

APPLICATION OF GEOGRAPHIC INFORMATION SYSTEM (GIS) IN TENEMENT RATES COLLECTION

By

Felix IYIOLA

Ekpo EFFIONG

Mohammed Bello ABUBAKAR



INTRODUCTION

Revenue generation by local govt. in Nigeria comes from:

- Tax and statutory allocation from Federal and State Govt.
- Local rates on markets and shops
- Permits and fines charged by local courts
- Tenement rates and naming of streets
- Signboard and advertisement permit fees
- Birth and death registration fees
- Wrong parking fees and motor park fees
- Marriage registration fees and road closure levies

INTRODUCTION

- Local Government Area councils have many departments which perform these functions.
- GIS allows users to view, understand, interpret and visualize data in many ways to reveal relationship, patterns and trends in the forms of maps, reports and charts. GIS is very useful and applicable in Local Government administration, most especially in tenement rate collection.

STATEMENT OF PROBLEM

- The present system of tenement rate administration in the country is based on manual method which is inefficient, time-consuming and prone to error and abuse.
- The manual method adopted by our administrators is due to lack of awareness of benefits offered by GIS in tenement rate administration and their refusal to apply GIS for various reasons.

- **AIM:** To apply GIS for the effective collection of tenement rates at Local Government level.

OBJECTIVES

- Database design
- Geometric and attribute data acquisition
- Database creation
- Spatial analyses
- Analysis of Results

STUDY AREA

A part of Busari Olarinre Scheme in Atiba Local Government Area, Oyo State, Nigeria. The site is along Oyo – Ogbomosho road in Oyo town



METHODOLOGY

- DATABASE DESIGN

- i. Conceptual Design: Vector Data Model was adopted

- ii. Logical Design: Relational data model adopted

Parcel Table (P_ID, O_Name, P_Use, P_Status, P_Per, P_Area,
P_Value, T_Rate)

- DATA ACQUISITION

- Dataset Used: Layout Plan collected in softcopy from the Local Govt.
Survey Unit

HARDWARE AND SOFTWARE USED

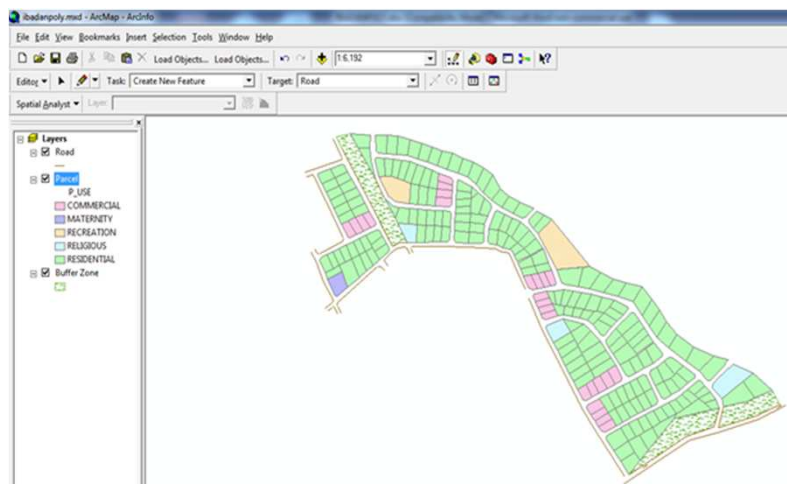
- HP Laptop
- A3 printer
- Autodesk Map 3D 2009
- ArcGIS 9.3

- Physical Design
- Database Creation

Database Creation: Using ArcGIS 9.3

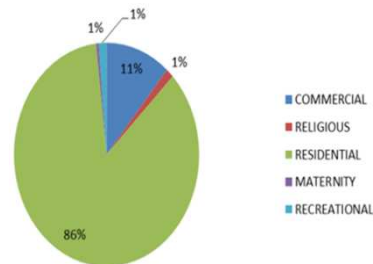
OBJECTID	SHAPE	SHAPE_Length	SHAPE_Area	O_NAME	P_USE	P_VALUE	T_RATE
245	Polygon	110.33921	704.202031	VICTORIA ADELEKE	RESIDENTIAL	\$70,420.20	\$3,521.01
226	Polygon	111.427738	681.639006	UGWU ELEWECHI	RESIDENTIAL	\$68,163.90	\$3,408.20
207	Polygon	106.493955	623.756616	TOLULOPE ADEMOLA	COMMERCIAL	\$62,375.66	\$3,118.78
217	Polygon	108.58523	719.523162	TOLU OLALEKAN	RESIDENTIAL	\$71,952.32	\$3,597.62
204	Polygon	109.637022	696.604197	TEMLOLU ADEJOKE	RESIDENTIAL	\$69,660.42	\$3,483.02
201	Polygon	106.042638	651.747123	SOLA TOLU	RESIDENTIAL	\$65,174.71	\$3,258.74
206	Polygon	103.009414	599.126148	SIMON ARKE	COMMERCIAL	\$59,912.61	\$2,995.63
203	Polygon	108.494038	680.164856	SIDKATU ARKE	RESIDENTIAL	\$68,016.49	\$3,400.82
233	Polygon	105.646969	669.8401	SALAMI OYEWUMI	RESIDENTIAL	\$66,984.01	\$3,349.20
220	Polygon	101.333393	573.669407	RISKATU OLUWAFEMI	RESIDENTIAL	\$57,366.94	\$2,868.35
357	Polygon	165.717876	1742.983054	P.O.W	RELIGIOUS	\$174,298.31	\$8,714.92
398	Polygon	252.126085	3397.827495	P.O.W	RELIGIOUS	\$339,782.75	\$16,989.14
240	Polygon	153.992787	1339.15655	P.O.W	RELIGIOUS	\$133,915.65	\$6,695.78
258	Polygon	224.566708	3010.106625	OPEN SPACE	RECREATION	\$301,010.66	\$15,050.53
323	Polygon	351.843709	6362.491146	OPEN SPACE	RECREATION	\$636,249.11	\$31,812.46
238	Polygon	118.619907	391.677291	OLUFEMI JAMES	RESIDENTIAL	\$39,167.73	\$1,958.39
234	Polygon	103.909084	610.778499	OGINNI JAMES	RESIDENTIAL	\$61,077.85	\$3,053.89
243	Polygon	106.819576	636.603927	N/A	RESIDENTIAL	\$63,660.39	\$3,183.02
230	Polygon	163.333747	1580.859423	N/A	RESIDENTIAL	\$158,085.94	\$7,904.30
232	Polygon	152.308972	1481.93826	N/A	MATERNITY	\$148,193.83	\$7,409.69
236	Polygon	107.979344	681.277721	N/A	RESIDENTIAL	\$68,127.77	\$3,406.39
226	Polygon	103.37106	639.467813	N/A	RESIDENTIAL	\$63,946.78	\$3,197.34
242	Polygon	113.98877	738.813531	N/A	RESIDENTIAL	\$73,881.35	\$3,694.07
244	Polygon	104.897792	661.312144	N/A	RESIDENTIAL	\$66,131.21	\$3,306.56
239	Polygon	121.529959	976.021608	N/A	RESIDENTIAL	\$97,602.16	\$4,880.11
210	Polygon	110.567839	702.283026	N/A	RESIDENTIAL	\$70,228.30	\$3,511.42
223	Polygon	99.735573	557.76047	N/A	RESIDENTIAL	\$55,776.00	\$2,788.80
222	Polygon	100.110471	561.297024	N/A	RESIDENTIAL	\$56,129.70	\$2,806.49
241	Polygon	117.318695	772.717081	N/A	RESIDENTIAL	\$77,271.71	\$3,863.59
219	Polygon	99.946937	544.815248	N/A	RESIDENTIAL	\$54,481.52	\$2,724.08
235	Polygon	107.819914	678.084004	LYNDA MARK	RESIDENTIAL	\$67,808.40	\$3,390.42
208	Polygon	106.628013	619.389597	KEMI AREGBE	COMMERCIAL	\$61,938.96	\$3,096.95
213	Polygon	107.917664	678.268806	JOKE ELEWURO	RESIDENTIAL	\$67,826.88	\$3,391.34
227	Polygon	102.762113	604.019264	JAMES ADICHE	RESIDENTIAL	\$60,401.93	\$3,020.10
221	Polygon	103.840978	619.543541	IYINLOLA ADEWALE	RESIDENTIAL	\$61,954.38	\$3,097.72
211	Polygon	109.91229	695.912153	BUNKUN ADEKOLA	RESIDENTIAL	\$69,891.22	\$3,494.56
229	Polygon	124.907402	845.804542	IBRU BLESSING	RESIDENTIAL	\$84,580.45	\$4,229.02
218	Polygon	100.301674	546.501379	HAMEED SKIRU	RESIDENTIAL	\$54,650.14	\$2,732.51
205	Polygon	110.394159	700.155208	FEMI ADELOLA	RESIDENTIAL	\$70,015.52	\$3,500.78
237	Polygon	107.739405	678.033592	EFFIOK ARCHBONG	RESIDENTIAL	\$67,803.36	\$3,390.17
212	Polygon	108.741605	685.676942	DADA ADEMOLA	RESIDENTIAL	\$68,567.69	\$3,428.38

SPATIAL ANALYSES/INFORMATION PRESENTATION



LANDUSE CHART

S/NO	LAND USE TYPE	NO OF PLOTS
1	COMMERCIAL	25
2	RESIDENTIAL	189
3	RECREATIONAL	2
4	MATERNITY	1
5	RELIGIOUS	3
	TOTAL	220



ANALYSIS OF RESULT

- Tables 4 shows land values, ownership and tenement rate the local government could generate per annum. The local government would be able to generate tenement rate of nine hundred and fifty one thousand three hundred and twenty eight Naira eighty seven Kobo (**₦ 951,328.87 K**) per annum in the study area.

WAYS OF IMPROVING REVENUE GENERATION

- Use of Geographic Information System
- Provision of good infrastructure: The LG should use the generated revenue for the provision of social amenities like good roads, potable water, well-equipped health centers, etc. to encourage people to pay tax faithfully and change their attitude of tax evasion.
- Staff motivation: LG staff should be encouraged through appropriate training and good welfare package to enhance effective revenue management and to discourage embezzlement and revenue mis-management.

CONCLUSION

- Internally generated revenue in local governments has enabled people to enjoy a lot of benefits such as well-equipped health centers, potable water, good roads, quality education, etc. The capabilities of analytical tools in Geographic Information System (GIS) have been demonstrated to enhance effective revenue collection and administration at local government level.

- THANKS FOR LISTENING