EDOGIS COMES ON-LINE

An Evaluation

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Preface

This paper intends to provide a fair, unbiased evaluation of the establishment and implementation of the Edo State Geographic Information Service (EDOGIS), a new land administration agency in Edo State, Nigeria. It will report apparent successes, failures, challenges and lessons learned. For the purpose of full disclosure, it must be stated that the author is an employee of the private company contracted to deliver the agency and is the project manager of EDOGIS.

Introduction: Land Administration in Edo State Needs an Overhaul

In September of 2017 a contract was signed, putting an ambitious endeavour into motion: to close a less than entirely effective land ministry and to open in its place, a fully-digital, fully automated land administration agency. The Ministry of Lands and Surveys in Edo State Nigeria had been in operation since before Nigerian independence, although under various renditions of state and territorial governments.

The state had stored information on 52,000 land parcels, yet over the span of over fifty years, due to continually dwindling funding and lack of re-investment in human and physical resources, the ministry had only issued less than 5,000 land titles. Despite a complete land title delivery process, the rate of citizen buy-in remained stunted. The land parcel cadastre was cast on decaying paper maps which had not been updated since the first printing in 1969. Irregular, off the books land transactions were known to be common, and the state's ability to enforce urban and regional planning regulations and norms remained small, resulting in a downward spiral of low output, low revenue, low funding and low service. From this environment an external solution was sought.

Solution: Private GIS/LIS/LAS Company Contracted for EDOGIS

The state contracted with a private company that specializes in establishing land agencies in West Africa. The company, GIS/Transport, was known for building self-sustaining Land and

Geographic Information systems in the service of new or overhauled land administration agencies.

The new agency, The Edo State Geographic Information Service, known as EDOGIS, would entirely conform to international best practices, featuring automated land and geographic information systems, and including an environmentally sealed, climate-controlled building for worker well-being and computer hardware ecology. Customer interaction would be constrained to limited points of contact, ensuring transactions with land title applicants were consistent and according to the regulations.

The plan called for the private service provider to design, build, operate and then transfer the agency over a two year period, after which it's expected that the new agency will be self-sustaining.

Planned Features of EDOGIS

Two aspects of the program to be delivered by GIS/Transport were considered to be indispensable for the program: the parcel-based GIS and high resolution orthophoto imagery. These aspects are considered to solve two of the most prevalent problems in land administration from the geospatial aspect: double allocation and geospatial irregularities.

The parcel-based GIS is a proprietary system used by GIS/Transport and contains a portal to a commercial GIS platform. The parcel-based GIS reveals when land parcels for new registration applications are overlaying land previously registered by other occupants, revealing and thus preventing double allocations.

The high-resolution imagery is an orthophoto mosaic captured from a manned aerial platform. The resolution is 10cm in urban areas and 25cm in rural areas. The imagery provides an encyclopaedic backdrop of survey-grade information; displaying positional evidence of land parcels. These physical manifestations of the land parcels; walls, fences, roads, buildings and plantings allow for the placement of survey plans and cadastral maps. As the imagery is

homogenous, consistent to itself, the survey plan and map data becomes a true mosaic of land parcels, eliminating gaps and overlaps caused by inaccurate georeferencing.

EDOGIS Established

It's firmly established that a criterion for a successful land administration initiative is legislative support. For EDOGIS, this keystone was set in place just after the contract was signed; the Edo State Lands Administration and Geographic Information Service Law, 2018. This enabling law shuttered the former Ministry of Lands and Surveys, transferring all land governance activities and all official geographic information and data to the purview of EDOGIS. This includes valuation, the land deeds registry and the state's surveying and mapping apparatus. EDOGIS was granted the exclusive franchise for the issuance of Certificates of Occupancy (C of O's), which are Nigeria's highest form of documentary evidence of land title rights. Further, the law mandated that all land must be registered and that all existing titles must re-certify into the new digital system.

In early 2018, the project accounts were funded, and the work began. A suitable empty government building within the capital city of Benin was selected, set within a somewhat secure government compound less than four kilometres from the city centre. The building was a two-storey rectangular block of concrete, 650 m2 and completely dilapidated and lifeless. This would be the stage on which EDOGIS would come to life.

Work Plan to Open EDOGIS

The building would have to be renovated, which was not part of the original contract. Plans were quickly drawn up to achieve this and bring the program online as soon as practically possible.

The plan became to:

- Fully strip the existing building to the concrete walls and floors
- Wire the building for electricity, VOIP phones and data cables

- Refurbish with screed and plaster walls, tiled floors, plaster ceilings and well-sealed windows
- Improve the untended compound grounds; renovating for a main drive, parking and exterior walks
- Install a 135KVA generator for full-time power and smaller backup generator
- Install furniture and ITC equipment
- Train the staff in the new land and geographic information systems
- Open the doors to the public

The initial schedule was ambitious. From the first work day on March 1st, the target opening date was only five months following. The routine construction delays occurred and the building was made completely operational on August 1st.

The first operational activity undertaken was the establishment of the server and client computer network. As soon as a secure room was available while the renovations were ongoing, the computer was delivered to the site. The computers were obtained from overseas, a file server, a domain server and UPS. The computers to be used throughout EDOGIS were laptops.

The system and hierarchy of permissions are extensive. Care must be taken to safeguard the orthophoto imagery and property information data from tampering.

As GIS/Transport optimized the file server computers and tested ITC functions, a training regimen was begun. With the closing of the former Ministry of Lands and Surveys, there was ample stock of potential staff. However, an early decision of the management team was to mostly fill the ranks with younger, non-tenured government workers, more adept at technology and not habituated to the civil service culture, which is too often steeped in a resigned, bureaucratic fatalism. These younger, more eager workers comprised almost 60% of the staff. Key experienced personnel from the former ministry, who expressed interest in working with EDOGIS accounted for the remaining 40%.

Training on the new system, Merlin, a proprietary LAS/LIS/GIS combination began immediately and ran for five weeks.

A key early activity of re-establishing a land agency is the acquisition of existing records. This operation started as soon as a secure room was completed in which to house the network servers.

While the training was underway, in the background, groups of land files, subdivision layout maps, and deeds register books were carried from the former ministry to a room in EDOGIS designated as the temporary archive while the actual archive building was planned for construction.

On September 17th, 2018 EDOGIS opened its doors to the public, and the customer service department began receiving applications.

Instituting the Process

The new agency is designed to be completely digital and automated, centred on the Merlin LIS / GIS software. Applicants for new C of Os fill out one page forms by hand and the Edo State Governor signs each C of O by hand. Everything in between occurs in the cyber realm. The data keyed-in from the application forms populate fields in subsequent preliminary documents and eventually the C of O. The costs for registering land parcels is calculated from relevant fields from the same data such as land use, coupled with geospatial determinants such as land value areas derived from the placement of the parcel in the GIS.

Another integral component of the system is state-wide orthophoto imagery, 10 cm resolution for the urban areas and 25 cm for rural. The high resolution imagery covering the urban landscape was acquired in early 2018. The imagery for the rest of the state is scheduled for early 2019. The orthophoto provides numerous advantages to land administration. It has an enormous informational payload, providing land use and environmental data for planning, infrastructure engineering and economic valuation. It's comprehensively encyclopaedic; despite being a snapshot in time, most of the roads, buildings and walls captured are durable by any standard, providing an important positional reference for many decades to come. It's also homogenous.

The measurement of various objects found throughout the imagery will be a true match to what exists on the ground. These characteristics ensure that the orthophoto imagery serves as a superb canvas on which the parcel fabric is being drawn.

Another pillar in the EDOGIS process involves constricting the customer interface to a relatively small area. A select cadre of the best staff is employed in the customer service department. It is widely held that in the past, the former land ministry was afflicted by officials dealing with potential title-holders personally, walking their applications through, getting approvals without the required checks and vetting, all provided for under the table charges. This challenge is overcome at EDOGIS in two ways: by entirely restricting customer interaction to designated customer service officers, who take applications from the customers from across non-access counters, and by restricting the remaining staff and most importantly, the land files to the back office. In effect, an air-lock is created, in which the land files and payments from the land title applicants overlap only in the small, behind the counter customer service area, which is open and highly visible.

The implementation strategy for EDOGIS called for setting the cost for obtaining a C of O significantly lower than historic rates, thereby enticing large scale uptake of registration. The base price to register land in Edo State is N50,000, or approximately $135. There are multipliers for land value areas, but these are set low. Most residential properties will register with charges less than N80,000, or about $220. For low income areas, the cost is set even lower than the base price.

In all aspects, the EDOGIS system seeks to instil international best practices for land governance; transparent, equitable and low cost. It’s expected that additional benefits will accrue: internally generated revenue, stimulation of the land market and a restoration of the norms of master planning, development control and land administration.

An Evaluation at One Year Since Inception

This paper will provide an evaluation of GIS/Transport's implementation of the EDOGIS system at one year since program inception. The new agency's outputs will be quantified, but most importantly, the program's conceptual successes and shortcomings will be enumerated, and an examination will be presented of factors that likely contributed to either outcome.

At the Time of This Writing

Offer Letters Printed – 455
C of Os Printed – 254
C of Os Sent – 184 (and another 70 about to go)
C of Os Signed and Returned – 92
C of Os Collected – 18

Most land governance programs involve the emplacement of IT and geospatial systems and they include the training of local land agency staff to operate the systems. This is certainly necessary; however, it falls far short of what is required to successfully birth an effective land knowledge system. In the author's view, the greatest failing of providing guidance for good land administration is that of not appreciating the level of commitment needed to launch a government apparatus capable of handling property registration for a governmental jurisdiction, usually a state. The time commitment necessary is measured not in months, but in years. A GIS technician can be trained to a productive level in a matter of months or even weeks. But this level of time commitment will never yield professionals, rather only technicians.

Conclusion

Land administration doesn't garner much attention from the modern, professional world, other than from within its own sphere. Understandably, it is often taken for granted, and most of society is content to let is content to allow it to conduct its own affairs. However, when one begins to open the bonnet and inspect the parts and pieces that constitute the engine, one quickly

sees that it is highly complex. Most importantly, it is composed of disparate pieces that are required to be in place for its successful operation. The

Following are a brief encapsulation of the necessary constituent parts:

- A secure, environmentally sealed, energized, air conditioned healthy office environment. The work is endless, the hours are long. If the physical needs of workers is ignored, the work will drop to a slow pace.
- An ICT system, including data, VOIP, security camera and fire alarm cabling. A panopticon security camera system will not only protect against theft and damage but will also assist with worker discipline.
- A GIS/LIS system, parcel based, affording current ownership, location, boundaries, tax payment status and history.
- High resolution orthophoto imagery, allowing for matching land parcel polygons to the photo-identifiable evidence of ownership such as compound walls and fences.
- Departmental organization and reporting structures, including documented messaging, GPS tracking in project vehicles, and weekly progress reports.

This paper has offered an examination of the re-establishment of a new land agency in Edo State Nigeria. As such, it presents an assortment of aspects and issues and challenges that one might expect to be present when delivering a land administration development intervention project in West Africa. It is not an exhaustive list, neither does it purport to plumb the full depths of any item presented. However, as a summary of many of the salient issues encountered and measures taken to remedy problems, it is hoped that it may offer some an account of some value.

It does seek to offer a summary of advocate the application of critical thought and logic to land governance implementations. This application is demanded by the abundance of variables and challenges that are present in the West African developmental aid environment.

In the final analysis, it must be seen that small details in equipment and methods used can lead to vast differences in outcomes in terms of data quality and time and labour efficiency.

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