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# Exploring U.S. Air Force On-line Communities of Practice: An Examination of Content Management Practices

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## ABSTRACT

The management of knowledge assets has become increasingly important as organizations recognize the strategic value of knowledge. In an attempt to capitalize on its potential, many organizations have turned to Internet technologies for capturing, managing and disseminating their vast amounts of explicit knowledge. One application of such technology can be found in the use of on-line collaborative workspaces. These virtual workspaces facilitate and promote an environment for capturing and sharing knowledge among members of a particular field, task, or common practice. Despite the implied efficiency of such an approach, an ever-increasing volume of information/knowledge may impede the ability of users to navigate successfully through the workspace thus undermining the user participation and illustrating the importance of effective content management (CM). This exploratory study uses case studies to examine the CM practices of eight U.S. Air Force on-line communities of practice. The findings suggest that the development of formal CM processes, and procedures may help solve future CM problems as well as increase the benefits associated with on-line CoP usage.

## Keywords

Content management, collaborative workspace, communities of practice, knowledge management

*The views expressed in this article are those of the authors and do not necessarily reflect the policy or position of the Air Force, the Department of Defense, or the U.S. Government.*

## INTRODUCTION

The world is in a state of constant change. Over a decade ago, Drucker predicted the coming of the knowledge society where knowledge, rather than capital, natural resources, or labor, is the basic economic resource. (Drucker, 1993). Given the argument that knowledge is a valuable resource to an organization, an organization's knowledge, tacit and explicit, requires due attention and management. Thus, organizations are constantly striving for effective knowledge management (KM) techniques, hoping to discover best practices for realizing its full potential.

Communities of Practice (CoPs) created by or developed for people with a common concern, problem, or passion about a topic (Wenger et al., 2002) are one method for managing knowledge in today's rapidly changing environment. CoPs have quickly become a main component of many organizations' KM programs as they often provide benefits such as reduced time and costs for performing work-related tasks, improved quality of decisions, increased retention of talent, and the ability to take advantage of emerging opportunities (Wenger et al., 2002). Within these communities, members interact to share information, accumulate knowledge, and solve problems (Wenger et al., 2002). They do so through social forums and with the use of a variety of web-based collaborative technologies. One application of this type of web-based collaborative technology forum is an on-line CoP. Serving as the focus of this research, an on-line CoP is a virtual, collaborative, and common workspace shared by active subjects and supported by Internet technology (Heaton, 1998).

Within an on-line CoP workspace, the daily creation of new knowledge and information by community members adds to the abundance of existing community member knowledge and archived information. However, despite this value, the vast quantities of information/knowledge available present a significant challenge for community members. Sense making, navigation, and efficient use of the knowledge become key concerns. Finding relevant knowledge becomes a key issue when

content is not managed properly within the collaborative workspace. Thus, CM is a growing concern in the areas of web site, portal, and collaborative workspace management (APQC, 2001a). This practice of developing a standard way to plan, acquire, organize, and update content attempts, regardless of platform, to ensure that pertinent information and knowledge is current, relevant, and presented in a usable manner for access by intended users (APQC, 2001a). Applying CM practices to collaborative workspace technology is a central enabler in helping people get the information and knowledge they need to get their jobs done (APQC, 2001a).

Although the importance of CM within collaboration workspaces is recognized, the key issues in how organizations/communities specifically execute it and which issues are considered critical to success are not completely understood. By identifying the key CM execution issues and those that are critical, a foundation for future CM efforts directed at cultivating and improving CoPs is possible. This study uses a multiple case study approach to explore eight CoPs in use by the United States Air Force and to identify perceived CM issues that, when addressed, can lead to better CM practices.

## LITERATURE REVIEW

The theoretical foundation of this study begins with the importance of managing knowledge in organizations. The literature review further develops the linkages between knowledge and its management, CoPs, and CM.

### Managing Knowledge

This research is built on the premise that knowledge is regarded as valuable resource (e.g., Drucker, 1993; Toffler, 1990; Wenger et al., 2002), thus it must be managed accordingly. Hansen, Nohria & Tierney (2000) argue that since the foundation of industrialized economies has shifted from natural resources to knowledge assets, senior leaders must examine the use of the knowledge underpinning their existence. KM practices accrue through experience (Swap et al., 2001) and are generally practices that exploit the combined knowledge, expertise, and experience of an organization's people to improve its productivity, efficiency, innovation, effectiveness, and value (Malafsky, 2002). KM is also the process of determining what we do not know and what skills we need to acquire (Fulmer et al., 2002). KM is also delivering appropriate content in a timely manner to aid in effective decision making, innovation, and the exploitation of business opportunities (O'Dell et al., 2002).

In pursuit of effective KM solutions, organizations often turn to technology. KM initiatives often employ IT to enable the collaboration of people and the sharing of knowledge (Hasanali & Leavitt, 2003). IT-based KM systems are designed to create, gather, organize and disseminate an organization's knowledge (Alavi and Leidner, 1999). KM systems reduce the tedious work of searching for specialized knowledge resources, making it more likely that groups of individuals will contribute a variety of knowledge (Gray, 2000). Malafsky contends that KM is not about the technology. Instead KM is about people-oriented processes (Malafsky, 2002).

### Defining Communities Of Practice

In order to accomplish work objectives, people collaborate and share ideas and views on problems or topics of concern. Technology, specifically web-based information technology, can facilitate collaboration and sharing by providing workers with virtual workspaces. People are no longer limited to the physical location of their desk, cubicle, or file cabinet, but now have a virtual expanse in which to store and share knowledge. Collaborative workspaces are common workspaces shared by active subjects and supported by information technology (Heaton, 1998). A specific form of a collaborative workspace is an on-line community of practice (CoP). The common thread within a community of people may be the desire to solve a problem, share information about a practice or concern, or instill passion for a topic. Thus for the purpose of this study, communities of practice are "groups of people who share a concern, set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis" (Wenger et al., 2002).

### Examining CM: Definition & Challenges

CM involves the identification, collection, and management of content within an organization (Hasanali & Leavitt, 2003). Content can include databases, documents, briefing presentations, records of dialogue transactions, and just about any creative work. Content goes beyond just information or data. Content is codified knowledge (APQC, 2001b). Managing that content is critical for providing knowledge to community members in a way that is meaningful (APQC, 2001b). CM should provide a common taxonomy or standard approach for content ownership, use, storage, and classification (APQC, 2001b);

Hasanali & Leavitt, 2003). Even with a structured CM system in place, challenges persist including developing a sense of ownership of the information, validating the content, and creating a logical organizational pattern of the content.

Participation by community members in providing new content and assisting in maintaining content is important. A common mistake is building knowledge repositories based on existing content and without active community members contributing to the endeavor (APQC, 2001b). Research by APQC found completely supply driven efforts are rarely successful in getting members to refresh or use the content provided. Community members need to contribute and maintain their content, not have it supplied for them.

Maintaining accurate and up-to-date information/knowledge is necessary for an effective CoP. Content validation processes can allow subject matter experts to scrutinize the knowledge and information provided by community members. A critical success factor for the validation process is selecting recognized experts in a certain field or area to evaluate their respective community knowledge. Organizations report that establishing a period for the validation process keeps content from becoming obsolete or stale (O'Dell et al., 2002). Establishing a validation process period also helps in preventing members from becoming discouraged contributors (O'Dell et al., 2002).

Finally, CoPs often create and organize their documents and content in an idiosyncratic way that may be understandable to their members but are not easily accessible to others within the organization. During its eighth research consortium on KM, *Managing Content and Knowledge*, APQC (2001b) researched several examples of working CM systems and found one best practice organization provides centrally-funded content managers. These individuals teach community members how to use metadata or keywords on a document so it can be retrieved from a search easily. The content managers also give training to content providers on writing abstracts so community members can quickly review the abstracts and see if the document is applicable. These practices allow community members to create documents and more effectively share these documents with the whole community. According to research on best-practice organizations by APQC (2001a), a key lesson learned is CM must be addressed early in the community life cycle since content becomes the limiting factor for most communities (Hasanali & Leavitt, 2003).

### **Exploring CM In Communities Of Practice**

There is a growing awareness of the importance of CM in KM initiatives (APQC, 2001b). A lack of proper CM practices within a KM effort reduces the value of gathering an organization's knowledge and information into a searchable repository. This is especially true for on-line CoPs, where good content management can promote active and dynamic (Wenger, 2002) communities as well as help community members transform what may be data and/or information into personal actionable knowledge. Moreover, CM allows for the establishment of a context in which community members are familiar and can better apply the information/knowledge contributed by other community members. Exploring the issues involved with employing CM within CoPs is a first step in understanding the phenomena and a foundation for providing suggestions for future action.

### **METHODOLOGY**

This study uses multiple case studies of individual U.S. Air Force (USAF) CoPs to explore and identify the CM issues associated with on-line CoP workspaces. This research effort consists of exploratory questions asked about a contemporary event of which the researcher has no control, suggesting the case study method is an appropriate approach (Yin, 2003). Multiple cases are used to add more rigor to this research effort. When using a multiple-case study design, the evidence discovered is considered more compelling and the overall study is more robust (Yin, 2003).

### **Research Questions**

The U.S. Air Force Knowledge Now web-based portal serves as the gateway to many of the USAF information system-based KM initiatives. Most USAF CoPs are hosted within this portal. The sophistication, complexity, and stage of development of each CoP make them ideal subjects for examination. The exploration of eight selected CoP attempts to answer the following research questions:

1. What are the CM issues identified by USAF CoP administrators?
2. What are the CoP CM issues critical to success as identified by USAF CoP administrators and community members?
3. What actions have the USAF CoP administrators themselves taken to address CM issues?

4. What suggestions or solutions do USAF CoP administrators/community members propose to solve the CM problems that they are experiencing?

**Research Design Quality**

To address internal, external, and construct validity and reliability for this research a number of tactics were employed throughout the research process. Multiple sources of evidence, a chain of evidence, and key informant review techniques were used to establish construct validity for this study (Yin, 2003). According to Yin (2003), the concern for internal validity in a case study approach may be extended to the problem of making inferences. A case study involves making an inference when an event is not directly observed. The analytic approach of pattern matching is one method of addressing internal validity (Yin, 2003). Replication logic provides the case-study tactic for establishing the external validity in multiple case studies (Yin, 2003). The research design allowed for the selection of a collection of CoPs to support both literal and theoretical replication logic. Finally, reliability must be established. The goal of reliability is to minimize the number of errors and biases within a study (Yin, 2003). If the procedures conducted by an earlier investigator are followed exactly by a later investigator, the later investigator should arrive at the same findings and conclusions. To achieve this end, the research procedures, interview questions, analysis performed on the interview results, and all the other procedures used in this research are fully documented for future reference.

**Data Collection**

Semi-structured interviews were used to gather data from individuals (administrators & community members) directly involved within eight USAF CoPs. Four pairs of functionally similar active CoPs were investigated (see Table 1). Active CoPs were identified based on their generation of content, actual use of the CoP workspace, and a recommendation by the USAF Knowledge Now portal team. The interviewees included a mixture of government civilians, government contractors, and military personnel.

Community of Practice	Functional Area
Acquisition Costing	Financial
Tech Order Pricing IPT	Financial
Serial Number Tracking	Logistics
Packaging	Logistics
Policy Integration (Air Force Material Command--AFMC)	Policy
Financial Management Policy	Policy
AFMC IT Transformation	Information Technology
AFMC e-Battlelab	Information Technology

**Table 1. Selected Communities of Practice**

**Descriptions of CoPs**

To better understand the purpose of each of the CoPs studied a description is provided below:

- **Acquisition Costing**—focuses on estimating the acquisition costs of various systems
- **Technical Order Pricing IPT**—focuses on resolution of contract language statements associated w/tech orders
- **Serial Number Tracking** —focuses on providing access to info resources associated w/ tracking of material assets
- **Packaging**—focuses on providing a one-stop shop information resource on material packaging issues
- **Policy Integration**—focuses on developing process for developing, reviewing, and coordinating new policy
- **Financial Management Policy**—focuses on providing AF Financial policy and information/knowledge to the FM Community

- **AFMC IT Transformation**—serves as a one-stop shop for all information about AFMC IT transformation efforts
- **AFMC e-Battlelab**—provides information/knowledge examining business processes and their on-line application

## RESULTS

To analyze the data in this study, interview transcripts and their interpretations were scrutinized for underlying themes and other patterns. Three techniques were used to complete the analysis: key informants review, content analysis, and pattern matching. To conduct key informant review, each informant was provided with a copy of the transcript to evaluate. Their review of the transcript for accuracy increases the validity and reliability of the research. Each transcript was then analyzed for content and pattern matching. Content analysis began with a review of the transcript created from the interview recording. Each transcript was uniquely marked for each instance that an action, issue, suggestion, or solution was observed. A spreadsheet was maintained for the ease of tallying participant responses and to record each instance a certain response was encountered. Next, pattern-matching techniques were employed. Yin suggests that pattern matching is one of the most desirable techniques for case study analysis (Yin, 2003). Patterns discovered from the analysis of the transcripts were described and compared to data found both between and within the multiple cases in this research design. Patterns were then matched within similar CoPs and also noted between the different types of CoPs. The results of the data analysis as related to each research question are presented below.

### Research Question 1: CM Issues Identified

The data analysis reveals two CM issues as perceived by CoP administrators. First, a lack of documented CM processes and procedures was identified. Each CoP appeared to manage content as time allowed or when they got new or updated information/knowledge to share with the community. However, the way each community used its CoP seemed to affect the formalization and documentation of their CM practices. For example, the logistical, Serial Number Tracking and Packaging CoPs contained a greater amount of archival information than the CoPs that focused on current policy development. So a lack of formalized CM processes posed less of a problem due to the archival nature of the information and lesser need for immediacy and currency in the updating of CoP content. Yet, most CoP administrators acknowledged that a formalized process would be helpful if time and human resources were available especially.

The second issue of primary concern was the sheer volume of content. CoP administrators placed little emphasis on purging or formally archiving outdated content since no limitation existed on the amount of content stored by a CoP. Additionally, these kinds of CM processes were not seen as an immediate priority particularly due, again, to a lack of time and human resources to practice formal CM. Despite the level of concern indicated in the findings, not all CoP members expressed that they were experiencing these CM issues. Size and stage of life seemed to affect the level of concern. For example, the AFMC e-BattleLab CoP is a relatively small and new CoP, and it had not experienced the CM issues expressed by a larger CoP like the AFMC IT Transformation CoP. To deal with their content management issues, the AFMC IT Transformation CoP had reorganized into smaller, more focused CoPs to deal with specific processes helping to alleviate the problem related to the volume of content.

### Research Question 2: CM Issues Perceived Critical To Success

In addition to the identification of issues of concern, this study examined issues critical to CoP success. The analysis of the data revealed two central CM issues perceived by members as critical to CoP success. First, respondents indicated that a consistent taxonomy for the CoP is essential. The lack of a CoP taxonomy seemed to contribute to the inability for members to find correct, relevant, up-to-date information with ease and in a timely manner. Administrators suggested that a taxonomy should be developed by evaluating both internal and industry best practices.

Second, each CoP identified CM training of CoP administrators as a issue critical for success. With proper training on CM procedures and processes and the adopted taxonomy, administrators can adopt best practices quickly without experiencing the growing pains of self-discovery. Truncating the learning curve will allow administrators to be more efficient with CoP CM, providing greater value to the community members.

### Research Question 3: Actions Taken To Address CM Issues

The key action to address CM issues identified in the data, echoes a critical issue previously identified. Respondents indicated that to address CM issues, they had taken action to attempt to train administrators. Many CoP administrators had been building taxonomies based on their personal experience with the subject matter at hand. To help these administrators, the USAF Knowledge Now portal team had begun to provide basic guidelines regarding the establishment of an initial

taxonomy for a CoP and had started to provide training on that taxonomy. Additional help for administrators in addressing CM issues was being provided via training workshops; however, the training was minimal at best. Respondents indicated that this must be continued and expanded.

#### **Research Question 4: CM Suggestions Or Solutions**

The data revealed several common suggestions or solutions to CM issues as perceived by the respondents. First, respondents suggested that evaluating internal and industry best practices can facilitate effective and efficient business processes of the CoP. The first step, however, is understanding how members utilize CoP content to accomplish objectives. Once the objectives are understood and best practices for CM are determined, documenting and formalizing CM processes and procedures becomes logical. It is this documentation of CM processes and procedures for a CoP that gives the administrator a plan to follow rather than no guidance at all.

In addition, three of the four functional CoPs identified not having the time or resources to execute good CM efforts as an issue. Suggested solutions included assigning an individual to be a full-time content manager. Although it would be unlikely that an individual would be exclusively devoted to maintaining the content of a single CoP, the individual would be in a position to maintain the content on the site in an effective manner. Other suggestions involved hiring a support contractor to execute the actions required for good CM or having specific community members assigned the task as an additional duty.

### **CONCLUSION**

#### **Summary of Lessons Learned**

It has been established that CM is an issue of concern in the areas of web site management, portal development/management and collaborative workspace management (APQC, 2001a). Sharing knowledge and information is essential in collaborative workspaces, and the rapid deployment of a CoP on the Knowledge Now site allows a virtual collaborative workspace to be established in a relatively short time. But the management of that content is critical to facilitating effective collaboration, sharing and learning in the CoP. This study revealed that a number of key issues need to be addressed to establish better CM practices. While a number of issues were identified, the tasks of developing a taxonomy based on best practices, formalizing and documenting CM processes and procedures, and training administrators are perceived as central to CoP CM success.

#### **Recommendations**

This research provides insight into a number of suggestions that may enable CoP owners to progress toward formalized content management. First, CoP administrators could use taxonomy experts to develop the needed taxonomy. As the data revealed, the foundation of good CM practices is a consistent taxonomy upon which the CoP is built. Second, CoPs should develop CM guidelines. As previously recognized, the CoPs hosted by Knowledge Now have no documented formal CM processes or procedures. Developing a guideline to be followed for CM may facilitate better CM practices. Properly applied, guidelines provide structure while allowing flexibility, creativity and collaboration. Finally, CoP administrators should be formally trained. Appropriate and timely training will aid the development of better CM practices.

In addition to the suggestions driven by critical issues revealed in data analysis, several other suggestions for developing good CM practices deserve exploration. First, CoPs should consider conducting reoccurring content audits. During the planning and design phase of a CM system, the APQC found that content audits were strongly correlated with improved performance in each area of CM: process improvement, service levels, cost savings, quality of content and customer satisfaction (APQC, 2001a). Next, CoPs should focus on the users. It is essential to keep the user as the central focus of content delivery. The value of content is realized when individuals utilize it to make better decisions for an organization. Providing personalized content delivery to individuals based on their CoP memberships could facilitate locating the most current and relevant content during a search for knowledge and information. Finally, CoPs should not focus on the technological solution. Performing CM is necessary to make sense of all the knowledge and information available and to provide users with the most relevant and up-to-date content necessary to make the best-informed decisions.

#### **Study Limitations & Suggestions For Further Study**

This research effort is limited by the scope of the CoPs investigated. A wider selection and number of CoPs may present a more complete picture of the CM issues related to the CoPs hosted on Knowledge Now. Assistance from the Knowledge Now portal team was used in the selection of CoPs to be investigated and may have introduced some bias into the research. Determining the level of maturity of the participating CoPs was also not addressed in the scope of this research, but evidence collected in the study suggests that it should. Knowing the varying levels of maturity would assist in matching patterns or

discovering trends in the interview data. During data analysis, the triangulation of interview data was accomplished with a sparse volume of additional documentation. Finally, the generalizability of this research extends to the Air Force CoPs hosted on the Knowledge Now website.

In addition, an examination of CM application options deserves attention. The authors are aware that a number of automated CM solutions are available and deserve exploration in the context of the given community under examination. However, these technology solutions are not an option for the USAF CoPs as they cannot be used in these particular communities. In other contexts, these digital solutions should be examined. Also, an expansion of the study to include the levels of maturity of the participating CoPs may explain some pattern existing between the various CoPs. The differences in issues between CoPs in the evolutionary stage could then be distinguished from CoPs in more mature stages. In addition, enlarging the selection of other types of CoPs may provide a more complete picture of the CM issues currently existing in the Knowledge Now hosted CoPs. Further study may include identifying factors that impede the practice of sound CM. These factors could be identified in the subject areas of people (their roles), processes and technology involved with the CoPs. In addition, this study could be extended to other organizations such as corporate entities, non-military government entities or non-profits.

### Summary

This study reveals a number of CM issues facing administrators and members of USAF CoPs and presents plausible suggestions for dealing with the ever-increasing volume of knowledge/information, circulating through this collaborative environment. It is clear that ignoring these CM issues prevents users from navigating successfully through the collaborative workspace and ultimately finding information/knowledge that they find useful in execution of their everyday responsibilities. The results of this study clearly suggest that the development of formal CM processes may help solve CM problems.

### REFERENCES

1. Alavi, M. & Leidner, D.E. (1999). Knowledge Management Systems: Issues, Challenges, and Benefits. *Communications of the AIS*, 1(2), 1-37.
2. American Productivity & Quality Center. (2001a). *Building and sustaining communities of practice: continuing success in knowledge management* (ISBN No. 1-928593-49-6). Houston: Author.
3. American Productivity & Quality Center. (2001b). *Managing content and knowledge* (ISBN No. 1-928593-56-9). Houston: Author.
4. Drucker, P. (1993). *Post-Capitalist Society*. Boston: Harper Business School Press.
5. Fulmer, R.; Gibbs, P.; & Keys, J. (2000). New Tools for Sustaining Competitive Advantage. In J. Cortada & J. Woods (Eds.), *The Knowledge Management Yearbook 2000-2001*, (pp. 336-351). Boston: Butterworth-Heinemann.
6. Gray, P. (2000). The Effects of Knowledge Management Systems on Emergent Teams: Towards a Research Model. *Journal of Strategic Information Systems*, 9(2), 175-191.
7. Hansen, M.; Nohria, N.; & Tierney, T. (2000). What's Your Strategy for Managing Knowledge? In J. Cortada & J. Woods (Eds.), *The Knowledge Management Yearbook 2000-2001*, (pp. 55-69). Boston: Butterworth-Heinemann.
8. Hasanali, F. & Leavitt, P. (2003). *CM: A guide for your journey to knowledge management best practices*. Houston: American Productivity and Quality Center.
9. Heaton, L. (1998). Talking heads vs. virtual workspaces: A comparison of design across culture. *Journal of Information Technology*, 13(4), 259-272.
10. Malafsky, G. (2000). Technology for Acquiring and Sharing Knowledge Assets. In J. Cortada & J. Woods (Eds.), *The Knowledge Management Yearbook 2000-2001*, (pp. 85-107). Boston: Butterworth-Heinemann.
11. O'Dell, C.; Hasanali, F.; Hubert, C.; Lopez, K.; Odem, P.; & Raybourn, C. (2002). Successful KM Implementations: A Study of Best Practice Organizations. In C. Holsapple (Ed.), *Handbook of Knowledge Management: Knowledge Matters, Volume 2*, (pp. 411-441). New York: Springer.
12. Swap, W.; Leonard, D.; Shields, M.; & Abrams, L. (2001). Using Mentoring and Storytelling to Transfer Knowledge in the Workplace. *Journal of Management Information Systems*, 18(1), 95-114.
13. Toffler, A. (1990) *Powershift: Knowledge, Wealth and Violence at the Edge of the 21<sup>st</sup> Century*. New York: Bantam Books.
14. Wenger, E.; McDermott, R.; & Snyder, W. (2002). *Cultivating Communities of Practice*. Boston: Harvard Business School Press.
15. Yin, R. (2003). *Case study research: Designs and methods* (3rd ed.). Thousand Oaks, CA: Sage Publications.