



**Materializing Knowledge Management through
Communities of Practice**

Denis MEINGAN
Director

December 2002

Olivier CROUZET
Manager

Knowledge Management and Portals
VALTECH France

Knowledge Management

A - Main theoretical approaches

Introducing knowledge management as the **management of immaterial capital** in companies is one approach. Based on the fact that more and more companies operating in the new technology field have found that there is a considerable gap between their economic values and their accounting values, those who hold this opinion explain the difference in asset values by:

- The competency of colleagues (capacity to react in different circumstances), Internal organisation (product concepts, patents, function modes, computer systems)
- External elements (client and supplier relationships, company image...)

Knowledge management can therefore be likened to analyses, techniques and tools seen as a whole, enabling an accurate evaluation of a company's immaterial assets.

The analytical accounting elements of this approach shed enough light on the matter to be able to share knowledge management considerations with a population which is usually little sensitive to the subject: financial management.

Another approach, that of **knowledge system management**, is based on two hypotheses about knowledge: it can be seen both as an element which contains the information in a specific way and in a precise context, and also as a global system which must be analysed from three main standpoints: structure, function and dynamics.

Knowledge management therefore consists of analysing knowledge in a particular field from all these standpoints, so as to generate a complete model.

This approach fits into the systemic school of thought. Having been used successfully in a certain number of projects, it nevertheless seems more adapted for use in large national institutions rather than in the competitive private sector.

For others, the definition of knowledge management is the **management of a firm's global memory**. It consists of defining knowledge management as the management of a larger or smaller repository which collects a company's knowledge potential. The smallest repository corresponds to an individual memory such as that of an expert in a specific field, and the largest corresponds to the memory of an entire company, thus including all company knowledge in its activities, products, organization, etc.

Even if enthusiasts prone methods and tools in their presentation of the subject, this approach seems to be more of a concept than a true operational process.

Adding knowledge management to the approach to **skills management** corresponds to the evolution of employee management within a company. In the space of a few years it has developed from personnel management to human resources to strategic skills management.

To harmonize with this approach, knowledge management cannot ignore these developments and must integrate the formalization and institutionalisation of

knowledge and know-how with its projects for use in the more general definition of skills profiles, competencies and lastly, of jobs.

Knowledge management does not, however, simply amount to such a point of view.

KM has been expressed by some as being rather more of an **approach** which enables **the installation of collaborative tools or Intranets**. Taking into account the fact that KM included numerous components and was the answer to a variety of problems, they have concentrated their approach on an implementation process broken down into work sections such as return on investment, organization, methods...

All these approaches have been, and are still, interesting; but as company needs in this field have developed, companies have concentrated more on operational considerations and on the added value of the approach rather than on concepts.

B - Knowledge creation processes within companies

Practitioners and academics agree nowadays that knowledge management is a means of systematic know-how and knowledge in companies whose objective is to gain competitive advantages.

Therefore, organisations develop their know-how and knowledge through a transformation process going through four main steps :

- socialisation (sharing of tacit knowledge)
- formalisation (transformation of tacit knowledge into explicit knowledge)
- internalisation (transformation of explicit knowledge into implicit knowledge)
- combination (rearrangement of explicit knowledge).

To be more precise, the process of **socialisation** or sharing of tacit knowledge enables a description of the way in which professionals exchange their know-how and knowledge within the framework of company processes.

For example, the purchasing process of industrial equipment involves the collaboration of method, quality, and maintenance technicians etc. as well as purchasers, all of whom are going to exchange their know-how and knowledge to make an acquisition at the best cost of ownership.

The process of **formalising** or transforming tacit knowledge into explicit knowledge aims at describing the phenomenon by which professionals, sometimes experts in some company domain, structure and shape their know-how and knowledge in documents in order to make it available to their colleagues.

For example, setting up quality references and their "Write what you do" motto is a good example of this process.

The process of **internalisation** or transformation of explicit knowledge into implicit knowledge is simply a question of describing how the organisation and its staff identify and integrate knowledge from outside their environment into their every day professional practices.

An example can be given by installing a strategic intelligence system, whether it be technological, competitive or commercial.

The process of **combination** or rearrangement of explicit knowledge is the one usually found in companies for their different management processes.

A good illustration of this process is that of developing new products with the exchange of documents that it generates, from marketing specifications up to those specifications regarding the product destruction and recycling.

C- Operational approaches

The analysis of knowledge management project, whether it be

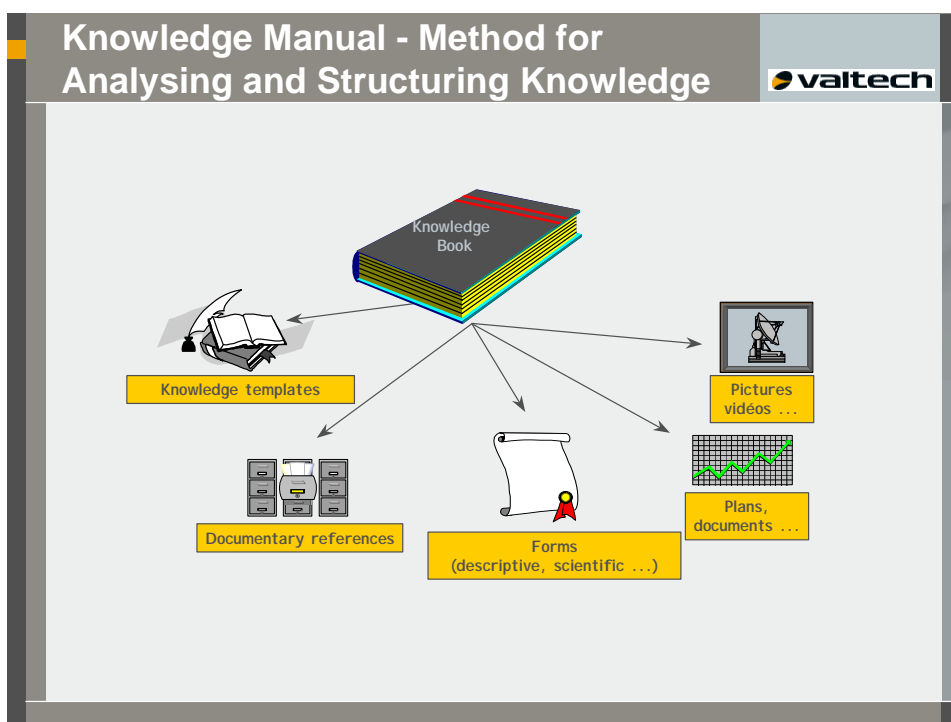
- the setting-up of an automatic furnace management system,
- the coupling of refined planning of product development projects with concept know-how management,
- the determining and making available of reusable elements in paint shop implementation operations
- the organisation and tools for shared know-how and technical knowledge
- ...

shows two existing approaches to knowledge management: the modelling approach and the collaboration approach.

The **modelling** approach relates to the transformation process of tacit knowledge into explicit knowledge.

Operationally speaking, this approach concerns the gathering, formalising and making available of know-how and knowledge amongst colleagues.

These can be experts in the strict sense of the word, professionals who have non-codified but nevertheless critical organisational knowledge which could be asked for, such as maintenance technicians, production line operators, etc.



Know-how and knowledge being technical and complex, it is not always possible to formalise it by only using the usual vocabulary.

Modelling techniques and models are necessary, even when they seem obscure.

These modelling and shaping techniques become a reality through manuals or professional reference books.

Knowledge books are documents, which give a complete view of the know-how and knowledge in specific fields from several analytical approaches, and shape these contents in a multi-media structure in the most exhaustive way possible.

Professional reference books are formal descriptions of professions (buyer, accountant, etc.) in a precise company context. In other words, they are a formalisation of the activities of a professional who is at the crossroads of the definition of a function and the shaping of a process.

Any of these can be referred to via multimedia systems.

In the choice of modelling method, a compromise must be found between the resources generated by the model and the level of intellectual investment necessary to obtain it.

The **collaboration** approach relates to the process of sharing tacit knowledge.

Operationally speaking, this approach is used to identify communities of practice in organisations and to define how shared knowledge and interactivity needs can be satisfactorily answered to.

D - Presenting communities of practice

Communities of practice are the outcome of an international movement which started in the nineties. They evolved with businesses, consultants and universities towards conducting projects and defining models, in order to make accessible and valuable the know-how of colleagues within companies.

A community of practice is a group of professionals who share knowledge, work together, create common practices, and gather knowledge on a field of mutual interest (expertise, skills, processes, etc.).

A community of practice is different from:

- 1) a department of a company, because it sets up a collegial structure between its members but is not concerned with management
- 2) a project team, because it is based on mutual interest and not on the execution of tasks or the supply of deliverables
- 3) a network, because it is not based on interpersonal relationships but rather on the federation of professionals around one or more subjects in which they want to “develop” their knowledge.

There are several levels of participation in a community of practice:

- 1) the core group
- 2) full members

- 3) part-time members
- 4) one-off participants
- 5) colleagues aware of an assignment.

From an analytical point of view, a community of practice can be defined by the following elements:

- 1) the area of interest for the community
- 2) the community which can specify the members of the group
- 3) the practice which ensures the description of activities, exchange etc. within the community.

The case of a large international industrial group which established a community of practice for buying (the area), for buyers and buying staff for all the countries where it operates (the community) is interesting because of the elements which were pooled (the practices):

- 1) professional reference books
- 2) localisation of buying expertises
- 3) knowledge of the markets, suppliers and update on industry news
- 4) consolidation of negotiations
- 5) sharing of experience feedback and best buying practices
- 6) analysis of supplier performance
- 7) follow-up on improvements to buying performance
- 8) documentation for buying processes.

A community of practice needs internal resources and external support in order to function.

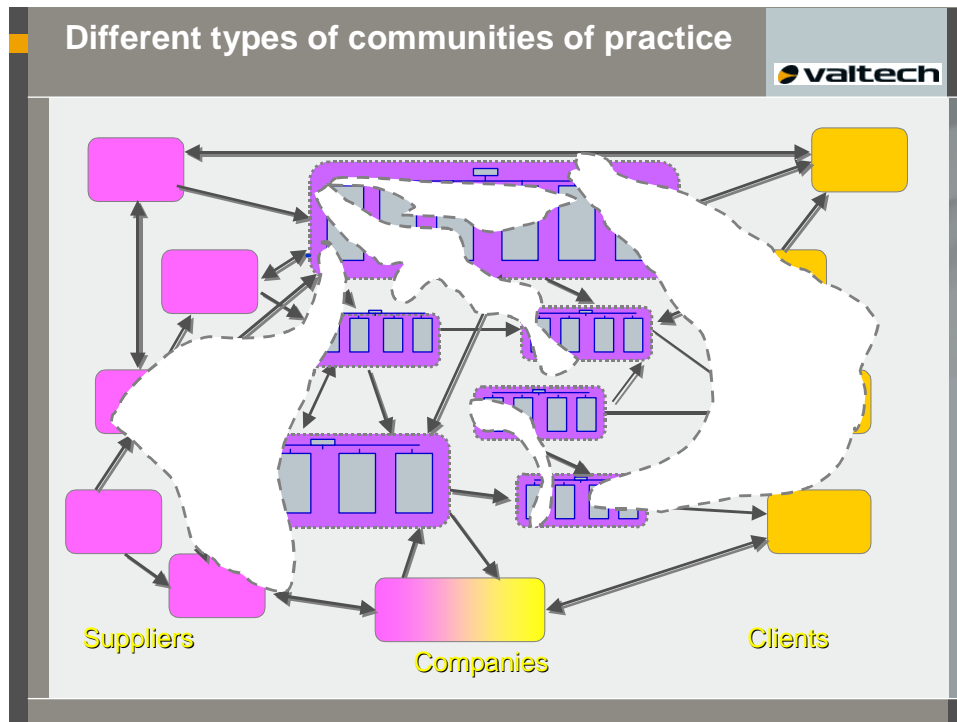
For internal resources, the community of practice requires a facilitator, an information officer, field experts and of course basic members.

External support should be given mainly by a global facilitator (sponsor) who integrates the community in the organisation and ensures coherence between the existing communities.

In addition, the life of a community of practice is not linear. It evolves in several stages: preparation, setting-up, maturity, activity. Development does not always go smoothly, its life-span can vary and it could die after that the main exchange of information between its members have been made. If this type of situation should occur, the important thing is to be able to capitalise on the experience gained.

Communities of practice can be: formal or informal, real or virtual, mono or multi-functional, purely internal to a company or including suppliers, clients and partners, national or international, etc.

The following slide gives a graphic picture of the above:



Another example is that of a large shipbuilder who installed a community of practice for design activities (the domain) for his client's technicians, engineers, heads of design and industrialisation department and his suppliers (the community), to share the following items (the practice):

- 1) technological intelligence
- 2) locating of skills and technical know-how
- 3) patents in use or to be registered
- 4) capitalisation on best concept practices
- 5) feedback on functional practices between the client and his suppliers
- 6) professional reference book.

These examples show the global and individual benefits of installing communities of practice in companies, which are far from negligible.

The most significant advantages of communities of practice


The experience gained on projects has made it possible to identify the numerous advantages of the use of communities of practice. We've classified them along two axes :

- 1) contribution level
- 2) type of contribution.

The **contribution** level identifies those who benefit from communities of practice: its members, the community itself or the company.

The **type of contribution** specifies whether or not it is possible to define an appropriate means of assessing the contribution in question. Measurable contributions are most often used to calculate return on investment (ROI). Non-measurable contributions are more centred on improving company processes.

The following table gives a classification of identified communities of practice contributions to date.

Contribution created by Communities of Practices			
	Members	Community	Company
Measurable	<ul style="list-style-type: none"> Share Best practices Improve competency Improve efficiency 	<ul style="list-style-type: none"> Develop a common language for the domain Create the domain memory Develop new knowledge 	<ul style="list-style-type: none"> Improve operational performance Supplement project team activities Increase innovative potential
Non-measurable	<ul style="list-style-type: none"> Compare Introduce a different view regarding usual activities Improve access speed to know-how Supply a teaching aid 	<ul style="list-style-type: none"> Include experts in collaborative areas Improve group cohesion Value knowlege capital 	<ul style="list-style-type: none"> Develop a culture of sharing Increase employee motivation Improve learning capability

Some of the contributions are detailed here-below as examples.

The improvement in skills of the members of a community of practice is easily assessed by their flexibility and therefore by the resulting productivity scope.

Increasing the value of the company knowledge capital through the use of communities of practice is not easily measurable; nevertheless, any professional working internationally on areas which demand a certain technical level such as finance, will easily confirm the contribution brought by communities of practice.

Providing something additional to the functioning mode of project teams is also a measurable contribution for a company which implements communities of practice: it helps colleagues and mainly experts maintain and develop their know-how, and therefore guarantees the efficiency of their contributions to the project teams to which they belong.

Community of practice implementation

The main objective of implementing communities of practice in an organisation is to define focal points which enable the assembly of specific know-how and knowledge in a given domain as well as defining the people who have and develop that knowledge.

The organisation is therefore familiar with its know-how and has the capacity to make it evolve, which can be a very important asset in a world where on-going reconfiguration of the organization is necessary to meet client demands and the pressure of the competition.

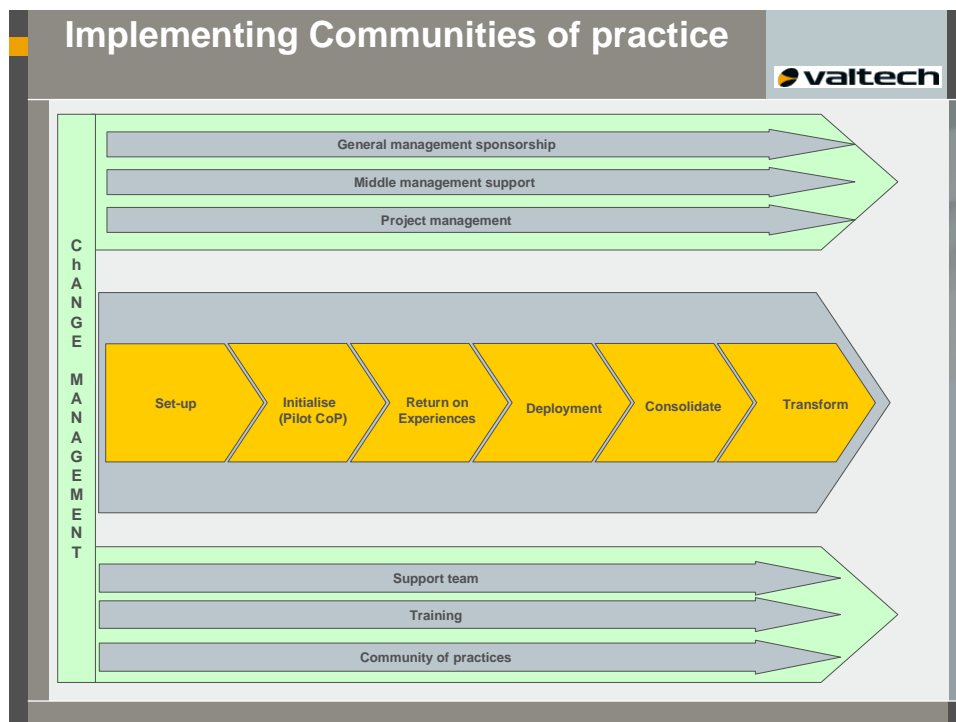
Setting up communities of practice must obey certain rules and draw on a five-level process:

- 1) Act gently and stay simple
- 2) Build to ensure easy, shareable development
- 3) Identify, follow-up and share worthwhile data for all parties
- 4) Continually develop internal and external relationships around a basic group with a federated co-ordinator
- 5) Make sure there is an ad hoc technological backup medium without focusing on that aspect.

These principles become effective through an implementation process which can be broken down into the 3 following parts:

- 1) Sponsorship to guarantee that support is readily given from Top Management as well as middle management and that they ratify its goals
- 2) Project management to ensure that the operation is going ahead in the best of conditions for the company by integrating preparation, setting up of pilot communities, bringing in experience feedback, work deployment and consolidation and, lastly, positioning the company as a learning organization
- 3) Organisational and training support for the progressive deployment of the communities of practice.

The following table gives an overview of the implementation process within an organisation.



Several points should be noted.

The last stage of the installation process or transformation phase has an ambitious objective, that of positioning the company as a learning organisation, i.e., an entity aware of its knowledge and know-how and therefore able to reconfigure itself whenever necessary.

In the case of fairly large entities and deployments which span a certain period, a community of practice can also be installed on the subject of its own deployment (see "Communities of practice at the bottom of the table).

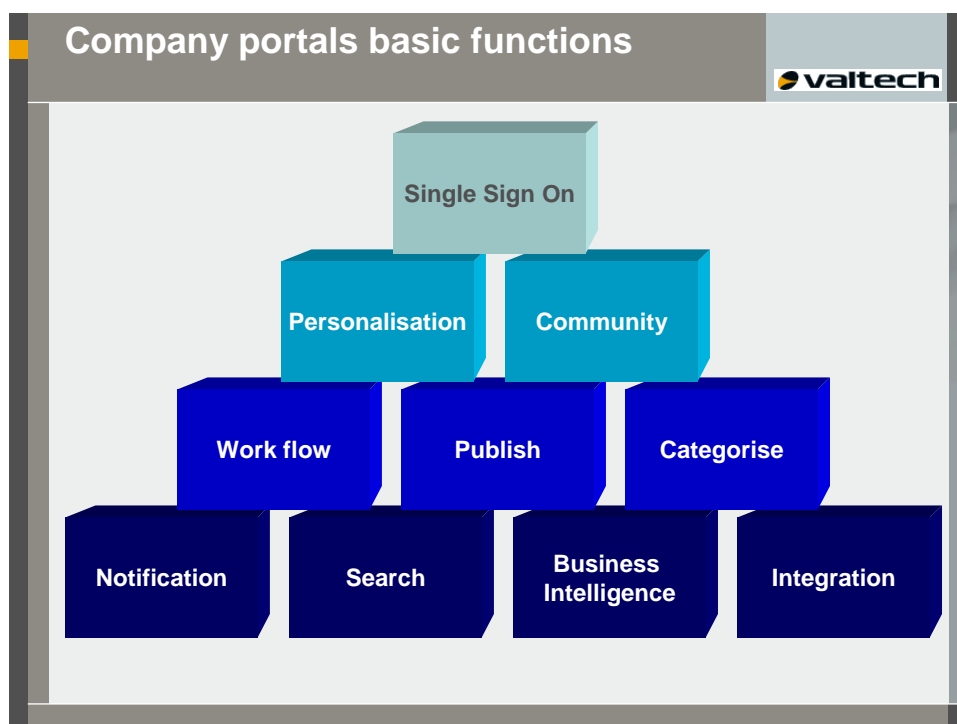
Even though setting up communities of practice is not a matter of information systems, looking at the underlying information system is unavoidable.

In terms of applications, the main needs of communities of practice are the following:

- 1) an address book
- 2) virtual places for intercommunication and discussion
- 3) a document management system
- 4) an agenda and a calendar of planned events
- 5) decision-making tools
- 6) a glossary.

To answer to these needs, it is obvious that e-mails, electronic document management systems and groupware are insufficient. A new generation of tools is necessary: company portals.

The following table shows the basic functions of company portals.



The content of most of the functions shown above is explicit enough; others need further precision.

The « Personalisation » function enables specific access to linked-up colleagues and makes available all the services to which the user has access rights.

The “Community” function ensures the administration and management of the different communities defined on the portal.

The « Categorisation » function ensures the static or dynamic classifying of the content to which the portal gives access.

The “Integration” function must be understood as the ability for the portal to integrate different applications and enable transactions to be made.

There are currently two large categories of company portals :

- 1) collaborative and documentary portals
- 2) application portals.

The first category is aimed at the management and sharing of documents. It usually integrates functions of multimedia content management. The software leaders of this category are Microsoft, Hummingbird and Open Text.

The second ensures the connection with **applications**. It enables transactions in different applications through a unique interface. The software leaders of this category are SAP, Plumtree, IBM and BEA

Lessons learned presented in a practical case

Context

With more than 6 million clients and a network which covers 98% of the French population, this telecommunication operator has proved to be a dynamic and innovative player on the French mobile telephone market. As for most large companies, it has to face optimal information and knowledge management problems.

At the end of the year 2000, the company started thinking about knowledge-sharing. After several feasibility studies, the proposed projects looked difficult to install and to manage, as well as very costly. A call to tenders was then launched. A consulting group specialising in knowledge management was engaged using the Microsoft portal. Known as a knowledge management portal, Microsoft’s portal can store, classify and publish documents in collaborative spaces through an **intuitive** Web interface.

This Microsoft product was chosen to satisfy the different demands of the company’s activities and because of its easy installation and simple use.

In order to meet a challenging schedule, Bouygues called on Valtech, a company specialising in management consulting and IT. Valtech was chosen because the project required a rapid delivery of effective knowledge management solutions. Valtech’s experience in this field is well-established.

In just a few months, the company has implemented four highly effective knowledge management systems. As a first stage, two projects were defined. The first was to give preference to exchanging best practices in SAP, and the second is to improve the transfer of knowledge on innovative projects between the division which initialised them and the operational divisions which put them into practice.

The exchange of best practices within the SAP user community

The pilot project - tested in north-eastern France - delivers support to one hundred staff using SAP. The aim of the project was to provide on-line assistance to end-users and ensure that they could share the best practise of these solutions.

The knowledge base manages the publication and classification of documents and provides users with a single knowledge portal. Users are encouraged to add their own advice and experience relating to SAP via their browser.

Results were immediate and impressive. Users need immediate and accurate information to get the most out of this relatively complex software and make a real contribution to the bottom line. The knowledge base has helped this company leverage and extend the value of its SAP investment.

Knowledge management in a technical reference system

Initially designed for maintenance technicians from the same region, the second project involved about thirty people in its pilot phase before being extended to a further 200 staff. The aim is to give technicians on-line access to company technical information knowledge base. Technicians frequently work on site. From their portable computers, they can connect to the technical knowledge base on the portal and access technical files and recommendations made by their colleagues in similar situations. If a file is not 100 per cent relevant, they can adapt it and make their expertise available to others.

In a matter of months, the company has built a comprehensive on-line library of technical knowledge. Technicians now have rapid, real-time access to the entire company expertise. It is also highly versatile. Technicians can search the knowledge base according to various criteria, including full text search and also through their specific areas of interest (categories).

End-user feedback is also extremely positive. Technicians now have all the information they need to make better decisions more rapidly than ever before. Prior to the portal creation, they spent far too much time searching for the right person with the right information. Now all they need to do is look on the web. They can resolve network issues quickly and with minimum fuss, resulting in the company being able to further increase the overall quality of its customer service.

Using knowledge management to innovate in information systems

The CPS (Computer Planning Strategy) Division is responsible for researching new technology and then ensuring rapid implementation of the solutions that best support the company's business objectives. Practically, it tracks and researches new technologies and then validates them before they go live in any part of the business.

The knowledge base designed in this second project was used to accelerate the movement of new technology from the CPS division to operational divisions.

Like the previous project, it took only a few weeks to complete.

All technical documents are classified, each event in the project can be traced and the lessons learned for each project conducted by CPS division is stored in the knowledge base.

Now, no time is wasted searching for documents. On one hand, the CPS can make full use of its acquired knowledge to develop innovative new information system strategies and, on the other hand, the operational divisions can start a project benefiting from all the capitalized information.

Keeping track on new information system technologies

Since a recent past, the client's IT people have been really motivated by obtaining and sharing information on system technologies, and newsletter on these subjects have appeared over the past few months. They were written by a person in charge of collecting and gathering information on the latest technological developments from various sources, mainly Internet.

With this fourth project, also quickly developed and implemented, the idea is to set-up a collection of information by the people owning it, with a quick validation of field experts, and the organization of the information-sharing through the portal by alerts posted on the subjects of interest.

After finalizing defining the taxonomy and implementing collaborative intelligence function, the feed back of the users was very positive. Now they have a global memory for new information system technologies which they can access easily and search for all kinds of information and also be notified on specific chosen subjects.

Barriers during the implementation process

Like for all projects presenting a new approach to working or managing people or using a new technology, the people were very enthusiastic at the beginning. Particularly in this case where the design, development and implementation for these four knowledge bases was very rapid.

But, after a few weeks some difficulties appeared:

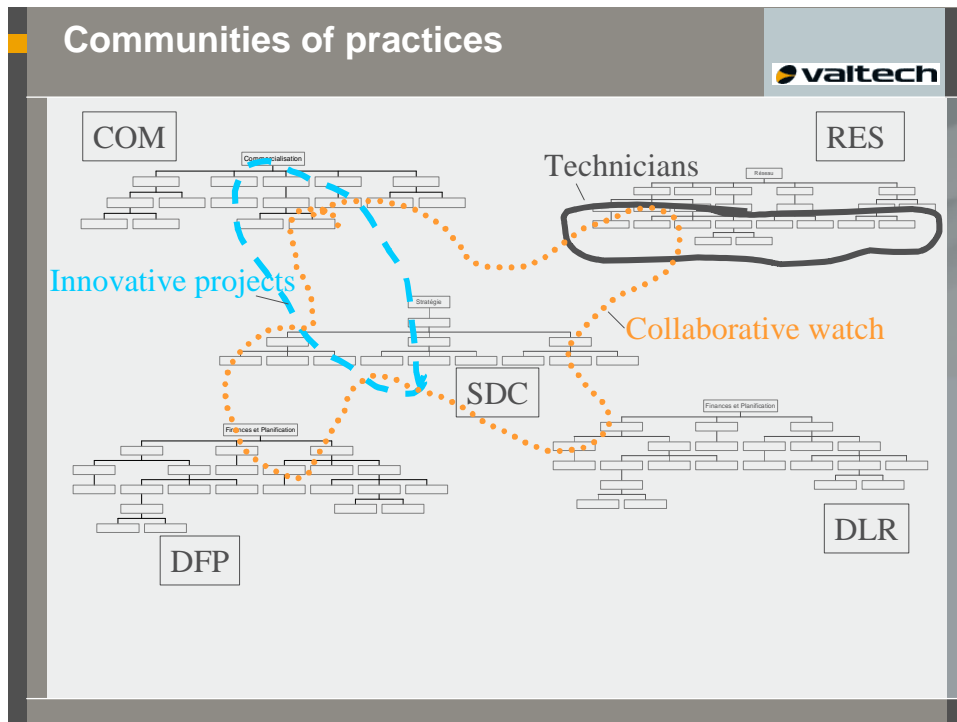
- Fear of losing know how,
- Doubt about the completeness and sincerity of knowledge passed to them,
- Technical difficulties,
- Loss of management support,

Overcoming these difficulties was done through a change management program.

The Knowledge Management Manager and her team work closely during a few months with people involved in these projects organizing communication and training, implementing incentives, examining with human resources the possible evolution of the job description ...

Even in an organization going through constant evolution like this telecom operator, the company has overcome the main obstacle to knowledge management success – end-user resistance with a light use of change management. By setting up focused, effective projects

that deliver impressive and immediate results, Bouygues Telecom has managed to make its knowledge management vision become reality.



Lessons learnt

After over two years of working on the implementation of Knowledge Management at this telecom company, it is possible to capitalize on a few points:

- Focus efforts on results, not on concepts,
- To begin a KM implementation in your company, start from the ground floor and work up
- Define value-added KM projects,
- Identify measurable and non-measurable gains to be obtained by projects,
- Choose a tool which is easy to implement and to use, which can readily meet all the company's professional requirements,
- Obtain staff adhesion by good utilisation of change management,
- Design, develop and implement the projects quickly,
- Don't be disappointed by the delay in project and stay in line with your KM objectives.

Another lesson learnt was in the choice of a tool which could support the communities of practices. It must be simple, practical, not expensive and quick to set-up even if it's functional cover is not exhaustive.

The tool that was chosen was Microsoft's collaborative and documentary portal. SharePoint Portal Server proved easy and flexible to set up at a very low cost – both in acquisition and maintenance-.

Conclusion

As concept, communities of practice belong to the collaborative approach of knowledge management. Although the concept might be global, it needs a precise focus as much on the target as on the implementing process and on the expected results.

This enables knowledge management to move from a relatively theoretical approach to operational concepts. The return of experience, presented here-above, illustrates this point.

From the implementation point of view, communities of practice are supported by computer tools: collaborative and documentary portals.

It is now possible to assert that communities of practice give a concrete expression to knowledge management.