Research Article

Educational
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Theory and Practice

Development Of Adaptive Systems For Higher Degrees Of Automation Of Information Acquisition And Analysis

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ARTICLE INFO	ABSTRACT
	With the dynamic interest of power clients, the business interest of power industry has likewise changed. For this situation, new subsystems (SS) or data might be required. On account of stage shows, the utilization of SOA empowers various frameworks to adjust to the Enterprise Service Bus (ESB) data interface coordination convention, so data communication and application combination can be applied in a multi-level application framework, and the availability of the customary endpoint module application end to interface end can be accomplished. In this paper, GPS clock synchronization innovation and re-enactment stage innovation of PTP clock synchronization power data obtaining framework were applied to guarantee that the tickers of the assortment terminal and the insightful instrument are brought together with the principle station. Robots are a fundamental examination subject in the field of man-made reasoning and mechanical technology, which has coordinated the most recent exploration aftereffects of many disciplines. In this structure, the framework's customer finishes the capacity of the visual framework, and the worker side (Server) of the framework understands the capacity of the dynamic and the sending of the guidance. Using piece synchronization system, message planning and other multi string innovation and Socket based organization correspondence innovation to accomplish the double camera securing design and correspondence. In the plan, the hierarchical strategy is embraced, and the FPGA premise work is separated into a few modules, and the plan technique and control stream of every module are examined exhaustively.
	Keywords: Acquisition, system design, power consumption, subsystems.

1. INTRODUCTION

The force data securing framework is utilized to assess the correspondence execution of various methods of correspondence. To understand the solid and quick data collaboration in the test terminal, a various leveled multi-network combination correspondence instrument is planned. The combination correspondence component is separated into correspondence interface total layer, center accumulation layer and administration collection layer, to understand the data trade between Ethernet correspondence, power line transporter correspondence, RS-485 correspondence and remote correspondence. Joined with burrow transmission component, cushion pool instrument, correspondence check system and break control instrument, multi-network combination correspondence system can adequately further develop the correspondence execution of test terminals [1]. The test outcomes show that the component can meet the on-going and unwavering quality necessities of the force data securing framework test stage.

Because of the constant deviation of the buying terminal and the shrewd meter, it is hard to carry out the force cost and the course duty strategy in the force data securing framework. GPS clock synchronization innovation and PTP clock synchronization power data procurement framework recreation stage innovation can guarantee that the clock of the obtaining terminal and savvy meter depends on the fundamental station and the three-layer clock synchronization component of the securing terminal and shrewd meter is precise, solid and uniform [1]. Robot is the best portrayal of science and innovation, fine, sharp place of the best, and the football robot is without a doubt a difficult task. With the ceaseless advancement of computerized reasoning and mechanical technology, the examination on the improvement of robot has gotten one of the hot exploration themes on the planet [2]. AS-MF 2011 robot is one of the exceptional agents.

2. GENERAL WORKING PRINCIPLE OF THE SYSTEM OF CENTRALIZED CONTROL ROBOT

In the centralized control of robot system, digital camera is placed directly above the site. The match ball is an orange golf ball. Each team has a team logo and each player has distinguished from other players of color, the color mark is placed in the top part of the car. The image will be processed by the image processing, the position information of the robot and the ball is analyzed, and the identification results are provided to the decision software. The decision module converts the decision results into a specific signal, which is transmitted by a radio transmitter [3]. Car antenna receives a signal, and the car comes with MCU decoding, and the corresponding commands to the motors of the robot, motion of the car driven. Therefore, it achieves the decision module to car movement of continuous control.

According to system analysis, we can know, in large field, each part of the robot system are faced with new problem, which is mainly reflected in the vision and decision parts of the system. First, for the visual part: first, with the increase of the size of the venue, in hardware, a camera in 2.5m to 3m height has been unable to shoot the arena, which must be equipped with two cameras, each responsible for half of the scenes access to meet the requirements. Second, with increasing of the number of robots in the field, and every frame image to object identification number will be a corresponding increase in, for accurate and rapid identification of appearances on each of the robots and the ball location information, we must to improve the recognition algorithm. Secondly, for decision making: first, with the increase of the venue, the division of the site and the path planning must be adjusted. Second, with the increase in the number of players, arrangements for the formation of the decision, role assignment and role players between and cooperate with each other and obstacle avoidance action is more complex [4].

3. IMPROVED ROBOT CAR SYSTEM IN THE LARGE FIELD

At present, some of the MIROSOT team in the international competition robot car design is very characteristic. For example, from South Korea's pill team, they design the car weight light, low center of gravity, starting and acceleration are very fast, they rely on the speed the killer copper in previous world cup has repeatedly received good results, but the body light is also their robot car in the game against the disadvantaged and robot car at high speed by collision to overturn. In addition, the Austria team designed robot car is also very characteristic [5].

4. RESEARCH METHODOLOGY

4.1 SOA Model Analysis
SOA is a subcomponent model that connects a variety of different functional units (services) through protocols and interfaces based on open standards. Its primary purpose is to integrate marketing applications with reusable subassemblies of other systems. In the way of describing business relationships, the main purpose is to construct these subcomponents of the service [6]. Figure 1 below shows the SOA model.

Figure 1 SOA terms
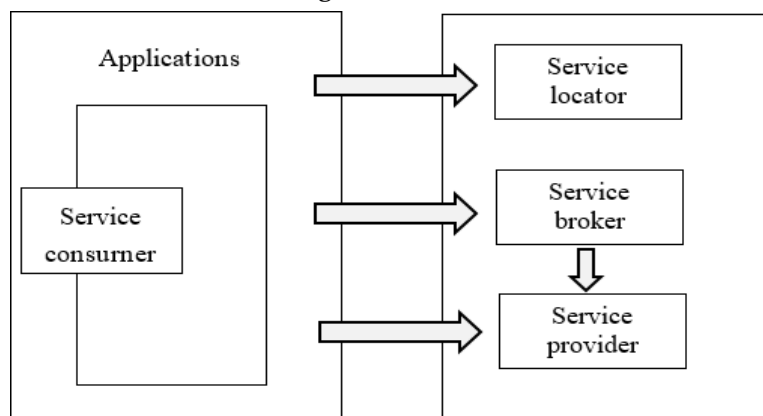
For an application framework, its administrations can be considered nuclear, and each read application is at least one administration, in order to accomplish the coordination between them. SOA is the most ideal decision for incorporating applications without changing any instant applications. Before the data trade between the different business data frameworks, the SOA should be arranged, in which case the ESB is applied. This not just kills the intricate coupling between every subsystem, yet in addition permits them to acquire relative freedom, security and honesty. ESB is the center of information association and business reconciliation between applications [7]. The ESB logical framework is shown below.
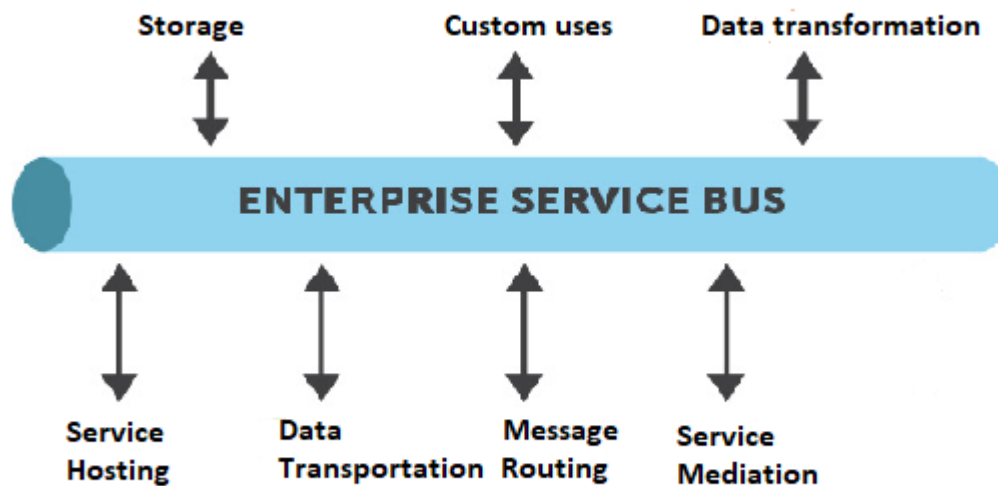

Figure 2 ESB logical framework

Among them, ESB is the core of data transmission and function synthesis in all links, and it can control and realize the information transmission between all services through various information transfer protocols, so that the end-to-end business process model in all interactive information can eventually be achieved [8].

4.2 Model Design Flow
The definition of business processes is the business process caused by application service according to the business needs, which first encapsulates the customized workflow and then packages it into the.NET assembly to facilitate invocation and integration of other services through platforms [8]. Since joining rules are put away in XML design, it won't ever answer on a particular middleware measure segment [9]. Cycle driven motor: the interaction driven motor is executed by applying middleware reconciliation parts. Administration distributing and search stage: administration distributing and search stage applications are regularly utilized in depiction, disclosure, and combination (UDDI) administrations, which can address the issues of the fundamental data mix in the data mix climate, and backing different Web administrations distributing, inquiry and support stage, in order to understand the application coordination administration dependent on Web [10]. Stage Rules File Library: the ordinary record libraries and setup documents on the stage are gotten to in XML design, including: Application Integration Rule Base, Date Interactive Rule Base, Standard Error Information Database, WSDL Service Description Library [11].
Data Interaction Specification: when the framework connects, the standard SOAP convention is utilized. Indeed, the SOAP basic vehicle convention (like HTTP and SMTP) is limited by restricting a similar message outline. In basic terms, SOAP is an open standard convention for XML + RPCover HTTP, XML messages are sent over the HTTP convention. Albeit other parsing records are mentioned during this exchange, both HTTP and XML are open standard details that can be gone through the firewall, in rundown, SOAP is generally utilized [12].

4.3 Service specification for interactive interfaces
The interfaces of the ESB stage can be separated into customer (ie, administration requester) interfaces and worker (ie service provider) interfaces [13]. The SOAP customer can be utilized to give exemplary libraries and COM objects etc. For the worker side, the stage utilizes SOAP over HTTP/SMTP to carry out utilitarian solicitations and the job of data connection [14]. According to the requestor's point of view, ESB isn't just a Web specialist organization, yet in addition a Web administration intermediary. At the point when it is utilized as a Web specialist co-op, the ESB will distribute various approaches to react to the requestor's different solicitations. Furthermore, when it goes about as a Web administration intermediary, it can give a

UDDI stage, which is first evaluated by the ESB and is eventually coordinated and improved by the customer [15].

Figure 3 System structure diagram

4.4 Access service provider
According to the supplier's perspective, ESM is only a solicitation part. A specialist co-op couldn't care less about the primary solicitation, however just makes a move on the SOAP epitome solicitation and returns the preparing result straightforwardly to the ESB. The information securing network is made out of concentrator, authority, shrewd meter and information transmission channel, which is utilized to finish far off meter perusing power checking [16]. The concentrator sends the force data to the expert station through the optical fiber unique organization or the GPRS/CDMA remote public organization to finish the prepaid administration. Every normal conveyance transformer is utilized to accomplish the gathering unit for the meter perusing of the private client. The concentrator procures every one of the information of the keen meter through the correspondence channel. Intelligent logistics will further deepen and expand the connotation and extension of "Internet + logistics". Wisdom logistics involves not only express enterprises how to make use of the Internet information technology, to carry on the connotative development, realize the logistics enterprise mass transfer efficiency, also involves across the enterprise, cross-regional, cross platform, for the whole logistics information flow of the automatic intelligent, controllable visualization, Shared asset-like development, so as to stimulate domestic demand, promoting the optimal allocation of social resources, reasonable industrial layout, and improve productivity, create new wealth of new social value. At present, the express delivery industry under the Internet economy has gradually become the new driving force for economic development, optimization of industrial layout and employment and entrepreneurship. According to the survey, the development index of the Courier industry in India was about 386 in 2015, which was more than 36 percent higher than in 2014.Since the 2010 development index has been rising for five years, it is more than 31%.National support and, under the market good attract began logistics network layout is unreasonable, irrational price competition, extensive management, service innovation and inadequate development, lead to packet loss, blowing up, franchisees and headquarters conflict appears frequently. According to the notice of the state post office, about 280,000 logistics users were effectively appealed in 2015, up 17.9 percent year on year, and the loss of logistics users was about 33.2 million. In order to realize the healthy development of the fast growing logistics industry and realize the second leap, the upgrading and innovation of express industry should be accelerated in the agenda.

4.5 The Lack of Information Technology Leads to High Costs
At present, compared with other countries of India's circulation industry infrastructure construction level is relatively backward, circulation because of the "Internet +" technology should be increased, for inadequate circulation costs are high. In the first place, the "Internet +" has a short time, and the "Internet +" technology is insufficiently invested, so there are few enterprises that can effectively use the "Internet +" technology. The production of the circulation industry is not symmetrical with the demand of the residents, and some of the production and marketing links in the supply chain are out of line. Second, although some of the large retail enterprises in our country to achieve the advanced level in the hardware facilities, but the new "Internet +" technology application is not sufficient, and restricted by traditional retail transportation and marketing mode, hard beyond its limit, reduce the circulation cost. Finally, India's circulation industry chain operation is small, and network infrastructure lag, cause circulation enterprise technology equipment and business needs are not synchronized, retail chain cannot expand business scale, it is difficult to realize industrialization production principle in the application of offline store, purchase, distribution and retail chain management cost is higher, in the credit accumulation and branding.

4.6 The Security of Internet Technology Restricts the Development of Circulation Informatization
The application of "Internet +" technology involves the security of personal privacy and corporate secrets, which restricts the development of informatization of the circulation industry. In the development of the combination of the Internet and logistics, radio frequency identification technology has set up a file in the storage, distribution, transportation has been widely applied, while enjoying the convenience of intelligent, consumers in the case of not yet perceive has been scanning location and tracking, result in the leakage of

personal information and trade secrets. Second, "Internet +" at the time of implementing interdisciplinary development, information security problems, such as mobile phone number, user name and identity problems such as information leakage, it is also the important factors that restricts the flow information.

5. RESULTS AND DISCUSSION

5.1 Strengthen Internet Application Consciousness to Promote the Development of Circulation Enterprise

First of all, the enterprise shall clarify its own development goal and Fang Jiang, strengthen the application of "Internet +" consciousness, and understanding of the "Internet +" comprehensive system, combined with their own actual situation, give full play to the "Internet + technology" to the positive role of circulation industry development. Can also use "+" Internet technology to effectively improve services for and management of the marketing service ability, human resources management in the traditional circulation enterprises, can through the Internet technology change enterprise management mode, to realize the digital intelligent management. Secondly, using the "Internet +" promote the transformation and upgrading of circulation enterprises, vigorously develop the personalization of the Internet, cloud model of manufacture and so on, to research and develop the consumption demand and production of the bidirectional interaction. Third, reorganize circulation regions "Internet +" city node, optimizing the regional distribution facilities layout, are Shared between urban and rural infrastructure, the construction of urban and rural dual circulation channels of mutual integration, improve the "Internet +" in the application of the circulation industry.

5.2 Improve the Circulation Policy to Create a Quality Ecological Environment

First, the government of the relevant departments should be on the market access of electronic commerce, trading rules and settlement on the corresponding laws and regulations, promote circulation at the same time, the main body of circulation and market regulation legislation process, make the circulation system reform and adapt to the modern circulation form, improve the retail industry commodity trading system of laws and regulations, formulate electricity no entity shop sales rules, promote the orderly development of electronic commerce. Second, strengthen the circulation industry "Internet + technology" regulatory system, encourages the circulation industry upgrade implementation structure innovation, realize the intensive production and management professional, at the same time, to regulate the electronic commerce process variable transformation, cultivate mature e-commerce credit system, promote the benign competition between circulation enterprises and healthy development. Finally, we will establish and improve the information security system, crack down on intellectual property infringement and the sales of counterfeit goods in e-commerce, and strengthen the enforcement of administrative law enforcement.

To speed up the construction of modern circulation system are first priority is to strengthen and improve the network infrastructure construction and improve the information technology applied in circulation, development of the technology application domain of "Internet +".First of all, should strengthen the construction of information superhighway, improve the speed and accuracy of network information transmission, increase funding in computers at the same time, training technical personnel in computer technology, improve the level of research and development of network technology, for the "Internet +" circulation industry to create a good platform. Secondly, on the basis of perfecting the soft and hard facilities of the circulation industry, the logistics distribution system of commercial flow, logistics, information flow and capital flow is established to strengthen the security of electronic payment. Finally, to promote "Internet +" technology in circulation in the enterprise management information acquisition speed, breadth and accuracy, realize the business and personnel management system of digital, comprehensive resources to speed up the construction of cross-border e-commerce services, actively promote the logistics service system, to build international circulation group.

5.3 Smart Logistics Public Information Platform

With wisdom logistics development philosophy, wisdom of logistics public information platform broken out, the wisdom logistics from theoretical level to practical level, will completely change the traditional logistics operation mode, a new cross and new momentum for the development of the logistics industry. Wisdom logistics public information platform based on intelligent logistics concept, the fusion of cloud computing, Internet of things, such as triple play the latest technology, to provide logistics information, technology, equipment and other resources sharing service, unified management and scheduling through the network computing resources, integrate each link of supply chain logistics information, logistics, logistics technology and equipment, such as resources, faces the society provide information services, management services, technical service and trading services. Platform to set up the logistics information data center to meet the whole process of logistics activity, build three basic network, through the layered construction, capacity and application platform of growth, can be expanded easily, has a very large scale, virtualization, open good, safe and reliable, easy to expand and other unique function.
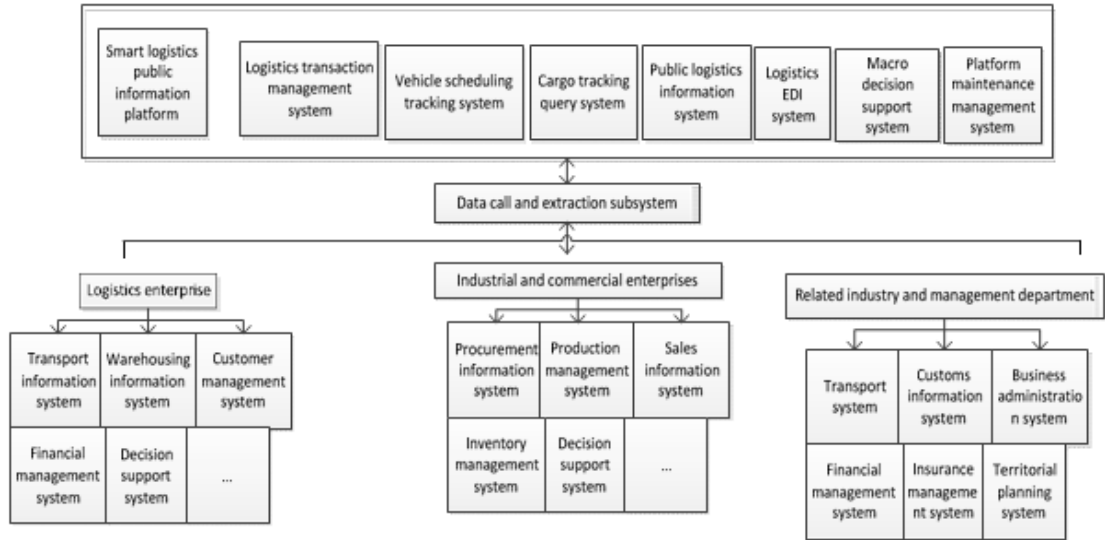
Figure 4 Intelligent logistics public information platform structure model

Little and medium-sized clients have introduced unique transformer securing terminals, which can speak with savvy instruments through 485 transports to get and store estimation information and data of insightful instruments, it tends to be pre-controlled and overseen by observing the force client switches, and can send the force data to the expert station through the far off correspondence channel, to get and execute the administration of the expert station. The information transmission channel from the procurement terminal to the expert station can be chosen from the optical fiber organization, GPRS/CDMA remote public organization.

The large-scale dedicated inverter user installs the collecting terminal with the load management function, which can obtain the output pulse through the 485 bus in time, obtain and store the data and information of the intelligent meter, and can complete the load control function by monitoring the power user's switching [17]. It transmits the power information to the master station through the remote communication channel, and provides the local information service for the user. Therefore, the determination of the agreement is also crucial.

The PTP convention (Precision Time Protocol) is an exactness clock synchronization convention dependent on the IEEE-1588 norm. It can not exclusively be carried out through equipment, yet in addition through programming. At the point when it is carried out by the equipment, nanosecond exactness can be accomplished, when it is executed by the product, ms-level precision can be accomplished. As the PTP convention can be handily accomplished, and can take up less Internet assets, the expense is moderately low; it tends to be broadly utilized in more decentralized procurement terminal and shrewd meter clock synchronization framework [18]. The essential standard of PTP convention is to accept the Internet as the transmission medium, to utilize the time stamp instrument to carry out the simultaneous organization of recurrence and time between the expert clock and the slave clock by computing the clock deviation between the expert clock and the slave clock and the transmission defer season of the message. It characterizes four kinds of messages, to be specific synchronization data message (Sync), following data message (Follow_Up), postpone demand data message (Delay_Req) and defer reaction data message (Delay_Resp), the fundamental guideline is displayed in the figure.
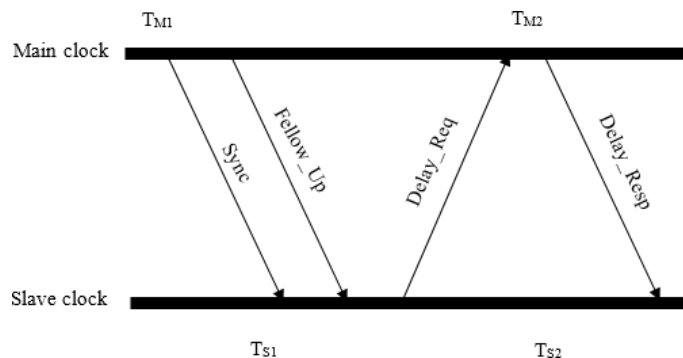
Figure 5 PTP protocol's basic clock synchronization principle

As indicated by the above determination measure, it is feasible to understand the clock synchronization between the expert clock and the slave clock by intermittently trading the clock synchronization data that has the opportunity stamp [19]. Clock synchronization message transmission measure is: right off the bat, sending the clock synchronization message from the expert clock application layer, then, at that point entering MAC layer through the working framework, epitomizing it as information outlines, entering the actual layer, changing over it into actual signals, and sending it to the organization. At the point when the clock synchronization data arrives at the slave clock, it likewise goes through the actual layer, the MAC layer, and the working framework arrived at the slave clock application layer. The message transmission delay for the most part incorporates the principle clock working framework handling time delay, the MAC layer of the host clock and the actual layer information preparing delay, the line transmission delay, the information handling delay from the clock actual layer and the MAC layer, and the information handling delay from the clock working framework. How to accurately select and record the sending and receiving time of messages and ensure the minimum transmission delay link and the minimum jitter is the key to ensure the synchronization accuracy between the master clock and the slave clock.

Figure 6 System structure diagram

Figure 6 System structure diagram
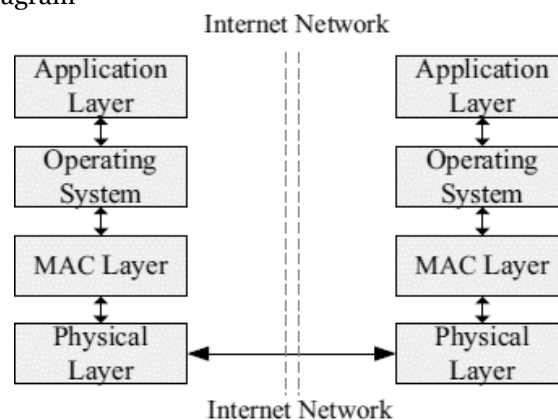
5.4 Motor Drive Unit
At present, the DC motor is driven by semiconductor power devices, and most of the DC motor is a switching mode driven by constant frequency pulse width modulation (PWM) mode. The advantages of the PWM modulation mode of the electronic device is the simplicity of the drive and the ease of the computer interface. Because of the PWM modulation mode, the transistor is operated in the switch state, which has the characteristics of wide speed range, good linearity, fast response and so on. When the input signal is zero, the servo motor is in the micro vibration state, and the influence of the static friction is overcome, which is beneficial to improve the stability of the servo system at low speed.
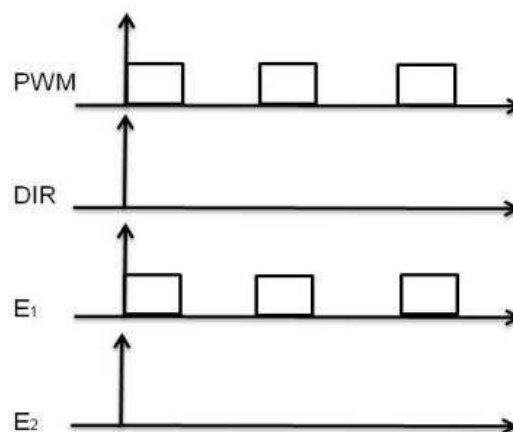
Figure 7 H bridge driver circuit and control signal waveform

5.5 Improvement of Wireless Communication Module
Wireless communication module is an important part of the robot system. After the upper computer in the field of information and make a decision, it is through the wireless communication way to command the robot car on the ground motion. In the game, each team can only have a transmitter, and each robot has a receiving module. The transmitter sends a command to the robot car on the field at a specific frequency in the form of a broadcast. In the original 5:5 system, with the British team long company wireless transceiver module BIM -433/418.

5.6 Performance Characteristics of NRF2401

NRF2401 chip is a new generation of short distance wireless communication scheme for NORDIC wireless applications for 2.4GHZ wireless applications. NNF2401 uses GFSK modulation and demodulation technology optimization, 125 channel variable, the highest rate of up to IM bps, better than Bluetooth, with high data throughput, CRC built-in hardware circuit and multipoint communication control, especially for FIRA point to multipoint wireless communication; transmitting power, frequency and other parameters all can be programmed by software set chip; set up a special internal regulator circuit, use a variety of power including the communication effect of DC/CD switching power supply has very good; each chip can be set up by the software of 40hit address, the address of the machine can only receive the output data (providing an interrupt, easy programming tips); its working voltage range of 1.9~3.6V, the power consumption is very small, in the transmission power of the −sd bm, the working current of only 10.5mA, the current received as long as 18mA. This mainly has four working modes, they can be set up through the PWRUP, CE, CS three pin. Table 1 a 3 gives the corresponding relationship between the working mode and the signal setting.

Table 1 nRF2401 Working mode

Working mode	PWR-UP	CE	CS
Send/Receive	1	1	0
Configure	1	0	1
Free	1	0	0
Shutdown	0	X	X

In addition, nRF2401 is used in transmitting / receiving data. It is pointed out that the transceiver mode can be divided into two modes: Burst mode and Direct mode. Shock Burst technology used in first in first out stack area so that the data can be from MCU low-speed input, but high speed launch out 1MbPs can save energy. So, using a low-speed MCU also can achieve very high radio frequency data transmission rate. The high speed signal processing related to RF protocol is carried out in the chip, and it can reduce the energy consumption of the system.

5.7 Robot System Software

Robot system uses the C / S structure, according to the logic function of the system of the upper part of the task decomposition, parallel execution structure with interconnected two computers. In this structure, two PC can be connected by a network cable to communicate, the PCI host is responsible for driving the two camera image acquisition and the whole image target recognition, recognition frame will transmit information to the host PCZ received each frame of data information to make treatment decisions and instructions are sent in. In the implementation of the system structure, the main technical difficulties: First, multi thread technology and synchronization mechanism. In order to improve the efficiency of data processing, the system can improve the efficiency of data processing by parallel processing, which is mainly reflected in the use of the dual machine system to improve the performance of the system. However, on the micro level, the parallel idea can be realized mainly by the multi thread technology and the synchronization mechanism, the multi thread and the synchronization technology is the powerful guarantee for the data synchronization between two computers. However, multi thread is a double-edged sword, if used improperly; it will also cause the whole system to crash.

Second, real time data communication between two computers is used. Although computer interconnection technology has very mature, but in real time have very high requirements of a specific system to do work more, such as: the formulation of the choice of data communication protocol, data communication and transmission format, socket network programming technology and so on.

5.8 Multi Thread and Synchronization Mechanism

Thread is the basic unit of Windows taking advantage of the 000P Window, is the basic entity of CPU time for the program, and is the basic unit of application. The process is a resource allocation unit, which describes a program to load memory, an executing task. Each process has a thread; this thread is called the main thread. Each process consists of one or more threads in a composition, multiple threads in the same process can be shared address space and all processor resources and can execute in parallel, a thread will be independent of the other threads in a process of operation. One of the most challenging problems in writing multithreaded programs is how to make one thread work with another thread. When all the threads do not need to communicate with each other without the need for communication, the performance of the Microsoft Windows is the best. However, threads are rarely able to run operations independently in all the time. Often, a thread is created to handle a task. When this task is completed, another thread must understand the situation [11].

5.9 The Function of Intelligent Logistics Public Information Platform

The functions of intelligent logistics public information platform are mainly embodied in: (1) integration of logistics resources. The platform can integrate the information resources of each logistics information system,

complete the data exchange and information transfer among the various systems, and realize information sharing. According to the logistics informationization standard, the heterogeneous system is integrated to realize the effective integration of the scattered and different standard information resources. Effectively improve the operation efficiency of the whole supply chain and reduce the total cost of supply chain. (2) Integration of social logistics resources. To enhance the logistics enterprises and cooperation between upstream and downstream enterprises, and optimize supply chain formation, improve the utilization rate of social logistics resources and optimize social economic chain of supply chain, the straightening out, will produce good economic and social benefits.(3) logistics information service function. The main performance is to provide input, release, organization, inquiry, maintenance and other services to various logistics information. For example: latest logistics information, public information, business transaction information, vehicle service information, cargo tracking information, information consulting services, etc. (4) online trading function. Platform set of online trading, payment, supervision, query, project bidding, product display, promotion, marketing and other application as a whole, to standardize the market operation, effective integration of logistics resources, and can ensure the safety of the B2B and B2C on WEB collaboration, realize the online shopping, TV shopping and the combination of urban distribution.(5) logistics operation management function. Platform and strong control technology and security, response to the needs of customers to quickly build and integrated end-to-end logistics management functions, can be internal and external to the enterprise resources planning and management, and can be oriented to the whole process of enterprise supply chain. (6) Platform using its accumulated comprehensive and effective data, according to relevant laws and regulations, system, and scientific and reasonable classification,set up a comprehensive evaluation index system of logistics industry, the introduction of third-party guarantee organization, the logistics enterprise's economic strength, solvency and credit degree, make management benefit and development prospect of comprehensive evaluation. (7) Platform management function. The platform stipulates, controls the user access and the access to the information, maintains the normal operation of the whole system, and guarantees the data security. Security responsibility consciousness, providing consumers with the most comprehensive information, has many successful applications. The wisdom of the product traceability system which can realize the product from the raw material, processing, dating back to the whole process of finished product transportation, through the RFID radio frequency identification technology, the label card can realize the function of the read/write internal data information, the product by radio waves state and positioning information real-time transmission to the wisdom of the product traceability system, users can login the system to find the corresponding product safety traceability information. Food safety production management by login the system to the product safety problems quickly recall harmful products, prevent rapid diaspora of defective products, thereby the wisdom of through product traceability system solve the problem of product quality and safety of life, enhance consumer confidence.

5.10   Product Intelligence Traceability System

Wisdom at present, the product traceability system in food, steel, agricultural products, medicine, tobacco, and other areas of the industry played a product tracking, identification, inquiry, information collection and management of huge role, strengthened the production operator's safety responsibility consciousness, provide consumers with comprehensive information as much as possible, there are many successful applications. The wisdom of the product traceability system which can realize the product from the raw material, processing, dating back to the whole process of finished product transportation, through the RFID radio frequency identification technology, the label card can realize the function of the read/write internal data information, the product by radio waves state and positioning information real-time transmission to the wisdom of the product traceability system, users can login the system to find the corresponding product safety traceability information. Food safety production management by login the system to the product safety problems quickly recall harmful products, prevent rapid diaspora of defective products, thereby the wisdom of through product traceability system solve the problem of product quality and safety of life, enhance consumer confidence.

5.11   Visual Intelligent Logistics Scheduling Management System

Visual wisdom logistics scheduling management system is based on the computer, network, GPS, GIS, RFID and other technology and wisdom logistics concept, combined with effective management way, realize the vehicle positioning, in the process of logistics transportation monitoring, vehicle scheduling, real-time visualization monitoring management, and other functions, make the whole logistics supply chain more transparent, and realize the effective configuration of logistics resources, thus providing efficient and accurate logistics services. Logistics companies embed RFID chips in the packaging of each delivery vehicle by installing a GPS positioning system or an RFID steel electronic lock with an independent system and a power supply. Logistics companies and customers can use the login visualization intelligent logistics scheduling management system to understand the location and environment of vehicles and goods. In the process of transportation, the goods can be adjusted and deployed in a timely manner according to the customer's requirements, so as to realize real-time monitoring of the goods and prevent the loss of goods, etc. Use system accumulated data, through the establishment of the mathematical model of the logistics business,

analysis of historical data, digging, in evaluating the delivery plan for the user, estimate the delivery time, optimize logistics transport routes, shorten the intermediate links, reduce transportation time, etc. to provide decision support. Through the RFID chip on the goods, goods when loading and unloading cargo handling information automatically collected, the goods can be automatically placed, shortens the time of logistics operation and improve the operational efficiency of logistics, reduce logistics cost.

5.12   Smart Logistics Distribution Center

Wisdom logistics distribution center with advanced computer communication technology, RFID technology, GPS technology, GIS technology and so on, through scientific and rational scientific management system, using modern management methods and means, with the help of a distribution center of intelligent control and automation network, basic implementation automatic stacking machine, automatic handling of goods, products of automatic sorting, automatic stacker in-out warehouse etc. So as to realize the whole logistics operation and production automation, intelligent and networked, and realize the logistics function integration and distribution operation standardization, distribution service, distribution, distribution modernization of means, marketization of delivery organization network, distribution management, distribution management legalization. Wisdom logistics distribution center to realize real-time monitoring and real-time decision-making of the whole process of logistics, business flow, logistics, information flow, capital of comprehensive coordination, give full play to its basic function, ensure the implementation of relevant enterprises and users as a whole benefits.

Through the optimization of the management platform of Anshan, the main cost consumption has decreased obviously and the economic benefit is considerable. In 2015, the cost of sales logistics for Anshan iron and steel group decreased by 280. Through the on-line operation of the storage and transportation system and the port logistics information system, it is closely integrated with the production and marketing ERP system and eliminates many disadvantages such as the original management system information island. Automatic warehousing, automatic fitting, PDA data acquisition, greatly reducing the burden of human, tally time from three days to real-time, with the ship by the past half a day time shifts for now one second, reduce 28 hours per 3000 ton shipment time, efficiency of shipping from 29 days down to 15 days to Shanghai, reduced to 19 days to Guangzhou 33 days. At the same time, the port logistics shipping agreement, inventory, ship distribution, settlement and other business processes are optimized.

Table 2 Sales logistics cost optimization before and after comparison table

	Before optimization (in2013-2014 year)	After optimization (in2015 year)
Sale Logistic Cost (billion)	16.32	13.52
The shipping cost (billion)	6.45	5.39
Land transportation cost (billion)	5.44	4.17
The cost of trains (billion)	3.23	3.06
warehouse charges (billion)	1.2	0.9

In 2015, the company lowered the cost of production logistics for Anshan iron and steel group by 150 million. Factory at a much lower volume, through the implementation of the information system, the use of GPS systems, plant area, road restrictions range, limit driving route, measures such as optimizing trucks dispatching management, transport organization implement zero with production system, improve the utilization efficiency of the vehicle, factory, freight is down 3%, the compression in the factory the machine-team capacity by 7%, 1681.At the same time, the production units are guaranteed strict control of the freight budget.
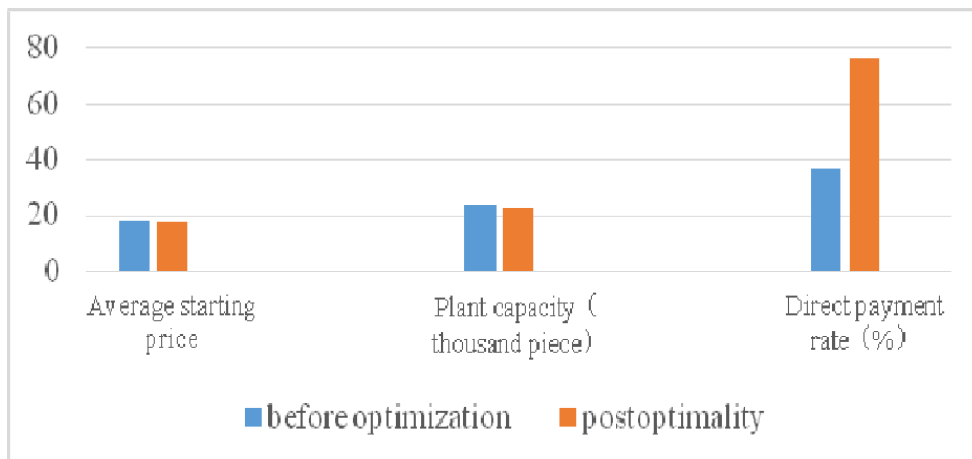

Figure 8 Reduce the cost of production logistics

In 2015, the cost of logistics and logistics cost in the factory is RMB 10070 million. Raise the direct payment rate and reduce logistics costs. Through the implementation of the information system, timely grasp the railway administrations to the information, and follow up the implementation of plan, information, equipment for unloading operation inside the plant to information such as reasonable distribution of discharge area, realize the material straight pay for unloading. In 2015, the cost of logistics was 4.1 million by raising the direct payment rate.

Table 3 The comparison table before and after the optimization of production logistics cost

	Before optimization (in2013-2014 year)	After optimization (in2015 year)
Sale Logistic Cost (billion)	13.69	12.19
The shipping cost (billion)	5.45	4.99
Land transportation cost (billion)	3.74	3.45
The cost of trains (billion)	3.1	2.58
warehouse charges (billion)	1.4	1.17

The logistics cost of logistics is 9.37 million in 2015.Through the logistics management platform optimization, increase in the volume to lift trucks, reduce the cost difference caused by the freight unit price, improve the return cycle load, the implementation of return full load transport,reduce the cost of empty, return full are up to 83%.
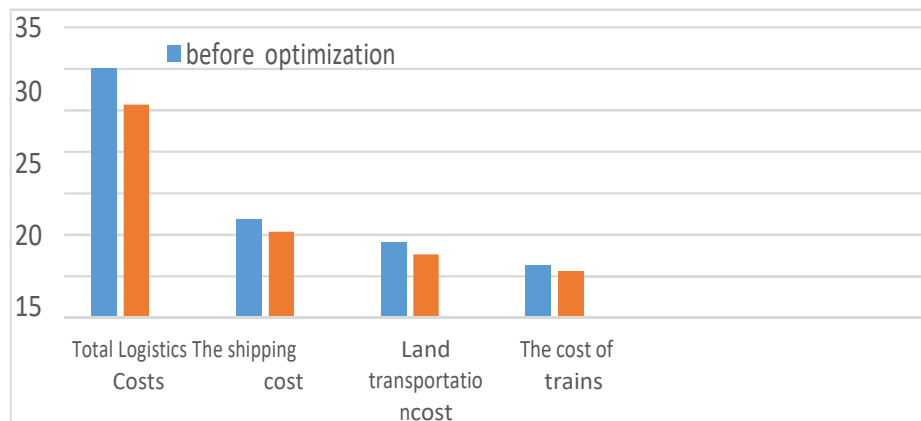
Figure 9 Total logistics cost reduced in 2015

6. SMART LOGISTICS DEVELOPMENT DIRECTION

At present, the development trend of modern logistics present globalization, multi-functional, intelligent, systematic and the characteristics of the informationization and standardization, wisdom logistics in the logistics industry in our country the application and popularization of level is still low, and larger gap with the developed country. At present, there are many problems in the construction of intelligent logistics, which are mainly reflected in the lack of effective planning and complete scientific system of logistics informatization, which leads to the partial duplication of construction. The information isolated island phenomenon is serious, can't play the comprehensive effect. The construction of logistics standardization system is not perfect; Lack of proper operation management mode, etc. In order to improve the informatization and intelligence level of logistics industry, promote the application and promotion of advanced technology in the logistics industry. Released in March 2009 of the state council of the logistics industry adjust and revitalization of planning ", clearly put forward the development of modern logistics industry has to "supported by advanced technology, integration of logistics and information into the main line", "improve the level of logistics informationization" as a main task, the "logistics public information platform project" as a key project in the enhance the level of logistics information. On June 8, 2011, the state council released eight new logistics industries, which explicitly stated the need to promote the innovation and application of logistics technology. Logistics industry to strengthen logistics new technology independent research and development, to speed up the advanced logistics equipment development, actively improve the level of logistics enterprise information management, increase the application of intelligent logistics, innovative wisdomin the field of logistics mode, implement from logistics enterprises to informatization, the wisdom of the whole logistics network, improve efficiency of logistics organization and management methods, improve the logistics resources optimization configuration and management. Let the traditional things intelligently interact with the human beings, control the logistics chain becomes easy and easy, all the information is clear and clear, the plan, control the first. When the concept of intelligent logistics is applied to the complex logistics system, it will be able to flow with the "wisdom" and the shock and surprise brought by the intelligent logistics.

All threads in the system must have access to a variety of system resources, including memory heap, serial port, file, window, and many other resources. If a thread needs to have access to its resources, other threads cannot complete their work. In turn, it is not for any one thread to access all of the resources at any time. When developing web applications, you can choose what you need from existing protocols, and used as a basis for your application. If the application needs to rely on a specific protocol, the choice is limited; however, if you want to in the Win32 platform developed from scratch an application, TCP / IP is the first protocol, at least from the sponsorship and Microsoft's ability to support this point of view is such. And the TCP eight P protocol on the client / server mode of communication technology is also very mature.

The first parameter AF is the protocol's address family. The second parameter type is the protocol of the socket type. The third parameter Protocol is the specified address family and socket type have multiple entries, you can use this field to limit transmission. Socket (SOCK-STREAM, A Feel NET), for example, is the TCP/IP protocol.

Table 4 OSI network model

Layer	Description
Application layer	Provide the corresponding interface for users, so as to provide the use of networking functions
Presentation layer	Format conversion of data
Session layer	Control communication link between two hosts
Transport layer	Provide data transmission services
Network layer	Between two hosts to provide a set of fixed access, addressing mechanism, and simultaneously responsible for the routing of data packets
Data link layer	Control of physical communication links between two hosts
Physical layer	The physical media is responsible for the form of a series of electronic signals, the outgoing data

6.1 General Communication Flow of Network Application

In TCP eight P network application, the communication of the two processes are the main mode is client / server mode (client and Server model, the customer to the worker sends administration demand, the worker gets the solicitation, offering comparing types of assistance. Client / server model established based on the following two points: first of all, the establishment of the cause of the network is network soft and hardware resources, operational capability and information inequality, need to share, thus creating has many resources hosting services and fewer resources to customers request service the non-equivalence effect [12]. Secondly, inter network communication process is completely asynchronous, mutual communication between processes does not exist between father and son, nor a shared memory buffer, hence the need for a mechanism wish to communicate between processes to establish contact, for both the data exchange provides synchronous. The client / server mode is taken in the operation process is the active request mode.
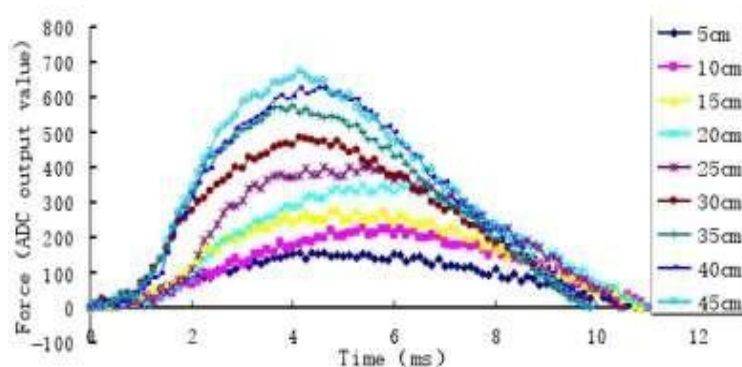

Figure 10 Curves of impact force versus time

In order to accurately and timely capture the impact effect, reaction time and other information, after the system was developed successfully, the KP&P electronic protective equipment was used as the reference to calibrate the impact effect. Through calibration test, the impact evaluation is consistent with the KP&P electronic protector, and the measurement error is less than 5%. According to the conservation of energy, the solid ball has the same mass and the free falling end has the same velocity, so the impulse is the same. The calibration of the self-developed electronic gear and KP&P electronic gear on the same hardness of the tiles on the ground, are at the center of the strike, first use 5Kg solid spheres with different height (5-46) cm on self-developed electronic gear (each height hit more than 6 times, the average), curves of impact the actual measurement of solid ball formed in different height free fall time, were selected, 0 cm, 5 cm, 10 cm, 15 cm, 20 cm, 25 cm mapping, and the height of each impulse integral acquisition value corresponding and finishing, such as shown in figure 11.
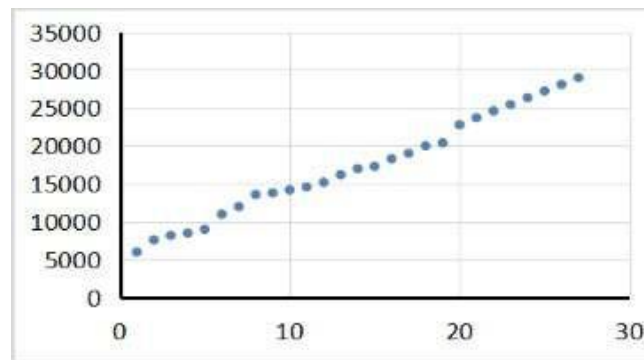
Figure 11 Relationship between the integral value of impulse and the clock synchronization

To check the clock synchronization exactness of the force data obtaining framework, this paper set up the clock synchronization execution test arrangement of the force data securing and re-enactment stage, as displayed in the figure. To guarantee the decency and dependability of the test information, this test framework presented the clock synchronization test hardware, which knew about GPS satellite standard clock signal. When running the clock synchronization framework, the test gear originally sent the expert clock as per the TEST_REQ test demand message broadcast by the radio gathering, and afterward gathered the terminal clock and savvy meter. In the wake of getting the test demand message and the expert station, the gathering terminal and the canny meter recorded current time, and sent a TEST_RESP test reaction parcel to the test have at the planned season of the test gear, and the test have recorded the appearance season of every reaction message. The clock synchronization impact of the assortment framework was assessed by looking at the timestamps of the got and reaction parcels. The test went on for 24 hours and the trial was 15 Ms. Test outcomes are displayed in Table 5.

Table 5 Clock synchronization system test results

Test item	Test result		
	Master	Acquisition terminal	Smart meter
Test number	57600	57600	57600
Test frequency	15	15	15
Average deviation	0.035	0.56	0.83
Max positive deviation	0.048	4.326	7.325
Maxnegative deviation	-0.034	-2187	-4318

Success rate is an important technical indicator of the system. However, many factors can cause problems such as meter reading exceptions, date can't be delivered to the master station, and then the success rate is reduced. Based on the research, it is divided into management, master station, communication technology and terminal equipment in four aspects: management (management includes operation and maintenance), evaluation indicators, user communication and supplier communication. It can be seen from the table, in different technologies, the test results are some differences. As the main clock of the acquisition system comes directly from the GPS satellite clock synchronization device, the synchronization error mainly depends on the accuracy of the GPS clock, and its clock accuracy can reach below ±50ns, the clock accuracy of the acquisition terminal and the PTP smart meter with high precision clock synchronization technology can reach 4.5µs and 7.4µs or less respectively, which can meet the need of clock synchronization of power information acquisition system and reduce the running cost of distribution network.

The definition of the boundary determines the scope of the system according to the main task, and then focuses on procurement, operation and maintenance, so as to reduce other work as much as possible such as monitoring work. The city power supply company should establish a monitoring center, which is responsible for the procurement, operation, maintenance and communication with the supplier. It can improve the maintenance of the establishment of reasonable units, strengthen business skills, and propose incentive measures, strengthen cooperation with operators and users, which makes the system get better cooperation. The smart grid uses advanced sensor and distillation technology to run and control the power system, which can not only improve the energy structure and utilization efficiency, but also increase economic efficiency, security and reliability of the transmission system. The energy information acquisition system is the physical basis for constructing the smart grid, which adopts advanced sensor, communication and automatic control technology to acquire and manage the data and analyze the power.

Energy information collection system is an important part of building a powerful smart grid, which can effectively improve the level of energy measurement automation, upgrade instrument readings, prepaid invoices and other marketing business. The cab can also improve the overall management, provide accurate data support for business applications, so as to meet all levels of power demand and special requirements.

The electric energy management system can greatly reduce the operation cost and loss of distribution network, and realize the electricity saving, which has good economic and social benefits.

7. CONCLUSION

The business needs of the power industry have changed, in this case, new subsystems (SSs) or information may be required. In this paper, based on SOA (service architecture), B / S (browser / server) system and enterprise service bus (ESB) applications, the information exchange of various subsystems was realized. Based on "customer centered" thinking, relevant information were collected, stored and transmitted in a timely, comprehensive, accurate and reliable manner, so as to provide accurate and fast information inquiry service for related departments and power users. SOA design and specific functions were implemented to a certain extent. As the main clock of the acquisition system comes directly from the GPS satellite clock synchronization device, the synchronization error mainly depends on the accuracy of the GPS clock, and its clock accuracy can reach below ±50ns, the clock accuracy of the acquisition terminal and the PTP smart meter with high precision clock synchronization technology can reach 4.5μs and 7.4μs or less respectively, which can meet the need of clock synchronization of power information acquisition system. In order to verify the clock synchronization accuracy of the power information acquisition system, in this paper, the clock synchronization performance test system of power information acquisition simulation platform was established, so as to greatly reduce the running cost and the loss of the distribution network and realize the electricity saving, and achieve good economic and social benefits.

Conflict of Interest
This paper has not communicated anywhere till this moment, now only it is communicated to your esteemed journal for the publication with the knowledge of all co-authors.

Ethical approval
This article does not contain any studies with human participants or animals performed by any of the authors.

Code availability
No data statement has been used

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