Perspectives

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Improving knowledge exchange with technology tools

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Abstract

Sustainability is a major driver of a number of international instruments including the Brundtland Report, Rio Declaration, and Agenda 21. All of these instruments emphasize the need to improve our management and exchange of knowledge.

Sustainable management of natural resources requires the integration of information from many sources and disciplines, as well as close collaboration between geographically dispersed team members. Natural resource managers make decisions every day—to make sound decisions, they must have access to the best available information.

Knowledge management systems address a variety of factors, including generation, organization, sharing, and application of knowledge. This paper demonstrates the value and applicability of various technology tools, including collaborative workspaces, Web conferencing, mailing lists, and Internet portals/knowledge repositories. The experiences of two organizations, FORREX–Forest Research Extension Partnership and FORCAST (Coalition for the Advancement of Science and Technology in the Forest Sector), are used to highlight the benefits of these tools within the natural resource sector and beyond.

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Introduction

Could your organization improve its management of information? Would you benefit from increased collaboration among your employees, or between your organization and its clients? Does your organization manage complex projects with geographically dispersed participants? Do people in your organization need better access to each other? If you've answered yes to one or more of these questions, your organization would benefit from knowledge management. Knowledge management will help move us all one step closer to sustainability—healthy economic, social, and environmental systems for the present and future.

Sustainability is a major driver of a number of international agreements including the Brundtland Report, Rio Declaration, and Agenda 21. All of these instruments emphasize the need to improve our management and exchange of knowledge. Ann Dale, Environment and Management Program Professor, Royal Roads University, believes that "…competence in this area can never be based on complete knowledge but must rely on the best available information and expertise" (Dale and Hill 2001). Sustainable management of natural resources requires the integration of information from many sources and disciplines.

Government information is not currently treated as an asset—it is not integrated, nor is its release maximized (Denny 2000).

Lee Denny, recently retired Chief Information Officer of the Government of British Columbia, points out that government information is not currently treated as an asset. It is not integrated, nor is the release of information maximized (Denny 2002). Financial, pharmaceutical, and telecommunications companies are leading the way in knowledge management (Coleman 1998), but in the author's opinion, no industry needs knowledge management more than the natural resources sector.

Knowledge management systems address a variety of factors, including generation, organization, sharing, and application of knowledge. Improved access to tacit knowledge (i.e., knowledge people carry around in their heads) and explicit knowledge (i.e., knowledge contained in documents or databases) will help ensure we are using and applying current knowledge.

Systems that enhance collaboration improve access to tacit knowledge. Enhanced access is especially important as more organizations operate in virtual teams. Sharing directories of expertise and organizations improves access to tacit knowledge. Access to explicit knowledge is improved by linking, organizing, and sharing warehouses of information.

No industry needs knowledge management more than the natural resources sector.

FORREX–Forest Research Extension Partnership provides extension services to support more informed decisions about sustainable ecosystem management. We leverage expertise contributed by diverse teams to create and deliver our programs. With specialists, partners, and working groups distributed throughout British Columbia, located across different time zones and using different computer operating systems, allowing everyone access to current information can be challenging.

We are not the only organization addressing this challenge. Government and non-government members of FORCAST (Coalition for the Advancement of Science and Technology in the Forest Sector) champion the importance of adequately resourced science and technology in the forest sector across Canada. They facilitate co-ordination and communication among forest science and technology providers and users. For example, Henry Benskin, a director on FORCAST's Board, knew that working with top executives and managers across Canada could be a challenge. He wondered how FORCAST committee members could stay on top of Board developments, look at huge documents, and collaborate with other members without wasting precious time and energy. This is especially important to FORCAST as its geographically dispersed membership includes senior managers who have limited available time. To address this issue, FORCAST sought to establish a Strategic Knowledge System (SKS) in partnership with FORREX.

Using the experiences of FORREX and FORCAST, this paper discusses how various technology tools improve knowledge exchange, and help the natural resource sector move towards sustainability.

TABLE 1. Web sites highlighting various technology tools

Collaboration and Project Management	
eProject	*www.eproject.com*
eRoom	*www.eroom.com*
HotOffice	*www.hotoffice.com*
Lotus Domino	*www.lotus.com*
Teamware Office	*www.teamware.net*
WebBoard	*www.chatspace.com*
List Servers	
lSoft ListServ	*www.lsoft.com*
MajorDomo	*www.majordomo.com*
Knowledge Management Theory and Technology	
Blue Angel Technologies	*www.blueangeltech.com*
BRINT	*www.brint.com*
KMWorld	*www.kmworld.com*
Knowledge Management Magazine	*www.kmmag.co.uk*
Knowledge Management News	*www.kmnews.com*
Knowledge-Management	*www.knowledge-management.net*
Meta Knowledge Management Portal	*www.metakm.com*

Collaborative Workspaces

These Web-based tools are designed to increase participation in decision-making or planning, increase opportunities to generate ideas, and reduce the time and expense of travel. A variety of collaboration tools are available, each offering different features, delivery mechanisms, and pricing structures (Table 1).

After the internal implementation of a Web-based collaboration package called eProject, FORREX realized they could help other organizations with this technology. When FORREX offered to assist FORCAST in the development of its SKS solution, the first steps involved using eProject, thus enabling teams to share tasks, documents, discussions, schedules, Web addresses, and polls.

One advantage of eProject is that documents do not have to be distributed—FORCAST committee members, such as Benskin, do not have to cope with multiple electronic versions of a document or large e-mail attachments. All documents and communication are stored on the eProject Web site, and are accessible through any computer connected to the Internet. FORCAST is introducing its members to the full potential of eProject for sharing minutes and reports, and for notifying people of upcoming meetings. These systems would be especially useful to organizations involved in land use planning, where a variety of people need to access the same repository of knowledge.

Interested? Some companies offer free scaled-down versions of their product for small project teams. Examine your business needs to see if collaboration software would help improve your organization's efficiency and decision-making.

Web Conferencing

Do your employees have to travel far for training? Would you benefit from working with one of your colleagues on the same document, at the same time, from different computers? Web conferencing may help. It allows people to jointly view or edit documents, share applications, view presentations, or tour the Web. Some companies use Web conferencing tools to provide remote support for their computer networks.

FORREX brings people from different locations together using a tool called WebEx. Through a conference call, FORREX can offer remote computer training and demonstrations. For example, FORREX trained members of FORCAST from British Columbia and Ontario on how to

use their Strategic Knowledge System. Participants access the meeting centre on the Internet, and interact via conference call with trainers who can share the contents of their computer with all participants.

FORREX uses WebEx to interact with graphic designers as they develop publications and Web sites, and to collaboratively plan conference programs with dispersed teams. Users can discuss document drafts and take turns making changes, as other participants watch.

Table 1 identifies a number of companies offering Web conferencing. Many offer free online demonstrations and training.

Mailing Lists

Mailing lists create networks of people with the same interests. They offer an excellent method for building communities of practice in which people can share their experiences and tacit knowledge. Discussion lists support collaboration by allowing subscribers to post questions to many people with experience on a topic. Responses can also be shared with all mailing list subscribers.

Lists can be public or private, with anywhere from two participants to many thousands of members. Mailing lists are often used to keep subscribers up-to-date with information about organizations, products, or topic areas. FORREX uses mailing lists to share announcements about services, events, and products with almost 2,000 clients. To help FORCAST in its communication efforts, FORREX is hosting two mailing lists. One private list is for FORCAST members to discuss FORCAST activities, projects, events, and forest science and technology initiatives. Another is a public mailing list for anyone interested in discussing forest science and technology issues.

Mailing lists are available on numerous natural resource topics. For examples, visit the Natural Resources Information Network (*www.forrex.org/nrin*). Table 1 provides a number of mailing list suppliers.

Internet Portals/Knowledge Repositories

The word "portal" means "door." Internet portals often operate as hubs from which users can search and link to information. Many Internet portals share search tools, current news, collaboration tools, and methods for cataloguing additional information.

The Natural Resources Information Network (NRIN) is an Internet portal that operates like a virtual library where the owner fills the shelves. NRIN helps information seekers—practitioners, professionals, researchers, decision-makers, resource users, and the public—by providing:

- information about documents (published and unpublished), research data sets, research activities, and direct links to electronic information;
- a catalogue of provincial extension events, training courses, and conferences;
- an on-line community for collaborating on natural resource topics; and
- tools for searching, viewing, and ordering information.

Developed by FORREX in collaboration with a wide variety of partners, NRIN helps bring information from FORCAST together with information from other government, non-government, First Nations, industry, and academic organizations for easier search and discovery.

While tools such as Web conferencing, mailing lists, and Internet portals can help improve the transfer of knowledge, organizations cannot rely solely on technology to achieve more efficient operations and make better decisions.

FORCAST uses NRIN to catalogue science and technology documents that members wish to share. It has begun documenting strategic information such as cost–benefit analyses and success stories within the forest industry—the sorts of things its membership needs to succeed. At the same time, this information is shared publicly through NRIN so other agencies can benefit from FORCAST's investment.

Connecting to NRIN decreases the time spent researching information and reduces the chance of research being duplicated. These benefits lead to more informed sustainable management decisions that are based on innovative and current research.

Many technology solutions for managing Internet portals and information are available depending on your business needs. Table 1 summarizes resources on knowledge management theory and technology.

Conclusions

With international environmental instruments such as Agenda 21 as a foundation, companies are now being judged on how well they manage their activities as part of a long-term sustainability agenda. This agenda includes the management of knowledge. Only by building and supporting a culture in which knowledge sharing is valued and encouraged will we achieve sustainable management.

The world is undergoing a fundamental socioeconomic change from an industrial society to an information society and a knowledge-based society (Simard 2000).

Using current knowledge can translate into more efficient operations and better decisions, in the forestry sector and beyond. While collaboration tools, Web conferencing, mailing lists, and Internet portals can help improve the transfer of knowledge, organizations cannot rely solely on technology to achieve these goals. A variety of internal factors that drive knowledge management must be addressed including leadership, culture, business processes, people, skills, and technology infrastructure.

A thorough knowledge management assessment forms the basis for the development of a knowledge management strategy—organizations will be most effective once they have established links between their knowledge management and corporate goals. As managing for sustainability is not a static goal, only the most responsive organizations—those with reliable access to current information—can hope to achieve it.

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