

## REAL ESTATE MANAGEMENT USING WEB GIS

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### ABSTRACT:

Real Estate management is one of the fastest growing sectors in terms of land services. The unprecedented population growth coupled with unplanned developmental activities has led to urbanization with some insufficient infrastructure facilities. Real estate info management system is that the essential half for a true estate enterprise and is incredibly vital for the decision-makers and managers. By understanding the business process and work flow of Builders through GAP analysis, the main objective is to embed the GIS application in web sites of Real Estate Builders in order to meet the needs and demands of Real Estate Builders. To make a cost effective and an efficient application, open source and free maps is the best possible way. Moreover, for the map's procurement, Google maps have been chosen. For designing the customized tools, scripting language used on server side, PHP has been used and for the storage of data, the open source database PostgreSQL has been used. After designing this platform, various functionalities have been added to make our application more effective and useful for Real Estate Builders. Like zoom in, zoom out, pan, running spatial queries, measuring distances, gathering major landmark's information in order to fulfil the builder's requirements.

**Keywords:** Real Estate; Web GIS; PostgreSQL

### INTRODUCTION:

The number of people with access to the Internet, however, is increasing at a staggering rate. The general public is becoming more comfortable with the idea of using the Internet to find useful information. Web sites are becoming more user friendly as there is no need to have GIS Software's knowledge. All such approaches make GIS data to be easily available to the internet users. GIS assists the land business with analyzing, reporting, mapping, and modeling the benefits of one site or area over another. From distinguishing the best

fit for new advertisement improvement or coordinating a homebuyer's choice criteria to dealing with a property portfolio.

With fast growing population, demands are also increasing day-by-day. Consequently, it is leading to the insufficient infrastructure facilities. In order to minimize such impacts, the urban infrastructure needs to be properly planned, designed, operated and maintained so that it provides a well-managed platform. Site selection has been the most prominent issue for general public and such problems can be resolved by a well and proper managed platform i.e. a Real Estate

Management Information System for a real estate enterprise.

## **OBJECTIVE**

To implement the Geo-spatial technique in the web sites of Real Estate Builders. Such application is useful to meet the business needs of the builder groups. A user can get solution of his queries on live and interactive map.

## **APPLICATION OF GIS**

Web enabled GIS professionals in every field have discovered the advantages of using maps for decision support. With easy-to-use Web browsers, GIS on the Internet provides a much more dynamic tool than a static map display. Web-enabled GIS allows to deliver interactive query capabilities such as searching for specific site locations, displaying and viewing multiple data sets, conducting queries for specialized analysis, performing data commerce and retrieving specialized data services.

Geography is critically important to the commercial real estate market. Most corporate real estate executives are acutely aware of the value of GIS in setting restaurants, stores, warehouses, and corporate offices. Some of the more important factors to consider when locating a business are proximity to suitable customers, location of potential competitors, crime rates, transportation infrastructure, local labor pool characteristics, and environmental risk factors such as floodplains, toxic sites, and others.

GIS allows the real estate practitioner to integrate a wide variety of data into one common format, a map. The presentation of a wide variety of data affecting the

desirability and value of a property on one or two maps can give a far more accurate picture of the property's suitability as a first-time residence, acquisition for a portfolio, or site for a retail outlet than any number of generalized market studies, photographs, and marketing text. Many realtors have discovered the value of showing available residential property on a map prior to actually showing the client the property, as the details are comprehensive, time saving and gives Macro as well as Micro level picture.

## **GAP ANALYSIS**

To know the marketing scenario and to know the current trends and current need of Real Estate Builders, Gap analysis is a very useful tool for helping marketing managers to decide upon marketing strategies and tactics. Again, the simple tools are the most effective. There's a straightforward structure to follow. The initial step is to settle on how you are going to review the gap over time.

To fill all gaps of Real Estate Builders and fulfill their requirement by meeting through Geospatial Technology, few analyses will be required such as Define target industries to attract to a community, improve project design for land use, project and site planning, Quantitative and qualitative methods applied, Understand customer preferences, Gain customer feedback on existing conditions and Generate ideas and gauge support for future plans, Potential changes or new products/services. Survey over internet, telephone or mail can help in this.

After all such detailed analysis, some key areas were identified where GIS technology

is needed to be embedded, these are as follows

- A user can spatially query the site
- A distance measurement can be made between two sites.
- Showing major landmarks of the area like church and others which can help out the user in identifying the area.
- As per the requirements, user can buffer his interested area.
- Providing the vicinity details of the area, this can provide more overview of the area.

## METHODOLOGY

### 1.1. DATA COLLECTION

There can be multiple source of data such as internet, various builders and survey. The data base will be categories as per the status of building such as it is ready to move in, newly constructed or under construction. The address should have detail information regarding area, price, floor, Rooms, details of amenities, Contact info, date and source of data etc. All the rows of database must have coordinates so that it can be projected on google map.

### 1.2. APPLICATION DEVELOPMENT

Application development is designing of a software product in a planned and structured way. Such tasks speed up the business process and, in fact, even improving application effectiveness. Such changes and reforms in terms of IT cum GIS technology, depends upon the customer's need and business target.

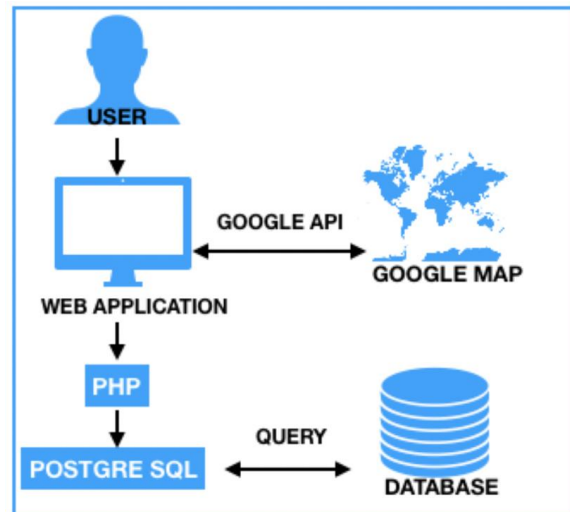


Figure (i). Methodology

In the above-mentioned architecture, there comes five important components, which are as follows:

**1.2.1. USER:** Here, the user is the person dealing with Real Estate Builders and surfing their website where this application is linked.

**1.2.2. WEB SERVER:** The Apache HTTP Serve, commonly referred to simply as Apache. Apache is developed and maintained by an open community of developers under the auspices of the Apache Software Foundation. The application is available for a wide variety of operating systems, including Unix, GNU, FreeBSD, Linux, Solaris, Novell NetWare, Mac OS X, Microsoft Windows, OS/2, TPF etc.

**1.2.3. PHP:** Here for creation of application, PHP has been used. The acronym for PHP is, Hypertext Preprocessor, it's a computer scripting language mainly used for dynamic web pages development. It is an open source software and support many databases such as MySQL, Informix, Oracle, Sybase, Solid, PostgreSQL, Generic ODBC, etc.). Other reason for choosing PHP is that it runs on different platforms (Windows,

Linux, Unix, etc.) and is compatible with almost all servers used today such Apache, IIS, etc. PHP is a scripting language and there are three main areas, where this scripting language is used i.e. Writing desktop applications, Command line scripting, Server-side scripting. It not only designs the web page but also run and store the spatial queries.

**1.2.4. POSTGRESQL:** PostgreSQL is an object-relational database management system (ORDBMS). Unlike many other open-source programs, PostgreSQL is not controlled by any single company. It has a global community of developers and companies to develop it. Major function of PostgreSQL will be trigger of events, Inheritance of multiple database. To display the fetched data on Google maps, we require a local database like postgresql to maintain our database spatially enabled. This database stores many schemas and tables which are further queried by using PHP language and result is displayed on the maps.

#### **1.2.5. GOOGLE MAP SERVER**

**GOOGLE MAPS:** Google Maps is a free web mapping (for non-commercial use) service application and technology provided by Google that powers many map-based services. As the Mercator projection is used by Google Earth, so it cannot show areas around the poles. A related product is Google Earth, a stand-alone program for Microsoft Windows, Mac OS X, Linux. Google Maps is a service which offers powerful, user-friendly mapping technology and local business information. It includes business locations, contact information, and driving directions. With Google Maps, user can ease by using the unique features such as Integrated business search results, Draggable

maps, Satellite imagery, Terrain maps, Street View, Detailed directions, Keyboard shortcut for pan and zoom.

**GOOGLE MAPS API:** The APIs created by Google Maps allows developers to integrate it with their database on developed website. Currently it is a free service but also in the terms of Google, it has been stated that they deserve rights to display ads. By utilizing the Google Maps API, it is possible to implant complete site of Google Maps into a customized peripheral website. Developers are required to request an API keyword, which is bound to the website and directory entered when creating the key.

#### **1.3. MECHANISM**

The main advantage in this application lies here. Map server at the client end is not required here. The Google map are provided upon the http request by specifying the center Lat/Lon and the processing of the map is completely done at Google end.

So, this architecture explains the interaction between different components at different level. Out of all components, the most important components are those which are customized, to fetches the data and query the data, consequently result is displayed on Google maps through server.

The web browser also plays vital role in processing the GIS application. Once the user send request through web browser, it is processed and further goes to the web server Apache which fetch the Google map from Google server and displays on the web browser.

Once the user makes the request, it depends which type of request is being generated by user, whether it is involving database environment or not. Major landmarks, are of vital importance in identifying our area of

interest, but there is no need to make any interaction with database. As all landmarks are stored in form of arrays in Google server. So, user can click on the details listed on the legend or can directly click to the landmark to know its information more. Like above mentioned task, the Distance measurement tool doesn't require any interaction with database, but there requires the help of java script to know the LAT/LONG information which in turn returns the radial distance between two points. After getting the distance, the user can clear the selection and perform this query number of times, when require. Spatial queries are also very important part of project, for example- "this particular place present within distance of" is all implemented in the tables which are stored within the database. Once this query is run, it will be first fired to the database using PHP and results are displayed on the map.

## RESULT

The final web page, displaying all important content of the page. Since it is based on Google map, so it can be toggled with maps.



Figure (ii). Final Web Page with Map display



Figure (iii). Web page with hybrid display

User can also search the information using google map tools. Distance measurement tools enable the user to measure the distance between any two places, which helps him in finding out his own queries.



Figure (iv). Vicinity Information & Distance Measurement

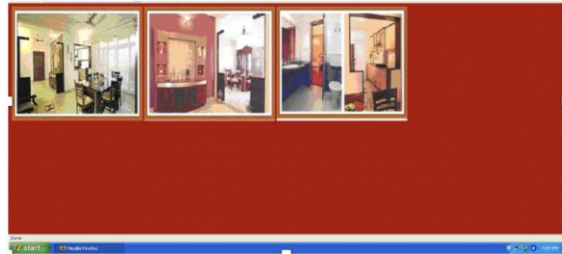


Figure (v). Image Gallery

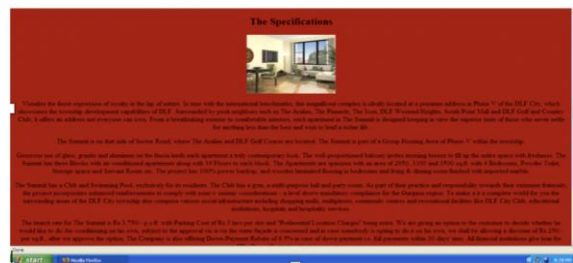


Figure (vi). The Specifications

## CONCLUSION

Such application is valuable for the web sites of Real Estate Builders, who are implementing Geospatial Technology in order to fulfill the basic requirements of builder groups. Such application enables the user to find out some spatial queries related to his requirements, and also can find out the vicinity details of his interested areas. With the advent of GIS on open source, data can be made freely available to the users. As a result, such applications are very easy going and the best part of this, user is also not charged for such online applications

A geographic information system, which examines and displays data in a spatial context, is uniquely suited to the detailed analysis of real estate data, using GIS systems we can locate properties for home buyers, perform supply and demand analyses for retailers, and advise investors on the performance of their assets. It can be enhanced by providing 3D view of outer and internal structure of the buildings. By using GIS technology, all the major players in the real estate industry that are property owners, investors, builders, service providers, managers and regulatory bodies will be beneficial. It will not just offer guidance on staff training and use of consultancy in real estate but will also provide advice on management of ongoing projects and future GIS applications.

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