

IMPLEMENTATION AND USE OF GLOBAL INTRANET: CASE OF A DISTRIBUTED INTERNATIONAL RESEARCH ORGANISATION

Adekunle Okunoye, University of Turku and TUCS, Turku Finland, email: adeokun@cs.utu.fi

Intranets were originally intended for internal use within an organisation but the advances in technology have enabled organisations to extend their Intranets in innovative ways beyond the geo-organisational sphere. Using the taxonomy of Intranet diffusion drivers, this paper presents the implementation of the Global Intranet using the case of an international research organisation. It also discusses how applications of the Global Intranet are being used in various modes - for publishing, transacting, interacting, searching, and recording purposes, in order to support cross-border knowledge sharing. The major challenges are in the provision of up-to-date information and making the applications more interactive. The experiences reported here could assist organisations in cross-border knowledge sharing using Global Intranets.

INTRODUCTION

With the recent realisation of the value of knowledge in an organisation's competitiveness, Intranets have become popular in contemporary organisations. They are now being used in diverse innovative and competitive ways in order to support organisational processes. It has also been noted, however, that the most far-reaching impact of the use of Intranets is on organisational knowledge and support for decision-making (Scott 1998; Sridhar 1998). Most definitions of the Intranet (Damsgaard and Scheepers 1999; Watson et al 2001) emphasise its organizational applications and its accessibility only to internal users. However, with the rapid changes in the structure of organisations, many corporate Intranets are being made available to internal users in other geographical locations. Thus, instead of seeing Intranets in the hitherto restricted sense, this paper considers an Intranet as a web-enabled private network which allows members of the organization access it regardless of their location. In this article, this is called the Global Intranet. The applications on a Global Intranet are specifically tailored to the direct needs of users within an organisation in order to meet specific operational and strategic needs. Global Intranets raise greater security issues when compared to the Internet, as the information stored on a Global Intranet can be highly sensitive. The potential usefulness of Global Intranets makes them a significant part of the information technology infrastructure in organisations. Their implementation and diffusion, however, vary.

GLOBAL KNOWLEDGE MANAGEMENT IN INTERNATIONAL RESEARCH: THE CASE OF ICRISAT

The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) is a non-profit, apolitical, international organization for science-based agricultural development. It is one of 16 centres of The Consultative Group for International Agricultural Research (CGIAR), and it is supported by more than 50 governments, foundations, and development banks. ICRISAT has approximately 1200 staff, and an annual budget of about US\$ 24 million. The mission of ICRISAT is to help developing countries apply science to increase crop productivity and food security, reduce poverty, and protect the environment, especially in the semi-arid tropical (SAT) areas. ICRISAT is headquartered in Patancheru near Hyderabad in the State of Andhra Pradesh in central India with seven other locations in Africa - Kenya, Ethiopia, Nigeria, Malawi, Niger, Mali and Zimbabwe (ICRISAT 2002). With ICRISAT, it was possible to study how being located in developing countries affected the kind of technology they could deploy, and specifically the implementation of knowledge management technology.

ICRISAT has a specific knowledge sharing initiative as part of its medium term plan. It is currently implementing various technologies to support it, including an Intranet. The rationale for this emphasis is that over the years, there has been a reduction in donor's funds, and there is growing pressure on the organization to improve efficiency and increase productivity within the limits of the available budget. The distribution of the organisation, in eight different locations on two continents will always be logistically challenging for organisation-wide initiatives. It is necessary to develop an appropriate strategy to support better collaboration and improved communication among the scientists. It is also imperative that the organisation finds means for sharing the knowledge it produces with the local communities who are the end users of its research. Thus, in their 2002-2004 medium-term planning, they consider "information as an asset that should be carefully managed to enhance the scope and magnitude of impact of ICRISAT and its partners" (MTP 2001). To facilitate this, they combined the functions of public awareness, information systems, and learning systems units into the Information Resources Management Programme (IRMP). They realised that digital technology skills will form a key integrating point in supporting the activities of the programme. They also initiated US\$0.72 million knowledge sharing project with the goal to improve the well-being of the SAT poor. The aim was to enhance the sharing of information and knowledge that is critical for reducing poverty, achieving food security and protecting the environment of the SAT (MTP 2001, pp. A-28-A-29). The principal milestone for the knowledge-sharing project in 2002 was the implementation of Global Intranet in four major locations and a future plan to include the remaining locations. The plan aims to make information available to all staff, irrespective of their location. This Intranet initiative was sponsored by the senior management and co-ordinated by the head of the IS units. The Intranet initiatives receive inputs from the heads of various

research programmes, and other staff members, on the type of applications they would like to have on the Intranet. In this study, the main focus is on how this Global Intranet spread in the organization and what kinds of uses it was put into.

INTRANET DIFFUSION DRIVERS AND USE MODES

King et al. (1994) have developed a taxonomy of innovation diffusion drivers. These include knowledge building, knowledge deployment, subsidy, mobilisation, standard setting and innovation directive. The status of our case organisation (a research oriented institutions with strong international and institutional ties), fits the example of an institution that could influence IT innovation (King et al. 1994). Damsgaard and Scheepers (1999) have adapted this taxonomy to discuss the implementation of Intranets in organisations. The taxonomy is appropriate in the discussion of the Global Intranet, as it recognises interaction among providers and users of technological innovations, with differing interests, while accommodating a variety of interventions in pursuing these interests. It also can be used to explain the activities of the users, as well as the implementers, and it provides for both regulatory and influence-based intervention (Damsgaard and Scheepers 1999). Damsgaard and Scheepers present the modified diffusion drivers for Intranets. *Knowledge building* is concerned with the availability of knowledge necessary to develop and sustain innovation and use. These include technical and practical knowledge of its applications. *Knowledge deployment* interprets the innovation for adoption purposes. This can be achieved using various forms of training. *Subsidy* focuses on subsidizing of the critical activities essential for the diffusion and innovation of technology. Subsidy is a very important driver controlled by people that manage organisational resources, and it can indirectly affect knowledge building and deployment. The next driver they discuss is *mobilisation*, which aims at encouraging decentralised actors and organizations to think about an innovation in the right way in order to facilitate increased usage. It can also be linked to knowledge deployment. *Standard setting* makes the practice official and defines the scope of options for the actors involved. Lastly, the *innovation directive* addresses the guidelines that are meant to control both the production and use of innovations.

The interest here is also how the Global Intranet was used in the organization. The primary application of Intranet for communication and collaboration among organisational members (Bansler et al. 2000), can be accomplished through its use in different modes. Damsgaard and Scheepers (1999) identified several use modes for intranets. Intranets are used to *publish* information (e.g. home pages, newsletters, technical documents, employees directories, catalogues). They are used to *transact* with the functionality on Intranet pages and other organisational computer-based information systems (e.g. web forms). Intranets are used to *interact* with other individuals and groups in the organisation (e.g. discussion database) and for *searching* for organisational information (e.g. search engines, indexes, search agents). They can also be used to *record* the computer-based “organisational memory” (e.g. best practices, business processes, FAQ).

THE RESEARCH METHODS

I spent a total of two weeks at the organisation, and worked closely with the information systems unit. Both quantitative and qualitative data was collected using a questionnaire, an interview, non-participant observations and a review of historical documents and application manuals. The entire interviews were recorded on audiotape and salient points noted. A daily diary was also kept to keep track of the sequence of events. Fifteen people completed the questionnaires and twelve people were interviewed. A list of IT infrastructure (Broadbent and Weill 1997) was completed by the head of the IS unit, to assess the level of IT infrastructure capability. This rich data will be used in several studies to come, but here the focus is only on the Global Intranet, its diffusion and uses. Some of the applications on the Intranet were demonstrated by a programmer at the IS unit, and the e-library application was demonstrated by a senior librarian. The use of the Intranet was observed in various departments. I also attended a demonstration of several Intranet applications and had the opportunity to have hands-on experience of some of the technologies available to support knowledge management. We also conversed with both the developers and users of the applications. Interviews were conducted with the promoters of the applications on the Intranet, to establish their original objectives and confirm if these are being fulfilled by the applications. At the end of the second week, preliminary analysis of the data was done and the findings were presented to the senior management team of Information Resources Management Programme (IRMP). The recorded interviews were later transcribed and cross-checked with the notes and observations to eliminate possible errors.

ICRISAT INTRANET DIFFUSION DRIVERS

The organizational implementation of the ICRISAT Intranet is described here, focusing on the six diffusion drivers. The main interest here is the initial implementation in Hyderabad, India. During the visit, the development of the Global Intranet was still ongoing and the organisation was continually finding ways to make it more efficient and more usable.

Knowledge building appears to be very easy in ICRISAT due to the location of the organisation. Apart from the investment of the Indian national government in IT education and infrastructure, Hyderabad is known for its large pool of people with IT expertise and technical knowledge, necessary for developing Intranet applications. This is not only available but also cost effective.

“..... there are students who are now on job contracts. They are being mentored carefully to deliver a good quality product. They are available at relatively affordable cost” (Snr. staff, ISU unit)

Knowledge deployment becomes the onus of the “experts”, or the primary owners in each programme, with the additional support of IS people. For example, the library unit had to organise training for staff on the use of e-library, which is one of the most important applications on the Intranet. Generally, staff members were informed of any new application added to the Intranet, and instruction was given on the basic functionalities. This could also be seen as marketing of the services.

“.....One of the things we are trying do is marketing, to let people know the level of proficiency that we have grown into, over a period of time. How we have changed and what are the benefits of the change in terms of our (e-library) services.....” (Snr. library staff)

ICRISAT uses various methods for *mobilisation*. With knowledge sharing as a main project, and an agenda to ensure the success of the organisational strategy, the commitment of senior management is very high. There is a specific need for each application on the Intranet and the employees are motivated through the emphasis on the advantages, and through making the applications user-friendly. All the applications on the Intranet were given a catchy name, like e-library, TripReports. When appropriate, the applications took a name that is synonymous with existing publications - e.g. “Happenings”, which is the name of a weekly newsletter at ICRISAT. Also, employees are asked to decide what applications they need on the Intranet, and the IS unit regularly assesses the usage of each application, as people tend to use applications they find very useful, irrespective of advertising:

“.....We also introduced applications that we never announced but which people use a lot, like the weather forecast. We introduced it for all our locations and since a lot of people are travelling between the locations, they use it very extensively. For example, the head of human resources is going to Bamako and he has already decided not to take a jacket because he saw that the average temperature for the week is 33 degrees Celsius.....” (Snr. staff, ISU)

ICRISAT provides *subsidy* to support the Global Intranet by making sufficient resources available, in terms of programmers required, to develop different applications. This is in addition to the expertise available in the information systems unit, which is shared across the organisation. Most of the staff also has access to the Intranet at various points within the organisation and other locations. A senior employee in the IS unit is also made responsible for the Global Intranet, accessible to application owners and users.

ICRISAT was working on *standardization* at the time of data collection. Since many of the applications have just been developed and upgraded to work on the Intranet, the interfaces were different and the colour scheme depended on the developer’s preferences. Nevertheless, the organisation uses standard software and each application has a complete manual. There is a plan to standardize the format of the Intranet applications in order to enhance learning and make functionality easily identifiable.

The *innovation directives* approach at ICRISAT discourages duplication of applications on the Intranet, by ensuring that the promoter of the application can justify the need and prove that none of the existing applications meet those needs.

“.....The fact is that people build different applications and see it as a matter of pride and prestige but this did not result into more available information, there are better and better software and less and less information. Now, we are trying to change the approach. Our idea is not on application what is important is that you must be in a position to contribute something” (Snr. staff, ISU)

To encourage appropriate *usage*, there is also a plan to attach the usage of some of the application to other organisational processes, as explained by one interviewee.

“.....for knowledge management to work, organizations have to put up a system. The system could enforce people to use the applications e.g. if they connect writing reports, to the settling of travel bills. You create a kind of process. You also make people understand that the applications could make people do their jobs better (awareness and motivation). Create clear reward systems for using knowledge.....” (Snr. human resources staff)

Since there are champions of various applications on the Intranet, the organisation still needs to address the issue of power and influence, which could affect the sustainability of the Intranet. This is more important in an organisation with various locations, as there is a tendency for “not-invented here” syndrome. Presently, there is a systemic effort to assess the usage and relevancy of the applications on the Intranet. However, a standardised way should be established to conduct the performance audit and ensure that the Intranet is meeting organisational objectives.

APPLICATIONS AND USE MODES

A key Intranet application, among many, is the *e-library*, which provides access to library information systems. Users can access catalogues and search databases available at the library from all locations. Users can also make requests for books and other library services. The e-library supports distributed learning at ICRISAT and facilitate access to library services in all locations. Searching for literature has always been a big problem for researchers outside major locations, and this has caused delays in publishing their findings. The e-library alleviates these problems and enhances the knowledge sharing capability of the staff. With timely publications, they would be able to share their findings with the stakeholders. The e-library is being used to fulfil the *searching* and *publishing* functionality of the Intranet.

“*Happenings*” is the weekly newsletter that informs employee of past, present and future events at the organisation. It reports about visitors and the highlights of research activities. It serves as a low-cost communication medium between the management and the entire staff keeping them up-to-date on the daily activities of the organisation, now available to staff at all locations with access to the Global Intranet. This makes the activities of the organisation more visible, and thus “*Happenings*” is serving a *publishing* function on the Intranet

Another important application on the Global Intranet is the *TripReport*, which enables staff to enter a report of trips into a database which is available to all staff. TripReport is a major application, enabling staff to report their travels and the events which could be useful for others within the organisation. Staff can easily access this database, whenever they want, to search for any information and could contact the contributor if the need arose for additional information. If a scientist is planning to travel to a country, for example s/he could look at the report to know who had visited the country and get some background information. Often, the report is sufficiently detailed and the inquiries do not require contact with the contributor. TripReport is serving as a kind of organisational memory and fits the *recording, publishing, searching* and *interacting* functions of the Intranet.

There is also a link to *CG InfoFinder* which is a search engine developed by CGIAR in collaboration with the Food and Agricultural Organisation (FAO). It lets users search for CG-wide electronic information (e-Documents, web pages, press releases). This is also available on the websites of all the CG Centres. This provides access to other 15 CGIAR organisations and many related organisations. CG-InfoFinder is the outcome of an management initiative of CGIAR, which was to make information and knowledge available to all their member organisations at an affordable cost. Thus, CG InfoFinder is used for *publishing* and *searching*.

There are also several *human resources and finance applications* where the user can directly perform some *transactions* by filling forms and getting feedback. *Policies and procedures* are also available on the Intranet, and this is fulfilling *publishing* functions. At the time of data collection they were still adding functionality to the Intranet, including a discussion database to allow more real-time *interactions*.

CONCLUSIONS

We have discussed the Global Intranet at ICRISAT, focusing on how it supports the knowledge sharing activities in this global research organization. We found the use of the term Global Intranet by ICRISAT appropriate, to refer to extending Intranet across several sites. Similar organisations could use the experience of ICRISAT in the development of their own Intranet and take note of the challenges that need to be addressed. Global Intranet at ICRISAT has benefited from the effective intervention and commitment of senior management and from the support and co-operation of both the developers and users. However, several challenges were raised which highlight the complexity of Intranet diffusion. For example, low cost developers help reduce the cost needed to develop applications, but they increase the difficulty of maintaining standards, as reflected in non-standardized interfaces. Non-standardised interfaces and applications affect the usability and usage of the applications. A main concern raised by users was the need for more interactive applications and the provision of up-to-date information. To neglect constantly updating information and documents could hamper the frequency of use and accomplishments. Although security issues were not explicitly discussed, supporting a network that extends beyond a location, nevertheless, poses security challenges that need to be addressed. The trust of the users needs to be built on the confidentiality and security of the information provided on the Global Intranet and organisations should endeavour to guide against all unintended consequences that could ensue from illegal access. These and other challenges emphasise the need for careful planning, prioritizing and making adequate and calculated compromises.

A more detailed version of this paper, including all the references, can be found at <http://www.jyu.fi/~adeokun/gitm/kmitpaper4.htm>