

GEOGRAPHICAL INFORMATION SYSTEM BASED VALUATION ROLL FOR OPTIMAL LAND TAXATION IN NAIROBI CITY COUNTY

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INTRODUCTION



**NCC is formerly Nairobi city
Council (CCN) which became NCC
upon the inauguration of the
new constitution in the year 2012**

Introduction cont...'

- Nairobi is the capital and largest city in Kenya.
- Total area 700 Sq Kms, and a population >3m people (Kenya Census, 2009).
- NCC is home to >100 major international bodies and companies viz the UNEP, World Bank, headquarters for the UN in Africa & Middle East.
- The first valuation roll in CCN was done in 1941.
- The latest dates to 1980.
- Consequently many properties have not been captured..

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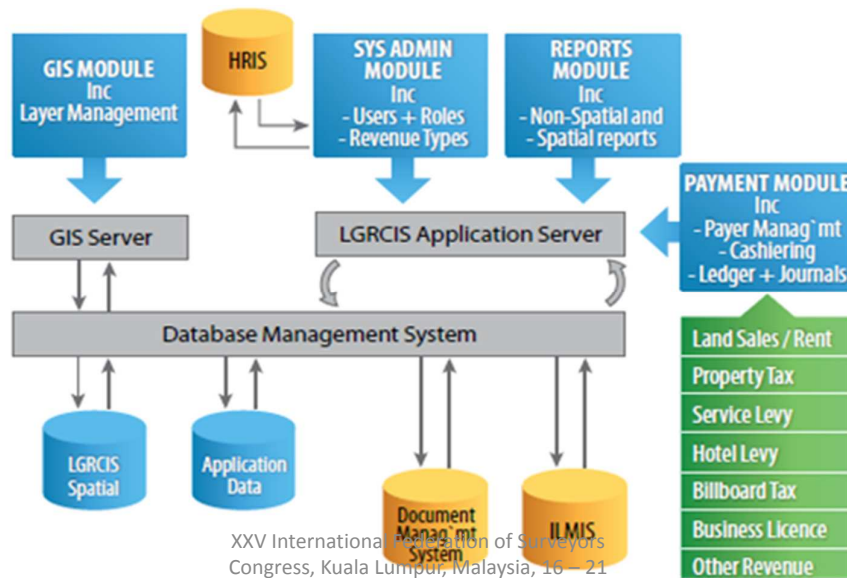
LAND TAXATION STATUS

- The land rate stands at 17% of the 1980 market values up to 2013.
- To mitigate for the disparity between current market values and values in the VR (1980) the rates were increased to 34% awaiting preparation of new Valuation Roll (Finance Act, 2013).

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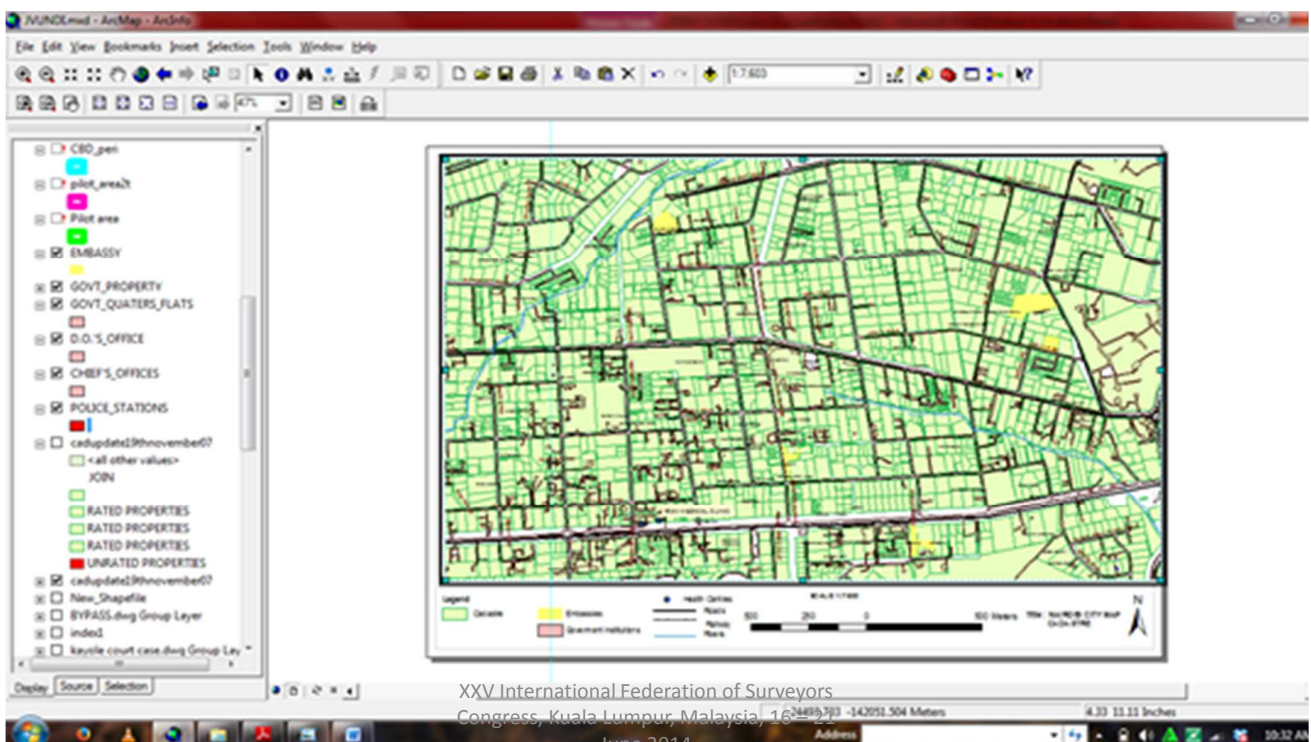
Using GIS in land valuation process

- Integrated County Information System (World Bank, 2013)



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Functional qualities that affect value of properties



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Land Valuation Factors

1.Location of the property	_ Shopping center
_ Street frontage	_ Schools health centers
_ Distance from nuisance/noise	4.Land character
_ Distance to city center	_ Size
_ Dist. to educational services	_ Shape
2.Highest and best user:	_ Topography
_ Permitted No. of floors	_ Soil condition
_ Permitted construction area	5.Social-Economic factors
_ Permitted user	_ Inflation/federation
3.Nearby development and infrastructure	_ Micro and macro economic changes
_ Electricity	_ Supply and demand
_ Water	_ Political changes
_ Roads	

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- In mass valuation situation like VR, is practically impossible to inspect every plot physically

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- Each land valuation factors does not have same effect on the total value.
- Each of the 'value factors' that affects a given parcel need to be assigned a "weight". The weight so assigned must be derived from market survey

$$V_i = \text{AREA}_i * \sum_{i=1}^n (P_i * W_i)$$

Area: Land parcel size (or pixel size)

P: Factor value

W: Factor weight

n: Total number of factors

- Any 'movement' on any of the value factors means 'movement' of Land value.

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Land Rates Billing

- The current land rates billing system is manual.
- This process is slow, cumbersome, tedious, and resource-consumptive process, prone to mistakes and irregularities
- GIS system allows for data exchanges between the land valuation system and the land rates calculations and billing system.

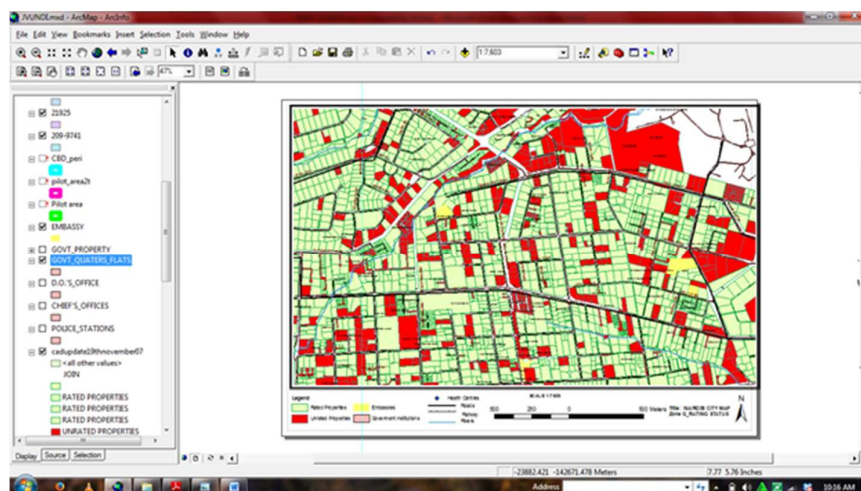
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Unrated properties identification

Zone	No. of plots in VR	No.of plots in GIS database	Difference
G	9472	9622	150
T	7342	7458	116
U	1319	1547	228
TOTAL	18,133	18,627	494

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The plots highlighted in red were not rated



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Details of the unrated properties

LR Number	Serial Number	USV 1980	Plot Size (Ha)	Ownership details
209/149990/12	G/1481/10	207,500	0.2757	x
2/709	G/4622	719,500	0.4455	x
7158/603	T/1031/1/1	258,000.00	0.495	x
7785/1381	T/1697/5/G/46	117,500.00	0.2182	x
12239/24	T/1697/5/G/47	117,500.00	0.2182	x
119/1354	U/8733	298,500	0.0308	x
74/402	U/783/7	296,500.00	0.0287	x

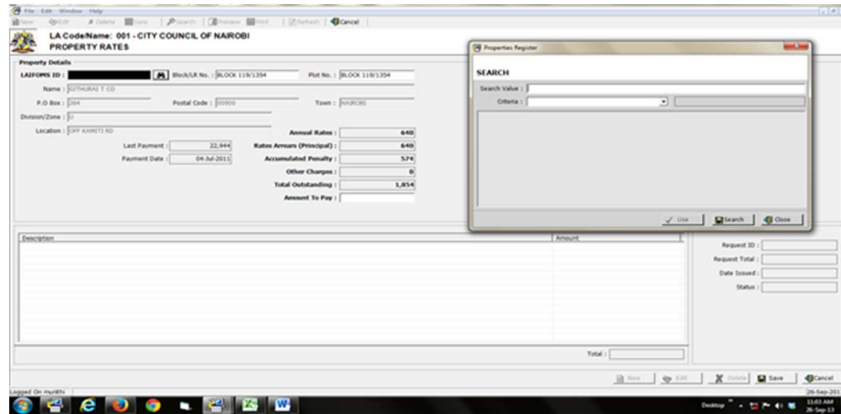
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Parcel valuation data page (with search option)

The screenshot displays a software interface for land valuation data management. The main window, titled 'City Council of Nairobi - Private Land', contains a form with the following fields: 'Name and address of the owner' (GITHURAI T OO), 'Serial Number' (U8733), 'Map number' (E8), 'Valuation Book Number' (T2212/R/11), 'LR Number' (1191354), 'Locality' (OFF KAMITI ROAD), 'Area in Hectares' (0.0000), 'Unimproved SV(NCC)' (0), and 'Unimproved SV(Private)' (296500). A search dialog box is open, showing a 'Search For:' field with '12239/24' entered and 'OK' and 'Cancel' buttons. At the bottom of the form, there are buttons for 'Search Record By' (LR Number, Serial Number), 'Clear Fields', and 'Exit program'. The Windows taskbar at the bottom shows the system clock as 1:03 PM on 11/26/2014.

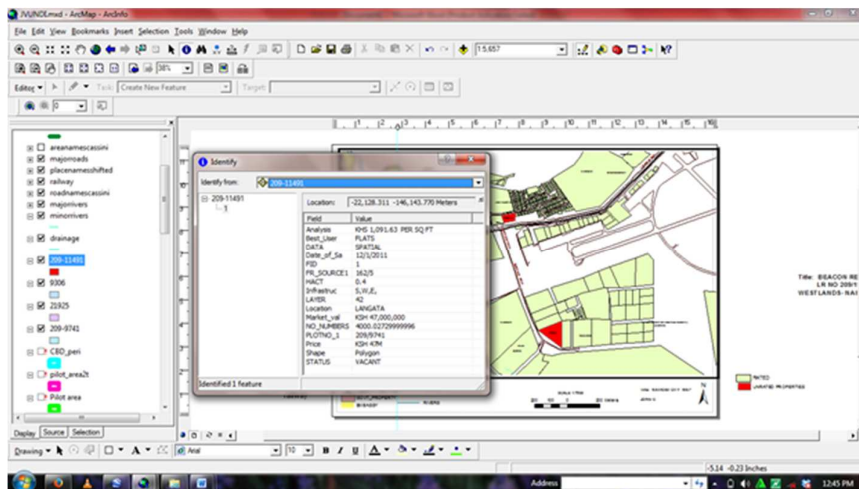
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Rates billing system



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GIS based sales tracking map



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Conclusion

- The traditional preparation of Valuation Roll and land rate billing does not capture all the eligible owners of ratable properties.
- GIS is able to aid in capturing up to date changes in land ownerships, new land registrations, amalgamations, subdivisions and any other changes relating to land that affect its value and rating status.
- In addition storage and retrieval of properties and ownership details is simplified hence a realized eases in payment.

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A 3D rendering of the word 'asante!' in a dark green, textured font. The letters are blocky and have a slight shadow, giving them a three-dimensional appearance. The word is slanted upwards from left to right.

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