THE MODELING OF E-SUPERVISED (E-SUV) FOR DISTANCE LEARNING CENTRE

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Abstract- E-services is a suite of web-based products that will allow any business or service running globally and efficiently. It brings profound changes in business models and value chains especially for Professional and Continuing Education Centre (PACE) environment due to its responsibility to manage all the courses provided by every faculty to private colleges. Even though PACE is running resourcefully but it is still facing a few problems such as the difficulties of each faculty officer to get information about private colleges, inability communication between PACE and private colleges directly and, a lack of information management in private colleges. Therefore, this study tries to propose a model of e-service application called E-Supervised (E-SUV) to provide the information related to twinning programs between Universiti Utara Malaysia (UUM) and private colleges. It enables users to interact via portal by using the UML-based Web Engineering (UWE) approach.

I. INTRODUCTION

E-Services will have significant effects on how enterprise IT approaches management and administration [3]. It brings profound changes in business models and value chains, such as new models of distribution and retailing. As the Web has become a runtime environment for small-scale to large-scale business applications [9], a more structured and disciplined approach for design, implementation, maintenance respectively evolution, and integration of such Web applications is required [4]. E-services represents self-contained and Internet-based applications and it also increases competition, broadens distribution channels, lowers costs through easier outsourcing, and eases the integration efforts required to implement value-added partnerships [7].

As a distance learning centre in UUM, PACE has a responsibility to manage all the courses provided by every faculty to private colleges. In every faculty there is one Programme Coordinator who manages supervised programmed activities between UUM and private colleges. Each faculty will select faculty members to be a Course Supervisor as an assistant to Programme Coordinator based on the number of colleges. Course Supervisor will supervise all of the courses in each private college. As regards, an e-services is required to provide more effective services from PACE to private colleges. PACE has found a few problems such as the difficulties of each faculty officer to get information about private colleges, inability communication between PACE and private colleges directly and, a lack of information management in private colleges. Therefore, this study tries to propose a model of e-service application called E-Supervised (E-SUV) to provide the information related to twinning programme between UUM and private colleges by enabling users to interact via portal through forum as a medium for discussion and bridging communication gap between both of them.

II. METHOD

This study uses a precise UML-based authoring method [6] for Web applications. This authoring method is part of the UML-based Web Engineering (UWE) approach [1]. The notation is using the “lightweight” Unified Modeling Language [12] profile developed by researchers [2, 10]. There are four activities of modeling involve in this study, which are requirement analysis, conceptual model,
navigation model and presentation model [10]. Meanwhile, the conceptual models have been used as a guideline for modeling the E-SUV environment. Fig. 1 shows the modeling of E-SUV environment.

![Diagram of E-SUV framework]

**III. E-SUV FRAMEWORK**

The goals of the requirements analysis are to find the functional requirements and to represent these requirements as use cases. It is a user-centred technique that forces to define who is the users (actors) of the application are and offers an intuitive way to represent the functionality that an application has to fulfil for each actor. The main modeling elements used for use case modeling are: *actors* and *use cases*. They can be related by *inheritance*, *include* or *extend* relationships. All of the use case models have been generated by the guidelines [5, 8, 11]. The actors and use cases are generated based on the data that has been collected from the PACE environment. Based on the current environment at PACE, there are three use case models which are forum, email and information that have been identified. The second step is the conceptual model which aims to build a class model with their objects, that attempts to ignore as many as possible navigation paths, presentation and interaction aspects. The use case packages will offer information about the activities of each actor. The actors are identified during the requirement analysis. Meanwhile, the objects, relationships and operations are identified traditionally based on the existing use case and textual description.

The third step is navigation model, which is divided into two parts; navigation space model and navigation structure model. The navigation space model represents the modelling elements used and the method applied to construct the navigation space model. In the process of building the navigation space model the project focuses on which view of the conceptual model is needed for the application and navigation paths that are required to ensure the application’s functionality. The model decisions are based on the conceptual model and the application requirements defined in the use case model. Meanwhile, the navigation structure model describes how the navigation is supported by access elements such as indexes, guided tours, queries and menus. Technically, the navigation paths, together with the access elements, are presented by a class model, which will be systematically constructed from the navigation space model in two steps. The first step is enhancing the navigation space model by indexes, guided tours and queries, while the second step is deriving menus directly from the enhanced model. Menus are representing the possibilities of choices for navigation. The result of the navigation model is a UML class diagram built with UML stereotypes, which are defined according to the extension mechanism of the UML.

The final step is presentation design, which supports the construction of a presentation model based on the navigation structure model and additional information collected during the
requirements analysis. The presentation model consists of a set of views that show the content and the structure of the single nodes and how the user can interact with them. The objective of the presentation flow model is to show where the user interface views of the storyboard are presented to the user, i.e. in which frame or window they are displayed. It also shows which contents are replaced when the user interacts with the system. The focus of this step is to model the dynamics of the presentation showing where the navigation objects and access elements will be presented to the user. A presentation flow model of E-SUV is built with stereotyped classes «window», «frameset» and «frame». It uses these stereotypes to indicate the location of the presentation.

V. RESULT AND DISCUSSION

A. The E-SUV Activities

Fig. 2 has shown the E-Supervised activities. It starts by requesting the URL through browser and the Interface component will load the requested page. The Maintenance component will display the page for every actor in Internet. It will wait for actors to key-in their password. If the password is correct it will redirect to members page or else actors need to re-login. The actors can choose the menu that has been displayed. All requested activities will be served by Maintenance component. Actors can logout if there are no activities to do. The Interface component will close the windows after the logout is done.

![Fig. 2. The activities of E-SUV environment](image)

B. Conceptual Model

Fig. 3 represents the User View of the conceptual model. The users are model by tracking their interest in problems that have been defined in requirement analysis. At a particular session a user of the system uses the system in one of the following roles: administrator and registered members. Administrator will register members according to personal profile that has been given. Administrator will also create the forum according to current circumstances. All members will be able to use the forum for discussion and interaction. Other than that, members can also send file and browse information about courses.
Fig. 3. User view of E-SUV environment

Fig. 4 below depicts the Forum View, which includes the main classes of Forum, Messages and Registered Members. The forum class contains information, such as forum name and description about it. The date of post and last post of the forum are derived attribute (time dependent). It changes when the message is sent by user. A message is described by the forum title and ids of the user. Each message has an automatic generated id so that it can be matched with the forums. Message can be displayed if users have any question regarding E-SUV problems. Other users can reply the message by answering the question. The administrator will monitor all forums and users by registering it before they can use. Registered users can use all the utilities after they have registered.

Fig. 4. Forum view of E-SUV environment

The last view is a user email that shows the interaction between members and user email menu. Members can compose mail or attach file to other registered user in database. Members also can change password and read e-mail from other user. File can also be attached with e-mail to other users. By enabling this function members do not need to post file traditionally. The user email view is shown in fig. 5.
The *Information View* shows the relation between members and information. Members can search course and coordinators information if they want to know something. Information is stored in database and will be updated by administrator from time to time. Administrator will key-in all information to database if there is new information. Members can browse for profile information such as coordinators, supervisors and private college lecturers. Other information like courses and examination question are also included in the feature. Fig. 6 shows the information view.

For *Information class model*, administrator will store the information into database and also update it from time to time. Administrators can also delete information that is not needed. Registered members can view the information that has been entered by administrators. The information is about coordinators, course supervisors and course information. They are also able to view or download the past semester examination questions. The E-SUV class diagram is shown in Fig. 7 summarizes the navigation space views of *Forum, User Email* and *Information* in the global navigation space model. Fig. 8 below shows how the navigation space model of the *E-SUV* environment can be enhanced by indexes, guided tours and queries.
D. Presentation Flow
A presentation flow representing a scenario for a sequence of possible navigation activities that can be performed by the user of the application. The user will start from the main page of the portal and the menu will be displayed. If users select to browse the main menu they will have to move to sub-window page. The content will be displayed. Besides that, user can also choose model of E-SUV to use the facilities. The user will select one or more menus in the page and the body will display the content.

VII. CONCLUSION
We have presented a UWE approach to develop a model of e-service in education environment. Because of the potential benefits in term of being able to provide e-service through information and communication technology (ICT), E-SUV and its modeling activities could be a guideline model for future e-distance learning centre. Moving towards a goal of a practicable e-service, this paper has highlighted the main components of E-SUV support environment. For future work, we intend to investigate the effectiveness of this model when it is implemented in real practices.

REFERENCES