Research and Design on Information Service System framework of Performing Arts Equipment Industry

Wei Jiang[1, 2,3], Rongjie Shi[1,2,3*], Yujiang Jiang[1,2,3], Shaobo Wang[1,2,3]

[1.]Information Engineering School, Communication University of China

[2.]Key Laboratory of Acoustic Visual Technology and Intelligent Control System, Ministry of Culture

[3.] Beijing Key Laboratory of Modern Entertainment Technology Beijing, China

E-mail : jw@cuc.edu.cn, Srongjie90@163.com, jiangyujian82@163.com,770741394@qq.com

Abstract. The state council calls for accelerating the development of science and technology service industry. To improve deficient information of existing domestic arts equipment website, this paper describes a system for the analysis of the relevant integrated Information Service System which is basic and essential. This paper outlines the functions carried out by Ajax engine technology and Apache + PHP + MYSQL built on B/S structure. Emphasis is placed on the construction of a criterion function by which the information service system in achieving the effect of transmission between the front-end interface and information retrieval about performing arts equipment with the server database. In addition, we also further discuss how to optimize and maintain this system.

Introduction

Over the course of the past 50 years, nearly 5600 enterprises about the performing arts equipment[1] industry has emerged form intuitive in the domestic. Technological revolutions have recently hit the industrial world. The advent of information service system for performing arts equipment industry has had a significant impact on the science and technology service. But there's a phenomenon of keeping secret about their technique, nasty competition in the market , serious lack of science and technology service, so they hider the development of this industry. First, people have a weak sense of technical services consciousness, they are still insist on relying on a single technology to take the lead.Second, they are lack of communication of scientific and technological besides appropriate places. Third, they don't understand science and technology is the principal line during all the service,just regard it as product distribution and after-sales service. Finally, they are lack of operable technology service platform and corresponding management promotion mode. Although a lot of effort is being spent on improving these weakness, the complete and effective platform has yet to be developed.

Science and technology services will bring leveraging effect on performing arts equipment industry. The emergence and application of new technology deeply affect and change the cultural performance's artistic expression, content's style, the audience's perception and experience, the personnel creativity and artistic production. Performing arts industry has the characteristics of joint connection multidisciplinary, so it requires the comprehensive support of science and technology services. Science and technology service industry[2] is a new classification in the process of innovation-driven transformation in the countries all over the world. It places more emphasis on using modern knowledge of science and technology to provide intellectual service and professional support for the society under the condition when the role of science and technology innovation reinforce constantly. It includes research and development services, technology transfer services, inspection and certification services, business incubation services, intellectual property services, technology and information services, technology and financial services, science and technology popularization services and integrated technology services.

In this paper, we design a complete set of technology service platform information service system. A major thrust of the paper is to discuss approaches and strategies for structuring this information service system. It makes full use of various types of information resources, such as expert data, user data. It organizes various information resources according to the unified format and standard. it uses the existing AJAX search engine technology to match the search results. The producers and buyers can also communicate with experts to develop a suitable production standards process about performing arts equipment.

Architecture design and environment construction

This system uses the technology of Ajax with asynchronous interaction and partial refresh technology [3]to apply research. It makes asynchronous data transfer from the browser client to the system server by using Ajax engine technology. Finally we complete user function and system management function. we can query the information of professional lighting, professional audio, stage machine, professional effect device, stage scheduling and monitoring device, stage scenery and props, musical instrument, professional equipment technology, intellectual property, news, performing arts companies and scientific research projects. This system's structure is shown in Figure 1.

Fig.1. Architecture diagram of this system

This system has two kinds of development model[3][4]: Client/Server short of C/S mode; Browser/Serve is short of B/S mode. For distinguish between the two models, we make the following table to choose appropriate development model for this system. The difference of the two models is shown in Table 1.

Table1. C/S AND B/S

pattern	Hardware Requirement	Running speed	Software reuse	system maintenance	UI	safety	processing
C/S	Generally built on professional local area network, suitable for small scale network or LAN using	First factor is the development process of the design of authority at all levels,not the system running speed , so,applicability is not strong	Emphasis on the integrity, not independence	Integrity is stronger,a long development process,but narrow scope,the maintenance and update is more difficult	More professional, higher requirement for developers	Better,and have higher request for both client and server	The overall focus on data, interactivity is not clever,data flow process is slow and complicated
B/S	Use more extensive,not strict with hardware environment	Emphasized more excellent model architecture, various use for the development of new one, speed increase after development mode being optimized	Multiple structure, relatively independent parts,but not all,better software reuse	Development difficult is smaller than C/S mode, better compatibility, upgrade easier	Pay attention to simple and vivid,the user process is more simple, interactive is strong	Only consider the safety of server, client security is low	Multiple way of processing information,free flow, high interactivity

To sum up, generally, those who require higher interactivity such as small and medium enterprises, institutions, campus information search system and so on, can chose B/S model. Considering operating convenience, stronger interactive, more flexible, short development cycle, easy maintenance, low cost, circulation fast, this system uses B/S development model.

We choose suitable development tools to complete the system's function before development. PHP [5]is a server-side scripting language. It can be embedded into HTML or as a separate binary language. The internet user can use it to process the pages on the internet through the web. It's more convenient to have access to operate the database. This system chooses to install PHP7.0 in windows 7. It uses sublime text 3.0 as PHP development tool. In addition, MYSQL is an open

source. Its advantages are reliable performance, high speed, low cost, easy to use, more stability, openness. It can be modified and maintained. It's more important to assist various languages and technologies, for example, PHP, JAVA, Perl and Python. It becomes a widely used and active MYSQL database.

Users send the request through application on a computer, for example, we can access this system through a web browser and database according to different function permissions. We can query information, browse information, download information, add information, modify information, delete information. Web server send request through network IP address. Database technology verifies authority and response request, find the required data in accordance with the request, send the data resource to users' machines and finally complete response. PHP and MYSQL can be a good composition with the effect of excellent model. They are short development process, save resources, and more economic benefits.

We can have access to database by connecting to database, choosing database, querying and executing database, getting the records of database and retrieval function. The implementation is shown below:

First,shell>mysql[-h host_name][-u user_name][-p your_pass];
Second,mysqli_select_db(connection,dbname);
Third,if ($result),$result=mysqli->query();
Forth,mysql_num_rows();
Last,$num_results=$result->num_rows;
$num_results=mysqli_num_rows($result);
$row=$result->fetch_assoc();
$row=mysqli_fetch_assoc($result).

Design Process Function Model of This System

First, a system must have a clear user group, so we can make corresponding user demand for data management and operation. The users of this information service system are divided into five groups including the system administrator, enterprise member, individual member, ordinary tourist and experts of performing arts equipment industry. The system administrator's permissions are browsing and querying this platform's information, releasing of performing arts equipment information, maintaining performing arts equipment information database,reviewing and adding or deleting members, reviewing and releasing news and information, and reviewing identity of experts. Enterprise members are manufactures, buyers and scientific research units. They require corresponding permissions to query and release information. Individual members are those who can provide individual performing arts equipment supply and demand information. Regular visitors are the non-certified one. Experts refer to have appropriate qualification of equipment for performing arts industry and can customize standards of performing arts equipment production with producers and VIP members of this platform. According to the above analysis, we design the flow chart of this information service system about entertainment equipment industry service of science and technology, as is shown in Figure 2.

The implementation of users' permissions is described below:

```
$query =mysql_query("select * from users where username = '$username' and password ='$password'",$conn)or die("failed to perform the SQL statement");
if($row = mysql_fetch_array($query))
{
    session_start();
    if($row['class'] == 1 or $row['class'] == 2 or $row['class']== 3or$row['class'] == 4or$row['class'] == 5){
        $_SESSION['username'] = $row['username'];
        $_SESSION['class'] = $row['class'];
        echo "<script>alert('Login in successful!');window.location.href='index.php'</script>";
    }else{
```

```
        echo "class is not correct";
    }
}else{
    echo "<script>alert('The user's name or password is error!Please input again…');
history.go(-1);</script>";
}
```


Fig.2. The system process' module

In the user login module,after each user enters into this system, they can add, modify, delete, modify professional lighting information, professional audio information, stage machinery information, professional effect device information, stage scheduling and monitoring device information, stage sets and props information, musical instrument information, professional stage equipment technical information, intellectual property information, news information, performing arts companies and scientific research units information.Publishing platform releases, deletes,modifies information.Above all,this paper designs the system function module as a whole.As is shown in Figure 3.

In the information query module[6], this system will make full use of the Ajax engine technology. It is asynchronous interaction technology to realize real-time search suggestions functions. That is similar to Google suggest, information query and search suggestions process is shown in Figure 4.

The implementation of querying information is described below:

```
<script type="text/javascript" src="JS/jquery.js"></script>
<script type="text/javascript" src="JS/Tool.js"></script>
<script type="text/javascript" src="JS/Search.js"></script>
<script type="text/javascript">
$(function() {
var search = new Search('initCss');
search._UrlHtmlIdAry['other'] = '#dropOther';
search._UrlParmAry['other'] = 'other';
search._UrlHtmlIdAry['otherTxt'] = '#txtOther';
```

```
search._UrlParmAry['otherTxt'] = 'otherTxt';
search.InitBind();
search.SearchApply('#searchBut', 'search.htm');
});
function Other() {
$('#txtOther').css('color', 'red');
}
</script>
```
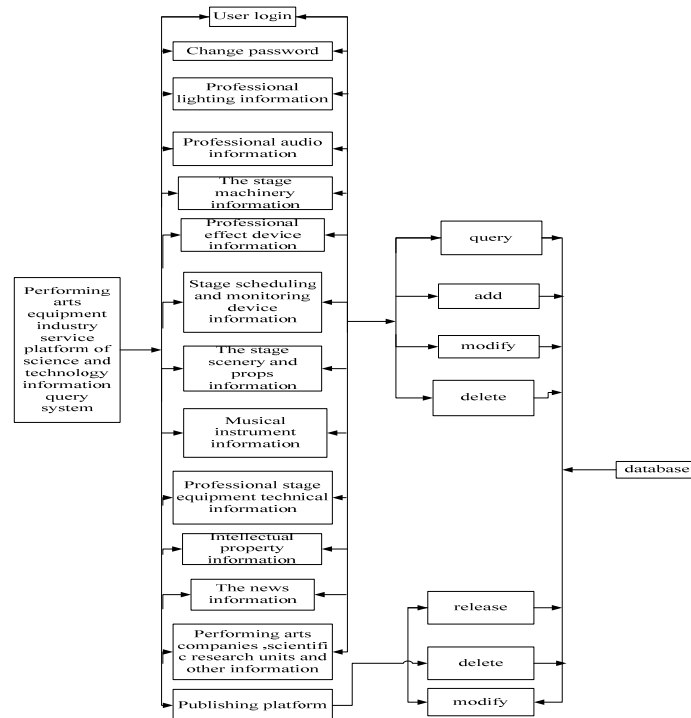

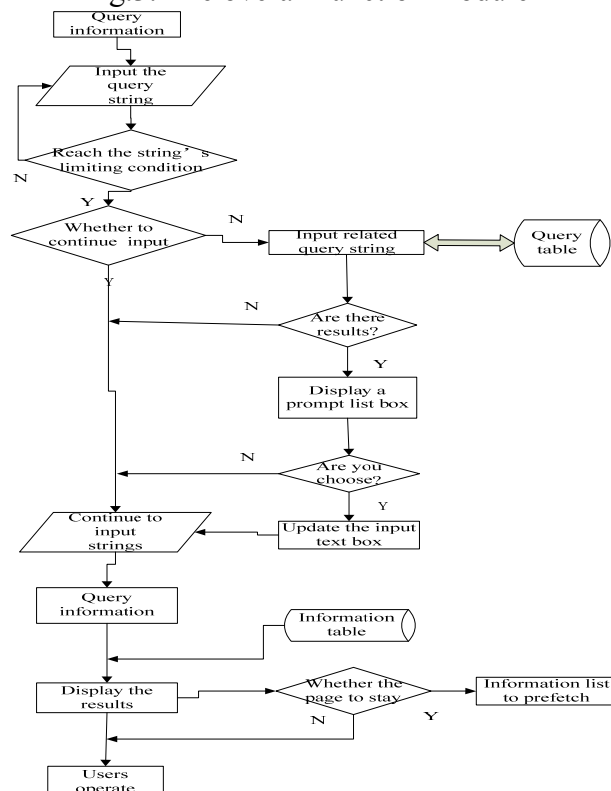Fig.3. The overall function module

Fig.4. Query information and search search suggestions

Conclusion

In short, some important issues in developing this information service system about performing performing arts on science and technology service platform are discussed. In order to respond to the State Council on accelerating the development of science and technology services, this article selects technology services platform information service system about performing arts industry is very meaningful. It is not only the basis of this platform, but necessary.

Considering the users' actual supply and demand on the performing arts equipment industry, this paper designs science and technology service platform information service system based on B/S model. It adopts Ajax engine technology and economical and practical combination of Apache+PHP+MYSQL to realize the function module. The system administrator, corporate members, individual members and expert can add,delete, modify and search information, also can update the displaying content of each module through the asynchronous interaction and partial refresh technology, so that supply and demand users on the performing arts equipment timely access to the latest information. These functions can promote the development of science and technology services about domestic performing arts equipment industry.

Acknowledgement

References

[1] Xian-liang Yan . The next 10 years, how performing arts equipment towards "smart" [N].culture technology, August 20, 2015 (007).

[2]Bi-juan Dong.Several opinions on accelerating the development of service industry of science and Technology promulgated by the State Council urged innovation and development on science and technology service industry[N].economic daily, October 28, 2014 (1).

[3]Hongxia Wang,Bing Wang,Baoyu Li,Xiang Niu,Zuying Liu.Configure nature reserve information management system based on B/S mode[J]. Forest Resources Management,2015,(5):127-130.

[4]Yun-feng Yang. The design and implementation of Guangzhou social intelligence information inquiry system based on AJAX [D]. Guangzhou: South China University of Technology, pp.15-37,2009.

[5]Ulam Tu Ya.The design and implementation of school office management system based on PHP framework[D]. Jilin:Jilin University ,pp.14-21,2015.

[6]Wei Jiang,Jinyong Wang.Research on service mode of cultural performances theater chain[J].Performing Arts Technology,2014,(2):42-45.