**Chapter 3**

**TECHNICAL BACKGROUND**

System design is the process of defining the architecture, components, modules, interfaces, and data for a system to satisfy specified requirements. The main objectives of the design are practicality, efficiency, cost, flexibility, and security.

This chapter discusses the research method used, software development methodology, different requirement analysis tools, and systems requirements of the software product.

**Research Approach**

The methods that the proponents used to achieve purposeful, precise and systematic search for new information about the software project is the descriptive research method. It involves the recording, description, analysis and the presentation of the present system, composition or processes of phenomena.

Descriptive research refers to the type of research question, design, and data analysis that will be applied to a given topic. The researchers help to accomplish their study by the use of this method. Detailed descriptions of specific situation(s) using interviews, observations, and document review.

The researcher’s goal is to collect factual evidence and information that give a comprehensive perception of their topic. The researchers collected information by given an interviews, questionnaires and surveys to the respondents and through the use of documents and theses that related to their study. This method helped the researchers in defining specific problems encountered in the existing software. The researchers were able to identify the advantages and disadvantages of the existing software and used it to provide basis in defining adjectives for the researchers. By the use of this method the proponents obtain more accurate and detailed information that they need to accomplish their study.

**Methodology**

The capability of the system analyst will be tested in this period. This is the part where the system analyst must be able to determine and explain the methods that will be used throughout the entire project. The following are the system development methods, software planning, software analysis, software design, software testing and software implementation.

Waterfall model is a sequential design process, in which progress is seen as flowing steadily downwards through spaces of conception initiation analysis, design, construction, testing, implementation, and maintenance. It is sequential design process, in which progress is seen as flowing steadily downwards through spaces of conception initiation analysis, design, construction, testing, implementation, and maintenance. It is Waterfall model is a sequential design process, in which progress is seen as flowing steadily downwards through spaces of conception initiation analysis, design, construction, testing, implementation, and maintenance. Waterfall model is a sequential design process, in which progress is seen as flowing steadily downwards through spaces of conception initiation analysis, design, construction, testing, implementation, and maintenance.

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Figure 1. Waterfall Model

PLANNING

DESIGNING

DEVELOPMENT

TESTNG

EVALUATION

**Requirements Analysis**

The proponents used different tools to gathered information for the development of the said software solution. Data gathering helps the researchers to establish the priorities of the information needs.

**Observation.** It is an act of attentive watching, perceiving, or noticing to get findings on a certain thing. The researchers observed those things that will help to their study especially the daily operations involved in the library. During the data gathering the proponents accidentally discovered that in Bulacan State University, every colleges/department has a library. The proponents observed that they are still using a manual library system. The school is not accepting student or researcher without a referral letter from the librarian. The proponents also observed that during vacation their librarian has an assisting staff for the accreditation process or change in module. Their book in CICT Department library has a volume of about 2,000 aside from the books in different colleges/departments library. All in all, maybe their books have a volume of 10,000 including all the departments’ library. The proponents also observed that they didn’t allow the student/borrower to return the book at the bookshelves to avoid disarrangement of books.

**Interview.** It is the major method of data collection in software development. It serves as a suggestive reference during interview. It aids in focusing attention on salient points relating to the study and securing comparable data in different interviews by the same o different interviewers. The proponents make an interview guide question for the librarians, questionnaire for the staffs of the library and survey for the students of different campuses. During the data gathering, the proponents noticed that most of the problem in different libraries is almost the same. One major problem is inventory of books. The librarians are having problem in inventory of books especially when they are under in a manual library system. Another problem is, when the class is regular the number of students entering in library increases. When the number of students increases the librarian is multi-tasking. Also the librarians are having problem in disarrangement of returned books.

**Questionnaire.** It is an act of attentive watching, perceiving, or noticing to get findings on a certain thing. The researchers observed those things that will help to their study especially the daily operations involved in the library. During the data gathering the proponents accidentally discovered that in Bulacan State University, every colleges/department has a library. The proponents observed that they are still using a manual library system. The school is not accepting student or researcher without a referral letter from the librarian. The proponents also observed that during vacation their librarian has an assisting staff for the accreditation process or change in module. Their book in CICT Department library has a volume of about 2,000 aside from the books in different colleges/departments library. All in all, maybe their books have a volume of 10,000 including all the departments’ library. The proponents also observed that they didn’t allow the student/borrower to return the book at the bookshelves to avoid disarrangement of books.

**Survey.** It is the major method of data collection in software development. It serves as a suggestive reference during interview. It aids in focusing attention on salient points relating to the study and securing comparable data in different interviews by the same o different interviewers. The proponents make an interview guide question for the librarians, questionnaire for the staffs of the library and survey for the students of different campuses. During the data gathering, the proponents noticed that most of the problem in different libraries is almost the same. One major problem is inventory of books. The librarians are having problem in inventory of books especially when they are under in a manual library system. Another problem is, when the class is regular the number of students entering in library increases. When the number of students increases the librarian is multi-tasking. Also the librarians are having problem in disarrangement of returned books.

**Form and Document Analysis.** It is an act of attentive watching, perceiving, or noticing to get findings on a certain thing. The researchers observed those things that will help to their study especially the daily operations involved in the library. During the data gathering the proponents accidentally discovered that in Bulacan State University, every colleges/department has a library. The proponents observed that they are still using a manual library system. The school is not accepting student or researcher without a referral letter from the librarian. The proponents also observed that during vacation their librarian has an assisting staff for the accreditation process or change in module. Their book in CICT Department library has a volume of about 2,000 aside from the books in different colleges/departments library.

**Systems Requirements**

The accuracy, efficiency, reliability, speed, portability and user friendliness of the system will be evaluating with different method used to obtain the consistency of the proposed system.

**Software.** The systems project is considered technically feasible if the internal technical capability is sufficient to support the project requirements. It considers the technical requirements of the proposed project. The technical requirements are then compared to the technical capability of the organization.

Table 1

**Software Specifications**

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**Hardware.** The systems project is considered technically feasible if the internal technical capability is sufficient to support the project requirements. It considers the technical requirements of the proposed project. The technical requirements are then compared to the technical capability of the organization.

Table 2

**Hardware Specifications**

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**Peopleware.** The systems project is considered technically feasible if the internal technical capability is sufficient to support the project requirements. It considers the technical requirements of the proposed project. The technical requirements are then compared to the technical capability of the organization.

Figure 2. Organizational chart

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The systems project is considered technically feasible if the internal technical capability is sufficient to support the project requirements. It considers the technical requirements of the proposed project. The technical requirements are then compared to the technical capability of the organization.

**Network.** The systems project is considered technically feasible if the internal technical capability is sufficient to support the project requirements. It considers the technical requirements of the proposed project. The technical requirements are then compared to the technical capability of the organization.

Figure 3. Network Specifications

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It considers the technical requirements of the proposed project. The technical requirements are then compared to the technical capability of the organization. It considers the technical requirements of the proposed project. The technical requirements are then compared to the technical capability of the organization.