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Research Report

THINK TOOLS WILL BE THE LEADERS OF CHANGE
ARE PROJECT COOPERATIONS AN ALTERNATIVE TO MERGERS?

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Think Tools Will be the Leaders of Change

Are Project Cooperations an Alternative to Mergers?

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INTRODUCTION

Before we can answer the somewhat provocative question as to whether knowledge management technologies will make project cooperations a viable alternative to mergers (and acquisitions) we first need to understand the underlying assumption **“Think Tools Will Be the Leaders of Change.”** We will examine what is most commonly understood when people talk about knowledge management and the supporting technology. We will discover that the use of knowledge tools is by no means a sufficient guarantee for a successful project cooperation. As a necessary precondition, a culture of trust and sharing must exist.

KNOWLEDGE MANAGEMENT

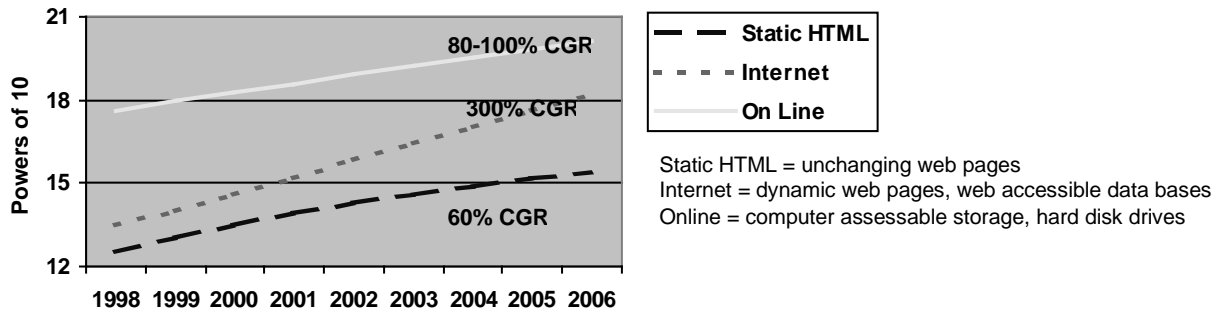
Knowledge Management (KM) is a term that has become very popular over the past four years. No longer only consulting companies, whose primary asset is knowledge, talk about managing knowledge, but also manufacturing and other services companies have started to invest in knowledge management to gain competitive advantages. Many companies have started to define the role of a formal *Chief Knowledge Officer* (CKO), who is charged with managing and leveraging knowledge assets. HP’s former CEO Lew Platt once said, “If HP knew what HP knows, we would be three times as profitable.” KM is an attempt to put the creation, codification, coordination, and transfer of knowledge into a formal framework and supports it with tools, technologies, and organizational structures to improve the efficiency, competency, and responsiveness of an enterprise.

Why KM may provide the competitive advantage can best be described by the following quote:

“We now know that the source of wealth is something specifically human: knowledge. If we apply knowledge to tasks we already know how to do, we call it productivity. If we apply knowledge to tasks that are new and different, we call it innovation. Only knowledge allows us to achieve those two goals.” – Peter F. Drucker

DATA, INFORMATION, AND KNOWLEDGE

The pervasive use of computers, the Internet and the Web have led to an explosion in the amount of data that has become available to an enterprise. Moreover, the amount of available data is growing at an exponential pace.



Growth of on-line data

Sources: IBM and Gartner Group

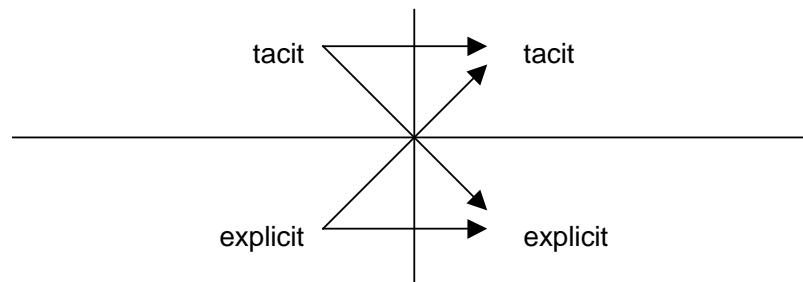
Data is neither information nor knowledge. The fact that a bank or the tax authorities keep records of all transactions and employ effective data management technologies to retrieve, search, and manipulate these records is key to their success. However, turning this data into information or knowledge is a non-trivial task. **Information** is typically defined as a message that has a sender and a receiver, the information is intended to change the way a receiver perceives something, it is to have an impact on his judgement and decision process. One technique to turn data into information is to analyze the data and look for correlations between various data sets. This is a skill statisticians have mastered for decades and for which now first automated data mining tools have become available. In most cases though these mining tools still require human intervention to formulate a hypothesis. The results are interpreted by a “*knowledgeable*” human who leverages his experience and contextual information to create new **knowledge** out of this information. It is difficult to define knowledge precisely, although we may state that knowledge is derived from information through *comparison, consequences, connections, and conversation*—all activities only humans can perform.

TACIT AND EXPLICIT KNOWLEDGE

Knowledge is classified into two categories, explicit and tacit. **Tacit** knowledge is knowing, for example, how to ride a bicycle or play golf. It is virtually impossible to capture it in a codified form such as a book or database. Tacit knowledge can only be acquired through training and learning on the job. In many cases, tacit knowledge is what we also call experience. **Explicit** knowledge is knowledge that can be codified and written down. An example may be a patent portfolio that is indexed and classified in many different ways. Enterprises, in recent years, have become aware of their explicit knowledge assets. But in many cases, they have not yet considered the tacit assets that reside in the heads of their older, experienced employees. When looking at how decisions are made, research has shown that roughly two thirds of the knowledge used comes from face-to-face meetings or telephone conversations. Knowledge that is transferred via these media is often tacit. Languages other than English, German for example, distinguish between tacit and explicit knowledge through the use of different verbs such as: “*Sie **kennt** Frankreich und **kann** Französisch*” however “*Er **weiß**, warum der Kunde nichts gekauft hat*”.

KNOWLEDGE TRANSFER

Knowledge transfer occurs in two distinct steps, the diffusion and the absorption (and eventual use) of knowledge. Without absorption by the recipient, knowledge has not been transferred. To talk about knowledge transfer and the assistance that information technology (IT) can provide, let us consider the four quadrants below.



Knowledge transfer happens readily from explicit to explicit knowledge. In this domain IT offers the most help through indexing, reformatting, and classification techniques. A very recent example is the use of XML in document creation because it allows the author to mark up documents with additional tags to indicate semantic meanings. These tags can then be used for improved indexing and classification. The transfer of tacit to tacit knowledge is one where human contact is most important. IT can facilitate communication by bridging time and distance via desktop video conferencing, shared white boards, chat rooms, and e-mail. The transfer of tacit to explicit knowledge has been attempted with varying success by so-called expert systems, whose goal it is to translate tacit human knowledge into rules that can be used by a computer. We say with varying success because in spite of considerable investments into artificial intelligence research, very few success stories exist. The transfer of explicit to tacit knowledge—a large part of what we can call learning—may, for example, be technically enhanced with the help of multimedia presentations, hypertext links, and computer simulations.

KNOWLEDGE MANAGEMENT TOOLS

KM researchers agree that the technologies used in support of knowledge management projects play only a subordinate role to the more important cultural issues of enabling a market place for the exchange of knowledge. In fact, Davenport and Prusak claim that if in a KM project more than 1/3 of the effort is spent on tools, it probably is an IT project that is doomed to fail. When we talk about KM technologies, we can distinguish among the following five categories.

In Support of	Technologies
Business Intelligence	Online Analytical Processing (OLAP), Data Warehousing, Data Mining
Collaboration	Groupware, Synchronous Messaging, e-mail, Desktop Conferencing
Knowledge Transfer	Distributed Learning, Live Collaboration, Computer-based Training
Knowledge Discovery and Mapping	Categorization, Document Management, Search
Locating Expertise	Expert Networks, Yellow Pages, Directories

For each of those categories a wide range of commercial tools and experimental prototypes exists. The Internet and common standards have made it possible to extend these tools across organizational boundaries and make them interoperate widely. An example is Lotus Notes, which has been one of the premier KM tools supporting collaboration. It has been extended in its

Domino version to allow access not only with the proprietary Notes client but also with universally available web browsers.

THE KNOWLEDGE MARKET

Whereas supporting technology—such as a common communications infrastructure, data and information repositories, and structured knowledge databases and directories—is essential for effective knowledge management, technology alone will not ensure knowledge sharing. Effective KM requires fostering a culture of interactive exchange, identifying roles and responsibilities, collecting high-quality content, and achieving consensus that knowledge sharing is vital to the enterprise’s competitive advantage. It is most helpful to look at the process of transferring knowledge in terms of a *knowledge market* that functions similar to markets for goods or services.

MARKET STRUCTURE

As with any traditional market, a knowledge market consists of buyers, sellers, and brokers who match up buyers and sellers of knowledge. It is important to understand that these knowledge markets generally do not follow the mechanisms of traditional organizational structures but rather span informal networks and communities of interest that may form around interesting business or technical challenges. For example, in a company such as IBM, long before Linux became mainstream, a very active online community existed in which technical problems such as how to install the operating system on a particular type of PC were discussed and solutions provided. In fact, the entire open-source movement and the widely distributed development of software for Linux can be considered a highly efficient informal knowledge market that was not planned for or created by anybody in particular. Emulating such a highly efficient knowledge market is a considerable challenge for any organization, as the cultural issues tend to be a considerably greater barrier than any technological issues. We have observed time and again that certain competitive cultures (engineering, architecture, advertising...) do not appreciate reusing or sharing a successful idea but rather value original creativity, often at the expense of having “reinvented the wheel.”

PRICING MECHANISMS

Unless an enterprise hires a consulting firm or a lawyer, knowledge is rarely shared for **cash** but for other—often less obvious—reasons. In the open source community, for example, **reputation** is a primary reason why people contribute their intellectual capital. Pride in having contributed a piece of code upon which others build their applications or which others use in their day-to-day work is a significant motivation for programmers, who may spend a significant part of their spare time in perfecting a module or device driver. Another popular currency used in informal knowledge networks is **reciprocity**. The seller of knowledge expects that she will be reimbursed at some later point in time by the buyer’s sharing his knowledge or doing some other favors. **Trust** in and knowledge of the trading partner is crucial if any of these payment mechanisms are to work. In the case of knowledge markets it is important that the members of an organization see that people get due credit for diffusing and absorbing knowledge. For the creation of formal knowledge markets, trust can be built through an appropriate management system that makes it clear that knowledge exchange is rewarded and expected. As trust flows from the top down, it is important that senior management “walks the talk” and creates the appropriate cultural and social environment. Often politics and power struggles impede such trust establishment and invariably lead to market inefficiencies, where knowledge is distributed very asymmetrically and rarely shared. Unlike other goods and services, however, knowledge is the only good that grows by being shared and for which it should be easy to define win-win situations.

MERGERS (AND ACQUISITIONS)

Mergers and acquisitions occur for a variety of motives. For example, an enterprise may wish to grow quickly to a competitive size in a market, access new channels, exploit synergies, generate additional revenue, access new technology, and/or gain the skills of a proved technical and management team. In the context of KM, the latter two motives, which are becoming increasingly important particularly in our industry, serve the express purpose of obtaining new knowledge for an enterprise. To leverage such mergers or acquisitions, where knowledge resides largely in the heads of humans, requires a common understanding of the corporate knowledge-sharing cultures or—in economic terms—a successful merger of two or more (knowledge) markets. Such a merger comes with significant risks that usual due diligence explorations do not address: what are the knowledge-sharing cultures, are they compatible or can they be made compatible? Even large retention packages may not work to transfer and leverage the acquired knowledge successfully to the larger enterprise. Differences among tools are losing importance as many standards are evolving and suitable technologies exist to bridge incompatibilities.

ARE PROJECT COLLABORATIONS AN ALTERNATIVE TO MERGERS?

After the brief introduction to the topic of KM and its key supporting technologies we can now answer the central question of this essay in the affirmative. We believe that targeted project collaborations among entities with compatible knowledge-sharing cultures can work to the benefit of the parties involved. Good examples of these collaborations are both the global open source community, which lacks any formal organization, and Silicon Valley, where extensive personal contacts brokered through venture capitalists have created an extremely efficient knowledge market. In both these markets it is possible to pull together a group of experts rapidly to collaborate on a common project. These group members leverage available and emerging knowledge tools to bridge time and distance and build a repository of the explicit knowledge created by such collaboration. The growth of tacit knowledge will lead to more experience and the ever-faster creation of value in future collaborations.

ACKNOWLEDGMENTS

Much of my understanding of KM is drawn from the seminal book “Working Knowledge” by Thomas H. Davenport and Laurence Prusak, Harvard Business School Press, Boston, MA, 1998 and from discussions with colleagues at IBM Research.