Towards an Institutional Knowledge Repository (IKR) at IGCAR

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Abstract

Abstract. The collective acquired information of an organization is called the 'institutional knowledge'. The centralized Knowledge Repository uses standard taxonomies to consolidate information into one place allowing knowledge to be searched and retrieved with maximum efficiency and accuracy. Many organizations have realized the value of institutional knowledge and already initiated knowledge management systems that collect, store, redistribute, utilize and ultimately leverage the institutional knowledge for the benefit of the organization. All the organizations, in particular the R&D institutions like IGCAR need to build knowledge repository on its specific areas of interest. Once created, the IKR will act as a vehicle for knowledge dissemination, sharing and transfer. This paper gives a comprehensive view on building IKR at IGCAR.

Keywords: Institutional Knowledge Repository, Knowledge Management, Digital Library, Knowledge Organization

1. The knowledge organizations

Today's organizations must survive in the environment that is complex and highly competitive. The tremendous growth of information and communication technologies has made the organizations to continuously strive to improve their performance and goals. After the information explosion through Internet, organizations have become more conscious towards information management and now they are evolving as knowledge organizations. A significant challenge facing the modern organizations is how to utilize the information for overall improvement. A knowledge organization must necessarily become a learning organization so that the entire institution will learn during the daily routine and be able to adapt quickly to changing environment

2. Challenges of Knowledge Sharing

The challenging barrier for knowledge organization is that of creating a culture in which knowledge and knowledge sharing are valued and

encouraged. R&D organizations generate knowledge mainly from within the organization. Another aspect is the tapping of tacit knowledge. The knowledge that resides in expert's mind has to be recorded so that when an expert leaves the organization, his knowledge will be available for the benefit of organization. The issues to be addressed are

- Appreciation of importance of knowledge captured
- Knowledge loss while capturing
- Mechanisms for transferring and transforming knowledge

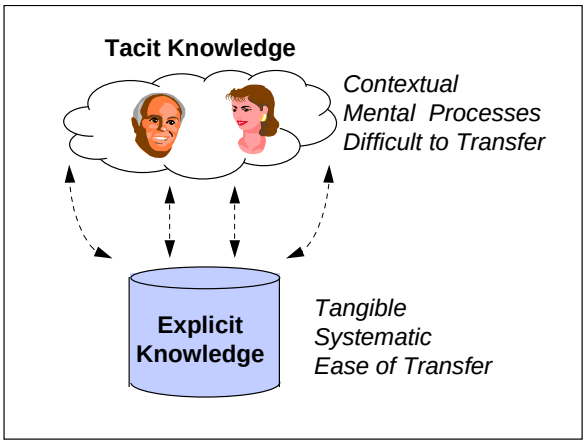

Fig 1: Types of Knowledge

3. Knowledge Resources and Acquisition

Tacit knowledge exists within the research people in either internal or external form. Internal knowledge resides within the individuals and is based on personal experience and level of intelligence. External knowledge on the other hand resides outside and manifested in different platforms. Such a type of knowledge can be captured and codified into technical reports, images and can be archived as institutional knowledge repository.

Knowledge acquisition identifies the knowledge resource and transforms it in to knowledge repository that can be used. It involves the following activities

- Identify knowledge resources
- Capturing identified knowledge
- Organizing captured knowledge
- Transferring the captured knowledge

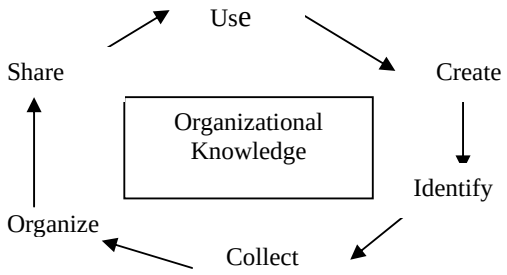

Fig 2. Organizational Knowledge Management Process

There are several issues related to knowledge acquisition. It includes identifying the relevant knowledge, managing knowledge overload, knowledge loss while capturing, procedures and guidelines for organizing and transferring knowledge etc. The particular methodology and the level of desired knowledge depends on the organizational goals and its activities.

4. Why IKR?

Organizations need to gather all the information that they need to know for their survival and then pool the captured information at a common place as a repository. The type of information include organization's accumulated operational data, its manuals and procedures, research outputs, case studies, contingency management reports etc. These are essential information that today's management needs frequently and the same has to be available for future use both in the near and far. Such an organizational information repository becomes knowledge repository when it is analyzed, adapted and used effectively for the organizational end. The repository approach of organizing and consolidating information makes it possible for all of its potential users to access it easily, and also enables information and knowledge sharing. The repository approach also makes it possible for management to organize and access information by specific area of interest, and to make it available to employees more easily in any situation.

5. Technologies of IKR

The information technology acts as an enabler for knowledge management. There are several technologies and each has got a significant role to play in building institutional knowledge repository.

5.1 Intranet, Internet

Intranets and Internets offer new ways to manage and communicate data, information and knowledge. Intranets have emerged as one of the most effective ways of sharing information and knowledge with in organizations.

5.2 Groupware

Groupware provides a means for increased collaboration and information transfer through e-mail, calendaring, contacts, project management and scheduling capabilities. It is essentially information sharing. But with IKR, groupware will be used for knowledge transfer through services like ask an expert, consult etc. Some common groupware products are Microsoft's Exchange server, Lotus Notes and GroupWise.

5.3 Intelligent Agents

The problem of information overload is becoming acute for many professionals. Intelligent agents can be trained to roam networks to select and alert users of new relevant information. Additionally they can be used to eliminate less relevant information from information feeds.

5.4 Mapping Tools

There are an increasing number of tools to develop cognitive maps or 'shared mental models'. Companies to develop future scenarios and resolve conflicting situations have used these cognitive maps. Mapping tools can represent conceptual linkages between different knowledge resources.

5.5 Document Management

Documents, and especially structured documents, are the form in which more explicit knowledge is shared. With proper annotations, indexing, highlighting etc, the documents can become knowledge repositories. Application of mapping tools and intelligent agents will help in linking documents for knowledge mapping.

6. Building Knowledge Repository at IGCAR

Knowledge management is the synergetic combination of data and information processing capacity of information technologies and the innovative capacity of human beings. The knowledge recorded in procedures, databases, reports etc are explicit type of knowledge and can be processed by knowledge management tools. Explicit knowledge can be captured or generated, preserved and disseminated for knowledge sharing. The Scientific Information and Resource Division (SIRD) has initiated IGC knowledge resource management project named as "Bodhi". This will be a centralized repository of knowledge documents of ICGAR, which will provide access to the following resources.

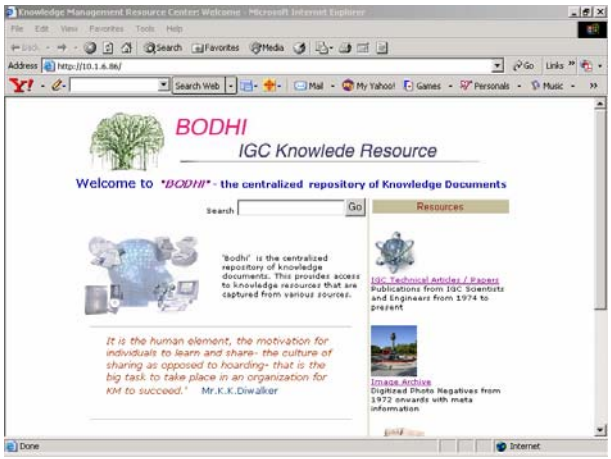

Fig 3: Home page of IGC Knowledge Resource

6.1 IGC Research Contribution

The database of articles published by IGC scientists and engineers in various conferences and journals from year 1973 onwards. Articles are classified based on major subjects. Full text access is provided to all available articles. A suitable search interface is available to search publications based on various fields like author, title, keyword, abstract etc, Author index for every author gives his full set of publication that are available in this database. Year wise listings are provided with full text link that gives the summary of publication for each year.

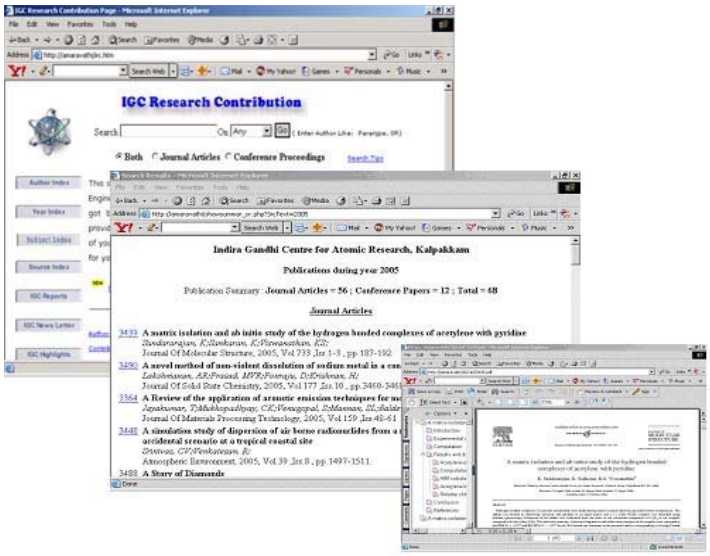

Fig 4: Year wise Publications Summary

6.2 Image Archive

A comprehensive database is being built to store the metadata of photographs belonging to various categories like milestones, VIP visits, important events, various facilities, historical events and experimental setups. All the photo negatives/photos of both color and black & white from the year 1973 onwards are being digitized and archived in Server system.The corresponding metadata information is maintained in database system with required Meta fields such as description, keywords, year, unique id etc. The image archive can be searched based on any of fields for user convenience like description, date, event, unit etc. Digitized images are linked to their respective Meta information.

6.3 IGCAR News Clips Archive

It is a repository of News clips pertaining to DAE and in particular to IGCAR activities from 1973 onwards. A bibliographic database is being created with required fields such as date, title, keywords etc. Individual news clips are being digitized and uploaded to servers and finally linked to their respective bibliographic entry. A search engine is being developed which can search news clips based on various fields such as date, year, tiles and source.

6.4 Internal Reports

Digitized versions for ICGAR Internal reports like IGC Reports, News Letters, Annual Reports, Brochures, Procedure documents and Manuals are made available

and users can search on abstract level information and access the digitized full text of the internal reports.

7. Future Plan

- *Organizing Digital Objects:* The distributed digital objects can be organized based on their subject thesaurus and establish a semantic relationship between the objects to form a conceptual network which will act as a semantic network or otherwise called as knowledge network.
- *Ask an expert service:* Users can get the answers for their questions from a subject expert through IKR. This provides a means for knowledge transfer and sharing

8. Conclusion

Knowledge management through institutional knowledge repository will create a learning organization in which knowledge will be shared and transferred among the employees in more effective manner. Appropriate information technology tools can be utilized and employees could be motivated for sharing their respective subject knowledge.

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