Hospital Information System Through GIS For Aurangabad City

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Abstract- *Now a day's development of Internet GIS has been an increase in the development of various information on systems dealing with Geospatial data. Integrating of geospatial data scattered around various Organization which refers to a common geographical space is becoming a challenge. But in terms of the health centers, everyone wants easy access for their desire location including all necessary details of the health centre. But in Aurangabad city use of GIS is limited. This research project focuses on finding whether GIS can be used to benefit for finding hospital in the city. This tool provides an easy way to highlight geographical references for the Aurangabad city in the map. the base map of the study area is collected co-ordinates of the hospitals obtained within the field of the global Positioning System(GPS). The objective of the hospital Information System (HIS) is to find the hospitals location with their necessary information in particular area.*

Keywords- Geographical Information System (GIS), Global Positioning System(GPS), Hospital Information System (HIS)

I. INTRODUCTION

Hospitals are complex organizations with intensive information needs. Effective management of knowledge within hospitals is crucial for higher service effectiveness and efficiency levels. HIS is a necessary part of recent hospital infrastructure. HIS is considered a prerequisite for the efficient delivery of high quality health care in hospitals [1] The extent to which HIS fulfill their role and support the services of healthcare delivery is obviously important. This definition outlines 3 key issues: measure attributes of HIS and also to support the making decision. Undertaking the evaluation is challenging as the decision making in design, development, and management in HIS all requires evaluation. The Internet has become a huge source of geospatial information and offers already many different services. [2].The location of Hospitals within the city is based on addresses and also the position of the hospital. while not providing the information regarding the facilities provided by the hospitals, various treatments assigned within the hospitals, along with the various departments present simply just in case of multispecialty hospitals throughout a single system this goal are often

achieved with the help of GIS[3]. GIS provides the power of combining spatial data and associated attribute information during a single system. With the help of GIS applications, the actual position of the health center can be mapped accurately based upon the coordinates taken. The associated information, such as name, addresses, phone number, can give more additional information in the combination of spatial location. GIS is an integration of computer hardware, software and geographically referenced data [4].

The purpose of using GIS in health care facility is that maps provide a new dimension to data analysis that helps in visualizing the advanced patterns and relationships. Relationships among neighboring areas are specific during a map that permits for the visual image of spatial patterns [5]. Visualization and mapping can explore the spatial pattern and placing the object accurately. Geographic Information system (GIS) has come to be a very specialized tool for analyzing, managing and providing user with spatial information. [6]

II. RELATED WORK

The project GIS Applications in Public Health as a Decision Making Support System has been done in Iran city. In this project it is tried to study and evaluate the experiences on applying GIS publicly health. the main goal of this project involves environment health, control of diseases, health education them and prevention, medical and nursing actions for early diagnosis, management and management of diseases [7]. During this project GIS are often used as a decision support system so as to help the mangers of public health.

Modern advancements in GIS and location-based data collection technology create opportunities to establish geospatial components into information systems, thereby strengthening the ability of the systems to support the scaled-up operational priorities of malaria elimination [8].In Ayutthaya, Thailand, GIS was used for examining effects of different factors on public health, showing disease distribution, performing specific analyses, visual image and providing of data on health care and additionally serving to in numerous higher cognitive process. The purpose of using GIS in health care facility is that maps offer another dimension

to data analysis that helps in visualizing the advanced patterns and relationships. data used in this study include: population data, data regarding infectious diseases and their prevalence locations. During this study, dependence of spreading illness on time was studied using simple regression analyses. One among the advantages of this study is that the simultaneous use of spatial and applied mathematics analysis that has powerful tool for method process. Among all examined diseases, respiratory illness had a right away relation with time and highest dependence constant (94 %) and its distribution in crowded areas was high[9]. The literature reviewed within the area of GIS-based routing showed that there are several benefits to developing systems that make use of GIS and intelligent software [10].The use of information technology in hospital is important to improve the standard of the services provided and conjointly to scale back the cost dates back to the early. The aim of this study was to explain physicians use, perceptions and information regarding the implemented HIS at an outsized teaching hospital, the objectives of the study were to explain the extent to that staff physicians use the system their knowledge of the system capabilities and their perceptions of system's impact on certain aspects of hospital operation[11].

III. METHODOLOGY

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A. Study Area

It is the primary and vital step towards the completion of the project. For this work Aurangabad city (19°52′59″ N and75°19′59″ E) is considered as the study area which is situated in the Maharashtra State of India. Google map of Aurangabad city which is considered as the base map for further work. For creation of map, the data collected must be in the form of spatial and attribute data. Spatial data can be obtained by digitizing the base map of city. The hospitals information can be obtained by visiting the desired hospital and taking the important information about the facilities and the specialty of hospitals etc. The attribute data like name of hospital, contact number, type of specialty, site address etc., are need to be stored in the separate database.
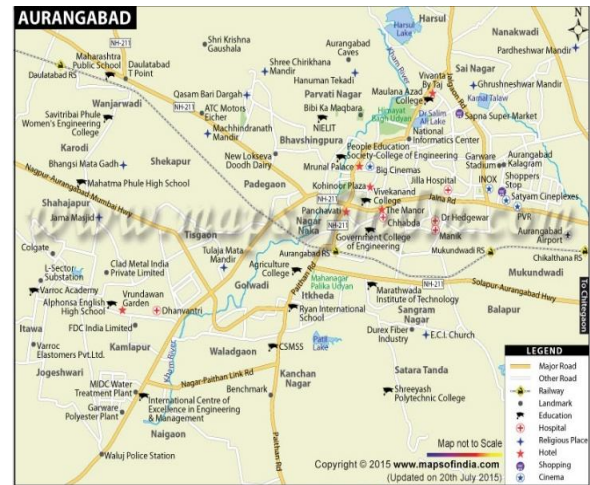

Fig1: Base map of Aurangabad city

B. Google Map

Google Maps provides high-resolution satellite pictures in conjunction with hybrid view which combines the illustrated map and satellite view. A Google map is an address based mapping application that allows users to zoom and drag maps around the curser without ever reloading the page. Google Maps uses JavaScript extensively. As the user drags the map, the grid squares area unit downloaded from the server and inserted into the page. When a user searches for a business, the results are downloaded in the background for insertion into the side panel and map; the page is not reloaded. Locations are drawn dynamically by positioning a red pin (composed of many partially-transparent PNGs) on prime of the map images. By using the Google Maps API, it is possible to embed Google Maps site into an external website, on to which site specific data can be overlaid. It also extended to include a service for retrieving static map images, and web services for performing geocoding, generating driving directions, and obtaining elevation profiles. Once the map is loaded, users can Zoom interactively, select point of interest of the map location without requiring reload of the data.

C. Web Service

Web service includes 3 fundamental components referred to as web Map Service (WMS) for creation of map application visualized by the web browser. . Web Feature Service (WFS) is for client to make web based access to the geo data in the form of GML (Geographical Markup Language). Web Coverage Service (WCS) is for continuous stream of GIS data processing. Google maps are supported as application with WCS and WMS.

The main challenges of geospatial [1] data are:

- Geospatial data are in bulk in size.
- Loading the data and map into the client is complex.
- Reload of map and data are takes time.
- Geospatial data are highly heterogeneous.
- Complex geospatial problems need large quantities of geospatial data from multiple sources and locations.

Since GIS based mostly web services system involves the dissemination of large volumes of data and /or large user interactions, we tend to needed an efficient system to manage it. typically GIS web services clients are traditionally heavy-duty , complete software tools.

D. Technology

Web technologies that may be used to implement a web application that communicates with a server within the background, without intrusive with this state of the page. The following technologies are incorporated:

- HTML or XHTML and CSS for presentation
- XML for the interchange of data
- The XMLHttpRequest object for asynchronous communication
- PHP for server-side scripting language.

My SQL is AN application used to create computer databases for the Microsoft Windows family of server operating systems. . It provides an environment used to generate databases that can be accessed from workstations, the web, or other media such as a personal digital assistant (PDA). MY SQL is probably the foremost accessible and also the most documented enterprise database environment This also means that you can learn it a little quicker than most other database environments on the market Using SQL one can create and maintain data manipulation objects such as table, views, sequence etc. These data manipulation objects are going to be created and stored on the server's hard disk drive, in a very table space, to which the user has been assigned .These data manipulation objects will be created and stored on the server's hard disk drive, in a table space, to which the user has been assigned. Once these data manipulation objects are created, they are used extensively in commercial applications. Following fig. shows the three tier architecture of the system as browser, web server, GIS server and data. The main function as follows:
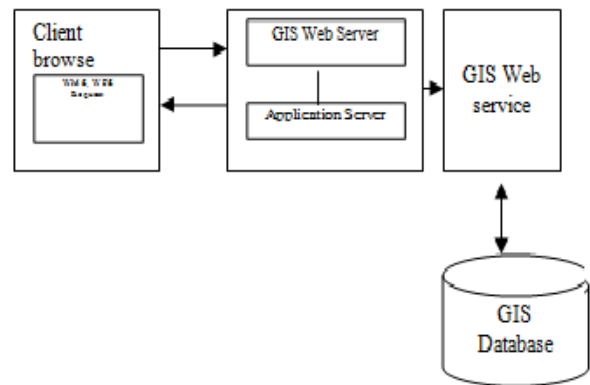

Fig 2: GIS web services

Step 1: Browser sends Http request to the web server. The request may be spatial information or map.

Step 2: Web server tier has the responsibility to change the response comes from the GIS server into the format that the input module supported.

Step3: The basic function of GIS Application server is to receive the request comes from the web server, so contact the data tier for reading files or database, finally provides the processed lead to the form of XML response to the web server

Step 4: The data tier has the GIS files and database include tables for using MySQL; this tier communicates with the GIS server directly.

IV. EXPERIMENTAL WORK

A. Creation of database

Database can be created by integrating the information of the hospitals with the coordinate (Latitude and Longitude) taken by using GPS. The information is collected for following details as shown in Table 1.

Field Name	Data Type
Serial no	INT
Hospital Name	TEXT
Category	TEXT
Address	TEXT
Opening and closing time	TEXT
Latitude	TEXT
Longitude	TEXT
Area	TEXT

Table1: Database Attribute

After creation of database the final map is created by selecting the type of specialist and particular area or you have to select area or type of specialist. as shown in following figure.
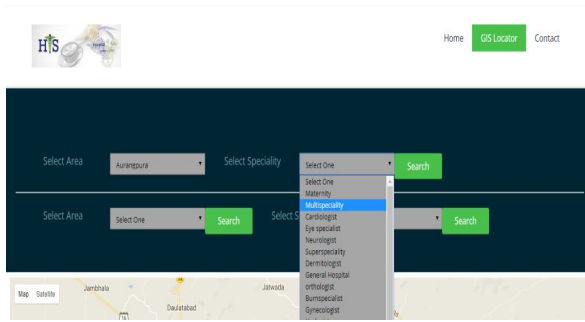
Fig3: Hospital service type

After selecting the type of specialist and area you will get the location of hospitals in that particular area .user clicks on any hospital, the information will appear on the screen regarding hospitals. as shown in figure
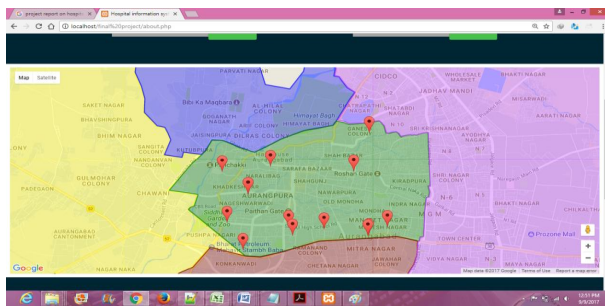

Fig4: Hospital Location

Above fig. shows the location of hospitals in Aurangpura area and above all hospitals are multispecialty hospitals.
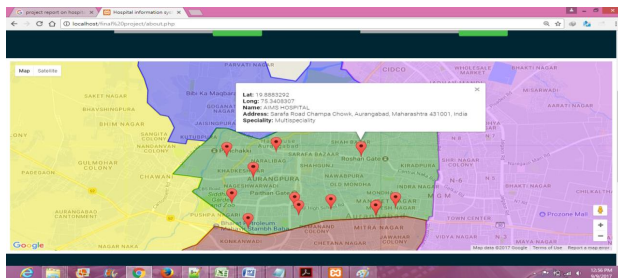

Fig5: Hospital Information

Above fig. shows the all information regarding hospital will be display. Such as hospital name, type, address, phone no. opening and closing time.

V. CONCLUSION

Healthcare is a very important part of our society Each day hundreds of thousands of people need a hospitals for getting good treatment from specialist, so the main objective of this study is to find the hospitals of particular area and giving information about all hospitals related to name, address, phone no, opening and closing time of the hospitals. In a future it can be possible to find out the nearest hospital from the desire location. And it can be also possible to add the ambulance Services for emergency purpose.

VI. ACKNOWLEDGMENT

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