Function and Structure Design for Regional Logistics Information Platform

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Abstract

Regional Logistics Information Platform is the core and key development factor of modern logistics industry. Through the construction of logistics information platform, it can greatly promote the information-oriented for modern logistics development. The concept, characteristic and requirements of regional logistics information platform are defined. The function and operation mechanism of it have been analyzed. Based on the analysis, the frame of the information platform has been designed.

Keywords: Regional, Logistics, Information Platform, Frame.

1. Introduction

Under the background of the globalization and integration in regional economic, the economic linkages in regional interior and between regions enhance greatly. It largely changed the environmental conditions of logistics activities. Regional logistics has become an important component in economy activity. With the development of regional logistics industry and information technology, more and more region put forward the construction of regional logistics information platform planning and implementation requirements[1]. Regional logistics information platform can support the requirements of logistics information for regional departments. Through optimizing the whole logistics system resources, it can make full use of the superiority of network and information to provide interactive sharing for social logistics system[2]. The regional logistics information platform can also provide high quality and level services for enterprises to realize the optimization operation of social logistics system and improve the utilization efficiency of resources [3].

2. The Concept of Regional Logistics Information Platform

Regional Logistics Information Platform (RPLIP) is an integrated and intelligent logistics information network platform. It combined the advanced information technology, computer processing technology, network technology and data communication technology to a unified and efficient communication platform with the Internet. Through the collection, classification, screening, storage, analysis, publishing, management and control of logistics data, the platform can provide material and information resources integration and sharing which decrease total logistics cost and improve total logistics efficiency[4]. Therefore, an appropriate and efficient regional logistics information platform is the premise to ensure the efficient operation of modern logistics industry.

3. Significance of Regional Logistics Information Platform

Regional Logistics Information Platform is the central nervous system of modern logistics. It can enable enterprises to actively respond to the market and guide enterprises to adjust production and business activities through the information fast, accurate, and real-time flow in the logistics system [5]. Through the establishment of regional information platform, the information of each subsystem is extracted and stored in the database of logistics information platform, which can effectively integrate various existing logistics information resources. It also improves the current situation of logistics information construction fundamentally and plays the overall advantages of logistics system. The platform provides support and guarantee for the rapid development of logistics industry.

Regional Logistics Information Platform can improve the transparency of the logistics operation, reduce logistics information exchange links, shorten the cycle of logistics operation, reduce operating costs, and improve operational efficiency and logistics service level. Logistics enterprises can establish long-term partner-ship with multiple logistic agencies through the logistics information platform, which is beneficial to improve the utilization rate of a large number of idle logistics resources to realize the logistics scale benefits.

The relevant government departments can make scientific prediction, analysis, planning, and the formulation of relevant policies on the macro-decision and can also obtain enterprise information, total demand, supply capacity, and operating conditions of transport modes through logistics information platform.

4. Requirements Analyses

There are three type users of the regional logistics information platform. They are the supplier enterprises, the demand enterprises and related government departments [6]. The demands of users on the logistics information are described by analyzing the business functions.

(1)The supplier enterprises

The main business functions and regional logistics information demand analysis of the supplier enterprises on logistics service are shown as Table 1.

Table 1. Regional Logistics Information Demand Analysis of Supplier Enterprise

Enterprise types	Main business functions	Information demand
Transportation enterprises	Transportation order management Transportation plan making Transportation Transportation scheduling Vehicle and cargoes tracing Transportation information inquiry	Traffic information Vehicle tracing information Transportation
Storage enterprises	Storage order management Storage Retrieval management on cargoes Retrieval management on vehicle Cargoes tracing	Vehicle tracing information Cargoes tracing information
Distribution enterprises	Distribution order management Warehouse management function Vehicle scheduling planning Cargoes tracing	Territory information Traffic information Vehicle tracing information

Integrated logistics enterprises	Provide whole course logistics service through transportation, storage, circulation processing, distribution, logistics system consultation and design, etc.	Related information about alliance enterprises and the government
Common information demand: Investigation and forecasting on the logistics market, the development consultation on logistics industry and regional economy, decision support by logistics experts, related logistics policy, industry standard and laws, weather forecast, etc.		

(2)The demand enterprises

The main business functions and regional logistics information demand analysis of the demand enterprises on logistics service are shown as Table 2.

Table 2. Regional Logistics Information Demand Analysis of Demand Enterprise

Enterprise types	Main business functions	Information demand
Production enterprises	Production, processing and assembly of the product	Vehicle and cargoes tracing information The situation of the logistics service market
Wholesale enterprises	Provide products and service for retailing by gathering goods in the intermediary stage of circulation	Vehicle and cargoes tracing information The situation of the logistics service market
Retail enterprises	The circulation terminal which faces the final user and consumer directly	Vehicle and cargoes tracing information The situation of the logistics service market

(3) Government departments

In order to provide information support for logistics facility layout, logistics forecasting, logistics planning and designing, government need the regional logistics information platform offer information such as logistics business types among departments and industries, freight volume, the total sum of the logistics settlement contracts, volume of stock, logistics facility quantity in possession, number, scale and basic operation situation of logistics enterprise, etc [7].

5. The Function of Regional Logistics Information Platform

Regional Logistics Information Platform should be implemented through the interconnection of logistics information network to realize logistics information sharing. It has the function of regional logistics information collection, transmission, processing and distribution. It can not only provide all kinds of logistics data and information services for user but also have functions of online logistics transaction, the entire cargo tracking, financial and insurance services, and so on.

Thus, the regional logistics information platform should have five main functions.

(1)Data exchange

This is the core function of the integrated information platform, mainly referring to the translation, conversion and communication for electronic documents, including customs clearance online, commodity inspection, license application, settlement, pay (refund) tax and multilateral business information exchange.

(2) Information release service

Relevant information is released in the form of a web site, such as platform basic information, industry information, education, consulting and training information and varieties of transportation information.

(3) Membership service

Include member document management, members of the shipment status and location tracking, transaction tracking, trading statistics, membership credit rating.

(4) Trading online

Acceptation orders online, delivery business; recording logistics information online; recording orders information.

(5) System management

Prescribing and controlling the access to platform, permission to use the information, maintain the operation system, ensuring data security.

6. Frame Design of Regional Logistics Information Platform

Regional logistics information platform can provide basic logistics information for information system of relative department, such as regional logistics enterprises, manufacturing enterprises and government. Through collecting relation information of logistics, it can satisfy all of common logistics information requirement of enterprises information system. And it can also support the realization of all function of enterprises' information system. And the same time, the plat form can support the building of calling management and standardization management of market between government departments by sharing logistics information. The general structure of the frame of the regional logistics information platform can be designed as shown in Figure 1.

7. Design and Analysis for Regional Logistics Information Platform Hardware and Software Systems

7.1 Design Principles for Hardware and Software

The design for regional logistics information platform hardware should be based on the following principles.

(1) On the premise of meeting the required functions of business processing and other management, logistics information platform provide unified hardware platform for various processing, calculation and management capabilities.

(2) It should have capability of expansion. With the construction of the city, expansion of road network, the amount of logistics increasing and other new requirements, the hardware platform should be scalable.

(3)The logistics information platform is the core of the logistics information system and the convergence hub of various functional departments. The system should be safe and reliable in order to ensure uninterrupted work of major equipment and data unloose. During the design phase, it should be integrated cost-effective, reasonable hardware backup solution.
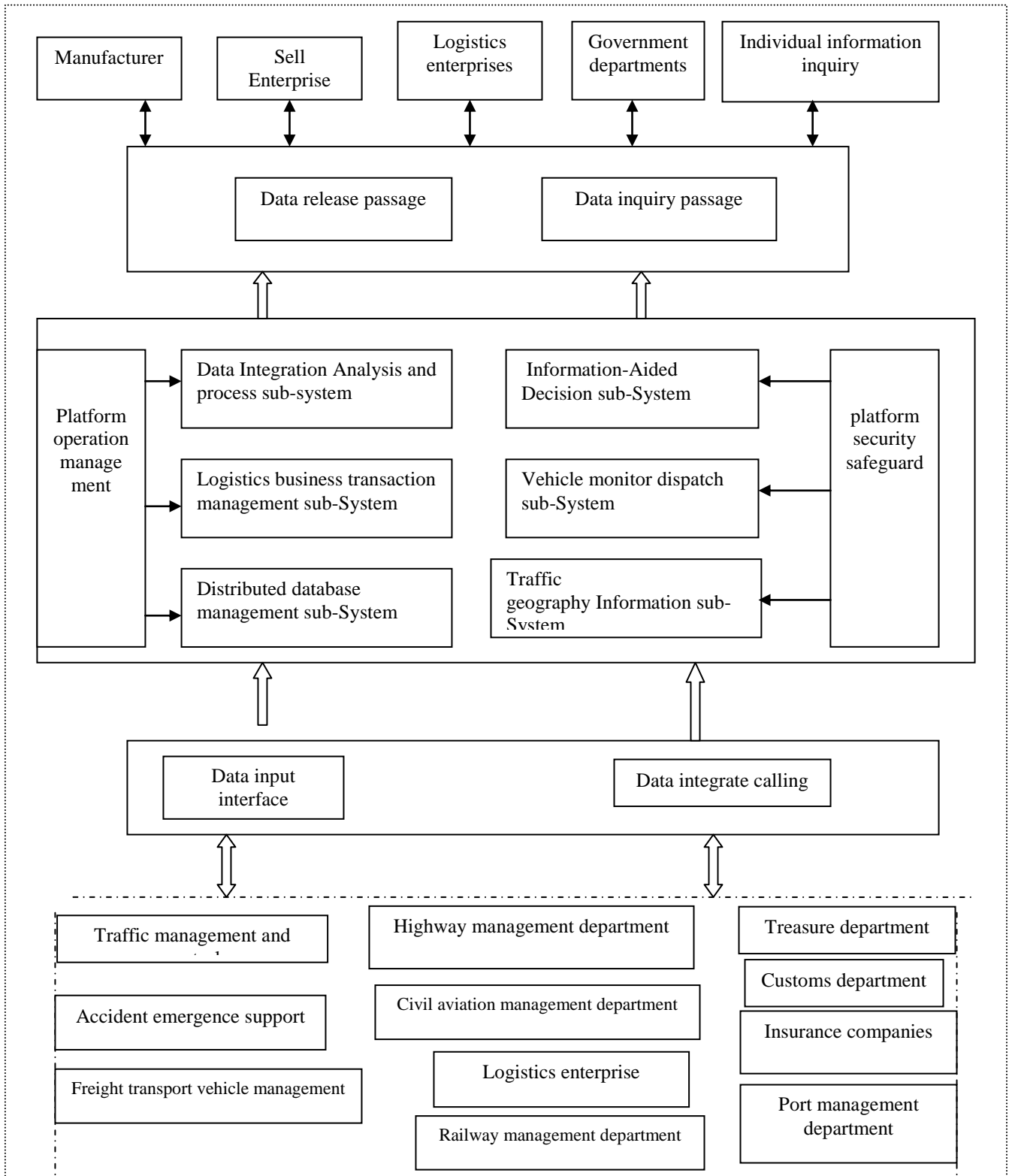
Manufacturer	Sell Enterprise	Logistics enterprises	Government departments	Individual information inquiry

Data release passage	Data inquiry passage

Platform operation manage ment	Data Integration Analysis and process sub-system	Information-Aided Decision sub-System	platform security safeguard
	Logistics business transaction management sub-System	Vehicle monitor dispatch sub-System	
	Distributed database management sub-System	Traffic geography Information sub-System	

Data input interface	Data integrate calling

Traffic management and	Highway management department	Treasure department
Accident emergence support	Civil aviation management department	Customs department
Freight transport vehicle management	Logistics enterprise	Insurance companies
	Railway management department	Port management department

Figure 1. Frame of Regional Logistics Information Platform

Software of regional logistics information platform should be designed based on the following principles.

(1) Unified software system functions

As an information exchanging center of logistics information system, regional logistics information platform provides a unified hardware platform of information exchanging for government departments, logistics companies and other departments. It should be provide a unified software platform, including operating systems, database management software, and network communications and networking management supporting software.

(2) Openness and standards of software

Software is based on main mature technology with specifications of the software and related interface protocol keeping line with international standards, national standards, and industry standards.

(3) The software is modular in structure and easy to expand the function and processing capabilities.

(4) The software should have a high fault tolerance with a self-protection and recognition in exceptional cases.

(5) The software should have a friendly interactive interface to facilitate communication among managers, users and systems.

7.2 Design of Hardware and Software

In the center of regional logistics information platform, system hardware equipment includes data file server, business process server, communications server, WEB server, map database server, control and management computer, terminal workstations of various functional units, network switches, network routers, print servers , laser printers, and other network wire. The software of regional logistics information platform includes system software and supporting software and application software. System software and application software consist of application software platform supporting software to meet the data processing, organization and various management needs. Regional logistics information platform software uses the client / server model structure. Software should be modular structure and each module can be separately configured on each node computer so as easy to expand and upgrade. At the same time, it has a hierarchical security functions to achieve protection system at different levels. All operator interface of software should use GB GB2312 character display. Menus and graphical drivers should be chosen so as that interface is concise, intuitive, and easy to operate.

8. The Operation Mechanism of Regional Logistics Information Platform

The operation mechanism of the platform mainly means the construction, management and the using strategy about the sharing information of the platform. It contains two important aspects: the sharing mechanism and the construction mechanism.

8.1 The Sharing Mechanism of the Information Platform

The platform needs to provide information according to different functions, demands and authorities of participants. The sharing mechanism mainly includes:

(1)Classification sharing: Assign certain authorities to different users to let them share information of corresponding levels.

(2)Hierarchical support.

(3)Diversified service: Provide diversified service mode in accordance with different demands and different data types.

8.2 The Construction Mechanism of the Information Platform

For it is not to develop an isolated system, besides the general strategy, there are some problems should be noticed when constructing the logistics information platform.

(1)Take the development of the basic functions of the system as the foothold.

(2)Pay attention to the participation of the logistics enterprises.

(3)Strengthen the coordination work of sharing information. It is the premise that the data provided by existing systems or external systems to develop the information platform. Thus the coordination work of the information is very important for the success of the platform.

9. Conclusion

The establishment of regional logistics information platform is a complicated systematic project that is concerned with the coordination between government departments, between government and enterprises and between enterprises. Therefore governments are required to plan, promote and guide to construct the platform from a macro point of view and enterprises are required to plan apply the platform and application from micro point of view in order to jointly make contribution to the development for local economy.

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