Wireless Web Content Management Using J2ME

Anjana Gangadhar[1], K Shirin Bhanu[2]

[1]M.Tech, CS, Sri Vasavi Engineering College, Pedhatadepalli, Tadepalligudem
W.G.Dt., A.P. India.

[2]Sr.Assistant Professor, Dept of IT, Sri Vasavi Engineering College, Pedhatadepalli, Tadepalligudem.
W.G.Dt. A.P., India.

*Abstract***- A Content Management System (CMS) is a software system used for the management of computer files, image media, audio files, electronic documents and web contents. A Wireless CMS in contrast is administered through a mobile device wirelessly. Wireless content management system (WiCoM) which works in real time, using wireless programming and J2ME development platform. It is wireless application aimed at helping the general administration of cyber contents while being on the move. It is wireless content management software running on a java enabled mobile device having GPRS connectivity. WiCoM System is implementing in real-time news reporting system application. The main purpose of this application is to enable secure content administration using any smart mobile device (java enabled and having GPRS connectivity), which helps "Any Where Any Time" administration possible. This application provides interface for the user to securely add in various useful data, which can be interactively displayed on the web in real-time. Both textual as well as multimedia contents (pictures and video) can be managed. We used news reporting agency for administer news site in real-time. For instance, let us assume an event is taking place at a site. A reporter arriving at the site of the event can record the news of the current scenario from the various sources. He can take snaps and videos and upload them right at the moment to the web-server making it available to the world in no time. There are options to edit/delete and thus provide various content management related features. The system structure of the project is divided into client side and server side .In client side, MIDP application is used which resides on the mobile device. Additionally we add optional package Mobile Media API(JSR 135) to handle multimedia contents .In server side ,J2EE technology is used .**

I. INTRODUCTION

Along with the speed development of internet the need for the management and integration of multimedia content among sites is also increasing. Large amounts of information need to be shared with their users through Web, Which relate to the information when to release and cancel, content management and publication, as well as a range of issues such as rights management. The traditional solution is to use a large number of Web editors and keep editing the contents into different HTML files, thus completing the content management of website. Due to the low efficiency of content processing and expanding contents volume, government, enterprises and organizations come across such problem: the need for effective management of multimedia Web content, Thus, the content management system application in particular or general fields has practical significance and research value.

II. RELATED BACKGROUND KNOWLEDGE

A.WCMS

Web content management system is considered as Content Management System (CMS) software, implemented as a Web application for creating and managing HTML content. WCMS is also a tool, which allows a variety of centralized and decentralized technology, non-technical staff in certain restrictions of rules, processes and workflow to create, edit, manage and control a large, dynamic collection of Web material (HTML documents, images, audio and video), Which facilitates content creation, content control, editing, and essential Web maintenance functions [1]. WCMS provides authoring tools designed to allow users with little knowledge of programming languages to create and manage content with relative ease. And most WCMS use a database to store content, metadata, or artifacts that might be needed by the system. Content is frequently, but not universally, stored as XML, to facilitate reuse and enable flexible presentation options. A presentation layer displays the content to Web-site visitors, which is based on a set of templates. The templates are sometimes jsp page files. Unlike Web-site builders, a WCMS allows non-technical users to make changes to a website with little training. A WCMS typically requires an experienced coder to set up and add features, but is primarily a Web-site maintenance tool for non-technical administrators to ensure a consistent and effective website.

Web content management is a form of blogging in which the user publishes blog entries directly to the web from a mobile phone or other mobile device. Mobile blogging provides an instant way of accessing and collecting personal memories.
Through this relatively new technology users are allowed to create and maintain their own personal web sites from their mobile phone. The users update their web sites by simply sending their images, audio and/ or text from their mobile phones. This eliminates the need for manual maintenance of

web sites. Mobile blogging applications have become popular as an instant way of accessing and collecting personal memories and blog entries from mobile devices.

B.J2EE-based three-tier architecture

Three-tier is widely used in the late 1980s through the mid-1990s, this architecture can separate all three layers into different systems. In this architecture, the foremost layer is presentation layer, that is separated out to a program that runs on the client side, and the business logic part runs on what is called the "middle-tier," which itself might be composed of more than one server. The middle-tier systems make requests from the data tier on another server by using Transact-SQL and stored procedure calls, often combining and breaking apart the requests to service them quickly and efficiently [3]. J2EE-based three-tier architecture technology can also be utilized in developing WCMS, and in this system, we will use three-tiered design in application: presentation layer, business logic layer, persistence layer. A well-architected application is crafted into distinct layers, each of which encapsulates a particular role. There are different roles between the layers, and by using different framework with open-source code in each layer, we can acquire the most effectively combination framework, that is: the presentation layer of the system is implemented based on Web Work framework, which is based on MVC. (Model View Controller)

Overview of the web content management System Developed

The mobile blogging system works with all mobile systems that have internet connection and that have the java application installed. It also provides for remote website manipulation by submitting, updating and deleting content on the website in a simple to use but powerful system. The user first registers for the service from their mobile phone or from the web site before they can start sending entries to the website. Once the user is registered short entries can be sent from their mobile phone to the web site. The user can edit these entries on the web site. Alternatively they can use their mobile phones to send their entries. The application exhibits the nature of a multi-user blog in that it can be managed and updated by different users provided they are account holders within the blog. Because of this multi-user aspect, the application allows users, both those registered and unregistered, to read posts created by other users with blog accounts implemented based on spring framework, which is an IoC/AOP container. And the persistence layer of the system is implemented based on Hibernate, which is a kind of advanced tool of O/R mapping. Each layer maintains a clear separation to make them independent existence with different tasks. But interfaces are used to communicate between different layers, shielding the implementation of the internal detail, three-tiers
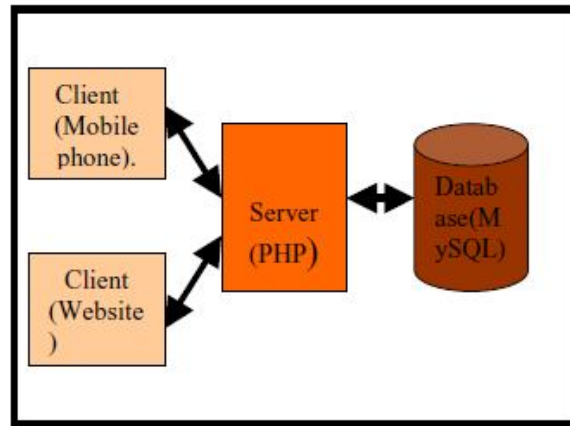
Overview of System Developed

a. Presentation layer

Web Work, used as this layer framework, is a powerful web-based MVC framework built on top of a command pattern framework API called XWork, Web Work's specific features include dispatchers that handle and representative requests, according to the result types to choose the right view and set to user pages with several different display technologies (JSP, Velocity, Jasper Reports, XML, Free Marker), and a small but powerful library of JSP tags and Velocity macros. By using Web Work framework [4], presentation layer components can provide data, and is responsible for providing the user interface that users use to interact with application and perform user interface process management to orchestrate those interactions.

b. Business logic layer

The middle component of the typical web application is the business or service layer, which has the assignment of handling application business logic and business validation, managing transactions, allowing interfaces for interaction with other layers, managing dependencies between business level objects, adding flexibility between the presentation and the persistence layer, exposing a context to the business layer from the presentation layer to obtain business services and so on [5]. In Order to finish these tasks effectively, the most popular framework Spring is applied in this layer. Spring Framework is composed of an IoC/AOP container, a configuration and organizational components of the framework and a set of built-in persistence for the Services and Web Services provided by user interface components. Spring provides seven modules, Spring Core, Spring AOP, Spring DAO, Spring ORM, Spring Web, Spring Context, Spring Web MVC, and Spring Core are the basis of Spring, provides a control inversion [6], At this layer includes the use of AOP framework and the spring framework for IOC container to connect affairs and deal with logic, which leads to tightly coupled applications in selecting a components for independent use on demand.

c. Persistence layer

Persistence layer uses the Hibernate technique as middleware to completely shield concrete implementation of the database. Hibernate is an open-source object/relational mapping toolkit that relieves the need to provide direct use of the JDBC API. Hibernate offers facilities for data read and update, transaction management, database connection pooling, programming as well as declarative queries, and declarative entity relationship management [7]. Hibernate has the ability to generate Java source files to match the structure of a database, which containing configuration data provide Hibernate with details about databases with which it needs to interact. These files contain database connection specifics, connection pooling details, transaction factory settings, as well as references to other XML files that describe data objects in the database [8]. Combined, these files provide substantial configurability allowing an application to tune the behaviors and performance of its data access layer to a remarkably fine level of granularity. Through Hibernate provides API and HQL Query Interface, the operational data becomes more effectively, and more convenient. At the same time, it shields variations between different databases below, and provides the necessary interface for business.

III. OVERALL ANALYSES AND DESIGNS OFWCMS

A. Requirement Analysis

a. Basic Requirements of WCMS

• Achieving a sound management of content publication, supporting such management that with multi-role and multi-user. Distributing the roles and permissions among different functions of CMS, which can be used for content creating, editing, auditing and publishing process and other handling permission management problem.

• Implementing the page automatic generation and management, include the automatic adding of page elements as well as division management of page module.

• Supporting at least one site for generation and management, ability to publish or cancel-published content items to one or many locations within a single

Site, while meets the expansion system requirements of generating multiple sites.

• The system should have rapid access speed and better control of concurrent operation, by solving concurrency issues to improve the efficiency of cooperative office during system application and actual operation process.

• Achieving the separation of site contents and access page, thus content editors don't need to pay too much attention to the display format of site contents, displaying the contents by a flexibly mechanism, such as optional default page templates, special subject column templates and so on. Which are provided in advance by the system.

• Adopting appropriate workflow technology to implement information flow control effectively, and for the publication and classification of the contents, the multi-level flow of information control can help to achieve creating, editing, auditing and publishing the site contents.

• Providing a good scalability and portability, benefiting the extension of system function in future.

b. Description of the basic business requirements

By analyzing and investigating the overall demand of the system and the business processes, according to the demand conditions of the maritime and shipping business website in Yunnan province, the article sums up the basic business requirements are as follows:

• Content draft: ability to create new draft and submit it, classify the columns according to different content items, besides, content draft should provide basic editing methods and editing tools with general document editing function, and be able to upload and download the images in the content, achieving diversification performance of different types of contents, Furthermore, the submitted content should present the basic information of submitting process.

Thus facilitate the management of content submission.

• Content edit: content edit should satisfy the requirement of submitted contents in terms of querying, previewing, editing, deleting, submitting, etc. such basic operation and management, edit content items without affecting the published work and distribute the authority to approval submitted contents. In addition, content edit should track the process of content submission and approval status which has been rejected or in the process of approval.

• Approval process: Approval process can add, modify, delete and manage the authority of the allocation roles and individuals. Provide a workflow that is configurable for users to allow different approval processes with varying content item status during the authoring, establish a variety of roles within a workflow process, and assign workflow to classes of content items as well as roles and individuals.

• Content approval: ability to approval the submitted content which is in the edit process, query and view the submitted contents for approval. There are two kinds of approval states: passed and not passed. The function that approval process should implement is to ensure each approval step can authorize only one approver.

• Content publishing: The editorial content can be published after passing the approval process, in the process of content publishing, cancellation and republished function should be provided. Published content should apply static html pages as contents storage form, with the publication of the contents, the unpublished content and page module can be updated as well, which also makes publishing Web pages convenient to manage and update. Thereby increase the speed of page browse and access.

• Website configuration and column management:

Ability to classify and manage the website columns of

 publishing content, including the basic operation of the columns, such as columns add, edit, delete, as well as the template option of page modules and website columns. Besides, Website resource management can achieve the basic functions, such as upload and download files management,

configuration and management of the published website parameters.

• Rights authority: include allocation of operating authority in various sectors of system function module.

B. System Main Business Process Analysis

In the process analysis of the website content management system, the article imposes on solving the problem of the major processes, such as content draft, content editing, content approval and content publishing, which together consist of the core part of the website content management system, Namely, the entire content distribution business processes, which also involve the content column management and website resource management, so that make it easy to classify the published static website and a user-friendly management. Besides, Website resource management has the ability to upload and download published resource file, which has enriched resource file of the published website. By analyzing the Fig.2 below, the paper obtains the basic steps information of content publishing process. Firstly, content producer create new content which is going to be edited and published, before the final step of content submission, the status of the content is draft, only this content item's producer can edit and submit its own created content, while the other don't have such authority right. Secondly, the status will change into waiting editing after being submitted, the editor can not edit the submitted content or do view, modify, delete and reject operations without authority rights. Figure 2.

C. System functional requirements Analysis

A complete content management system should have four major functions: content integration, content intelligence, content management and content distribution, as are shown below.

• Content integration: Allow users to find different forms of information form different systems, and the information includes documents, data, audio, video, graphics and so on.

• Content intelligent: Content intelligent is the core function module of content management system, which is used for content classification archive and help users to locate required information quickly, the search methods can be divided into full-text search and context search.

• Content management: Content management system's main function modules, to support for content management process, including content creating and editing, achieve the access to a variety of data, information, documents and procedures and provide collaboration tools to create content, such as documents and web pages production tools, data conversion Html tools and so on.

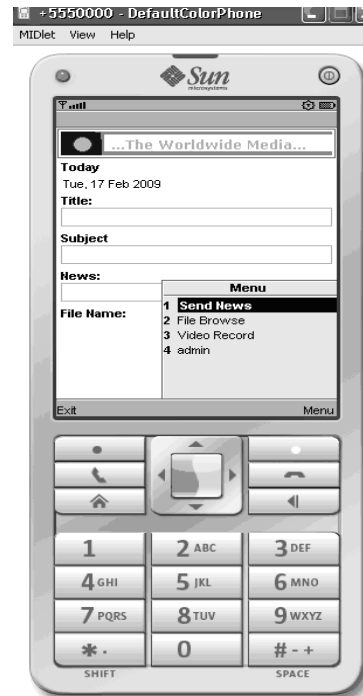• Content distribution: Allow all users receive the

Fig 1.send the news

Fig2.Sending Video

Fig3.Loading the video

Published information at the same time, including the traditional way non-Web of graphical user interface GUI, web information portal and various other ways.
The specific function structure chart is shown below as

KEY TECHNOLOGIES OF IMPLEMENTINGWCMS

Fig 4.Stop the record

A. Layered implementation

WCMS adopt three layers technical architecture to design the system, which consist of presentation layer, business logic layer and persistence layer, the presentation layer is responsible for publishing information to the end-user and interacting with the user, the input data can be transmitted through this layer to the business layer, and is responsible for extracting data from the business layer and appear to the user, different frameworks have been used for different layers so as to reduce the coupling of system architecture, system. For example, Web work which is based on the MVC framework is used in presentation layer, it separates business logic and presentation layer very well. Spring is used as a lightweight container, which is responsible for dealing with complex business logic and adopts dependency injection to implement object initialize, Hibernate is responsible for lowering down the difficulties in developing business model process. It will correspond with entity objects with the corresponding records in a database table, and shield specific database differences through unified interfaces. The benefits of the three layer's combination is that it has lower coupling problems in whole or in part of the structure by using such integrated framework to develop the information system and complex business model, and the maintainability and flexibility have also been improved, thus eliminating the deficiency while using each separate framework.

B. Access control & rights management

In the development of WCMS for maritime and shipping business, there exists different type of permissions, such as site permission, column permission, templates permission, file permission, menu access permission and the other types of permission objects. Access control and rights management is applied to distribute various functions of web content management, and all the rights can be controlled in the process of status change. The system management function assign user and user groups for one or more roles, while roles can be assigned one or more rights according to content status and taxonomy. Several kinds of rights have been defined to assign for roles. Those rights involve creating, editing, auditing, submitting and publishing. Roles with creating and editing rights can append and modify content in the column or specific category. If the user hasn't "publish rights", the created or edited content will be in submitting state. Roles with publishing right can publish content. Roles with website resource management right can download and upload document, image and file resources and so on.
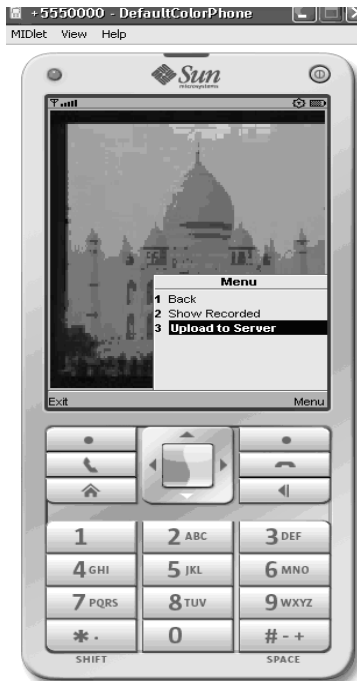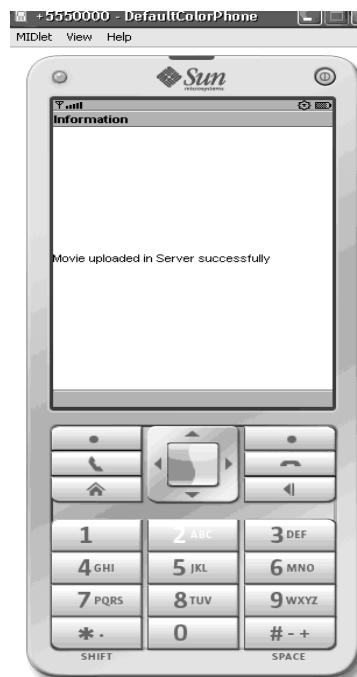
Fig5. Send the record to Server

Fig 6.Server loaded successfully

C. Publish Static Html Page

The content in the WCMS can be stored in the database after passing the approval process. And when the content is published with document templates, it will generate static HTML pages. The static HTML pages can be copied to web

server by distribution function, according to the different circumstances of topology, Web server and WCMS may be in the same server, different server or multiple web-server. WCMS has the ability to implement an automated distribution mechanism that can automatically synchronize the update files to the website server timely, and can publish static html page with files index to deploy to one or more servers to support server mirroring and server clustering. The benefit of publishing static html page is that the access speed of the published website can be improved. The template is designed so that author affiliations are not repeated each time for multiple authors of the same affiliation.

Please keep your affiliations as succinct as possible (for example, do not differentiate among departments of the same organization). This template was designed for two affiliations
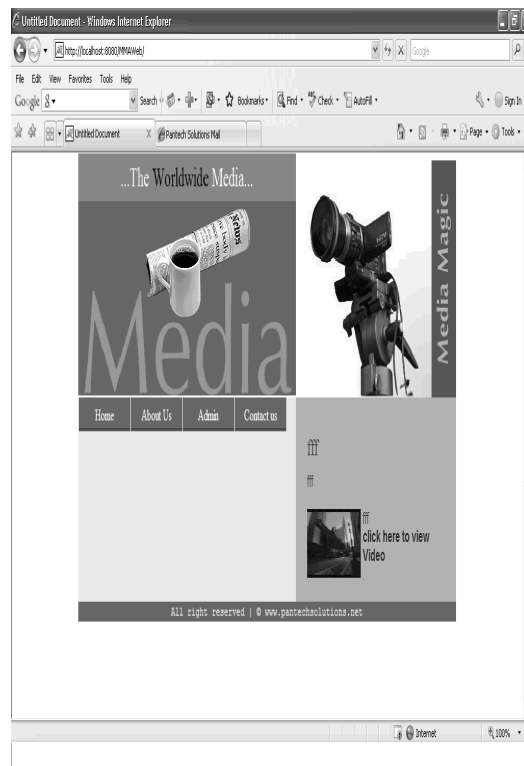
V. CONCLUSION

Web Content management system is a management tools for website construction with significant practical value and development prospect, this paper proposes three-tier architecture technology to realize a Web Content Management system based on J2EE developing model and gives the design scheme and key technologies for implementation, concretely including the business process diagram, functional structure diagram and the detailed design of the system, etc. and the three-tier that Webwork+Spring+Hibernate architecture which is used for web content management in maritime and shipping business and will enhance scalability and lower maintenance

costs greatly, improve efficiency of the software development, and our implementation shows that the J2EE-based three-tier architecture design is able to support extensible information content management services successfully.

In this paper we have presented a multimedia application developed using java micro edition, PHP/MySQL on the server side. The use of XML was a good idea keeping in mind the future scope of the project. The application is one of its kinds and finds huge application in news reporting agencies and e-commerce sites. An advanced version of the application is in progress which is a more generalized mobile CMS and eligible for a large scale deployment.

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