

# Design of Logistics Information System based on Mobile Internet

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## Abstract

**As a new generation of network technology, the Internet of things has attracted more and more attention. With the continuous popularization of logistics in daily life, the real-time information monitoring of logistics vehicles is becoming more and more important. At present, the utilization rate of the logistics network of the logistics system is not high, and the use effect is not good. This paper designs a logistics information system based on mobile Internet, which can effectively solve the monitoring and management of transportation tasks, and has high reliability, security and maintainability.**

## Keywords

**Logistics Information; Mobile Internet; The Internet of Things.**

## 1. Introduction

With the continuous development of wireless communication technology and sensor technology, the Internet of things, as a new generation of network technology, has attracted more and more attention. With the continuous popularization of logistics in daily life, the real-time information monitoring of logistics vehicles is becoming more and more important. When the vehicle is actually transported, neither the logistics distribution center nor the customer can obtain the real-time status of the vehicle in detail and monitor the vehicle in real time. General logistics distribution vehicles do not have real-time and effective navigation information in the transportation process, which can not optimize the distribution route and increase the operation cost of logistics distribution. Moreover, the utilization rate of the logistics network of the current logistics system is not high, and the use effect is also poor. This paper designs a logistics information system based on mobile Internet, which can effectively solve the monitoring and management of transportation tasks, and has high reliability, security and maintainability.

## 2. Logistics Information System

Logistics information system refers to an interactive system composed of personnel, equipment and procedures to provide information for logistics managers to perform planning, implementation, control and other functions. Logistics information system is based on logistics information. Only with the available logistics information can the logistics information system play a role. In logistics related enterprises, if people want to find the most economical and effective way to overcome the time and space distance between production and consumption, they must transmit and deal with all kinds of logistics related intelligence, which is logistics information. It is organically linked with the functions of ordering, receiving, inventory management, delivery, distribution and recycling in the logistics process, so that the whole logistics activities can be carried out smoothly.

With the continuous development of society, the number of logistics distribution is increasing rapidly. Although it has brought great convenience to people's lives, the efficiency of logistics distribution still needs to be improved, which also puts forward higher requirements for logistics management. With the development of the times, there will be more and more logistics

enterprises, and the competition is quite fierce. In such a market environment, only by providing better services and carrying out differentiated competition, can logistics enterprises gain a foothold in the market. It is an important means for logistics enterprises to improve their core competitiveness with the help of information technology. The use of advanced information technology can reduce business costs and increase efficiency. At the same time, the new information technology can also provide customers with more humanized services.

### 3. Mobile Internet

Nowadays, the demand for mobility and information has risen sharply. More and more people hope to access the Internet at a high speed in the process of mobile, obtain the information they need urgently and complete the work they want to do. Therefore, the trend of combining mobile and Internet is inevitable in history. At present, mobile Internet has penetrated into all aspects of people's life and work. The combination of mobile communication and Internet technology has promoted the development of many industries.

Mobile Internet is a new generation of open telecommunications infrastructure that is nationwide, with broadband technology as its core, and can simultaneously provide high-quality telecommunications services such as voice, fax, data, image, multimedia, etc. It is an important part of national information construction. Mobile Internet adopts international advanced mobile information technology, integrates Internet and mobile communication technology, introduces a large amount of information and various businesses from various websites and enterprises into mobile Internet, builds a mobile information application platform suitable for business and management needs for enterprises, and provides all-round, standardized, one-stop enterprise mobile commerce services and e-commerce solutions. The series of mobile Internet products guide the development of mobile communication technology, which can meet the needs of users and provide competitive services. Entering the 21st century, especially in recent years, mobile Internet has ushered in a new development cycle. At this time, the most significant change is the gradual breakthrough of the technical barriers that originally existed on the mobile Internet. In terms of network, HSPA/EV-DO, WiMAX, Wi-Fi and other broadband wireless access technologies began to emerge, which greatly expanded the bandwidth capacity of the access network. Nowadays, various broadband wireless communication, mobile communication and Internet technologies have been well applied in mobile Internet services.

### 4. Overall System Structure

The system uses RFID technology and wireless sensor network to realize the automatic identification of goods. Use GPS and GIS technology to realize the real-time positioning of goods, reasonably guide and arrange the storage location of goods, improve the picking efficiency and reduce the storage cost of goods. Applying RFID technology to goods storage management, using RFID reader and wireless sensor network technology to realize the automatic input and control of goods warehousing, outbound, storage and movement, which can effectively solve the monitoring and management of transportation tasks. The monitoring system has high reliability, safety and maintainability. The overall structure of the system is shown in the figure 1.

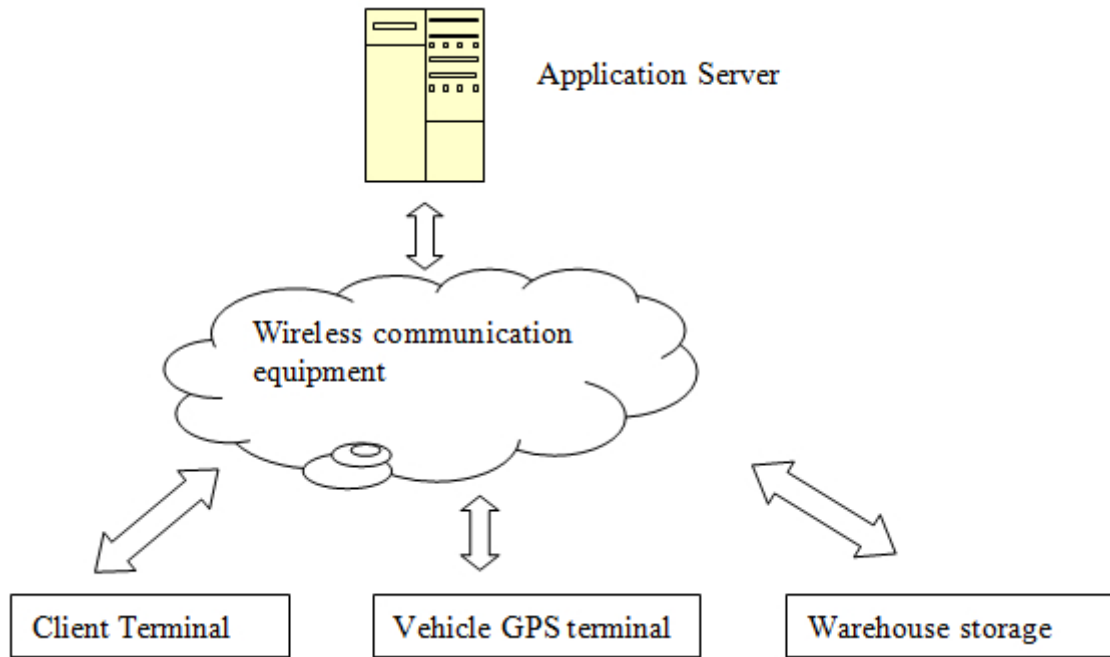


Fig 1. Overall System Structure

### 5. Module Structure Design

The structural design of each module is directly related to the efficiency of system operation. The module structure design of the system is shown in Figure 2.

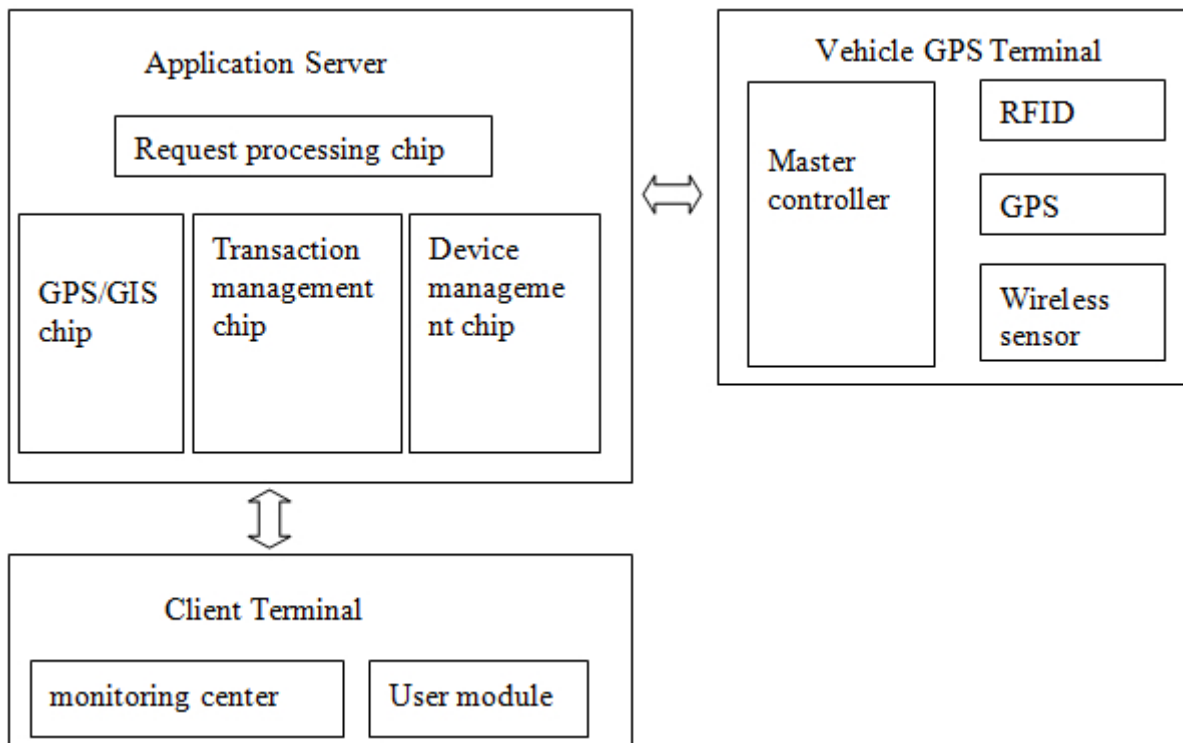


Fig 2. Module structure design

The system mainly includes application server, wireless communication device, customer terminal, vehicle GPS terminal and storage equipment. The application server includes request processing chip, GPS / GIS application chip, service management chip and device management chip. The GPS / GIS application chip in the application server is respectively connected with the

on-board GPS terminal, customer terminal and storage equipment through the wireless communication device. The on-board GPS terminal includes a main controller, an RFID reader, a GPS receiver and a wireless sensor. The main controller is respectively connected with RFID reader, GPS receiver and wireless sensor. The main controller is connected with the application server through a wireless communication device. The client terminal includes monitoring center and user module. The main controller is also equipped with a wireless sensing signal receiving module and RFID middleware. The wireless sensor in the on-board GPS terminal communicates with the main controller through wireless sensor network. The wireless sensor comprises at least one of a temperature sensor, a humidity sensor and an air density sensor.

The on-board GPS terminal sends positioning information to the system application server with the set frequency to provide real-time position information of vehicles and goods. The on-board RFID device and wireless sensor device will transmit the article attribute data and in vehicle environmental data to the system application server. The application server will adjust and control the environmental index in the carriage in real time according to these information to adapt to cargo storage and transportation.

The GIS / GPS Application module is centralized in the application server of the system. The on-board GPS terminal transmits the received geographic positioning information to the GIS database through the wireless communication device. The system application server updates the GIS database after converting the information processing into GIS coordinate data. The monitoring center or user sends a cargo positioning request to the system application server, and then the service program processes the request, and feeds back the location information result to the requesting end.

When the client terminal sends a cargo positioning query request to the system application server, the system application server will send a query instruction to the on-board master controller. After receiving the sent cargo ID query instruction, the on-board GPS terminal starts to read out the EPC code of each cargo successively through the RFID reader according to the ID number in the instruction. EPC code and relevant information of goods have been written in the electronic tag, and each goods has a unique EPC code. When the EPC code of the goods is consistent with the goods code to be queried, the RFID reader obtains the information written in the tag by receiving the radio wave sent by the RFID electronic tag, sends these information to the on-board master controller with RFID middleware function, and the master controller transmits them to the system application server through the wireless communication device. Wireless sensor is used in the vehicle GPS terminal of the system. The system provides a variety of wireless sensing devices, including temperature sensor, humidity sensor, air density sensor and so on. Of course, there are more choices according to user needs. Although the transmission distance of wireless sensor is very limited, the data can be transmitted to the system application server through the main controller in the on-board GPS terminal. The main controller is equipped with a wireless sensor signal receiving module, and the wireless sensor transmits and communicates with the main controller through the wireless sensor network.

## 6. Conclusion

In the whole production and operation activities of enterprises, logistics information system is closely related to various logistics operation activities, and has the function of effectively managing logistics operation system. It has two main functions: one is to grasp the changes of commodity volume brought by commodity flow at any time; The second is to improve the operational efficiency of various logistics businesses. With the rapid development of mobile Internet technology, relying on mobile Internet technology to improve the efficiency of logistics information system is the direction we need to make continuous efforts.

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