuration of hardware, software, communication networks and analytical procedures for the extraction of information from data to support decision-making so as to achieve planning or managerial objectives”.

“Computer-based systems tool for capturing, manipulating and displaying geographic and land related data in the computer with specialised software”.

2.1 Why GIS in Land Records

2.1.1 Increase in the Amount of Land Documentation Growth

As the land department activities expand and the volume of work increases, the amount of land documentation grows at an enormous rate and this become major land archive problems.

This growth, therefore sometimes force land departments to either dispose of documents not considered essential or increase the storage areas used for the filing of these documents. To alleviate these land archive problems, many land departments began using microfiche and microfilm technologies as well as establishing complex manual procedures to support organisational demands.

2.1.2 Global Challenges

The main global drivers for change in GIS can be identified as technology development, micro-economic reform, globalization, and sustainable development.

2.1.3 Technology Development

The technological development in the Information Technology is the major driving force in changing the face of the Digital information world. The scanning technologies for electronic land document management have revolutionized the traditional paper based land document management. The database technologies for storage of large land document and the scanning technologies for data management, analysis and manipulation arguably have had the greatest impact on the digital land archive information environment. In recent times, the communication technologies such as the WWW and the Internet have become the focus of attention for viewing and using digital land records.

2.1.4 Micro-economic Reform

The micro-economic reform initiatives represents' the institutional and governmental side of the changes observed during the latest two decades. This includes initiatives such as privatization, decentralization, downsizing, cost recovery, performance contracts, quality assurance, public/private partnership, and other policies to ensure service delivery and cost effectiveness. These initiatives have changed the focus from the pure technological issues to include also the more managerial components of building and maintaining national digital land data infrastructure.

2.1.5 Globalisation

A globalised world is one in which political, economic, cultural, and social events become more interconnected. The process includes that events in one part of the world increasingly have potential to impact on people and societies in other parts of the world. Globalisation widens the perspectives from the local to the global level. This should lead to a world movement towards improving the quality of lives of people by thinking and working together on common concerns. Globalisation has a social, economic, political, as well as an educational dimension. The www is the most graphic example of this trend, even if the full potential of the web as an educational resource is still to be seen.

2.1.6 E- Government Reforms

The last decade has seen moves towards establishment of fully digital land record systems throughout the world. It is recognized that digital land record systems are the key components of more global electronic document management systems. Digital land record systems thus must serve a multi-purpose use and thereby meet the challenge of a modern E-Government and IT environment. New communication technologies and the WWW have a dramatic effect on the evolving digital land record information marketplace.

2.1.7 Capacity Building

The Capacity Building Challenge is about establishing

- Sustainable Lands Departmental Records Management
- Sustainable Lands Departmental Records Management infrastructure
 - Sustainable human resources and skills

The new paradigm for Capacity Building in Digital Lands Records System offers a wide range of principles and options such as:

- Allowing land documents and records to be retrieved on demand.
- Storing digital land images on acceptable media.
- Possessing reasonable land document controls to ensure integrity, accuracy and reliability.

3. GIS INFRASTRUCTURE FOR LAND ADMINISTRATION

The GIS Infrastructure for land administration includes but not limited to the following;

- Satellite Imagery
- GIS Hardware and Software
- Conversion of Analogue Land records into Digital Formats
- Institutional Development and Capacity Building

3.1 Satellite Imagery

Satellite Imagery is a space technology for gathering, manipulating and displaying Geographic and Land Information Systems (GIS/LIS). Satellite images can be low resolution or high-resolution images. Landsat and NigeriaSAT-1 are examples of low-resolution images.

- LANDSAT

The Landsat Project began in the early 1970s. Since then, many different satellites have been sent into orbit. These satellites have taken various data and information from the planet Earth.

While most of the satellites are not in operation now, Landsat 5 and Landsat 7 are still working around the clock to archive Earth's rapidly changing landscape.

- NigeriaSAT1

NigeriaSat-1 was launched in 2003. It's an earth observation satellite that has a 32-meter resolution imager in 3 spectral bands. NigeriaSat-1 is a relatively ordinary micro satellite, weighing less than 100 kilograms.

Low resolution images are not good for Land administration because of their inability to show clearly every feature on the land.

DigitalGlobe/Quickbird, IKONOS and SPOT are examples of high-resolution images.

- Quickbird

QuickBird was launched in October 2001. The QuickBird 61-centimeter imaging system returns high-resolution, commercial Earth imagery from space. The system collects 61-centimeter class panchromatic and 2.5-meter multispectral stereoscopic data over a large field of regard with rapid target selection. The data from the satellite is useful for mapping, agricultural and urban planning, weather research and military surveillance.

- SPOT

The SPOT (Système Pour l'observation de la Terre) program began in France in 1978 and SPOT was launched in early 1986. Spot Image offers users products and services from optical and radar observation satellites to meet user needs for geographic information in many fields: cartography, defence, agriculture, identifying cadastral parcels, urban planning, telecommunications, the environment, disaster management and mitigation and renewable resources.

- IKONOS

IKONOS is the world's first commercial high-resolution imaging satellite. It is capable of providing one-meter resolution images of virtually any place on Earth. One-meter resolution means that objects as small as one meter squared on the ground can be recognized.

The High-resolution images are good for Land administration because of their abilities to show clearly every feature on land. **Quick bird is highly recommended because land parcels can be identified clearly.**

3.2 GIS Hardware and Software

An operational GIS for Land Administration has a series of components that combine to make the system work. These components are critical to a successful GIS and these components are:

- hardware,
- software,
- data,
- people,
- methods.



Hardware

Hardware is the computer system on which a GIS operates. Today, GIS software runs on a wide range of hardware types, from centralized computer servers to desktop computers used in stand-alone or networked configurations.

Software

GIS software provides the functions and tools needed to store, analyze, and display geographic information.

Data

Perhaps the most important component of a GIS is the data. Geographic data and related tabular data can be collected in-house, compiled to custom specifications and requirements, or occasionally purchased from a commercial data provider. A GIS can integrate spatial data with other existing data resources, often stored in a corporate DBMS.

People

GIS technology is of limited value without the people who manage the system and develop plans for applying it to real world problems. GIS users range from technical specialists who design and maintain the system to those who use it to help them perform their everyday work. The identification of *GIS specialists* versus *end users* is often critical to the proper implementation of GIS technology.

Methods

A successful GIS operates according to a well-designed implementation plan and business rules, which are the models and operating practices unique to each organization.

3.3 Conversion of Analogue Land records into Digital Formats

GIS as a tool for Land Administration will therefore require infrastructure capable of data storage, information management, quick and easy data access, as well as retrieval of land data and updated reports. Therefore the overall goal of GIS in Land Administration is to be able to design a GIS, which will 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

Lands Department have enormous land related records which comprises of large volume of records which consist mainly of:

- Compilation of personal data of applicants for Land
- Storage and retrieval of cadastral information on Layouts;
- Security and control of access to confidential land information management data, such as acquisition, assessments, allocations, valuations, consents, assignments and
- Registration of land related matters.

To put these lands records into GIS format will require;

Digitisation/Scanning of the land related records

Creation of land database

Provide software facilities for Compilation of personal data of applicants for Land

Designing of a robust management information system for analysing land records

3.4 Institutional Development and Capacity Building

The introduction of GIS in Land Administration requires Institutional Development and Capacity Building, which will lead to the ultimate goals of skill transfer. The capacity building programmes should be in three categories: Managers (Professionals), Supervisors (Technologists) and Operators (Technicians) with the aim of systematically improving the technical and operational management of land records. Therefore, the training programmes for the three categories would have the following objectives:

- i. To provide overall appreciation of the training, thus increasing the level of awareness hence increased co-operation and assistance on GIS in land administration.
- ii. To teach basic skills in GIS Equipment, Facilities and Materials.
- iii. To instil confidence and broaden the perception of land officers on the use of the GIS Equipment, Facilities and Materials

4. SUCCESS STORIES OF GIS IN LAND ADMINISTRATION

4.1 Abuja Geographic Information Systems (AGIS)

AGIS is the computerisation of the Land records in The Ministry of the Federal Capital Territory (MFCT).

One of the thrust of the AGIS is to promote good governance, having identified by the Government that bad governance is one of the root causes of all evil within our societies. The concept of "governance" is not new. It is as old as human civilization. Simply put "governance" means: **the process of decision-making and the process by which decisions are implemented (or not implemented)**. Governance can be used in several contexts such as corporate governance, international governance, national governance and local governance.

Since governance is the process of decision-making and the process by which decisions are implemented, therefore, the AGIS focuses on the formal and informal actors in land administration processes which involve decision-making and implementing the decisions made and the formal and informal structures that have been set in place to arrive at and implement the decision.

Consequently, AGIS as a tool for Good governance has 8 major characteristics. It is participatory, consensus oriented, accountable, transparent, responsive, effective and efficient, equitable and inclusive and follows the rule of law. It assures that corruption is minimized,

the views of minorities are taken into account and that the voices of the most vulnerable in society are heard in decision-making. It is also responsive to the present and future needs of society.

The purpose of Abuja Geographic Information Systems Project is to develop a comprehensive land policy for Nigeria in a systematic way and to reduce poverty and enhance economic and social growth by improving security of tenure, simplifying the process of acquiring land by the public, developing land market and fostering prudent land management by establishing efficient system of land administration.

The AGIS contain land information such as records of allocation, (name of allottees, plot numbers, plot sizes, uses and locations). It also includes records of all transactions such as power of attorney, deed of assignment, Mortgages, Subleases, Releases, devolution, etc. The mission of the project is to provide a comprehensive, all-inclusive, full proof and state-of-the-art computerized geospatial data infrastructure for the Federal Capital Territory Abuja Nigeria.

The introduction of Abuja Geographic Information System has brought about adequate and effective control of the allocation and use of land in Abuja.

4.2 Federal Land Information Systems (FELIS)

FELIS is the computerisation of the Land Records in the Federal Ministry of Housing and Urban Development using GIS. The FELIS offers valuable improvements to land/property registration in Abuja and the following benefits are now being enjoyed:

1. Speed of response increased
2. Improvement in Land Security
3. Reduction in the falsification of land documents
4. Physical reorganization/repair of land documents
5. Permits more secure property registration
6. Rationalization of Land Administration processes
7. Contribution to the infrastructure improvement
8. Increased revenues
9. Ability to have substantial projected income generation and the cash flow related to land properties.
10. FELIS provides a first class tool for advanced planning and management of lands
11. In general, the implementation of FELIS has boosted the country's economy.

5. CHALLENGES OF GIS IN LAND ADMINISTRATION

Geographic Information Systems in Land Administration will help to promote economic and social development in Nigeria. This is because GIS has advanced from a “nice-to-have” to a **necessity** in the management of land records.

However, the challenges of GIS in land administration includes but not limited to:

- Capture and maintenance of datasets
- Land Information Resource management.
- GIS awareness for decision-making.
- Managing change in terms of organizational strategies, business processes and integration of GIS systems in land administration.
- Staying informed of the external environment regarding standards, technological developments and international events concerning land information management.
- Cost recovery and land orientation
- • Resistance to change of tradition
 - o • Resistance from those who get facilitation fees for finding deeds
- • Fear of Employees losing their jobs.
- Dependent on “Local GIS Expert”

6. CONCLUSION

There is an increasing awareness of the use of GIS in land administration. The use of GIS in land administration system has considerable potential to support society’s evolving humankind/land relationship by providing information for decision makers that will enable them to make decisions favorable to sustainable development in the context of land administration and management. GIS is a valuable tool and powerful decision support system for the Computerisation of Land records for the following reasons:

- Effective land administration
- Efficient resource allocation for land administration
- Sustainable land development and planning
- Improved physical storage facilities for land related matters
- Automation of indexes to provide quicker document retrieval
- Computerisation of title documents to provide quicker access to land information

The use of GIS in land administration will bring about the creation of a stronger, broader, safer and more sophisticated **Land Data Archives**.

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