

# ANALYSIS AND DESIGN OF NEWS CENTER MANAGEMENT SYSTEM BASED ON UML

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**Abstract:** In the Paper, the visual analysis and system design on news center management system are carried out. Firstly, the concepts and features of UML (Unified Modeling Language) modeling are summarized simply, and then in allusion to the actual needs and the business model of news center management system, the system requirement model based on UML is offered, to establish static modeling and dynamic modeling ultimately.

**Keywords:** UML, ROSE, News Center Management System, Static Modeling, Dynamic Modeling

## 1. UML Introduction

UML (Unified Modeling Language) is a general-purpose visual modeling language used to describe the software and process visually and construct software systems documentation. Any kind system with the static structure and dynamic behavior is the system modeling based on UML. Their modeling can be categorized as static modeling and dynamic modeling. UML has brought about many facilities for the software development process such as unified, consistent [3-6].

To design system through object oriented technology, there are three main steps [1]: the first step is to describe the system demand; and then according to demand we can establish a static model of the system and construct the static structure of the system; closely followed by a description of the behavior of the system and the reflection of the dynamic relationship between the system objects. In the first step and the second step in which the application of UML static modeling, we can describe the main aspects of the system through the Use Case Diagram, Class Diagram (including package), Object Diagram, Component Diagram and Configuration Diagram. The third step is the application of UML dynamic modeling, the model established can probably perform, or denote the order state or interactions of the implementation, mainly including Statechart Diagram, Activity Diagram, Sequence Diagram and Collaboration Diagram four parts.

## 2. News Center System Requirements Analysis

News Center Management System is mainly to achieve a real-time dynamic news display and management of certain enterprise business websites.

A typical News Center Management System usually provides News Headlines Categories Show, news detailed display. It should also provide the corresponding maintenance and management of news system for the background administrators, including adding new news, editing and modifying the information, deleting news and other functions.

In order to better description of system functions, we will be divided into two main modules: the information browsing Module and the Back Administration Module,

as shown in Fig. 1.

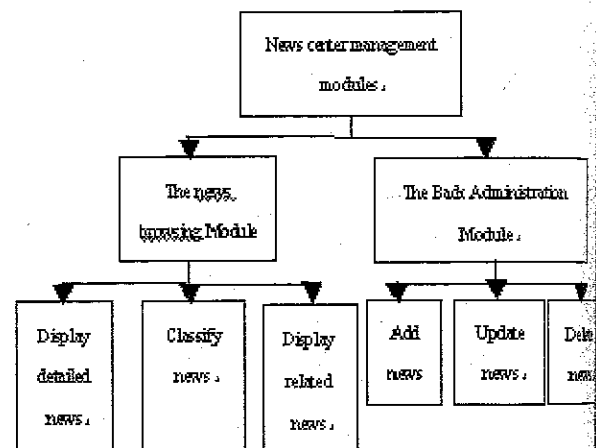


Fig. 1 System functional structure Diagram

## 3. The System UML Basic Model

Followed by the design and implementation of news center management system model, there are the system's static model (Use Case Diagram and Class Diagram) and the system's dynamic model (Sequence Diagram, Statechart Diagram and Activity Diagram). Draw various UML basic model through the application of Rational rose software.

### 3.1 Use case diagram

The first task of requirements analysis phase is to establish Use Case Diagram. Use Case Diagram is to describe the system functions from a user view, as well as the implementation of the system outside and a link between the Use Cases provided by the system. By Use Case, users and systems analysts can communicate with each other in order to analyze the needs of users [2].

In this system, there are two actors: the general viewers and back administrators. The surfers function is to classify news headlines, and to display news content and other related news. System administrators can add news, update news and delete news. The Use Case Diagram of visitors to browse news is shown in Fig.2. The Use Case Diagram of the system administrators to manage news is

shown in Fig. 3.

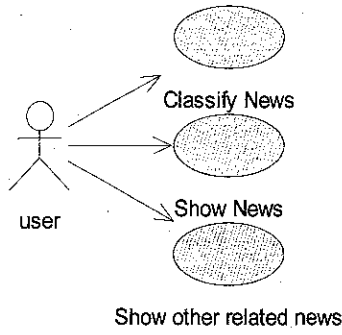


Fig. 2 Use case diagram of user

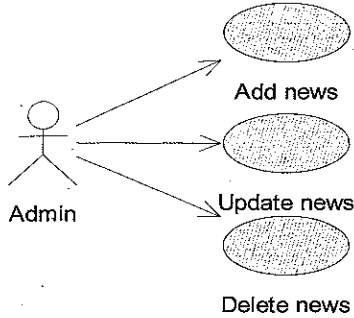


Fig. 3 Use case diagram of administrator

### 3.2 Class diagram

Class Diagram is used to define the categories of system, including describing the relationship between different class and the class's internal structure, and displaying the static structure of classes of the system; there are three relationships in the classes containing the Association, Inheritance and Aggregation.

In the news center management systems, we can create a global diagram of information management, as shown in Fig. 4. Administrators can handle the change of many pieces of news, so NewsService and Admin are 1: n relationship, while the same category of news can only correspond to a kind of news service, so NewsService and NewsAction can only be a 1:1 relationship.

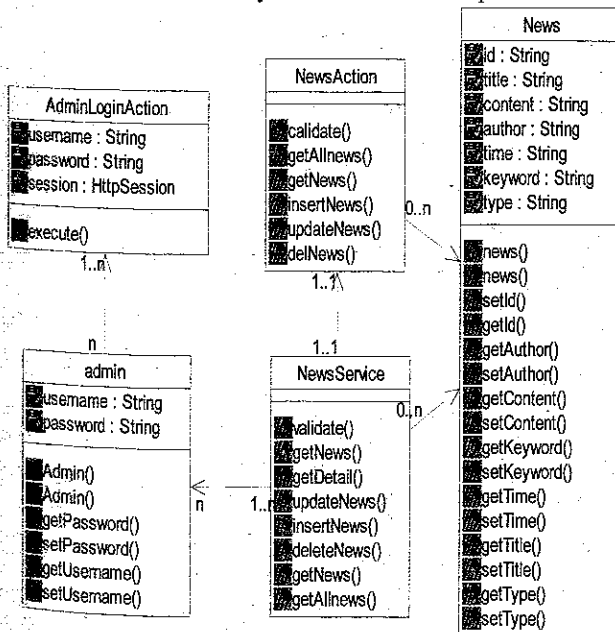


Fig. 4 Class diagram of news system

### 3.3 Sequence diagram

Interaction Diagram is used to describe the system how to implement a Use Case or a particular scene in the Use Case. Two kinds of interaction diagrams are offered in UML, such as Sequence Diagram and Collaboration Diagram. Sequence Diagram describes the interaction between system elements according to time order; Collaboration Diagram describes the interaction between system elements in the light of the time and space order. Here, the paper's emphases is to create the system Sequence Diagram, Collaboration Diagram is established in Rational rose through the command 'go to collaboration Diagram to achieve' under the 'browse' menu.

In the news center management system, the Sequence Diagram of general visitors browsing news need to be created, shown in Fig. 5. The Sequence Diagrams of the system administrator to add news, update news and delete news need also to be created as shown respectively in Fig. 6. Fig. 7. Fig. 8.

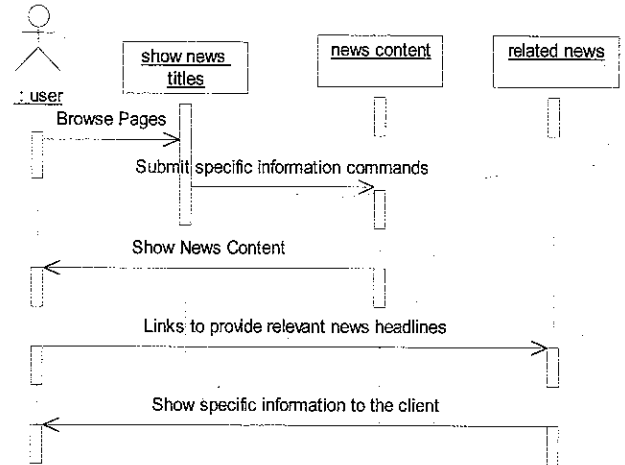


Fig. 5 Sequence diagram of user browsing a piece of news

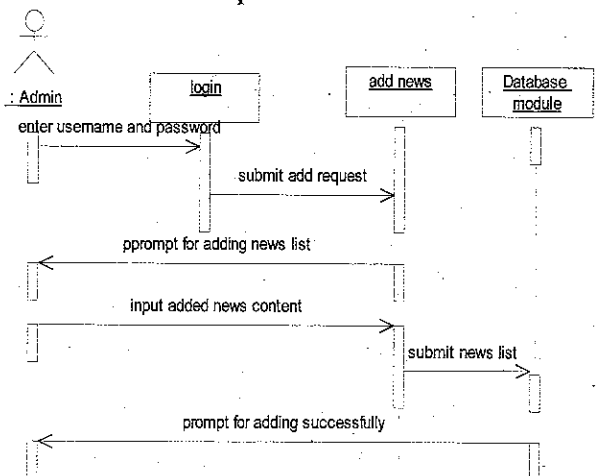


Fig. 6 Sequence diagrams of the system administrator to add news

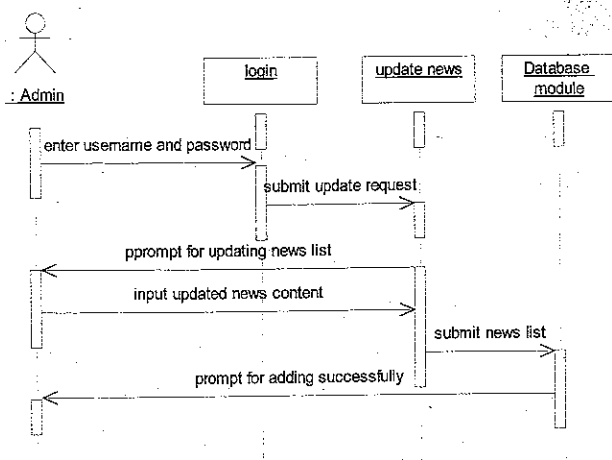


Fig. 7 Sequence diagrams of the system administrator to update news

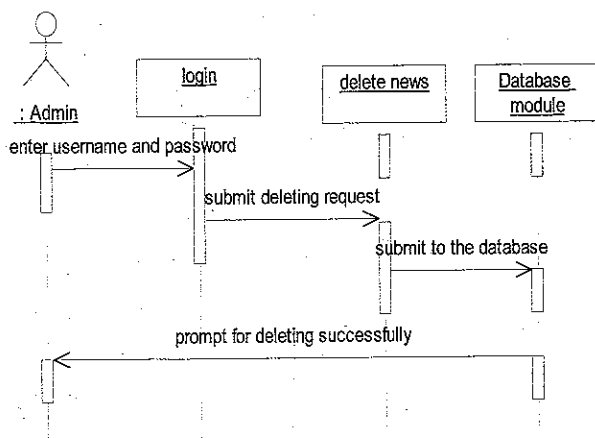


Fig. 8 Sequence diagrams of the system administrator to delete news

### 3.4 Statechart diagram

In the back-stage management of this system, there are mainly three kinds of states, namely adding news, updating news and deleting news. It is very similar to complete any state of three states. Here, to draw the state Diagram of this system administrator to add news is mainly as shown in Fig. 9.

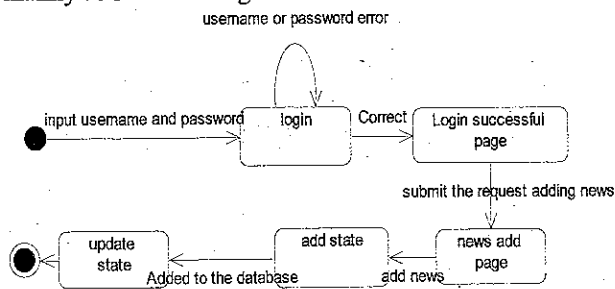


Fig. 9 Statechart diagram of the system administrator to add news

### 3.5 Activity diagram

In UML, Activity Diagram is another tool used for modeling for the dynamic behavior of the system, which describes the sequence of events and shows the control flow from one activity to another activity. In the system, the Activity Diagram of browsing a piece of news is

shown in Fig. 10. The background management Activities Diagram, as shown in Fig. 11.

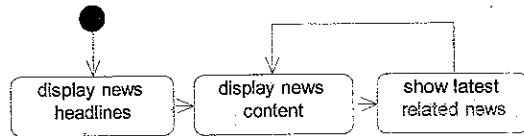


Fig. 10 Activity Diagram of browsing a piece of news

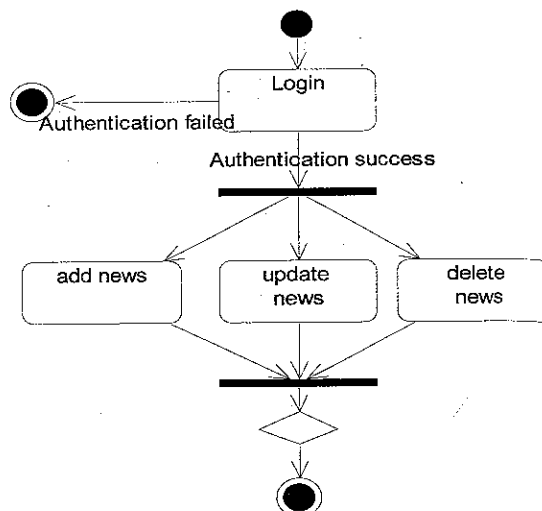


Fig. 11 Background management activities diagram

## 4. Conclusion

By the practical discussion of news management system above, we can see that UML provides a flexible, easy to read and intelligibility expression in the entire system development process. It is simple and powerful, in the provision of most of the core concepts of object-oriented, while also providing expanded programs to make object-oriented modeling worker be easily defined the complex system in most areas through UML. To improve software productivity, quality, reliability and maintainability played a very important role. The use of visual modeling tools such as ROSE graphical modeling, we can generate a format standard model, Enhance the readability of the model will help designers to express design ideas more clearly and more in the future of commissioning and maintenance work has laid a good foundation.

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