

Design and Implementation of ERP Management System for Manufacturing Enterprise

Lei F

School of management Shanghai university

ShangHai 200444, China

yfx163@qq.com

ABSTRACT: *Twenty-first Century is the era of rapid economic development and information technology, manufacturing enterprises in order to compete in the market in an invincible position, we must constantly improve the level of enterprise information management. This paper analyzes the reasons for the low production efficiency and high cost of manufacturing enterprises, and makes a research on how to improve the production efficiency of manufacturing industry, and gives the conclusion that the manufacturing enterprises must take the road of information management. The main content of this paper is design and manufacture enterprise management system, through the system of production management, procurement management, inventory management and process management, improve the level of enterprise information management, so as to reduce the production cost and improve production efficiency. In this paper, the design and implementation of the manufacturing enterprise management system, including production management, procurement management, inventory management and process management, etc.. In this paper, according to the basic idea and principle of management system design, combined with the actual production of enterprises, the system needs analysis, and design and implementation of the manufacturing enterprise management system. This paper conducts a detailed system analysis and design to achieve the system analysis of the functional demand, the realization of the system of manufacturing enterprises in the production process control and management have positive significance in the deployment and use, system stable operation, complete functions, provide to the user a better user experiences. The system has greatly improved the efficiency of enterprise production management, cost savings, and promote the enterprise to create greater value.*

Keywords: Manufacturing enterprise, Model, Framework, System design, Yii framework

Received: 16 September 2016, Revised 18 October 2016, Accepted 23 October 2016

© 2017 DLINE. All Rights Reserved

1. Introduction

Manufacturing industry is the pillar industry of our country, with the rapid development of China's economy as the world's second largest economy, China's manufacturing industry has maintained a good development trend. However, in the global economic and financial crisis leads to downward pressure on the global economy since, China's economic growth slowed, extensive economy faces severe challenges, the need to change the mode of economic growth, manufacturing industry must

conform to the national policy of macro-control, take the road on the information. Manufacturing information management is the development trend of the global manufacturing industry. Under the circumstance of economic globalization, the preferred strategy for the development of manufacturing industry is to allocate resources in the global scope, and to form the industrial chain and regional industrial clusters with competitive advantage. In view of this, the global manufacturing industry is moving towards globalization, information technology and the direction of the development of services [1].

The so-called enterprise information, will enterprise production process, material movement, cash flow and other business process digital, through a variety of information system network processing generation of new information resources to observe all kinds of dynamic business all the information, to make a conducive to the combination of factors of production optimization decision, make the reasonable configuration of resource, to obtain the maximum economic benefits. Along with the rapid development of information technology and global economic integration continues to advance, enterprises are faced with the challenge and competition is becoming increasingly fierce, rapid, accurate and enterprise decision and efficient and scientific management of enterprises the indispensable is also becoming increasingly prominent. Manufacturing enterprises must follow the time pace, strengthen the construction of enterprise informatization, system development, improve production efficiency of enterprises, not only helps to produce more high quality products, at the same time can bring more benefits to the enterprise (see figure 1 and 2).



Figure 1. ERP login screen (Chinese version)



Figure 2. Management interface (Chinese version)

For a manufacturing enterprise, in order to realize the sustainable development of the enterprise, it is necessary to ensure the consistency of the product's production process. This means that companies have to ensure that different operators can produce qualified products at different times. However, the products of different production conditions in the same process is different, then how to ensure that hundreds or thousands of employees can choose the correct production conditions, different products through different processes to ensure that the correct processing path, is worth thinking about the problem. Some practical experience shows that information management is a good way to solve the above problems. In by a batch pipelining production enterprise, the different processes in the operation staff can products through the production management information system with production conditions, including processing mode setting, parameter setting, selection of parts and materials, machining path etc. information. In view of this, the specification of the production operation process makes the operation accuracy can be effectively guaranteed, thereby avoiding the production conditions to choose the production risk [2].

2. Key technologies involved in the process of system design

System is expected to target, in terms of functional implementation, customer contract delivery management mainly realizes the establishment customer information, input the sales contract and make delivery plan and release delivery task, mainly for the Department of marketing department. Production management main production process control and management, responsible for making production plan, production orders, and after the production orders provide material collar with recording function, mainly for the Department for the production department. Procurement management is mainly to achieve the supplier management, procurement management process and delivery record. Among them, supplier management main supplier information maintenance, procurement process management to achieve develop monthly purchasing plan and purchasing contract management, delivery record is according to the actual situation of arrival were recorded and management, mainly for the Department for the production department and the Treasury. Inventory management to achieve the main inventory of products and materials inventory of the daily inventory management, mainly for the Treasury department. Process management is mainly to achieve the definition and management of materials, products and processes, as well as the definition of the process route design, mainly for the Department of the workshop. User rights management mainly to achieve user information management, department management and rights management, the user's system operation rights of the control and management, mainly for the system administrator [3].

2.1 Yii framework introduction

Framework Yii is a high performance PHP framework based on components for the development of large Web applications. Yii provides almost all the features needed for today's Web 2 application development. Yii is one of the most efficient PHP frameworks. Yii is the founder of Xue Qiang's painstaking efforts, began in January 1, 2008 to develop. Yii is a high performance PHP framework based on components for the development of large-scale Web applications. Yii using strict OOP preparation, and has a sound library reference and a comprehensive tutorial. DAO/ActiveRecord, widgets,, caching, RBAC, Web,,, Web, I18N, L10N, MVC, and Yii, provide almost all the functions needed for today's application development. In fact, Yii is one of the most efficient PHP frameworks. Yii is a high performance web application development framework for PHP5 applications. You can quickly create a web application code framework through a simple command line tool yiic, developers can add business logic in the generated code based on the framework, to complete the development of application program. Yii easy to learn and use. You just need to know PHP and object-oriented programming, you can quickly get started, without having to learn a new architecture or template language. With Yii development speed is very fast, in addition to the framework itself, the need for the application of the code written in very few. In fact, this is one of the most efficient development framework.

Yii has a high degree of reusability and extensibility, which is a purely object-oriented. Everything in Yii is independent and can be configured, reusable, extensible components. More important is that Yii has more and more extensions. The component that is mainly contributed by the user, which may help to significantly reduce your development time.

Yii has a wealth of features from MVC, DAO/ActiveRecord, to the theme, internationalization and localization, Yii provides almost all of today's Web 2 application development required functionality. The Yii reference manual is a complete Yii document that has the information you need to learn and master it. Yii carefully designed to adapt to the complex WEB application development. He is not a byproduct of a number of projects or third party integration. But the integration of the author's rich experience in Web application development and other popular Web framework and application of the crystallization of the outstanding ideas. In the end, but not unimportant, Yii is free, Yii follows the latest BSD license. It ensures that the third party development it is sequential and BSD compatible license (see figure 3). This means that you are free to use Yii to develop either open source or proprietary applications, both legally and financially [4].

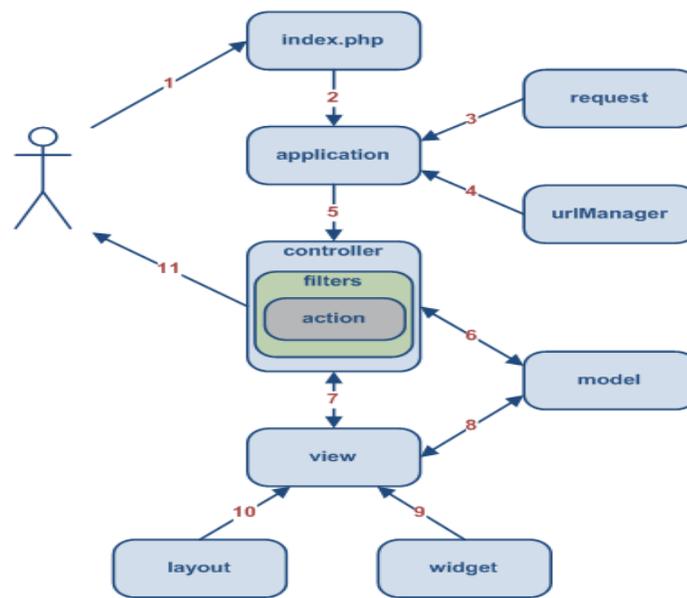


Figure 3. Schematic diagram of Yii frame

2.2 JQuery is introduced

JQuery is after prototype and an excellent Javascript library. It is a lightweight JS library, it is compatible with CSS3, but also compatible with a variety of browsers (6.0+ IE, 1.5+ FF, 2.0+ Safari, 9.0+ Opera), jQuery2.0 and subsequent versions will no longer support IE6/7/8 browser. JQuery enables users to more easily deal with HTML (an application under the standard universal markup language), events, to achieve animation effects, and to provide convenience for the web site to provide AJAX interaction. JQuery also has a relatively large advantage is that its documentation is very full, and a variety of applications are also very detailed, at the same time there are many mature plug-ins to choose from. JQuery can be used to keep the user's HTML page code and HTML content separation, that is to say, no longer in the HTML to insert a bunch of JS to call the command, and only need to define the ID. JQuery is a compatible multi browser JavaScript library, the core idea is less do, more write (write less, do more). JQuery in January 2006 by the American Resig Barcamp John released in New York, attracting a large number of JavaScript experts from around the world to join, led by Methvin Dave team to develop. Today, jQuery has become the most popular JavaScript library, the top 10000 most visited websites in the world, there are more than 55% in the use of jQuery. JQuery is free, open source, using the MIT license agreement. JQuery syntax design allows the development of more convenient, such as the operation of the document object, select the DOM element, the production of animation effects, event processing, using Ajax and other functions. In addition, jQuery provides API to allow developers to write plug-ins. Its modular approach allows developers to easily develop powerful static or dynamic web pages. JQuery, as its name implies, that is, JavaScript and JavaScript (Query), that is, to assist in the development of the library.

2.3 Basic concepts of cryptography

The core of Ajax is the JavaScript object XMLHttpRequest. The object is first introduced in Explorer Internet 5, which is a technique that supports asynchronous requests. In short, XMLHttpRequest allows you to use JavaScript to request and respond to the server, without blocking the user. The first component that allows the client script to send a HTTP request (XMLHTTP) is written by the Web Access Outlook group. The component originally belonged to the Microsoft Server Exchange, and quickly became part of the Explorer Internet 4. Some observers believe that Web Access Outlook is the first successful commercial application of Ajax technology, and become a leader in many products, including Oddpost's web mail products. However, at the beginning of 2005, many events made the Ajax accepted by the public. Google uses asynchronous communication, such as Google, Google maps, Google search, and so on. Framework application and thinking of the framework of the Ajax framework for the application and thinking of the framework of the Ajax recommendations, Gmail, etc.. Ajax this word by "A New Approach to Web Applications Ajax." a text of the article, the rapid spread of the text to improve people's awareness of the use of the technology. In addition, the support of the Mozilla/Gecko makes the technology mature, become more easy to use [5].

3. System implementation

According to the above requirement analysis and system design, the paper carries out the coding and implementation of the system [6-8]. In the realization of the process, in accordance with the detailed design of the design process and program. The basic realization of the production management, procurement management, inventory management and process management module, and the interface of a number of modules using jQuery and AJAX is Jane male optimization, to achieve the desired effect. The production planning management interface consists of the following main components: the selection of the drop-down list, the workshop selection drop-down list, the query button, the development of the plan button and production schedule. In the layout, the upper part of the page will select and workshop layout of the drop-down list at the top, the center, set the search query button at the bottom of the drop-down list; in page part, plan button display center, at the bottom of the button for the production plan table, the default display is hidden [9]. The system is reported to the management of the main interface from the selection and process of the drop-down list, query button, as well as reported and has been submitted to the table. In interface layout, will choose the figure number and selection of process in the drop-down list at the top, followed by "record" the search query button display, as the bottom of the table has been submitted to the record form and for workshop users to fill in the report records the, the default for hiding and showing. Users can choose the number and process to run the dog has been reported to the record, if there is no reported record, you can report the operation.

4. Conclusion

First of all, this paper introduces the development background and trend of the world manufacturing industry, and puts forward that the information management is the inevitable way to realize the sustainable development of manufacturing industry. Through the research on the development status of domestic and international manufacturing information, the paper points out that the management system is important to the development of enterprises. Then, this paper makes an analysis of system requirements, according to the actual situation of the enterprise, combined with management system design concept, starting from the user's point of view, a detailed analysis of the system requirements, the system is divided into: production management module, purchasing management module, inventory management module and process management module, each module is divided into more modules, through the use case diagram and each module on the use case description.

References

- [1] Sloman A. (1972) Interactions between philosophy and artificial intelligence: The role of intuition and non-logical reasoning in intelligence. *Artificial Intelligence*. 2 (3) 209-225.
- [2] Etzioni, O., Cafarella, M., Downey, D., et al. (2005) Unsupervised named-entity extraction from the web: An experimental study. *Artificial intelligence*. 165 (1) 91-134.
- [3] De Giacomo, G., Lespérance, Y., Levesque, H.J. (2000) ConGolog, a concurrent programming language based on the situation calculus. *Artificial Intelligence*. 121 (1) 109-169.
- [4] Gao, Z., Zhang, D., Ge, Y. (2010) Design optimization of a spatial six degree-of-freedom parallel manipulator based on artificial intelligence approaches. *Robotics and Computer-Integrated Manufacturing*. 26 (2) 180-189.
- [5] Huang Fuquan. (2002) Discuss about the basic strategy of information technology and curriculum integration. *Electrochemical Education Research*. 7, 24-29.
- [6] Bos, J.E., Bles, W., de Graaf, B. (2002) Eye movements to yaw, pitch, and roll about vertical and horizontal axes: adaptation and motion sickness. *Aviation, space, and environmental medicine*. 73 (5) 436-444.
- [7] Fan, K.C., Chen, M.J., Huang, W.M. (1998) A six-degree-of-freedom measurement system for the motion accuracy of linear stages. *International Journal of Machine Tools and Manufacture*. 38 (3) 155-164.
- [8] Paddan, G.S., Griffin, M.J., (1998) The transmission of translational seat vibration to the head—I. Vertical seat vibration. *Journal of biomechanics*. 21 (3) 191-197.
- [9] Gao, W., Arai, Y., Shibuya, A. et al. (2006) Measurement of multi-degree-of-freedom error motions of a precision linear air-bearing stage. *Precision engineering*. 30 (1) 96-103.