

# Helping Clients Harness Knowledge to Drive Innovation

David Connor (Author)  
Vice President and GM  
Industry Consulting & Systems  
Integration  
Xerox Professional Services  
Xerox Corporation  
7900 Westpark Drive, Suite 400  
McLean, VA 22101  
David.Connor@xps.xerox.com

Matthias Gutknecht (Coauthor)  
Associate Principal Knowledge Mgmt.  
Xerox Professional Services  
Xerox Corporation  
Thurgauerstr. 40  
CH-8050 Zürich  
Switzerland  
Matthias.Gutknecht@xps.xerox.com

## Abstract

By assembling information in such a way that it becomes an intellectual asset, an organization can link structured and unstructured information to allow people to exploit the information/knowledge to achieve business objectives, improve processes, or solve problems. The Applied Knowledge Management Framework sets the stage for the kind of knowledge sharing and collaboration that leads to innovation and creation. As technology and globalization level the playing field among competitors, these may be the most important remaining competitive advantage.

## Introduction

If generating economies of scale was a strategic imperative in the manufacturing based economy, harnessing corporate intellectual assets to achieve sustainable competitive advantage through innovation is the *sine qua non* of the knowledge-based economy. The ongoing challenge to harness and channel intellectual assets has developed into a discipline known as *Knowledge Management*. It has evolved from popular management concepts such as organizational learning, total quality management and business process reengineering and, today, is a topic for discussion from the boardroom to the information technology office to the human resources department.

## From Information to Knowledge and Back

Traditional views of knowledge management emphasize a progression from data to information to knowledge.

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People facilitate this progression, by organizing, grouping, and categorizing numbers, words, sounds and images to transform them into information. Human reflection, analysis and synthesis put information into productive use and thus transform it into knowledge. The central challenge facing corporations is transforming the knowledge that has been created and captured back into information that can be reused and shared. In a time of rapidly shrinking time and space barriers, coupled with intense competitive pressures and dynamic work forces, optimizing and institutionalizing this transformation process is a strategic imperative.

In essence, the knowledge that resides within an organization cannot be fully exploited unless it is transferred and used by others and the most common ways of communicating knowledge are speech, practice and documents. Powerful document representations (text, voice, video, graphics, Web pages, etc.) are often superior to verbal communication and can facilitate the transformation of practice into codified knowledge. This communications superiority, coupled with the ability to preserve, transmit and evolve knowledge, makes the document a key enabler for sharing and generating knowledge.

It is also critical to recognize the role that informal work practices play and the need to identify and capture those that are critical to success. For example, during the air traffic controller's strike in the 1970s, new controllers were hired, trained, and provided with the standard operating procedures that documented the work to be performed. Needless to say, without the benefit of the knowledge contained in the undocumented practices of the striking workers, the new employees were unable to anticipate and prepare for all the incidents that they would encounter. A key objective of the Applied Knowledge Management Framework is to capture and institutionalize the informal work practices and personal know-how needed to sustain and leverage the process.

## The Knowledge Conversation

Today, proponents of knowledge management fall into two distinct categories. At one end of the spectrum are technology companies that focus on prescribing the right technology infrastructures to capture, store, access and disseminate corporate information. At the other end are

management consultants who offer advice on best practices and incentives for creating and encouraging a knowledge-sharing culture.

Both groups provide useful tools and insights for knowledge management initiatives. The role of technology is critical in realizing the potential of an organization's knowledge as it provides tools to more efficiently and effectively collect, manage, and use information of all types. It helps us to more effectively share relevant information and facilitates teamwork and collaboration. However, it must be viewed in the context of enabling, not defining solutions. Best practices demonstrate that culture is also critical and can make or break knowledge management initiatives, but without the technology to support practice and process changes people will become frustrated by the constraints of time and geography.

As companies continue to shift their focus from productive machines to productive minds, an integrated approach is needed - one that considers practice, process and information. Only then can a company create work and learning environments that foster the continuous creation, aggregation, use and reuse of organizational and personal knowledge in pursuit of new business value.

### Xerox Professional Services (XPS)

Xerox Professional Services (XPS), the global consulting arm of Xerox Corporation, has adopted this integrated approach to knowledge management, and has created a comprehensive service offering and solutions portfolio based on the *Applied Knowledge Management Framework* shown in the following diagram:

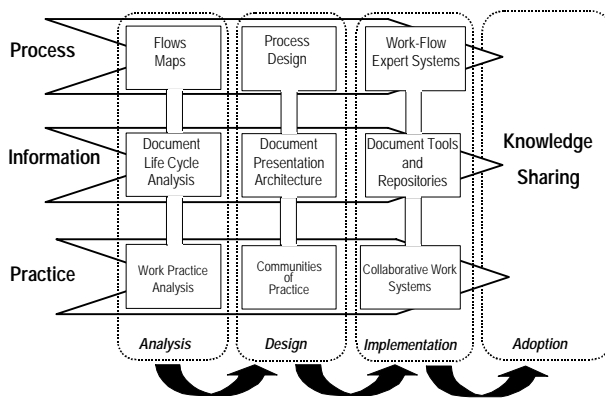


Figure 1: Applied Knowledge Management Framework

The Applied Knowledge Management Framework was developed by XPS to guide the process used to enable knowledge-based solutions for clients. XPS uses this proven methodology to optimize the integration of practice, process and information, and to prescribe services and solutions that deliver the right information, in the right format, at the right time, to the right people to make decisions and take actions that drive business. Within this framework, XPS analyzes client requirements and implements solutions that will facilitate the creation, sharing and preservation of knowledge,

while yielding near term returns in the form of improved productivity and efficiencies. More importantly this approach builds a solid foundation for the adoption of a knowledge sharing culture in which innovation and creativity can thrive.

Central to this unique approach is the premise that the traditional focus on people, process, and technology does not suffice. People are the key constituents for knowledge management and corporate research at PARC (Palo Alto Research Center) helps to better understand how people work, how people relate to technology, and how people put information to work to get results. XPS has built upon the findings from PARC, and practical field experience to broaden the view with the Applied Knowledge Management Framework. The use of this powerful tool enables consultants to examine:

- *Process* - the documented steps and activities required to complete the task as defined by the requirements and available best practices knowledge.
- *Information* - the full range of available information in all of its forms including electronic, hard copy, structured, unstructured, and multimedia.
- *Practice* - the often undocumented activities, approaches, behaviors, values and culture which reflect the unique personality of an organization and the influences which drive the successful completion of tasks.

Against these three primary vectors of consideration (process, information, and practice) XPS applies a structured methodology that enables the identification, capture, and use of the key factors needed to realize near-term goals and establish the foundation for sustained long-term benefits.

In the following three cases are presented. Each of the cases shows a specific application of the framework. Case 1 - an industrial project - has chosen a process centric approach. Information is centered around processes. Case 2 - a financial project - has chosen an information centric approach. Processes and practice are organized around central business knowledge. Case 3 - a field service project - has chosen an integrated approach fully exploiting the strength of the Applied Knowledge Management Framework.

### Case 1: Asea Brown Boveri (ABB)

ABB is a world-renowned engineering company. With some 210,000 employees and revenues of over \$30 billion, it specializes in areas such as power generation and distribution, industrial systems and transportation.

A major division of ABB wins a significant percentage of its business by submitting proposals under tight deadlines, in the form of documents. The proposal generation process historically was highly paper intensive and required frequent input and collaboration among multiple ABB specialists. In many cases these specialists were geographically dispersed.

The company recognized the need to fundamentally change its work processes in order to improve the efficiency and speed of the proposal creation process.

They formally modeled and introduced the full offer to installation process. Since most of the proposal documents are largely made up of complex engineering and technical information, which form the company's main intellectual capital, ABB focused on how to improve the use of this asset. The company brought XPS to assist ABB in standardizing and improving its collaborative processes through a worldwide digital document management system.

The system designed for digital proposal creation is based on Documentum and includes functions for storing components of the proposal in a repository and linking users throughout ABB. The new system not only facilitates re-use of information from previous proposals, but also helps teams of disperse workers collaborate and share knowledge. It allows each team to have current information on the status of a particular component and who worked on it last. Furthermore, by understanding more about the work to be done, costing is more accurate - which helps improve profit margins.

This project has been successful in supporting a complex business process by supplying the right information from different sources in an integrated way. However, not having paid enough attention to the practice aspect made the introduction and deployment of the system difficult. Before a deployment in a new country adaptations had to be made in order to meet the specific needs of the local work practice. Substantial training and support is needed for the users. This difficulty has been avoided in the next case.

### **Case 2: Banque Pictet & Cie**

Since it was founded in 1805, Pictet & Cie has built up assets of \$60 billion-plus, and, with a flourishing private asset management operation, Pictet clearly exemplifies 'liberty, independence, responsibility', the watchwords of Geneva's five private banks. Pictet's clients, some of the most demanding individuals and organizations in the world, expect personalized service, unquestioned security and assured confidentiality. Pictet's customers are high net worth individuals, and the administrators of family trusts, pension funds, insurance companies, private corporations, and State entities. Pictet has a staff of more than 1'000 people and offices in Geneva, London, Montreal, and Nassau.

From this it is clear that total confidentiality, solid results and excellent customer relations are the cornerstones of Pictet's business success. In the early 90ies Pictet decided to introduce an electronic system for managing and archiving their customer dossiers. Documents are the heart and soul of the business process, and the company's biggest expense after payroll.

To meet Pictet & Cie's detailed and stringent requirements of utter confidentiality, reliability and efficiency, Xerox designed, built and implemented a secure, swift, multi-user electronic data management solution. Every document Pictet deals with now goes into this system: all archives, invoices, accounts, letters, contracts and cheques. Everything is either scanned or written straight in. With 12 million stored documents at

any given time, Pictet's electronic document management solution will be one of the largest in the world, and crucial to its daily operations and future success. Tasks which once took hours, or even days, to complete, involving endless excursions down corridors in pursuit of paper, are now undertaken electronically and completed in a fraction of the time.

The business benefits which Pictet has derived from the system include higher client satisfaction, improved business efficiency and increased employee motivation and satisfaction. Security - already rigorous - is even further enhanced. Paper can go astray, but digitised documents never get lost, and only those with specific responsibility for a client can access their details.

This project has been successful by focusing on the information and documents which represent the core business knowledge. Concentrating on the information and not on the processes, which are very flexible in the banking business, has been a good and feasible first step. Nevertheless, the tacit knowledge of how to acquire and keep good customers - maybe even for a lifetime - has not been tapped by this project. Including this would also require inclusion of the third element of the Applied Knowledge Management Framework: the work practice and collaborative support aspect. This aspect - together with the other two has been successfully integrated in Case 3.

### **Case 3: Xerox - The Eureka Project<sup>1</sup>**

Xerox has many thousands customer service engineers (CSEs) world-wide working in the field at customer sites. "Service engineers frequently invent new/better ways of doing things and sharing them locally. Unfortunately, current policies and infrastructure significantly limit the company's ability to capture any value from this learning beyond the local workgroup. The following story was told to one of us by a senior CSE.

Decades ago when he started at Xerox, he submitted a suggestion on how to install a machine more efficiently. For six months he did not receive any feedback about the suggestion. Then he saw a published bulletin with his idea, attributed to the person who received the suggestion over the phone. After that, the service engineer did not submit any ideas until the launch of the Eureka process.

To provide an infrastructure and context that they could feel comfortable with in sharing their knowledge more widely, we worked with the field service community to create a process (named Eureka). Representatives of the field service force in France, including customer service engineers, hotline specialists, product specialists, Tigers and others, jointly designed a distributed tips validation process. In this form, a tip is a problem-cause-solution case. Tips are indexed at the same granularity as the documentation (presenting symptom), allowing easy cross-referencing between the tips case-base and the documentation. In this process, anyone in the field

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<sup>1</sup> This case description is cited from [Bell97]

service community can author a tip and submit it for validation by a community of product leaders.

The French service community decided that the appropriate people to do validation should include those people who were already designated product specialists, and the Tigers who helped in the escalation process. They felt that these were the people who could check the validity, safety and efficacy of the suggestions. This validation community has several responsibilities: first, to talk with contributors about submitted tips, to make it better in both content and form, enabling submitters to learn from the conversation; second, to ensure the quality of tips before sent to the larger community; third, to combine redundant tips, and remove those that are no longer useful.”

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“After a tip is submitted, tip authors can monitor the progression of their tips through the validation process. They get to see who claims their tip for validation, all the comments that person makes on their tip, and they get to have a conversation with the validator about their tip. Use of the system is completely voluntary, and extrinsic rewards are not used. When asked if a monetary incentive would be useful, a Tiger said ‘such incentives would corrupt the process.’ With the author’s name on the tip, community recognition and improved reputation are rewards.

The process is changing the roles of community members. Customer service engineers are now spending more time thinking of new ways to diagnose broken machines and new ways to repair them to make them more reliable. They are sharing these tips with others in order to help both their local workgroup and the large field service community. One hotline specialist who we thought might have felt threatened by the system, welcomed it saying ‘This will allow us to spend more time figuring out how to handle hard problems, and less time on repeating solutions to problems we have already figured out.’ Most of the validation is done by people local to the district, rather than by the centralized group of Tigers who support the escalation process. Instead of being a bottleneck in a validation process, the limited number of Tigers are enjoying their role coaching a distributed set of validators.”

Up to now there are about 2000 tips in the US and Canada knowledge base. 70% of all tips are validated in less than 5 days. There is an average of one new tip per 100 service calls. The tips data base is consulted once per day and CSE. There is an improvement of 5% in service hours and parts usage. The biggest improvement has been observed for CSEs with low dedication to a specific product (which is the majority in France).

The Eureka project being the first project exploiting the full Applied Knowledge Management Framework by co-designing practice, information, and process in a socio-technical approach has shown excellent results. It is highly accepted among the users and is one of the (few) examples in the knowledge management literature where knowledge sharing has been achieved without any monetary incentives at all.

## Conclusion

By assembling information in such a way that it becomes an intellectual asset, an organization can link structured and unstructured information to allow people to exploit the information/knowledge to achieve business objectives, improve processes, or solve problems. In the long term, the Applied Knowledge Management Framework sets the stage for the kind of knowledge sharing and collaboration that leads to innovation and creation. As technology and globalization level the playing field among competitors, these may be the most important remaining competitive advantage.

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- [Bell97] David G. Bell, Daniel G. Bobrow, Olivier Raiman, & Mark H. Shirley, Chpt. 16, *DYNAMIC DOCUMENTS AND SITUATED PROCESSES: Building on local knowledge in field service* in Wakayama, Toshiro, Srikanth Kannapan, Chan Meng Khoong, Sham Navathe, and JoAnne Yates (eds.). *Information and Process Integration in Enterprises: Rethinking Documents*. Kluwer Academic Publishers, Norwell, MA, 1997.