
Leveraging Expertise to Build an Organizational Capability

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"The wonderful thing about knowledge is that it is relatively inexpensive to replicate if you can capture it. Most activities or tasks are not onetime events. Whether it's drilling a well or conducting a transaction at a service station, we do the same things repeatedly. Our philosophy is fairly simple: Every time we do something again, we should do it better than the last time." John Browne, CEO of British Petroleum, interviewed by Harvard Business Review, September-October, 1997.

To Kent Greenes this quote captured the essence of his dilemma. Sitting in his BP Amoco office in late 1998, Kent thought about his experience of implementing this simple philosophy throughout a large, complex organization. He had started working on the knowledge initiative in late 1996, building on the foundation of the successful Virtual Teamwork (VT) pilot project (see Appendix 1 for a description of the VT project). At that time, a meeting with the managing directors of the dozens of relatively autonomous business units seemed to generate genuine high level support for a global task force that would develop a knowledge management (KM) strategy for BP Amoco. The VT pilot project had provided technology infrastructure and a core team for the task force, so the stage was set for an accelerated kickoff. During the meeting of the managing directors, Kent engaged them in a realistic scenario where they played roles to the accompaniment of music by the Beach Boys (a conscious choice to encourage people to think about surfing the web). According to Kent, "this opened up some people's eyes as to what was possible."

Now, over two years later, Kent had several success stories to relate. And, the knowledge management task force had evolved to become a knowledge management team whose work in several different business units of BP Amoco was highly regarded. Kent's dilemma concerned what to do next. His objectives had been not only to demonstrate the value of his team, but also to embed sustainable KM practices in a federation-style corporate structure. He was relatively certain that the first objective had been accomplished; he was less sure of the second. Kent's boss had asked him to prepare a presentation to the senior business group executives, outlining a plan for continuing to pursue KM initiatives in BP Amoco. As he pondered the original philosophy, he realized the difficulty of choosing among several different options.

Company Background

BP Amoco is one of the largest fully integrated energy companies in the world. The firm is organized into over 100 distinct business units,

based on both geography and product. The organizational structure resembles more of a federation than a traditional multidivisional corporation, because it has a small central core with relatively large structures outside of the core. The leadership in the central core provides enterprise-wide vision and everyone is expected to consider themselves as being under the “same flag.” However, for each unit in the federation, separate performance contracts are negotiated that drive unit strategy and operating tactics.

The major process components of the oil segment of the business fall into six general categories:

1. Exploration – is the function responsible for discovering and maximizing the potential of BP Amoco’s geophysical assets. This involves complex seismographic analysis as well as engineering the technology that is appropriate for extracting oil from the fields being exploited.
2. Production – plans and manages the output from the oil fields. This function also requires engineering knowledge, together with an understanding of operations and logistics issues.
3. Supply – is responsible for integrating assessments of production capability and market demand for both crude oil and oil products. The supply function is involved in trading activities, where excess supply is sold to other firms. In addition, people working in supply must have knowledge of the crude and products markets (both spot and futures) in order to balance raw materials requirements and to hedge costs.
4. Transportation – arranges shipments of crude and products in tankers and via pipelines. The domain of expertise in this function ranges from maritime law to seafaring lore.
5. Refining – is another function where the ability to leverage both engineering and management knowledge results in high operating efficiency and effective decision-making.
6. Marketing – consists primarily of the retail operations of the firm, including the distribution of oil products to service stations. Clearly, this function relies on traditional operations management skills and marketing expertise. In addition, knowing where to develop new markets within a country globally and knowing how to design and construct appropriate facilities are both components of success.

Thus, the industry is both capital demanding and knowledge intensive. It is also characterized by numerous external relationships that spread risk and allow the firm to obtain the specialized knowledge that is necessary to get the job done. This additional organizational complexity makes the KM initiative even more of a challenge.

Taking the First Steps: Setting Objectives

When the managing directors of the BP Amoco business units met in

late 1996 to approve the creation of a KM task force, they set in motion what seemed to be a way of addressing their CEO's objective of enterprise-wide knowledge reuse and enhancement. The inclination of the managing directors was to avoid having a central team that would "know all, tell all, and lead all" in KM. Nevertheless, they were encouraged by John Browne's view that it was possible within BP Amoco's culture to set up a corporate level unit without creating a kingdom. Thus, in January 1997, the task force recommended that a Knowledge Management Team (KMT) be formed. Kent Greenes, a geophysicist by training, was named as the team leader. Kent, who had been a member of the task force and had also managed the successful VT pilot project, did not report into the Information Technology (IT) organization, as is common in KM initiatives that have a technology project such as VT as a catalyst. Instead, he reported to the Group Chief Executive (see Appendix 2 for an overview of the BP Amoco organizational structure). Initially the six team members included people from the VT project with engineering, human resource and IT backgrounds.

One of the first tasks of the KMT was to build on John Browne's philosophy in order to create a vision for KM in BP Amoco:

"BP Amoco knows what it needs to know, learns what it needs to learn, and uses knowledge and applies knowledge to create sustainable competitive advantage."

For Kent, this meant that BP Amoco had to become an organization that both learned rapidly and transferred the human learning around the organization. Most importantly, the potential to innovate had to be enhanced for all of the diverse activities that each major function undertook. It was critical to be able to build on the things done right and not make the same mistake twice. The bottom line objective was to help make BP Amoco distinctive and significantly more competitive. Kent translated his interpretation of the vision into a set of objectives for the KMT:

- Create business value: specifically, demonstrate business benefits from the application of the KM practices that the team develops. Track the benefits in the context of business unit and peer group performance contracts.
- Develop, validate and package a robust KM framework, ensuring that the organization adopts the tools and processes in the framework.
- Create capacity for applying the KM framework by promoting awareness and skills development throughout the firm.
- Enhance BP Amoco's reputation by creating world class KM practices that are recognized externally.

In the two years that had passed since defining these objectives, a substantial amount of progress had been made. The year 1997 was

principally dedicated to building awareness of the initiative. By November of that year, the framework and a systematic methodology for KM had been developed (see Appendix 3). In a review with the managing director group in January 1998, the KMT was authorized to continue its work, with the overriding goal: “to firmly establish knowledge management as a key performance lever for BP Amoco.” As a result, the KMT members agreed that their specific mission for 1998 was to deliver value in a way that would make the organization stand up and take notice. More concretely, they set a goal of contributing \$100 million in business value by applying their framework in the business units. Their intention was to deliver value that had a deep impact, providing the business units with the capacity to carry on KM activities without a central team. The following section describes the approach that was used.

Delivering the Capability: A Three-Phased Approach

The team began work with inherent credibility in several business units because of relationships that had developed during the VT pilot project. They had also received external recognition, including a 1997 Computer World Smithsonian Innovation Award for the Virtual Teamwork project. The team’s approach for achieving the new objectives was designed to leverage the success of VT, but they clearly recognized that technology was the least important aspect of their work. They agreed that three steps were essential: build awareness of KM benefits, design and test appropriate tools and processes, and embed KM practices in a large part of the organization.

Phase 1: Creating Awareness

In retrospect, Kent Greenes realized that “the KMT had a very purposeful approach, which was to go where the people pulled and, if people didn’t pull, not go there.” The view was that KM is about managing change and learning. Thus, the KMT did not explicitly push its processes into the business units. Nevertheless, Kent also understood that KM principles and opportunities could be moved to the forefront of people’s consciousness. Thus, in September 1997 the KMT conceived and implemented an event designed to break through other initiatives competing for management attention. The Milan Knowledge Exchange brought approximately 100 people together to share best practices in KM. Some attended because they were urged to do so by members of the KMT; others were there because, according to Kent, “the strategy fit and it was something people could relate to.” At the meeting, the KMT revealed their plans, with the goal of obtaining input and ownership from the attendees. The sharing of best practices provided an indication of the diversity of opportunities. By design, each person was given a relatively short amount of time to present. As Kent put it, this resulted in forcing presenters to “create their own distillation of know-how.” He said: “This was a key learning

for all of us.”

One outcome of the Milan Knowledge Exchange was activation of the Knowledge Management Community of Practice (KMCOP), which had been initiated electronically before the Milan meeting. The KMCOP was an e-mail discussion group that provided evidence to others that there was a large number of people interested in KM issues. Kent said: “The business unit representatives returned from Milan with a sense that what we were doing was legitimate. They saw how we did it and that we learned from the people who were doing it for real in the businesses as well as creating awareness and engagement.”

Another event orchestrated by the KMT in late 1997 was an Innovation Colloquium. This was a face-to-face meeting attended by 40 BP Amoco business unit executives as well as external innovation experts, a futurist, a senior officer from the U.S. Army and executives from innovative companies. Keith Pearse, a member of the KMT, said: “Since the topic was innovation, we wanted to use innovative methods of getting people to participate in the event.” Therefore, the KMT supported the colloquium. People who could not attend the event personally were encouraged to attend the event virtually. More than 1,700 of the 20,000 BP Amoco employees with Intranet access did so. This was a high visibility event with high risk. The goal was to tap insights from around the company during the colloquium, sharing information from the entire organization with the delegates who were physically present. This demonstrated how to make the know-how of an organization visible in a virtual setting. One senior executive described the energy and excitement of the event:

“I remember people walking around the corridors in Aberdeen (not the sight of the colloquium) actively participating in the meeting. They would stop me in the corridor and have a discussion about what had happened that morning or what was going to happen. They talked about how they could capture it and take learning away from the event. This was not one or two people. I would say that it wasn't that I went looking for it; people actually stopped me in the corridor and said we've got to do something. They knew exactly what was happening: it was a real meeting that was happening in a virtual sense. There were lots of mini-extensions of that where people would get around the copier machine and talk about it. I think the thing that engaged the people was the process that the KMT brought, rather than the content, so it is more to do with what you did rather than what the meeting was about.”

As an indication that this approach had external validity, the magazine Fast Company wrote about the Innovation Colloquium in February 1998, describing it as a powerful way of enhancing creativity and exchanging ideas. However, when two units within BP Amoco asked

for help in replicating the colloquium for their own businesses, the adaptations were not successful. Neither unit fully adopted the approach taken by the KMT. Possibly because of expense concerns, the events that took place were not open. The result was that the learning from the colloquium was not leveraged into other parts of the business.

Phase 2: Developing Tools and Managing Pilots

The KMT extended the concept of awareness in part by becoming aware themselves of activities already underway that were related to KM. Looking both within BP Amoco and outside, they identified practices such as Peer Assists, Retrospects, and After Action Reviews that later became part of the KM framework. (Appendix 4 provides a brief summary of each of these KM tools and techniques).

In some cases, the KMT learned about activities serendipitously; in others, their search was quite purposeful. For example, by observing work done at various levels of the organization, they recognized the power of the concept of Peer Assists. They discovered the practice that became known as Retrospects by speaking with people on production platforms in the Gulf of Mexico and in Norway. And, they became familiar with the After Action Review approach by getting to know people at the U.S. Army's Center for Army Lessons Learned.

These concepts and others were codified into a set of practices that the KMT could use in projects that had clear benefit for the business. The plan was not to create new tools and techniques, but rather to cross-pollinate many of the good practices that had already been adopted in individual business units. The longer-term objective was to demonstrate the value of these practices so that they would be used by the organization as a whole. Thus, at the beginning of 1998 the KMT decided to focus on a few high-value business projects, including two that involved extensive travel in the Americas and in Southeast Asia. Kent Greenes viewed the "very purposeful approach to projects in a variety of businesses" as a critical success factor.

In mid-1998 the team met to reflect on what they had learned to date. They talked about KM as a concept to be infused into the organization, rather than as a series of projects. This deeper understanding of their role represented a crucial transition point for the KMT. They recognized that the tools and techniques they were using could in fact be described as supportive of three stages of learning: learning before doing (Peer Assists), learning while doing (After Action Reviews), and learning after doing (Retrospects, learning histories, retaining knowledge assets). The Connect system (a form of corporate yellow pages and perhaps yet another stage of learning: learn who knows) was another framework element that was proving successful.

With the KM framework and their experience in using the repertoire of

tools and techniques, the KMT could turn their attention to making sure that the business units would see how making KM a part of the way they do things would deliver “real money.” That became the KMT’s overriding focus and goal, knowing that accomplishing their objective would both deliver value and build capability within the organization. Their plan was to split their time on an 80:20 basis: 80 percent of the time spent on the high-value projects and 20 percent helping people who requested aid within other, less visible projects. As Kent put it: “It wasn’t 80:20. It was 80:80, with everybody working really hard.”

The selection of business units to work with centered on those which were considered to have high value to BP Amoco and those which were having difficulties in project management. The team was also opportunistic, going where they found advocates and where there was both a need and an interest. They selected areas where they were relatively sure they would be successful. Performance agreements had a common set of criteria, focused on value delivery and on embedding KM practices. Each project plan also established as an objective the creation of knowledge assets that could be used in the future.

By mid-1998 the KM framework was beginning to come into broader use by the team. In order to validate and enhance the elements of the framework, the KMT convened formally every two weeks to share what they were learning across all of their projects. In effect, they used some of the elements of the framework itself to capture their own insights. In addition, the electronic discussion within the KMCOP created energy to further develop the framework.

Another key meeting took place in mid-1998 when Kent presented the results of the team’s efforts to the managing directors, focusing on value created for each business unit where a project had taken place and on the development of the KM framework. At this meeting, the managing directors reinforced the need to focus on business delivery as opposed to building KM capacity. According to Kent: “There was a distinctive, purposeful statement that we should use our skills to deliver value, as the primary purpose of the world-class practice that we had developed. We thus took it upon ourselves to move towards the goal of ‘99 in 99’ [99 business units using knowledge management tools in 1999] as a way of demonstrating the benefits of building capacity.”

Phase 3: Embedding the Concepts and Improving Performance through Knowledge Management

As noted above, the KMT made a particular effort to find people who had a vested interest in making KM successful – people with real business needs. In order to identify and gain the involvement of such people, the KMT initiated an internal communications program,

building once again on their success with a similar approach to the VT project. The KM framework was documented and demonstrated in a "Resource Pack" distributed in early 1998. This included a compact disk describing the tools and techniques developed by the KMT as well as full-color pamphlets explaining the individual tools. According to one member of the team: "The Resource Pack had a tremendous influence in the business units, enabling people to have more intelligent conversations without needing to fall back on the KMT for definitions and examples. This was very important in the States."

As part of the internal communications program, the KMT created training courses and provided coaching to business unit staff. They also planned a Virtual Knowledge Exchange for fourth quarter 1998 to rejuvenate the Knowledge Management Community that became active after the Milan Knowledge Exchange in September 1997.

All of these communications efforts were important. However, the principal means of embedding concepts was by demonstrating the value of the tools and techniques. Therefore the team focused its efforts toward meaningful tangible goals with specific milestones. An example of this was the Bovis Alliance project, described below. A key objective of this project was to provide clear evidence to the rest of the organization that it was possible to embed KM practices and add significant value.

The Bovis Alliance Project

Background

In late 1996 BP Amoco looked for a partner to work with to build retail sites throughout Europe. Their objective was to establish a "high performance alliance," which they described as: "A long-term relationship characterized by simple, clearly articulated principles that would endure and mutually benefit each of the partners. The alliance would feature a high degree of trust and consensus between the partners, exemplary relationships, and a bias to solve problems quickly and fairly. It would also encourage innovation to meet new challenges, and draw on the best that each partner had to offer in order to deliver higher performance than a standalone operation." In the opinion of the KMT, this was clearly an appropriate test bed for the KM framework.

After a review of potential partners, Bovis, a global project management and construction company, was selected. Staffed by a combination of Bovis and BP Amoco people, the Bovis Alliance was established under a five-year contract. A core team was set up at the Alliance head office in Harrow, England and country alliance managers and country teams were placed in each of the European countries.

The KMT's Role - Engagement

When Tom Young, a member of the BP Amoco KMT, read an announcement about the Bovis Alliance, he contacted a BP Amoco executive committee member for more information. Tom was encouraged to communicate with Richard Appleyard, the lead BP Amoco member of the country alliance team in Brussels. Based on what he had heard, Tom sensed value in this project and arranged a videoconference with Richard, using the VT technology. During the VT (BP Amoco employees refer to such videoconferences as "VTs"), Richard identified a key issue and challenge for the Alliance – obtaining permits to build a retail site. Building a retail station in any European country requires a permit from a local authority. Typically, the permit cannot be applied for until the land is purchased. With the permit process taking from six weeks to two years, the cash allocated to the land purchase is unproductive until the station is operating. Furthermore, there is no consistency across countries as to either the form of applications or to the process used for evaluating them. In Germany, for example, a minor change on an engineering drawing requires the permit process to be restarted.

Tom recognized that, in addition to these regulatory issues, the permit process was dependent on the expertise of the project manager in each location. There was no process for sharing experiences or learning between sites. Richard explained to Tom that a task force with members from both the Alliance and BP Amoco Retail-Europe had been formed to address this issue. This task force had already met face-to-face in workshops, but Richard was not completely satisfied with the results. Thus, at the end of the VT, Richard asked Tom to work with the task force and attend the next workshop meeting as a KM advisor and participant. The objectives for the workshop were twofold:

- To design a process to capture learning from previous experiences obtaining permits
- To design a standardized process for getting permits.

The next workshop meeting and subsequent meetings provided function and clarity to what had to be done during the process of obtaining a permit, and started to capture and embed what BP Amoco knew about obtaining permits. A single, agreed-to process, owned by the people who had to obtain the permits, was designed and subsequently applied. As a result of Tom's success in the workshop, Richard asked him to continue to work in a KM capacity with the Alliance. The overall program was called "Market Leadership." One of the pan-European goals was to design a retail station to deliver the ultimate in customer satisfaction and build it in ten weeks at a cost of ten per cent less than current construction. Richard asked Tom to work with the Global Retail Engineering Network (GREN) to meet this objective. The GREN is a community of practice with members from

all of the major markets in Australia, Europe, and the USA in which BP Amoco operates a retail business. It sets the standards and doctrine for retail engineering and works closely with marketing and asset management staff, who buy the properties for the stations

Tom's first role was to engage the management of BP Amoco Oil Europe, capitalizing on an invitation to participate in a management meeting in Madrid. His goal was to communicate quickly, dramatically, and without doubt that sharing knowledge is beneficial to BP Amoco. Realizing the importance of the retail expansion in Europe, Tom believed that sharing had to be inculcated in the management team; otherwise it would be the equivalent of corporate suicide. Tom was also acutely aware of the language issues within the team. Although English is the working language for BP Amoco, he knew that it was a second language for many of the people attending the meeting. He was given thirty minutes to convince the audience of the importance of sharing knowledge. Tom split the sessions into two parts: the traditional slide show and a scenario. The slide show set the context. Oddly, it was the first time for some in this audience to view a presentation with embedded video clips. The scenario consisted of a VT session, with a field engineer calling his boss at the head office. The engineer showed pictures he had taken at a fictitious retail site that had just been constructed. He explained the picture content, telling his boss what worked and what needed improvement. The audience identified with the scenario because language was insignificant – the pictures revealed the problems:

- Gas pump housings were secured with screws. One was broken and cellophane tape was used to keep it together.
- One station used emulsion paint to cover a scratched pump. The paint coverage was not complete, and there were streaks on the pump.
- There was a car entering a petrol station where the station lights were so bright that they blinded the driver.

Tom said: "They were living it." In his closing remarks, he mentioned the probability of the next site experiencing the same mistakes, which would be "business as usual." If the learning were captured and the drawings were updated, the story would be different. Money would be saved and customer satisfaction would be increased. The most senior manager in the group said: "We're going to do this. What do we do next?"

Introduction of KMT Tools and /Processes

In keeping with the BP Amoco knowledge management doctrine of "learn before," Tom talked to several people about the process of building new sites and what the challenges were. He learned that local project engineers were ultimately responsible for building a site, rather than the head office team. Thus, the project engineers and their

knowledge were critical to success. Not surprisingly, he found that the business language for the project engineers was often the local language, and that their understanding of English was not up to the level of the head office team. He noticed that VT was installed in several offices, but was not used to any significant degree.

In the following weeks, Tom arranged for a VT session between his home office in Scotland and the alliance office in Harrow in order to plan the next phase of the project. His objectives were:

- To deliver a KM training course for project engineers, providing them access to new work processes
- To help the key players become familiar with VT technology, by encouraging them to use VT to talk with other offices, thereby propagating the use of this “new” tool.

Retail management agreed with both objectives and Tom was asked to develop and deliver a face-to-face training session for project engineers. He borrowed an office near Heathrow Airport to demonstrate the value of collaboration. This office was a neutral location – neither BP Amoco nor Bovis – to serve as a symbol of sharing. He designed two business activities to teach project engineers three major KM tools - Peer Assists, After Action Reviews and Retrospects.

The first activity was a construction game in which the teams were challenged to build tall towers – as tall as possible – from blocks and paper. The results of the game demonstrated that by learning from each other and by transferring knowledge from one team to another, they could dramatically enhance their performance, and build towers higher than they thought possible.

A second activity was to conduct a Peer Assist to establish a standard process for building retail gas stations. A pictorial representation of the 12-week plan was drawn and placed on a wall. During the Peer Assist, project engineers asked for help, absorbed new information, and placed a note on the chart for the week in which the information would be helpful. Color codes were used in the notes to delineate information available to share from information that was sought. Participants were then matched by similar color coded notes for the same week or process. This became the starting point for developing a Knowledge Asset, known as “What BP Amoco Knows about Building Retail Sites.”

As a result of these activities and others, Tom believed that the Bovis Alliance is becoming a learning organization that actively manages its knowledge: “KM is now embedded to such an extent that it is woven into the fabric of everything they do. By doing that, they save lots of money.”

A View from the KM Community

While the success of projects like the Bovis Alliance was measurable, the initiative to create capacity for applying the KM framework throughout the firm was not as quantifiable. The Milan Knowledge Exchange and the Innovation Colloquium did help to raise awareness and support for KM in the business units. One participant said:

“The Knowledge Exchange was exceptionally valuable for a number of reasons. One, it built a sense of evolution. This isn't something that is already packaged and available off a shelf. This is something that is evolving along with technology and different ways of working. It is evolving with a move to globalization, again driven by technology. It's another strategic requirement. It helped us understand, certainly from a perspective of operations, that many people have similar challenges. So to be able to network and build common approaches to learning and sharing is invaluable.”

The KM Community that emerged out of the Knowledge Exchange was centered on the discussion database used by its 100 members. The KMT had created an intranet site and brochures for the tools they developed. But some members of the KM community felt that they were not getting what they needed. Because of the volume of information, it was difficult to find an answer to a specific problem. In addition, there was no training in the use of the KMT tools. Individual members of the KMT were responsive to individual requests for aid, but they lacked the resources for formal training programs. Some members of the COP believed that there was too much dependence on the central team.

Nevertheless, the KM community functioned as a community of practice and there was clear evidence of its effectiveness, even though the members of the community lacked the resources for formal training programs. When a member had a specific question, communication via electronic mail would result in a timely, accurate response. In Alaska members created a knowledge agenda and named a Knowledge Management Champion. They added VTs in remote operating sites. Peer Assists and Retrospects were conducted. Knowledge Assets were created and distributed to other members of the KM community.

In the opinion of one member: “Kent was clearly the strategic thinker and had a close relationship with the managing directors. Kent wasn't particularly involved with the wider community. He had a pretty strong network, but it tended to be very upward focused, so unless you either worked for somebody important or were important, or were suddenly on a project that was important, Kent didn't tend to build up much of a working relationship with you.”

Which Way Forward?

At the end of 1998 Kent was deciding how to describe what had been accomplished and what to do next. (See Appendix 5 for a chronology of the major events in the KM initiative. Appendix 6 illustrates the global scope of activity of the KMT.) Kent realized that he had to engage in his own “retrospect.” The credo adopted by the KMT – learn before, during, and after – was applicable to the work of his team. It was clear that most of the effort had been in project work. He wondered whether enough time had been devoted to building a community that recognized the value of good KM practices. He listed the questions:

- What did we set out to do?
- What did we achieve?
- Did we meet the deadlines?
- Did BP Amoco get what it wanted?
- Were satisfaction measures achieved?

The objectives established when the team was formed – to create business value, to develop a robust KM framework, to create capacity for applying the framework, and to enhance BP Amoco’s reputation by making the KM initiative externally visible – provided a guide for answering the first three questions in the list. Answers to the other two were proving more difficult. Kent wondered why the KMT seemed to be more visible outside of BP Amoco than within the company. Would a different approach to the projects or a re-balancing of projects and COP activities have resulted in a broader and deeper embedding of KM practices?

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Appendix 1 – The Virtual Teamwork Project

The virtual teamwork project was intended to demonstrate that teams whose members were distributed around the world could do their work via video conferencing, Lotus Notes, and other shared applications. Initial investigation of the technology platform began in August 1994, with pilot implementation of about 100 workstations completed in mid-1995. The virtual teamwork project is intended to represent a critical differentiating capability for the British Petroleum. In designing the pilot, BP explicitly considered not only the information sharing requirements of their professionals, but also their need to develop the kinds of effective working relationships that motivate knowledge sharing and innovation.

The enabling technology consists of personal computers providing desktop interactive video communications via ISDN lines as well as other applications (e.g., Lotus Notes, a whiteboard that can be shared by multiple users, the ability to edit text collaboratively). Figure 1 illustrates the technical configuration of the equipment. The workstations have been installed on offshore platforms, in offices in the continental U.S., Alaska, the U.K., Asia, and Latin America. As a result of BP's intertwined partnerships with other oil companies and its numerous subcontracting relationships, several workstations have been placed in these organizations also.

Looking beyond the technology, there are two key additional components of the virtual teamwork project. First, "coaches" were an integral part of the pilot deployment of the technology. The coaching role included a mixture of training, motivating use, group process facilitation, and process re-engineering. Coaches did not simply answer questions – they went out and looked for questions. They were not functional experts, although many had prior experience in the oil industry. They did not need to be technology experts either, as the workstations conform to industry standards, are essentially self-contained, and users have the additional back up of round-the clock help desk support. The coaches were globally distributed and used the technology themselves to work as a virtual team, recording and sharing what they had learned.

A second key component was embodied in a benefits management unit. This unit was established to track both tangible and indirect value. As the pilot came to a close, management was able to demonstrate the value of the investment by identifying specific savings and productivity improvements. Processes were also established to capture anecdotal evidence documenting the qualitative impact of using the virtual teamwork technology.

The virtual teamwork pilot was supported at the C.E.O. level of the organization, but this was not enough for success. It became clear that local business champions, whose own success was clearly linked to the success of the teams using the technology, were also necessary. In what may seem to be a surprising structural decision, management of the pilot project came from the human resources area of the firm. Although the individual responsible also had an extensive operations background, this decision is strong evidence that developing a capability for virtual teamwork was viewed as an organizational change project rather than as primarily a technology implementation.

[\[Figure 1\]](#)

Appendix 2 – The BP Amoco Organizational Structure

[\[Figure 2\]](#)

Appendix 3: BP Amoco's knowledge framework: Simple learning tools and processes

[Figure 3]

Appendix 4: Glossary of knowledge management tools and techniques

BP Connect: A system on the BP Intranet designed to connect people within the company. It is the technical equivalent of a yellow pages directory. A significant feature is that participation is voluntary. In addition, BP Connect is a stand-alone system, not electronically dependent on other corporate systems such as human resources records of job assignments or skill inventories.

Peer Assist: A meeting or workshop where people are invited from other business units to share their experience, insights, and knowledge with a team that has requested some help. A peer assist:

- targets a specific technical or commercial challenge
- gains insight from people outside the team
- identifies possible approaches and new lines of inquiry
- promotes sharing of learning
- develops strong networks among staff.

After Action Review (AAR): A process that allows a team to make course corrections during an activity, based on what is learned. For a team to get better at what it does, it has to learn during the activity. However, experience shows that you can't build learning into existing team meetings and practices. It always gets pushed off the agenda by operational issues. Learning needs to be a distinct item. Using the AAR procedure, the team can address and build collective operational knowledge.

The AAR was developed in the US Army. It is a short focused meeting, for the team, by the team, lasting half an hour or less. The AAR has been proven to be an effective way for a team to learn while doing. It also promotes openness and good team behaviors. The AAR format is simple and quick. Every participant in the AAR deals with four questions:

- What was supposed to happen?
- What actually happened?
- Why were there differences?
- What did we learn?

AARs are designed to help the team and individuals learn during the work process rather than after. They are conducted after:

- a. each identifiable event (e.g., the end of a shift at a refinery)

- during a turnaround), or
- b. an entire small action (e.g., replacement of a furnace), or
- c. a discrete part of a larger action (e.g., the inspection process during a major refinery refurbishment).

The AAR should take place immediately after the event so memories are fresh and participants are still available. The learnings then can be applied immediately. This is particularly beneficial when the event is part of a larger action.

Retrospects: Team meetings that take place after a piece of work is completed, with the objective of capturing the lessons learned during the project for the benefit of future teams. The retrospect is one approach to the “learning after” process in the knowledge management framework. Retrospects are face-to-face or videoconference meetings that take place as soon as possible after a project is completed. The meeting time varies depending on the number of people, duration, and complexity of the project. Retrospects can range from 30 minutes to an hour for a short, simple project to four or more hours for a six month project. A Retrospect of an alliance between several departments or companies may take two days.

A retrospect needs to be facilitated but the team should “own” the meeting. The meeting structure should be flexible. The retrospect begins by revisiting the objectives, deliverables, and measures of the project. Questions include:

- What did you set out to do?
- What did you achieve?
- Did you get what you wanted?
- Did you meet the deadlines?
- Were satisfaction measures achieved?

As in the AAR, the members of the team should ask what went well (in the context of meeting objectives) and they should determine why these aspects went well. The success factors should be identified so they can be repeated by this team or other teams. Then, additional questions are addressed: what could have gone better? What were the difficulties? The project is given a 1 – 10 (low to high) numerical rating by each participant in the meeting. If it is less than ten, each member is asked what would have made the rating a ten.

The outcome of the retrospect is a Performance History of the project that includes guidelines for the future, a history from the project to illustrate the guidelines, the names of people involved for future reference, and the key artifacts.

Learning History: A tool that can be used as part of learning during or learning after an activity to record what happened. A team often appoints a learning historian. The purpose of a learning history is to

help a team understand the thinking behind projects, so that team members can recreate and build on their significant successes. A learning history is specifically about dissecting noticeable results, which are defined as results that will cause the organization to “turn its head”. Use of this tool is complex compared to the others and thus requires more training.

Knowledge Assets: Guidelines, set within a business context, enlivened by stories and quotes, which are linked to people and documents for further investigation. Typically, knowledge assets are stored on an intranet so that they can be linked and searched. Knowledge assets are often compiled from a number of experiences across business units in a group (each of which may be captured as a learning history). Knowledge assets should be living stores of knowledge, evolving as the organization’s knowledge evolves.

Appendix 5: Chronology of major events in the knowledge management initiative

August 1994	Team established to investigate emerging groupware technologies
January 1995	Virtual teamwork pilot project team formed
August 1995	First workstations installed
June 1996	Knowledge Management Task Force established
January 1997	Knowledge Management Team chartered
September 1997	Milan Knowledge Exchange
November 1997	Development of knowledge management framework and methodology completed
Early 1998	Innovation Colloquium
1998	Started to apply framework in significant value-adding projects

Appendix 6: Geographical scope of knowledge management activity

[Figure 4]

About the authors

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