MOBILE-GIS APPLICATION FOR ASSESSING WINE QUALITY

Nguyen Tho Thong[1], Nguyen Duy Linh[2], Truong Chi Cuong[3] and Nguyen Huu Dien[4]

VNU University of Science, 334 Nguyen Trai, Thanh Xuan, Ha Noi, Vietnam

[1] nguyenthothongtt89@gmail.com, [2] linhnduy@gmail.com,

[3] truongchicuongbk54@gmail.com, [4] huudien@vnu.edu.vn

ABSTRACT

The AWQ project aims to assess wine quality at New York. The system has been developed to simplify collection and manage information, events for assessing wine quality. The technologies used are Amazon Aws cloud, web server and Mobile. The developing languages for the servers are PHP, Apache and MySQL with REST/ json. Mobile devices are used to send and receive upcoming events.

We integrate GIS to AWQ for supporting the overall process. The comment and event notifications will be shown and processed directly at a location on the map. In specific, we will develop the most striking open source Mobile-GIS system based on OpenLayers library and add some additional analysis functions such as searching (point, polygon), modifying object information, etc. Through the collected data, we will give an evaluation of wine quality and perform detailed statistics for each region.

Keywords: *Mobile-GIS, AWQ.*

1. INTRODUCTION

AWQ (Assessing Wine Quality) is a social network for wine tasting and wine events. Everybody can share opinions about the wines with other members. AWQ helps producers manage information of wines, winebars, opinions of users, wine events, etc.

AWQ system consists of web service and mobile technology. Web service is an easy way to store and query all information about producers, wines, winebars, wine events, etc. Users are able to search information about a wine, a producer, a winebar, insert a tasting, see the posts of other people, find an event about wines and create an event etc. by an iPhone/Android/Windows Mobile device. Initially, it is difficult to search wine information, wine events. Moreover, users have to send emails to comment about a wine or a wine event to producers.

In this paper, we will present the use of Mobile-GIS technology for AWQ to deal with these limitations. AWQ allows users to search wine tasting and wine events based on the map. Users can share comments about wine events directly to wine producers and other users. In addition, AWQ allows producers to carry out statistical analyses of customers taste, consumers taste trends in each region.

At present, there are some related works which use Mobile-GIS for data collection. As Mansourian (2008) presented Emergency Management System. The system used Mobile-GIS to provide the interaction between mobile client devices and web servers. The Emergency Support System Project (ESS) (Martin, 2009) was started in 2009. ESS is a collection of real-

time data-centric technologies which will provide actionable information for crisis managers during abnormal events. This information will enable improved control and management, resulting in real-time synchronization between police, rescue, firefighters and control centers. As Atteih (2011) presented Emergency Management Information System (EMIS). EMIS used Mobile-GIS to send and receive emergency information from the center.

In general, these systems use Mobile-GIS to collect data only.

2. INFRASTRUCTURE OF AWQ

AWQ system consists of two tools: online and mobile tools. We have developed the online tool on Amazon cloud system (Amazon, 2012). This tool manage all the data of producers, winebars, customers, wine information, comments of customer, events, etc. based on Web Services.

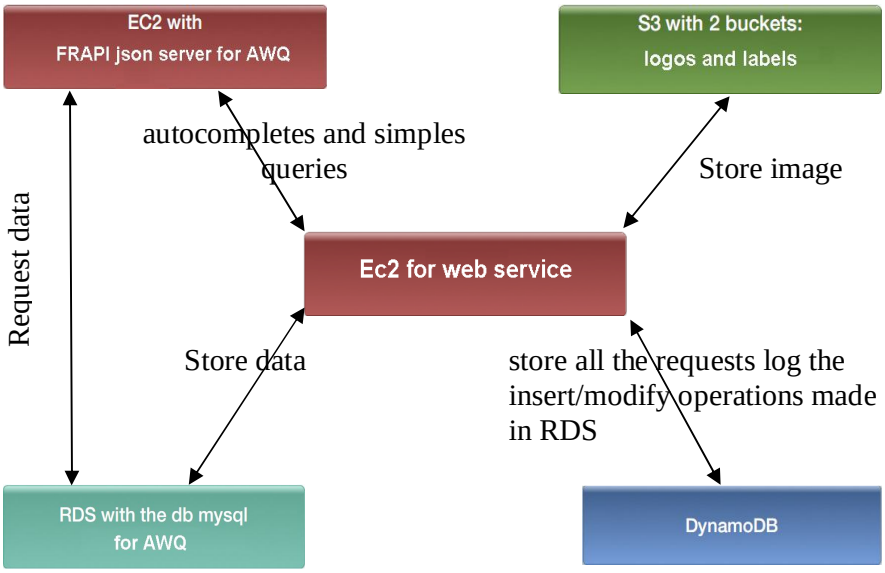

Figure 1: Infrastructure on server

In server, we use php, apache, mysql with rest/json languages for development. Firstly, we store all data in mysql database of Amazon RDS. RDS is a web service that is easy to set up, operate, and scale a relational database in the cloud. The data are managed via Web Service. It is located on an Ec2 virtual machine in Amazon cloud. When Web Service wants to store or get data, it can send requests to Mysql or FRAPI server. FRAPI has been built in an Ec2 machine based on php language. It has advantages such as easy to use and high security. When Web Service sends requests to FRAPI then FRAPI will get data from mysql on RDS and automatically return data in the form of Json format to Web Service. In addition, we use S3 service and Amazon's Dynamo for system development. Amazon S3 is a storage multimedia of Amazon on the Internet. It provides a simple web services interface that can be used to store and retrieve any amount of data, at any time, from anywhere through the web. We use it to store images for web pages and mobile. Amazon DynamoDB is a fully managed NoSQL database service. It is designed to address the core problems of database

management, performance, scalability, and reliability. We use it to store all log requests of all operations made in RDS.

Mobile tool helps users search for information such as wines, producers, winebars, additional information about wine tasting, find an event about wine, and create an event. Firstly, we developed it on the android operating system. We used GCM application (Google, 2010) of Google and Request method of android to communicate between a server and mobile. GCM is completely free and allows us to send message from server to mobile devices via the device identify code. Mobile devices can request API Mobile directly to get data from server.

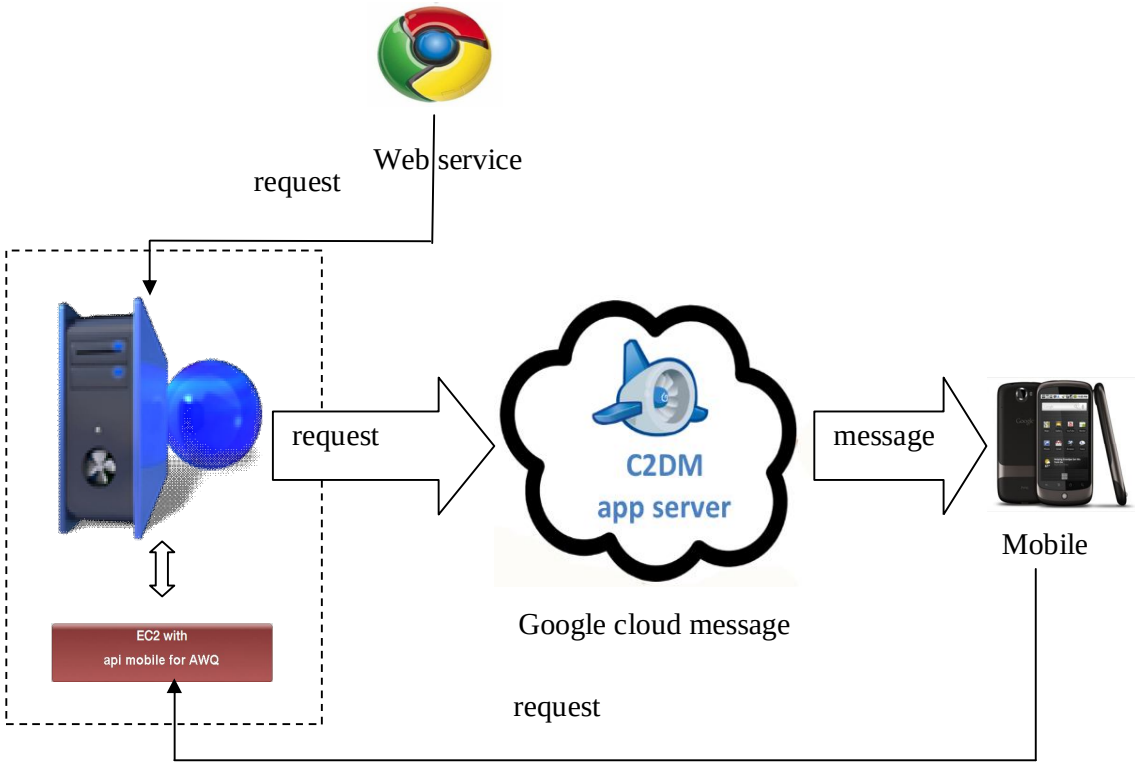

Figure 2: Infrastructure on Mobile devices

Currently, search and information display in the mobile system are not user-friendly. When producer announces the launch of an event to the customers, he will send messages from a server to mobile devices. Customer must go back to search form to know details of event. In addition, system is not built to comment about event directly. The customer cannot view other people's comments. To overcome for this flaw, we propose the solution in the next section.

3. MOBILE-GIS APPLICATION FOR AWQ

The Mobile-GIS application for AWQ has been developed for Mobile based on OpenLayers library (OSGeo, 2012). OpenLayers is an open source javascript library. It provides full functionalities to interact with the map. We use Google map, OpenStreetMap as the map base for the development of the system. We add winebar information and events to the map by maker (OSGeo, 2012) (Figure 3).

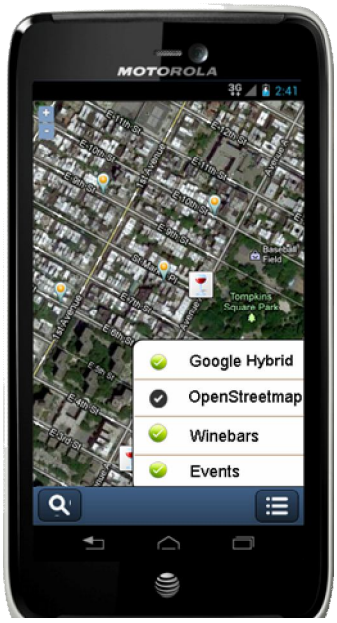

Figure 3: Maker

All information about the winebar is represented by the map maker. When we click on maker of the winebar, a form popup is shown. It allows customers to share their opinions about wine quality and exchange them with others at the winebar (Figure 4).

Figure 4: Popup for winebar: i) Main popup. ii) Vote popup. iii) Comment

The producer needs to send notifications to customers about a new event only. At the same time, they add makers for the events on the map. Each event maker offers three popup forms. A popup will display full information about the event. The second one helps customers send questions related of events to the producers. The third one allows customers to contribute their opinions about quality of wine and exchange ideas with others in real-time.

In addition, we build some tools based on Mobile-GIS to support users. They are the spatial query (point or polygon) and statistics. The spatial query tools help users visualize the search for information about winebar events through the map. The statistical tool helps producers visualize the results on the map.

Figure 5: i) Main search. ii) Search polygon. iii) Statistics. iv) Rate chart. v) Comparison and forecast charts

4. CONCLUSIONS

In this paper, we presented the use of Mobile-GIS to remedy some limitations of AWQ system. It was difficult to search wines and wine events information. Users were hard to comment about a wine or a wine event to producers. We developed a Mobile-GIS application

based on OpenLayers library and some additional analysis functions such as searching (point, polygon) and modifying object information. Users' comments and wine events are shown directly at a location on the map. We gave an evaluation of wine quality and performed detailed statistics for each region.

In the future, we will use Mobile-GIS for other social networks.

5. ACKNOWLEDGEMENT

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