**Chapter I**

**Problem and its Background**

**Introduction**

The proponents help to provide transferee students and visitors an excellent guide in finding specific buildings within the campus.The following features are the information about the school, including its vision, mission, goals, university administration and the schedule of professors.

Nowadays, information technology is an important component of our daily lives especially in business applicationsand handy communication devices. Technology makes our liveseasier and complete our tasks faster. It also expedites the learning of students by making vast amounts of collected knowledge readily available through the internet. With technology, the only limit is our imagination, as the saying goes.

Technology is also very useful in different aspects in our lives like in communication, because theproblem of time and distance between two people who wanted to talk but live in different provinces or time zones is now a thing of the past, thanks to cellular phone and internet technology. Businessmen do not need to be at their offices always to transact with their clients – online selling is a very lucrative business.Missed an episode of your favorite tv show, or longed to watch again an old movie that made you cry when you were in your teens? There are many video streaming and video on demand sites you can search, for a minimal fee.Technology also gives students answers and solutions to academic problems in real time.

Bearing in mind the advances in technology we have at our disposal, we have been inspired to design and create an innovative device like the Electronic Mapping and BIT Directorythat we hope can help the students of Bulacan State University Sarmiento Campus.

The researchers made the Electronic Mapping and BIT Directoryas a means to provide pertinent information and guidelines. The purpose of this project is to help the transferees and/or visitors of the campus to locate specific rooms, departments, buildings and other points of interest in and around the campus.

To use the device, a person who is inquiring needs to tap the monitor to select his choice. The main choices are: Building 1, Building 2, Building 3, Building 4, BIT Directory (including faculty department and instructors’ schedules), CoursesOffered and Other Information. The researchers have also provided 3D images of the buildings that show different perspectives of the chosen building to give the user a general idea of the building he wants to go to.

The purpose of program schedulingis to list the available instructors or professors of a given subject and time. It also gives a brief information about the instructor selected. Most of the freshmen and visitors do not know the profile ofBIT professors so the researchersalso includedtheir pictures, with the instructors’ permission, above theirappointed schedules so that the user ofthis project will correctly identify a specific instructor and the subject and timeassigned to him.

The proponent’s goal is to eliminate the problem of the students and visitors of the campus looking forspecific room assigned for a subject. It is time consuming and sometimes confusing and frustrating, especially for new students of the Bulacan State University Sarmiento Campus. The Electronic Mapping and BIT Directory was designedto be informative, convenient and easy to use.

The touch screen monitor has controllers displayed on screen, and is therefore easy to operate, even for people with little or no technical knowledge. The researchers also included THE VISION and MISSION, the BSU Hymn and theBSU Marchfor the benefit of new and transferee students. This project made the above-mentioned information looksomewhat cool and lively,hoping that the user will entertained while using it.

The project, entitled Electronic Mapping and BIT Directory,has a database that is very useful but limited by design,to cater to students and professors of BITspecifically. The only other resource information included in the system is the courses offered in Bulacan State University-Sarmiento Campus that interested visitors will want to know about.

**Statement of the problem**

Most of the freshmen, transferee students and visitors are not familiar inside the Bulacan State University Sarmiento-Campus. Every semester, freshmen and transfereesget lost or confused in the campus; it takes a lot of time to find the location of their building.

1. It`s difficult to find the location ofevery room and faculties.

2. Most of the freshmen students do not know the professors’ schedule.

3. Visitors do not know the exact location of the building or room they are looking for.

4. The freshmanor visitor may notbe given direction properly by the guard, something that may cause confusion.

**General Problem**

The main problem of freshman students in Bulacan State University-Sarmiento Campus is the difficultyof finding the classrooms, faculties and the schedule of BIT professors.

**Specific Problem**

Most of the freshmen and visitors don’t have any idea where they should go or whom to ask directions from. At times they may ask our security guardfor help, but it is not always enough to pinpoint the exact direction or building they have in mind.

1. How effectiveand reliable will the information befor all the students and visitors to use?

2. Is it accessible to all people looking for an immediate solution?

3. Is it possible to update or change theinformation contained in this project in the future?

4. In the event of a power failure in Bulacan State University, will it affect the program?

5. What type of hardware were used in this project to give the best performance?

**Significance of the study**

This part of the study discusses about importance of creating the system. This will serve as a basis of reference for conducting research.

**Bulacan State University Sarmiento-Campus-**The University would benefit in terms of technology to encourage more students to enroll in Sarmiento Campus.

**Bulacan State University Students-** Would be benefit in terms of looking for different building and schedule BIT professors.

**Freshmen Students** - Freshmen would be more familiar of the location of their building and learn the history, mission, vision, goals and objective, BSU hymn and BSU march.

**Visitors-** Electronic Mapping and BIT Directory for Bulacan State University would help visitors to find the location of particular building they are looking for.

**Future Researchers-** This systemcan be improved upon and may serve as a reference material to students who intend to conduct further study and gain knowledge about 3D mapping system.

**Guard-** It will help our security guardsin guiding the visitors and transferees using the system.

**Scope and Delimitation of the study**

It provides the scope of Electronic Mapping System for Bulacan State University on what the project can provide and its limitation,explaining the constraint of the said project.

**Scope**

The researchers focused on the development of Electronic Mapping System for Bulacan State University. The project provides university information including the history, vision, mission, goal and objectives of the university.It also includes information about the admissions policy and enrollment procedures. The information about the course offered by the university were also included in the system. To guide the freshmen and visitors to locate specific area inside the Bulacan State University-Sarmiento Campus.

**Limitation**

The system doesn’t provide the rooms, available professors and scheduling for the other courses offered in the campus except for BIT. The mini maps of the chosen building in the main menu are not interactive were not designed to be manipulated.The system automatically shuts down whenthere is a power interruption.

**Chapter II**

**Review of Related Studies**

**Relevant Theories**

**Touchscreen Monitor-** touchscreens or human machine interface touchscreen technology is the direct manipulation type gesture based technology. In 1977, Elographics developed and patented a resistive touchscreen technology, one of the most popular touchscreen technologies in use today.

**Visual Basic-** is a fast and easy way to create programs for Microsoft windows, even if you are new to windows programming, with visual basic you have a complete set of tools forsimple programdevelopment.

**Google Sketch-up-** in 3D computer graphics, 3D modeling is the process of developing a mathematical representation of any three dimensional surface of object (either inanimate or living) via specialized software. The product is called a 3D model.

**Related Study**

Electronic mapping system focus in mapping but in our project we add student directory which is instructor information even scheduling and also the announcement inside the campus. Were both using touchscreen monitor to display the information and guidance. And also visual basic to run the program by itself and sketch up for 3D dimensional which is allow the user to surf the facilities provided by the research the actual picture.

**Foreign Literature**

Steve Gordon (2009), College of William & Mary the modernization of the world we are now in the 5th generation where automations are in demand. One of the useful materials that had been invented was a locator map. It is like traditional map the only difference is the locator map used cartography to show the location of a particular geographic area. But now a day’s locator map was upgraded it became a gadget like touch screen map locator. Touch screen map locator is the combination of a locator map with a use of Screen monitor.

**Local Literature**

The following are example or related system for electronic mapping and student directory for Bulacan State University.

Ayes, Tara Jane F. (2011) former BIT students of college of information and communication technology developed a “BulSU Cyber Map and Information System Booth” It was developed to serve as campus directory and way finding. It continues the vision, mission, goals and objectives of the university and different colleges, different courses offered reliable mapping information about the direction of the building and facility. Actual pictures of all the colleges and hot spot in Bulacan State University. It also has a language selector guide for the user so that information provide is more intelligible and precise. The researcher make all of the related info that gathered using the different data gathering techniques that can serve as guidelines for a better application.

According to Andreas (2009), was about “3D scan-based Navigation using multi- level surface Maps” the field of researcher connected to the mobile robot navigation is much broader than the scope of this thesis.

Dionisio, Ian Joseph (October 2007) BSIT student of CICT developed a “land route Directory System of Bulacan State University” several features integrated into the system like Bulacan state University directory, floor plan of each college. Officer and the institute of Bulacan State University as well as the plan of the other building.

Guofeng, Wuet al (2009), developed a thesis about research on electronic mapping. Based hypermedia data model, map a symbol of space cognition, has become one of three cultural tools for human being to recognize and know about the world. As a new type of carrier of space information, electronic map possesses may features dynamic, interactive, multimedia integration,

Karen Kaye T. Daniel (2012), aims to provide student, transferee, visitors a better satisfaction in finding specific buildings. Features that the following are 1) information including its history, vision, mission, goals, admission policy and procedure, university administration 2.) full three module of the dimensional building of the university. 3.) Path animation feature starting on the chosen gate up to the chosen building university.

According to Janet R. Agustin (2013), on smart way to bring in a fresh technical edge to a business, marketing, sales, or client servicing is to start vitalizing the potential in kiosk. Some kiosk of this way also include a guide or attendant where main purpose is to help visitors by offering information and advice maps, fliers, small books and other items may be available to anyone who visits an information kiosk.

**Chapter III**

**RESEARCH METHODOLOGY**

This chapter contains the method and techniques that the proponents used in their study.The first stage is gathering some information about the proposed title through research.Based on the information gathered,the researchers were able to identify the problems and propose potential solutions.

The second stage is planning and conducting fine studies for this project and design and assembling all the components.

The proponents let the users and administrator to evaluate and analyze the proposed projects for its performance,efficiency,accuracy, usability and effectiveness.

**METHODS AND TECHNIQUES OF THE STUDY**

**Internet Searching**

Part of the study is to research in internet to have an easy access to get the information that are needed for the study.

**Library Research**

The researcher required this tool to gather concrete facts about the research like the thesis documents and other matters related to the study.

**Brainstorming**

Give public opinion or sharing knowledge to one another, the researcher analyzes the cause and effect, to determine the functional and non-functional requirements of the study.

**Interview**

A tool in research which is commonly used in field survey, is by doing some interviews to different persons related to the study. The researcher interviewed some of new comer students of Bulacan State University Sarmiento Campus to gather real world facts and information with regards to the issue.

**Questionnaire**

This part of data provides statistical information from the people of Bulacan State University of Sarmiento Campus through papers distributed to them. It can be in the form of multiple choice, checklist and true or false.

It is a simple set of questions used to accumulate information in general nature to assess the possible attitude and interest.

**INSTRUMENT OF THE STUDY**

The researchers also used instruments to gather information about the study that may help the researchers create new a tool to betteraddressthe need for the project.The proposal aims to introduce a technique to improve the traditional ones to a technological counterpart. These are the methods of the study.

**Evaluation Strategy**

Another way to accumulate the data in a procedural form from the people through describing and comparing the proposed system to the existing system by defining and analyzing both systems.

**Performance -** the project is easy to use and can be learnt at a short period of time.

**Accuracy –** the researchers provide some of the images captured in Bulacan State University Sarmiento Campus.

**Effectiveness –** this will be very effective for new comers and visitors alike because they will have easy access to information of where should they go.

**User Friendly –** it is easy to use and is less time consuming.

**POPULATION AND SAMPLE OF THE STUDY**

The researchers conduct the population of the study to determine the respondents who will adapt the Electronic Mapping and BIT Directory. Based on the research the proponents conduct an interview for their research to determine the number of respondents that will gain access to the proposed system which is the Electronic Mapping and BIT Directory.

The questionnaires were sent to a random sample of 25 students from a population of 430 1st year BIT students studying in Bulacan State University Sarmiento Campus during the school year 2016-2017. Questionnaires were sent to the 25 students and 5 professors of Bulacan State University-Sarmiento Campus, to collect the feedback forthe survey, and to facilitate the detailed exploration of the issues and factors which influence students’ technological know-how.The interviews were conducted one on one basis and focused on a framework of question design.

**DEVELOPMENT METHOD**

The researchers used this way to imitate the experience of every individual’s traditional method of consultation by asking the guard on duty or other people. The researchers created a device that provides reliable information.

The proponents find the software requirements first and observed what kind of software should be used, which is the Visual Basic application for programming and MS Access. The researchers started to develop the program, and later on finally compiled it after a series of debugging sessions, to create a stand-alone program, to eliminate the need for an installed Visual Basic application.

**DEVELOPMENT COST**

***Programmers***

Donato G. Constino P 11,000

Banjo DC. Cristobal P 6,000

***Documents***

Joan G. Geroy P 4,500

Julien O. Cordero P 4,500

***Hardware*/ Table Assembly**

Lorna M Villas P 4,500

Maria Sheila B. Cuadera P 4,500

***Hardware Costing***

Computer

1 Unit of PC P 4,000.00

1 Touch Screen Monitor P 6,900.00

1 Keyboard P 350.00

2 Speakers P 120.00

***Software Costing***

1 Microsoft Windows 7 P 3,000.00

1 Microsoft Visual Basic 2010 P 2,500.00

1 Google Sketch-Up P 500.00

1 Adobe Photoshop Free

1 MS Access Free

***Utilities***

1pc.Plywood P 300.00

7pcs.Good lumber P 755.00

2pcs.Spray Paint P 200.00

½ kilo Nail P 40.00

6pcs.Hinge P 114.00

3 Roll Sticker P 375.00

4pcs.Nylon Caster P 318.00

1pc. Extension Wire P 148.00

***Electricity***

500/month\*4

P 2,000.00

**TOTAL DEVELOPMENT COST** P 56,438.00

**SYSTEM SPECIFICATION**

The proposed system needs the following requirements for the developer and the end user to use it properly.

**Hardware Requirements for Developer**

**Programming**

System Motherboard: Gigabyte Technologies GA-F2A78M-DASHV

System Model: FM+/FM2 A series APU

System Processor: Athlon™ 5370 APU with Radeon™ R3 Series

Memory: 2GB RAM DDR3

Hard Disk: 320GB

**Documentation**

Laptop/Netbook

**Software Requirements for Developer**

Visual Basic

Google Sketch up Pro

Microsoft word / Access 2010 (Documentation)

Adobe Photoshop CC

**Programming Languages and Application**

With regards to the construction of “Electronic Mapping and BIT Directory”, the researchers had decided to use a Microsoft Visual Basic Studio Professional 2013 for the software application which is a very important part of the system which the researchers studied.

**Conceptual Framework**

**Input**  **Process** **Output**

**Knowledge Requirements**

\*Visual Basic Programming

\*Basic Photoshop

**Hardware Requirements**

\*System Unit

\*Touchscreen Monitor

**Software**

\*sketch up Pro

\*Visual Basic Studio 2013

\*MS Access 2010

\*Planning

\*Analization

\*Design

\*Software development

\*Testing

**Electronic Mapping and BIT Directory**

Figure 1.1 Conceptual Framework of the Electronic Mapping and BIT Directory

**CHAPTER IV**

**DATA ANALYSIS AND INTERPRETATION**

**Evaluation of the System**

The researchers used a “point scale method” in order to rate the system and classified it as follows: 5-excellent, 4-very good, 3-good, 2- fair, 1-poor. The result for the evaluation are presented in the table with its corresponding mean and interpretation.

**Table 1.0**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | **Professor** |  | **Students** |  | **Overall** |
| 1. **Performance** | **Mean** | **Interpretation** | **Mean** | **Interpretation** | **Mean** | **Interpretation** |
| 1. Project works fast with minimal lag | 4.8 | Excellent | 4.2 | Very Good | 4.5 | Excellent |
| 2.The project responds quickly | 4.8 | Excellent | 4.1 | Very Good | 4.5 | Excellent |
| 3. The project is easy to use and can be learned at a short period of time. | 4.8 | Excellent | 4.4 | Very Good | 4.6 | Excellent |
| 4. Project does not show sign of irregularities | 4.2 | Very Good | 3.9 | Very Good | 4.1 | Very Good |
| **Composite Mean** | 4.7 | Excellent | 4.2 | Very Good | 4.5 | Excellent |

**Table 1.0 Result of the respondents for evaluation of the system in terms of Performance**

The results shown in table 1.0 the respondents gave a composite mean of 4.5; the system is Excellent in terms of Performance. The illustration shows highest rating that the respondents gave meansthat theproject is easy to use and can be learned at the least amount of time.However the lowest mean given by the respondentsindicate that the project show signs of irregularities at times.

**Table 1.1**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | **Professor** |  | **Students** |  | **Overall** |
| 1. **User-Friendliness** | **Mean** | **Interpretation** | **Mean** | **Interpretation** | **Mean** | **Interpretation** |
| 1. Project exhibits easy to use characteristics | 5 | Excellent | 4.4 | Very Good | 4.7 | Excellent |
| 2. Project is in a very understandable language | 5 | Excellent | 4.7 | Excellent | 4.9 | Excellent |
| 3. The project response quickly to the user’s selection. | 5 | Excellent | 4.5 | Excellent | 4.8 | Excellent |
| 4. The Environment of the system is easy to navigate | 5 | Excellent | 4.0 | Very Good | 4.5 | Excellent |
| **Composite Mean** | 5 | Excellent | 4.4 | Very Good | 4.7 | Excellent |

**Table 1.1 Result of the respondents for evaluation of the system in terms of User Friendliness**

The results shown in table 1.1 that the respondents gave a composite mean of 4.7; the system is Excellent in terms of User Friendliness.The table below shows according to most of the respondents,the proposed system in terms of User-friendliness. However the lowest mean given by the respondent in User-friendliness means the project is easy to use in characteristics.

**Table 1.2**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | **Professor** |  | **Students** |  | **Overall** |
| **C. Accuracy** | **Mean** | **Interpretation** | **Mean** | **Interpretation** | **Mean** | **Interpretation** |
| 1. Project provides accurate information | 4.4 | Very Good | 4.4 | Very Good | 4.2 | Very Good |
| 2 The project shows the exact location of the rooms | 4.6 | Excellent | 4.2 | Very Good | 4.4 | Very Good |
| 3. Project does not confuse users | 4.6 | Excellent | 4.2 | Very Good | 4.4 | Very Good |
| **Composite Mean** | 4.6 | Excellent | 4.4 | Very Good | 4.5 | Excellent |

**Table 1.2 Result of the respondents for evaluation of the system in terms of Accuracy**

The results shown in table 1.2, the respondents gave a composite mean of 4.5; the system is Excellent in terms of Accuracy. The table shows that the highest mean given by respondent in terms of accuracy project provides accurate information and shows the exact location of the rooms. However the lowest rate given by the respondent is no.3, meaning that the project does not confuse the users.

**Table 1.3**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | **Professor** |  | **Students** |  | **Overall** |
| **D. Effectiveness** | **Mean** | **Interpretation** | **Mean** | **Interpretation** | **Mean** | **Interpretation** |
| 1. Project is stable | 4.6 | Excellent | 4.1 | Very Good | 4.4 | Very Good |
| 2. The system is reliable | 4.6 | Excellent | 4.2 | Very Good | 4.4 | Very Good |
| 3. The project is effective for transferee students and visitors | 4.6 | Excellent | 4.5 | Excellent | 4.6 | Excellent |
| **Composite Mean** | 4.6 | Excellent | 4.3 | Very Good | 4.5 | Excellent |

**Table 1.3 Result of the respondents for evaluation of the system in terms of Effectiveness**

The results shown in table 1.3, the respondents gave a composite mean of 4.5; the system is Excellent in terms of Effectiveness. The table shows that the high rate of given by the respondent is no.3 means that the project is effective for transferee students and visitors.However the lowest rate by the respondent is no.2, meaning that the system is reliable.

**Summary of Output**

After tallying the outputs of the respondents, the table below shows that the system is very good in terms of performance, user friendliness, accuracy, efficiency and effectiveness.

**Table 1.4**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | **Professor** |  | **Students** |  | **Overall** |
| **Criteria** | **Mean** | **Interpretation** | **Mean** | **Interpretation** | **Mean** | **Interpretation** |
| **Performance** | 4.7 | Excellent | 4.2 | Very Good | 4.5 | Excellent |
| **User Friendly** | 5 | Excellent | 4.4 | Very Good | 4.7 | Excellent |
| **Accuracy** | 4.6 | Excellent | 4.3 | Very Good | 4.5 | Excellent |
| **Effectiveness** | 4.6 | Excellent | 4.3 | Very Good | 4.5 | Excellent |
| **Composite Mean** | 4.7 | Excellent | 4.3 | Very Good | 4.5 | Excellent |

**Table 1.4 Summary of the Respondents Evaluation to the System.**

The results shown in table 1.3, the respondents gave a composite mean of 4.5; the system is Excellent in terms of Effectiveness. The table shows that effectiveness high rate gives by the respondent is no.2, that project is effective for transferee, students and visitors.However the lowest rate by the respondent is no.3 stated that the system is reliable.

**Flow Chart Diagram**

Home Page

The User can see all rooms and faculty of Building One

The User Click the Building One Button

NO YES

The User can see all rooms and faculty of Building Two

The User Click the Building Two Button

NO YES

The User Click the Building Three Button

NO YES

The User can see all rooms and faculty of Building Three

The User Click the Building Four Button

The User can see all rooms and faculty of Building Four

NO YES

B

A

A B

The User Click the B.I.T Directory Button

NO YES

The User can see the schedule of all BIT Professors

END

The User can see the courses available in our campus

The User Click the Courses Offered

NO YES

The User Click the B.S.U Information Button

The User can see the B.S.U Hymn, March, Mission, Vision, Goals, History

NO YES