Research and Implementation of Device Life Cycle Management based on Internet of Things

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Abstract: In recent years, China's machinery and equipment manufacturing industry has developed rapidly, which has made great contributions to meet the latest demand of manufacturing industry and accelerate the rapid development of China's economy. As an important part of China's economy, equipment management is not only related to the direction of manufacturing industry, but also plays an important role in the overall development of manufacturing industry. Based on this, from the perspective of the Internet of things technology, this paper expounds and analyzes the concept and related technology types of the Internet of things technology, and then conducts in-depth research on the application of the Internet of things technology in equipment management.

1. Overview of the Internet of things

The concept of Internet of things was first put forward by Professor Ashton of MIT when he was studying sensor networks in 1999. In 2005, the International Telecommunication Union (ITU) made the important countries in the world begin to attach importance to the expansion of sensor networks into physical connected networks. So far, the world has not formed a unified standard to define the Internet of things, but a consensus has been reached on the basic theory, technology and application of the Internet of things. The Internet of things (IOT) technology can be regarded as relying on RFID, infrared camera, laser scanner and other sensor equipment, global positioning system, wireless transportation system, etc. According to the pre-agreed agreement, connect the items (such as equipment, facilities, various commodities and even people and animals) with the Internet, so as to exchange or transport information between people and objects, objects and objects, so as to realize the intelligent identification, positioning, tracking, monitoring and management of objects. In a word, the Internet of things is the integration and integration of a variety of information technologies. It is the integration and integrated application of a variety of information technologies. It enables intelligent communication between people and things, and between things to create an intelligent world. The reason why Internet of things technology can promote the development and innovation of information field lies in the accumulation of more than ten years. At present and in the future, the development and application of Internet of things technology will be valued and used by our country and other countries in the world. Through the analysis, we can find that the development and application of Internet of things technology began in developed countries, and it has developed more advanced and mature. At first, Internet of things technology was used in business, retail, logistics and other fields. At the beginning, research and development mainly focused on barcode and RFID technology, and then related to the combination and innovation of sensor and computer technology, making its application gradually involved in environmental management, intelligence, facility construction, biomedical and other industries.

2. Application of Internet of Things Technology in the Whole Life Cycle Management of Equipment

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At present, the Internet of things is widely used in logistics monitoring, intelligent transportation, intelligent home, remote monitoring, etc. Among them, the application in the field of equipment management is mainly to meet the requirements of intelligent production and other important processes to achieve intelligent transportation, and the application in the whole life cycle management of equipment management and transportation resources is also increasing slowly. The whole life cycle management of equipment management and transportation resources is an indispensable component of manufacturing informatization and automation.

2.1 The main system of integration

The integration of network management, geographic information and asset management is the main system. In most cases, manual management is still maintained as the main form while computer management is used as an auxiliary way. When employees carry out various material transportation management, they often need to waste a lot of time, and the automation level is not enough, which eventually leads to time waste and sudden errors in the transportation process. Therefore, we need to be able to analyze the application of equipment management and transportation resource life cycle management system under the condition of Internet of things technology from the perspective of hardware and software structure, and discuss the important technologies in the application process of system platform. Finally, the concept of the Internet of things and the life cycle management mode of equipment management are combined to reduce the intensity of human management and improve the efficiency to a large extent. The visibility and controllability of the Internet of things have been improved to a new level, the utilization rate of resources and the level of production management have been greatly improved, and an effective method and diversified platform have been provided for the automation and intelligent popularization of the whole life cycle management of equipment. However, because the system platform is built on the basis of the corresponding Internet of things, due to the characteristics of the Internet of things itself, there are some potential security problems, such as network attacks, forgery of information, privacy disclosure, etc., so in the future, it is necessary to analyze and solve the security problems of the Internet of things, and further improve its various fields Security and reliability in application.

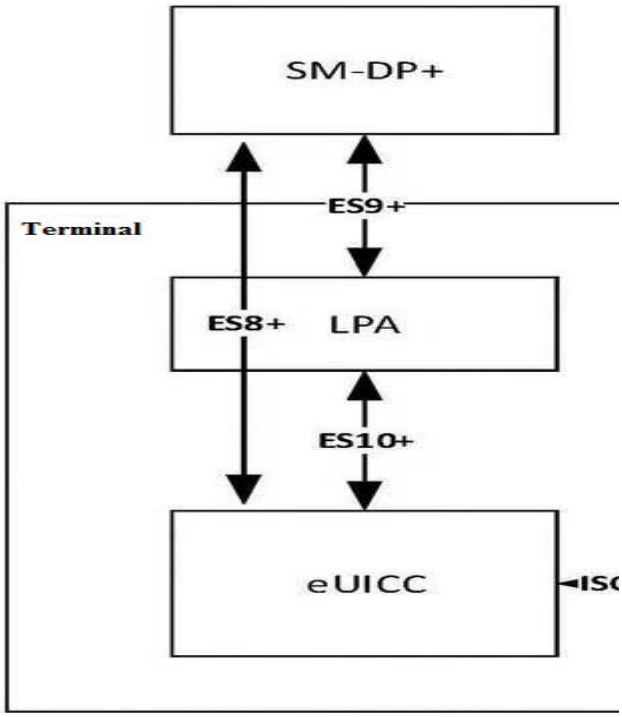

Figure 1.Terminal

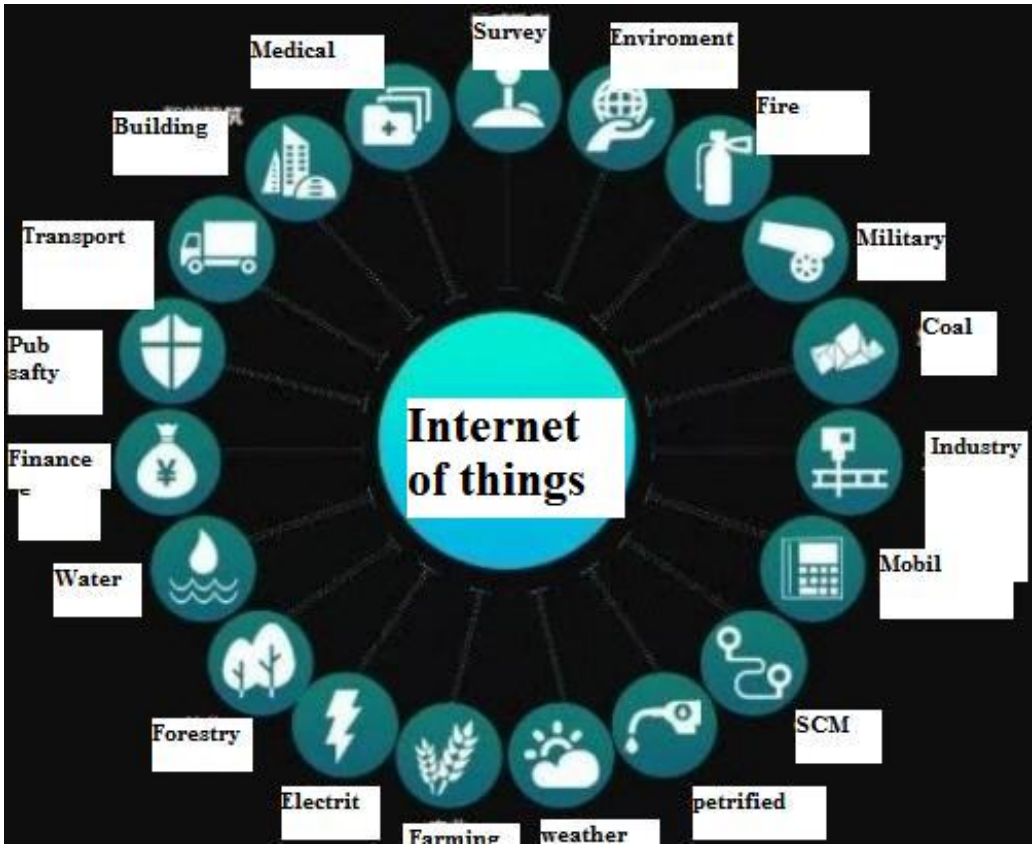

Figure 2. Internet of things

2.2 Necessity of application in equipment life cycle management

The necessity of the application of Internet of things technology in the whole life cycle management of equipment is mainly reflected in the following aspects: first, constantly improving the accuracy of equipment management. Accurate management of mechanical equipment is the key task of intelligent manufacturing modernization and information process management. With the use of advanced Internet of things technology, it can meet the rapid and accurate identification of mechanical equipment. And use the real-time recorded information as the basis of the equipment life cycle management to indirectly realize the management of the equipment. This way can not only improve the management accuracy of the equipment, but also increase the efficiency of the equipment management. Second, the real-time visual management of mechanical equipment is turned into reality. The visualization of modern mechanical equipment management has been studied and concerned as an important direction and goal. After the IOT technology is applied to logistics mechanical equipment, IOT can be set up in each mechanical equipment for marking. In this way, the running status of mechanical equipment can be well perceived, and then these big data can be fed back to the management platform for management visualization, so as to improve the efficiency of equipment management. Third, the use of Internet of things technology improves the intelligent level of equipment management. In the process of transportation, the relevant mechanical equipment will inevitably appear some sudden dangerous situations when it is used. Compared with the traditional artificial response, the adoption of Internet of things technology can quickly respond to the dangerous situations, and quickly feed back to the management information system to provide decision-making for the equipment managers in the shortest time.

3. Conclusions

The Internet of things is a product of integrated application and system innovation formed after the modern science and information technology has reached a certain stage. At present, the development and application of Internet of things technology is considered as the third information technology and industrial revolution, which is based on the development of computer and the universal application of Internet, and has a profound impact on the economic development and all aspects of social production and life in China in the 21st century. In addition, it has important military value. For this reason, in recent years, Internet of things technology has rapidly become the focus of the development of information technology around the world and is regarded as strategic high technology. The continuous development of manufacturing industry puts forward arduous tasks for the management of mechanical equipment. The quality of management of mechanical equipment directly affects the development of manufacturing industry. In such an environment, the application of Internet of things technology to optimize the efficiency management of industrial machinery and equipment will undoubtedly have an important impact on accelerating the overall development of China's manufacturing industry and economy.

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