ONLY FLEXIBILITY CAN ADAPT TO THE OUTSIDE WORLD, AND ONLY SOLIDIFICATION CAN UNIFY THE WHOLE SYSTEM

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Abstract: As a newly developing mode of transportation, this paper use the railway as an example to analysis the application condition of the information system in the engineering construction industry, and points out the demand of information production to adapt to the changes in the enterprise management of the engineering construction industry.

1 THE ENGINEERING AND CONSTRUCTION INDUSTRY WHICH IS REFORMING CONSTANTLY NEEDS SUPPORTING MANAGEMENT

Nowadays Chinese economy is under a stable and high-speed development state in recent years, GDP has been increasing at double-digit rate, and The Construction industry, as a pillar industry, plays a more and more important role in the National economy's development. At the same time, we also must see that China's construction industry is still traditional, low-tech, extensive in business management, not obvious in core competitiveness, and has small differences between enterprises, relies on low-cost expansion to develop. In order to make Construction enterprises to develop sustainably and healthily, we must change the traditional extensive management model, and transfer to road which relies on technological progress and improved quality of the new industrialization path.

With the preliminary establishment of Socialism market economic system and The promulgation of the Company Law, The State-owned enterprises began to establish modern enterprise system thriving across the country .Data indicates that: More than 69% of state-owned manufacturing enterprises in our country have completed the restructuring of the modern enterprise system. As the change of the company subject and the system, It's inevitable that it will bring the change of business organization and the adjustment of processes continuous, while the enterprise system continue to improve and match with the modern enterprise system, which managers need a more flexible system of organizations and management processes to adapt to the changing. In this process, enterprises also need a more quickly respond to market, adapt to market and build a agile construction.

All of these require the management model and the management tools, which are match able with it. And now, as an essential auxiliary system of the information system to the modern business management, we need a deep study and discussion on whether it can meet and adapt to the requirements of the business management.

2 CONFUSION OF APPLICATION AND IMPLEMENTATION IN INFORMATION TECHNOLOGY PRODUCTS OF ENGINEERING CONSTRUCTION INDUSTRY.

China's reform and opening up and the process of modernization are develop quickly, the domestic market has become increasingly international, while the international market has become increasingly domestic. With the opportunities increasing,

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challenge and competition are become more and more serious, which makes it very obvious that construction needs information. In recent years, IT technology has widely developed, which in Financial Management, Office automation, Real-time monitoring site, Remote communication, in construction field. Part of the management department has established computer management information system which covering the management functions, such as Material Management System, Project Budget Software, Progress Management Software, which can inspire the Industry management.

But the informatization of the whole industry have suffered a lot of frustration, which can be described as a failure rather than an evaluate, in recent years. By the practice from the author in the information technology industry, the following factors cannot be ignored.

2.1 Confined to Department Classes and Difficult to Expand

Because information tools that most of construction industry has used are in the level of department classes and standards are not uniform, it make interchanges and interconnections very hard. While most of companies of construction industry are ran in the collectivize operation, they need some projects in the side of collectivize control to raise companies' comprehensive management levels. High-speed railway system consists of High-speed railway operation, High-speed railway facilities and High-speed railway management policy. As a subsystem of the transportation system, it's most important function is to satisfy Users' travel demand. Therefore, this paper used the concept that high-speed railway is service in "person" as a starting point, and the influencing factors of User s' travel choice as the breakthrough point, to research high-speed railway and the influencing factors of **use**s' travel choice. Through data analysis and investigation, this paper determined high-speed railway users' travel choice index system, including five influencing factors of high-speed railway users' travel choice and one factors for evaluation of the result.

If this problem was not solved, at certain stage, it would make the management software cannot meet the demands of upper management and gradually cannot use. For an instance, it is unable to complete the task of issuing control indexes and providing related superior comprehensive reports.

2.2 Disability to Support the Multi-organisation and Multi-format

In fact, construction industry many braches, most construction enterprise are not satisfied with the traditional flat industrial structure. For example, most enterprise are developing in diversity which in the low level and repeat competition in simple civil engineering, and a large construction group always has subsidiaries including housing construction company, installation company, road and bridge corporation and so on. Of course, all of these subsidiaries are different in management for business difference. But now, the product which has applied in much enterprise can't satisfy the requirement which can apply in multi format in multi-organizational group. As times go, this situation will constrain the enterprise's management and accessing to information. What's more, it will lead to that data can't be generated by system.
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2.3 Disability in Application of Multi-mode

It has many management-modes For a construction enterprise in a period .Such as, governance structure in project-management will have a numerous modes including Legal management project, contractor management projector-operating items. This situation will last a long time for the Chinese national conditions. How to make our software system to meet the requirements totally is not unclearly.

All above make enterprise informatization get away from the management practice in the process of informatization .As a result; It caused the failure of the establishment of the informatization.

Four-stage method is based on investigation and familiar with the situation of traffic, finally predict the future distribution. The basic steps are traffic generation、 traffic distribution、 traffic model selected、 traffic assignment. We can gain some parameters about cargo flow through investigation. But it is difficult to implement, it will cost a lot of manpower, material and financial resources, so the minimum cost maximum flow is better to optimize the road network. The so-called minimum cost maximum flow problem is finding a maximum flow f, simultaneously the total cost is minimum. Studying this problem is trying to find out: from A to B, how to choose the path, how to assign traffic flow, in order to achieve minimum cost. The

meaning of cost can be defined as carbon emissions in this model.

3 THE INFORMATION SYSTEM EXPECTED BY US -- THE INFORMATION SYSTEM BASED ON "TURNOUT THEORY"

Informatization is an extension of corporate strategy, the corresponding behaviour of corporate control is achieved by it, so we expect system that immobilized management processes and management practice of many enterprises ensure standardization of enterprise management, and it make enterprise management reproduction convenience at advance management idea and management practice. However, immobilization dose not means static, because enterprise have changed , we need to change informatization system as our business changes, so we can achieve business continuity and adaptability of enterprise management practice.

Like the rail system, we need train to run as the fixed operation diagram in a period, rather than the mind of somebody, especially the train drivers'. Once there is change, we can change the train operation diagram at any time, and we do not need to re-lay or alter track system. All about this can be accurately calculated and controlled through the railway central dispatch system, and then switched by the turnout system in each station. At last, It can form a new rail road map by using the existed physical networks, which not only ensures the safety of the train, but also keeps the investment of railway system effective in long-term. Construction industry, in fact, is similar to it, we need solidified an flexible construction industry products which can follow the mode above. That is the author's "theory of turnout" which about informatization.

Based on the theory we mentioned above, we are be able to offer some kind of information production which has the following features:

- **Information Production based on the Management Integration**

Today's enterprise management system must meet the needs of modern enterprise management standard, so it needs to meet the demands on controlling group and breaking the barriers between departments. As the country's railway operation

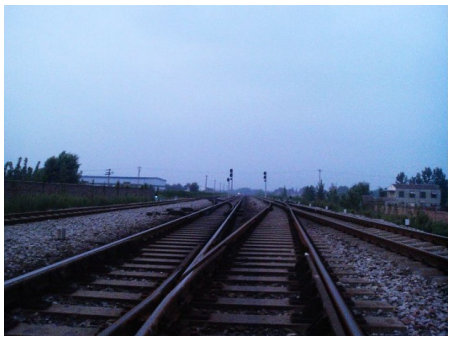

Figure 1: The railway.

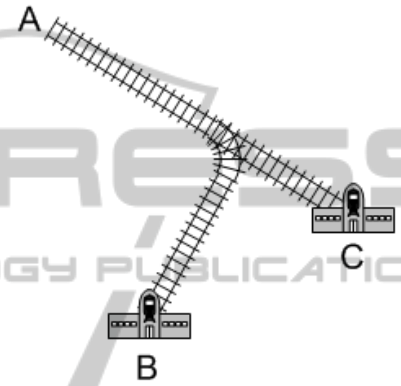

Figure 2: The turnout.

chart, only can it ensure that the dispatch centre of ministry of railway acknowledge and control that from any one site to another site in the country when the country's railway operation diagram is unified.

The running enterprise information system also needs to use information technology to make the business plan, construction and production, quality safety, materials and equipment, human resource and technical files together, at the same time, relies on the unified basic technology platform for building it, which can guarantee the collection, storage and analysis of the data overall and provide to the centre manager to unified management rather than independent.

- **Information Production based on the Business Process Configurable, and in Line with the Principle of Multi-organizational Distribution**

The business process of the enterprise will change with the changement of the enterprise management system, the control point can be moved up and down consistently, and the degree of sophistication and control of enterprises will differ from each other.

The following scenario is a typical example: one stage of a sub-segment of the original inspection and acceptance by the Group of unified management, because of the importance of reducing the current management of subordinate units or mature need for decentralization of power, it will be normalized by the branch management, which requires business process management system in production adjustments. User choose transportation mainly rely on time , economy and feeling these three factors. Dividing these three dimensions, we classify the factors influencing User making travel choices. User make travel choices will be influenced by some objective, potential factors. Through analysing the Users' characteristics and different factors' effects on users, we got a flow chart of user travel.

For other companies, on the management of materials, including a project can make an accurate pre-construction material master control program and the need for strict control plan in accordance with the needs of the total applications and process control limits picking, another project over the duration emergency supplies cannot make the total control program, but to ensure normal production, you can always picking. This is derived from a different company supplies two items control mode, which requires companies with a production management system configured to two projects to support different business processes and business rules to support the project after the allocation process.

- **Information Production based on the Flexible of the Organisation**

The real business of the organization of information is no longer a choice between big and small, but the flexibility to adapt to living environment, according to market demand, at any time to adjust the scale of business organization, making organizations more flexible. Appropriate of the production systems should be the same, and the need to dynamically adjust the division of the organizational structure of enterprises, and support staff, multi-character set the scope of work.

For example, a group of three levels organization under a bridge company, since the expansion of corporate strategy or direction of tilt to the bridge, has been promote to a group of two levels organization under the directly control of the group, and the supervisor of the company's group vice president concurrently. In the meantime, there is a group under the Municipal Corporation are to co-ordinate management, intensive management, the Group established a new two municipal corporations, unified all of the original two companies merged under the jurisdiction of Municipal Corporation.

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- **Information Production based on the Principle of the Designable Approval Process**

Just like the business process, the approval process of the enterprise is always justified, too. Especially the approval process of the inter-organisation is also justified with the demand of the enterprise strategy and enterprise risk control. Therefore, the information system of enterprise should have the function of self-define the approval process, and these functions will contribute to the independence of the enterprise to define the approval process away from the software company and support the connection of the inter-organisation.

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- **Information Production based on all Kinds of Models Which can be Configured and in Line with the Principle of Multi-organizational Assignments**

Most of the large-scale industries has many kinds of way to operate, under some special circumstance which some of the macro-indicators happen to be the same, format of the management of similar differences in micro-management content will inevitably bring more business. This kind of difference of management can not only set the enterprises at the macro indicators set uniform standards to ensure the realization of comprehensive reports and decision support data harmonization, but also to ensure that micro-management of scalable data can change to meet the needs of each individual line of business management needs. This requires a higher level of enterprise management system can be configured in the unified control of the template, curing the appropriate management standards, and to support the template as a master of the issued and required by the various sub-units to individual adjustment.

All of these demands we mentioned above is about to ensure our system to be more flexible, which can be more suitable during the big changes in the modem enterprise management. In the meantime, most of this kind of flexibility needs one

powerful basic technique platform to support it (which is also called “network of the train” of the information system). There will be amount of parameters in the basic technique platform to be offered for the user and software to configure the implementation of staff (which means information systems that the various “turnout”), which established the fixable and controllable information system that meet the flexible need of the actual construction business management (which means the “railway operation chart” of the information system).

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4 CONCLUSIONS

The author, who has engaged in informatization of engineering construction for several years, holds a view that the overall development of informatization construction in the domestic construction industry remains a positive momentum. This development trend fundamentally enhances the management level of the whole industry and is bound to make an enormous contribution to great-leap-forward development of the future engineering construction industry. During this process, the key issue on the development of informatization products in the future engineering construction industry lies in how to convert our informatization system into a convenient informatization tool and adapting into the swift transformation of modern enterprise management system. After all, as a word goes in Management science：Changing is the only thing in the world that remains unchangeable.