Research and Application of Agricultural Science and Technology Information Resources Sharing Technology Based on Cloud Computing

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Abstract: With the development of virtualization technology and cloud computing technology, these have been closely related to people. The main topic of this paper is how to apply cloud computing to agricultural resources service platform, so that people can enjoy the convenience of cloud computing technology and improve the ability of cloud services. This paper analyses the application prospects of cloud computing in agricultural science and technology sharing service platform, so that people can share the convenience of science and technology. This paper studies the application of key technologies in the co-construction of scientific and technological information resources and puts forward a service platform for agricultural science and technology sharing based on cloud computing.

1. Introduction

With the development of computer and network, the degree of rural informatization has been greatly improved. People's demand for information acquisition and processing is increasing. Agricultural science and technology information service has been constructed everywhere[1-2]. Users can make full use of information resources through information sharing. This can reduce the cost of agricultural information[3]. However, due to the limitations of various reasons, it is difficult to achieve the unification of technology and storage because of the lack of planning and management in the establishment of application systems and data. They usually develop and design information systems according to their own needs. This leads to more information systems and scattered resources, resulting in poor information integration and global application. This leads to heterogeneous information. It is not only manifested in different hardware and software systems[4], but also in different data access technologies. Structures and even semantics may vary depending on the data schema. The processing of information in different systems will result in incompatibility of users' rights, leading to the failure to provide one-stop services. Different platforms, different information, different forms of existence and different ways of access make it difficult to share information. At the same time, the problem of information overload is also serious when obtaining agricultural information[5]. Users are more difficult to express their needs and do not know how to obtain effective resources[6]. At the same time, users cannot absorb active information and acquired information in time. It usually takes a lot of time, but the harvest is small.

In view of the above problems, this paper puts forward the key technology research of agricultural science and technology information resources sharing based on cloud computing. According to the problems of insufficient agricultural information resources and lack of individuation in the current Internet, cloud computing technology and methods are used to study, so as to explore a new scheme of agricultural information resources sharing.

2. Cloud computing

Cloud computing is a unification of ideas and methods, not a specific calculation. The main purpose is to integrate and utilize the available resources on the network to form a new model. Its core is virtualization and dynamic. Computing tasks are mainly integrated into computer resources, and storage space and information services are calculated according to needs[7]. Usually a secure storage center is established to ensure data security through unified authority. This technology saves

cost, improves the ability of integration of operation level and information, further realizes resource sharing, and reduces the use of data links[8], so as to meet the personalized needs of users. Cloud computing service model has three levels of services, such as infrastructure[9], platform and software, and the relationship between users and providers of this service is different. It can also be divided into public cloud, hybrid cloud and private cloud[10]. Figure 1 shows the cloud computing platform.

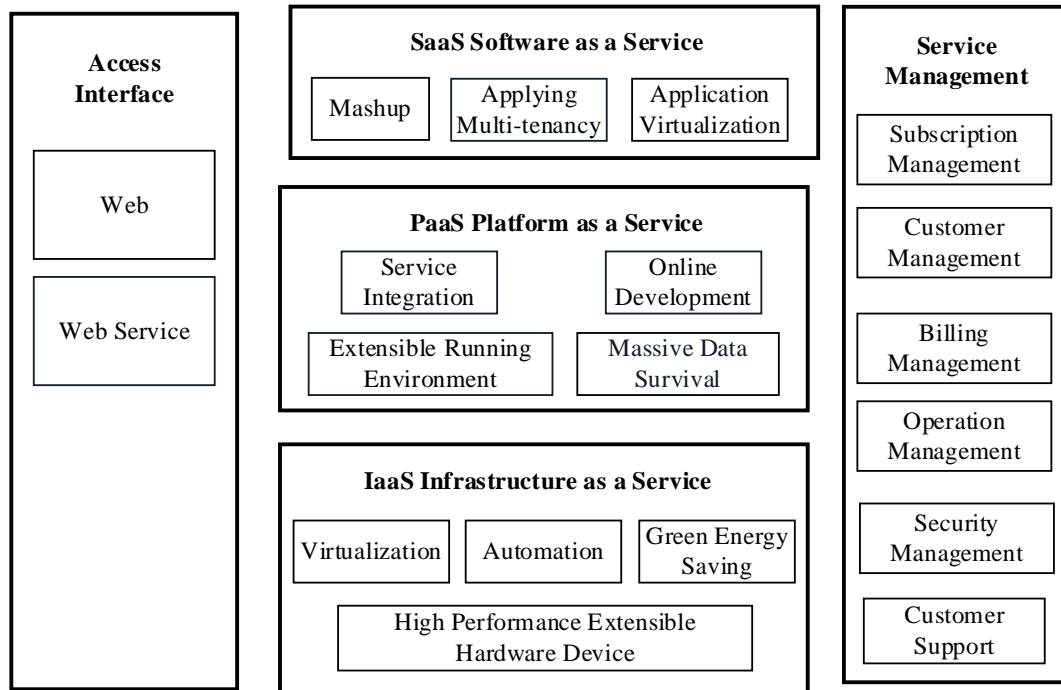| Access Interface	SaaS Software as a Service			Service Management
Web	Mashup	Applying Multi-tenancy	Application Virtualization	Subscription Management
	PaaS Platform as a Service			Customer Management
Web Service	Service Integration		Online Development	Billing Management
	Extensible Running Environment		Massive Data Survival	Operation Management
	IaaS Infrastructure as a Service			Security Management
	Virtualization	Automation	Green Energy Saving	Customer Support
	High Performance Extensible Hardware Device			

Figure 1 Cloud Computing Platform

At present, the technology sharing platform has its limitations. Although sharing can be achieved to some extent, the platforms are isolated. Under the traditional network, it is difficult to share resources across different fields and disciplines, and resources cannot be shared in a wide area, resulting in waste of local resources. Cloud computing, as a new mode, brings opportunities to science and technology reform, which has great significance. There are two main points: first, it can extend the meaning of sharing and improve theory and practice. With the impact of social development, society attaches importance to scientific and technological innovation, and resource sharing needs to be strengthened. Recently, with the continuous innovation of sharing theory, it is necessary to explore a sharing mode that meets the requirements of large data. Cloud computing meets the requirements of science and technology for sharing. As a new development point, cloud computing can seek the agricultural sharing service mode. It is not only the development of current sharing connotation and depth, but also the application of advanced technology, which has epoch-making significance for resource sharing.

For the mode of integrated services, how to promote shared services, we need to include scientific and technological resources, also need to achieve resource sharing, incubate results, serve the economy and society, and promote the development of science and technology. With the arrival of big data, a large amount of information has been shared in a wide area. Cloud computing needs to integrate traditional platforms and design a shared service model to meet the trend, so as to promote service change.

3. Agricultural science and technology resources

Agricultural science and technology information is one kind of science and technology information. Generally speaking, there is a distinction between broad sense and narrow sense. Agricultural science and technology information is usually a variety of agricultural science and technology activities, which need to be recorded on the carrier for the transmission and sharing of

information sets. In addition to collections, this information usually includes some other related information, such as science and technology management, policy information and so on. In a narrow sense, it is used to feed back the scientific achievements and the latest developments in the field of agriculture, which is the same as natural science and agricultural economy. It can be used as a source of information, with objectivity, public welfare, long-term accumulation asymmetry, resources and other characteristics. Besides, it has other characteristics: first, authoritativeness, because this agricultural information comes from agricultural production or research and development at the grass-roots level, and usually works. For raw materials, it is usually authoritative. Secondly, the frontier of agricultural information mostly presents the new progress and new trends of agricultural science. Its information content is incomparable with the general literature. It provides new experimental reference in time to guide market decision-making. Again, because of the long production cycle, natural influence and complex process, agricultural information is widely distributed, and its information value is limited and dispersed. Subsequently, because of the different links of agricultural production, different requirements for water, fertilizer, fertilizer and production season in different regions, the information of agricultural science and technology is also different. Usually, accurate information cannot be obtained in a short time, and the timeliness is obvious. Finally, there is a comprehensive relationship among all the information. One kind of information cannot exist independently. Most of it is information synthesis. Especially for agricultural information theory, it involves a wide range of fields. Because crop growth depends on soil, farmland management and so on, it is necessary to consider the factors that restrict its development comprehensively, take measures according to local conditions, and give full consideration to the obtained measures.

Agricultural information system has the following problems: First, all kinds of agricultural information are distributed in different databases and different professional websites. Because of different resource retrieval systems, their styles are different. Often users spend time and energy searching information. They need to master different retrieval technologies to make full use of resources. However, users often feel that in the process of searching resources, they often feel that the process is tedious. Because of the different design and deployment of the system, there is no communication between the systems. Besides, there is no unified standard and system between agricultural information. Secondly, agricultural information system only provides agricultural science and technology information, usually based on keyword search. There may be problems in word matching. Users need to change queries to obtain the necessary information, and then the system lacks the ability of association, resulting in inefficiency. Finally, the service mode of agricultural information system is usually single, and it can only provide one-way information service mode, but cannot distinguish the needs of users, nor can it adjust the characteristics of users, thus unable to achieve the personalized needs of users.

4. Key Technologies

In order to meet the needs of agricultural science and technology resources with huge data and numerous services, we use cloud construction to realize the sharing platform of science and technology resources information. On the one hand, this meets the framework of science and technology system, on the other hand, this system has strong compatibility and meets the future development. According to the characteristics of science and technology cloud, we propose a cloud platform construction model that uses cloud computing to obtain services such as mass storage and data retrieval. The service architecture it needs is shown in Figure 2.

On the one hand, this model improves the efficiency of resources, on the other hand, it uses virtualization technology to achieve integration, and further expands the service flexibility. Therefore, cloud computing can not only integrate scientific and technological resources, but also provide a new mode. This service mode usually includes the design of system architecture, but also compatible services, which can be development-oriented and has strong flexibility.
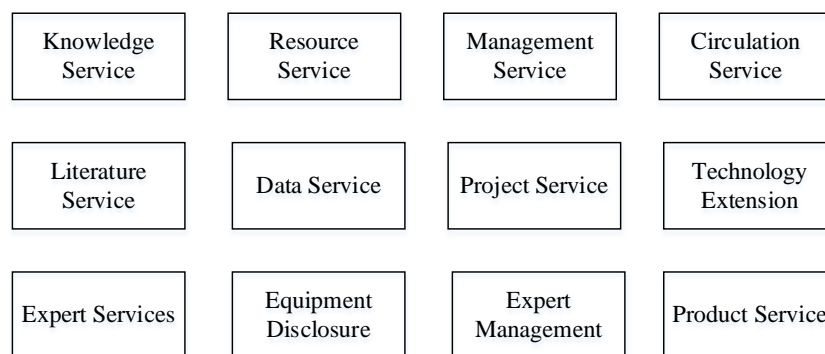
Knowledge Service	Resource Service	Management Service	Circulation Service
Literature Service	Data Service	Project Service	Technology Extension
Expert Services	Equipment Disclosure	Expert Management	Product Service

Figure 2 Service Architecture

5. Conclusion

Because of the popularity of cloud computing technology, people are building more and more cloud platforms. At the same time, the resources of science and technology departments are becoming more and more perfect. How to build an agricultural information technology cloud sharing platform is a new research direction. How to get the information users need more quickly will become the focus of the next research.

Acknowledgement

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