CHAPTER II

SYSTEM DESCRIPTION

This chapter presents the general features and functions of the application with the use of a graphical figure. It further explains the operating environment in which the application can run smoothly, as well as its development tools. The developers also discussed the constraints on the design and implementation. The assumptions and dependencies are also elaborated in this section.

1. System Perspective and General Features

ASEAN Aid Map is an application used to manage the various programs and projects of different NGO in ASEAN member countries. This application serves as a repository for the list of organizations with their relevant information with regards to their projects. The application has a geographical information system (GIS) that shows the map with the number of projects per state. It also has a login or sign-up form for organizations, a search engine for the retrieval of sectors, organizations, and information of the state, and records about the projects with their corresponding reporting organization, project description, project timeline, project budget, contact information, and information regarding the donors.

Figure 1 shows the significant features of the application. The ASEAN Aid Map provides and handles information on the different aspects of the organizations. The application is also accessible for registered NGO and presents a user-friendly interface for the users.

1. Informative Content

In computer aspect, software is considered to be informative if it can provide the users important and relevant information that can be of use (Sabarina et al., 2010). ASEAN Aid Map is a web-based application that provides users with information about the projects of NGO occurring in particular places of Southeast Asia. The information is not only for the registered users of the application but also for the visitors who are interested in viewing the different projects in the ASEAN countries. Other than the details of the projects, there are also statistics and information about the organization that are available in the application. The application also gives suggestions to users about the projects that they can engage with or join based on their interests, and a notification that informs them of the updates or requests in terms of collaboration, connections, and projects. The resources of the organizations as well as the projects are also available in the profiles for the purpose of matching. The application helps the organization find a project that they can collaborate with and matches the resources that they can offer. The application also allows the organizations to generate reports that help them in their decision-making process.

1. Up-To-Date Information

This feature implies that the data presented are recent updates or newest information, straight from the organizations themselves. This feature can also provide reliability because the information is the latest updates. ASEAN Aid Map provides users with fast response to their actions to immediately update the database and deliver up-to-date information. For example, when an NGO successfully created a new project, the application immediately update the database and add the newly created project on the map. The notifications and data operation are also responsive to the trigger or actions of the users which mean that if there are updates, the application automatically updates the state of the application in the client-side.

1. Adaptive User Interface

It refers to the characteristic of the software to adjust to new specifications or operating environment (SQA, 2016). ASEAN Aid Map is a web application that has responsiveness with its design which means that it can adapt to changes in screen width or height. As a web application, it can also run on different platforms and browsers. The users can either access the application on their mobile devices, laptops, or desktop computers because the application can handle changes in platforms and operating environment. The responsiveness of the design does not affect the performance of the application as well as its functionalities.

1. User-Friendly Environment

The design of the ASEAN Aid Map possesses user-friendliness as it is designed for easy navigation for the users to have immediate access to its features. The buttons, labels, and text boxes on the application are duly organized so that it may be intuitive for the users to know their tasks and do not cause them any confusion. The application is not complex, yet it ensures the users that they are not frustrated in using it, and at the same time obtain what they expected and what the application is intended to do (Christensson, 2014). The tasks the users performed in the application are also made easy to remember.

* 1. Operating Environment

In software development, many factors are considered, and one of them is the operating environment to which the application runs. This section discusses the different operating environment of the application.

1. Hardware Platform

The hardware platform explains the technical specifications of the application which are its hardware requirements and other components relating to it. ASEAN Aid Map runs on desktop, smartphones, and tablets. It is a web application that requires Random Access Memory (RAM) minimum of 2GB for storage of cache data. The processor also plays an important role, and the application requires Intel*®* Celeron and above for smooth performance and faster speed. It can be fully functional as long as the machine meets the hardware requirements*.*

1. Software Tools

ASEAN Aid Map is a web application that runs on all platforms. The application is developed using a JavaScript software stack called MongoDB, Express.js, Angular.js, Node.js (MEAN) Stack. It handles the overall operation of the application from the front-end to the back-end development. In developing the map, the team makes use of Google Maps JavaScript API. The developers decided to use JetBrains WebStorm 10.0.4 as their editor for developing the server functions and Sublime Text and WebStorm 10.0.4 for developing the web pages. On designing the user interface, the team used Adobe Photoshop CC in creating the appropriate icons or images intended for the application.

1. Operating System

The operating system is also one of the factors for compatibility of the application. Since the application is a web application, it runs on any platforms. ASEAN Aid Map can run on Windows 7 and up, Mac OSX, Android 4.0 and up, and iOS f5 and up platforms as long as they have a web browser. The application is also adaptive to the screen width and height so the users need not to worry about how the application looks like if the resolution of the device is small such as that of the smartphones and tablets. The developers decided to implement it in a web because it is more accessible to users and does not require any download. This means users can see updates anytime.

* 1. Design and Implementation Constraints

This section explains the limitations regarding the design and implementation of the application and its interfaces. In the current level of knowledge and available resources of the developers, consider the proper look and feel of the application interface and the mapping of countries as technical hitches during the development phase. This section also discusses the constraints in the functionalities of the application.

* + 1. Interface Design Considerations

The developers aim to develop a user-friendly interface for the NGO and the general public, who are the target users of the web application. A user-friendly interface means that it is easy for the users to navigate through different sections, without a lot of explanation coming from the developers (Christensson, 2014). A user-friendly interface can attract users, and also encourage them to check other parts of the application. In developing a user-friendly interface, it is a challenge to the developers because the application may have different types of users, especially the general public users. The developers agreed to use simple CSS but not to the point where it becomes boring. The interface design should also go with the type of information that the application presents.

* + 1. Mapping Concerns

The team uses Google Maps JavaScript API to develop the map for the geographical information system (GIS) feature of the application. Using this API, the developers still use the same language which is JavaScript. The challenge for the developers in this feature is about the customization of the map. In the application, the map shows the number of projects in different ASEAN countries through location markers. The developers agreed to use the roadmap view in the GIS feature of the application because of the details that this view contains, like streets, routes, among others.

* + 1. Member Countries

This application aims to improve the collaboration and the linkage between different NGO in ASEAN countries. Only those NGO which are based or originated in any ASEAN member countries are covered in the scope of the application. Brunei Darussalam, Cambodia, Indonesia, Laos, Philippines, Malaysia, Myanmar, Singapore, Thailand, and Viet Nam are the ten countries included in ASEAN (Asean.org, 2016).

* + 1. NGO Participation

For presentation purposes, the team needs a set of data to be used. Aside from the dummy data, the team also makes use of the data of the active NGO as well as the data of their projects for the application. The team gathered these data from the organizations with their consent. The cooperation and participation of the NGO in the application helps the team in showing the collaboration of different organizations regarding their projects and in making connections with each other.

* + 1. Criteria for Matching

In the matching of organizations, there are four criteria that are used as the basis for finding the match. These criteria are the following: sector focus, the number of similar connections, location, and available resources. For the matching of organizations to projects, there are a few similar criteria that are also used in the matching of organizations, but there are also some additional criteria. The criteria for matching of organizations to projects are the following: sector focus, location, available and needed resources, and connections that are collaborating in that project. The matching reflects on the suggestions presented in the organization profile relevant to the criteria which it is associated.

* + 1. Project Status

In a project profile, a status is shown to indicate the current state of the project. There are four statuses that a user can choose from with regards to a specific project. The options the application presents to registered users are ongoing, on-hold, completed and canceled. The users can change the status of a project and the collaborators in that project are informed about the changes through notifications.

* + 1. Donation

The resources of a project that is shown in the project profile can change in quantity based on the donations of the collaborating organization or private donors. The users need to specify the particular resources that they donated on other resources that require specifications. Once the organization receives the donation for the specified project, which can be construction supplies, school and office utilities, clothes and personal necessities, medical supplies, tools and equipments, food, or money, the quantity of the resources increase. The increase is shown in the form of a progress bar. After that, the number of resources that the donor has (if ever they are registered in the application) decreases in accordance with the number of donation that they have given.

* + 1. Reports

The users are given a specific module that contains the reports which can support their decision making in either managing future projects or be supporting other projects. The reports module is divided into two parts namely: statistical reports and summary reports. The statistical reports contain the performance report and average number of project reports. The performance report shows the overall performance of the organization in its projects either monthly or yearly. It also shows the specific projects with similar performance. The performance is rated by the collaborators of the projects through answering series of questions when the project ends. There are series of questions that the collaborators answered and each question has a weighted score based on the answer of the collaborating organization. The overall score has a corresponding impact to the performance report of the organization. The range of scores determines the performance of an organization to their conducted projects. The rating starts form one to 100. Each rating indicates a certain performance assessment value. Table 2 shows the performance assessment that corresponds to the result of the evaluation for a project.

The second report is the summary report which presents the list of all projects of the organization with their corresponding description. A show summary of the project is also presented that when the users click it; it displays the liquidation report of resources to the different activities enlisted by the creator during the implementation of the project. The summary of the project can be created and edited by the organization that created the project. They can add an activity and allocate resources to that activity.

* + 1. Resources

Resources are viewable in an organization profile and a project profile. Upon creating a profile (whether project or organization), users can already add the resources that they have or need. There are pre-defined resources in the application, but there are possibilities that there are additions to the resources choices. Some resources are given fields for the creator to specify what specific resources that they require for those criteria.

In an organization profile, the resources posted are the resources that the organization currently have and are willing to be donated to a certain project. In the project profile, the resources that can be seen are the resources that a project currently needs and it signifies that they are accepting donations from other organizations and private donors.

* + 1. Functionalities

In the usage of the application, constraints regarding the functionalities are placed on non-registered users or the general public. Unlike the registered users, the non-registered ones can only view the information. These users cannot make changes on any profiles nor even have their profile. The functionalities that are intended for non-registered users are viewing project profiles, organization profiles, submitting a question to the frequently asked questions page of the application, and search for information using the GIS or the search function of the application.

* 1. Assumptions and Dependencies

The team assesses circumstances and resources that are probably helpful in the development of the application. The assessments are presumed to be true and acquired for the progress of the project. For the development of the application, the team also enumerated tools where the productions of results are dependent. The following statements are the assumptions and dependencies that the team has identified:

* + 1. Assumptions

The developers assumed that the required programming skills are already acquired for the development of the application. The given hardware platform should carry out the functions and operations of the application, as well as yield anticipated outputs. The developers have specified the following operational requirements which the users must comply for the application to work according to its indicated functions and operations. For presentation purposes, the developers use the data of active NGO with their consent to avoid legal issues. Also, the developers make use of dummy and provided data of certain organizations with consent to utilize it in the application.

* + 1. Dependencies

The ASEAN Aid Map utilizes the JetBrains WebStorm 10.0.4 as a tool to use in developing all of the features and functions of the application. The JetBrains WebStorm 10.0.4 application handles the MongoDB, Express.js, Angular.js, and Node.js (MEAN) stack which supports the developers in managing the models and operations of the project application. This tool helps in associating every module of the application to work accordingly. Conversely, the MEAN stack serves as a guide for the developers in working on the parts of the application such as the frameworks, servers, and databases. The developers rely on the given data of certain organizations with their consent to publicize it. This data are relevant to the needed information in a registered account and used to show how functions of the application should work when implemented.

This chapter presented and discussed the four different features of the web application which are the following: up-to-date information, adaptive user interfaces, informative contents, and user-friendly environment. In the same chapter, the team discussed the different software tools and hardware, as well as the different constraints that the team may encounter during the implementation phase. These constraints are as follows: interface design considerations, mapping concerns, member countries, NGO participation, and functionalities. The identified assumptions and dependencies of the application were also laid out in this section.