

# An Archetype to Sustain Knowledge Management Systems through Intranet

B. T. Sayed, Nafaâ Jabeur, and M. Aref

**Abstract**—Creation and maintenance of knowledge management systems has been recognized as an important research area. Consecutively lack of accurate results from knowledge management systems limits the organization to apply their knowledge management processes. This leads to a failure in getting the right information to the right people at the right time thus followed by a deficiency in decision making processes. An Intranet offers a powerful tool for communication and collaboration, presenting data and information, and the means that creates and shares knowledge, all in one easily accessible place. This paper proposes an archetype describing how a knowledge management system, with the support of intranet capabilities, could very much increase the accuracy of capturing, storing and retrieving knowledge based processes thereby increasing the efficiency of the system. This system will expect a critical mass of usage, by the users, for intranet to function as knowledge management systems. This prototype would lead to a design of an application that would impose creation and maintenance of an effective knowledge management system through intranet. The aim of this paper is to introduce an effective system to handle capture, store and distribute knowledge management in a form that may not lead to any failure which exists in most of the systems. The methodology used in the system would require all the employees, in the organization, to contribute the maximum to deliver the system to a successful arena. The system is still in its initial mode and thereby the authors are under the process to practically implement the ideas, as mentioned in the system, to produce satisfactory results.

**Keywords**—Knowledge Management Systems, Intranet, Methodology.

## I. INTRODUCTION

WHEN Information is lost, or not accessible, we must go ahead without it, find it, or recreate it - all wastes of resources and time. It is well known that the time spent to find

lost information is tremendous. In order to improve finding lost information or at least help making a compromise between information and time/resources, knowledge management strategies can be applied. Using systems based upon these strategies, organization can be provided with enhanced practices and increased competitive capabilities [5]. Simultaneously, an enterprise intranet is being used as little more than a communication medium for its employees and if these communications be extended to knowledge acquisition and transfer, in a modern way, will be an additional advantage to the entire enterprise. People truly are the greatest internal asset and are one of the top strategic priorities for businesses across the nation and the world today. As such, remaining intent on traditional methods of knowledge acquisition and transfer is a mistake [5]. The proposed archetype would dramatically enhance the process of capturing, storing, retrieving and sharing of knowledge thereby leading to the access of the lost or non accessible information that already exist and was hidden within the organization. Intranet based knowledge management systems should be equipped with attractive, easy to use & handle, accurate, and updated sites. These sites would be database driven and dynamic so as to accurately store, retrieve and share the knowledge on the intranet. It should be an open resource for all the employees (in terms of usage) and could be restricted based on the hierarchical level of the employees.

The remainder of this paper is as follows: Section II highlights the main features of knowledge management systems. Section III gives a short description of Intranet. Section IV presents the methodology for the implementation of this model. Section V proposes an archetype of the proposed system. Section VI highlights the benefits of the proposed system. The benefits followed by conclusion and future work is then presented. Finally the references have been cited.

## II. KNOWLEDGE MANAGEMENT SYSTEMS (KMS)

The term knowledge management (KM) is used to describe everything from the application of new technology to the harnessing of the individual capital of an organization. Tacit knowledge resides in people's brains and explicit knowledge resides in the organizational systems and documents, both electronic and on paper [5]. Both are common definitions in the KM field. Implicit knowledge is embedded within an organization's processes and procedures, products or services. Knowledge management is concerned with the exploitation

This paper is submitted on May 17, 2008 and is completely supported, sponsored by Dhofar University, Salalah, Sultanate of Oman.

B. T. Sayed is working as Lecturer at the Department of Computer Science, College of Arts and Applied Science, Dhofar University, PO Box 2509, P. Code 211, Salalah, Sultanate of Oman (phone: 00968 99494589, E-mail: b\_sayed@du.edu.om).

Nafaâ Jabeur is working as Assistant Professor at the Department of Computer Science, College of Arts and Applied Science, Dhofar University, PO Box 2509, P. Code 211, Salalah, Sultanate of Oman (phone: 00968 96275005, e-mail: nafaa\_jabeur@du.edu.om).

M. Aref is working as Lecturer at Department of Management Information Systems, College of Commerce and Business Administration, Dhofar University, PO Box 2509, P. Code 211, Salalah, Sultanate of Oman (phone: 00968 95746178, e-mail: mohammed\_aref@du.edu.om).

and development of the knowledge assets of an organization with a view to furthering the organizations objectives. The knowledge to be managed includes both explicit, document knowledge and tacit, subjective knowledge. Knowledge Management Systems "are composed of two complimentary parts: one technical, the other social". The technical component seeks to "capture, package, and distribute tangible, documented products" while the social side "enables collaboration, connection, and reflection among system users" [9]. Management entails all of these processes associated with the identification, sharing and creation of knowledge. This requires systems for the creation and maintenance of knowledge repositories, and to cultivate and facilitate the sharing of knowledge and organizational learning.

Typically the knowledge management process involves: Capture, Organization and Storage, Distribution (or better Sharing) and Application or Leverage. Knowledge Management has always been present within an organization in the sense that enterprises have wished to capture and document process, for purposes of quality, automation, or to create documented methodologies. While routine work may be adequately captured for the purposes of quality or automation, enterprises often set out to capture non-routine work processes in documented methodologies. These are an explicit exercise in knowledge management, getting the knowledge from "people who have done it" documented and available across the enterprise. This could be better improved by the usage of intranet capabilities available across the globe.

### III. INTRANET FOR KMS

In a strict technical sense an intranet is a subset of the internet and shares most of the characteristics of the internet. In addition the intranet is organizationally bounded and accessible only by users from within their organization. From a Knowledge Management perspective it is an important factor since it enables the organization to more freely share information not intended for competitors. When it comes to publishing, intranets follow the development of the web: content is to an overwhelming extent read-only and essentially provided via a centralized process where a small number of professionals are assigned the responsibility of maintaining the environment [6]. Although the importance of external contacts as sources of diverse stimuli and rich information provision are being stressed, internal communications is also vital to organizational creativity. When the people involved in information sharing all belong to the same organization and thus can be expected to share certain objectives, there is a greater incentive to cooperate. The ability to share and/or transfer knowledge within an organization and amongst its members is regarded as a fundamental KM process. The ability to effectively manage the intranet is one of the most significant factors to successful development [11]. Knowledge sharing can be greatly facilitated by the use of intranet in terms of virtual meetings, chats, email transactions, conferencing, official memorandums, etc.

### IV. METHODOLOGY

This model is based on a hybrid process involving computer specialists, who will build the system, and users, for whom the system is being built. The design therefore looks at both the human and technical aspects of knowledge management systems development. Initially a focus on human activity targeting an organization in terms of its mission, vision, problem themes, followed by the creation of a statement about what the knowledge management system will be and what it will do would be analyzed. It would then identify the entities and functions of the given problem situation that would result in the analysis of information. Finally the technical requirements of the user interface followed by the design and technical specification requirements, that would enhance the electronic workplace, of the system such as networks, computers, database, control, and other medias from where the information could be retrieved need to be scrutinized. The model integrates the use of developed components through portal prototype establishment like seamless integration of new multimedia and hypermedia technology into the knowledge management control loop, to address the topics of knowledge creation, retrieval, distribution and usage.

### V. ARCHETYPE OF THE PROPOSED SYSTEM

Assume a situation with more than 200 Personnel's, and has a constant need to keep pace with the changes in technology. Personnel are regularly challenged with identical issues and problems so a framework was put in place that would enable them to share their learning across the organization. This reduces the learning curve, resulting in better workplace practices because less time is spent trying to 're-inventing the wheel'. The personnel are exposed to better methods and procedures, which results in more effective, more efficient organization. Our Intranet based knowledge management solution will help replace paper based information systems and share knowledge across the organization, so that staff in different locations can collaborate on the same items of work, often with workflow applications that help them manage the sequence of tasks for different business processes. The system will allow organizing, store and sharing our business's knowledge and provide a platform for the staff to work as a team. It provides a framework for controlling and disseminating an organisation's knowledge assets and is designed with an aim to enable decision makers to access the information they need as quickly and easily. An authorised could post a document onto the Intranet, he/she can literally choose the rights for other users to view or edit the document, so that documents can be rigorously controlled. In the initial phase of the archetype, user requirements are analyzed and collected to set the general framework for all further activities. From here, appropriate use cases and potential models are derived.

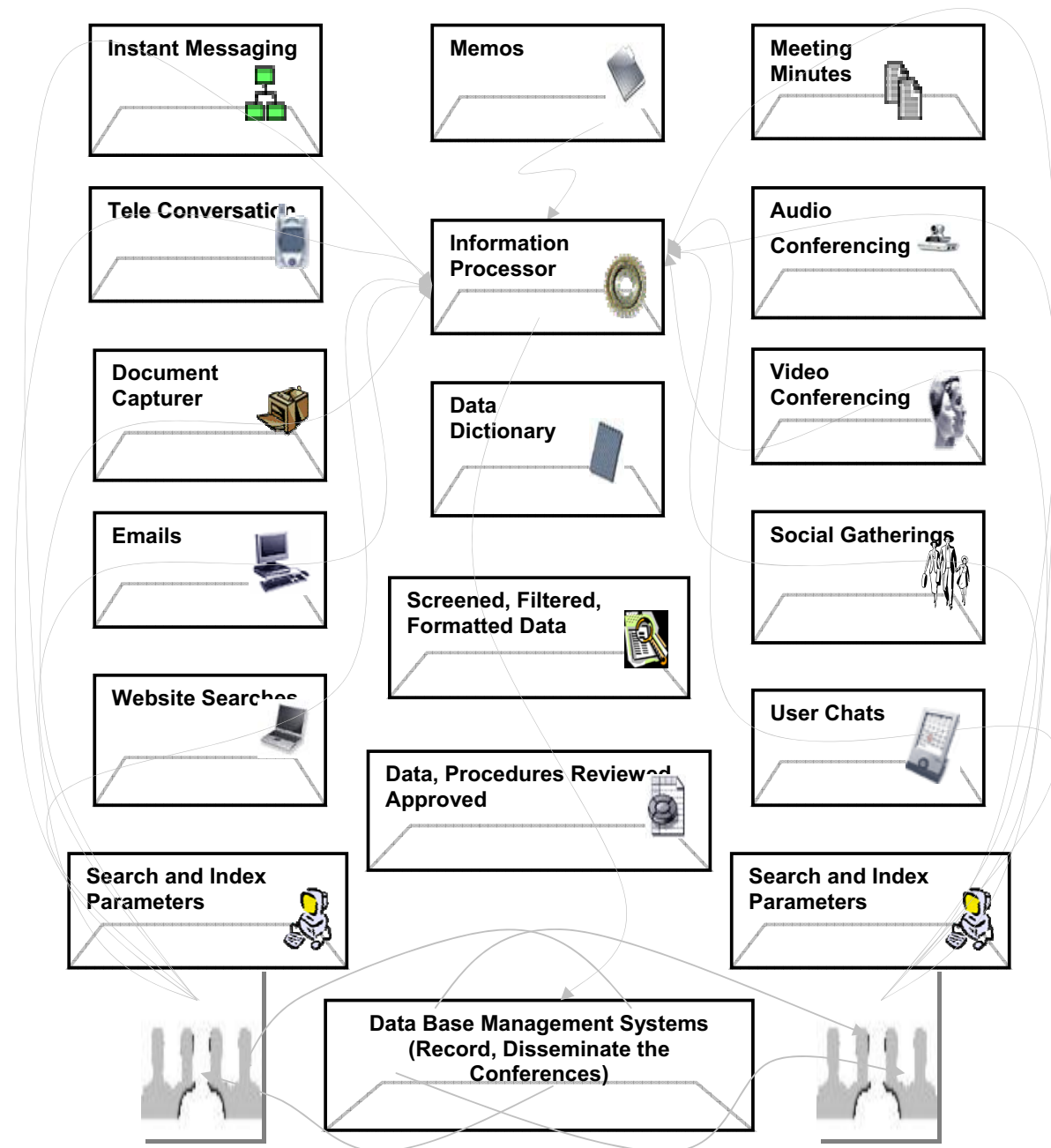
**Intranet Based Secured Electronic Workplace**

Fig. 1 An archetype of the proposed system

The model then investigates and develops the core technologies like telephonic conversation, document management, document capture, emails, website approaches, memos, meeting minutes, audio/video conferencing, social gatherings, chats that could be captured with in the environment for capturing knowledge management information and searches for feasible technical methods to

implement in accordance with the user requirements. As the users interact with each other or pass over any related information as mentioned earlier they need to consider the search and index parameters. This index and search parameters represents a formatted model of ready to use expressions and statements that could be the only input to information processor. These information will then go through

a rigorous process into the data dictionary and would be then screened, filtered, formatted as needed by the authorities for reviewing and approving prior to storing in the database management system. The database information could be used by any of the authorized personnel's in the organization based on the authorization levels. This way knowledge interaction paradigm is created and developed leading to technical information which is then integrated into application prototypes within the thematic domains of intranet services. The prototyped applications will be tested as to usability aspects together with trial partners in the destination domains. The appropriate type of testing and evaluation in the trial is dependent on the system maturity attained. Usability tests and the results of testing in the application domains will lead to the final evaluation of the information outcome.

Procedures are thoroughly reviewed and approved prior to the publication. An important piece of software which runs with the database is the data dictionary system. The data dictionary provides information about the database, such as, what data is held, which users have rights of access, what are the permitted values and so on. The data base management systems will store the data and the data relationships on the backing storage devices. It will also provide an effective means of retrieval of that data when the applications require it, so that this important resource of the business, the data resource, is used effectively. The aim of using data management systems in this model is to appreciate data independence, increase data share ability, increase data integrity as in a shared environment, it is crucial for the database system to control the creation, deletion and update of data and to ensure its correctness and its 'up-to-date ness'; in general, ensure the quality of the data. The aim of the system being: capture knowledge from the users, organize existing knowledge, distribute/share the knowledge and apply this knowledge to the work. By adopting a multi-perspective of the intranet where information, awareness, and communication are all considered, this interaction can best be supported and the intranet can become a useful and people-inclusive KM environment [10].

By examining and justifying different aspects of information and make explicit the relationships and interactions between them, we can develop knowledge systems or schemata capable of answering to questions about the outcome of such interactions [8]. This system is based on capturing as much as possible of the reality of the work as it was done by the team who did it. In this approach, the information is captured as it is created using the same tools as used in the work. Knowledge about the work can be retrieved as soon as the data, information is captured in the work. Both data and information require knowledge in order to be interpretable, but at the same time, data and information are useful building block for constructing new knowledge [9]. And it is immediately applicable to any other work where it fits. The archetype follows that everyone on the team uses computer-mediated communications, all their team dialogue takes place in the team electronic workspace, and not through private email, even when that dialogue is informal, a culture is formed online which reinforces knowledge sharing and continuous communication, team members are encouraged to

learn from each other and from outside the team, the structure of that electronic workspace remains tuned to the emerging structure of the knowledge that the team is handling. A knowledge repository consists of databases that gather and organize knowledge, both explicit and tacit, and make it available to those who need this information. It provides a comprehensive and current source of information and guidance that is accessible to anyone in the organization that needs it [5].

This system would help finding and retrieving the information without wasting much of the time in recreating the information that already existed in the organization. Verbal communications could be captured through a simple device embedded in someone's personal electronic gadgets such as mobile phone, PDAs or portable electronic organizers that can record verbal communication. The written text is less complex to be attained as it can be directly imported from current communication channels such as e-mails, SMS to personal computer, online chat room, electronic bulletin board and electronic documents [3]. The community members are instructed to express the true feeling and sincere opinion when they are sure about their well-being and safe from any uncalled for consequences. Natural expression can be obtained by hiding the true identity of the community members and the flaming-talk based on someone's personality can be avoided [3]. Actions such as information creation, information seeking, and information interpretation can successfully be performed in these environments.

When a new team joins the organization and they would go ahead with a new proposal, they could read the conferences. They would understand not only the details of the proposal the original team had created, but why they had done it, and what went on while they were doing it. From the captured dialogue they could identify with the decisions, the dialogue, and the emotions that were flowing at critical points. They will be able to abstract key points from the captured process of the earlier proposal. These were both points that they already knew they needed answers to, and also points they didn't know they needed answers to. They will be able to contact people whose expertise was apparent from the recorded conferences, and consult with them about the new proposal. They would be able to place the generic zed aerospace proposal template in context, and could skillfully pick and modify items which were relevant to their proposal.

The proposed archetype uses the following notations:

Instant Messaging refers to an intranet based system whereby the users could easily and immediately transfer messages to other users in the range.

Tele conversation refers to the conversation produced by the relevant group.

Document capturer refers to the electronic storing and retrieval of documents in an organization in the form of scanned and editable articles.

Emails refer to the electronic mails sent or received through the intranet based system in an organization.

Website searches refer to the sites browsed and used for professional activities, by the employees, of the organization.

Memos refer to the communication made by the employees throughout their professional activities.

Meeting minutes also refer to the minutes stored in an editable format that could be extracted as and when required.

Audio and Video conferencing, user chats also refer to the stage when employees are at large distance and need to communicate through out their professional activities.

Social gatherings also meant to capture and store relevant data as needed for the professional growth of the organization.

The development of this system is not based upon the traditional life cycle but adopts an evolutionary/prototyping approach. It focuses upon identifying the important users and involving them via workshops at early stages of development. It focuses on obtaining commitment from the users by inputting as much as information as possible by them. KMS is highly dependant on group activities which in turn relies on social, motivational, economical, cultural and political factors that changes overtime [1].

Fig. 1 represents the archetype of the proposed system.

## VI. BENEFITS OF THE PROPOSED SYSTEM

- \* The time consumed to create such systems on the intranet would be less compared to the time wasted in creating existing solutions.
- \* The existing hidden information would be exposed as and when required.
- \* The quality of decision making, when merged with the new information, would be enhanced.
- \* The cost occurred to print or copy or recreate the lost, damaged or destroyed documents would be tremendously reduced.
- \* Supports the organization development and processes.
- \* Contributes to the delivery of services in the form of methodologies, tools, and processes.
- \* Builds awareness and team work among employees of industry and discipline issues.

## VII. CONCLUSION AND FUTURE WORK

A positive attitude to knowledge sharing is a vital and necessary prerequisite for a successful KM initiative. Without such willingness any KM related effort would have very less impact. In this system user participation, to share the knowledge, together with the methodology to implement the system, should be initially facilitated. This participation and methodology, during the communication, in the intranet would keep the information up to date and precise. The paper concludes that intranet, with the support of proper methodology, full fledged user participation, when used to capture, store and retrieve the knowledge would indeed be a successful knowledge management system tool. The future work relates to the development of the system as modeled in this paper.

## REFERENCES

- [1] B.T. Sayed, "Amalgamating Social Information Systems - An Archetype to increase the market value and achieve quality results", CITOT Conference, Lisbon, Portugal, 19-20 May' 2007
- [2] B.T. Sayed, "Social Information based Knowledge Management Systems – An archetype to congregate customer requirements within an organization", KMICE Conference, Kuala Lumpur, Malaysia, 6-8 June' 2006.
- [3] S.M.F.D. Syed Mustapha, B.T. Sayed, "Social Knowledge management system, A Paradigm for characterizing social values in an organization". ICKM Conference, Kuala Lumpur, Malaysia, 7-9 July' 2005.
- [4] Davenport, T. and Prusak, L. "Working knowledge". <http://www.knowledge.hut.fi/projects/itss/referDavenport>, Harvard Business School Press, 1998.
- [5] Carla Carter and Associates, "The Business Case for Knowledge Management", [www.centerforchangeexcellence.com](http://www.centerforchangeexcellence.com), 2005
- [6] Fagin, R., Kumar, R., McCurley, K., Novak, J., Sivakumar, D., Tomlin, J. and Williamson, D. "Searching the Corporate Web", [www2003](http://www2003.budapest.hu), Budapest, Hungary, 20-24 May' 2003.
- [7] Stenmark, D. "Knowledge sharing on a corporate intranet: Effects of re-instating web authoring capabilities". ECIS, Regensburg, Germany, 26-28 May 2005.
- [8] Spender, J.-C., "Pluralist Epistemology and the Knowledge-Based Theory of the Firm", *Organization*, Vol. 5, No. 2, pp. 233-256, 1998.
- [9] Nonaka, I. and Takeuchi, H., "The knowledge-creating Company", Oxford University Press, New York, NY., 1995.
- [10] Stenmark, D. "Information vs. Knowledge: The Role of intranets in Knowledge Management". HICSS, Hawaii, 7-10 January, 2002
- [11] Hinrichs, R.J. What's the Bottom Line? Intranets, Upper Saddle River, NJ: Prentice Hall, 1997.