The Design of Transportation Industry Credit Information Management and Service System in Beijing

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Abstract: As the foundational, precursory and service industry of the national economy, speed up construction of the transportation industry credit system, which is an important way to perfect the socialist market economy system, strengthen and innovate the social governance. Based on the current situation of credit information management system of road transportation Industry and its existing problems, according to the planning objectives of credit informatization in Beijing, this paper tried to construct a credit information management and service system of the road transportation Industry in Beijing, on the basis of the existing credit evaluation system in several transportation departments. Furthermore, detailed introduction of functions and characteristics of the overall framework, data architecture, application architecture, business architecture, and security system.
Key word: credit management; transportation industry; credit information system

1 INTRODUCTION

In order to thoroughly implement the "The State Council on the issuance of social credit system construction plan (2014-2020) notice" [1], "Ministry of Transport on the strengthening of the transportation Industry credit system construction of a number of opinions" [2], and the spirit of "Beijing Municipal People's Government on accelerating the construction of social credit system implementation opinions" [3], conscientiously implement the requirements of "Notice of the General Office of the Beijing Municipal People's Government on Printing and Distributing the Key Tasks of the Construction of Social Credit System in Beijing (2015-2017)" [4]. The purpose is to build Beijing personal credit information system, improve the enterprise credit information system, on the basis of the enterprise and personal credit information system, Beijing started the city's unified market main body credit information platform construction in 2015.

At present, there are some problems in the construction of the credit informatization system on transportation Industry: the shortage of integration of transportation Industry quality credit evaluation system, the application ability still remains to improve, and the lack of sharing and using evaluation results, lack of a unified credit information platform, the government's credit information sharing is not enough, credit information of departments and regions is scattered, independent of each other, credit information resources can not be shared. So the integration and sharing of data and platform needs to be further improved.

2 CREDIT INFORMATION CURRENT SITUATION

2.1 Ministry of Transport

In 2010, the Ministry of Transport officially organized and developed the national highway construction market credit information management system. The credit evaluation of enterprises engaged in design, construction, supervision and test detection achieved national unified standards and information sharing. It marked that the construction of China's road construction market credit system and credit information management were in the full implementation.

In 2015, the Ministry of transport issued the "Ministry of Transport on the strengthening of the transportation Industry credit system construction of a number of opinions" [2]. The main purpose is to implement the requirements of the central government to comprehensively deepen the reform, strengthen the top-level design of the credit system construction of transportation Industry, and clearly put forward the overall goal of the construction of the credit system of the transportation Industry in 2020.

In September 2016 ,the Ministry of transport officially inaugurated the traffic credit information platform, that is, "credit traffic" website. This website has provided credit information inquiry service for managers, enterprises, practitioners and the public.

2.2 Other Provinces and Cities

At present, many provinces and cities were also vigorously promoting the construction of traffic credit information.

In 2007, Traffic Committee of Beijing established quality credit evaluation system for the transportation Industry and the quality credit evaluation system of road construction, and began to promote the construction of credit reputation and regulatory patrol system in 2015,and the system passed the preliminary acceptance in September 2016 . So far the main function of the system is completed, at the same time access to traffic management bureau and traffic law enforcement corps that can obtain related illegal data for transportation Industry to carry out annual assessment work.

Shanghai launched a new round of credit system construction in 2013, took transportation as one of the key areas of credit system construction. In April 2016, Shanghai issued the "three years of civilized traffic action plan in Shanghai (2016-2018)". It will associate the traffic violations, traffic accident information with enterprises, personal credit, and bring traffic behavior that cause serious adverse effects into Shanghai public credit information platform and take appropriate disciplinary measures.

In addition, Zhejiang Province began to develop transportation construction market credit evaluation management system in 2010, and the system was officially put into use in 2011.In the same year, Shandong Province completed the construction of the Shandong Province transportation construction market credit information management system. Jiangsu Province promote the construction of the transportation

Industry credit management system on the transportation market and traffic construction, and in August 2016, built "highway and waterway construction and transportation market credit information service system". On the basis of "demonstration project of credit information systems for road transport", Liaoning Province started the development and construction work about "Liaoning Province road construction and transportation market credit information service system" in 2014.

3 CREDIT INFORMATION MANAGEMENT AND SERVICE SYSTEM

3.1 System Construction Background

In August 2016, the Beijing Municipal Commission of Economic and Information technology on the "unified management of the Beijing municipal public credit information service platform (phase I) project construction" put out an open tender. With the principle of "unified platform, multi-service, security sharing and industrial cultivation", we should make full use of the information technology such as big data and information fusion technology, build a unified management of public credit information service platform in Beijing. Thus the system can go to realize the unified management and application services of market main body credit information, support credit information disclosure and sharing , public credit information query and services, joint credit supervision as well as reward and punishment.

It is quite necessary to plan the overall framework of credit information management platform construction and achieve credit information sharing with relevant departments.

3.2 Research on Overall Framework

3.2.1 Overall Framework

In accordance with the requirements of the Chinese government and the Ministry of Transport on the construction of the credit information system, according to the planning and design objectives of Beijing transportation Industry credit informationization, relying on the resources of existing credit evaluation system of Beijing Municipal Transportation Bureau and Highways Bureau, it is necessary to integrate the transportation Industry law enforcement information, complaint information and Internet + transportation enterprise credit information, access to relevant information of departments outside the transportation Industry, such as law enforcement punishments and other information, and build the Beijing transportation Industry credit information database, realize the city's credit information resource management, credit supervision, decision support and information services, and share information with the Ministry of Transport, the Beijing Municipal Commission and the relevant departments.

The overall framework of the Beijing Municipal transportation Industry credit information management and service platform is shown in Figure 1.
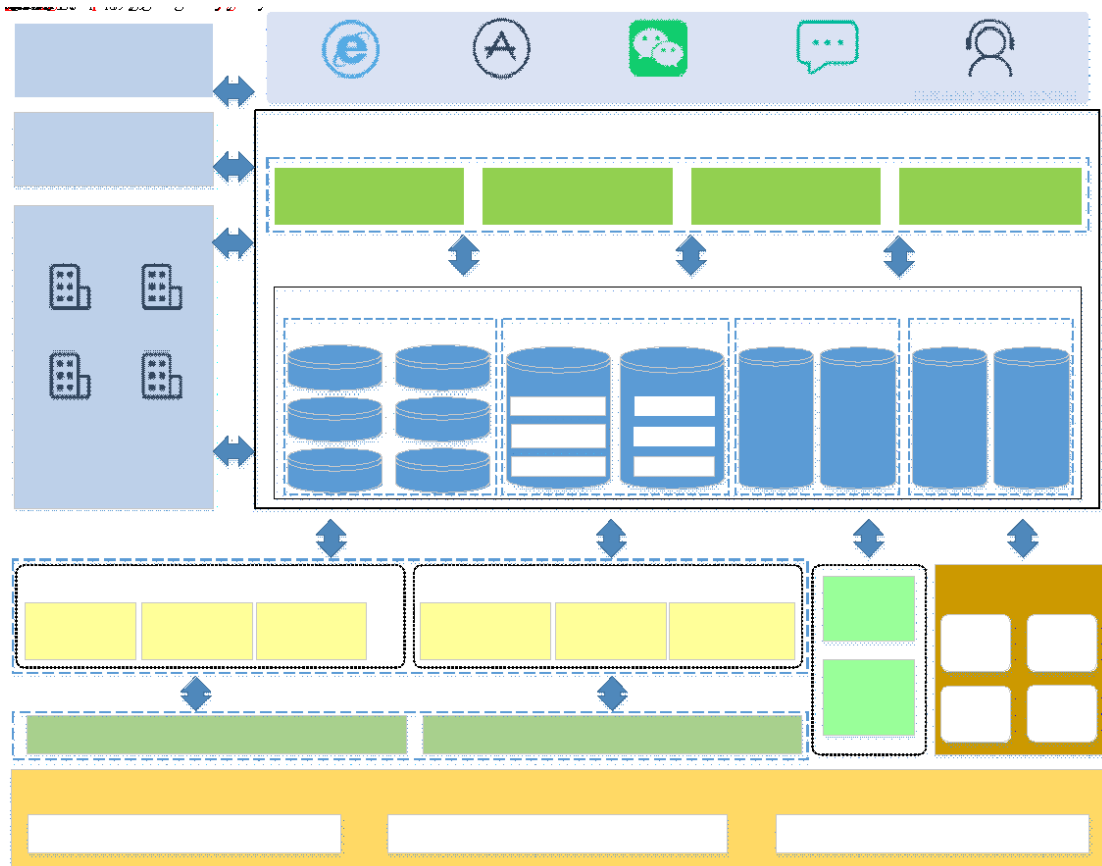
Figure 1. the overall framework of platform

According to the functional requirements of the credit information management and service platform, four major databases are planned and constructed: basic information database, business database, subject database and shared database; including planning and construction of four subsystems: information resource management, credit supervision management, decision support and information service system; and a unified security guarantee system should be constructed(the security standard guarantee system, organization institution guarantee system and information safety guarantee system are included).

3.2.2 Data Architecture

Integrating the Beijing's transportation Industry credit information resources is to build the corresponding credit information database, including the four major databases:

(1) Basic information database: covering the basic information such as enterprises, practitioners, project information, reward and punishment records, credit evaluation of enterprises, credit evaluation of employees and so on.

(2) Business database: covering information such as road transportation management credit data and road construction administration credit data.

(3) Subject database: covering information such as the source governance and safety regulation data and highway engineering quality evaluation information.

(4) Shared database: covering information such as credit evaluation information of enterprises and credit evaluation information of practitioners.

Thus, the system can improve the data exchange and sharing platform and interface system to achieve data exchange and sharing with related units and enterprises, as shown in Figure 2.
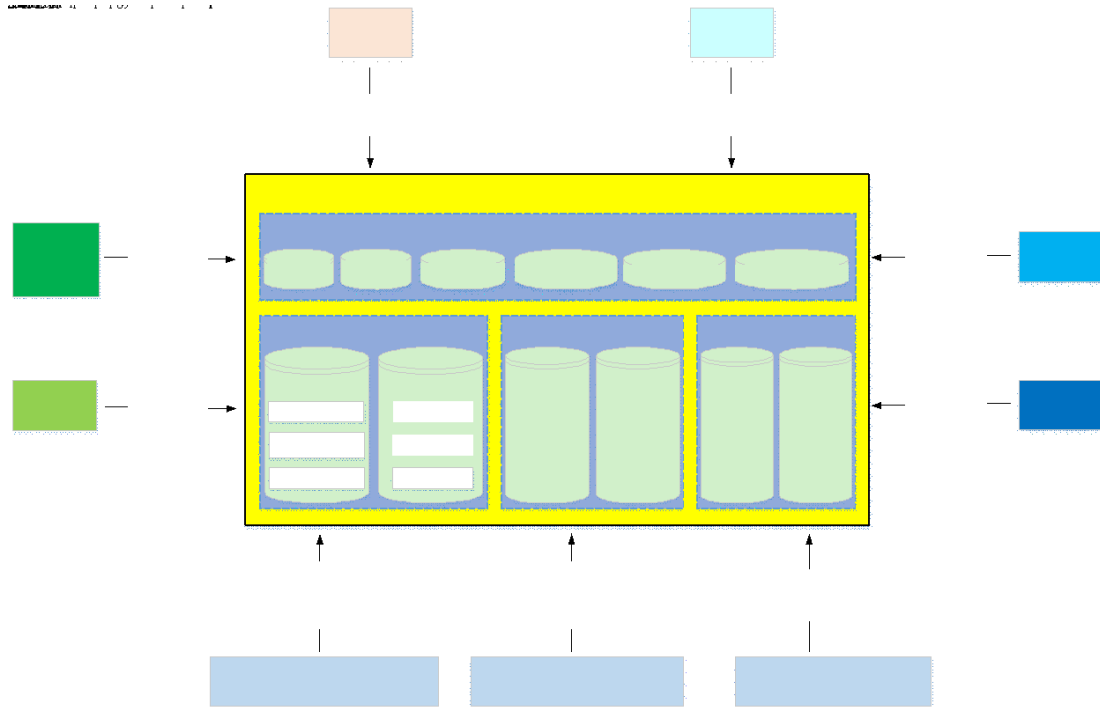

Figure 2. The data structure of platform

3.2.3 Application Architecture

The goal of the application system architecture is based on the management of information resources of transportation Industry, and achieve the four services of resource management, industry supervision, information service and government decision-making.

Through the construction and improvement of relevant systems can promote the development of the transport Industry credit informatization, strengthen the government supervision, improve the level of enterprise services.

The application architecture of the Beijing Municipal transportation Industry credit information management and service platform is shown in Figure 3.
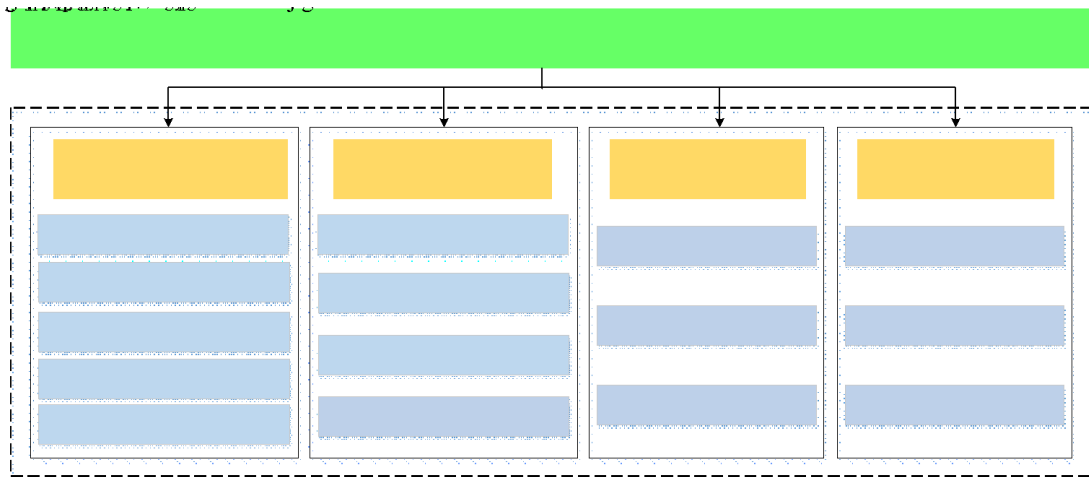
Figure 3. The application architecture of platform

(1) Basic information management

Basic information management system is the management of the four major databases, that is, basic information database, business database, subject database and shared database. At the same time the system can achieve data sharing and exchange functions with the Ministry of Transport, the Beijing Municipal Commission as well as transport-related Industry.

(2) Operation supervision of transportation Industry

Operation supervision system mainly realizes four functions, namely the credit information directory management, monitoring and analysis of enterprises and practitioners credit information, monitoring and analysis of enterprises and practitioners disciplinary incentives, handling the objection about the credit evaluation results of enterprises and practitioners.

(3) Government decision support

The government decision support system mainly realizes the credit information data query(including enterprises and practitioners), statistical analysis and statistical report forms.

(4) Public information services

The function of the public information service system is to provide the one-stop service of transportation Industry credit information through mobile phone APP, WeChat public number and customized SMS, which towards enterprises, practitioners and the public.

3.2.4 Business Architecture

Based on combing the needs and concerns of transportation Industry management departments, enterprises, related departments and the public on the credit information, business architecture closely integrate credit information business management, and provide basic conditions for the development and construction of application system. As shown in Figure 4.

	basic information of enterprises					basic information of practitioners		good behavior information		bad behavior information	
	basic quality	financial status	qualification status	performance status	self-owned equipment situation	basic quality	qualification status	reward information	highest credit rating record	punishment information	lowest credit level record
transport Industry	√		√	√	√	√	√	√	√	√	√
enterprises						√	√	√	√	√	√
the public			√				√	√	√	√	√
public security						√					
traffic control			√		√		√				
industrial and commercial bureau		√							√		√
tax bureau		√							√		√
safety supervision			√				√				
NDRC			√	√					√		√

Figure 4. The business architecture of platform

(1) Transportation Industry

Transportation Industry management departments need to grasp the basic situation, qualifications, performance and self-owned equipment situation of enterprises; need to grasp the basic conditions and qualifications of practitioners; need to master the good behavior information of enterprises and practitioners, as well as bad behavior information.

(2) Enterprises

Enterprises of the transportation Industry need to grasp the basic conditions, qualifications, good behavior information and bad behavior information of practitioners.

(3) Related departments

Due to the different functions of the related departments, so there is a certain difference between the information needs of enterprises and practitioners in the

transport Industry, such as, the public security departments are concerned about the basic information of practitioners; traffic control departments pay attention to the qualifications and self-owned equipment situation of enterprises, as well as the qualifications information of practitioners; the administration for industry and commerce focuses on the financial situation and bad behavior information of enterprises.

(4) The public

As the public is mainly to accept services from transport Industry, so it is mainly concerned about the qualification information, good behavior information and bad behavior of the enterprises and practitioners.

3.2.5 The Security Guarantee System

(1) The security standard guarantee system

Starting from the actual demand, the standard and normative research is carried out. Based on the national and industrial informatization standards, the data and interface standards should be established, the system construction should be guided, the business process and the operation and maintenance of the information application system should be regulated. Specific conditions need to formulate appropriate information platform management measures.

(2) The organization institution guarantee system

Referring to the requirements of the Ministry of Transport on the credit system construction, making clear the division of responsibilities at the municipal administrative departments, improving the working mechanism and integrating resources are important to ensure that each work will be carried out in an orderly and steady manner. Strengthening the construction of credit information assessment and formulating quantitative assessment indicators can ensure science, objective and accurate assessment of the construction of credit information.

(3) The information safety guarantee system

According to the credit information security management system, we need to make sure the security protection , carry on the security classification, security domain division, physical security, network security, host security, data security and application security in the information system construction aspects, as well as implement the responsibility of management, personnel management, operation and maintenance management responsibilities.

4 CONCLUSION

Based on the analysis of the current situation of the credit information management and service system of road transportation Industry, this paper studies the overall framework of the system on the basis of the planning goal of credit informatization in Beijing. And the system data architecture, business architecture, application architecture and security guarantee system were introduced.

From these, the system can go to realize the management of credit information resource, supervision of enterprise credit, decision support and information service of Beijing. Furthermore, to realize the information sharing and social service function with the Ministry of transportation, the Beijing municipal government and the related

transportation Business department etc.. So to form the credit information management and service system of Beijing transportation Industry which is adapted to the social and economic development.

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