Modern Logistic Information Management System Under Internet Technology

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Abstract—The 21st century is an age of information with constant development of computer network, which has brought much convenience for people's life; while logistics is an indispensable part of modern people's life. Since people are having higher and higher demand for quality of life, the traditional logistics management system hasn't been able to adapt the market. Internet, as a necessary product of network and modern intelligent system, it will make logistics management system more efficient and safer. Based on computer network, Internet is an emerging industry developed with intelligent perception as well as identification and so on. Nowadays our society has a huge demand for talents on Internet technology. In this paper, it briefly introduces the effect and benefit of Internet technology on modern logistics information management system from the definitions of computer network as well as Internet.

Keywords-computer network; Internet; logistics technology

I. INTRODUCTION

The concept of logistics has been existed since the world war two in the last century, and the traditional logistics mainly refers to comprehensive activities like keeping, transportation, delivery, packing, loading and unloading, process as well as process of object information and so on. After years of development, modern logistics is paying more attention to the quality of service. In order to meet customers' demand as much as possible, modern logistics tries its best to lower its cost, and it transfers raw materials or commodities to customers by keeping, transportation, and delivery. Obviously, modern logistics should make constant innovations and lower the cost to achieve better development.

With the constant development of people's quality of life, people also have higher and higher demand for the quality of service. Logistics, as an emerging service industry, it has become an indispensable part of people's modern life. According to the statistics in recent years, modern logistics industry is facing unprecedented challenge. To achieve development in the fierce competition, they should reform original logistics information management technology by introducing new technology and reducing cost so as to improve efficiency and raise competitiveness.

The emergence of Internet technology has brought benefit for the development of modern logistics information management system. From its name, we can know that Internet means convey objects' information by various kinds of wireless of network. With the technology of Internet, a remote control can be realized on objects so as to realize intelligence. Internet can be combined with sensor and realize intelligent operation by cloud calculation and model identification. It is no doubt a big leap for the development of modern logistics information management system to apply Internet technology. In this paper, advantages of modern logistics information management system based on Internet technology will be elaborated with the comparison between traditional logistics information management system and the new one.

II. INTRODUCTION OF COMPUTER NETWORK AND LOGISTICS NETWORK

Computer network means to realize resource sharing and information communication by linking multiple computers or external equipment of different geographical location with independent functions under the coordination and management of network operation system, network management software as well as communicative protocol. Computer network is a network with computer as its terminal and group exchange as its technology. Its terminal customer resources can be shared and linked, which has become an indispensable part of people's life, work, study and communication. It can even be seen as the basis of Internet and logistics network.

The Internet of Things, which is short for IOT, is another network based on computer network as well as Internet. It is a network formed by key technologies like ZigBee and RFID, etc.

The IOT is also applied to computer rooms since sensor network is employed in the computer rooms to collect environment parameters so as to connect computer network with data sever. Relative staff can manage real environment in the network houses by mobile terminal transparently.

Internet technology has been developed rapidly in our country, which contributes to a better development of IOT correspondingly. Besides, according to the data from CNNIC, the popularity of Internet in our country has also been greatly improved. By the end of 2010, netizens in our country has been up to 457 million with a popularity rate of 34.3%. Third, since the study of sensor network technology in our country has always been ranking the top, China can be regarded as one of the

dominant countries in this field with large amount of patents and studies. Fourth, China has developed clips of IOT with high property independently, which indicates that the core technology of IOT has been overcome.

III. COMPOSITION AND STRUCTURE OF IOT

Generally, IOT can be divided into three levels by common standards, which are perception level, network level and application level. See Fig .1 as follows.

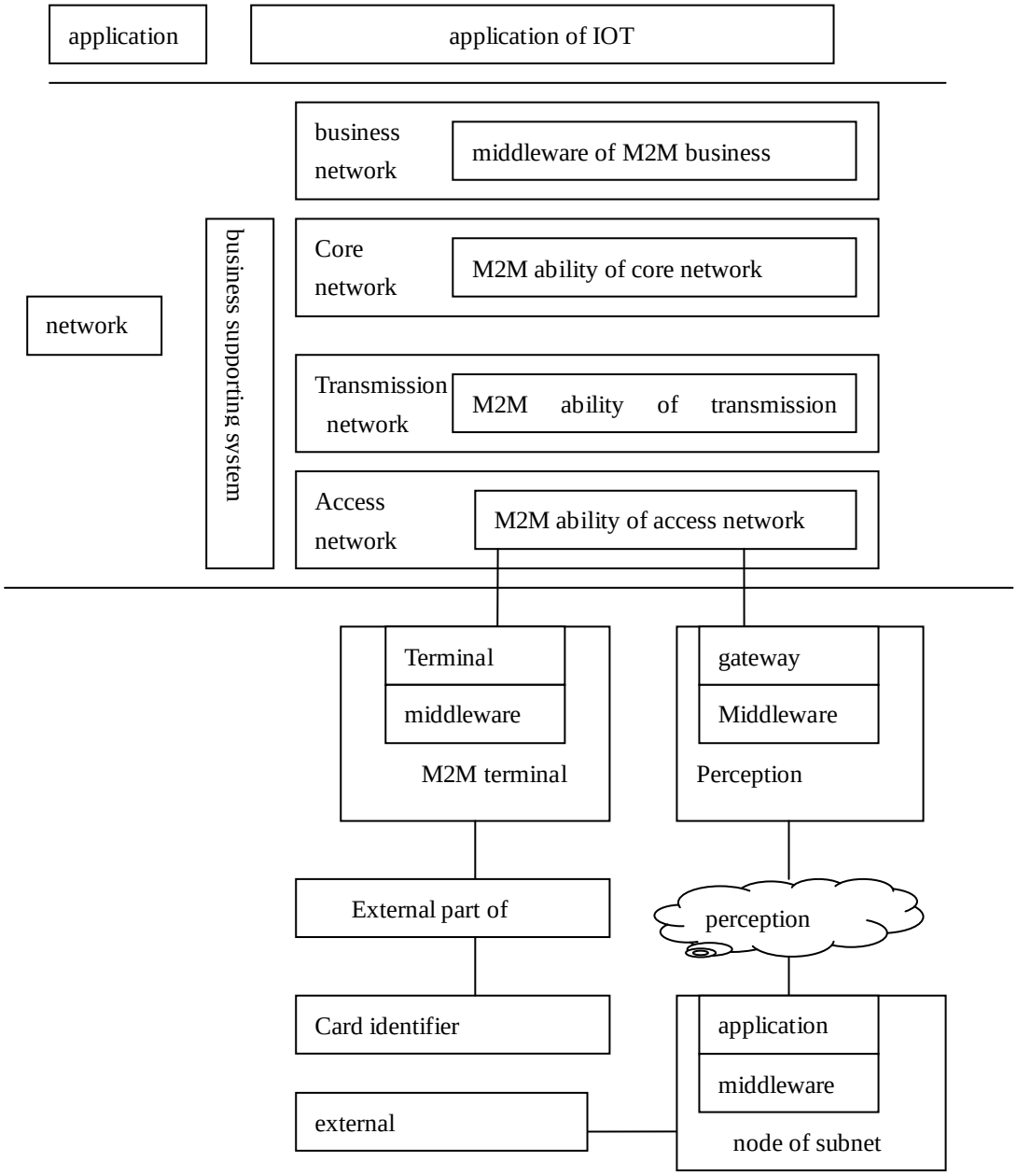

Figure 1. The Internet of things technology architecture as a whole

The perception level of IOT includes QR code label and reader, RFID label and reader, camera and M2M terminal, hand-held terminal, sensor network and sensor webmaster and so on. The main task of this level is to recognize object and collect related information of the object. Equipment of the perception level should possess strong ability of access and management as well as characteristic of external plug and play.

The network level mainly includes access network, transmission network, core network, business network, network management and business supporting system. The network level should not only possess the ability of network operation but also the ability of business operation, such as deployment of sample database and algorithm database.

IV. MAIN TECHNOLOGIES OF IOT APPLIED TO LOGISTICS

The technology of IOT is a generic term of technology system instead of one single technology. In logistics, from the perception of object to information processing and to transmission, each section requires lots of technologies. However, generally, application of IOT in logistics covers three technologies, which are perception technology, network communication technology and intelligent process technology.

（1）Perception technology of IOT applied to logistics information management.

At present, the perception technologies applied to logistics are RFID technology, video recognition technology, monitoring technology, GPS technology as well as sensor technology and so on, during which RFID has been widely applied with the largest range, and meanwhile it is also one of the most mature technologies. It is mainly used in the automatic warehouse management system, goods transportation management system, dispatching management system of trucks, automatic delivery management system and timely tracing of commodities, and so on.

（2）Intelligent management technology of IOT applied in the management of logistics information

Intelligent operation is an important part of modern logistics information management as well as the core technology of IOT technology. During current technologies of logistics information management, intelligent logistics work has been partially realized, such as intelligent information management technology and automatic dispatching technology of vehicles, etc.

These three technologies are applied in the logistics information management system together with interactive influence. Their work principles are displayed in the Fig .2 as follows.

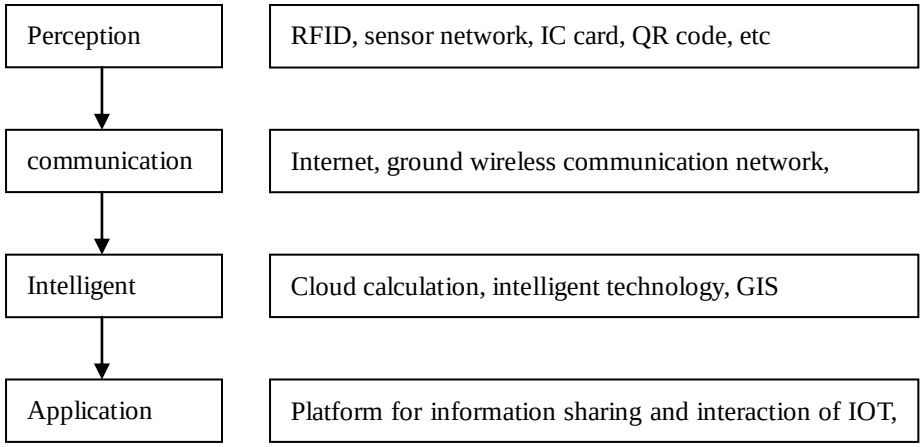

Figure 2. The Internet of things technology of modern logistics information management structure diagram

Sketch map of the structure of modern logistics information management under IOT technology

V. CONCLUSION

IOT is the third wave in the world information industry after the development of computer and Internet. IOT has been applied to many field like ITS, environment monitoring, government work, public safety, safe housing and accommodation, industrial monitoring, nurse of aged, food tracing and investigation on enemy's situation and so on by combining intelligent perception and recognition technology with pervasive computing and ubiquitous network. It has become a trend to apply IOT technology to modern logistics information management system. With the introduction of IOT for its working principles as well as application levels in logistics compared with traditional logistics information management system, the paper has concluded that modern logistics information management system based on IOT technology is more convenient, intelligent and efficient. The IOT technology has become an indispensable support for the development of modern logistics information management system.

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