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An Innovative Humanitarian Activities Mapping in Malaysia

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Abstract

Many people register to be volunteers in many non-governmental organizations. However, the data is not fully utilized especially when there are events that require the volunteer immediately. This is due to the data that are not adequately managed. Therefore, this study is to develop a web-based multimedia mapping system for decision tool making and sharing geo-information on the volunteer program in Malaysia. This study has been conducted by using a standard development process that is known as Agile Models which has less strict guidelines and adjust according to needs in Standard Development Life Cycle (SDLC). The proposed volunteer management system can be accessed through <https://volunteer-management-learnigis2.hub.arcgis.com/>. This exciting system provides a basic information system such as database, query, mapping, measurement, buffering, and others related to the humanitarian program. Beta testing has been conducted for a user's satisfaction. The proposed volunteer management system should be able to increase the efficiency and effectiveness of an organization in handling the volunteer's database and humanitarian program in Malaysia.

Keywords: Volunteerism, Humanitarian, Web-Based Multimedia, GIS Mapping

Introduction

Malaysia appears to be moving forward in supporting the spirit of volunteerism. Even though in the USA volunteerism is on the decline, as shown in their 2014 data. The United States Bureau of Labor Statistics shows that volunteering was at a 10-year low. The US government intervened to stop this declining trend by implementing several initiatives. The non-governmental organizations and volunteering public now has access to portals and websites set up to encourage more participation from the public. Winston Churchill, the British Politician once said that, we make a living by what we get, but we make a life by what we give. This is the quote that drives the whole volunteerism spirit of volunteers to achieve many good causes in the name of altruism (Lim, 2014).

The people who volunteer are changing, based on the shifting of socio-economic and environmental trends. People contribute more to their communities informally based on structured volunteer programs. Another aspect of volunteerism relies on technology and better understanding of employers. For example, during disasters, volunteers are connected online and volunteering from their workplace with the encouragement of their employer. Volunteering remains an essential driver of political, social and economic development regardless of the form it takes. It is an instrumental force in promoting positive and sustainable growth for humanity (Witt, 2011).

Living in this digital age, the information technologies have gained importance due to their efficiency with low costs in the worldwide organizations. GIS is affected by data management systems as a development in computer and information systems. Data management is an important part of GIS. At the beginning phase of GIS, various data structures and exchanging different types of data cause serious problems. Data exchange still remains as one of the main problems even though organizations and individuals involved with GIS have developed many different solutions. The purpose of these solutions is to open up new perspectives of creating and managing data systems easily and economically even though development of computers and data systems is linked with some problems.

Over the past few years, interactive mapping or Internet GIS has developed rapidly resulting in the migration of some GIS functionality. To facilitate the users involved in volunteer organizations, in terms of search, analysis, deployment, test and delivery a web-based mapping navigation interface system should be established. With the use of specialized GIS software, users can use the system applications by using internet browsing applications such as Internet Explorer, Mozilla Firefox or Google Chrome (Hazrin et al., 2014). Therefore, this study will result in the development of a web-based multimedia GIS application for volunteer's programme in Malaysia. Table 1 shows the previous process of the volunteer management system and summarized the volunteer management model from numerous versions.

TABLE 1. Process of Volunteer Management (Mazlan, 2017)

Author	Process				
	Planning	Recruitment & Selection	Induction & Training	Supervision & Evaluation	Recognition
Zheng, (2009)	/	/	/	X	/
Ducharme, (2012)	/	/	/	/	/
VGO, (2010)	/	X	X	/	/
Howard, (1999)	/	/	/	/	/
VA, (2003)	/	/	/	/	/
Studer et. al, (2013)	/	/	/	/	/

Method

User Requirement

An informal interview was conducted with one of the MyCARE staff, Sarah Afiqah binti Khairulannuar, Project Coordinator of MyCARE. Volunteers are really needed in order to make a program run smoothly. Even though they already provided a registration platform for those who are interested in becoming their volunteer, they don't have a system to manage the registered volunteers. Therefore, the database of these volunteers needs to be fully utilized so they can cut the time of recruiting the volunteer for their upcoming humanitarian program at a certain location. As a result, a potential customer, MyCARE, wants to have a web application which involves volunteer management. In this case, the requirement has to be clear about the volunteer criteria needed like what kind of skills, interest, involvement and at which location or state they would like to volunteer. The questionnaire has been distributed to the public.

System Development

Once the user requirements have been gathered, Web-based for volunteer management system can be developed.

- Identification of hardware and software

Table 2 shows the list and specification required to design and develop the Web-Based GIS Application.

TABLE 2. List of Hardware and Software Specification

List	Specification
Hardware	
Acer Aspire E 14	Processor: Intel®Core™i5-7200U CPU @ 2.50GHz 2.71 GHz RAM: 8.00 GB OS: Windows 10 System Type: 64-bit
Software	
ArcGIS Online	A cloud-based GIS Mapping Platform
ArcGIS Hub	An easy-to-configure cloud platform that organizes people, data, and tools to accomplish Initiatives and goals.
ArcGIS Web App Builder	An intuitive what – you – see – is – what – you – get (WYSIWYG) application that allows to build 2D and 3D web apps without writing a single line of code. It includes powerful tools to configure fully featured HTML apps.

- System Design

The new system has to be developed based on the user expectations and a thorough review of a new system. This is the process of designing the framework. This is the most critical step of a system 's growth. The logical design of the system came about as a result of the system analysis and is converted into physical design. Figure 1 is about the landing page of the main topic for the system.



Fig 1: Volunteer Landing Page

Figure 2 illustrates one activity to another activity with logical decisions in activity diagram. This activity portrayed the system operation.

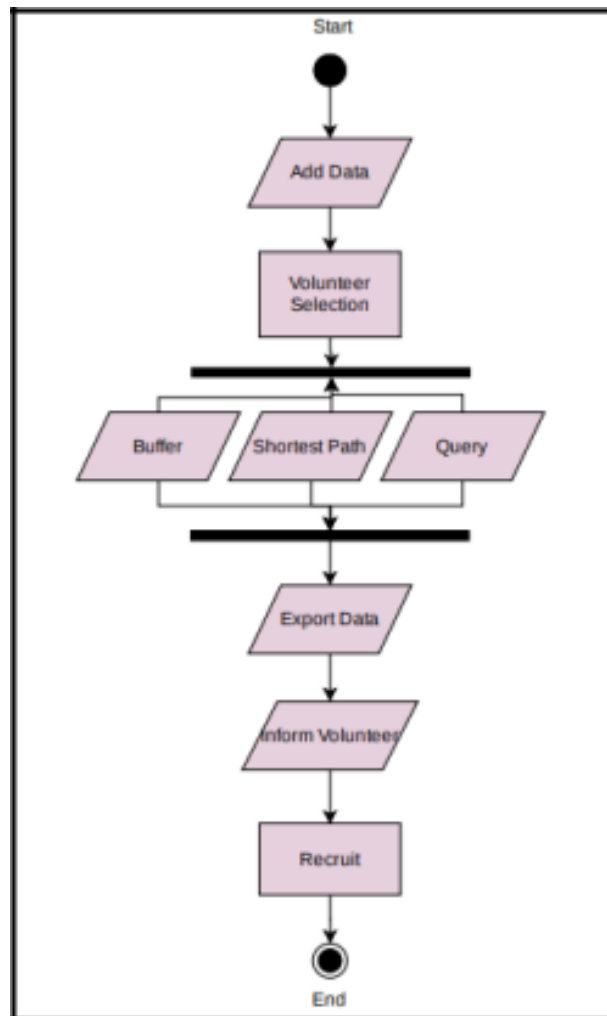


Fig 2: Activity Diagram

- System Implementation

This phase is an actual construction process after the illustrated design of the requested system is fully satisfied. Figure 3 is about developing process of Manage Volunteer Application, while Figure 4 shows the development of volunteer landing page

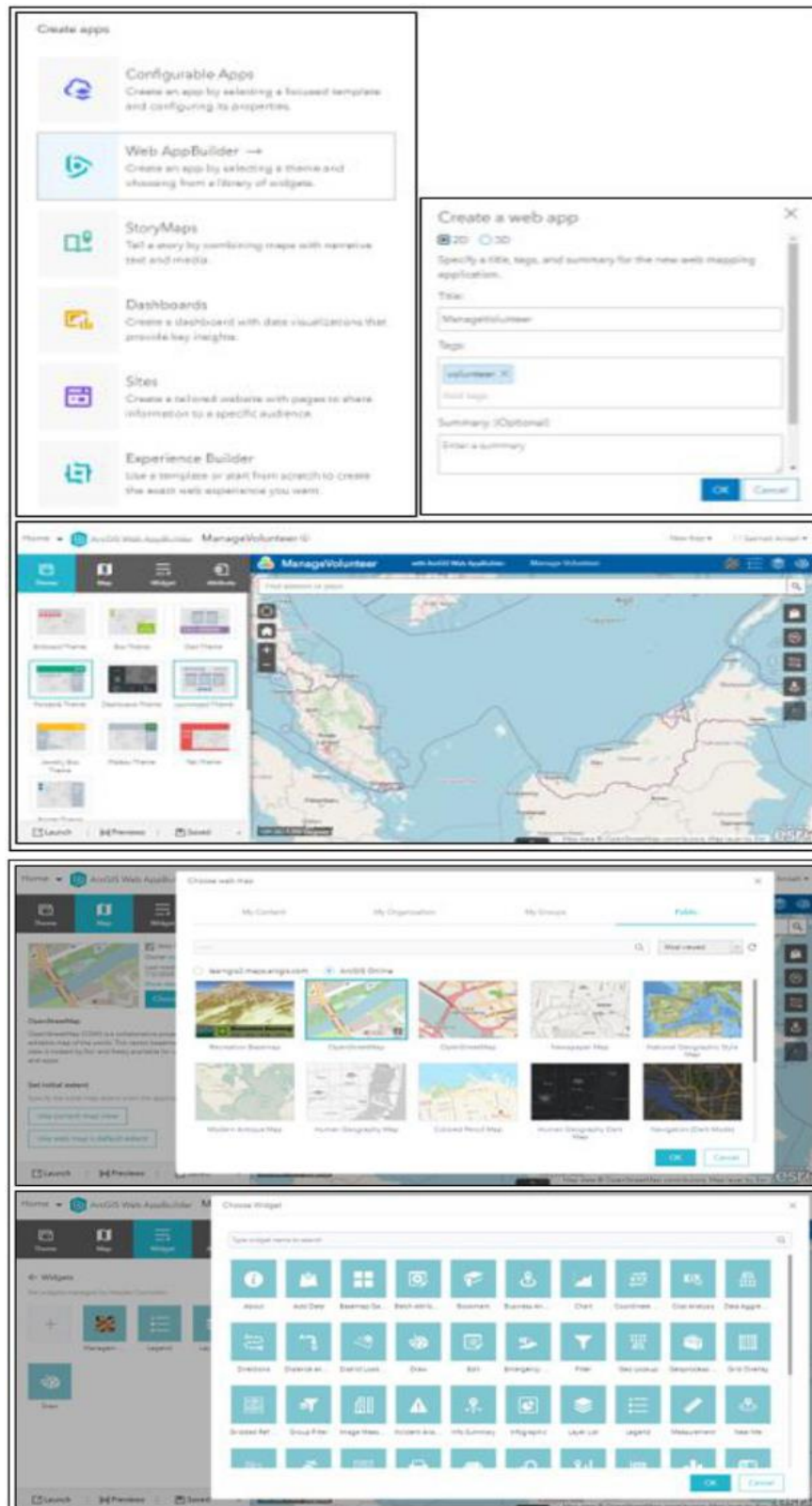


Fig 3: Development of Manage Volunteer Application

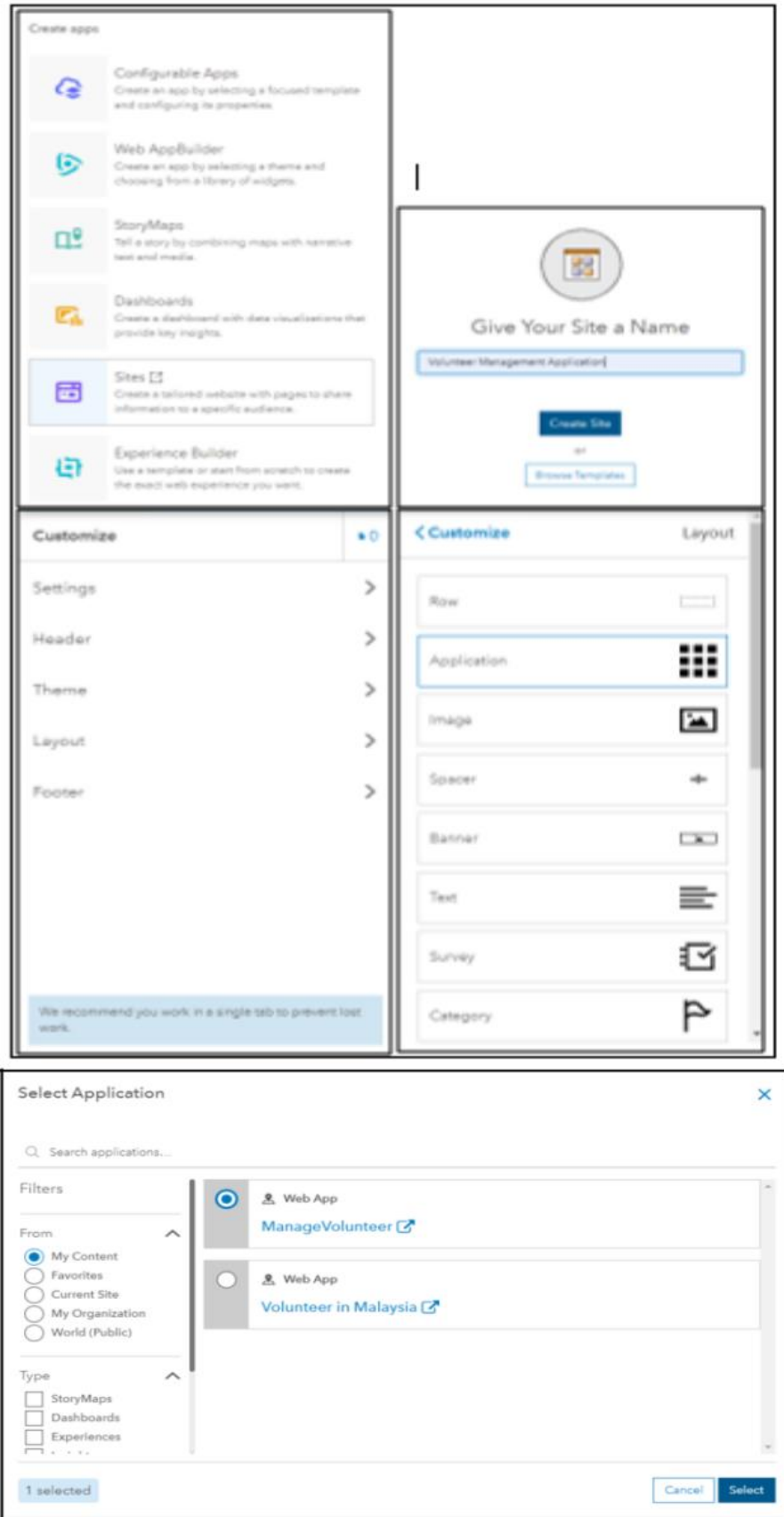


Fig 4: Development of volunteer landing page

System Testing

Two types of testing were performed, which is alpha testing, to test the functionality of the system internally whereas beta testing is distributed to the actual users. The feedback and comments were gathered for further action.

Results and Discussion

The results discuss the output of the main objectives and the analysis will describe the motive of this study with the functionality of the proposed system.

User Requirements

The needs assessment was conducted by distributing the questionnaire to the public or potential volunteers via Google Form. The finding in user requirements is about the necessity of the volunteer system in their activity. 93.8% of the respondents agreed that there is the need to have a system for volunteers. The elements needed in the system are map, volunteer database, tracking performance and calendar activities. The respondent suggested having the verification of registered volunteers and providing training for them.

Framework and Functions of the Proposed System

This web-based GIS application consists of a website and volunteer management system. It started with website of the volunteer website to share the general information about volunteering. Then a person from the organization will be assigned as an administrator to manage. This website can be accessed publicly by entering this web address: <https://volunteer-management-learnGIS2.hub.arcgis.com/> in any type of search engine and device.

Figure 5 shows the website page and Figure 6 until Figure 8 shows the GIS application for the volunteer management system.



Fig 5: Website Main Page

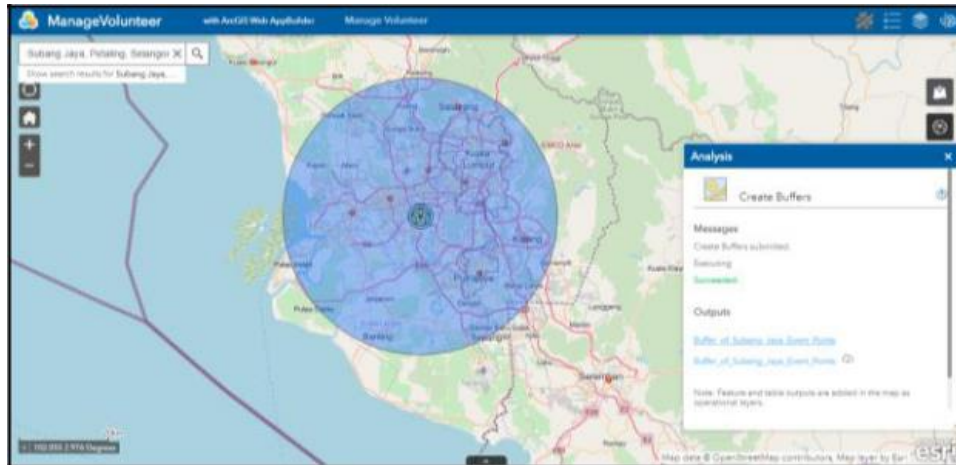


Fig 6: Function of Buffer

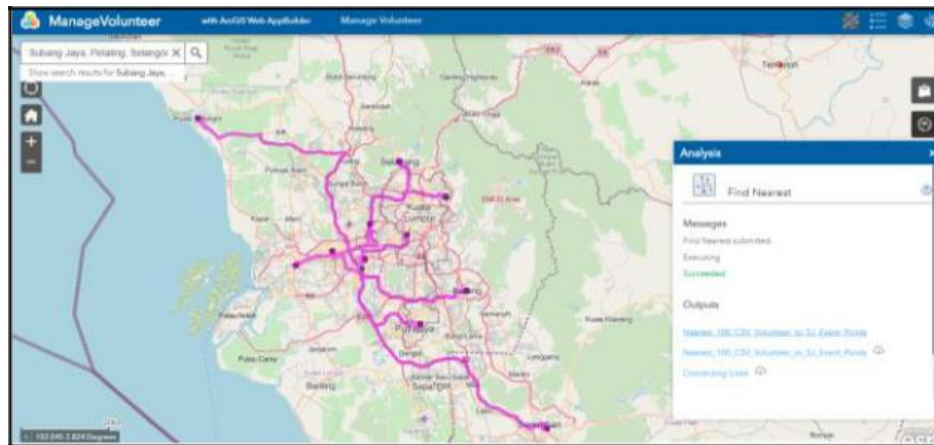


Fig 7: Function of Network

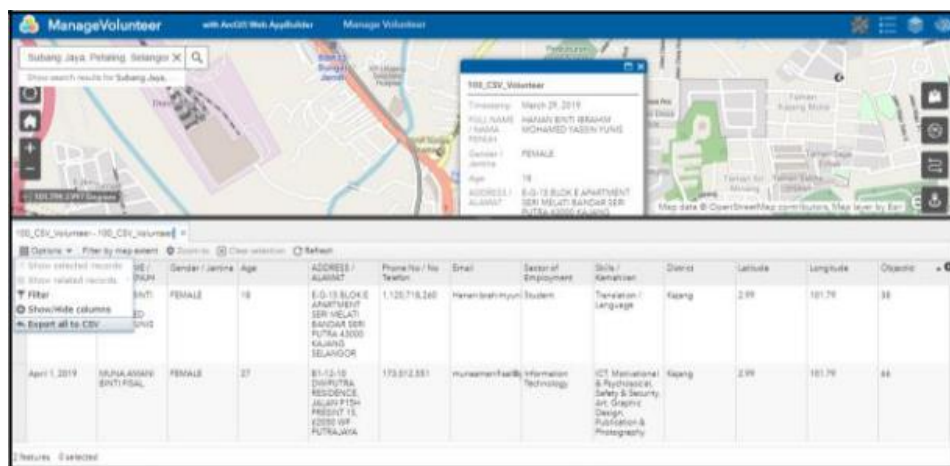


Fig 8: Function of Query

System Testing

In general, all of the users are satisfied in terms of the website content, system design, system usability and reliability of the system. The administrator agreed that this proposed volunteer management system is convenient, efficient, increases productivity and enthusiasm of

volunteers, reliable and easy to understand. Therefore, this testing is able to make the developer see the real-response and do some correction.

Conclusion

Overall, this system of Web-Based Multimedia GIS Application has been successfully developed. The system can generate the volunteer's information needed by an organization related to volunteering activities. The existence of this proposed volunteer management system would be an effective tool and increase the efficiency and effectiveness of an organization in handling the volunteer's database.

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