

Research and Application Analysis of an Enterprise Management Platform Based on the Context of Intelligent Big Data

Xiaoxia Liu¹, Qian Liu^{*}

E-mail: liuwxsw@163.com¹; lucky_liu67@163.com^{*}

School of Humanities, Shanghai Institute of Technology, Shanghai 201418, Shanghai, China

Abstract. The aim of the research in this paper is to implement a basic enterprise management services platform that provides a desirable channel for information technology to enterprises, especially SMEs that cannot afford to purchase a complete enterprise management system. This platform should be able to provide several standard services for the basic functions of the enterprise information system, such as warehouse management services, procurement management services, production management services, etc. And based on these basic services, it needs to be reserved for expansion means that can easily extend other services. Companies in need can order these service modules according to their needs. For example, a company specialising in logistics can subscribe to the platform's warehouse management services, a retail wholesaler can subscribe to sales management services, and the platform only charges for the corresponding services provided, so that companies can choose services according to their own needs, and if the company has an expansion in business can subscribe to other corresponding services of the platform.

Keywords: Business management; Service platforms; Internet platforms; Big Data Algorithms

1 Introduction

ECP enterprise management platform is a management system, which is a combination of tangible and intangible management system used in the real operation of the enterprise. On this platform can fully guarantee the realization of the enterprise's own management ideas, management concepts, management methods, management tools, enterprise processes, rules and regulations, incentive mechanisms. This platform, the main role is to fully utilize the efficiency of internal and external resources, the core task is to ensure the realization of corporate goals, tasks and results.

The traditional sense of the enterprise management platform, is through a combination of manual, computer, intranet, independent management system, OA, etc. to build, this than the most primitive purely manual enterprise management platform, there is considerable progress, not only to improve the efficiency of the management, but also the scientific management of the unprecedented application. And today's management informatization has made great progress, we can call it modern management informatization. Therefore, in this sense, management informatization is actually to build a management platform for enterprises, is the use of modern information technology, through the network environment and management applications to

build a management platform in line with the trend of the times to meet the needs of enterprises on their own management. Management informatization itself is the application of information technology, it is not technology, not management or tools. However, it is able to build a system in which the management of the enterprise operates efficiently.

SaaS-based enterprise management services platforms are aimed at enterprise tenants in a variety of industries, whose businesses are diverse and sometimes have different organisational structures, leading to different business processes being required by these tenants [1]. This raises the requirement for easy customisation of the business processes of the enterprise management service platform. Combined with the thousands of tenants that the service platform faces in this paper, the amount of work we have to do to redevelop for each tenant cannot be too great, and in order to achieve business extensions based on a standardised enterprise management service approach, one of the things we have to do is to subdivide the entire enterprise management service platform based on a functional analysis of its layers, and for the functions that cannot be subdivided any further they are called atomic functions, and to encapsulate these functions for publication as web services [2][3].

2 Interface customisability analysis

2.1 characteristic

1. Integration of applications, synergistic implementation. Integration of a variety of scientific management methods, management tools in a platform to realize the real synergistic operation of enterprises, efficient implementation;
2. Hundred rivers converge to the sea, natural. Aggregate a hundred rivers, return to the sea. Let the knowledge, information, data from a hundred rivers (each person, each process, each link, each decision) and sink in the sea (corporate knowledge base), to achieve knowledge management in the work, to achieve the integration of processes, decision-making and knowledge;
3. goal-oriented, consistent. Implementation, goal-oriented program. Let the enterprise's goals throughout the actions of each person every day, to achieve the goals, implementation and assessment of the coherent, to ensure that the achievement of corporate goals;
4. Through the whole situation, the decision to win. Information and decision-making is smooth. Help managers to live in a corner and see the whole picture, a place and win a thousand miles.

2.2 dominance

Enterprise management platform is the operational support environment for the online survival of enterprises, it provides a similar offline daily work environment for the managers of the enterprise, distributed in different places at different times of the work of the managers, can work like sitting in the same room.

- 1, enterprise management platform is an integrated application of management software platform, integration is one of its biggest features. On top of the collaborative management platform, the various management units of the enterprise is highly correlated, rather than cut off from each other, it is not a simple collection of information islands. Collaborative management platform

under the various subsystems using a unified database, unified business processes, knowledge stored in a unified knowledge base;

2, enterprise management platform is a management tool for enterprise management, it can cover all aspects of management functions, such as administration, human resources, objectives, customers, projects, knowledge and other management, rather than only solving one aspect of the problem. All managers in the enterprise can work on this unified platform, and each other, "synergistic";

3, enterprise management platform is a business process management as a carrier, people-centered, can achieve "goals, implementation and assessment of the through", to achieve "the integration of processes, decision-making and knowledge", to achieve the customer, the project's full life cycle management.

2.3 Service function menu customisation

Each different tenant has different needs for personalization [4]. In addition to the configurable name of the system menu, the hierarchy and distribution of the menu may also vary from tenant to tenant, which also needs to be configurable [5] [6].

In summary, a simple design of the configurable content of the system menu yields the class diagram shown in Figure 1:

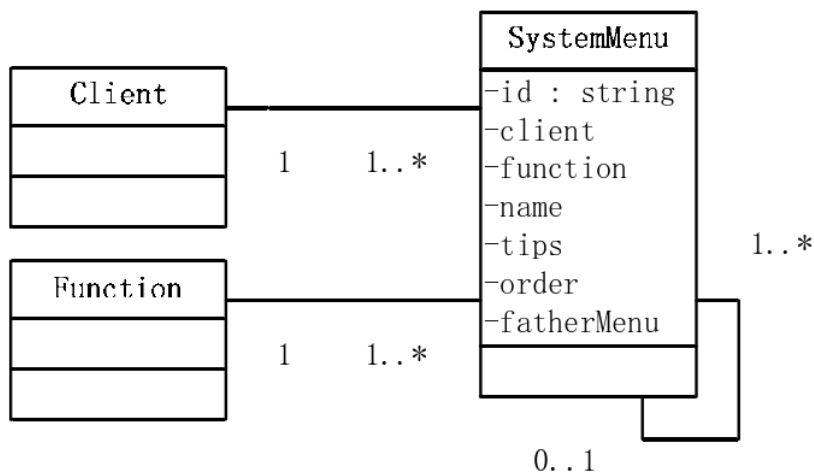


Fig. 1. System menu configuration class diagram

2.4 Service portfolio based on scheduling processes

In this paper it is necessary to compose the handheld device scheduling process from the previous subsection with services [8], using atomic function services for the functions in the box node and judgment logic services for the functions in the diamond node [9]. The service combination of the business process requires the conversion of the scheduling process of the handheld device into a BPEL program process, and after the conversion the list of Web services that need to be called for this process can be obtained, as shown in Table 1.

Table 1. List of web services required for the scheduling process

Serial number	Service Name	Atomic functions	Post-registration methods
1	PPCreator	Create a product manufacturing plan	PPCreator
2	ProInserter	Inserting handheld production schedules into corporate production schedules	Receiver-to-assigner
3	MoverTask	Mobile adjustment of previously set manufacturing plans	Assigner-to-invoker
4	ProductPlan	Judgement time	Assign DueDate

The first three services are already pre-developed, while for different users it is necessary to develop their own ProductPlan, which is a PortType in the BPEL grammar and needs to be developed separately for users with different needs.

3 Integrated scheduling process

In the scheduling process of this paper, the scheduling process of the handheld device and the scheduling process of the controller and other components can be tried to be inclusive, in this case the scheduling process of the three components and the scheduling process of the handheld device itself are combined to form the complete scheduling process of the handheld device. These four processes work together to guide the company's production correctly, and they are not logically dependent on each other. Its structure is shown in Figure 2.

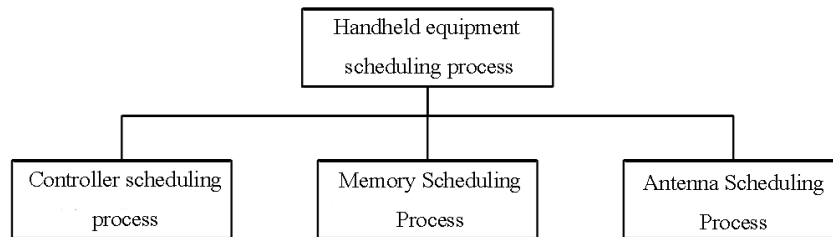


Fig. 2. Relationship structure of the scheduling process for handheld devices

3.1 System access control solutions

There are six basic sets of elements involved in the access control scheme in this document, namely tenants, users, roles, resources, operations and access rights [7].

The access control model of an enterprise management service platform based on the SaaS model is shown in Figure 3. Six elements are involved, users, roles, permissions, etc., which are represented by the initial letters of their corresponding English words.

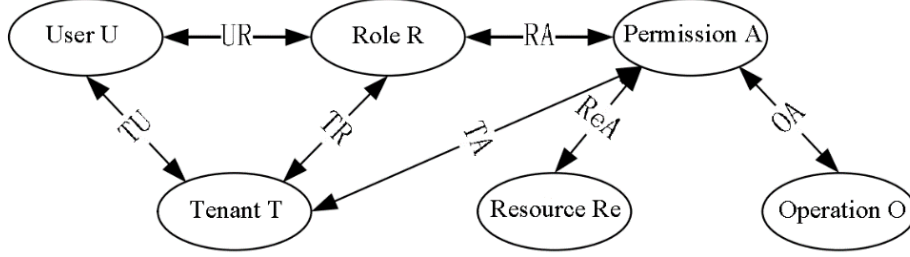


Fig. 3. Access control model

3.2 Clustering algorithms

K-Means clustering: Using mathematical ideas, the clustering algorithm can be formulated roughly as follows:

Assume that the given input data set is $X = \{x^1, x^2, \dots, x^n\}$, where each data sample $x^i \in R^d$. What he wants to do is to cluster the n input data into k ($k \leq n$) clusters $S = \{s^1, s^2, \dots, s^k\}$, while minimising the sum of squares (i.e. variance) of the distances between the data sample points in each cluster and the cluster centre [10]. As expressed in equation 1 below:

$$\arg \min_s \sum_{i=1}^k \sum_{x \in S_i} \|x - u_i\|^2 = \arg \min_s |S_i| \text{var} S_i \quad (1)$$

where u_i is the centroid of the set S_i , i.e. the centroid of the clusters we mentioned earlier. Equation 1 is also equivalent to Equation 2, i.e. the distance translates into minimising the pairwise squared deviation of data points within a cluster. As expressed in equation 2 below:

$$\arg \min_s \sum_{i=1}^k \frac{1}{2|S_i|} \sum_{x, y \in S_i} \|x - y\|^2 \quad (2)$$

Combining the two equations above, this can be simplified to: As expressed in equation 3 below:

$$\sum_{x \in S_i} \|x - \mu_i\|^2 = \sum_{x \neq y \in S_i} \|\mu_i - y\|^2 \quad (3)$$

Since the total variance is fixed, minimizing the within-cluster sum of squares (WCSS) is equivalent to maximizing the between-cluster sum of squares (BCSS, between-cluster sum of squares).

4 Conclusion

Use case identification starts with the identification of all the physical objects involved in the system. As the objects involved in the enterprise management service platform in this paper are relatively numerous, mainly summarised as personnel, documents and materials, the management functions of these objects can all be identified as atomic functions, such as the addition,

deletion and checking of certain types of production machinery in the enterprise. In this paper, the personnel involved in the enterprise management service platform mainly include: various partners, employees, etc.; these personnel can be unified management or individual management, the basic functions should have all personnel information as well as the addition, deletion and checking of individual personnel information. This paper deals with a complex variety of documents, and there are a large number of corresponding objects in the various modules planned, such as BOM sheets and production planning documents in production management, and invoices, requisitions and purchase orders in purchasing management. For enterprises fixed assets such as machinery and equipment should also be managed effectively. This paper combines many aspects of a comprehensive study, which has led to new breakthroughs and ideas in this field of research. On the basis of the original basic theoretical research, coupled with new ideas and ideas for the integration of research, for the subsequent research to do a great deal of padding has made a forward.

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