

Table of Contents:

Abstract	2
1. Introduction	3
2. What is GIS all about?	3
3. Requirements of a GIS	4
GIS Data	4
Data Layers and Objects	4
4. Advantages of GIS	5
5. Challenges faced in GIS	7
6. Positives of GIS	9
7. Applications of GIS	10
1. GIS FOR VHA	10
2. A WEB-BASED GEOGRAPHIC INFORMATION SYSTEM FOR ACEH NATURAL HAZARDS	13
3. USING GEOGRAPHIC INFORMATION SYSTEM TO VISUALIZE TRAVEL PATTERNS AND MARKET POTENTIALS OF PETRA CITY IN JORDAN	18
CONCLUSION	24
REFERENCES	25

Abstract

The technology has developed very fast in the recent years and the method of analyzing the information and gathering the information has changed drastically. In the similar way Geographic information system (GIS) technology has emerged as the powerful technology to monitor almost every information of earth. This article speaks about the basic idea of GIS; working of GIS, its benefits, managing the data in GIS and its applications in the day today life .This article also gives the information on today's libraries and the changes that need to be done by using GIS.

1. Introduction:

When you visualize a map it gives you some information on a particular area but not precise. If we think of visiting a tourist spot, we will not get detail information with the help of a map. Whether that tourist spot is good for hiking, camping and fishing? By embedding all this information into a map will give us clear information about that place.

In the mean time libraries are facing much competition and challenge in the field of electronic media .As most of the electronic media of geographic information is presented by public and private sector. With the use of web 2.0 it has become very easy for the private and government sector to transfer the information, which can be readily available to many users. More over the computer technology has developed very fast and is affordable.

Many private companies and marketing executives as well as government sectors can now integrate the data available for diseases, weather, agriculture, sales and much more in to geographical areas using GIS tools .So that the end users can use it and get the information.

Now with the use of GIS technology we can able to do that. To get the more precise information on GIS and its applications in day today life, and the challenges faced .Let us get in detail about GIS.

2. What is GIS all about?

Geographic information system (GIS) is a computer tool which presents the coordinate data and attributes data in user understandable form. In other words we can say that, it is a computer tool used for gathering information, analyzing information and storing information of a particular Geographical area.

This information of GIS is not only limited to computer environment .As the technology of mobile communication has increased; we have tablets where we can embed the information provided on a road map. Where the user not only gets the information on the number of lanes, but also gets the shortest distance as well as the geographic information. (4)

3. Requirements of a GIS

An automated GIS must contain database for storage of both coordinate data and attribute data; it should have data layers or data objects; the data must have topology; and there should be a mean through which the spatial data can be manipulated to derive new data.

GIS Data

As discussed above the GIS stores both coordinate data and attribute data in its database. Coordinate data or spatial data is the location of the earth which is represented on a map by using X and Y coordinates .The data must be displayed by using three type of representation that is point, line and areas. This is how the data are usually stored in the computer environment of a GIS.

The measurement of earth surface is done using graticule. It is the intersecting grid of latitude and longitudes .It is an angular measurement system. The graticule measure angles not distance. One degree of longitude at the equator is approximately 69 miles on the other hand one degree of longitude at the North Pole is zero miles. These dimensions are used for projecting three dimensional data into two dimensional. (4)

The projection of data on a map will not be accurate as three dimensional data is transformed into two dimensional. Every map projection will not have true characteristics. When projection is done on a little area, it will have less affect. Where projection of data is done on a large map it will have more affect. On the other hand attribute data is the data which links the coordinate data of a geographical area that describe the features of that area. As it describes the features it is often called as Z coordinate in GIS. (4)

Data Layers and Objects

A data layer is the one which contains the information on particular object. A map may have vast information about that geographical area but to visualize a particular information layers are defined. This is best done by the GIS software.

Object oriented data storage is the emerging method. All the features and information related to feature are stored as object. (4)

In an object oriented environment we have classes .Each object is part of a class. And each object of a particular class is usually referred as an instance. In GIS every object of a class has particular information about a geographical area.

When the data is stored in layers or objects assigned for a particular geographical area, this combination of objects when laid on to a geographical area gives the information to each and every question. This ability of GIS makes itself an independent tool for analyzing a particular geographical area.

Vector and raster are the two formats in which the data is stored for processing the geographical coordinates in a computer. A vector defines the data in two points that is X and Y coordinates. Cartesian coordinate system is the one in which data is stored when projected. For example, if there is a location at 250 meter west and 600 meters north then the coordinates shown in vector form is (250,600).

On the other hand raster storage is different from vector storage format. Here in raster storage the data is stored in rows and columns in the form of matrix. The data which is stored is of pixel matrix a small picture.

When we differentiate both raster and vector storage according to there advantages and disadvantages, the biggest disadvantage of raster form of storage is that, it should be stored in matrix form only. On the other hand vector data needs a particular software program to process the coordinate data. A series of pixels defines a particular area. Memory requirements for raster data is more when compared to vector form of data. Variable resolutions can be achieved by vector data where as raster data displays the image. In vector format coordinates can be placed depending on the scale, where as it is not possible in case of raster format as it contains images. The numeric data differentiates the pixels in GIS. Vector data takes less time for processing when compared to raster data. (4)

4. Advantages of GIS

Though there are numerous advantages of GIS the biggest advantage is that it is its feature to integrate various databases into one. Hence some time it is called as the database of the databases. Out of many in layers in GIS each layer is considered as a database as it has much and complete information related to that layer. For example when we take the layer for restaurants in a particular area it shows only that layer through which we can easily identify the restaurants available in that area. And all the data of each layer in a GIS

database may represent a complete the related information can also be analyzed by a user. It makes a user comfortable and eases to use it by providing the data in a single layer for particular information. So from this we can understand that each layer is an individual database. Other than this the data can be accessed in more than one layer also. For example if the user wishes to have a look at the medical centers along with restaurants, he can do it by using the select tool. Similarly the user can select 3 layers and get the information on three at a time. Which is easily done by GIS. A route map of government sector may be available for a user but it does not provide the information related to restaurants, petrol bunks etc. The map is the property of government but it will not provide detail information about the route. This maps value automatically increases when it is embedded in GIS. (4)

The next advantage of GIS is that its ability to manage and make available the data visually in coordinates form. These data is managed in tabular form in databases, which don't permit to view or manage the data with spatial tools. For example, if we consider a study related to animals where in the location of the animals are displayed in map .Which then entered into the tabular form database in the form of latitude and longitude. It is seen that there were some typo errors which were present. This was clearly seen when this data is transferred into digital form. That is the typographic errors. (4)

When it comes to creation of database in GIS it is time consuming processes as well as expensive processes. On the other hand once the database is created it has many advantages. Once created they can be used for analysis, through which a lot of information can be extracted depending on the queries. We can generate reports, analyse the data modify the data and much more.

Complex spatial analysis is done quickly once the spatial data is placed on to a map. We can revise the maps quickly and reproduce the reports. This easy task of revising encourages the people to input the data.

For example if we consider an area which has some political impact at one side and the other area on other side, to target this according to the political impact it need to divided and re divided again which results in error ,when done by hand. But when done in GIS it can be done easily. (4)

With good analysis the data can be placed in a layer. This is individual database that gives the end user complete information on the subject.

Repeated calculation, analysis, generating the reports and inputting the data can be easily managed in GIS. This was not possible manually.

In this way different organizations can not only save the cost ,but also will get the correct information with less time consuming process than compared to that of manual one. (4)

When modified, refined and re edited the data becomes standard .This standard data provides good information on the context. Where in every organization is attached and enjoy the benefits provide through GIS.

5. Challenges faced in GIS

As discussed above the biggest challenge is faced by the libraries which need to develop its standard to get in competition with the private sectors. The other challenge is that of privacy data. (4)

Data accessibility is the first challenge faced by the libraries. Only a small portion of map is made available in digital geographic information system. The libraries' which are preparing to embed the digital available data into GIS will face the challenge. They need to maintain the old method of access while using GIS. More over interface programs will be difficult to learn and are not good at its best. Libraries need to do a thorough research on the available interface program to incorporate with GIS as a tool. (4)

When implementing new software every organization faces difficulties, similarly libraries will face many problems. Many people face difficulties to get adapted to new type of technology. Some people may not be comfortable in using computer. For them paper map seem good, but with GIS it is very difficult for them to operate and get the solutions. The users have to go through training to use the tools. (4)

Much of the library data is developed for specific projects with out the thought of its uses or users. As libraries incorporate digital geographic data into everyday usage, they are likely to run into "mystery data." More over the data layer which is created for a project may not have areal coverage for every data layer or the structure of data cannot be integrated with other data. It will be very difficult for a data to be identified with its code and values. With out proper documentation it becomes a difficult task to get the correct information. (4)

For an agency as National Mapping Division of US it has taken over many years to accumulate the data on maps and they follow certain procedures to do that. And it is verified again and again before release. On the other hand GIS allows users to enter data and create geographical data with no restrictions, hence there is no quality of data and it has no validation process. New technology implementation demands more expenses. There will be need for software, hardware for data storage, infrastructure, and trainers. More and more funding is required for transformation from old processes to new GIS one. The biggest challenge is faced when comparison is done with the maintenance of data storage and hardware. Many librarians will quickly find themselves facing the temptation of cost recovery on the use of the system or access to the data. It will be difficult task for them to balance the cost of providing GIS. For implementing every new technology it takes lot of effort and cost, few of the challenges faced while implementing GIS are: (4)

- The effort taken for gathering the information for the hardware and software required for GIS.
- To implement the infrastructure and install it and maintain it.
- Large storage requirement of GIS demands larger space for storage of data, as the data of GIS increase day by day. And also the compatible software to manage the database of GIS.
- It will be difficult task for libraries to manage the multiple dynamic databases.

It will be a challenging task for librarians to manage GIS when printing reports and plotting maps. There will be a lot of questions that need to be answered. (4)

As a library's strength will be in its neutrality when serving users. This neutrality will be affected, because of distribution of data created by others to the requesting user. As libraries gain the capability through GIS to create new information they will be faced with issues related to the presentation of that information that may affect their neutrality. (4)

There must be some proper method by which classification and symbolization of data is made. For example a population map will look different for equal interval classification or quantile classification depending on the symbolization

and color used. In essence, any time a map is displayed on the screen or sent to a printer, an interpretation of the data has been performed. (4)

The other challenge faced by the librarians is the process of learning the digital map concept. The whole world is presented in digital map which resides in database. More over it changes daily. The tools provided by GIS makes easy to distort map information--either accidentally or intentionally.

More and more skills are required by the librarians for managing the data in computers to maintain the data hardware and the software. These skills required need thorough training. Each and every staff of the library needs to advance in computers. Lot of parameters and tools has to be understood by the librarians, so that they can resolve the queries of the users. They need advanced education is to properly design and execute GIS functions such as database design, creation, and maintenance, spatial analyses, and map and report production. (4)

6. Positives of GIS

The main objective of Libraries will be to store the information and pass it on to the users. This objective of can be achieved by using GIS. Even though there are many challenges to understanding and using GIS, libraries have unique strengths to meet these challenges.

The method which is followed by libraries for storing and sharing of information provides great strength against the problems faced during implementation of GIS. This type of methodology not only improves the usage of GIS but also improve the quality. All non-controlling agencies libraries can defend against charges of bias in GIS operation. The users have trust and respect towards the data provided by the libraries and this degree of trust is one of the positive when implementing GIS. (5)

7. Applications of GIS

1. GIS FOR VHA

INTRODUCTION

Patient with diseases such as Multiple Sclerosis is need to be addressed as this critical to the patient, and requires appropriate access to VHA in timely health care. Therefore, the used of geographic information system (GIS) tools to locate Veterans Health Administration (VHA) patients with multiple sclerosis (MS) and to identify situation how they access to MS specialty care. This is to show how to utilize GIS tools in planning by providing examples how will affect patients' access to care when additional clinics for MS patients are added. The technique in mapping used in this report gives important and powerful tool for planning personnel and policy who are studying how to address undeserved populations and places within the VHA healthcare system. (2)

METHODOLOGY

1) *The Design Study*

Observing all Multiple Sclerosis patients looking for treatment in VHA facilities during Fiscal Year 2007. (2)

2) *The Cohort Study*

During 2007, 19,311 veterans patient with MS diagnosis was confirmed, and 92 cases (0.48%) were excluded in study because of not valid/missing zip codes or unclear locations. 19,219 VHA patients with multiple sclerosis was used for GIS analysis. (2)

3) *The used of Data Sources*

Records of the characteristic of MS Patient was used in study from VHA record databases that contains patient information including location of care (clinic stop codes, hospital unit), home zip code, procedure and diagnosis codes, type of care utilization (outpatient, inpatient) , costs of healthcare, and also the treatment in home facility. (2)

4) *Analyzing the Plan*

The travel time in minutes was used in study from veterans' access to VA healthcare facilities. (2)

PROCEDURE

By creating -30, -60, -90, and -120 minute travel-time bands around each VA facility was used in study. The travel time was used as an indicator of Geographic Access. Distance is not practical to utilize in study since the methodology used for creating the travel time bands depends in the population density and type of roadways. For example, VA facility in Nebraska and urbanized areas such as Chicago, LA, or New York has the same 15 mile distance, however, travel time will change and Nebraska can travel by 15 minutes only, while Chicago, LA or New York can travel by more than hour. So, it means that study depends in travel-time not by distance due to type of roads and the population density or not by straight line distance. (2)

Another example is in VISN east area, base on table 1, VISN 9 is the poorest to access the VH facility because 85.7% of the patient travel more 2 hours, so, by using GIS mapping technique, can conclude that adding specialty clinic (Nashville) near to VISN 9 east area is practical because more patients will be served. (2)

RESULT OF THE STUDY

The accessibility and availability to MS specialty clinic varies within and between VISNs and the East-West area.

Table 1.

Distribution of travel times by Veterans Integrated Service Network (VISN) within Multiple Sclerosis Center of Excellence (MSCoE)-East catchment area. Data presented as frequency (%).

VISN	0-15 min	15-30 min	30-60 min	60-90 min	90-120 min	120+ min
1. New England Healthcare System	67 (8.7)	123 (16.0)	268 (34.8)	148 (19.2)	52 (6.7)	111 (14.4)
2. Healthcare Network Upstate New York	29 (7.7)	28 (7.4)	17 (4.5)	48 (12.7)	33 (8.8)	218 (57.8)
3. New York/New Jersey Veterans Healthcare Network	59 (14.8)	107 (26.8)	127 (31.8)	83 (20.8)	20 (5.0)	4 (1.0)
4. Stars and Stripes Healthcare Network	55 (7.0)	98 (12.5)	232 (29.6)	164 (20.9)	157 (20.1)	100 (12.8)
5. Capitol Health Care Network	54 (14.8)	127 (34.8)	128 (35.1)	29 (7.9)	13 (3.6)	14 (3.8)
6. Mid-Atlantic Network	57 (7.7)	94 (12.7)	60 (8.1)	32 (4.3)	34 (4.6)	467 (63.3)
7. The Atlantic Network	27 (3.9)	66 (9.5)	119 (17.2)	66 (9.5)	100 (14.4)	315 (45.5)
8. Sunshine Healthcare Network	61 (6.5)	141 (15.0)	254 (27.1)	119 (12.7)	165 (17.6)	197 (21.0)
9. Mid South Veterans Healthcare Network	5 (1.0)	30 (6.1)	19 (3.8)	6 (1.2)	11 (2.2)	424 (85.7)
10. Healthcare System of Ohio	18 (7.1)	33 (5.7)	76 (13.1)	96 (16.6)	103 (17.8)	253 (43.7)
11. Veterans In Partnership	40 (6.3)	90 (14.2)	94 (14.9)	84 (13.3)	76 (12.0)	249 (39.3)
MSCoE-East Total	472 (7.0)	937 (13.8)	1,394 (20.6)	874 (12.9)	742 (10.9)	2,359 (34.8)

Table 2.

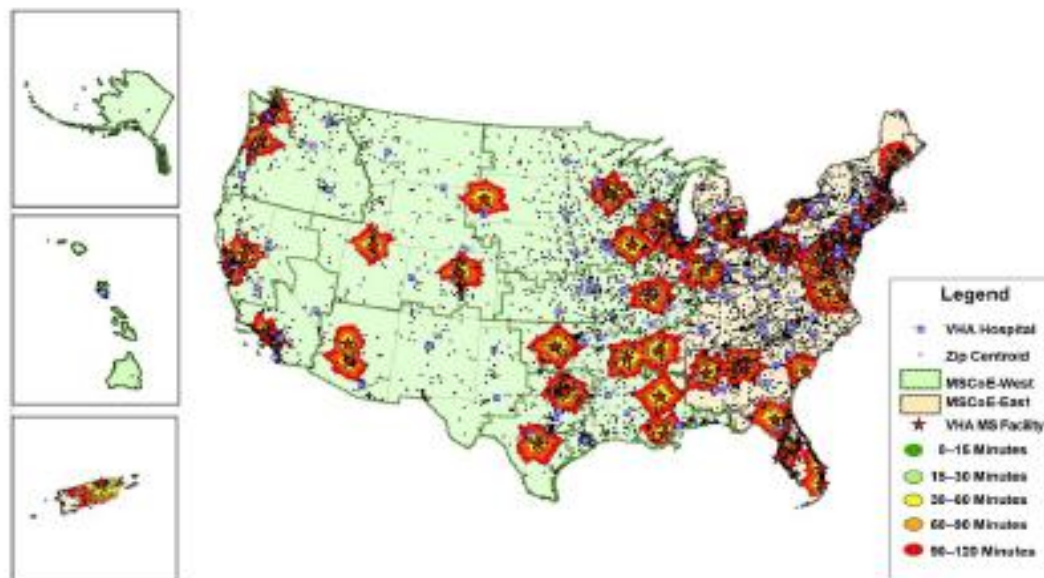
Distribution of travel times by Veterans Integrated Service Network (VISN) within Multiple Sclerosis Center of Excellence (MSCoE)-West catchment area. Data presented as frequency (%).

VISN	0-15 min	15-30 min	30-60 min	60-90 min	90-120 min	120+ min
12. The Great Lakes Health Care System	99 (12.2)	141 (14.5)	202 (20.8)	186 (19.2)	156 (16.1)	187 (19.3)
23. Midwest Health Care Network*	70 (6.0)	123 (10.6)	115 (9.9)	70 (6.0)	131 (11.3)	653 (56.2)
15. Heartland Network	20 (2.6)	54 (7.0)	97 (12.5)	24 (3.1)	34 (4.4)	545 (70.4)
16. South Central VA Healthcare Network	79 (6.7)	93 (8.0)	70 (6.0)	109 (9.1)	156 (13.4)	656 (56.6)
17. Heart of Texas Health Care Network	38 (5.5)	123 (17.8)	174 (25.2)	74 (10.7)	97 (14.1)	184 (26.7)
18. Southwest Healthcare Network	47 (6.8)	102 (12.7)	99 (12.3)	15 (1.9)	14 (1.7)	527 (65.5)
19. Rocky Mountain Network	82 (8.5)	139 (14.3)	137 (14.1)	133 (13.7)	59 (6.1)	420 (43.3)
20. Northwest Network	38 (5.2)	156 (13.9)	202 (18.0)	135 (12.0)	60 (5.3)	512 (45.6)
21. Sierra Pacific Network	49 (6.7)	98 (13.4)	153 (20.9)	99 (13.5)	55 (7.5)	278 (38.0)
22. Desert Pacific Healthcare Network	83 (8.1)	199 (19.3)	136 (13.2)	138 (13.4)	115 (11.2)	358 (34.8)
MSCoE-West Total	625 (6.6)	1,228 (13.0)	1,385 (14.7)	980 (10.4)	877 (9.3)	4,320 (45.9)

*VISNs 13 and 14 were combined into VISN 23 in January 2002.

VA = Department of Veterans Affairs.

The Figure below is a National map of VHA facilities offering multiple sclerosis (MS) specialty care:



CONCLUSION

The GIS mapping technique used in this study provides a helpful and valuable tool for policy and planning personnel who are evaluating how to address undeserved areas within the VHA healthcare system. (2)

2. A WEB-BASED GEOGRAPHIC INFORMATION SYSTEM FOR ACEH NATURAL HAZARDS

INTRODUCTION

The province of Aceh is the most affected area by Tsunami during December 26, 2004. It has been reportedly during this time that over 150,000 people died and made an estimated five million persons are homeless resulted by big destruction of this disaster. Aside from this, Aceh is experiencing a number of natural disasters such as flood, earthquakes, volcano eruptions, landslides, drought, etc. Until now, Aceh has no natural hazards information system which can be utilized to increase public awareness in order to reduce the impact of the disasters. (3)

This situation creates an institution a concept in how to minimize risk of disaster. Therefore, the development of Web GIS based information system for Aceh, referred as *Aceh Natural Hazards Information System (ANHIS)*, that will provides hazard maps as the guideline for disaster risk prevention planning and to increase public awareness of the risks of natural disaster hazard. (3)

This paper proposes an idea of GIS web design and the development of prototype for ANHIS. The main purpose of ANHIS is to visualize many natural hazards maps and provide information of the hazardous areas for disaster agencies, researches and public in order to help them act on warning issue. (3)

In creating the prototype for ANHIS, the idea of research method design was developed such as System Requirement Analysis, Hardware and Software requirements identification, prototype design and implementation. (3)



Concept of a web GIS based for ANHIS (Cited in Item 2)

PROCEDURE

Research method of conceptual design and the development of prototype for ANHIS consist of number of steps that are as follows:

- System requirements analysis

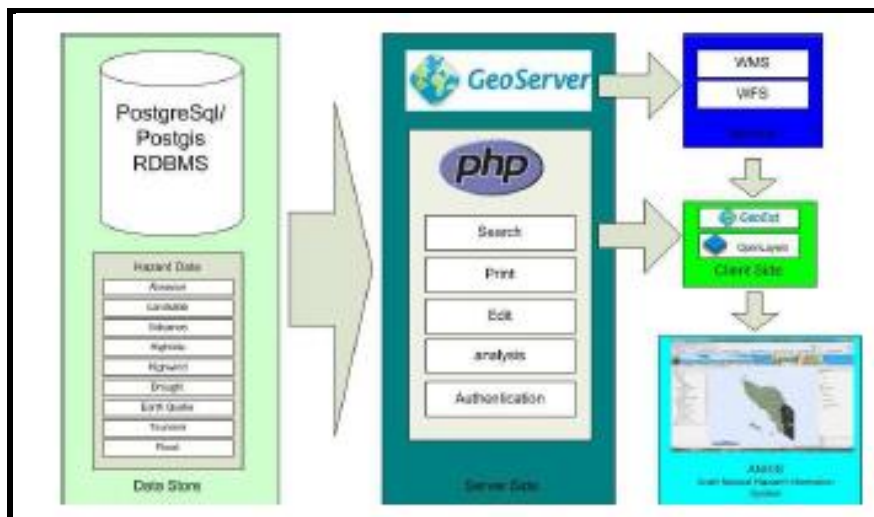
This system is to determine user requirement and satisfies what the user need. The role of the GIS web map will be internet browsing, taking hazard information, conducting queries, performing location-related analysis to assist decision-making process. (3)

- Hardware and Software requirements identification

Includes computer, type of processor speed & capacity, and operating system. Selection of type of software for server such as Geo Server written in java and Database Server. Selection of software for web applications such as Open Layers and Geo Ext JavaScript. (3)

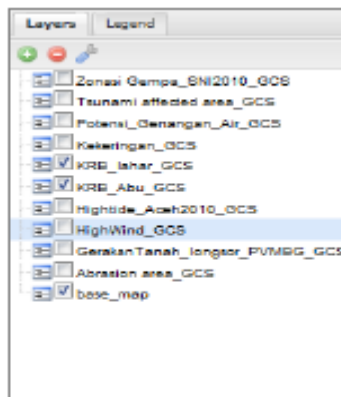
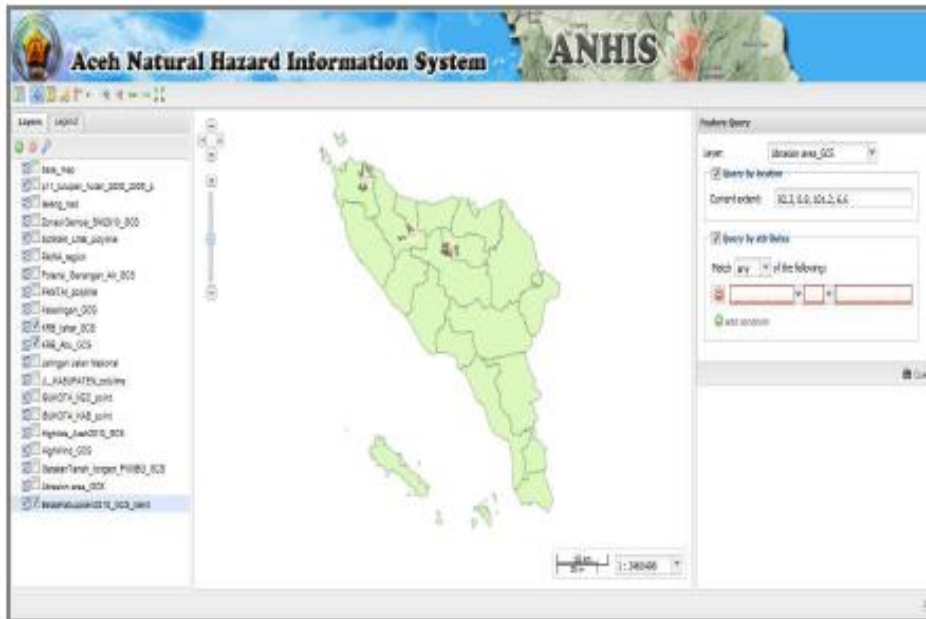
- Prototype Design

Design of the user interface and its function (Cited in Item 2)



- Implementation

Design base on user requirements in providing information about situation on the selected areas.

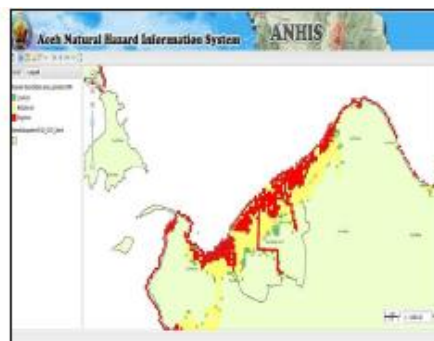


The homepage are provided with toolbar, layer & legend panel, and feature query to provide hazard information on selected areas

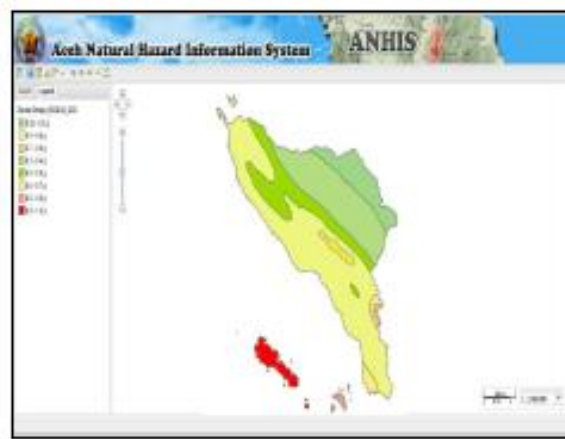
RESULT

GIS Visual illustration examples generated in hazardous selected areas

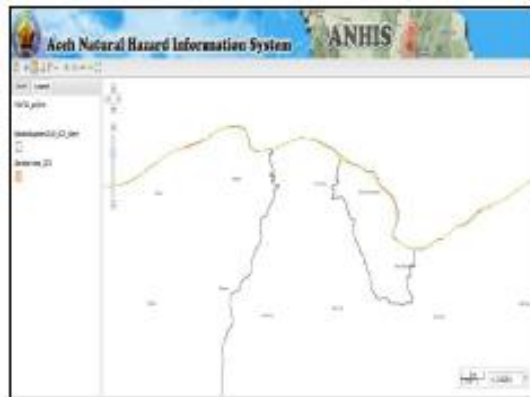
- 1) Information for Tsunami Warning Map (Cited in Item 2)



2) Information for Earthquake Warning Map (Cited in Item 2)



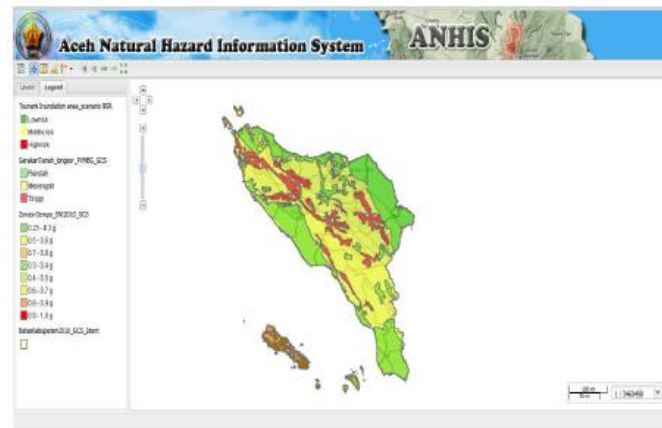
3) Information for Landslide Warning Map (Cited in Item 2)



4) Information for Flood Warning Map (Cited in Item 2)



- 5) Information for Multi-Warning Map (earthquake, tsunami, landslide) in the web ANHIS (Cited in Item 2)



CONCLUSION

This proposal has been discussed the idea of design and the development of a Web GIS based information system for Aceh natural hazards in order to have increase public awareness and prevent of the risks that natural hazards and related environmental disasters that may result to communities, societies and economies in Aceh. (3)

3. USING GEOGRAPHIC INFORMATION SYSTEM TO VISUALIZE TRAVEL PATTERNS AND MARKET POTENTIALS OF PETRA CITY IN JORDAN (1)

INTRODUCTION

Tourism is considered very important in the economic and social perspective of countries. It has the strongest effect on the economy, because it has chain reaction in developing other sectors. The contribution to the economy of tourism which involves such as transportation, hotels, malls, restaurants, establishments, entertainment, recreation, historical and cultural experiences, destination attractions, shopping and other services available to travelers away from home. While looking for information about all of these activities we may have to search at maps, reports, tables, charts, lists, but sometimes it is difficult to find information all about these activities. Therefore, GIS for tourism was developed to provide information, visualize complex scenarios, present ideas and derive effective solutions. (1)

RESEARCH OBJECTIVES (1)

The objectives of this study are:

1. To develop a geographic database in the net, including all tourist sites in Petra City.
2. To promote tourist sites in Petra City especially Petra being voted as one of the new seven wonders of the world.
3. To identify the actual role of GIS applications in tourism marketing in the context of the continual growth of tourism sector.

PROCEDURE (1)

Technical IT knowledge for both Hardware & Software computer applications and marketing strategy of the researchers for creating GIS website.

The features of the GIS plan as proposed by the researchers are:

- 1) Compilation of all the tourist sites in Jordan on the map to include all the information on the human and natural resources.
- 2) Determine which tourist sites need to be identified on the tourist map of Jordan.

- 3) Identify potential tourist attractions, human and natural tourist attractions that must be presented on the tourist map for each of the tourist sites, such as malls, restaurant, hotels, tour operators, places and environmental and cultural sites.
- 4) The design of a GIS for each tourist must be provided on CD-soft copy for the marketing purposes of the tourist site.
- 5). Uploading the site which was designed for marketing tourism in the internet. This will enable tourists to choose and browse freely through the site.
- 6). Provide this system in the form of hard copy, whether as paper or at least containing all the features on the map.
- 7). The administrative leadership in tourism sector in Jordan, who are responsible for decision making, must have important role in promoting this technique in the field of tourism as well as to encourage applying and using this technique in a full authority.

Regarding data required for the design of the system:

- 8). Create a database of tourist information for each tourist site in order to provide all the current data on the geographical location of the tourist maps, paper or digital maps of different scales, defined by the sites and roads.
- 9). Utilize information from the Royal Jordanian Geographic Centre.
- 10). Utilize information from Jordan Tourism Board.

Regarding design, maintenance and updating of the system:

- 11). Training sessions for public and private sectors employees on the use of Geographic Information System in marketing tourism in Jordan.

LAYERS FORMING THE DATABASE OF THE STUDIED AREA (1)

1) Concept of the Proposed System for Petra City (Cited in Item 3)



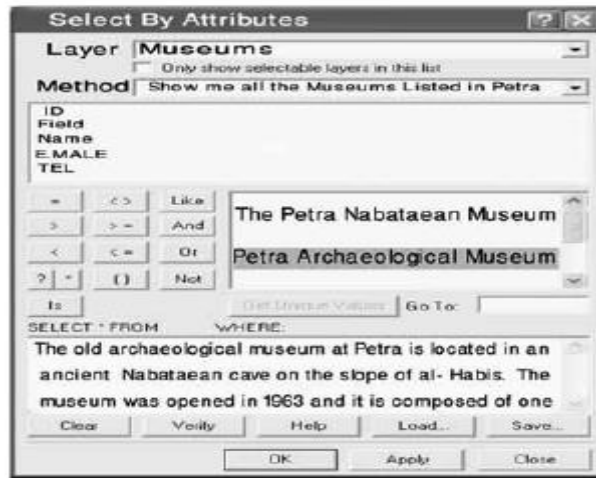
2) Identifying Detail Feature (Cited in Item 3)



3) Searching for hotels using “star rating” by using the proposed system (Cited in Item 3)



- 4) Searching of places and activities by using the proposed system (Cited in Item 3)



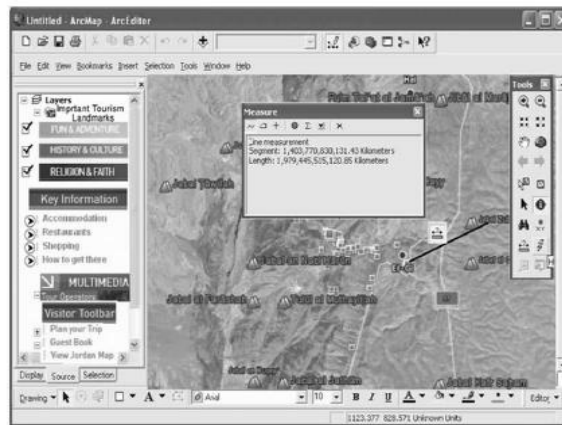
- 5) Access through the Window link to many tourist activities such as the Petra Marriott Hotel (Cited in item 3)



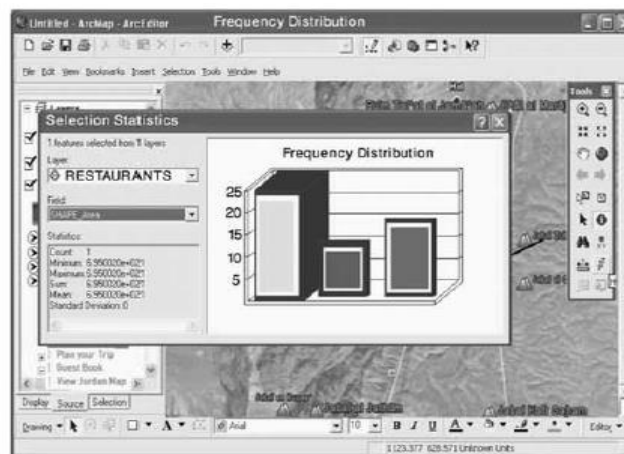
- 6) Identify the nearest places needed(Cited in item 3)



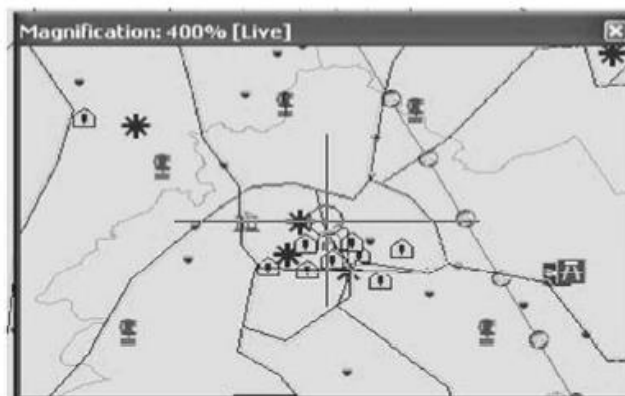
7) Identify the distance of the places needed (Cited in item 3)



8) Statistical operations carried out by the proposed system (Cited in item 3)



9) The use of zoom tool “Magnifier” (Cited in item 3)



10) Ability to modify geographical features (Cited in item 3)

Address	Restaurant Name	Restaurant type
Crowne Plaza Petra	Olive Tree Restaurant	Arabic
Movenpick Petra	Al Iwan	Arabic
Petra	Basin	Casual Dining/Pub
Petra	Oriental Restaurant	Casual Dining/Pub
Petra	Petra Kitchen	Casual Dining/Pub
Petra	Oriental Restaurant	Casual Dining/Pub
Petra	Aliwan Restaurant	Casual Dining/Pub
Petra	Al Saraya Restaurant	Casual Dining/Pub
Movenpick Petra	Ghadeer Roof Garden	Coffee Shop
Petra Marriott Hotel	L'Affresco	Italian
Petra	Casual Dining	Casual Dining/Pub
Petra	Al Ghadeer Roof	Casual Dining/Pub
Petra	Dushara	Casual Dining/Pub

11) Important Tourist-Spot appears through the tool “Tip” (Cited in item 3)



12) Finding a specific operator on the map using Find Feature (Cited in item 3)



CONCLUSION

Adopted by computer knowledge for both hardware and software, by using GIS the researcher can promote and develop marketing strategy for tourism in Petra. This GIS is able to provide information about tourist spot, visualize complex scenarios, present ideas and derive effective solutions. (1)

CONCLUSION

In the fastest growing technology GIS is becoming the integral part of each and every technology. When it comes to traveling, gathering information related to diseases, hospitals, etc. GIS has made a strong progress .This is what it makes the most powerful technology. As it is discussed this paper GIS has got many positive and some negatives. And more over there are lot of opportunities in GIS .With applications such as aceh and the application in travel industry it clearly shows us that in what way GIS is helping the whole world.

REFERENCES

1. Al qeed et. "Using Geographic Information System to Visualize Travel Patterns and Market Potentials of Petra City in Jordan", International Journal of Marketing Studies, 2010.
2. William J. Culpepper," Using geographic information system tools to improve access to MS specialty care in Veterans Health Administration", Journal of Rehabilitation Research & Development, 2010.
3. Nasaruddin et. "A Web-based Geographic Information System for Aceh Natural Hazards", TELKOMNIKA, 2011.
4. Scassa, Teresa. "Geographical Information as personal information". Oxford University Commonwealth Law Journal, Winter2010.
5. Cox, Allan B., "An overview to geographic information systems", Journal of Academic Librarianship, July 95.