



DIGITAL LIBRARIES AND KNOWLEDGE MANAGEMENT

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Introduction

Digital Library: - In the past, global networks have usually transported textual information, but there is a growing need for these networks to transport other forms of information such as images, video, and audio. Until recently, electronic information sources served mainly specialized clients, but now these sources will be accessed by a wide range of users, ranging from computer specialists, discipline experts, engineers, and the general public, including novice computer users and students at all levels. These trends have created an emerging, important environment: digital libraries. Several US agencies, including NASA, ARPA, and NSF, have made available over the past few years a considerable amount of money to support research in this field. Other countries, including Canada, the UK, France, Italy, and the Netherlands have also invested in digital library development [1]. The digital information resources which are processed in a searchable and orderable manner like traditional libraries but working within a web environment may be seen as a digital library.

Knowledge Management:-According to OECD identifications, knowledge can be divided into four categories: know-what; know-why; know-who; and know-how. In another words, it can be explained to be understanding knowledge; tuilixing knowledge; management knowledge and technical knowledge. Some Chinese scholars added another two: timely knowledge (know-when) and position knowledge (know-where). Some information specialists put knowledge in four degrees: data; information; knowledge and wisdom. According to Dr.Qin Jian, creation of knowledge depends on moving and transferring of tacit knowledge. Among various concepts of knowledge, There are two main streams: tacit knowledge and explicit knowledge. Tacit knowledge include thinking, experiences chats, electronic meetings.... which kept in human minds and skills and shown through behaviors or performances. There are five key factors consisting of the

Tacit knowledge e.g. knowledge, mood, worship, experience and skill. Explicit knowledge mainly means that the knowledge is carried by some explicit material like characters, pictures, printed and electronic materials etc. Collections of tacit knowledge for share needs more efforts and control methods for which we often use the word KM to represent the meaning. DL and KM are strategic partners in agricultural scientific and technical innovations as many information specialists have been already aware of. Construction of DL is the need of the current information users in the 21 century and KM will hold the core position in DL. DL is an ideal digital environment in our network world. However, It would not be so efficient without effective KM. We prefer to establish KM system in agricultural research sector in order to cater accurate and useful knowledge to our scientific users. In this way, users may have knowledge sharing conditions timely, quickly and effectively.

How Can We Create Effective KM System within Digital Library Environment?

Understanding ultimate user needs

The aim of Information specialists to organize and classify documents or create metadata of network, electronic and digital resources are to help their users to get the right information they need at the right time. To clearly understand users needs is the first importance in creating helpful KM system within digital library environment.

Better agricultural knowledge capture and resource coordination

From various sources to capture useful information in different formats is really a tough work. However, librarians have to be competitive in today's information society and aware that it is a chance for them to display their advantages in KM and they should take the obligation and play as the CKO in business companies so that they may complete well the transfer of actors from librarian to knowledge manager. By using knowledge capture techniques, knowledge managers can organize knowledge for users to use. And knowledge from different sources needs reorganization. In establishing digital knowledge resources, coordination and collaboration is very much needed within agricultural information system to avoid duplication and time waste.

Metadata and domain-specific markup language

Metadata and markup language are both aimed for description of information resources. However, Metadata has been developing from MARC format to DC 15 elements and from its simple description to become a centralized functions of description, control,

structure, storage, protection etc. But it is still limited to be a subsidiary of the documents and can not help the users to dig into the contents of it. And being a librarian, we need to not only do discovery of resources, but also discovery within resources[4]. So, the XML(eXtensible markup language) which develop fast in recent years, has formed a new era of markup language. Its characteristics are mainly including: accurate description of the contents, common XML rules and grammar in order to put special mark code into original text in the digital resources and so on. These standards will assist greatly in knowledge presentation in digital libraries.

Strategic planning in establishing China agricultural digital library

China agricultural digital library initiative is launching last year. The strategic plan has been made for a systematic approach of building the digital environment for the entire agricultural research sector of the country. It will be an open and large hybrid information system of both traditional and digital collections at present. It consists of many aspects not only the information resource allocation and organization, but also processing and financial support etc. Several issues are considered in the plan and the main ones include coordination and distribution of digital resources construction; digital library Collections linking; user community participation; human resources and investment needed; and intellectual property rights. The plan will be implemented in three years to establish a primary digital library framework for future development. Coordination meetings were held several times among agricultural libraries in 2001 and 2002 from which generate more ideas from participating libraries and promote the DL development.

User Oriented KM Services

Speaking of KM, its basis is the knowledge collection, capture and classification and process, its aim is knowledge share and exchange, and its core is knowledge utilization and innovation. Like information use, the key aspects of KM are also user oriented services. Mainly include:

Knowledge research and analysis

Specialized selective dissemination of knowledge (SDK) are recommended to users or research projects for more critical and accurate knowledge delivery. "My library" service is another good choice for individual user collecting and establishing his/her own knowledge based libraries on the web.

Knowledge searching and linking

Digital knowledge databases should be established on the core fields in agricultural digital library system. Linkage of various databases and web sites will be needed and portal should be set up to 509 indicate users to access the information or knowledge needed. Knowledge managers have the responsibility to help users to search what ever information they require.

Knowledge issuing and exchanging

Within the vast knowledge sea, knowledge exchange and innovation are needed to be distributed quickly for a better share and effects. Digital libraries will provide fast communication channels and any other infrastructure for this purpose.

Knowledge resource sharing

Knowledge resource sharing is our ultimate goal in digital library knowledge management. Some primary test of this kind can be shown by China National Library's Digital Library Project and Qinghua Digital Library management systems. To set up a mutual web platform for digital libraries to manage their knowledge resources will benefit to all users from different fields and sectors. And the system follows the international and national standards which will help us to share the knowledge more easily. We are so exciting to see such systems appearing by some authorized organizations or companies in China.

Technology Support

For establishing an efficient digital library environment, many high technologies will be used including data warehousing, data mining, text mining, knowledge extraction, knowledge mapping, and information visualization etc. Besides, in order to grasp extended contents or knowledge, resource description framework (RDF) should be prepared and markup language will be the choice for this aim. And semantic web pages will be useful for understanding of knowledge.

Suggested Precautions

- To put more emphasis on knowledge values and increase its transformation into productivity;
- To establish knowledge distribution mechanism and knowledge sharing environment;
- To promote knowledge innovation in agricultural research in science and technology;

- To enhance knowledge managers capability in KM;
- To develop suitable knowledge management policies to protect intellectual property; and
- To keep and increase core competence of the agricultural libraries and information system by using both DL and KM advantages in developing our professional activities.

The progress of information technology has truly transformed every aspects of our lives throughout the world. Librarians are facing greater opportunities and challenges. I am sure that we are capable to receive more achievements in the formation of agricultural digital libraries and its knowledge management if we closely work together on it from now on.

Reference

Nabil R. Adam and Richard Holowczak , Rutgers University, CIMIC; Milton Halem and Nand Lal,NASA Goddard Space Flight Center; Yelena Yesha, UMBC/Center for Excellence in Space Data and Information Sciences. Digital Library Commission Report, 2002

Wang Lingyong, Knowledge management: theory and practice, Proceedings of Knowledge management:Opportunities and challenges for the library, May 19-22, 2002, Beijing, 27-32p.

Hu Zhihui, Discussion on the connotation and strategy of knowledge management, Proceedings of Knowledge management: Opportunities and challenges for the library, May 19-22, 2002, Beijing, 17-20p.

Zeng, Maricia Lei, Metadata and Domain-Specific markup languages: Their functions in knowledge representation in digital libraries, Proceedings of Knowledge management: Opportunities and challenges for the library, May 19-22, 2002, Beijing, 58-59.