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Research on Intelligent Technology Management and Service Platform

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Abstract: In recent years, there are some problems in science and technology management, such as untimely task supervision and independent information system, which makes it difficult to achieve accurate, quantitative and standardized management. The storage of scientific research test data is scattered, and there are many deficiencies in the management, promotion and use of existing intellectual property. In this paper, on the basis of the knowledge economy, intelligence economy under the conditions of knowledge management concept and cutting-edge technology, technology management and service management related data, information, knowledge, method of blend together. Based on science and technology management, knowledge management as the core of management and service platform of science and technology technical route, main function, construction principles and standards. In order to realize the management systematization of science and technology, intelligent, better educated, multi-level and multi-angle application services.

Keywords: Knowledge management, demand, science and technology management, information services.

1 Introduction

With the promotion of scientific literacy, the China Association for Science and Technology, the Ministry of Science and Technology and other relevant departments formulated the Outline of the National Scientific Literacy Action Plan. It is proposed that the scientific quality of the public in China should reach the level of major developed countries at the beginning of the 21st century by 2020. It also calls for the scientific quality of the whole people to be included in the important work agenda of the CPC Central Committee, the State Council and Party committees and governments at all levels [Zhang and Zhao (2010)].

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2 The goal and characteristics of technology management and service platform construction

At present, science and technology management is faced with the problems of discontinuity of process and independence of relevant information system. The scientific research data is faced with the shortage of storage dispersion and the loss of scientific research experience and knowledge. Therefore, it is necessary to establish organizational structure model and task model of science and technology management. This requires the collection of local demands for science and technology management and service, and the aggregation of advanced technologies such as process modeling, data convergence, semantic analysis, knowledge base and information security according to the guidelines for the construction of science and technology management information system. By integrating existing related business systems and data, development with science and technology as the core of management and service, satisfy the standardized management of scientific and technological achievements, safe and reliable platform for the management of science and technology support [Wang (2013)].

The platform is a collaborative working platform for science and technology business with science and technology management as the main line and knowledge management as a core. Its design features include:

1) It can realize the comprehensive science and technology project management, and knowledge management. It is not only achieved the traditional knowledge management, but also made full use of the knowledge, through the procedural knowledge gathering and application, support business activities, to support decision making.

2) It is closely related to the business system of science and technology management. Through data analysis and mining to explore and solve practical problems, we can combine with the business.

3 Implementation of intelligent technology management and service platform

The construction of science and technology management and information service platform is to establish a unified and standardized management system of science and technology information resources. On this basis, it builds a technology management and information service platform that can support the business process of scientific research, provide information services with rich content and diverse forms, and meet personalized needs [Ni (2008)]. The construction of technology management and service platform is an integrated system engineering. In the construction process, middleware framework, customization and personalized development are combined. The scientific research business process, data system and knowledge system will be closely combined in the implementation process. It is around the business process to achieve a variety of data, information, knowledge correlation and analysis operations [Zeng (2019)].

First of all, it is necessary to establish a process-based, visual and standardized scientific research management system. It includes information management, process management, scientific research performance management and result management of scientific and technological projects such as new products, new materials and new technology research. Eventually to scientific research project management as the main line of scientific research task.

Secondly, it is necessary to establish a descriptive index system that comprehensively reflects scientific management, scientific research data and knowledge base. Taking data integration management as the core, semantic and metadata system is constructed. It realizes the normal operation of the whole process from metadata management, data collection, data integration and processing, query analysis, publishing and sharing to information service and push. And through the service system constantly, high quality embodies the strategic significance of knowledge management.

It is necessary for the technology management and service platform to be flexible, robust and flexible on demand [Deng (2010)]. An on-demand operating environment ensures business flexibility, simplified IT management, and appropriate resiliency. The following figure is the reference technical framework model for the on-demand operating environment.

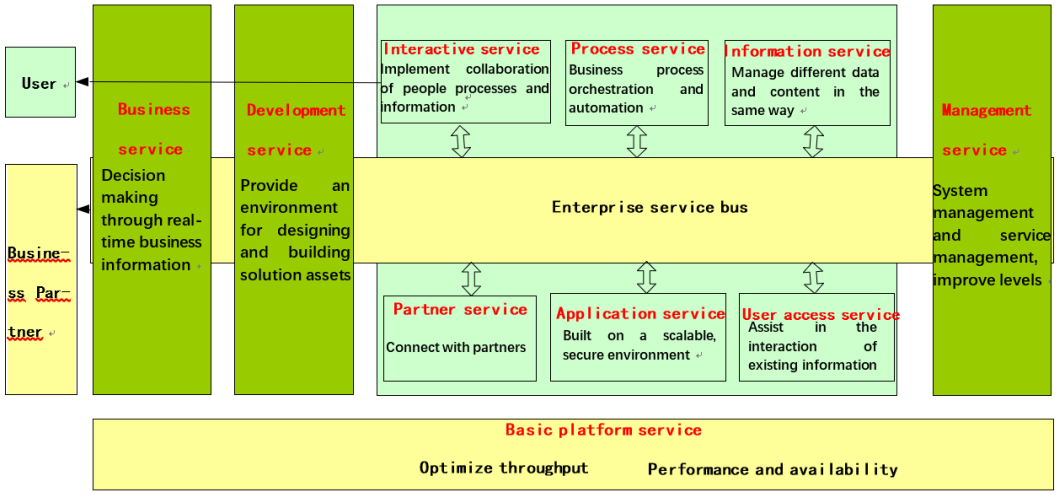

Figure 1: A reference technical framework model for an on-demand operating environment

An on-demand operating environment is an SOA based technology framework "reference model" in which services conform to the principles of a layered technology framework that clearly defines the set of services required. It includes not only functional services but also operational services.

Technology management and information service platform, using C/S and B/S combined system architecture development and construction. The platform can realize a variety of different types of applications, including flexible process management, information release, query, statistics and analysis functions, as well as multi-source, multi-granularity data, information integration, management and processing of unstructured multimedia data, and knowledge management. It can meet the needs of current and future research work.

In addition, the construction of technology management and service platform needs to integrate various technologies. Such as science and technology management system of process technology, the semantics of the data integration technology, knowledge management, knowledge engineering and practical technology, etc. It demands research

found that science and technology management and service platform should be made in order to streamline data management as the core of science and technology integration, the intelligent information system of knowledge. The key point is the integration of process, information resource and service, and the integration of other related management functions and intelligent analysis and processing functions such as data analysis and mining [Chen, Feng, Zhang et al. (2019)]. The functional structure of the system is shown in the Fig. 2.

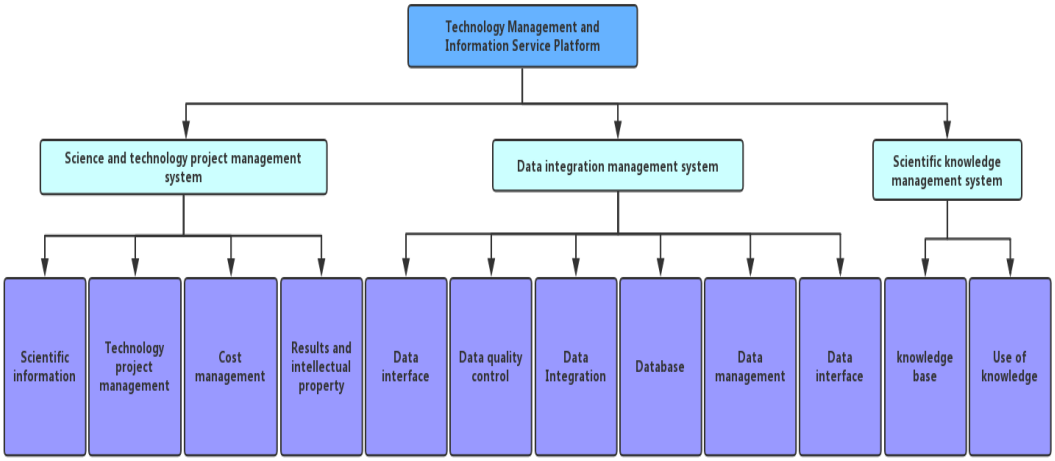

Figure 2: The functional structure of the system

4 Platform technology service features

The technology management and service platform can realize the functions of semantic retrieval, report generation, content check, and knowledge dynamic association of technology management information.

1) Information Semantic Retrieval Subsystem:

The basic operations of querying and browsing data, information and knowledge in the scientific and technological information resource library are realized quickly and conveniently. It mainly includes keyword search, full-text search, content search, and semantic search.

2) Management information report generation subsystem:

It makes use of the data, information and knowledge in the science and technology information database to carry out statistical analysis of various topics, report generation and other basic operations. It mainly includes time, project, content, personnel, results, statistical analysis and report generation of multiple subjects, statistical report of association relationship between scientific and technological achievements and projects, multidimensional analysis, etc.

3) Information content check subsystem:

It is aimed at the project approval, achievement declaration, intellectual property management and other re-inspection needs of new scientific and technological product development and decision-making needs of technology research and development layout.

It realizes the checking and comparative analysis of specific technical content and technical innovation. It also provides retrieval to avoid duplication of declared items and comparative analysis of similarity between content and technical points. This is conducive to technological innovation and knowledge inheritance [Wu, Ji and Luo (2007)].

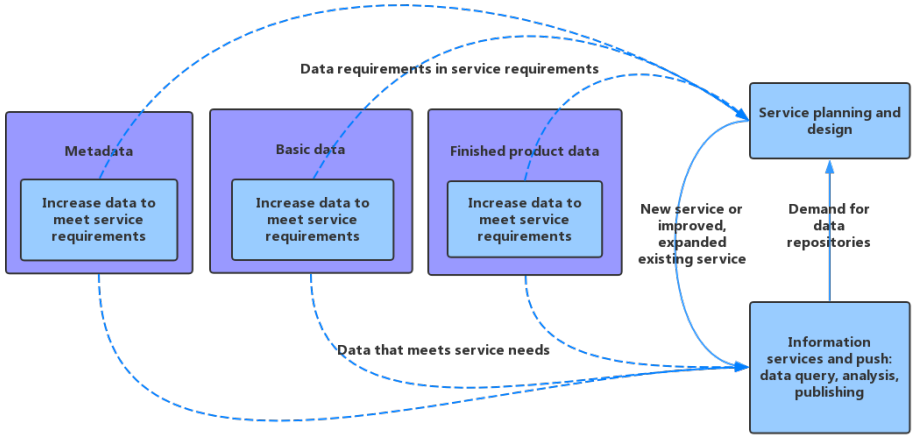

Figure 3: Service process

4) Information resource dynamic correlation subsystem:

It can realize the organic integration of scientific and technological resources such as data, information and knowledge with the research and development of new products and technologies. It also enables dynamic correlation and active push of data, information, knowledge and project management content. This provides an associated knowledge reference for problem solving.

The platform is data-centric. It forms the support of science and technology management through the whole process of data resource description and location, collection and integration, and processing [Liang (2007)]. "Service for purpose" is a process that includes service design and delivery, active management and close connection with data throughout, as shown in the Fig. 3.

The first is the planning and design of services. It manages the resource process through the planning and design of services [Zhao, Zhao, Wang et al. (2009)]. On the one hand, service demands are collected, corresponding designs are made, and provided to users through service and push links, so as to realize the expansion and personalization of knowledge means. On the other hand, the demand for data in the resource demand is transformed into the demand for data, and the "knowledge" production process is "required", so as to "change/extend" the knowledge production process to meet the needs of services.

5 Principles and standards of platform design

5.1 Standardization principle

The principle of standardization is an important prerequisite for data and resource sharing, integration and analysis mining, and thematic application [Hu (2010)]. In the process of system design and implementation, it is necessary to refer to the existing standards and system specific conditions of the country and region. The corresponding standardization

principles and requirements are proposed for each link within the system. It is necessary to develop and implement relevant standards to ultimately standardize system resources and data resources.

5.2 Advanced principle

In the platform design as far as possible to adopt the international advanced process technology, semantic technology, knowledge management technology, data integration exchange and analysis mining technology. In addition, the platform products with international advanced level and maturity should be selected to keep the technology advanced in a certain period of time.

5.3 Scalability principle

As the requirement of increasing the management work of science and technology and the rapid development of science and technology, the demand for science and technology management system will also change over time. To adapt to this change, the platform needs to be modified and expanded at any time to meet the requirements. Therefore, object-oriented technology, middleware technology, open SOA architecture and many other advanced platform construction software development technologies should be adopted in the design and implementation stages to improve the scalability and maintainability of the system.

5.4 Security principle

There are two aspects to platform security. First, to ensure the data acquisition and data processing process accurate, to provide a reliable basis for decision-making; Second, establish security protection mechanisms, such as access and processing permission Settings, important data confidentiality, backup, and so on. This can prevent data from being used and artificially destroyed by other illegal users [Kudyba and Diwan (2002)]. The platform shall be designed to provide a variety of security measures and means as required to prevent various illegal forms and ways of intrusion and the disclosure of confidential information. At the same time, it must have the ability of fault tolerance, fault detection, error correction and information system recovery and reconstruction [Sheng, Mao and Chen (2011)].

6 Conclusion

The research on intelligent science and technology management and service platform has strong social and economic benefits for the convergence of science and technology resources and the nationwide application and promotion. It also provides mechanism, method and technical system support for the accumulation and construction of scientific and technological resources. At the same time, the integration of science and technology resource data not only improves the utilization efficiency of resources, but also reduces the cost of resource development. In addition, the public service level of science and technology has been improved. We will be able to provide richer and higher-level scientific and technological services to the general public at a lower cost.

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