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The Big Data and Cloud Era Effects of E-port

Luo Ming
Department of Management, Guangdong University of Science and Technology,
99 West Lake Road, 523083, Dongguan, Guangdong, China,
Telp/fax 086 769 86211722
e-mail: luoming8654@163.com

Abstract

Big data and cloud computing is the development trend of the global information technology exciting and challenges every day now have a large amount of data and information generated, it provides an opportunity for big data analysis. Cloud computing is the essence of all computing social resources together, to realize automatic management, make all kinds of service providers and users don't need to worry about details, to focus more on their own business; it is conducive to innovation and lower costs. E-port will be all kinds of import and export business enterprise data are centralized to the public data center, If will be use of in cloud big data and computing function to analysis the information, not just stop at passive understanding of import and export trade, can also be planning, guiding, developing more efficient foreign trade and industry development planning.

Keywords: *big data, cloud computing, e-port, internet of things, integration e-commerce*

1. Introduction

China E-port was founded in 2000, is an unified information platform for Large customs clearance procedures by the general administration of customs jointly with 14 ministries jointly build of trans-department, trans-regional, trans- industry. It is sent to a centralized port public data center about the import and export information flow, capital flow and logistics such as electronic data relies on China's telecom public network, realizes related data sharing and networking verification, and to the enterprise to provide customs declaration, online payment, foreign exchange verification and export tax rebates and other "one-stop" e-government services.

Strengthen the regulation of ports, improve the ability of the government administrative law enforcement and improve customs clearance efficiency, reduce the enterprise cost is the original intention constructed the China E-port. Years of E-port construction has increased the clearance efficiency of ports, improved the trade facilitation level, perfected investment environment, thus promoting sound development of foreign trade and national economy.

By the end of the “Eleventh Five Year Plan”, Chinese private network of E-port has covered all provincial capital cities and cities with independent planning status [1], with the availability rate of backbone network reaching 99.94%; construction of disaster recovery facility in the same city and other places has yielded stage achievements. Chinese E-port Security Approval System has won the qualification of State E-governance Electronic Certification Service, with the safeguard, management, customer service, as well as operation and maintenance system of information security further improved; the availability rate of the core system is 99.93%. Chinese E-port platform has realized networking with 13 national main port management departments, 15 commercial banks as well as Hong Kong Trade and Industry Department, Macao Economic Service and Directorate-General for Taxation and Customs Union, developed 23 networking application projects, with totally 664,000 enterprises netting in, and over 1.30 million documents processed every day, which basically realized online verification and online working for key links of great clearance.

E-port is an information platform established on electronic information technology [2]. Information technology is the basis for the birth and development of E-port, therefore, the development and change of information technology will bound to bring the change of the basic environment for E-port. Especially the arrival of Big Data & cloud era, i.e. the realization of commercialization of cloud computing, will enable information technology to bring tremendous

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changes to the entire import and export trade as well as logistic industry, and will also bring great change to the entire port management and service environment.

2. Some Hotspots of the Development of Information Technology in Big Data & Cloud Era

In the past 20 years, the development of information technology has brought tremendous changes; so far, the number of netizens in China has exceeded 500 million, the number of mobile internet users has also exceeded 300,000,000. Intelligent devices such as mart phones and tablet computers have popularized digital technology to everywhere in our life, study, work and entertainment. The growing user number means that the users' demand on information resource is higher and higher; under such condition, a brand-new concept is born, which is "cloud computing". The far-reaching change on the society by the informatization of smart networking era is just beginning; new information technology will further affect, change and even overturn the original mode of life and production, thus proposing higher demand for future E-port [3].

2.1. Big data

Big data usually includes data sets with sizes beyond the ability of commonly used software tools to capture, curate, manage, and process the data within a tolerable elapsed time [4]. Big data sizes are a constantly moving target, as of 2012 ranging from a few dozen terabytes to many petabytes of data in a single data set. The target moves due to constant improvement in traditional DBMS technology as well as new databases like NoSQL and their ability to handle larger amounts of data. With this difficulty, new platforms of "big data" tools are being developed to handle various aspects of large quantities of data.

Data refers to the original datum of qualitative and quantitative description for a particular target, it include the numbers, words, symbols, graphics, images, is the most important foundation of scientific research is; the data collection, classification, the input, storage, statistical analysis, statistical test etc. are collectively called data research. the recently developed big thanks to the Internet, mobile Internet and cloud computing technology. Big data's essence is not in the "big", but more embodies the relationship with the Internet.

With the development of the Internet of things for years to come, Big data itself is actually a new information revolution led. There may be 210 billion RFID or cluster, data quantity will be larger at that time. The amount of data is just data, but it can't solve the problem, they should be into information and intelligence as well as business value from data, could be reflect the real value of big data [5].

2.2. Cloud Computing

The fundamental of cloud computing is that the operation of enterprise data center is more similar to internet by making the calculation distribute in a mass of distributed computers, instead of local computers or remote servers, which enables enterprise energy to switch over the resource into the needed applications, so as to access computers and memory system as demanded.

There are at least two factors for the emerging background of the concept cloud computing; the first one is the users' demand on large-scale calculation ability, for instance, with the rapid page view growth of social network sites and video websites, how to effectively serve for such large user group and enable them to enjoy convenient and fast service when participating has become a problem that must be solved for these websites. The second one is large companies such as Google have server clusters with powerful calculation ability; because of the demand on calculation ability on one side, and the other side can provide such calculation ability, therefore, cloud computing is born at the right moment. In 2006, Google put up "Google 102 plan", and officially proposed the concept and theory of "cloud". Later, Amazon, Microsoft, HP, Yahoo, Intel, IBM, Alibaba and Tencent all announced their own "cloud plan", cloud security, cloud memory, internal cloud, external cloudy, public cloud and private cloud…a cluster of dazzling concepts ceaselessly shock people's nerves [6].

The ultimate goal of cloud computing is to provide the public with computing, service and application as a kind of public facility, so as to enable people to make use of computer resources just like water, electricity, gas and phones. In the computing, applications with large correlation with E-port are:

a) SAAS (Software as a s service)

With this kind of cloud computing, the program can be transmitted to hundreds of thousands users through browsers. In the users' eye, it can save the expenses on servers and software authorization; from the suppliers' viewpoint, this only needs to maintain one program, which can reduce costs.

b) Commercial Service Platform

This kind of cloud computing provides a platform for the interaction between users and suppliers. For instance, a user's personal expense management system can manage his/her expense and coordinate various services subscribed in accordance with the user's settings.

c) Internet Integration

It integrates companies providing similar services to facilitate the users to compare and select their service suppliers.

3. Impact and Importance of Big Data & Cloud Era on E-port

Technology framework of E-port cloud platform Business service platform framework around the data and the end user, information technology and Internet development has three trends: the first application will be the flood Internet. The flood Internet is ordering information and services through the technology and method in the calculation of current may be passed between equipment, communications equipment, machines, people and delivery network, including the Internet, networking, network technology and equipment related to artificial intelligence. Second, industry will be vertical integration. The more close to the end user's company will have more say in the industrial chain. Third, the data will be assets.

Flood the Internet is a important way of collecting data, without extensive application of flood Internet, the company is difficult to get the user's behavior data;

Use level, industry vertical integration trend in the data gathered by a large number of user data, closer to the user, a better understanding of users, to provide more appropriate services;

Data become assets more emphasis on strategic significance.

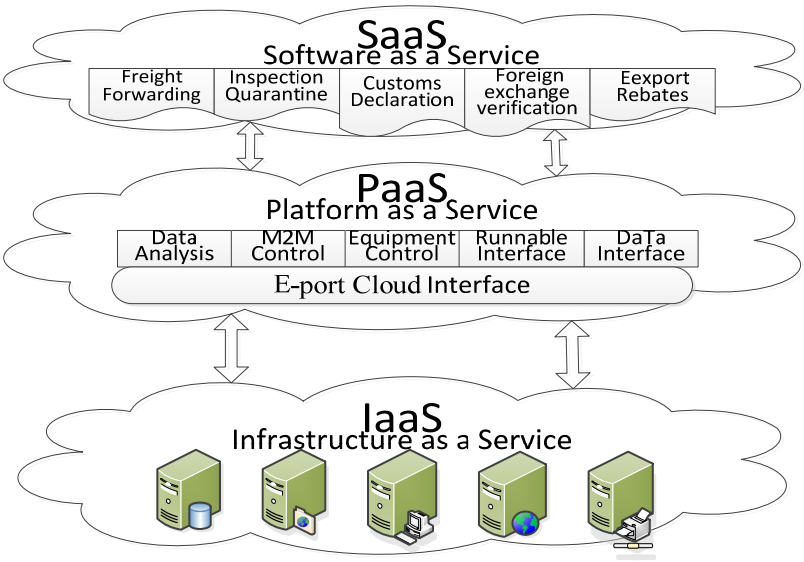

Figure 1. E-port Technology Service Platform Frame-work

4. Business framework of E-port cloud platform

The e-port system requirements on big data & cloud era:

The high-performance. The system demand is the high concurrency for speaking, reading and writing. For example high concurrency, real-time dynamic access and update the data.

The huge-storage. The system demand is the High-efficiency for huge amounts of data storage and access requirements. Such as a SNS networks, the efficient real-time massive amounts of customer information storage and query.

The high-Scalability and high-availability . The system demand is need to have rapid lateral extension ability and provide 7*24 hours service.

a) Software as a service (SaaS): The import and export traders use applications, but does not control the operating system, hardware or the operate the network infrastructure. It is the basis of a service concept, Suppliers to provide software services for customers in the form of lease instead of selling, more common pattern is to provide a set of account password.

b) Platform as a service (PaaS): Platform is usually the application infrastructure. The import and export business is able to use host by application, they control operation application environment (also with main machine control), but does not control the operating system, hardware or the network infrastructure of operation.

E-port is completely qualified to become the preferred the social service platform of Integration Electronic Commerce, so as to provide services for enterprises in terms of demand on security, credit management and settlement payments in E-commerce process.

The ecosystem of Integration Electronic Commerce consists of collaboration between enterprises, enterprise supply chain and social public service organizations. Its development will inevitably hasten a brand-new management of enterprise social credit as well as related security and financial services. With the help of Integration Electronic Commerce service association, social public services will help enterprises to cope with opportunities and challenges. On-line management service will help enterprises to link up with Integration Electronic Commerce service.

E-port as a public information platform, the great demand on the information procession center in Internet of Things is a development orientation worthy of researching. It is to establish public platform; it is unnecessary to build platform for import and export, it only needs to bear the expenses for readers and read signs of Internet of Things, and pay relevant corresponding expenses. GPS vehicle localization and video surveillance are used most under such mode. For the customers, the platform establishing costs is shared equally, therefore, the building costs is reduced to the greatest extent.

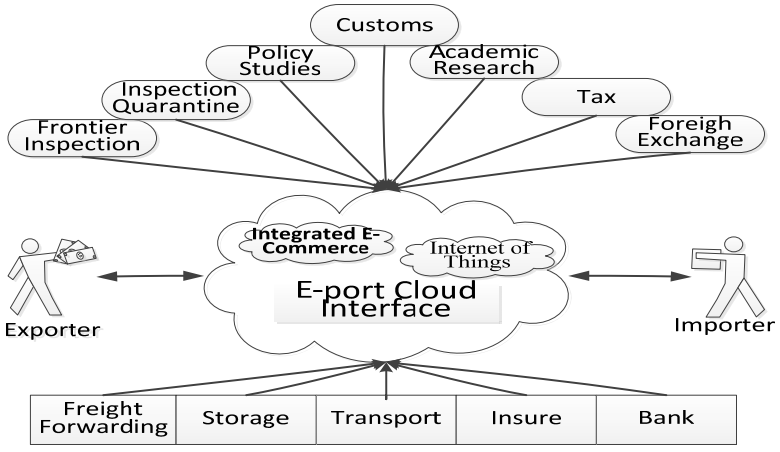

Figure 2. E- port Business Service Platform Frame-work

c) Infrastructure as a service (IaaS): The import and export business is able to use "basic computing resources", such as processing power, storage space and network components or middleware. They can control the operating system, storage space, deployed applications, and network components (such as firewalls, load balancers, etc.), but does not control the cloud infrastructure.

5. Opportunities of E-port and Coping with Them

The changes brought by the development speed of information technology under Big Data & cloud era has huge and profound influence, which is both a tremendous development opportunity and challenge for platforms based on information technology such as E-port. Only focusing on current technical feasibility and current political pattern of information to make development decision will not only have high implementation costs, but also have the risk that new technology development substitutes existing achievements. Therefore, in the era of information revolution and port ecosystem transformation, we should sufficiently take into consideration the development factors of new technologies, and define the issues from larger scale and higher layer, so as to keep perspectiveness and overall concept strategically, thus directly orientating the overall development goal in the future. Specifically, it can be deployed in the following three aspects:

a) Top Layer Infrastructure

Internet of Things and Integration Electronic Commerce need transmission and exchange of numerous data; although common means of data transmission can also realize simple need of data transmission, for enterprises, the transmission of key business data needs reliable and authenticable data transmission platform with high efficiency and high security.

In addition, CA system complying with national laws and its relevant supporting authentication services are the infrastructure of the security for E-commerce; enterprises' demand on these respects will rapidly increase in future. In mobile application, there will be also large demand in the security guarantee of information and the authentication of legal effectiveness of operation.

b) Building of Commercial Supporting Platform

In face of the informatization tide of small and medium-sized enterprises caused by cloud computing and Integration Electronic Commerce, the market's demand on social public service platforms with low costs and high reliability will grow rapidly; because of the mandatory of customs supervision, high reliability and security of governmental information system, combined with its advantage of being familiar with import & export business, E-port is completely qualified to participate in or cooperate to participate in platform construction, so as to build a loose service platform with SAAS as the core, a social public service platform including Internet of Things and Integration Electronic Commerce. Meanwhile, various services needed by enterprises can be conducted on the basis of this platform to encourage enterprises to conduct business flow, data transmission and trust business, so as to cultivate enterprises' recognition and trust for E-port, a national brand, thus preparing for future development.

Client side platforms of occupation desktop and hand-held terminal are also important components of commercial platforms; with killer application of pre-input as the entry point, they will finally occupy the united integration connection system realizing various informatization service resources of port at each operation personnel at the ports, so as to finally become a national platform of industrial chain integration, thus forming a distribution platform of informatization service similar to itunes. Currently, quickpass system has laid sound foundation in this respect; which can become the basis of promoting and developing the rudiment.

Operating system platform of mobile devices is undergoing a fierce competition stage; currently, it seems that and rid platform, promoted by Google, is more suitable to become the hand-held terminal of logistic industry because of its open source and open platform support, which has larger potential development in future.

6. Management System and Benefit Distribution Pattern

Overall arrangement shall be conducted in advance with elaborate consideration to design the benefit distribution pattern and management system of each construction party participating in under new business mode in future new technological conditions. Since the new operation mode caused by current new technological development just begins, the construction thoughts and modes at various places haven't formed. Therefore, we should hold fast to the opportunity to initiatively guide the cooperation mode of local E-port as well as other information platform by controlling key technologies and standards, so as to define the rights and obligations of central and local governments. The management concept of chain operation

should be referenced to build sustainable and controllable construction mode with long-term effectiveness to form path dependence.

7. Conclusion

E-port and cloud computing are two differ- rent concepts emerging in recent years. Although they are not mutually subordinated, there are close connections between them.

Both E-port and cloud computing are based on Internet; so we can say the Internet is a link connecting them mutually. Human beings are advancing gradually from the internet mode of accumulative information search to cloud computing mode which can judge information intelligence. Moreover, such information intelligence is conducted with the combination of different information carriers. Internet teaches people how to read information, while E-port teaches import & export and logistic enterprises to use information technology; therefore, E-port will bound to be a large scale information computing system.

Essentially, cloud computing is a computing platform used for numerous data procession; therefore, clouding computing technology is one of the technology category covered by E-port. With the development of E-port, future E-port will inevitably generate numerous data, while it will be difficult for traditional hardware frame server to cater to data management and procession. If cloud computing is applied to the transmission layer and application layer of E-port, the E-port with cloud computing will improve the operation efficiency to a great extent.

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