PUSHING THE ENVELOPE

A NETWORKED VISION; FROM KNOWLEDGE SCRIBES TO KNOWLEDGE HERDERS

by **Chief Warrant Officer Ralph Mercer, CD**

"The important thing is not to stop questioning. Curiosity has its own reason for existing."[1]

Albert Einstein (1879-1955)

The list of challenges facing the Air Force is long; infrastructure, aircraft procurement, future security environments, recruiting and budgetary constraints, just to name a few. There is a common thread that underpins the search for solutions to all these serious problems. This common thread is the computer network that all Air Force personnel use; it is from this network that we source the solutions to the problems that affect us. We must question whether this network that supports all Air Force activities can provide the necessary knowledge transfer, collaboration and flexibility necessary to generate the ideas and innovative solutions needed. Sadly, the answer to that question is no, we are quickly being left behind in network development and concepts.

There is a growing digital divide[2] between the collaborative, innovative and user friendly networks available to the public and our rigid outdated military networks. If this capability gap is not addressed we will not be able to use or exploit future advances in computer network applications, technologies or innovations. Air Force personnel work in a network environment that boasts email saturation and no formal knowledge capture system or useful search engine. In the name of security we have disabled the majority of our programs and communication devices to the point of rendering them useless. The fallout from this one-size-fits-all network is the creation of virtual and cerebral information silos.

Demographically, we are an aging force, presenting us with the added problem of corporate knowledge rust-out. It is essential that we develop a knowledge capture system that preserves a generation of tacit knowledge. In most locations we still have an oral tradition of job handover and transferring of specialized knowledge to personnel as they take over new positions. There is no Frequently Asked Question (FAQ) or knowledge management database made available, so we continue to relearn the majority of our mistakes. This is a very precarious way of carrying out business in a knowledge environment if you consider that most of our staff workers are pensionable and one deep.

One of the most serious secondary effects of this network environment is that the network is looked upon, not as a vehicle for success, but rather as a necessary evil that must be used. We need to change that reference point, and develop a culture that uses the network as a tool for success and shares knowledge pan-Air Force. Most importantly, we need to change from being knowledge scribes to knowledge herders.

To make this shift in perception, we need to stop focusing on the technology and start focusing on how we want our personnel to collaborate and share knowledge across the network. More importantly, involve industry experts in the development from the beginning. We also need to remember that collaboration and knowledge management are not new, we practice them every day. It is the conversations we have with our coworkers, the social and interpersonal networks we build, the information we search for and the data we collect. Computer networks can either enhance or deter collaboration, and we need to build one that excels at making us collectively smart. By recording the principles and basic tenets that describe the Air Force network of the future in a capstone document, we will have taken the first steps in the codification of the values that will guide the desired community of practice[3] within the Air Force.

To achieve this fundamental shift in work we need to start with a blank sheet of paper and discard our preconceived notions of hierarchical information flow. We want to foster collaboration, speed up the retrieval of knowledge and simplify the process of recording information while encouraging conversations and social networking.[4] It is the ability to collaborate effectively on the network that will change us from document producers to knowledge managers. We will go from small, secluded teams scribing away on a document to a dispersed community of stakeholders collaborating and sharing in the progression of ideas. This paradigm shift to social collaboration will free people to manage their functional areas and give them the time to research concepts and innovations being created in other militaries and industry world-wide.

The development of blocks of information by stakeholders and their assembly, like Lego-blocks, into a knowledge management database, opens the door to exciting possibilities for the Air Force. It will allow us to exploit the "all-source" approach and invite industry, academics and other government departments to easily and seamlessly contribute to the development of doctrine and best practices regardless of physical location. Doctrine and training organizations should have evergreen documents.[5] Users and stakeholders are invited to contribute on a continual basis to the document development; as the content of each modular block of information becomes distinct it is seamlessly integrated into the master document. This modular approach allows all functional areas to be symbiotically linked. As one modular piece changes, the updates are flagged across the network ensuring that all data remains consistent. Using the collective knowledge of the Air Force community, observations and problems can be converted into lessons learned in a minimal amount of time and disseminated throughout the network instantaneously. The relevance of any lessons learned program is dependent on it being community driven, open sourced and devoted to finding solutions at the lowest possible level without layers of bureaucratic involvement.[6]

To ensure knowledge management is culturally supported and encouraged (enforced, if necessary), data must be stored in open formats, remotely accessible and optimized for search engine optimization (SEO).[7] The act of retrieving that information needs to be flexible and customizable. Information that is only stored and cannot be easily accessed or researched is of no value. Only when it is used to improve operational effectiveness and decision making does it begin to have value. Picture a resource management clerk after setting up a Really Simple Syndication (RSS)[8] feed, receiving notices whenever there is a change to a DAOD [Defence Administrative Orders and Directives] or to human resources policies. This will allow changes in best practices and information to cascade across the network to users who want the information in real time. Traditional information gate keepers at all levels can no longer stockpile information; it needs to be shared and made available to all. It will be the different users and organizations at all levels that will take this seemingly unrelated information and combine it in new and exciting ways to generate innovative ideas and solutions.

We don't all think and work the same way and we don't all need the same information; individuals must be able to shape their desktops to suit individual work habits and work requirements. This will not only boost productivity, but work satisfaction. Personal desktop and email should be linked to the person, not the job location, and not suspended when posted or deployed. While the desktop and user profile belongs to the user, the FAQs about a particular job and the knowledge management aspects of that position should be linked to the terms of accountability and researchable. The structure of the network must be fluid and adaptive to allow the forming of ad hoc collaborative groups on the fly. If we have to wait for permission, opportunities are lost. The ability to use the knowledge-capture and collaboration aspects of the network should be as easy as sending an email or logging on to micro-blogging[9] or a workstation video conference feed.

Enterprise programs are not always the solution. Smaller applications that share and interact seamlessly consume less overhead and are easier to use than many larger one-size-fits-all programs. We should not lock ourselves into using monolithic, expensive proprietary programs; open source is both free and robust, with a large support community that can easily adapt programs to custom

fit operational requirements. Maximizing the use of open source products will free up expensive, recurring licensing fees that can be reinvested in the network to ensure we stay on the cutting edge.

To ensure that the capabilities of the network are used and exploited, the network and programs that make it all happen have to be dirt simple to learn. The network should look and feel very similar to the programs we use on the internet at home; no one can afford extra training costs and user down-time. The user-driven interface[10] should be designed around the way we want to work, we should not have to shape our work habits to fit a product. The entire network should be web compliant; it must be a living, flexible structure that upgrades easily, vice a rigid and proprietary system. Video conferencing and micro-blogging must be available at all work-stations. Collaboration and social networking are to be encouraged. We want people to talk, to share, to be open with their knowledge and to be a team helping each other. Support for mobile devices is imperative. Many of our knowledge workers live on the road, and the mobile network should be fast, support multimedia and wireless. Briefcases full of staff papers can be carried on a single e-Book reader, presentation and speaking notes can be reviewed on smart phones and everything should be updated wirelessly as we travel. The need for security on a military network is acknowledged; it should be flexible, scalar and adapted to the role of the organization it serves. We can no longer afford to be restricted by a rigid, one-size-fits-all implementation.

To make this all happen we need to establish a culture of digital knowledge management[11] and instill a desire to reach out for information, as well as share it. To do this, the buy-in at the top must be evident. Leadership at all levels must be the early adopters, demonstrating an environment where collaboration is not only encouraged, but expected. The successes and the benefits of collaboration must be made evident. The success of our adoption of new concepts and computer innovation will be critical to the Air Force's ability to attract and employ the "digital native"[12] generation. They will be our future workforce and we need to have in place a network structure that will capitalize on their unique perspective and provide them with the digital work environment that they consider the basic tools of life.

The implementation of this network overhaul needs to start now, and to do this we need to pick a test bed for the concept and start designing the process. I can think of no better place to start than at the Canadian Forces Aerospace Warfare Centre (CFAWC). One of its roles is to provide the Air Force with the knowledge to acquire the right capabilities and develop appropriate doctrine to successfully conduct aerospace operations as we move into the future. In the spring of 2010, CFAWC will move into its new state-of-the-art green building. This move could also be symbolic of the move to implement a new and truly interactive, collaborative knowledge network for the Air Force.

When we ask, "is the energy and resolve required to resuscitate and innovate our network worth the effort?" we should remember that without a fluid, interoperable and collaborative network we will never be able to stay inside the decision loop of our adversaries and ahead of our problems. It will be the speed and ability to adapt across the network, to use our collective knowledge and generate ideas that will be the Air Force's greatest non-kinetic tools for success.

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List of Abbreviations

CFAWC	Canadian Forces Aerospace Warfare Centre
CWO	chief warrant officer
FAQ	frequently asked questions
RSS	Really Simple Syndication
SEO	search engine optimization

Notes

1. Available online at http://www.famous-quotations.com/asp/acquotes.asp?author=Albert+Einstein+%28 1879%2D1955%29&category=All&curpage=7 (accessed September 28, 2009).

2. Available online at http://en.wikipedia.org/wiki/Digital_divide (accessed September 28, 2009). The term digital divide refers to the gap between people with effective access to digital and information technology and those with very limited or no access at all. It includes the imbalances in physical access to technology as well as the imbalances in resources and skills needed to effectively participate as a digital citizen.

3. Available online at http://en.wikipedia.org/wiki/Communities_of_practice (accessed September 28, 2009). The concept of a community of practice (often abbreviated as CoP) refers to the process of social learning that occurs and shared sociocultural practices that emerge and evolve when people who have common goals interact as they strive towards those goals.

4. Available online at http://en.wikipedia.org/wiki/Social_networking (accessed September 28, 2009). Social networking has encouraged new ways to communicate and share information. Social networking websites are being used regularly by millions of people.

5. Available online at http://en.wikipedia.org/wiki/Document (accessed September 28, 2009). Web analogs of traditional paper documents like a newspaper column have taken on a dynamic character due to the impact of technology enabling the addition of comments from readers. The document will increasingly become "virtual", bringing up-to-date information from various sources in one container (a la "mash-up") - as such it will be kept evergreen.

6. Available online at http://en.wikipedia.org/wiki/Crowdsourcing. Crowdsourcing is a distributed problem-solving and production model. Problems are broadcast to a group of solvers in the form of an open call for solutions. Users--also known as the crowd--typically form into online communities, and the crowd submits solutions. The crowd also sorts through the solutions, finding the best ones.

7. Available online at http://en.wikipedia.org/wiki/Search_engine_optimization (accessed September 28, 2009). SEO is the process of improving the volume or quality of traffic to a web site from search engines via "natural" ("organic" or "algorithmic") search results.

8. Available online at http://en.wikipedia.org/wiki/RSS_(file_format) (accessed September 29, 2009). The RSS reader checks the user's subscribed feeds regularly for new work, downloads any updates that it finds, and provides a user interface to monitor and read the feeds.

9. Available online at http://en.wikipedia.org/wiki/Micro_blogging (accessed September 29, 2009). Microblogging is a form of multimedia blogging that allows users to send brief text updates or micro-media such as photos or audio clips and publish them, either to be viewed by anyone or by a restricted group that can be chosen by the user.

10. Available online at http://en.wikipedia.org/wiki/User_interface_design (accessed September 29, 2009). The goal of user interface design is to make the user's interaction as simple and efficient as possible, in terms of accomplishing user goals—what is often called user-centred design.

11. Available online at http://en.wikipedia.org/wiki/Knowledge_management. KM efforts typically focus on organizational objectives such as improved performance, competitive advantage, innovation, the sharing of lessons learned, and continuous improvement of the organisation. KM efforts overlap with organizational learning, and may be distinguished from that by a greater focus on the management of knowledge as a strategic asset and a focus on encouraging the sharing of knowledge. KM efforts can help individuals and groups to share valuable organizational insights, to reduce redundant work, to avoid reinventing the wheel per se, to reduce training time for new employees, to retain intellectual capital as employees turnover in an organization, and to adapt to changing environments.

12. Available online at http://en.wikipedia.org/wiki/Digital_native (accessed September 29, 2009). A digital native is a person for whom digital technologies already existed when they were born, and hence has grown up with digital technology such as computers, the internet, mobile phones and MP3 [MPEG-1 Audio Layer 3].