

***THE PROCESSES OF BUILDING KNOWLEDGE.
THE CASE OF SMEs AND DISTANCE LEARNING***

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Abstract: The development of the globalization, of the complexity and the progress of Information Technology prompt most of the organizations to set up new conditions to manage their competencies, to develop cooperative work and to set up new mechanism to perform distant learning, working and understanding. This paper presents various alternatives as well as practical solutions to help SMEs and academic organizations to work and collaborate within the knowledge society.

Keywords : complexity; distant; knowledge; learning; organization.

Résumé: Le développement de la globalisation, de la complexité ainsi que l'accroissement des progrès dans les technologies de l'information induisent les organisations à mettre en place les conditions nouvelles de management de leurs compétences, à développer les travaux coopératifs et à développer de nouveaux mécanismes d'enseignement à distance. Ce travail présente différentes alternatives ainsi que des solutions pratiques pour aider les MPE ainsi que les organisations académiques à travailler et à collaborer dans le cadre de la société de la connaissance.

Mots clé : apprentissage ; complexité ; globalisatin ; Pme ; Tic.

The processes of building knowledge. The case of SMEs and distance learning

Introduction

This is common place to tell that today, we are moving from the Information Society to the Network society. Different papers and analysis, show on a country base as well as on a business one, that we are entering into the network era. See for instance Morten Falch and Anders Henten [1] (2000) showing that "The Danish Government recently issued a new policy report, *Digital Denmark*, on the conversion to a network society, as a successor to its *Information Society 2000* report (1994). This is part of a new round of information society policy vision statements that are, or will be forthcoming from national governments everywhere.". This put in evidence the fact that the globalization, the fastest turn over of the technologies, the rise of new competitors, introduce more and more complexity in our environment. This view is seconded for instance by Kristian K Möller and Aino Halinen [2] (1999) which show that there is a new challenge which is opening for the management, the challenge of the network era. In the same frame of mind, Barry Nalebuff and Adam Brandeburger [3] (1996) pointed out that the environment of a firm (customers, suppliers, competitors) should be understand, not to set up a battle field, but to try to rise up opportunities for collaboration and development by the bias of "Complementators."

In this context, even the University is concerned since this institution is more and more engaged to move from the classical model to the entrepreneurial paradigm through the triple helix system see for instance Henry Etzkowitz and al [4] (2000), or Henry Etzkowitz and Leydesdorff L [5] (1999) or towards the building of an intellectual capital which will open the space for creative thinking and innovation this view being supported by Richard Vicenzi and Gary Adkins [6] (2000) which show that "Previously, mass-market industries that relied on volume and economies of scale could be effectively analyzed using a linear machine model with primary focus that is internal to the organization... ", but

"However, today's more knowledgeable customer is rarely interested in a mass-product or service."

In the two last centuries, we passed from agriculture to industry very rapidly, and this develop strong mental models and images linked to the era of industrialization **where the values were land, people, and capital**. But, suddenly we moved in a very small time period to the era of immaterial and information, where everything go faster and **where a new valor is added: Knowledge**. But, the problem, is that knowledge is different from the other valor. Today's knowledge may be obsolete to morrow. In this context and to facilitate the understanding of this new paradigm, new images of the futures will be necessary, see for instance Anita Rubin and Hannu Linturi [7] (2001) which analyzed carefully the building of mental image of the future as a tool in education and decision making. In this perspective, it is necessary to understand and use all possible methodologies and tools to develop new knowledge. It is also very important to notice that **the universities will not be the only place where knowledge will be produced and even they will not develop the bulk of this production**. This is clearly shows by Gibbons et al. [8] (1994) which in their influential book *The New Production of Knowledge*, identify heterogeneity as an important characteristic of the contemporary landscape of science production. This point of view has been criticized by Benoit Godin and Yves Gingras [9] (2000), which analyzed the papers produced in the literature, and concluded that if new locations of knowledge appeared, the university is still the first one. But in our opinion their analysis which is mainly concerned by the Science Citation Index may also reflected that the production of knowledge does not go now necessary by through the channel of publication as the ones indexed into this information source. The importance of the Internet, of the gray literature, of the self edition and the intellectual protection push strongly in this direction.

1 - A few facts and questions

Before beginning to analyze in depth the problem of knowledge and intelligence, we should examine a few questions and facts

which may brush the landscape of our thinking in this matter. For instance, very often, executives and managers say: (part of these questions are extracted from a talk of Timothy Powell [10] (1999) at a Workshop of the SCIP (Society for Competitive Intelligence Professionals).

- We spend the same amount of money on R&D (that our competitors) but we don't get the same result.
- We certainly have a global corporate knowledge but we don't use it too much.
- We made it, but we lost the know-how.
- We access to a large bulk of information but we don't get any pay off out of it.
- We don't know really what is our knowledge.
- If we move to an extensive use of information, what will be the pay off ?
- We never get the right information which fit our strategy
- What is the knowledge capital of my company, how to measure it ?
- What are my competitive advantages ?

On the other hands, we found also very often statements and affirmations from top people which show, to the evidence, that many one are short sighted one day or another:

- We did not like the sound of their music and the electric guitar is not fashionable anymore
Decca Recording Co, refusing the Beatles, 1962
- I am glad to see that Clark Gable will failed instead of me
Gary Cooper, giving up the main role in "Blowing the wind"
- I think that there will not be a market for more than 5 computers in the world
Thomas Watson, president of IBM, 1943
- The is no reason to have a computer at home
Ken Olsen, Président of Digital, 1977

These two sets of questions and affirmations, show obviously that there is a problem between the development of a corporate intelligence or a corporate knowledge, and the views of certain decision makers. To fill this gap, many authors think that Competitive Intelligence, or Knowledge creation, are two

possible responses. Of course, the basis of the knowledge elaboration will be linked to information, but the process to move from information to knowledge (or intelligence) must be analyzed, because it is not obvious.

2 - From information to knowledge

One important fact about knowledge, is that knowledge **is not founded but it must be created**. In this view, we will second Brooke Aker [11] (1998), President of Cipher Corporation (<http://www.cipher-sys.com>) which, in a presentation of KM solutions developed this statement. If we adopt this point of view, there will be a large gap between documentation information management, and the knowledge creation process.

Today, almost all the authors agree that to build knowledge it is necessary to use information. But, if the information is leave alone, there will be only a process of retrieval and storage, without a process of knowledge creation. It is then important to analyze this process, on a methodological point of view in one part, and after to link it to various tools which will facilitate the overall process.

We are now going to present some of the main steps which are part of the transformation of information to intelligence. The goal is to help the company to becomes most innovative, creative, to shorten its decision making process, and to increase its overall skills. To better understand the whole process and its goals, Competitive Intelligence appears to us as one of the best discipline (with Knowledge Management) in which this creation must be developed.

Let us go back to some simple definitions of Competitive Intelligence:

- Systematic program of collection and analysis of information upon the activities of the competitors and the general goals of the company with in view the fulfillment of these goals.. Larry Kahanner [12] (1997)
- Analysis of the in formation upon competitors which are implicated in the process of decision making of the company.. Leonard Fuld [13] (1997)
- Knowledge and prediction of the world which surround the company; prelude of

the decision of the manager. Jan Herring [14] (1999)

- Information which ascertains good decision making which will increase the competitiveness of the company. Ben Gilad [15] (1999)
- A systematic process that converts bits and pieces of competitive information into strategic knowledge for decision making Kirk Tyson [16] (1998)
- Knowledge about current competitive position, historical performance, strengths and weaknesses, and specific future intentions Kirk Tyson [16] (1998)
- Competitive Intelligence Systematic program, of collecting, managing and processing information upon the activities of the competitors, clients, technologies and general tendencies of the company activities, in view of the decision making process and the realization of its strategic goals: Henri Dou, Gilda Massari Coelho [17] (2001)
- Competitive Technical Intelligence Systems of Competitive Intelligence with a strong emphases to science and technology and their impacts on the research and development activities.: Henri Dou, Gilda Massari Coelho [17] (2001)

It is clear, that from these definitions Competitive Intelligence is grounded to information, but that information must

encounter certain transformation before it may give rise to intelligence.

A - The cycle of Intelligence

To analyze the cycle of intelligence, it is fundamental to see information as a food that the organism will eat and will metabolize to perform various tasks. This point of view has been expressed to Timothy Powel [18] (1995), and by Henri Dou [19] (2001). This image is interesting, since the company is compared to a human body, and information to food. In this example, Timothy W Powell [18] (1995) shows that in the same way than a human being, the company may develop diseases, but it shown also that the process of metabolism if simpler in a human body than in a company since the food is absorbed uniquely by one way (the mouth) which is not the case in a company, and that on the other hand, if "energy" is going to the right place in a human body, this not generally the case in a company.

The Intelligence cycle may then be presented as follow:

In figure 1, the process of Intelligence Planning may be presented in four steps, one which deals with information gathering, the second with the information management, the third with information analysis, and the forth with information understanding and the creation of high (strategic) valuable information products.

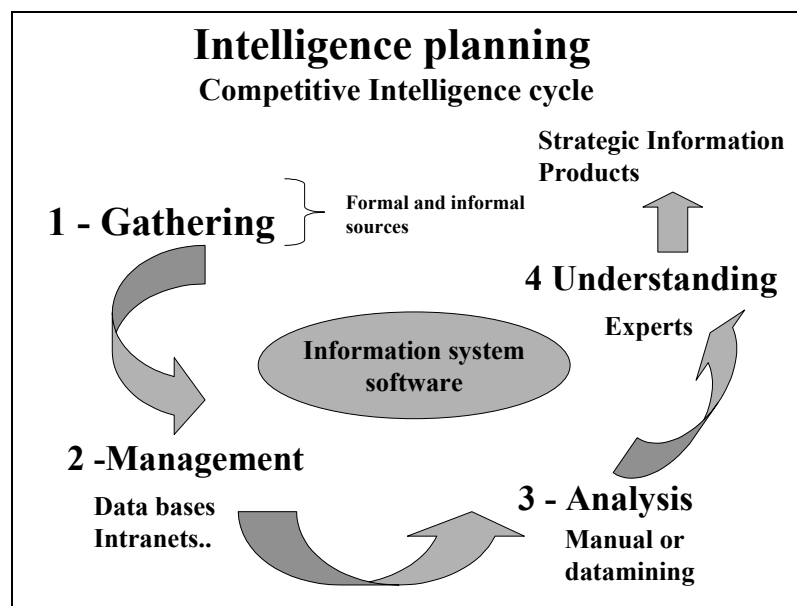


Figure 1: Intelligence Planning

It is obvious, that if not all the steps of the cycle are not perfectly fulfilled, the result will not be correct. We are not going to detail all the cycle, but we will emphasize the points which seem to us the most important.

Another presentation of the Intelligence Cycle, may be found in the paper of Gerald L. Kovacich, [20] (2000). This author pointed out that this cycle is classical and used almost everywhere, that it is circular: "Note that this is a circular, iterative process that progressively should move closer to the limits of questions that can be answered without intrusive (read unethical and illegal) methods and techniques.". Note because that will be useful later on, **the process of questions and answers** which is indicated by this author.

B - The main important points

Step 1, the information gathering needs to cope with two strategies: access to formal and informal information, this is not simple and in this respect: whatever the type of information (formal or written documents), (informal or human documents), it is of primary importance to analyze very carefully the sources of information. Do not forget, that for the formal information (such as scientific papers, data bases, etc.), the relationship of information and time is very important. This is not what people thought two years ago which is important, **but what they think NOW**. This is the key to anticipate. Do not forget, also, that for the

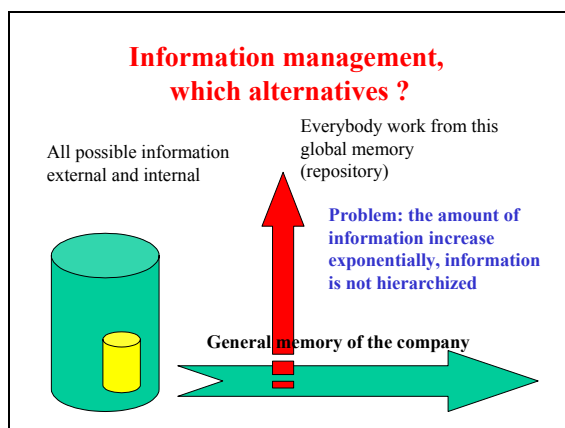


Figure 2: general repository

Different authors analyze the way in which for instance Competitive Intelligence analysts, work to gather information see U. Schultze and

informal information (notes, gossips, Internet forums, advertisements, ...) the information **needs to be validated before use**. (from Henri Dou [21] 1996, [22] 1998). A most explicit analysis of the collection of information (from a classical point of view of formal documentation) has been presented by Gerald L. Kovacich [20] (2000).

Step 2 is a little more complicated, since it may give rise to several ways to manage information into a company. The first way is to consider that all information of all kinds, (from invoices to patents going through reports, etc.) is valuable for the company, and that it must be stored. In this case a general repository is set up, out of which two ways to deal with information retrieval are possible. These two steps are presented in figures 2 and 3.

Figure 2 deals with the first way, the general repository as a source of information for all the employees of the company, experts as well as others, and figure 3 deals with the second way which is to select (by a specialized team, or by a Competitive Intelligence person) the information showing a strategic character to pass it to the experts for the clustering and understanding step.

From our own experience, the second way is better, because in the first way, there could be an overdose of information on one way, and secondly, because the experts may be transformed into documentalists or archivists, which is not really the expected result.

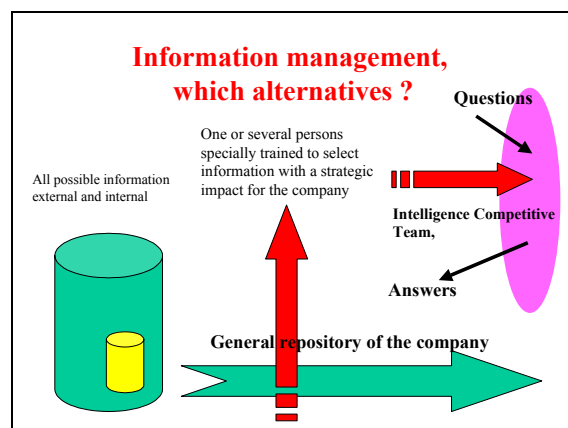


Figure 3: selection of strategic information

R.J. Boland Jr [23] (2000). They show that these analysts, most of the time develop their own databases in which they store all

information which seems to them useful not even for an immediate use, but for the future. These authors pointed out, that access to these information is a big step ahead for the exercise of their job.

In fact, in this process this is the transformation of data to information which takes place: data are small facts which have no

links between each others, generally at first sight. To put these links into evidence, will transform the data in information. But, information if it stands alone will not be very useful. Intelligence is the way to understand this information and to use it for action. (actionable intelligence). Figure 4 shows the progression from data to intelligence:

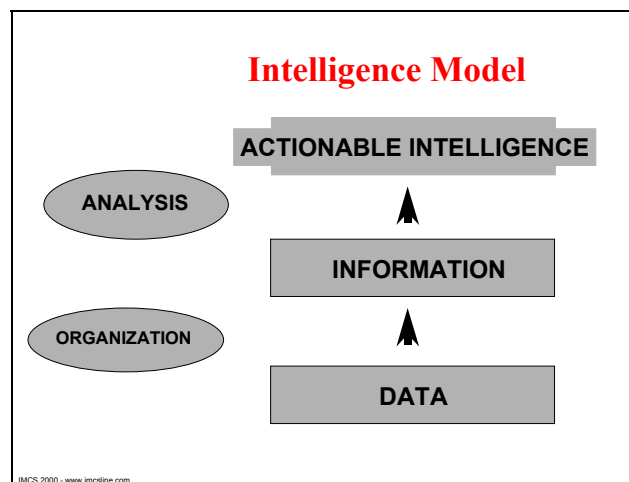


Figure 4: The intelligence model

Step 3: is the analysis of information, it should not be understood as the analysis of information on a dissertation mode. This is the way to correlated information which shows common point(s) (such as common authors, key words, etc..) This step is related to bibliometrical analysis see Hervé Rostaing [24] (1996) and to datamining (L Iwanska [25] 1997) . It points out to the experts the clusters of information which have a significant meaning. These clusters could not be seen at first sight, and this is uniquely the usage of powerful programs which help to build up networks and clusters. This is a significant help for the experts, since generally they second very well the specialists in their task to understand the meaning of large amount of information. At the beginning the analysis was linked to structured information such as the references obtained out of a commercial database such as Derwent for the Patents, of Rapra for the polymers, etc...On another hand, the rising of unstructured information, leads to the development of powerful software to performs datamining (for instance block seriation, etc.).

Step 4: concerns the understanding of the information, and the development of high valuable information products for the decision makers, and in the same time the way to organize the work of the experts involved into this process.

From the cycle of intelligence, it could be thought, that the system should work quite well as it is, but, from our own experience see Henri Dou [26] (2000) and from the experience of other authors as U Schultze and RJ Boland Jr [23] (2000) this process is not obvious. In fact, in this analysis of CI analysts practices, the former authors demonstrate that the forces in the field of development of the activities, see Pierre Bourdieu ([27] 1973 and [28] 1998), acts as a brake, since it inhibits some cooperation and information exchanges. It is also a brake when various strategies of collection (mainly in informal information) are developed on a personal base. Let us then see what may be said to light up a little more what are the role of the experts in knowledge or intelligence creation.

Various authors such as François Jakobiak [29] (1998) pointed out clearly that the experts

are the mile stone of the process of technology watch (Competitive Technical Intelligence). The experts must be of top quality, and work in group. They must come from different departments: strategy, providers, R&D, Marketing, etc.... Their work should be organized with care to facilitate exchanges and discussions. The same point of view is expressed by Myriam Trouchet, Antonio Da Silva, Henri Dou, Luc Quoniam [30] (2000).

3 - The process to create intelligence

We point out above, that when one works alone, the system is not powerful enough and that competition between people (their trajectory images of their future career in the space field of their job) is also damageable for the system. In other fields, such as e-learning, it is show that one of **the crucial step in creating competencies occurs when the students begin to develop cooperative work**. This space of cooperation may be created by the students or it can be initiated by the methodology used into the course. Céline Riffaut and Hervé Rostaing [31] (1999), (<http://ntide.u-3mrs.fr>) show that this is a key step for the success of distance learning. With the same vision, Kristian K Möller and Haino Alinen [2] (1999) indicate: "No firm can afford to be a self-contained "island" anymore; **learning through relationships is crucial** for the battle over the future". They are also seconded in this opinion by H Hakansson and I Snehota [32] (1995).

A - Positioning the activity of the firm

In fact, if we want to move from Information to Intelligence, we have to consider two

important levels of activities: the capacity to gather information, and in the same time the ability to process this information to understand it and to move to intelligence. The situation of a firm may be represented as follows in Figure 5:

Two positions are interesting:

- The companies or institutions which make a large effort to gather information, but which did not get the capabilities to process this information and understand it. This is very often the case in large companies or administrations where the bureaucracy for a self justification ask for more and more information which at the end terminates their life into remote cabinets and drawers.
- The companies which are starved, which means that they gets all facilities to understand information, but do not get the capacity to gather the information which should be necessary for this task. This is often the case when one company (generally one startup), leaves the laboratory of institution in which it was born. The link with scientific and technical information is then cut off, and the small company which must struggle at the operational level to live, did not get time and capacity to gather new information. This case is dangerous because it could be easy, from this place to shift to the nill place where both activities (gathering and processing) will be gone. This point of view has been expressed by Henri Dou, [33] (1998)

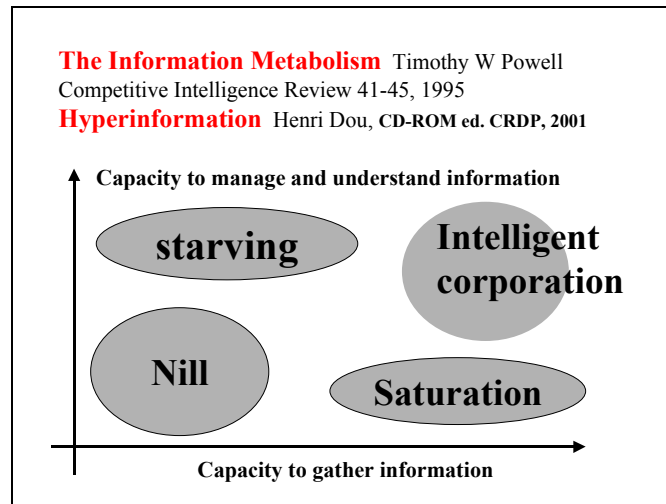


Figure 5 - Situation of a firm which moves from information to intelligence

B - Analysis of knowledge solutions

There are various tools (set of software) which are available in the literature and which presents various ways to create intelligence. Brooke Aker [11] (1998) from Cipher System, indicated that the process of creation of knowledge is linked to 3 main steps:

- gathering information, categorizing and indexing it,
- anointing these information by experts with evaluation, reformulation, etc.
- making information actionable to improve the skill, competitiveness and innovation of the firm

The same steps are also followed in the solution for Competitive Intelligence, presented by Lotus Notes.

In an outstanding paper, Ronald N. Kostoff [34] (1999) studied two approaches to enhance innovation: interdisciplinary workshops, and accessing literatures for enhancing innovation. We are going to examine these two approaches in the light of methodologies and tools necessary to create knowledge. First of all let us take part of the introductory observations made by Kostoff [34] (1999): "There is a growing consensus that one important factor in many instances of innovation is the transfer of information and understanding developed in one or more disciplines to other, perhaps very disparate, disciplines.". This points out that the role of experts and the role of understanding information are very important, but also that the two approaches chosen: workshops and literatures are closely linked to the information's typology: human documents

(informal information, workshops) and written documents (formal information used of the literature). Let us go a little further in this analysis:

Workshops for enhancing innovation:

- these workshops last 2 days,
- they are intensively prepared by a pre-meeting e-mail phase.
- a post-meeting e-mail phase ensure the participants to provide additional opportunities.
- the selection of the participants (experts) is crucial (it is possible to use bibliometric analysis of their work to perform a right selection)
- the e-mail component of the workshop is crucial
- there must be some sort of incentive to motivate the experts

Kostoff [34] (1999) notes also that in these workshops, there is a "spirit of comeraderie", and that people did not show any reluctance in sharing concepts and ideas. This is almost the same thing that the "esprit de complicité" noted by François Jakobiak ([29] 1998 and [35] 1992) about the Technology Watch network of people in some French companies. Kostoff [34] (1999) pointed out also that the pre e-mail phase is a crucial help to create such a spirit.

Accessing linked literatures:

The author is a specialist of bibliometric analysis of the literature, and he developed the concept of Database Tomography (DT)

(Ronald N Kostoff [36] (1993)) This technique allows to put together papers which have not direct links. For instance "two literatures can be generated, the first literature AB having a central theme a and sub-themes b, and the second literature family BC having a central theme b and sub-themes c. From this approach, innovation may be generated by cross-examination of these different papers.

What we learn from this accessing literatures phase, **is that the literature must be chosen with great care** (here by the bias of Database Tomography), but elsewhere it could be from an effort of a specialized group of people for instance or by a Competitive Intelligence team or from other bibliometric treatments.

The major conceptual breakthrough described in the paper

Let us cite Kostoff [34] (1999) "Perhaps the major conceptual breakthrough in this paper for stimulating and enabling discovery and innovation **is the recommended coupling of the literature-base approach to the workshop-base approach**". Performing these two approaches in tandem leads to synergy, and eliminates the weakness of both approaches conducted in isolation."

From these results, and from other work made at IMCS and CRRM, see Jean-Marie Dou Jr [37] (2000), and Gilda Massari Coelho, Henri Dou [38] (2000), it is possible to schematize the main steps in Intelligence creation. This is presented in figure 6.

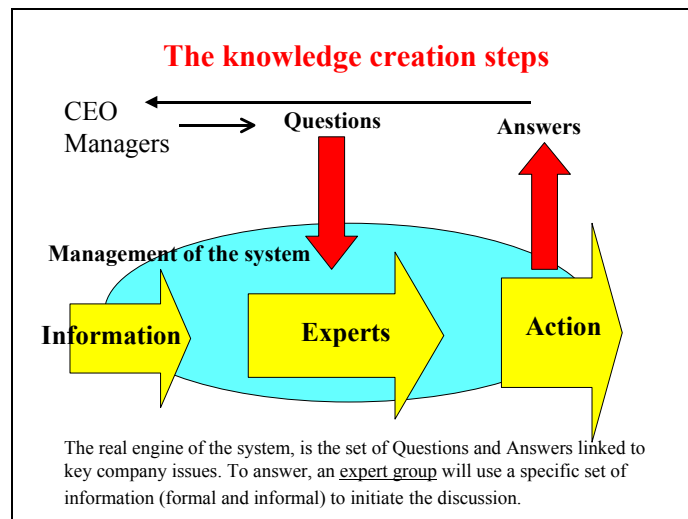


Figure 6: The knowledge creation steps.

Note that in these steps, people (experts, analysts) **are not isolated**. Note also that an incentive is created by the questions asked by the managers of the firm. Answers may be build up following the classical process of breaking the main question in sub-questions and performing all the separate answers and at the end regrouping the set of answers to obtain the final response. All answers should be followed by evidences (that is to say the pieces of information used by the experts to second their point of view).

If this scheme is correct, it should be possible, out of it, to develop a platform which will assist all the actors of the process, in:

- managing the competencies,
- working at distance
- ensuring a certain amount of secrecy
- enabling the managers to follow the work of the teams (Competitive Intelligence Teams for instance)
- providing easy readable and actionable answers for the CEO (Chief Executive Officer) or the managers.

4 - A platform for knowledge creation

This type of platform may assist Small and Middle Size Enterprises as well as group of students and professors in distance learning. Such a platform should content all the above

facilities and will also provide to the consultant (for firms) and to the professor (for distance learning) the necessary tools to let the employees or the students prepare the venue of the consultant or of the professor, and after to continue the work by exchange of comments

leading to the answers to questions (or exercises).

The main items necessary are presented in table 1:

Key points of the system
1 - Management of the users, password and login. Creation of user groups, priorities, management of the competencies.
2 - Secured e-mail center (encryption) - Question(s)
3 - Management of the time, calendar
4 - Knowledge base, which will contains the starting strategic information as well as the information added by the experts and eventually their comments.
5 - Forum, which allow all the experts to exchange point of view ideas, etc...
6 - Gateway to internet to share the best URL of servers.
All these different parts are interactive, that is to say that all the users may interact, set up dates, add or comment information, indicate URL, etc...

Table 1: The main requirements for a platform

Other features will be necessary for the design of the platform: **this is a facility**, then it is wise to outsource this part of hardware and software. This is the reason why the platform is located into the computer of IMCS, linked via a provider to very fast and permanent Internet access. Thus, there will not be any constraint in accessing the system from various places. The only requirement is to have an Internet access (Modem via telephone line, or cable or ADSL ..). This question is important, because small industries and SMEs, are very reluctant to engaged overhead costs such as the necessary facilities to start the intelligence process into the company. This is also the same reasoning which may be held in distance learning, the platform may be operational within a few hours, without any constraint. Such considerations have been presented by the CRRM and IMCS in papers such as those from Jean-Marie Dou Jr [39] (1996), Serge Quazzotti, Ciry. Dubois, Henri Dou [40] (1999), Henri Dou, Gilda Massari Coelho [41] (2001), Henri Dou [42] (1996), and Valérie Léveillé, Hervé Rostaing, Celine Riffaut [43] (1999).

Other authors, in the literature presented many papers describing various facilities to perform distance learning, such as Robin Peek [44] (2000), Miriam A. Drake [45] (2000), , but they do not insist on the way in which creating knowledge must be performed.

In an important paper, Dees Stallings [46] (2001), examines what according various authors the future will be shape in education:

- According to Ray Kurzweil [47] (1999), author of *The Age of Spiritual Machines*, "...the computers will surpass humans in all areas of intelligence by 2020." Whether his prediction of "significant new knowledge. . . created by machines with little or no human intervention" comes true, his vision of future learning is unsettling and instructive. In 2009, he projects, "Students of all ages typically have a computer of their own, which is a thin tablet like device. . . most textual language is created by speaking. Learning materials are accessed through wireless communication.... Learning at a distance ... is commonplace."

- Foundations are changing in both goals and modes of operation, and also provide some insights into organizing to survive. The Alfred Sloan Foundation [48] (<http://www.sloan.org>) insists upon the necessity of **asynchronous** access of the courses and present a good over view of distance learning.
- I (Dees Stallings [46] (2001)) assume that the economic needs of the individual drive the demand for goods and services, including education, in a post-capitalist society. Therefore, I sketch out three models that have both proven themselves and evidenced limitations in the global electronic marketplace and elsewhere. Two of the three, Agoras and Aggregations, may initially seem to be a bit far-fetched and exotic. Closer consideration shows that they do indeed have potential and a history of effectiveness as venues for delivering education. The third, the Alliance, I propose in one of its variations as having significant potential for organizations like Vcampus and its academic partners.

5 - The platform and its applications

In this paragraph we present firstly the different part of the platform, and secondly the usage by different groups of users, and the comments and practices which have been noticed and analyzes.

A - The platform:

With in mind the above considerations, we have designed a platform to facilitate the creation of knowledge. It works on a NT server, using SQL as database system. The platform is linked permanently to Internet via a provider of fast access on the base of a monthly rent. The platform may be remotely operated by the facilitator (which introduces the names of users, their e-mail, login and password, as well as the primary information which will be used to start the work of the expert group), remote operation is made via the software PC-anywhere. **This is important, since we are working on a virtual base, the facilitator may be delocalized, as well as the users.** They will only need an Internet access the platform (such as Internet Explorer from Microsoft), and an e-mail if they which to communicate face to face with other people. The platform may have different designs, but basically, the left part of the screen contains the resources, and the right par of the screen all the activity indicators which will help the person in charge of the group (for instance the KMO (Knowledge Manager Officer)) to see all exchanges, comments, new information, answers, ... of the users. The platform used 4 languages, and we are presently working to present the same contains of the platform on different languages, according the user's needs. That is to offer a friendly interface to users if they are not from the same countries, but nevertheless belong to the same group of users. They will access the same contain and information, but the interface will be in their own natural language.

Figure 7 provides a view of the main screen of the platform, that you reach after keying your login and password (one for each users).

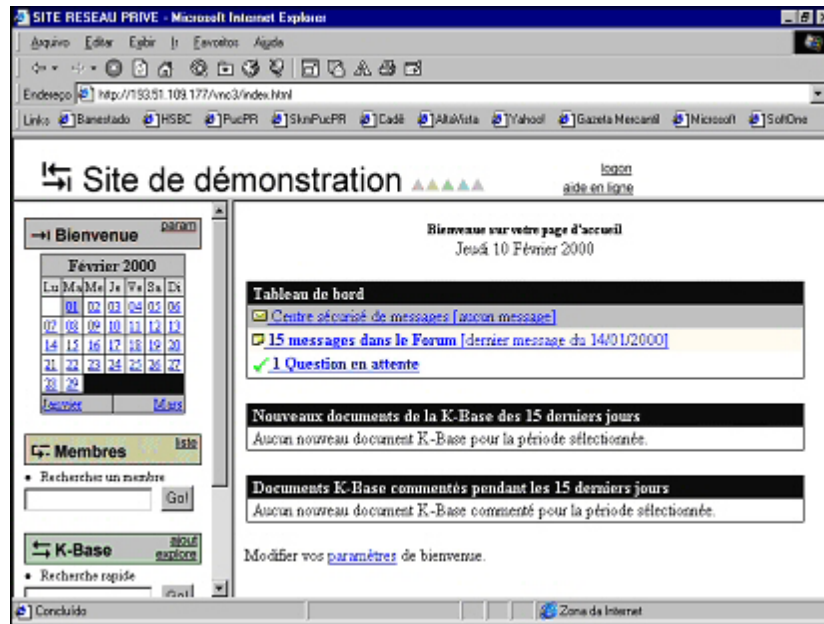


Figure 7: Main screen of the platform

Note the following features:

- The users need only the Internet Explorer to work. They do not need any other resident program on their machine. This means that from any machines, and from anywhere, you may work with the platform.
- The calendar: all users may enter information for one day event. You click on the day, a window appears, you enter the information (meeting, forum, ...) and close it. The date of day has is then of a different color indicating that they are one or more events this day.
- The members (the experts). They are the people which access the platform (one platform may allow the work of several groups of persons). You may search the user's name. This leads you to a window which contains the name and the e-mail. Clicking on the name leads you to the competency of this person. The competency(ies), may be entered by the user himself (only by himself because there is a checking of his password and login), or by the facilitator. It depends only of the way to described competencies (dynamic: the users do it, or static: somebody describe the people's competencies and give them to the facilitator to enter them into the system).
- The K-base: this base contains all the information that the expert group needs to work. At the first beginning the facilitator enters the basic strategic information (formal or informal), to seed the process. The members may comment the information, or add new information to the database. You may retrieve only the information that you provide, except if one of the person from the group gets upper rights.
- The Forum (see figure 8), is made to exchange various comments, shorts information, to ask for some advice's, to formulate answers, etc.. This asynchronous way to work is better than e-mail because it is well organized and more convivial since nobody is isolated (this is not the case when e-mail are used).
- The gateway to the Internet, where all the people may put the best URL according their subject and concern.
- On the right upper part of the screen the "tableau de bord" (general indicators), contains the center for e-mail encryption as well as the number of messages exchanged on the forum and the question(s) waiting for an answer.
- Going down, there is the indication of the number of new documents entered into the K-base, as well as the number of document which have been commented. The period

(here 15 days) may be shorten within the interval from 1 to 15 days.

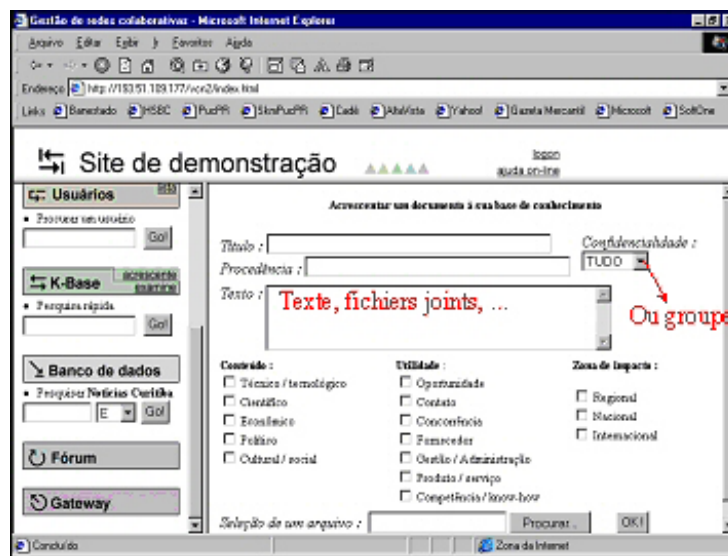


Figure 8: Last part of the resources and example of the addition of a document at the Knowledge base.

The Figure 8 shows how people may add new documents to the K-base. To facilitate the indexing and the search of the documents (besides the indexing in full text of the message, title, ... we use a set of descriptors (specially created by the facilitator according the task to perform) which are used as well as for the indexing that for the retrieval. Archives may be attached to the message (the same way that in the e-mail process), but the archives are not indexed. The K base is searchable as well with boolean operators than in full text (title of the documents, or text entered directly from the keyboard).

Note: figures 7 and 8 show one of the design of the platform. Other designs are available, for more information consult <http://www.imesline.com>

B - The uses

The platform has been and is used by different post-graduate students (at the DESS level in France), in the field of the management of the organizations in the field of Technology Watch and in the field of Information Technology utilization. Other users are civil servants (managers), which learn through the platform how to use new technologies to promote the management of people networks and to develop a knowledge in their organizations. The last group is made by two SMEs, which use the platform as a link between various

employees working outside the company and also to manage and comment permanently the information which may have a strategic character to the firm.

From these different users, we learn:

- In distance learning the platform may have a classical use, but it may also be used to prepare meetings or gatherings which are occurring from time to time depending the structure of the formation and the will of the students, etc.
- For the professors the collaborative work between students avoid them to stay into the e-mail front line ! They really intervene when the students do not find the right solution or when they are engaged in a false interpretation of one information or question.
- The users (students or company's employees) need to be familiar not really with the system, but with the methodology or the work, that is to say, working in group, using comments, helping each others, etc. To give an incentive to the users, questions are asked by the professors or managers, and "teams" of students or employee's work on various parts of one problem to provide at the end the global solution.
- At the beginning, most users read and comment the information, but when they add one, information they have a tendency

to use attached files with a size far too important. Most of the time, they do not indicate briefly what the archive is talking about, and why they put it into the K-base. These practices called for an ethic use. If you participate this is not by putting constantly new data into the K-base, but by commenting, analysis, and talking with the actors by means of the forum.

- For the use in small companies, the incentive came when the manager ask a question, and indicates what is the where about and the implication. This is very often on the form of: I (manager) got several information (x, y, z that he put into the K-base), what do you think? Is there any opportunities or menaces in them ?
- The small companies, also use the system as a mean of communication to disseminate information in a better way than with e-mail, since they put them into the database and get the thinking of the other people about it, in a better way and within a small management system. We asked why they like this use of the platform, the answer was that they do not have such a system open permanently on the Internet because of the cost of a permanent line and the necessity to manage from the inside such a system.
- The problem of data transmission (mainly speed) was not rise up. This is because the platform is located in a provider of high efficiency. The only problem rise when people use archives which are too large in size.
- The final problem rose by companies, was the security. They like the possibility to use encrypted e-mail, and they considered the IMCS company as a TTP (Tierce Third Party).
- For consultants: they use the system to be sure, that after their intervention into the company, people would keep working and will stay organized. This is important, because often, after one day of consulting, nothing happens after the departure of the consultant. This behavior is specially true in small companies.
- It seems also, that to work with such a system help people to sharpen their mind and to "squeeze up" the information as far as possible.

- At the end, we saw an appropriation of the system, part of it being used for other things that distance learning or analyzing information for a small company. People use it to set up the Saturday tennis team, or to organized chest plays. This show at evidence, that this type of system is useful. In a post-graduate groups, the students asked for the opening of a platform which will be only devoted to this use.

Conclusion

We are moving to the network world, to new forms of competitiveness, the University must survive into th 21st century, see Dees Stallings [46] (2000), and the small companies have to set up new way of collaboration: VC Virtual Companies, or cooperative networks, see John A. Weber [49] (2001)). In the same way, the development of new virtual incubators as well as e-commerce communities, see Michael J. Nowak , Charles E. Grantham [50] (2000), Grantham, C.E. [51] (1996) and Di Martino, V., Wirth, L.[52] (1990), pleaded for small entities to get the ability to compete with larger ones.

For Universities the context of privatization push harder and uniform facilities may expand or be imposed everywhere for instance, Jan Currie, Lesley Vidovich [53] (2000) analyzed the impact of the privatization in Australian universities and reached this conclusion.

One of the way to keep liberty and privacy as actionable freedom, is to use easy learning facilities to enter into the era of knowledge and intelligence creation. We believe that small, cheap, efficient systems such as the platform described in this paper, are one of the possible response. Knowledge Management, Competitive Intelligence are not only the challenge of large companies. Small ones may get a large benefit out of it, but to reach this goal, facilities, software, hosts, are necessary. Because of the cost of these facilities the best is to outsource them, at least during the time of learning and integration their uses. The goal of this paper has been to show that a simple and efficient methodology link to simple hardware and software facilities open the door to these new practices to Small Companies as well as to small educative entities. We firmly believed in personal initiatives and in the civil society

and noticed that often large system will kill or prevent initiatives at the right beginning. In spite of many criticisms, for a while, small will remain beautiful, and all the facilities offered by the Information Society will certainly help all types of organizations to enter in the e-learning of the digital age. (Marc J. Rosenberg [54] (2000). In the same way, new emerging countries such as China, seek for actionable use of Virtual Institutes (see Zhouying Jin [55, 56] (1999, 2002)). This means, that we have to learn as fast as possible to work in these new perspectives with efficiency, part of this paper is devoted to this goal.

Bibliography

- 1 - Morten Falch and Anders Henten Digital Denmark, on the conversion to a network society a , as a successor to its Information Society 2000 report (1994).
- 2 - Kridstian K Möller and Aino Halinezn Business relationships and Networks: Managerial Challenge at Network Era, Industrial Marketing Management, 28, 413-427, 1999
- 3 - Barry Nalebuff and Adam Brandeburger Co-opetition, ed Currency Double day, 1996
- 4 - H. Etzkowitz and al. The future of the university and the university of the future: evolution of ivory tower to entrepreneurial paradigm., Research Policy, 29, 313-330, 2000
- 5 - H. Etzkowitz and L. Leydesdorff The future location of research and technology transfer, Journal of Technology Transfer, Summer 1999
- 6 - Richard Vicenzi and Gary Adkins A Tool for Assessing Organizational Vitality in Era of Complexity, Technological Forecasting and Social Change, 64, 101-113, 2000
- 7 - Anita Rubin and Hannu Linturi, Transition in the making. The images of the future in education and decision-making, Futures, 33, 267-305, 2001
- 8 - Gibbons et al. The new production of knowledge, editor Sage, London, 1994

9 - Benoit Godin and Yves Gingras The place of the universities in the knowledge landscape production, Research Policy 29, 273-278, 2000

10 - Timothy Powell Workshop on Knowledge Management, SCIP Washington, 1999.

11 - Brooke Aker (1998) <http://www.ciphersys.com>

12 - Larry Kahanner Competitive Intelligence : How to Gather, Analyze, and Use Information to Move Your Business to the Top, Touchstone Book, 1997

13 - Leonard Fuld, The New Competitor Intelligence: The Complete Resource for Finding, Analyzing, and Using Information about Your Competitors 1997

14 - Jan Herring Measuring the Effectiveness of Competitive Intelligence: Assessing & Communicating CI's Value to Your Organization , Editor SCIP (1999)

15 - Benjamin Gilad Business Blindspots : Replacing Your Company's Entrenched and Outdated Myths, Beliefs and Assumptions With the Realities of Today's Markets (1999)

16 - Kirk, The Complete Guide to Competitive Intelligence (March 1998)

17 - Henri Dou, Gilda Massari Coelho L'enseignement de l'Intelligence Compétitive - Une expérience internationale, Humanisme et Entreprise, n°5, pp. 1-23, 2001

18 - Timothy Powell. The information metabolism, Competitive Intelligence Review , 41-45, 1995

19 - Henri Dou Hyperinformation ed CRDP Marseille, 2002

20 - Gerald L. Kovacich, Netspionage - The Global Threat to information,. Part I: What is it and Why I should Care ?, Computers & Security, 19, 326-336, 2000

21 - Henri Dou, Veille Technologique and Compétitivité, Dunod Ed. 1996

- 22 - Henri Dou, Course of Competitive Intelligence DEA, University of Aix Marseille III, 1997 - 2001
- 23 - U. Schultze and R.J. Boland Jr, Knowledge management technology and the reproduction of knowledge work practices, *Journal of Strategic Information Systems* 9, 193-212, 2000
- 24 - Hervé Rostaing La bibliométrie et ses techniques, *Sciences de la Société*, Collection "Outils et Méthodes", 1996
- 25 - L Iwanska, Recovering nonlinearly distributed knowledge: computing discourse structure in factual reports., *Natural Language Engineering*, vol.3, 191-213., 1997
- 26 - Henri Dou, Regional action (Provence Alpes Côte d'Azur) of Economic Intelligence, 2000 (DRIRE 69 Av du Prado, 13006 Marseille, France)
- 27 - Pierre Bourdieu Theory of Practice. Three forms of theoretical knowledge. *Social science information* 12, 53-80, 1973
- 28 - Pierre Bourdieu Practical reason: On the Theory of Action. Stanford university Press, Stanford CA, 1998
- 29- François Jakobiak L'intelligence économique en pratique, Dunod, 1998
- 30 - Myriam Trouchet, Antonio Da Silva, Henri Dou, Luc Quoniam, La participation des experts dans le processus de veille, 5^{ème} Forum de l'Intelligence Economique, Sophia Antipolis, 27-29 Septembre 2000
- 31 - Céline Riffaut and Hervé Rostaing, Formation Universitaire à Distance: Maîtrise NTIDE, Deuxième entretiens internationaux, CNED, Poitiers Futuroscope, 1er et 2 Décembre 1999, see also <http://ntide.u-3mrs.fr>
- 32 - H Hakansson and I Snehota, Developing Relationships in Business Networks, Routledge, London 1995
- 33- Henri Dou, Innovation Management Technology - An experimental Approach for SMEs in a Deprived Environment, *IMT News Special Issue*, April 1, 1998
- 34 - Ronald N. Kostoff, Science and Technology Innovation, *Technovation* 19, pp. 593-604, 1999
- 35 - François Jakobiak, Exemples commentés de Veille Technologique, Editions d'Organisation, Paris, 1992
- 36 - Ronald N Kostoff, Database tomography for technical intelligence. *Competitive Intelligence Review* 4, 1., 1993
- 37 - Jean-Marie Dou Jr, Virtual places: creating knowledge in the 21th century, CODATA 2000, Baveno, Italy, 16-19 October 2000,
- 38 - Gilda Massari Coelho, Henri Dou, Virtual laboratories - A Brazilian-French experience, CODATA 2000 (UNESCO Session), Baveno, Italy, 16-19 October 2000
- 39 - Jean-Marie Dou Jr, French small business organization through the internet - A comparison with US organizations, *International Journal of Information Management*, 289-298, 1996,
- 40 - Serge Quazzotti, Ciry. Dubois, Henri Dou, Guide Reveil - Communauté Européenne – mesure AAMM008, Les bonnes pratiques de la Veille en PME et PMI, 1999
- 41 - Henri Dou, Gilda Massari Coelho, L'enseignement de l'Intelligence Compétitive - Une expérience Internationale, *Humanisme et Entreprise*, vol5, 13-23, n°245, 2001,
- 42 - Henri Dou, Technology Watch and Competitive Intelligence The French and European Way, SCIP 10th anniversary conference, Washington DC, 28 Mars 1996,
- 43 - Valérie Léveillé, Hervé Rostaing, Céline Riffaut Double expérience en sciences de l'information: formation doctorale internationale et Maîtrise à distance, Journée d'Etude Internationale: les technologies de l'information et de la communication au service des relations internationales, Université de Nice, 17-19 Novembre 1999.

44 - Robin Peek, Web-based Digital Education Opportunities, *The Journal of Academic Librarianship*, Volume 26, Number 1, 49–52, 2000

45 - Miriam A. Drake, Technological Innovation and Organizational Change Revisited, *The Journal of Academic Librarianship*, Volume 26, Number 1, 49–52,

46 - Dees Stallings, The Virtual University: Organizing to Survive in the 21st Century, *The Journal of Academic Librarianship*, Volume 27, Number 1, 3–14, 2001

47 - Ray Kurzweil, *The Age of Spiritual Machines: When Computers Exceed Human Intelligence* New York: Penguin Books, 1999

48 - Alfred Sloan Foundation (<http://www.sloan.org>)

49 - John A. Weber, Partnering with Resellers in Business Markets, *Industrial Marketing Management* 30, 87–99, 2001

50 - Michael J. Nowak , Charles E. Grantham, The virtual incubator: managing human capital in the software industry, *Research Policy* 29, 125–134, 2000

51 - Grantham, C.E.,. Working in a Virtual Place: A Case Study of Distributed Work. *Proceedings of the ACM SIG on Computer Personnel Research*. Denver, CO, pp. 38–52, 1996

52 - Di Martino, V., Wirth, L., Telework: a new way of working and living. *International Labour Review* 129 5 , 529–554, 1990

53 - Jan Currie, Lesley Vidovich, *International Journal of Educational Development* 20, 135–151, 2000

54 - Marc J; Rosenberg, E-Learning: Strategies for Delivering Knowledge in the Digital Age, *The Knowledge Management Magazine Serie*, 2000

55 - Zhouying Jin, Organizational innovation and virtual institutes. *Journal of Knowledge Management*, vol 3, n°1, pp.75-83, 1999

56 - Zhouying Jin, Dou Henri, Passer de la représentation du présent à la vision prospective du futur - " Technology Foresight ", *Humanisme et Entreprise*, Déc 2002

- Bertacchini, Y., « Entre Information & processus de communication : l'intelligence territoriale », *Les Cahiers du Centre d'études et de Recherches, Humanisme & Entreprise*, n°267, octobre 2004.

