Extending Development of Web Application System with Location Data

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Abstract—**Web applications systems or known as "web apps" are useful tools to allow information to reach to end users as efficiently as possible. End users of the applications only require a web browser and internet to consume information no matter where or when. Location is an important data that gives valuable information and insights for the decision making process. Integrating the location data of users in web application systems through location based service brings a lot of benefits for future application of predictive analysis and recommender systems. This paper objective is to extend the development of the current web application system with a location based service. The result shows the extension on adding location based data with gps coordinate latitude and longitude in the system.**

Keywords—web application system, location based service.

I. INTRODUCTION

Web applications are application systems that are developed to be run in a web browser. Nowadays, web applications have become a crucial tool for end users as they are more flexible compared to mobile applications, tablet applications and desktop applications that require to be installed and maintained (regularly updates). Web application can be run on any device as long as it has a web browser and internet access [1]. This ensures that the number of end users that it can reach to be at the most maximum possible compared to developing for a specific device application.

The number of usage of web applications today covers a range of domain systems which includes the banking and finance systems [2], pandemic response systems [3, 4], government application systems [5], smart transportation systems [6], enterprise resource planning (ERP) systems [7], e-commerce systems [8, 9] and others.

Location based service (LBS) is software services that utilizes geographic data and information to provide services or information to end users. Currently, a lot of businesses integrate their system to also provide location based service by storing their users' location information in the database. User location information can be beneficial as it provides insights for better decision making based on the user's location context [10].

By implementing location based service in their system, businesses can make location based analysis (LBA), which is an analysis to find a particular location for a specific goal (the goal differs based on the industry). For businesses, generally the goal of using location based analysis is to find a location that would give the best return-of-investment (ROI) for the business. Generally, LBA would give the information of the surrounding location which includes the economic development level, demographic of population (for potential customers and workers) and others. There have been multiple published studies of location based analysis techniques, some of them are [11-14].

This paper aims to extend the current web application development system to include location based service. The current web application does not store any location based data, adding a location based service will enable us to use the location data for any future location based analysis.

II. RELATED WORKS

The researchers have found some relevant journal articles that is related to our work in developing a web application system that utilizes location based service. In [15], the author developed a web application platform called Tethys Platform. It is a development and hosting environment specifically for environmental web applications. Tethys Platform is equipped to work with geospatial datasets. The web GIS software suite provided by Tethys includes PostgreSQL database with PostGIS for spatial SQL storage. The developed product of their work facilitates making environmental web apps more commonplace, which will further serve to narrow the gap between research and practice in the environmental background.

In [16], the author developed an innovative and reliable decision-support system to facilitate the assessment of the feasibility of a public facility for evacuation. The developed system is a web application system that facilitates the communication process where experts can give an up-to-date evaluation of different facilities suitable for the