Web-based Research outcomes Management System for Secondary Department of University

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*Abstract--*Undering the background of the campus informationization construction becomes mature day after day, it is a meaningful work to design research management information system to improve the research management level and efficiency of the university. This study took college of a university for experimental object, used Visual Studio2008 for development platform, SQLServer2005 for backend database, c# as development language and used ASP.net technology, then designed Web-based research management system for college. The system mainly realized all kinds of information query, data management and scientific research statistics analysis functions.

Keywords-research achievements management, information systems, inquire, statistical analysis

I. INTRODUCTION

Currently, the construction of university campus informationize in China is becoming more mature, various functional departments, such as libraries, Personnel, Office of Academic Affairs, Finance and Student Affairs Office have their own proper application management system which improves the level of informationize and work efficiency of campus work. However, the construction of university research management information system is lagging behind, the research management work is mainly traditional manual management or stand-alone management. Although some universities have developed their own scientific research management systems, but these systems are still exist some problems, such as the system can only stand-alone operation, unable to achieve information sharing and collaborative work; lack of real-time information exchange with the user; lack of advanced development platform. However, with the rapid development of higher education, research work in higher schools is being attached more and more attention, the research level becomes an important index to measure a university's actual strength[1-4]. Therefore, on the basis of do a good job on research work, improving the scientific management level is also an important basis work for enhancing the higher schools' soft power.

This study takes the authors' company as the example, on the background of university's doctoral project and college's first grade discipline construction, aims at the common problems for research management and issues found in the actual work, finally designed the

MIS and GIS combined network college-based research Management Information System.

II. SYSTEM OVERALL DESIGN

A. System goals

The research goal is to establish a college -based research achievements' management platform, which combines the data of teacher information, teachers' research papers, research projects, research publications, awards and other research information in one, be able to achieve the function of scientific historical data's complete store, data sharing in college and statistical analyze of research information.

The users of the system have two categories

1) ordinary users, such as teachers. They can add, delete, change and query their basic personal information and research achieve -ments. 2) Research management personnel, such as scientific secretary and executive leadership. They can view all kinds of information, and can also use the analyze function to do statistical analyze for research achievements, which can assist decision making.
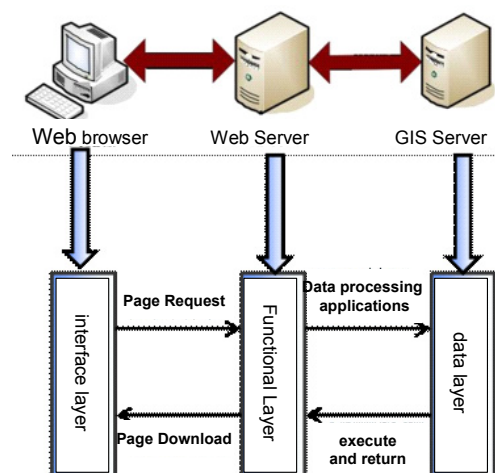

Figure 1 The system logic structure

B. System overall structure

The system is based on B/S structure [5-6], using a Web browser as the client [7-8], utilizing the more advanced and high-efficient ASP. NET2.0 technology [9-10] and SQL Server 2005 to complete the system development. The system structure is shown in Figure 1.

C. Database design

Database design is the core technology for the development and construction of information systems, it means that for a given environment, to construct optimal database mode, construct database and applications, making it possible to effectively store data to meet a variety of user application demands (information needs and processing require -ments).

According to the actual needs and operating requirements of the system, the main database tables of this system include: user table, teachers' personal information table, information on project achievements table, information on papers achievements table, information on writing achievements table, news table, and message lists table, etc.

D. System of web page design

The web page design mainly includes three modules; those are the home page design, the master page design and the content page design. The Web user controls should be designed before the web page design, it works like ASP.net pages. You can add existing Web server controls and marks into the user controls, and define the controls' properties and methods, and then the control is embedded into the ASP.net web page as part of page elements. The system designs two user controls: header and bottom, they are respectively the website title and menu bar at the webpage head and the copyright notice information at the bottom. The home page includes the login module, some links to the news and other research institutions, users can only browse news in the home page before log in the system; The master page uses the previously defined two user controls, and set aside two regions with the ContentPlace- Holder control, they are the function menu area and content area; content page uses master pages, you just need to add the appropriate controls in the set aside region of the master page.

E. System function framework

The whole system is mainly composed of the login and registration module, teachers' information module, research achievements management module, message board module. And research achievements management module is the core of the system, which can achieve multiple condition and more comprehensive inquiry of information, statistical analyze of research achievements, and also the statistical analysis results can be vividly displayed in the form of rich thematic charts (such as pie charts, bar charts, line charts), which is the key point of this system, that is to develop combine the ASP.NET database systems development with the geographic information system. The function frame structure of the system is shown in Figure 2.
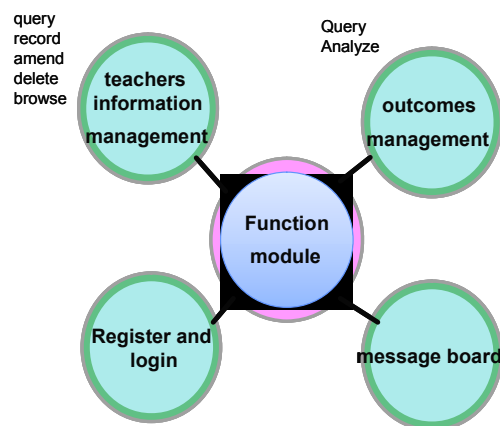

Figure 2 System function frame

III. THE KEY TECHNOLOGY AND ITS APPLICATION

A. ADO.NET technology

ADO.NET is a set of libraries contained by Microsoft. NET Framework, it is used to communicate with the various types of data stores in the .NET applications. It contains classes which are used to connect to a data source, submit queries and processing query results. Its purpose is to develop efficient and multi-tier database applications. In the .NET Framework, ADO.NET is a set of class libraries, to provide data access services for developers to create distributed data sharing applications.

B. Use GDI+ technology complete analysis diagram

GDI+ is an enhanced version of Graphics Device Interface, which provides a set of classes for graphics programming. Using this technology, users simply need to create a graphic object, and then call the object's methods in the form of object-oriented programming. It mainly uses the "System. Drawing" and the "System. Drawing. Drawing2D" namespaces when doing the image programming.

IV. REALIZATION OF THE FUNCTION OF TEACHERS' INFORMATION MODULE

The system use ASP.NET technology under Microsoft Visual Studio2008 platform, use Microsoft SQL Server2005 as its database, C# as the development language to complete the design and implement the function modules required.

A. Realization of the function of teachers' information module

This module's features mainly use GridView control to display the teacher's basic information, you can click the Details link to "view" the details of each teacher, and by clicking on the Remove Hyperlink to "delete" the teacher's information. After select the search condition and input the search words in the menu bar on the left, and then click the "search" button, the teachers' information that matching the search criteria can be found in the form on the right.

B. Realization of the function of scientific research management module statistical analysis

The statistical analysis function in this module mainly includes a summary of the paper's analysis, such as statistically analyze according to paper category (whether it is the core, whether it is retrieved, etc.), department and year, and the results of statistical analysis can be displayed by pie charts, bar charts , line charts and other forms of charts. Users need to simply click on the drop-down button to select the desired keyword to complete statistical analysis of the corresponding analytical summary analysis, and the results will be shown in the re-open page. Projects, monographs and patents can also achieve the statistical analysis functions in the same way. To do statistical analysis for the research achievements Information, can provide data support for the leadership's decision-making. The charts' realization in this function mainly uses the GDI+ technology. Some of its classes and methods can perfectly realize the Web graph functions. The result charts of the statistical analysis are shown in Figure3-Figure4.
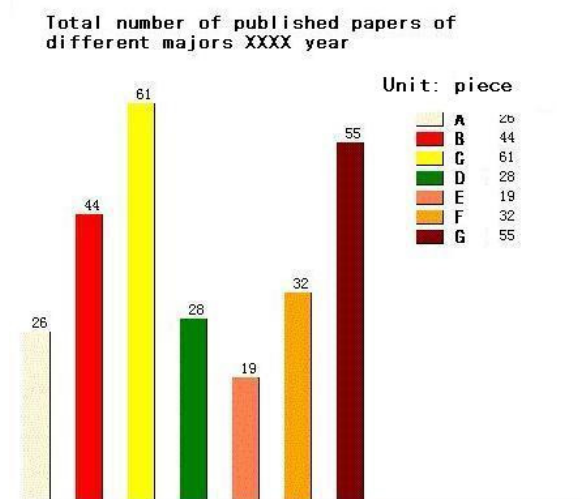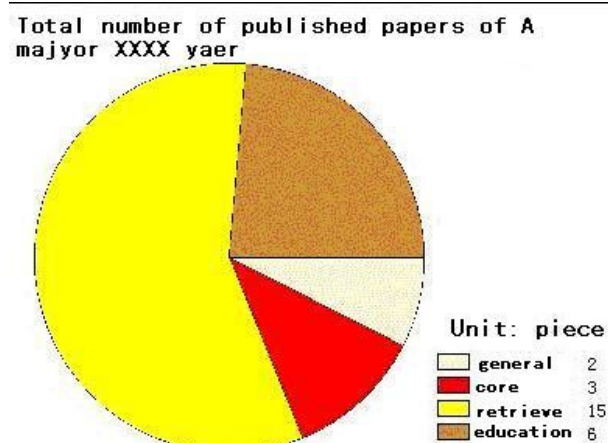

Figure 3 The pie chart analysis results

Figure 4 Histogram analysis results

V. CONCLUSION

This system is developed based on the current development of scientific research management system in domestic and foreign, to manage the college-level research achieve -ments, and the system's users are mainly teachers and leaderships of college. The system mainly achieves the following functions, query of various research information, data manage -ment and statistical analysis of scientific research achievements. The research can help to improve the efficiency and quality of college's scientific research information management, and also provide data support for the decision-making of disciplines' development.

The system is implemented in the context of practical applications, but actually has a gap. With the contents updating of disciplines' development, the system need to add new database tables. With the development of technology and the degree enhance of information needs, management information systems will increasingly be based on a combination of web structure and Intranet-based systems. Therefore, the system can continue to improve towards this direction, leaving the system more practical.

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