

# 14 Knowledge Sharing: A Perspective from Xerox—The Document Company

**Michael W. Laird**

If Dilbert were in the office and the phrase “knowledge management” came up, he might say, “Gee, I think I hear a buzz word.” We all have our own phrases on what we would like to call this area but I would like to call it “knowledge sharing.” Much research has been done to indicate that knowledge sharing is the way knowledge grows. You do not manage knowledge to make it better; you share it. Research also says that knowledge gets bigger when you share it. The real question that Dilbert raises is what is going on here? What is this thing that we are struggling to understand?

I propose that there is a lot going on in this area that is real and substantive, and that it is important to decision making in large organizations, as well as in small work groups. I will first discuss what knowledge sharing is and then give an example of how it works, as well as how to get further information.

Many data sources indicate that the number of knowledge conferences, as well as publications, has greatly increased over the past few years. Market research in the knowledge management area has also increased over the past four or five years. Forecasts show that consulting revenue in this area is growing and it is going to become a multi-billion dollar business. From the Xerox perspective, the forces driving knowledge sharing are in the same category as the total quality management effort

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initiated as a response to Japanese competition in consumer goods and automobiles in the 1980s. In the 1990s, we saw process reengineering as the major initiative. Movement within organizations was generated by many sources including global competition and the recessions of the early 1990s.

Knowledge management is a movement of the same class. It is aimed at managing knowledge assets and, just as the other movements were, it is driven by a lot of factors, including Internet technology and the democratization of how organizations work. This is not purely a technical phenomenon. There is a huge opportunity here for research in understanding what is happening from a social perspective. This kind of research would move this whole phenomenon forward.

We know there is a big difference between data (organized numbers, bits, bytes, etc.) and information (which is more organized, arranged, and processed). But what do we mean by knowledge? At Xerox our perspective is that knowledge includes the things that one has to have in order to launch into productive action. That is different from data or information by itself. When you launch into productive action, three things must be considered.

First, what is this related to? Where did this come from? How is this connected to something else I know or to a person I know? Context typically comes in the form of a document. There is a paper on a subject, or a book, or a speech. The context is very important to taking action. Second, we have to consider authenticity. Can I trust this? That is a key part of knowledge taking action as opposed to just information (which is simply organized and presented). The third piece of this is experience. Have I done this before? Has my co-worker done this before? These three elements of knowledge are not elements of data or information. This is where social science comes in. We are talking about a phenomenon that is very much technically driven, but it is not just technology. A great deal of social interaction is going on. Somewhere, our society is changing because of the forces that are driving knowledge sharing.

If we say that information is different from knowledge then we would have to say that information management is different from knowledge management. Information management has been around for a long time under a variety of names: information technology, MIS, CIO, etc. We all have some kind of understanding of information management. People are interested in delivery, accessibility, and up time. And there is a very heavy technical focus. This is where the alphabet soup comes in.

(Very few of us can understand this and even some of the people who are in the midst of it do not understand.)

Capture, retention, and standardization are important themes within information management. But knowledge management is a bit different. For example, human inputs are very important, which is the opposite from standardization. We have to trust whoever the person is that is associated with that information, rather than trust the standardization and definition of the data or information presented to us.

Something very interesting is going on in this complement of technology and culture and social science. It is leading to actionable content, something that gets filtered, synthesized, interpreted, analyzed, confidence-created, de-risked, etc. We can then finally come to the decision that lets us act. That is the essence of it.

People look at the whole, but then more information comes in. This information may be on a different subject and from a different endeavor, but it is brought into the conversation and it makes an impact. It may cancel something out or add confidence to some other piece. That, in turn, generates more conversations and more documents.

Documents are a repository, a container, for the interaction that occurred in some group. They document the thought process, who said what, and why we do something. That document then becomes a credibility factor in the next conversation. When we talk about knowledge sharing or knowledge management, at least at Xerox, we ask how we can foster these kinds of interactions.

This moves to an illustration. We in Xerox have a knowledge-sharing system that is used within our field service organization, which has about 20,000 people all over the world. They make a million calls per month on customer sites, either for prevention or maintenance. That is an awful lot of knowledge that is being used, refreshed, and refined. And it is a continuous process. We needed a way to tap that information and leverage it. We developed a process supported by some software products, but more importantly by social engineering. A set of awards and a set of roles and responsibilities foster reporting information up to another group that has dealt with the problem before.

We are a printer company. We know about streaks and paper jams. When it comes to paper jams we know more than anybody else does. This is all codified knowledge. We have very large databases that cover the "red streak problem" and the paper jam problem on a DocuTech-135, for example. This knowledge is very well organized and codified. But we then make new products, and customers come up with new uses

for current products. People put our products to uses we never imagined. We find new problems even in old products. We also go into new marketplaces where there are cultural differences. Things are changing all the time.

People are rewarded for figuring out how to fix these problems. We then put the solution into a database. This database is very extensive. We have people who specialize in streaking problems across all products and people who specialize in a particular product and the different kinds of problems that can occur with that product. We have created a very matrixed and complex organization.

Having a tip accepted is similar to getting published in academia. Tips come in from the field and are reviewed. The best tips on a particular problem become the way we do things. We publish the fastest, cheapest, and most replicate-able and appropriate methods for that problem in that product. This is a knowledge-sharing system. Anyone who runs into a problem gets the benefit of a million calls a month and all the experience generated by them. Employees do not have to reinvent the wheel every time a problem occurs. Also, they can contribute. What they find out is leveraged to everyone else.

We have seen a whole culture change within our very large organization. In fact, we now have multiple organizations. Those 20,000 people do not report to one person. They report to dozens of people all across our organization. But they all have the same incentive: to be published. They do not get tenure, but they do get incentives.

Our method of knowledge sharing is like doing research. At the bottom you might have research associates in your university or research lab who deal with very unstructured problems. They have the same need to communicate what they find. This is, in fact, how this particular product was created within Xerox. Some people within our research organization wanted a better way to communicate their results in the problem-solving process. They did not want a highly structured system where someone turns the document over to an administrator who puts it into an indexing system. They wanted something they could put information and documents into. Then they could decide who gets it and who does not get it.

Sponsorship is nice. But there is always a question of how much I should share with that person, and how often. Does the sponsor want to know every week, every month? With this system people can check the Web site whenever they want. It is not the responsibility of the research manager anymore to inform different people who are casually

interested. People can come and take a look at it. They are entitled to look at the documents that are shared. (Of course, people cannot see things that are not ready to be shared).

You can look at this as a school. The 20,000 people are 20,000 students and they are solving problem sets. The people at the top are pushing problems down on them. The community product leaders are curriculum leaders. The problem sets that come up are matched with how well the person has matched the curriculum.

This is a generalizable situation. Many activities across many different organizations are similar to field service. They all are amenable to leveraging the accumulated knowledge that is within that whole system of people.

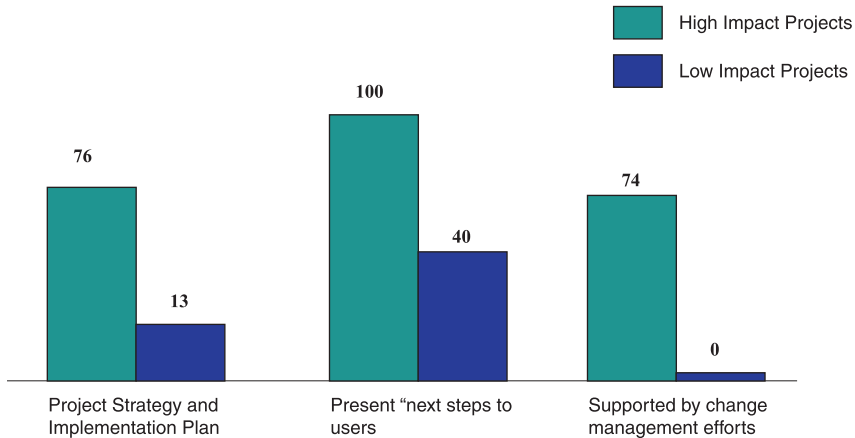
We have found out all kinds of things as a result of working with this. What benefits have we seen? The field service organization has been able to validate what goes on. They are identifying who is good at this and they are rewarding them. These people get more time to act as problem solvers and to leverage their expertise. We have also found that sometimes the problem is not with the machine or with the user, or the intended use they are putting it to. The problem is with our documentation. We need documentation that can be searched and organized. A whole cluster of problems came into our documentation group. The writers realized they needed to write the manuals differently. That has strengthened the way we communicate with our users, and it has reduced our costs. The improved documentation has also improved our customers' effectiveness. It is a win-win situation for everyone.

On an even slower feedback loop (but in the long run even more powerful), a variety of design problems have come up. That goes back to the engineering organizations and who can solve the problem in the next version of the product.

Of course, a lot of this has been going on for a long time in business management. You could say it is just good management. Why is this different and why is this getting a name like "knowledge management?" Something is happening to make all this happen more quickly with more people. The old paradigm for management was that if you wanted to do something quickly you wanted a small number of people involved. Now we have tools and social techniques that help us get things done quickly with tens of thousands of people. That has not happened before.

In every country in Europe we have a separate field organization. In France we have all kinds of data and a system to support the collection of data. This system provides statistics that things are getting better.

**Figure 1**  
**Characteristics of Knowledge Management Projects**



N = 93 projects at 83 companies

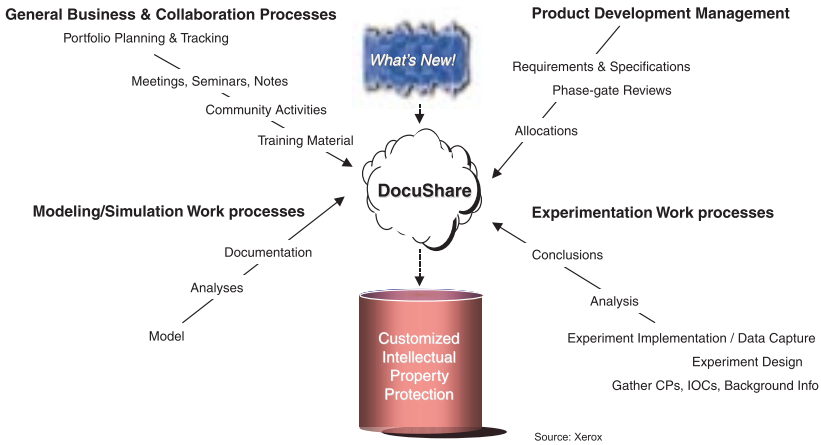
Source: Teltech Resource Network Corp.; CIO Enterprise, February 5, 1999

Through, in effect, some double-blind experiments and lots of interviewing, we concluded that deploying this capability in the field organization in France reduced their parts cost five to ten percent, and reduced time spent at customers' sites five to ten percent as well. If you dare to extrapolate that to a worldwide sales organization with 20,000 people and go at the high end (ten percent), you save, in some way, 2,000 people. We have ten percent more productivity without adding people. Our people are now much more effective, faster, and get more work done. Also, anecdotal evidence shows that customers are much more satisfied. Interviews with employees say they like this. This, again, is a win-win situation for everyone.

We can see examples of that in other places. Organizations are using new technology to fix problems. That is exactly what happened in France. The field service organization went from being a problem to one of our best European field organizations. It is a really good story about how all this can come together.

There is a lot of research about the effectiveness of work groups and teams. We are not talking about a team here. Of course, all of France, or all 20,000 people, is not a team. What do we have then? We call it a community of practice. AAAS is a kind of community of practice—a group of people with common interests. They share knowledge and get

**Figure 2**  
**Community-Owned, Maintained, Knowledge Environments**



together in conferences and interact over the telephone. This accelerates the process and provides real-time capabilities to further the area of interest. But this is more of a notion of mass migration than it is a work group or team.

Knowledge management projects are as tricky and as difficult to do well as any other technology or social engineering project within an organization. One study looked at about 100 projects to compare high-impact projects with low-impact projects. Not surprisingly, a project strategy with an implementation plan is associated with successful projects. If you do not have such a strategy, it is just like anything else, you are probably not going to be successful.

In 100 percent of the high-impact projects the tool or the capability put in place tells the user what to do next. In low-impact projects the percentage is much lower. The conclusion is that projects are successful if you tell people who have some information what to do next. This is based on a lot of people's experience.

In the social aspect of knowledge sharing implementations, a very high percentage of high-impact projects are supported by changing management processes that help to implement the whole activity. Literally none of the low-impact projects included thinking on change management, that is, the people part of this whole effort.

To summarize, knowledge management is a major enabler for organization effectiveness. Many technical and social forces are at work and they are improving decisions and action. Decision making is being reshaped by low-cost technologies and change management techniques that change work practices. The combination of those two things is producing great results.

More information is available at <http://www.mcse.external.xerox.com/docushare>. Type "AAASguest" for user name. The password is also "AAASguest." Click on "knowledge."