

**WEB-BASED INFORMATION SYSTEM**

**WITH SMS EMERGENCY ALERT APPLICATION FOR**

**SAVE OUR SCHOOLS (SOS) NETWORK IN DAVAO REGION**

A Thesis proposal

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**Chapter 1**

**INTRODUCTION**

The Internet is the decisive technology of the Information Age, and with the explosion of wireless communication in the early twenty-first century, anyone can say that humankind is now almost entirely connected, albeit with great levels of inequality in bandwidth, efficiency, and price. (Castells, 2014)

These connections were amplified by the systems that display data in the web. With the rise of web browsers and web development tools, the websites globally grew exponentially from 130 websites worldwide in 1993 to 60 million as estimated presently. (Coolidge, 2005)

Web-based information displays many benefits of multimedia technology. Using today's fast broadband connection, it's possible to stream sophisticated content to a computer anywhere in the world. This is an advantage for many people as the information can be received and read wherever and whenever it is convenient for them, which can be a crucial factor for a busy executive. A significant amount of interactive multimedia content is now delivered via the internet.

Web information system, or web-based information system, is an [information system](https://en.wikipedia.org/wiki/Information_system) that uses [Internet](https://en.wikipedia.org/wiki/Internet) [web](https://en.wikipedia.org/wiki/World_Wide_Web) technologies to deliver information and services, to users or other information systems/applications. It is a [software](https://en.wikipedia.org/wiki/Software) system whose main purpose is to publish and maintain data by using [hypertext](https://en.wikipedia.org/wiki/Hypertext)-based principles. A web information system usually consists of one or more [web applications](https://en.wikipedia.org/wiki/Web_application), specific functionality-oriented components, together with information components and other non-web components. [Web browser](https://en.wikipedia.org/wiki/Web_browser) is typically used as [front-end](https://en.wikipedia.org/wiki/Front_end_processor_(program)) whereas [database](https://en.wikipedia.org/wiki/Database) as [back-end](https://en.wikipedia.org/wiki/Backend_as_a_service). (Wikipedia, 2016)

Database management systems are important to organizations because they provide a highly efficient method for handling multiple types of data. Some of the data that are easily managed with this type of system include: employee records, student information, payroll, accounting, project management, inventory and library books. These systems are built to be extremely versatile.

Without database management, tasks have to be done manually and take more time. Data can be categorized and structured to suit the needs of the company or organization. Data is entered into the system and accessed on a routine basis by assigned users. Each user may have an assigned password to gain access to their part of the system. Multiple users can use the system at the same time in different ways. (IAC Publishing, 2017)

With the advent of web-based information system, Database security became a growing concern evidenced by an increase in the number of reported incidents of loss of or unauthorized exposure to sensitive data. As the amount of data collected, retained and shared electronically expands, so does the need to understand database security. At its core, database security strives to ensure that only authenticated users perform authorized activities at authorized times. Database security incorporates a wide array of security topics, notwithstanding, physical security, network security, encryption and authentication. (Murray, 2010)

Furthermore, application programming interface (API) is a set of [subroutine](https://en.wikipedia.org/wiki/Subroutine) definitions, protocols, and tools for building [application software](https://en.wikipedia.org/wiki/Application_software). In general terms, it is a set of clearly defined methods of communication between various software components. A good API makes it easier to develop a [computer program](https://en.wikipedia.org/wiki/Computer_program) by providing all the building blocks, which are then put together by the [programmer](https://en.wikipedia.org/wiki/Programmer).

Web APIs are the defined interfaces through which interactions happen between an enterprise and applications that use its assets. An API approach is an architectural approach that revolves around providing programmable interfaces to a set of services to different applications serving different types of consumers. When used in the context of [web development](https://en.wikipedia.org/wiki/Web_development), an API is typically defined as a set of [Hypertext Transfer Protocol](https://en.wikipedia.org/wiki/Hypertext_Transfer_Protocol) (HTTP) request messages, along with a definition of the structure of response messages, which is usually in an Extensible Markup Language ([XML](https://en.wikipedia.org/wiki/XML)) or JavaScript Object Notation ([JSON](https://en.wikipedia.org/wiki/JSON)) format.

A Text messaging API is an SMS gateway that allows a computer to send or receive [Short Message Service](https://en.wikipedia.org/wiki/Short_Message_Service) (SMS) transmissions to or from a telecommunications network. Most messages are eventually routed into the [mobile phone](https://en.wikipedia.org/wiki/Mobile_phone) networks and into mobile phone numbers.

The proponents from St. John Paul II College of Davao, aimed to produce a secure web-based information system and SMS alert application to help (SOS) Save our School Network in data management and emergency response for the Lumad Communities and IP Schools in Davao Region.

**Statement of Objectives**

The following are the statement of objective for the thesis, to:

1. Develop a Web-based Information System.
2. Create a Linux server from which the system will be deployed.
3. Create a secure authentication process and data encryption in the following areas:
   1. Network
   2. Server
   3. Database
   4. Software/Application
4. Find and incorporate SMS API for the text messaging feature.

**Purpose and Description**

The SOS network had been filing raw data in papers and folders, and pulling data in an enormous stack of file would be demanding and strenuous. Also the communication in the network is in a form of text messaging, since the teachers on remote areas could only access mobile networks and not internet.

The general purpose then of this Web-based information system is to help the SOS network in their data management, which can be accessed remotely, with efficient data handling and organizing and also in their information dissemination through the SMS alert application. In a way help the communities and children in their struggle for education.

**Scope and Limitation**

The system will cater the SOS networks’ need of database for storage of sensitive information. It will have an API for SMS alert service which will be an automated text messaging application for rapid information dissemination across organizations in the network.

The system will ensure an efficient and well-organized data presentation, manipulation and control. The system UI will be user-friendly, straightforward and easily understood. It will have the necessary data encryption and a secure authentication process.

However, since this is a “web-based” system; Its security will depend greatly on the capability of the the dedicated server for the Information System, the tools for safeguarding network and database security with the help of regular maintenance and a network admin. The efficacy of data retrieval and upload will be determined by bandwidth and speed of the internet service.

**Significance of the study**

This study will be beneficial primarily to the SOS network and its protected Lumad Schools. It will be a catalyst for more philanthropist systems that would improve the lives of the ordinary people.

The proposed system is most significant to the following:

* **SOS Network**

This will address the growing data bank of the organization in relation to their advocacy.

* **IP/Lumad Schools**

This shall serve as centralized information storage as well as a database for resources. This will also be a way for the community to alert the SOS network of emergency efficiently.

* **Proponents**

This will be extremely helpful to the proponents for giving them the opportunity to help the Lumad Schools in fighting for their right to education while learning simultaneously in the process of the creation of the system, and in passing this capstone project.

* **St. John Paul College of Davao**

This shall serve as a reference for other students in developing a system that would be helpful to a community that could not afford such systems and technology.