A Web-Based Geospatial Application for a Real Estate/Property Management

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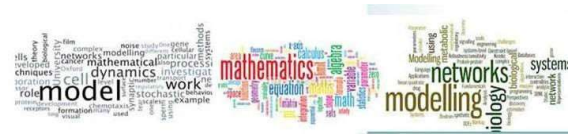**Phone**: +2347032184856)

ABSTRACT

Estate development is one of the drivers driving the economy of any community or nation. It is the solution to the problems of housing and industrial development in Nigeria today. The project focusses on the marketing of landed, housing and other properties such as vehicles and machineries. It will solve the problems of both house agents and property users. The model is a web-based estate management platform where all dealers of housing and properties can interact for the mutual benefits of all who have to do with housing. The GIS technology is employed with the internet solution to facilitate rent, lease and purchase of houses, estate and properties. It is an interactive, communicative and instant feedback on the available properties of your choice. The project will among others, accomplish the task of searching for accommodation/landed properties in any locations of choice without leaving the comfort of your room; reduce the time spent on roaming the streets in search for accommodation/landed properties; locating house/property agents or developers without any hassle; panoramic view of the property/house to be rented, leased or purchased; a chatting platform for interaction on the property; contacting the agents or company concerned to seal up the deal; viewing the location map/google map of the property site; uploading of detailed information about the property by the agents or companies; platform for membership by agents and companies involved in the business of estate management/property development.

Keywords: Estate, property, web, map, GIS, Google, location, management.

1. INTRODUCTION

"An estate is everything comprising the net worth of an individual, including all land, possessions, and other assets that the individual owns or has a controlling interest in" Julia Kagan (Jul 6, 2019). Estate is defined as "a piece of landed property, especially one of large extent with an elaborate house on it: to have an estate in the country". It is further described as "property or possessions", "the legal position or status of an owner, considered with respect to property owned in land or other things", "the degree or quantity of interest that a

person has in land with respect to the nature of the right, its duration, or its relation to the rights of others", "interest, ownership, or property in land or other things", "the property of a deceased person, a bankrupt, etc., viewed as an aggregate", (British) "a housing development" (https://www.dictionary.com/browse/estate Property Management).

"A large area of land in the country that is owned by a family or an organization and is often used for growing crops or raising animals: It's a typical country estate with a large house for the owner, farm buildings, and estate workers' houses". "Everything that a person owns when they die" (https://dictionary.cambridge.org/dictionary/english/estate).

Property management is a specialty in which real estate brokers manage homes and duplexes as well as large projects such as office and industrial complexes, shopping centers, apartment houses, and condominiums. Reasonable knowledge and understanding of the general principles and responsibilities relating to this field is appropriate for all brokers and salespersons. Knowledge of agency, contracts, fair housing, rentals and leases satisfies a considerable portion of property management requirements. Additional knowledge is required in business administration, marketing, purchasing, extensions of credit, accounting, advertising, insurance, repairs and maintenance, taxation and public relations.

1.1: Objectives
The main objective of this study is to develop a model for a real estate/property market where all key players in this sector of economy will have a level playing ground for 'smart' business transactions.

2.0: LITERATURE REVIEW

2.1: Land - Real Estate - Real Property: Fulcrum for Property Management
Land: Land is defined as the earth's surface extending downwards to the centre of the earth and upwards to infinity, including things permanently attached by nature such as trees and water. The term "land", thus, refers to not only the surface of the land but also the underlying soil and things that are naturally attached to the land, such as rocks and plants. Land includes the minerals and substances far below the earth's surface. It also includes the air above the land up into the space. Therefore, land consists of three layers known as respectively the "**surface**" the "**subsurface**" and "**airspace**".

Land is one of the basic factors of production. Primary production functions are taken place in rural land (non-urban land) whereas the other functions are allied with urban locations. However, due to the development of the infrastructure facilities, it is difficult to demarcate urban uses and non-urban uses easily.

Real Estate: Real estate could be defined as the land above and below the earth's surface, including all things that are permanently attached to it either natural or artificial. Therefore, the term "Real Estate" is broader than the term "land". It includes not only the natural components of the land but also all artificially improved immovable features made by the man. Any artificial thing that is attached to the land, such as a building or a structure or a fence is concerned as a part of real estate. Land is also converted into real estate as it is improved by means of providing access, utilities, sewerage systems and other services that make it suitable for habitable buildings. They are also called serviced-lands, improved lands or developed lands. Such parcels of lands are called real estates since they have been reshaped from their natural features.
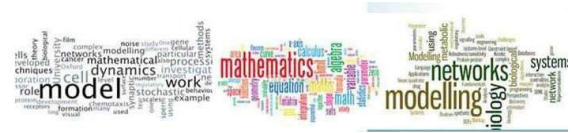
At the same time, it is clear that the land becomes usable when it is converted into a real estate. This means when a land becomes a real estate, it is usable for planned activities. Therefore, it is able to argue that the "usability of the land" is a more apparent and logical criterion to recognize real estate. In this way, it is also able to argue that when the man starts to use the land it becomes a real estate. Real estate is an industry, which generates resources and the wealth of the economy. For the purpose of achieving this broader function of real estate, efficient and effective management is essential. Real estate affects the economic life of all individuals. Hence, for the wellbeing of individuals, management of property is a must. Real estate affects land use pattern and vice versa. Therefore, in order to maximize the use of scarce land resource, management of property is a prerequisite. Effective real estate management requires clear knowledge and understanding of the needs and wants of owners of real estate and owners can fulfil their objectives. (https://www.investopedia.com/terms/e/estate.asp)

Real Property: The word "property" has different meanings in legal term1. In this discipline, it is the land and tangible features on the land and permanent improvements. "Real property" is defined as the interests, benefits and rights inherent in the ownership of real estates. Indeed, a real estate is valuable, usable and marketable as it possesses several real properties. Hence, the term "real property" is broader than both the terms "land" and "real estate". It includes the physical surface of the land, what lies above and below to it, what is permanently attached to it, as well as the bundle of legal rights: legal rights of ownership which is attached to the ownership of a parcel of real estate.

Real property includes not only the surface, subsurface and airspace but also the surface rights, subsurface rights and airspace rights, all of which can be owned by different individuals. There are, however, some limitations as well. For instance Moveable property, immoveable property etc... In this subject, the term property referred only to immoveable properties. Surface rights are restricted by different legal conditions such as Planning Law which aims to control haphazard development, Law of Delict, which aims to protect others from nuisance made by one who enjoys benefit(s) of a real estate etc. Further, restriction of cutting some trees like jack, coconut etc, and excavation of sand, granite etc are examples of limitations of the surface right.

Real Estate = Land + All Man Made Features
Real Property = (Real Estate) + (Rights and benefits attached to real estate)

"Property asset management" is all centered on the use of properties in maximum level. Therefore, it deals with the objectives of increasing the life span of properties together with the contribution to economic worth of the assets. Hence, through property assets management, organizations expect to ensure proper care and attention of benefits of properties. Thus, property assets management functions deal with the operational decisions. These decisions are usually taken by the middle and lower level managers of organizations.

2.2: Real Estate Management
(1) Real Estate Management is simultaneously a generic description of a broad range of activities and a specialist technical discipline **(Stapleton, 1986).** (2) Property is simply one that consists of a number of resources of an organization, which need specific skills to manage (property oriented management skills). Estate Management is considered as "All facets of case, development and Management of urban land, including the sale, purchase and letting of residential, commercial and industrial property and management of urban estate and advice to clients to planning ... **(RICS policy review in 1974).**

Thorncroft defines Estate Management as "the direction and supervision of an interest in landed property with the aim of securing the optimum return; this return need not always be financial but may be in terms of social benefit, status, prestige, political power or some other goal(s).

2.3: Statement Of Problem

Property management is a specialty in which real estate brokers manage homes and duplexes as well as large projects such as office and industrial complexes, shopping centers, apartment houses, and condominiums. Reasonable knowledge and understanding of the general principles and responsibilities relating to this field is appropriate for all brokers and salespersons. Knowledge of agency, contracts, fair housing, rentals and leases satisfies a considerable portion of property management requirements. Additional knowledge is required in business administration, marketing, purchasing, extensions of credit, accounting, advertising, insurance, repairs and maintenance, taxation and public relations. The property manager could be a staff of a small property management firm and devote full time to property management; or, he could be the owner of his own firm; or, he could be one of a number of property management specialists in a large real estate organization. Managing and marketing of properties for optimum profits are keys to personal, corporate and national economic development which the digital age is addressing.

3. METHODOLOGY

Programming language: HTML, PHP and java
Host: HP Laptop with 4 GB RAM, 250 GB Hard Drive
GIS Map: Google Map and Geo Database (web GIS)
Backend: MySQL
REQUIREMENT:
Computer system with a minimum of 4 gb RAM, 250 gb Hard Drive and internet connection to load the map.
  • User's requirement: Web accessible device with internet connection of at list 50kbps.

3.1: Research Design

The Research Design The research project is a GIS solution intended at introducing innovation into the digital marketing and management of landed, housing and other properties such as vehicles and machineries, Agro-Industrial and Household equipment. Google map was adopted and customised while web programming and development tools were employed, and the model successfully hosted on a local host, in readiness for a full hosting on a dedicated website.

4. DATA PRESENTATION

The activities of three categories of estate/property dealers were understudied, analysed: and processed into a model for the estate managers, house agents and property users Analysis was carried out using sampled data: textual and graphical data (such as photographs and videos) were collected and registered to the customised map and google map. A chatting platform is created to facilitate transactions between the industry players and also mails could be communicated among players. Statistical data could be viewed in graphs for smooth analysis of daily transactions by the active agents and organisations involved.

4.1: Discussion Of Findings

Findings are presented in line with the study objectives. The findings are explanatory enough to showcase realities of the smart market for real estate and property business. The findings are discussed with illustrating graphics as presented below.

4.2: Research Results

Research results are presented in graphics for more clarity and better way of display of the contents of the research work.
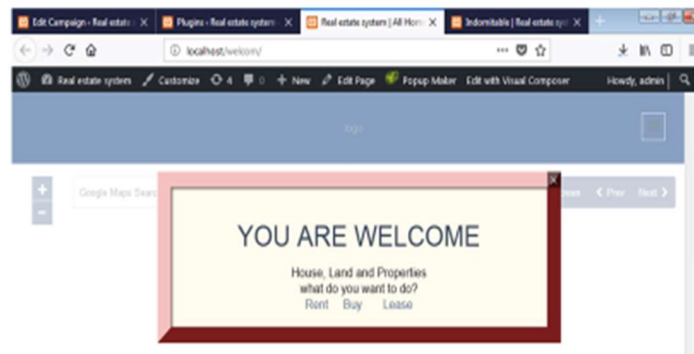
Fig 1: Welcome Window for all Users.
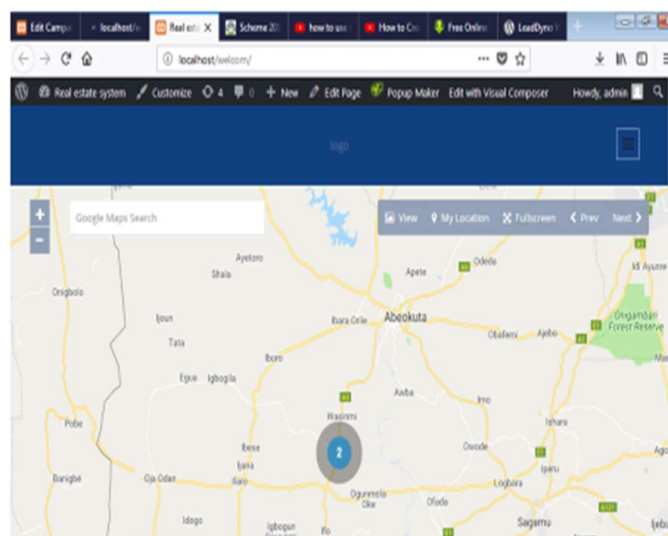
FIG2: Website Homepage

The map has Three options, the view , My location and full screen

1. **The View:** User can view the map in three different views, the main old map, Satellite view (Google earth) and the road view .
2. **My Location:** With my location, the user can see his/her current location point on the map with available around the user
3. **Full Screen:** This is this play the full screen map on the page
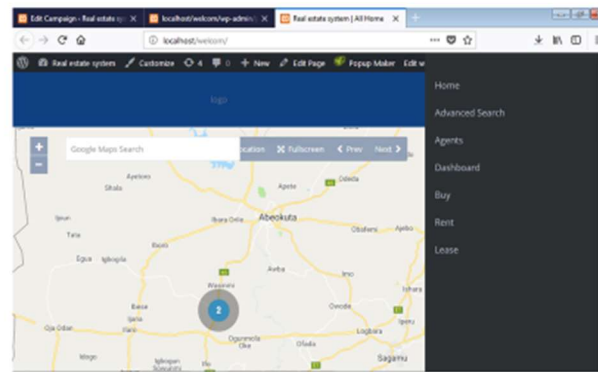
Fig 3: Agent's Logged in Page

We have the side toggle menu at the top right corner of the site to dis play the application menu , We have 7 menu available. They are: 1.Home, 2.Advance search, 3.Agents 4.Dashboard, 5.Buy 6.Rent 7.Lease. This will direct the user the a page for available properties for lease only
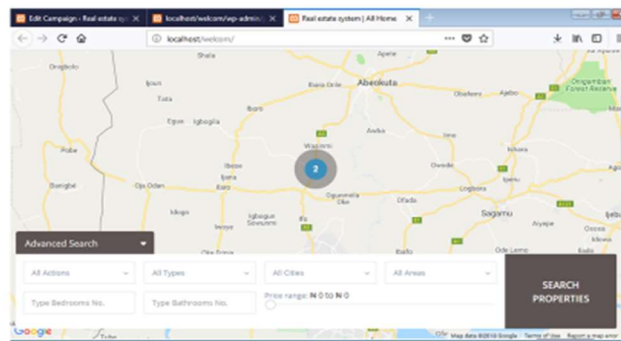
Fig 4: SEARCH OPTIONS for Properties.

Under the map we have an option of advance search for user, with 5 option to search with 1.Action, 2.Types, 3.Cities, 4.Price, 5.Range.
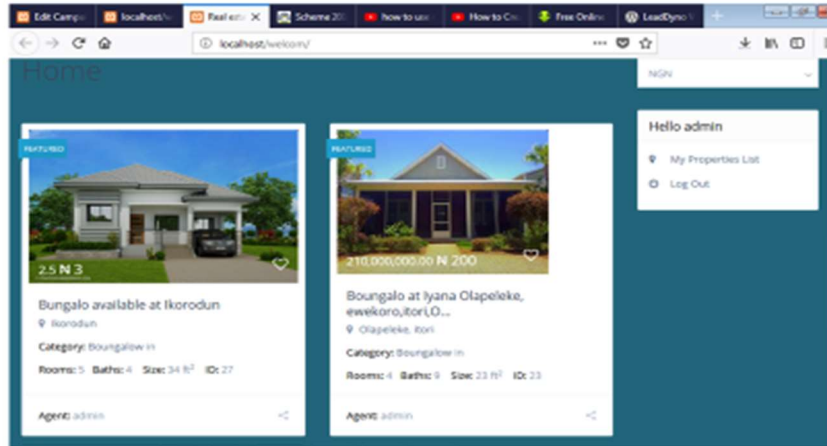
Fig 5: SEARCH Displaying Available Properties in a Chosen Location.
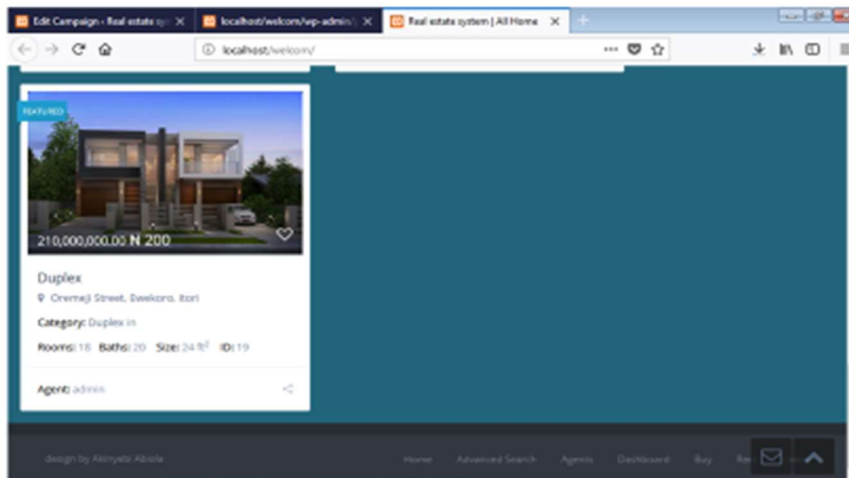
Fig 6: Class of Property with Agent's Contact.
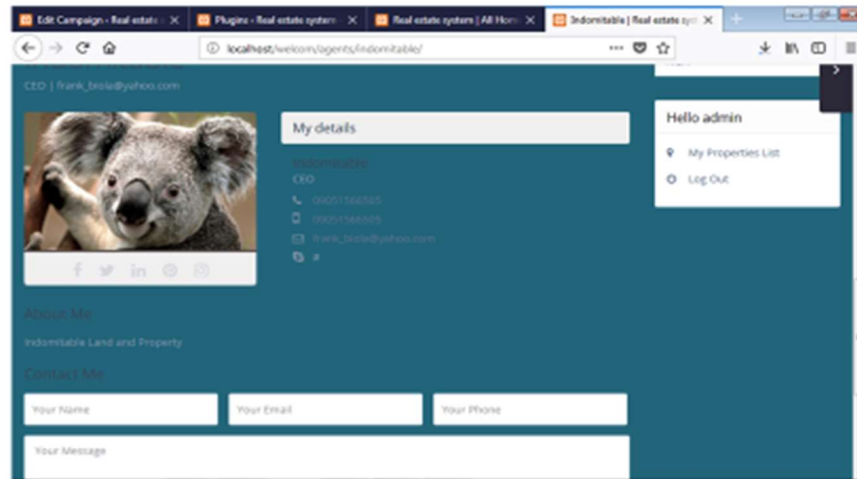
Fig 7: AGENT CONTACT'S Details
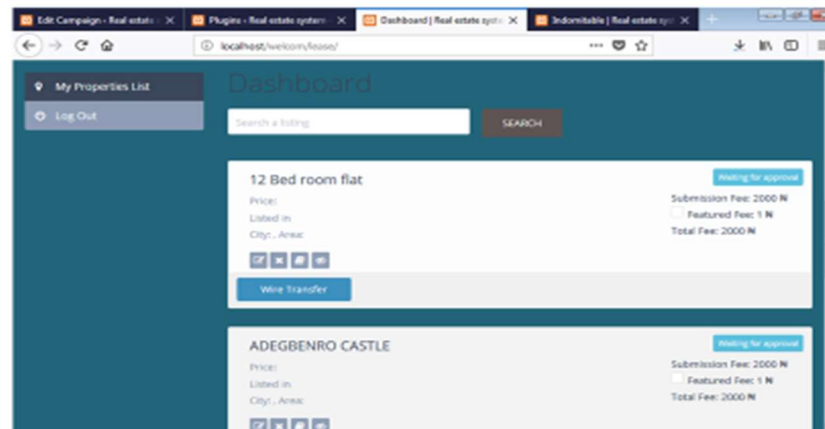
Fig 8: AGENT'S CORNER

This Is The Agent Dashboard, Where Agent Can View, Edit Or Delete His/Her Posted Properties.

Property view
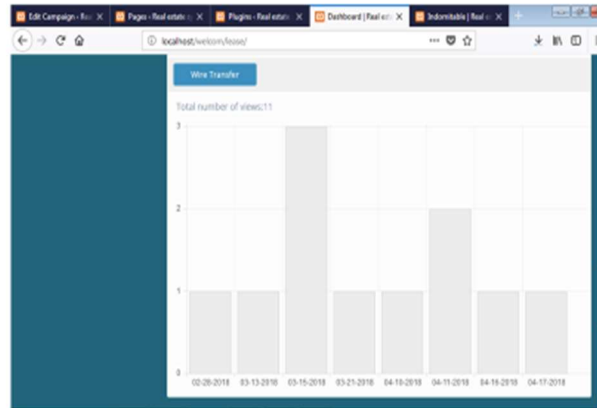
Fig 9: VIEWERS STATISTICS

Agent And User Can See The Statistics Of How Many Views A Post Have Got With Date

Favourite
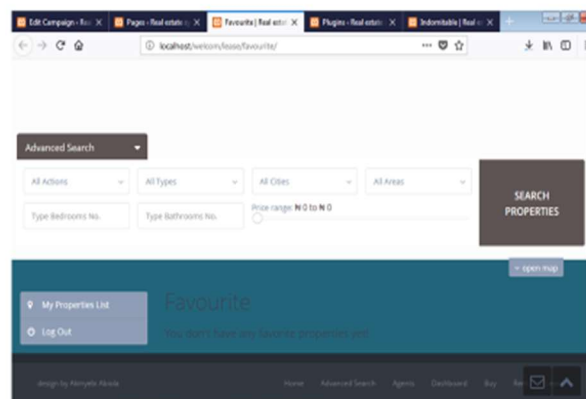
Fig10: USERS' FAVOURITE PROPERTIES

This is favourite section of the page that keep all users favorites properties. Both agent and user can save their search results for future views , but users searched save on the cookies while agent search is saved on his dashboard

Properties submitting form

Fig 11: Agents Properties Submission Form

The php code

Fig12: Web Programming Using Php

The css

Fig 13: SCRIPT WRITING USING CSS

Javascript

Fig 14: Script Writing Using Javascript
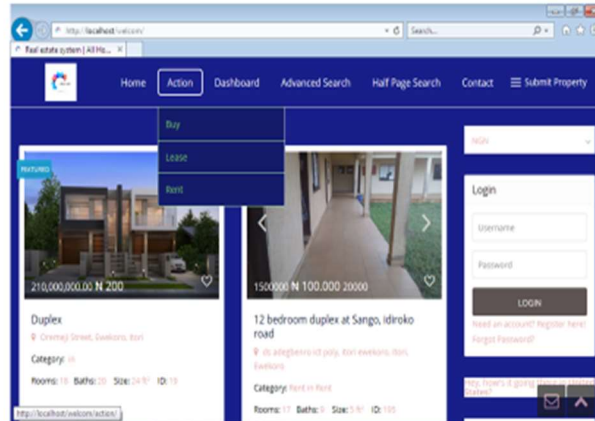
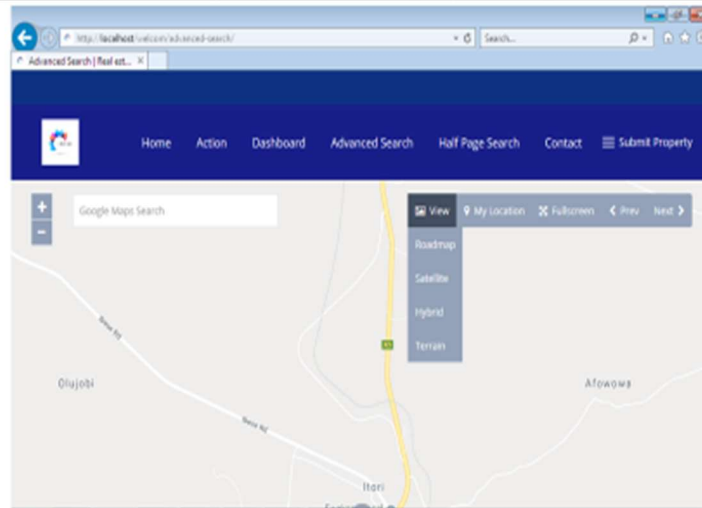**Fig 15: Menu Options For Transactions**
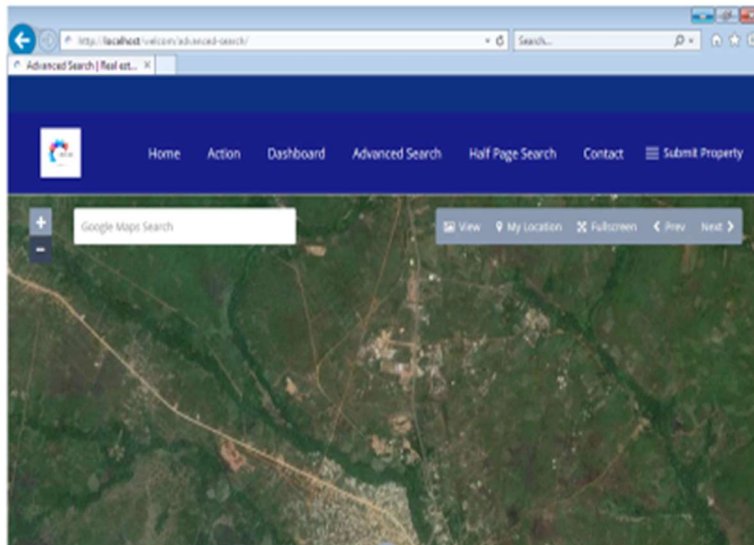

Fig 16: Roadmap View

Satellite view

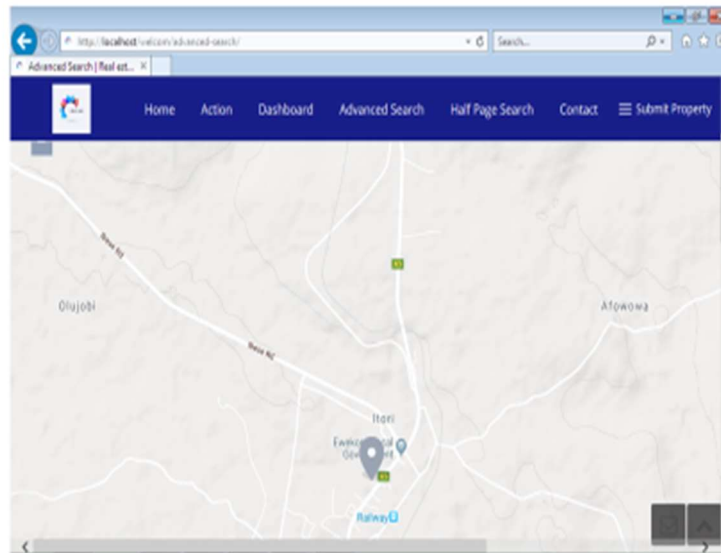Fig 17: Satellite View

Hybrid
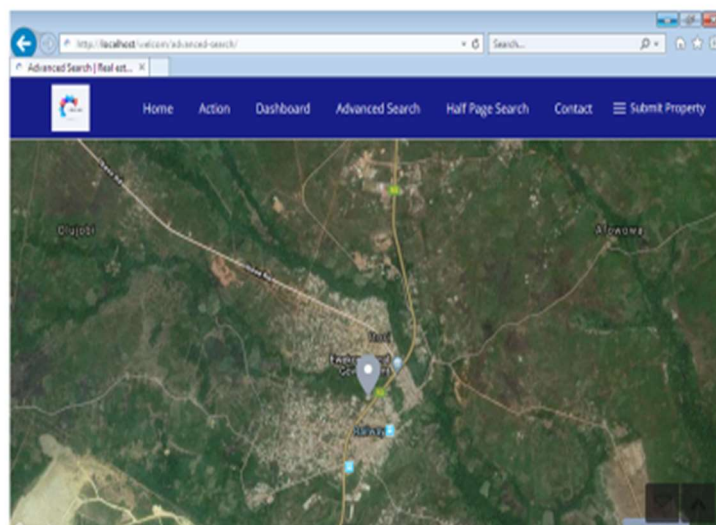
Fig18: Hybrid View

Terrain view

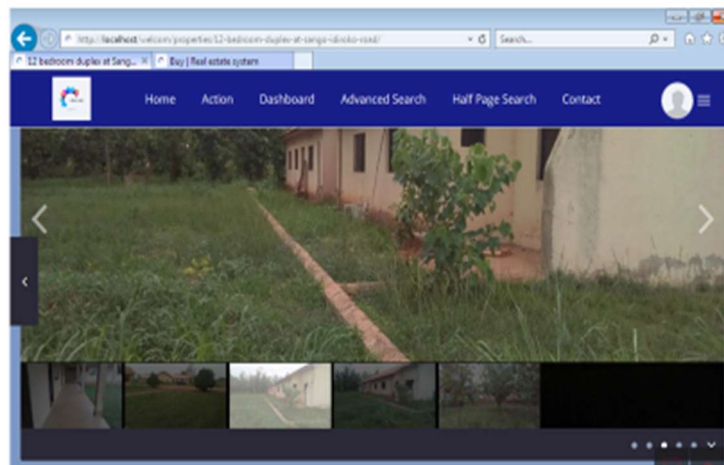**Fig 19: Terrain View**

Property slide

Fig 20: Features Of A Property In Slide

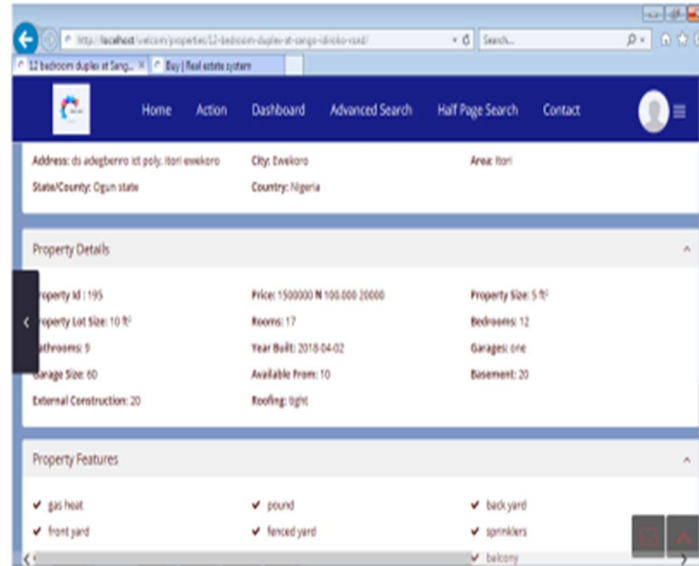## Properties Addresses and Details

Fig 21: Location Of Properties And Other Details
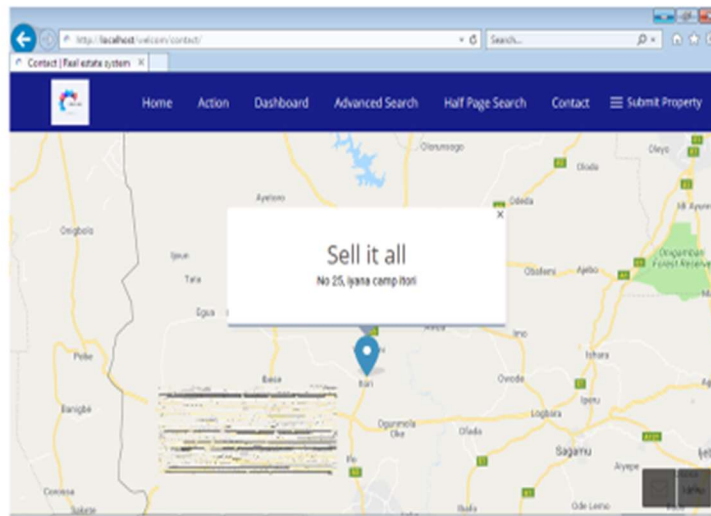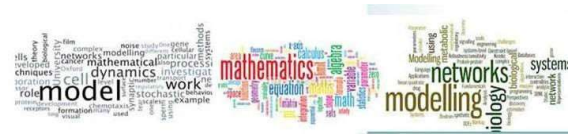
Contact Our Office Location

Fig 22: Developers' Office Contact Address

71

5. SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary
The research project is a GIS solution intended at introducing innovation into the digital marketing and management of landed, housing and other properties such as vehicles and machineries, Agro-Industrial and Household equipment. Google map was adopted and customised while web programming and development tools were employed, and the model successfully hosted on a local host, in readiness for a full hosting on a dedicated website.

5.2 Conclusion
It is cheery to know now that all real estate and property business could be done online without much stress anymore. Those seeking to buy, rent, lease or sell properties can as well, do that at the comfort of their room with less worry on how to go about it.
This estate/properties management has a mobile application (APK) and can be accessible on your phone. This is a web application, written in HTML, PHP, CSS and Java scripts and geospatially referenced.

5.3 Recommendation
It is recommended for adoption in the business of managing real estate and properties.

6. CONTRIBUTIONS TO KNOWLEDGE

The project presented a smart and better way of online real estate/property business transaction without much hassles. It will also bring together on one platform all players in the field and afford the users free access to all necessary details required to own, rent, lease and even sell properties. The introduction of map to guide the users is a good innovation to what is currently obtainable in the online estate/property market.

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