Developing ADUN e-Community Portal for Community in Malaysia: *Announcement Module and Discussion Module*

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Abstract—**Nowadays, there are many government agencies had already developed a portal sites for their citizens. This kind of portal is found to be particularly useful to those who faced certain problem regarding their dissatisfaction on the government's service. However, the main disadvantage of such portal is the lack of their public services to the citizens. Thus, ADUN e-community portal is designed to utilize information and help ADUN to manage the complaints created by the community. By using the system community, members can keep a close eye on the progress of many troublesome complaints which are disturbing their living condition and ADUN can take a proper control of the information and complaints received from the community. The system was divided into nine modules which is myprofile, announcement, discussion, complaints, directory, message board, crime prevention tip, report and analysis. This paper discusses further on the announcement module and discussion module.**

Keywords : e-community-portal;announcement module and discussion module

I. INTRODUCTION

A. ADUN e-Community Portal

In recent years, a lot of problems regarding the complaints from the citizens were neglected and was unsolved by the government agencies. The problem is citizen was unsatisfied with the way government agencies handle their complaints. Therefore, a government social networking service portal known as Member of State Assembly (ADUN) e-Community Portal is developed.

ADUN is a representative selected by the voters of a state election to the Legislative Assembly. The main role of ADUN is to maintain the constitutional rights of states and citizens, as provided by the state constitution. ADUN e-community portal is a social networking service for a particular city or town for the public users to express their dissatisfactions, complaints or suggestions about government, non-emergency, criminal, illegal, community issues and problems which affect the quality of their daily lives to the relevant government agencies and departments. The portal enables the public to lodge their complaints with regards to their service to the relevant government agencies in Malaysia. All complaints submitted through this portal will be monitored by the respective State Assemblyman (SA) for that community. In fact, from time to time users who faced the same problem can vote on particular complaints that they want to be solved faster. As a result, as more and more users vote on specific complaint, this will create even more social pressure forcing the authorities responsible to take action on the problem faster. Meanwhile, this will also create priority in term of the management of users' complaints. Next, the portal also will create social pressure in order to force government agencies to tackle and solve issues or problems as soon as possible before any tragedy occurs. In general, this portal will be used by three types of users, which are the system administrator, ADUN and users in the community. The system administrator will take care and update information of the portal, and manage the user's activities. Community users are registered users. They are allowed to make complaints, vote on complaints, join the discussion, send messages, edit their personal information and so on. In fact, certain functions of this portal are limited to the system administrator and ADUN only. These modules will bring a different role and benefit to the community. This paper will give an overview of ADUN e-community Portal, including its system architecture and the technique used to build the announcement module and the discussion module of the portal.

B. Objectives

The main aim of this technical paper is to study the techniques that have been used in especially on announcement module and discussion module of ADUN e-community portal and also to decide which techniques based on the module are the best technique.

The other objectives of this portal are:

a) To study and improve the efficiency of relevant government which is ADUN to take action based on the problem that has been issued by the community user.

b) To enhance good and effective online communication between ADUN and community user in order to recover the problem that have been issued by them.

c) To give an opportunity to the community user to issue some community problem on certain department.

d) To make sure ADUN is more responsible and alert about the problems or complaints about the community.

C. Report Methodology

Some method has been used in order to write this technical report. The first stage would be gathering the information related to the e-community portal service. After that is study the research papers that have been made by previous researchers to help understand more about the case study. Then study about the technique that had been used to develop the portal and each module. Instead of only studyingabout PHP language, we also study on MySQL for the database which used to store the data and also about the Javascript and AJAX to be implemented in the portal. Lastly isto study what are the problems and what are the solutions available in order to improve the efficiency of this portal.

D. System Architecture of the portal

The system architecture isshown in Figure 1.Figure 1 shows the main architecture of the ADUN e-Community Portal. The portal is made up of five components: a user type, a web based application, a central database and web service and a web administration site. Different types of user will be using this portal like admin, ADUN and community. This portal is developed as a web based application which can be deployed in the same server as the database. This will allow the portal to be made available from any machine through the browser. Central database and web service is built on the MySQL platform, and was remotely hosted at www.adunportal.com.my. Hosting this component remotely allows the ADUN e-Community Portal system to deploy at any location with Internet access. The web service provides a mean of transferring data between the database and the server application and front end, via PHP scripts. The web administration site is remotely hosted at www.adunportal.com.my/admin and allows system administrators to configure an ADUN e-Community Portal display.
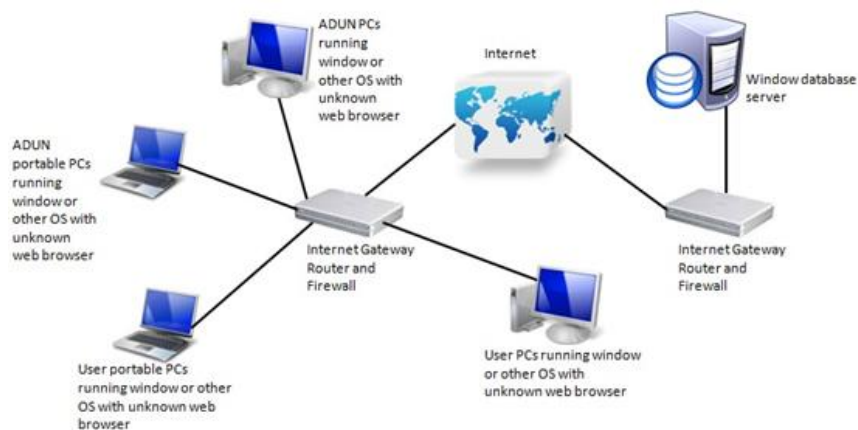

Fig.1: System architecture of the portal

E. System Architecture of Discussion Module

Figure 2 illustrates how the components of a discussion module work together.
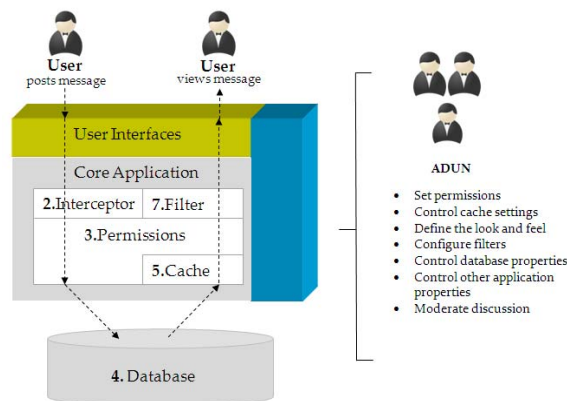

Fig.2: System architecture of discussion module

A user login into the portal and go to the discussion menu to post a message. After that, the discussion application sends the incoming message through filters, called interceptors. Interceptors screen the message for any content thathas been configured. The interceptors do one of the following: alter and pass on the message, allow it through unaltered, or reject the message. The system applies permissions set at global, category, or discussion level for the message. The system saves the message in the database. If a user tries to view a particular message, the system retrieves this message from the cache or from the database. According to the permissions the system decides whether to display the message to the user or not. The message that passes through the filterare dynamically format the message content before it can be viewed by users. Then the user can read the posted message.

II.   SYSTEM COMPONENTS

A. Announcement Module

Basically, the announcement module is responsible for showing up what is the latest news related to their residency. ADUN can quickly and easily maintain a list of newsworthy events through announcements module and thus helps ADUN to keep the site fresh and communicate important messages to the community. This module can be viewed by all types of user: admin, ADUN and community. But only the ADUN can manage and customize the announcement module. The objective of announcement module is to facilitate community users to register online for certain social activities. Furthermore, this module also will provide users "one-stop" news or announcement related to their environment.
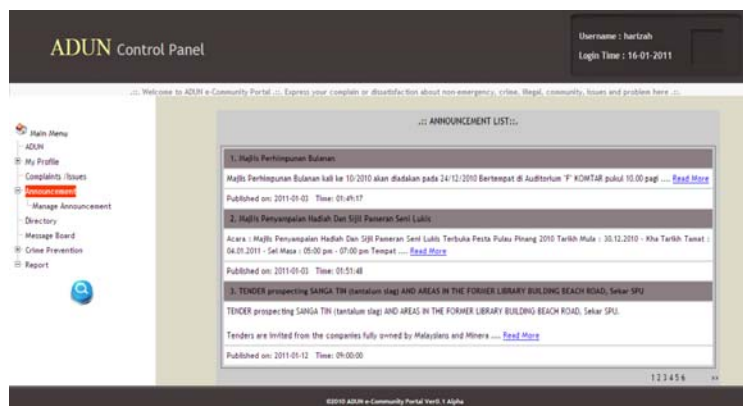

Fig. 3: Announcement view interfaces

Figure 3 shows the lists of announcement in ADUN panel. When ADUN clicks Read More hyperlink, the content of announcement will be displayed (See Figure 4).

Fig. 4: Announcement view content interfaces

Fig. 5: Announcement management interfaces

Figure 5 shows the management site of announcement in ADUN panel. ADUN can add a new announcement by clicking on the add button. Add announcement interface will be displayed (See Figure 6).

Fig. 6: Add announcement interfaces

Fig. 7: Edit announcement interfaces

The date and time will be automatically captured from the computer by using function date and function time, so ADUN does not need to input the value of time and date field. ADUN just need to enter the announcement title and the announcement description. Besides that, ADUN also can edit the contents of the announcement, if there are some changes on the information of the news or announcements (See Figure 7).

B. Discussion Module

The advancement of networking technologies allows people to have asynchronous on-line discussions by exchanges the messages through discussion base systems[2]. The web nowadays is not only a media to spread information, but also a place for people to express their ideas and also dissatisfaction. Instead of using the complaints module to express their dissatisfaction, the community also can join the discussion forum in order to suggest the best solutions or good ideas for ADUN to solve their problems.

By using the discussion also, the community can share or exchange their ideas in order to solve certain types of problems regarding their complaints.The discussion forum is the environment for the community to post their messages online. As such, this portal may be much more focused on the needs of that user population and can therefore better meet their needs as well as the needs of the organization.

The technique used in discussion module is thread technique. Each thread is displayed separately from the others. The threaded discussion communities are one of the most common forms of online communities, which are becoming more and more popular among web users. It is presented in a tree like structure: the root of the tree is the message that has started the discussion, and the nodes are the replies; the users can find the references and follow-ups relationships of the messages and follow the discussion easily (see Figure 8).
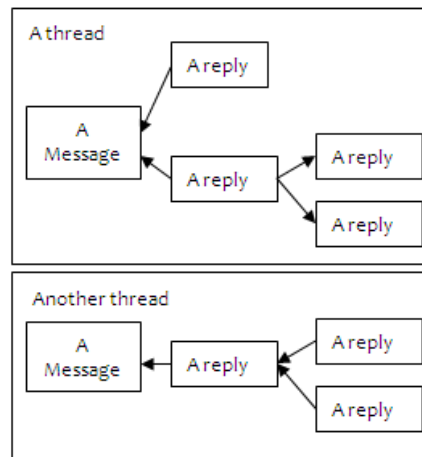
Fig. 8: Thread with tree structure

III.   TECHNIQUE OVERVIEW

There are several techniques that can be used to develop this e-community portal. These techniques have been researched and prepared during the analysis phase. The potential types of techniques that can be used to develop this system are use case diagram, system sequence diagram, state machine diagram, domain model class diagram, and data flow diagram [1].

A.   Use Case Diagram

Use Case Diagram is a type of behavioral diagram that can be used to show the behavior of the system that we develop. This type of diagram describes the users of a system and also the functions and services that are provided to the users. The main purpose of a use case diagram is to show what system functions are performed for which actor [3],[4]. Roles of the actors in the system can be depicted. Besides that, use case diagram also used to visualize the relationship between the use cases and the actors. There are three types of components in the use case diagram which is a simple stick figure whichrepresents an actor, the connecting lines between actors and use cases indicates which actors invoke which use case or role. There are two ways to organize the use case for better understanding and development. The first way is by showing all the use case that are invoked by a particular actor which is from the user's viewpoint, whereas the second way is by showing the use case from the viewpoint of a system and its subsystems [3]. One of the advantages of using use case diagram is it will provide a great deal of information and communication. This is because, by looking at the use cases, we will know what the functionality will be included in the system. In fact, we will also know exactly who will be interfacing with the system by looking at the actors and by looking at the set of use cases and actors. We will know exactly what the scope of the project will be. Thus the use case diagram can help to identify up front any missing functionality.

B.   System Sequences Diagram

System Sequences Diagram is a diagram that shows the sequences of messages between an external actor and the system during a use case or scenario[1]. This diagram is mainly used to show the interactions between objects in the sequential order that occur in the system. The sequence diagram is mainly used to define the event sequence that will result with some desired outcome. In addition, this diagram also used to represent or model the flow of messages, events and actions between the objects or components of a system. The sequence diagram is a good diagram to use to document a system's requirements and to flush out a system's design. This is because it shows the interaction logic between the objects in the system and also in the time order that the interactions take place. One of the major advantages of a sequence diagram is we can noted a common interactions and easily specify alternative or parallel scenarios using interaction fragments. In fact, this diagram is also one of the most widely used dynamic diagrams in Unified Modeling Language (UML).This is because, this diagram uses class name and object name references, so that it become very useful in elaborating and detailing the dynamic design and the sequence of the objects.

C. Statechart Diagram

Statechart Diagram shows the life of an object in states and transitions. It describes the different states of a component in a system where the states are specific to a component or object of a system.Besides that, statechart diagram also describes the flow of control from one state to another state. In this type of diagram, the states are defined as a condition in which an object exists and it changes when some event is triggered whereas the events is an internal or external factors that influence the system. When these states and events are identified, they are used to model it and these models are used during the implementation of the system. Therefore, the most important purpose of statechart diagram is to model lifetime of an object from creation to termination.

D. Domain Model Class Diagram

Domain Model Class Diagram is used to show classes of objects in a system. This diagram represents how different entities are related to each other in an object-oriented system. A rectangle in the class diagram represents classes and the lines that connectedto the rectangles show the associations among classes. The top section of the diagram contains the name of the classes and the bottom section lists the attributes of the class. All objects in the classdiagram have a value for each of these [3].

E. Data Flow Diagram (DFD)

Data Flow Diagram is a graphical system model that shows all of the main requirements for an information system in one diagram. Itrepresents the flow of information within the system for example, how information enters and leaves the system, what changes the information, where information is stored and so on [5].

In addition, this diagram also shows the flow of data from a source to a destination. The flow is shown as an arrowed line with the arrowhead showing the direction of flow. The advantage of data flow diagram isto be easy to understand. On the other hand, this diagram is also useful for communicating current system knowledge to the users. There are other process models, such as the activity diagrams used with business process reengineering, but the data flow diagram is the most commonly used process model.

IV. IMPLEMENTATIONS OF THE TECHNIQUES

A. Announcement Module

Figure 9 represents the use case of activity in announcement modules. Based on Figure 9, Announcement module consists of two actors as the main user which is ADUN and the user. Each of the actors has limitation in what they can do inside the subsystem. ADUN who has a full privilege can view, update, delete and create a new announcement. For user, they just can view the announcement. The line connecting between actor and use case in Figure 9 shows the relationship between the users and the function provided.
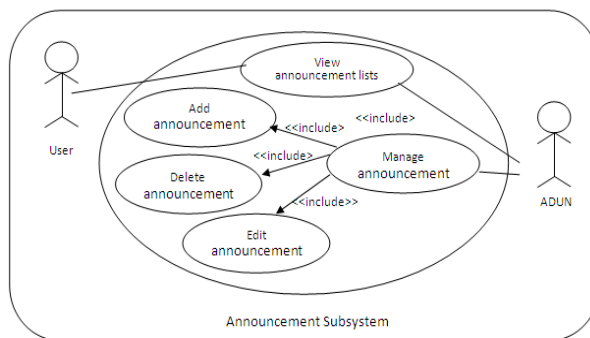

Fig. 9: Use case diagram for Announcement Module

Based on Figure 10, there are two tables involved in the announcement module, class diagram which is ADUN table and also the announcement table. This class diagram simply represents how ADUN and announcement entities are related to each other. Furthermore, in order to create the announcement, ADUN needs to register first and start to create the announcement by filling in the announcement details. The date and time will be automatically captured from the computer by using function date and function time, so ADUN does not need to input the value of the date and time.
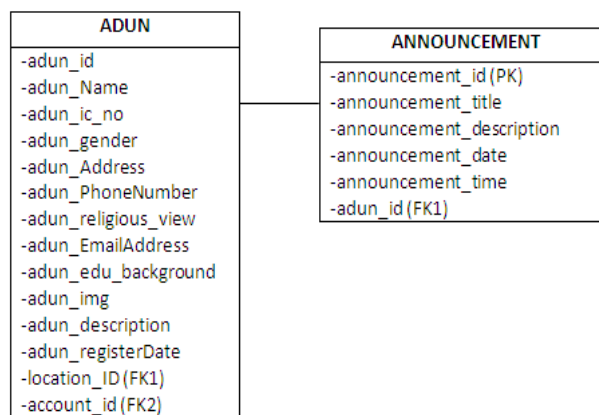

Fig. 10: Class Diagram for Announcement Module

Figure 11 shows a state chart diagram for announcement module. The state chart diagram shows the transition of the states of the ADUN detail add, view, edit and delete the announcement. The process begins from selection of criteria of the announcement menu. From the details displayed, ADUN can choose to add, view, edit or delete the announcement whereas the users can just only view the announcement.
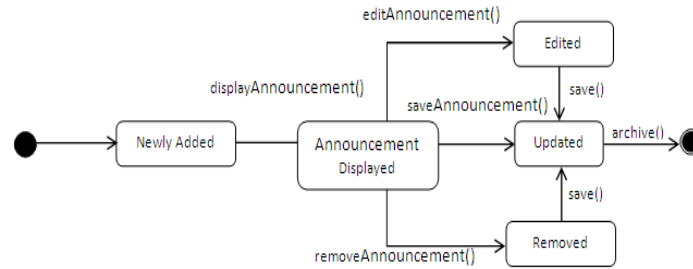

Fig. 11: State chart diagrams for Announcement Module

B. Discussion Module

Discussion module allows ADUN and the user to open discussion boards and start sharing or exchanging their ideas in order to solve certain types of problem regarding their complaints. Figure 12 represents the use case of discussion module. This use case shows that only two types of users, which is ADUN and user can join the discussion. These actors have different capabilities to respond with the function provided. The line connecting between actor and use case in figure 12 signifies the relationship between the users and the function provided. This use case shows that both of the users which is ADUN and the user have the same capability to handle the discussion but only the user can create a new discussion.
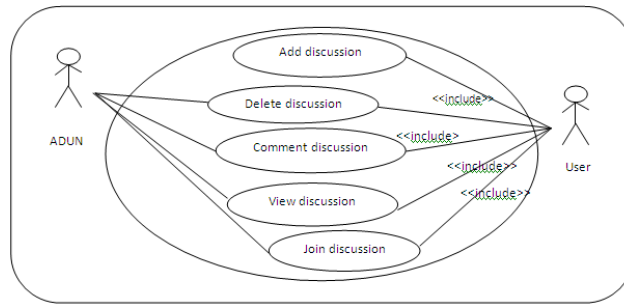

Fig.12: Use case diagram for Discussion Module

Based on Figure 13, there are three tables involved in the discussion module, class diagram which is ADUN table, discussion table and also the user table. This class diagram simply represents how the entities of the three tables are related to each other. Furthermore, in order to create the discussion,   ADUN and user need to register first before join in the discussion.
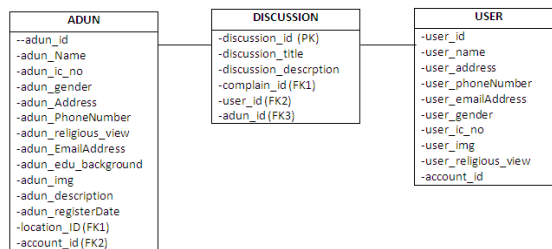

Fig. 13: Class Diagram for Discussion Module

Figure 14 shows the flow of the discussion module which consists of five status of the object. It explains the workflow of module in more detail than use case. As shown in figure 14, once the user adds a new topic in discussion module, the new topic will be updated and displayed. Besides that, both of them are allowed to do either to delete or edit the existing topic, but only the user can create a new discussion.
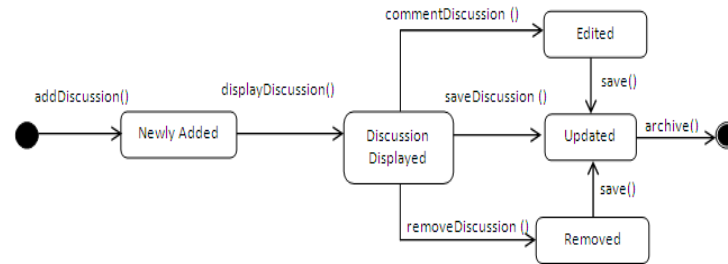
Fig. 14: State chart diagrams for Discussion Module

V. CONCLUSION

This paper describes two modules in ADUN e-community portal. A portal is a medium for user to gain access to web-based information and tools from a single Internet location. ADUN e-Community Portal provides the community the right place to express their dissatisfactions or complaint toward the government agencies and department. On the other hand, through this e-community portal, the community also can suggest their ideas in the discussion forum or make complaints regarding the problem that they have faced especially at their places. Besides, through this portal also ADUN can improve their community services to the citizens. Announcement module and discussion module make this portal become more interactive with the way it is represented in the portal. It will make the communication between the community and ADUN more effective.

The future work will include the development of file-uploading function, performance improvement and also to improve the user interface of the system.

ACKNOWLEDGMENT

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