The Research and Implementation of Nonferrous Metallurgy Informatization Service Platform

Guo Nianqin
School of Mechanical and Electrical Engineering,
Jiangxi University of Science and Technology
Ganzhou Jiangxi ,China
e-mail: nfgnq@126.com

Zhu Haiyan
School of Mechanical and Electrical Engineering,
Jiangxi University of Science and Technology
Ganzhou Jiangxi ,China
e-mail: yhz_0@163.com

***Abstract*-The construction of nonferrous metallurgy informatization service platform is proposed, facing the problem of the low concentration, poor benefit and dispersive resource of nonferrous metallurgy industry in our country. The integration of nonferrous metallurgy industry information is realized, the electronic trading platform and literature services are provided through the platform. And the visualization of nonferrous metallurgy industry technological process and the intelligent collection of data with cloud computing are achieving through the use of virtual technology. The platform is developed by the ASP.NET and SQL SERVER2008 as backend database.**

Keywords-Nonferrous Metallurgy; Informatization; ASP.NET; Visualization

I. INTRODUCTION

In view of the situation of the problem[1] of the dispersive information, chaotic market and so on of nonferrous metallurgy industry resources restrict the development of nonferrous metallurgy industry at present in our country, the construction of nonferrous metallurgy informatization service platform is proposed to promote the development of nonferrous metallurgy industry. The nonferrous metallurgy resources websites in our country have been existing to provide relevant information, product and related product information material of nonferrous metallurgy industry, but the demand of research personnel can not be satisfied because of the small amount of information and shallow effect. And the resource database of nonferrous metallurgy information have strong characteristics for itself, including the forefront information and the latest developments of related domestic and foreign nonferrous metallurgy resource and products. The construction of nonferrous metallurgy informatization service platform is to provide information support for the research work of nonferrous metallurgy industry and realize the digitization of nonferrous metallurgy resources.

II. THE WHOLE IDEA AND DESIGN OF NONFERROUS METALLURGY INFORMATIZATION SERVICE PLATFORM

The whole idea of nonferrous metallurgy informatization service platform is to complete the construction of nonferrous metallurgy cluster technology innovation service platform, nonferrous metallurgy e-commerce platform, literature resources service platform and the visualization model research of the related process flows of nonferrous metallurgy mining.

The nonferrous metallurgy cluster technology innovation service platform contains the authentication technology of unified identity, information communication and information transmission platform, special service technology, and inductive the dynamic information, patent information, resources information, technical standard information and mining experts information of nonferrous metallurgy. The nonferrous metallurgy e-commerce platform mainly contains nonferrous metallurgy equipment resource network, equipment procurement information, technology transfer information, seeking cooperation information and promote information of new product. The literature resources service platform mainly contains the journal literature summary, nonferrous metallurgy book abstract, technical manuals and use technology. The nonferrous metallurgy informatization service platform had completed the research of intelligent search technology, visualization technology, service mode and market mode.

The nonferrous metallurgy informatization service platform adopts the hybrid application structure form of the combination of C/S and B/S. The asynchronous work mode is realized ,the response time of browser is shortened and the local renovate function of browse pages are realized through the application of AJAX technology in the nonferrous metallurgy informatization service platform. The nonferrous metallurgy informatization service platform are researched and developed through using ASP.NET[2-5] technology and the management system of SQL Server2008[6-7] relation database. The overall diagram of the nonferrous metallurgy informatization service platform is shown in figure 1.

III. THE DATABASE DESIGN

The platform adopts the SQL Server2008 as backend database. The database contains mining and metallurgy process database, equipment library, expert database, enterprise database, metal type database, standard database, dynamic database of science and technology, books database, papers database and periodicals database, etc.

Through the needs analysis, process design and the structure determination of system function of the platform, the table design in the database mainly adopts standardization design method. The table structure of mining process flow are shown in table 1.

Published by Atlantis Press, Paris, France.

Table 1 The Table Structure of Mining Process Flow

Field Name	Type	Length	Main Key
product_id	int		Y
methodName	nvarchar	20	
classify	int	2	
animationPath	nvarchar	50	
ImgPathchar	nvarchar	50	
processName	nvarchar	20	
applicability	nvarchar	500	
oreBlockspara	nvarchar	500	
actualMining	nvarchar	500	
textualDescr	nvarchar	4000	
cutWork	nvarchar	500	

IV. THE REQUIREMENTS AND IMPLEMENTATION OF PLATFORM FUNCTION

A. *The Structure of Platform Function*

This platform is divided into two parts, foreground and background. The foreground mainly contains dynamic information, transaction information, literature information, production process information and users log. The background mainly contains information management and landing management. The structure diagram of platform function is shown in figure 2.

1) *The platform login and identity authentication:* The platform login interface contains registration, password and login parts. The steps of using this platform: click user registration into user registration page and add your own basic information, including name, sex, mailbox, work unit and position, etc; This platform are used that need the administrator audit after registering. The modules of user' pinyin automatic matching user' Chinese name are added to convenient user login operation in the login function; The process function of duplication name is added; The function is that when the user input name, it will automatically detect whether heavy and eliminate the login problem of duplication name.

2) *Dynamic information:*The dynamic information provides industry dynamic, expert information, patent information, new technology and new process information. The user can get more comprehensive information, timely update, and can understand new technology, new processes and industry tends through the dynamic information.

3) The management of transaction information: The purchasing information, resume information and registration information could be inquired through the management of transaction information; The demand side can search for their equipment and release their required related equipment information, resume information and registration information, etc.

4) *The management of literature information:* This platform provides literature resources services to make users query and download, including the domestic and abroad journal paper of Nonferrous Metallurgy, master and doctor's paper, metallurgy books, technical manuals, practical technology. The users of registered members can transfer the full text, but the users of not registered members can only see the literature.

5) *The production process:* The production process mainly contains the separation process, the mining process and smelting process. The demo, charts and instructions of written are in the process, so that users can see the whole process more intuitive and a powerful reference is given for the technology improvement of process.

*6) The management of background information:*The management of background information mainly contains add information, delete information, information list, information association, information modification and information browsing.

Only the administrator or granted permission can be able to add or delete information, information management and centralized management.

B. *The Platform Realize*

The home page of platform mainly display navigation, the latest news, production process information, search function and mining engineering, safety and environmental engineering, mineral processing, metallurgical engineering, material engineering, the industry trends of mining and metallurgy equipment engineering, new technology and new process, patent information, expert information and industrial economic information.

The management of platform background is mainly to release, modify and delete the information of every database.

V. THE KEY TECHNOLOGY

After the text edit has been completed, the paper is ready for the template. Duplicate the template file by using the Save As command, and use the naming convention prescribed by your conference for the name of your paper. In this newly created file, highlight all of the contents and import your prepared text file. You are now ready to style your paper.

A. *The Literature Retrieval Technology*

The literature retrieval system is mainly composed of two module, data storage and data operation. Data are intelligent collected through the cloud computing. Data storage module contains database and index, and database is mainly used to store the obtained data of extract and transform all kinds of documents, to provide data sources for the index. The data management module in the data manipulation module would read data out from database and set up the index, and then keep them in the index documents. In order to ensure the consistency of index file and data in the source database, the

increase, delete and change function are provided in the management module. The literature search module can work in the corresponding mode according to the different search terms, in order to achieve a variety of search function in the retrieval. The diagram of literature retrieval system is shown in figure 3.

B. The Visualization Technology of Pprocess Flow

The process flow of all kinds of open-pit and underground mining are comprehensive analyzed, extracts the typical acquisition process, carries on the visualization research, watch the acquisition process in the virtual environment, and digital display its craft parameters, to make people better understand acquisition process.

In the study of visualization technology[8], the problems of three-dimensional entity modeling of mining preparation and data management of data model are need to be solved. The visualization study of process flow can be proceed through the virtual technology[9].The grinding-classification process animation in the process of beneficiation flowsheet is shown in figure 4.

VI. CONCLUSION

The construction of nonferrous metallurgy informatization service platform are to integratively collect all kinds of information of nonferrous metallurgy industry, provide enterprise services for the nonferrous metallurgy industry and promote the development of nonferrous metallurgy industry. The platform also introduce all kinds of characteristic service , more humanization and visualization, promote the application in the nonferrous metallurgy industry, are welcomed in the nonferrous metallurgy industry.

ACKNOWLEDGMENT

This research was partially supported by the Science and Technology Support Project Plan of Jiangxi Province under the contract number 2010CHA02200.

REFERENCES

[1] J.H.Chen, D.H.Gu, and Z.Y.Zhou, “Mine Digital Technique Status and Development Aspect,”Sciencepaper Online,2006,vol.11,PP.1-5

[2] Y.Q.Chen, C.L.Zhang, and S.W.Wang, “WebGIS-Based Field Environment Monitoring Platform Design and Realization,”Techniques of Automation and Applications,2012, vol.31(5),pp.27-30

[3] C.Lin, J.H.Wang, and J.F.Yi, “The Design and Implementation of Thematic Map on.NET,” Geomatics&Spatial Information Technology,2012,vol.35(3),pp.213-216

[4] X.H.Yang, “The Design and Research of an E-business System Based on ASP.NET Ajax and CUL T3d,” Computer Development&Applications, 2012,vol.25(7),pp.73-76

[5] Q.X.Zheng, D.W.Fang, and Y.F. Liu, “The Full Memoir of ASP.NE T Project Development ,” Jing Bei:TsingHua University Press,2011

[6] X.H.Shen and Y.X.Cheng, “Implementation of an Auction System Based on ASP.NET and SQL Server 2008 Technology,” Computer Knowledge and Technology,2012,vol.8(23),pp.5611-5613

[7] C.B. Li and H.Zeng, “The Development Tutorial of SQL Server 2000 Application System,” Jing Bei:TsingHua University Press,2005

[8] Z.L.Tan, H.B.Shi, Y.F.Fang, and C.L.Zhang, “Research on Visual Management Platform of Mine Safety,” Coal Mine Machinery,2012, vol.33(7),pp.284-286

[9] L.LI,Xie snd L.Ding, “The Design and Research of Architecture and Urban Virtual Experimental Platform,”E-Education Research,2012, vol.6,pp.79-82

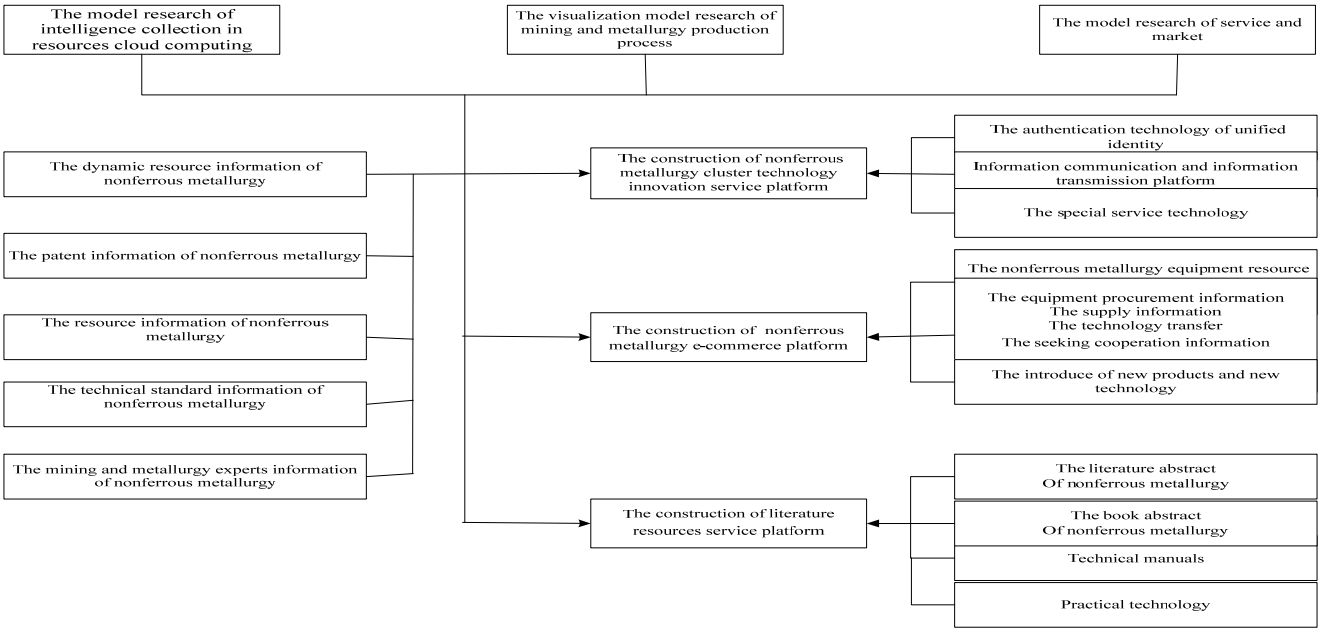

Figure 1. The overall diagram of the nonferrous metallurgy informatization service platform.

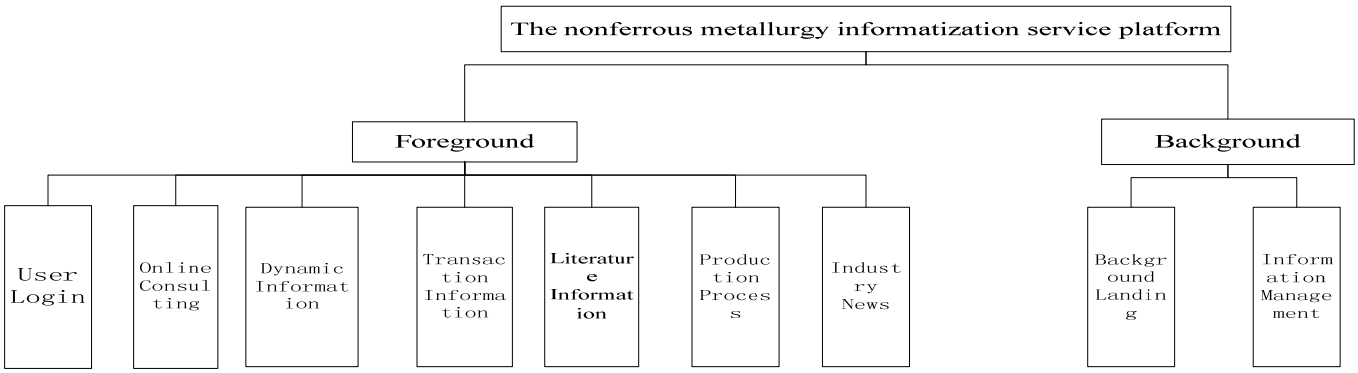

Figure 2. The structure diagram of platform function

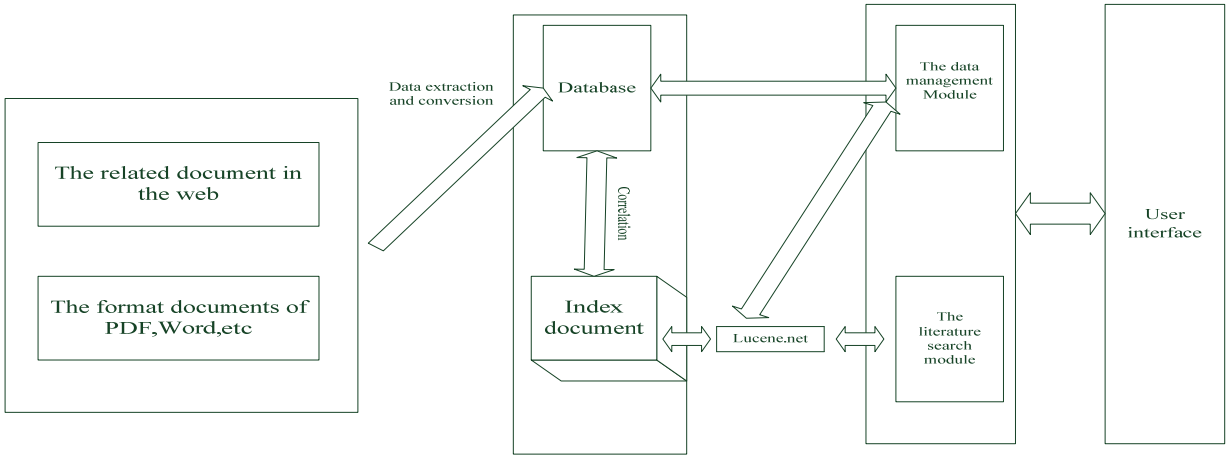

Figure 3. The diagram of literature retrieval system

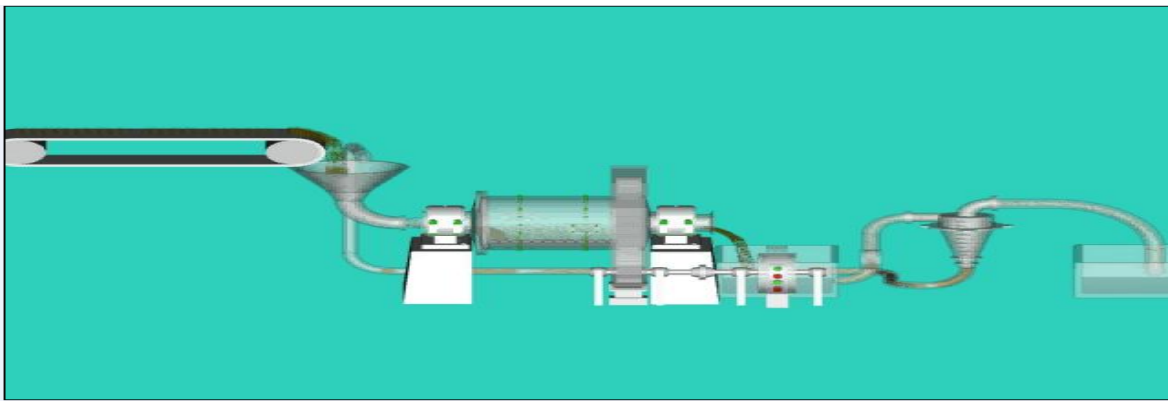

Figure 4. The grinding-classification process animation in the process of beneficiation flowsheet