基于 Portlet 技术的校园信息门户的设计与实现

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摘　要：建设数字化校园是推动当前教育信息化的重要系统工程，而对校园已有信息进行合理的整合更是十分必要的，也是当前数字化校园研究的重点。文中根据校园门户建设的需要，提出了一个基于 Portlet 技术的校园信息门户的方案，从而使校园信息资源得到有效的整合。通过 Portlet 构建的数字化校园门户，整合了资源，降低了开销，使得资源得到合理利用，同时也提高了各部门之间协作的工作效率，对建设数字化信息化的校园起到了很好的效果。

关键词：校园门户；Portlet；portal；数字化校园建设

Design and Implementation of Campus Information Portal Based on Portlet Technology

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Abstract：The construction of digital campus is the critical system engineering to promote the education informationization，and the reasonable integration of information on campus is very necessary，also is the current research contents in digital campus. According to the need of the campus portal construction，put forward a campus information portal solution based on Portlet，and make campus information resources to be effectively integrated. Through the Portlet build a digital campus portal，integrating resources，reducing cost，making rational use of resources，simultaneously，improve the work efficiency among various departments. It will play a very good effect in the construction of the digital informationization of the campus.

Key words：campus portal；Portlet；portal；digital campus construction

0　Introduction

The portal is to solve the fragmentary information resources，and different systems cannot be shared with each other and interactive data，one or more system with multi-point login and lack of personalized service，it proposes a new technical solution[1]. It provides a unique entrance to this system，uses the B/S structure，all kinds of application system，information resources and the Internet resource integrated in a platform，and provides single sign-on，content management，personalized customization features. Solve the problem of enterprises，institutions，schools and other applications of heterogeneous and isolated data，convenient visitors access to information[2].

1　The Portal principle

1.1　A concept of the Portal

Portal is based on Web application integration，it eliminated isolated information resources，provided single sign-on，integrated business system，personalized custom functions；the complete Portal usually consists of Portal，Portlet，Portlet server container[3].

The Portal server is the container of accommodating the Portlets，the Portal server will usually provide personalized settings，single sign-on，content aggregation，release information，rights management and other functions，support various data sources，and then put these data and information on the webpage in combination，and different permissions visitors can browse different in-

formation content[4]. The Portlet container provides Portlet execution environment, contains a lot of Portlets and be in charge of their management of the life cycle, save Portlet customized information. Portlet can provide the application program based on Web and other resource access reusable components. You can access Web page, Web services and applications through a Portlet. From the user's point of view, Portlet is a small window that the portal site can provide a specific service or information (e. g. , provides a calendar and weather)[5]. From the developer's point of view, Portlet is a pluggable module; they are designed to running in the Portlet container.

1. 2　The Portal architecture

Portal is a Webpage; it consists of one or several Portal page form. Every Portal page is composed of one or several Portlet window. Portlet is a window forms in Portal pages. Figure1 describes the relationship among the Portal server, the Portlet container and Portlet relationship.
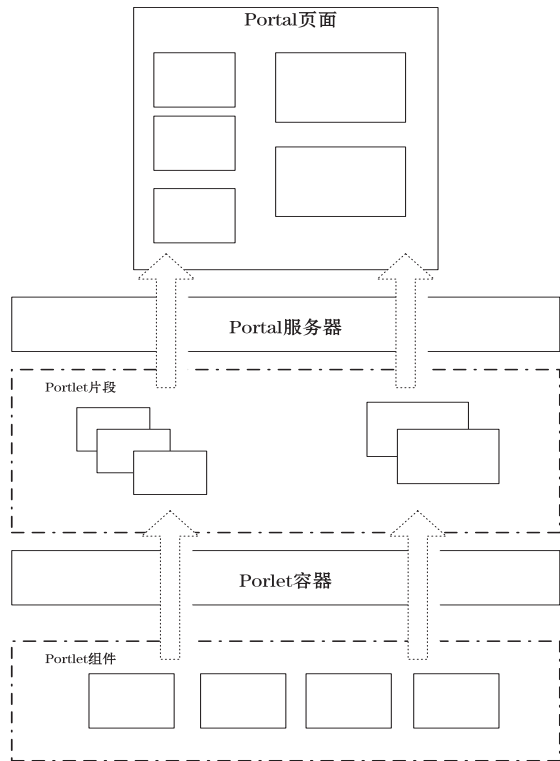

Figure1　Portal Page Composition Diagram

2　Design and Implementation of Campus Information Portal

2. 1　The campus Portal system architecture design

The framework of the entire campus portal system is divided into four layers：base layer, data layer, the ap-

plication layer and presentation layer. Therein, the base layer includes hardware, software, network infrastructure and Email, WWW, FTP and other basic services, it is the campus portal infrastructure support, if there is no foundation layer, campus portal is impossible. Data layer includes all data of the entire system and authenticate with LDAP (Lightweight Directory Access Protocol, public data center), which stores all user information and business data needed by the system, as well as includes the identity of the user and role information storage. At the application layer, the user through the unified identity authentication system to achieve single – sign – on, obtains the using authorization, and according to their roles and permissions to access services; at the same time, with the application of LDAP system through the ESB (Enterprise Service Bus) without breaking the data synchronization, ensuring the data consistency. Campus portal and browser constitutes a display layer, which is mainly responsible for the portal of information acquisition and display. Display layer and the application layer information interaction are in the form of Portlet[6]. The digital campus portal architecture design is shown in Figure2.
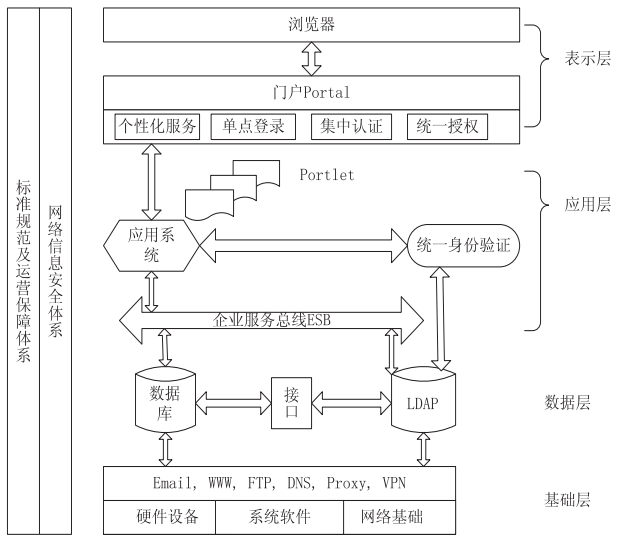

Figure2　Campus Portal system architecture diagram

2. 2　System function

The whole system has three major function modules, are the authority management module, the Portal management module and the Portlet management module respectively.

Authority management module：including the organization management and the user information management：the organizational management including the administrator of the in – house organization management,

group management; the user information management includes user information management and users' information management.

The Portal management module: including the system management, page layout module management, personal page layout management.

The Portlet management module: including the management of the Portlet size, shape, appearance, rights, and individual users can remove, add and change the Portlet providing by system.

The campus Portal function Structure diagram is shown in Figure3.
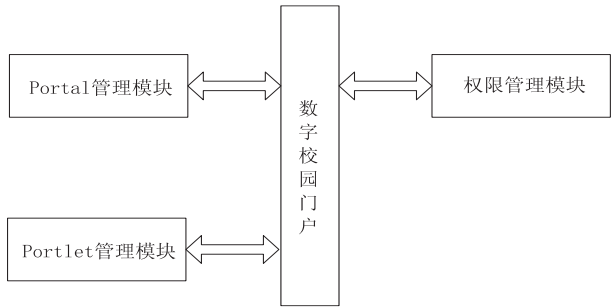

Figure3　Campus Portal function structure diagram

2.3　Work flow design

Client access campus webpage through Portal. In the portal webpage, the user and role information inside LDAP verified user login information by the portal, once verification is successful, you can access the resource and information immediately, this process is unified authentication; obtaining the corresponding authorized can access to various application systems, such as Figure in 4, access to educational, personnel and research application system, the application system is a Portlet, and then portal (i.e. each application system) produced results gathered into the portal webpage and returns to the client[7], as shown in Figure4.

In the university, the teacher and the students are the main usergroup of campus portal system, therefore, the Portal should be take care of the teacher and student data, and provide a unified identity authentication service for other business systems. The uniform identity authentication is validated through the platform, realization of single sign-on, the user pass through the authentication and authorization in their own jurisdiction that can use the service of system[8]. As shown in Figure4 below, the user wants to access each application system that must pass the uniform identity authentication, the system continues to run independently, but does not require a

separate design certification service function, the uniform authentication platform provides authentication, which can reduce the problem of user information inconsistency[9].
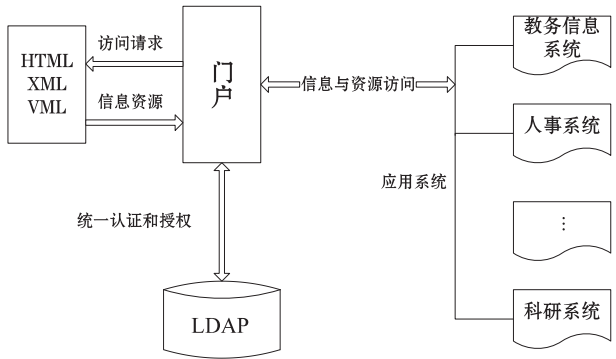

Figure4　Campus Portal workflow diagram

2.4　Campus Portal application integration design

As a small window display in Portal, Portlet can be as small as a webpage, or an application, in the portal it is a business integration tools, so, with Portlet, Portal is a very good information integration and application integration platform[10]. For example, a Portlet can complete the notification, lists, to-do lists the schedule; therefore, design these different business application Portlet, teachers and students can customize their portal page according to own rights, from a uniform interface to access the information, online interaction, then completing an access of the application of system.

Portal commonly used the following two ways to integrate applications:

1）iFrame embedded.

This method is mainly used for the integration of external Web application, use iFrame external Web application directly, and take its URL address as the address of the SRC iFrame. This method has the advantages that the original business system can be integrated basically without transformation. And if the external application of change, you will immediately see the effect. But iFrame also has some disadvantages, such as a page refresh, resolution of differences and with interaction problems other Portlet[11]. Such as a portal system on the teaching information network schedule, just taking its address as the SRC address can be directly included. The code as follows:

```
<preference name = "SRC" readOnly = "false">
< value > http://10. 100. 0. 1/JxxxHomePortlets/
Search. jsp</value>
    </preference>
```

2）Deploy Portlet applications.

This method only needs to use. War file deploying to a Web server，add or modify the corresponding configuration file，you can be very convenient to register it，deploy to the Portal container and release. This way is also the ideal way of the Portal integration application system，but if some business systems are not possible or very difficult to transform into the form of Portlet，so cannot use this method integration[12]. By editing the C：\tomcat\webapps\Jetspeed\WEB－INF\page in the defaut－page. psml file，weather and calendar are passed directly over the Portal deployment integration. The code as follows：

```
<fragment id = " 10001 " type = " Portlet " name =
" jxxx：: Maps" >
    <property name = " column " value = " 0 " ></
property>
    <property name = " row " value = "1 " ></proper-
ty>
    <property name = " row " scope = " user " scope-
Value = " admin " value = "0" ></property>
</fragment>
```

2.5　Realization

At present，there has many forms based on the portlet development，some companies such as IBM，Bea，Oracle have its own Portal product，you also can use JSP and struts and the customize framework to implement it. This system uses the open source Portal platform，call the Jetspeed framework implementation. Jetspeed is the use of spring as its default component framework，component framework assembly is configured and implemented through the JetspeedServlet（org. apache. jetspeed. engine. JetspeedServlet）. In JetspeedServlet，the initializeComponentManager method load assembly（see WEB－INF/assembly）for a given component frame，initializeComponentManager take spring framework as the default component framework. And assemble WEB－INF/assembly to initialize the spring engine under the XML file. Then component framework creates JetspeedEngin：

```
engine = new JetspeedEngine（properties，applica-
tionRoot，config，initializeComponentManager（config，
applicationRoot，properties））；
Jetspeed. setEngine（engine）；
engine. start （）；
```

Below is the code for the initializeComponent-

Manager method：

```
protected ComponentManager initializeComponent-
Manager（ServletConfigservletConfig，String appRoot，
Configuration configuration）throws IOException
    ｛
    ServletConfigFactoryBean. setServletConfig（servlet-
Config）；
    String relativeApplicationRoot = appRoot；
    String absApplicationRoot = new File（relativeAp-
plicationRoot）. getCanonicalPath（）；
    final String assemblyDir = configuration. getString
（"assembly. dir"，"/WEB－INF/assembly"）；
    final String assemblyFileExtension = configuration.
getString（"assembly. extension"，". xml"）；
    String［］bootConfigs = new String［］｛"/WEB－
INF/assembly/boot/∗. xml"｝；
    String［］appConfigs = new String［］｛assem-
blyDir+"/∗"+assemblyFileExtension｝；
    ServletContext servletContext = servletConfig. get-
ServletContext（）；
    SpringComponentManager n = new SpringCompo-
nentManager（bootConfigs，appConfigs，servletContext，
appRoot）；
    return n；｝
```

When JetspeedServlet in init，Spring container and loading the XML file is created，and the previously mentioned ComponentManager can pass name or class for component in the Spring container. ComponentManager will get RequestContextComponent（org. apache. jetspeed. request. JetspeedRequestContextComponent），and set up a RequestContext in the request，then call service method of Engine（org. apache. jetspeed. JetspeedEngine），this method will established the newly RequestContext afferents，so the following assembly can be used. In the service method，the Engine according to the goal URL of request to obtain the corresponding Pipeline（org. apache. jetspeed. pipelineJetspeedPipeline）to handle. Pipeline uses the Valve（org. apache. jetspeed. pipeline. valve. Valve），each Valve sequential execution；some Valve will be responsible for generating the response portal page. The Container will execute Portlet，and returns the results to Pipeline. The final will have a portal page back to the user.

In order to develop the convenience and portability，in defining a series of frame function，the other subclass

的相关信息(文件名,文件格式,文件在服务器存放的路径),判断文件是否处于共享状态,若当前文件处于已共享状态,先取消文件的共享,再根据文件存在的具体路径先执行物理删除操作,再根据文件名和用户编号在文件信息表中进行文件信息记录的检索,通过数据库操作类执行记录删除操作。

4　结束语

　　Android 的应用有着更为广阔的发展空间。本系统将客户端与服务器端进行了有效的结合,实现了文件管理的实时性,其实用价值将会不断地被认可。而且其开源组件 commons-fileupload 的应用也使得文件的传输效率一步步地被提高。由于本系统为了节约成本而使用了大量开源技术,而开源技术不断发展更新,因此需要时刻保持对最新技术的关注,运用该领域最新的技术来改进和优化系统设计。

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can inherit his father, as long as change the original portlet address. The digital campus platform integrated student management system, office automation platform, library system, personnel system and so on.

3　Conclusion

　　Based on the campus information portal building, built the campus information platform by portlet technology, the departments of work flow has been more closely,integration of existing resources and web application, realization of single sign-on with CAS, takes the authority and role management combining the user types and Jetspeed-2 security configuration management mechanism, use two ways to integrate multiple campus application system respectively, realizes the campus portal personalized service, improves work efficiency, using the campus information portal to provide users services that the traditional campus network does not have.

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