

*Does Knowledge Management mean something  
for small companies?*

*The storytelling between craftspeople*

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**Introduction**

Upon presentation of empirical studies that explain why the managers of small businesses prefer oral and face to face communication (Fallery 1983; Lemarié 2001), it would seem paradoxical to try and find out how new knowledge management tools could improve decision-making, communication or innovation in small businesses. However craftspeople do not often have the opportunity to bump into one another ‘around a coffee machine’ to recount their experiences to one another, and if we do not wish to be limited to the reducing vision of Knowledge Management advocated by certain consultancies (KM being above all here a management project), we understand, in such a case that small businesses can really gain from these new fields of study (knowledge management particularly enhancing the acquisition of explicit and tacit knowledge, individual and group knowledge sharing, interpretation of information in the context of an action, indexing of contextualised, procedural knowledge..).

This research is situated in the context of the uses of Information and Communication Technologies (ICT) within crafts businesses: a ‘Chambre Régionale de Métiers’<sup>1</sup> (CRM) which has the mission of co-ordinating the action of five ‘Chambre Départementales’<sup>2</sup> (CDM). The CRM has the role of promoting the CDM’s projects and carrying out prospective studies, in order to guide the development of the crafts sector and the functioning of the chambers in each department. The CRM with which we are working launched in 1998, a programme of thought and reflection on ICT, as much as for their use in the chambers, as for their adoption by craftspeople. Today it wishes to carry out an action project in favour of the competitive development of craftspeople, based on the idea that the use of this technology is a factor of competitive development and gain, as long as this use be well-mastered and coherent with the craftsperson’s profession. The mission that will be described here consists of implementing an interactive portal that brings together the experiences of craftspeople with ICTs. This mission is part of a vast project called ‘Artisans Interactifs’<sup>3</sup> for the implementation of distance tools to accompany these businesses. For this project it id

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<sup>1</sup> Regional Chamber of professions

<sup>2</sup> Departmental Chamber of professions

<sup>3</sup> Interactive Craftspeople

necessary to construct a 'experience database' that can fulfil the characteristics required for such a sharing tool: provisioning, indexing, consulting and reuse.


In the first part we are going to show why and how we modelise experiences with ICT in the form of stories: The emergent discipline of storytelling in knowledge management, is understood to be appropriate for the sharing of experiences in the form of stories, and the concept of 'use case' has been able to be used to operationalise the capture of experiences. The second part will then show the whole range of operations that can be carried out on these stories, in order to index them and extract different elementary knowledge structures from them. Finally, in the sharing phase, this structuring of knowledge is shown to be capable of improving levels of reuse and hence innovation and competitiveness, this will be shown in the third part.



## **MODELISING STORIES OF EXPERIENCES: STORYTELLING**

The emergent discipline of storytelling in knowledge management, is understood to be appropriate for gathering experiences in the form of narratives (Boje 1991, p.121; Boje 1995; Gabriel 1995; Czarniawska 1998). The concept of use case (in UML terminology, the modelling language for information systems) can in this case be considered as the most interesting notion for operationalising the capture of experiences of ICT use by craftspeople.

### **Modelising of narrations**

 Narration, stories, connects people to social events, processes and organisations. Over the last twenty years the concept of storytelling has been used more and more often in the social sciences. More specifically, the storytelling concept is recognised as increasingly successful as much in the field of management science [Martin et al. (1983), Boland et Tenkasi (1995), Czarniawska (1998), Gabriel (1995; 2000), Giroux (2000), Soulier (2000), Boje (2001), Marti (2002) Boudès (2003)...], as in the domain of knowledge management. [Wenger (1998), Orr (1996), Denning (2001), Swap et al. (2001)...].

This coming together between management sciences and 'narrative sciences' would seem an interesting perspective, since the use of narratives is a familiar human aptitude. Narratives hold a key place in the social science disciplines, as they represent a favoured way of giving meaning to a situation and putting sets of information into an order. Zuckier (1986) points out that people more often think in a 'narrative' 'than argumentative' or paradigmatic' manner. The narrative organisation of personal experience is a particularly interesting manner of transmitting meaning.

Weick (1995, p.60-61) explains the multiple roles of stories, and the importance of stories in sensemaking 'if accuracy is nice but not necessary in sensemaking, then what is necessary? The answer is, something that preserves plausibility and coherence, something that is reasonable and memorable, something that embodies past experience and expectations, something that resonates with other people, something that can be constructed retrospectively but also can be used prospectively, something that captures both feeling and thought, something that allows for embellishment to fit current oddities, something that is fun to construct. In short, what is necessary in sensemaking is a good story '.

Naratology, term proposed by Todorov to refer to 'the science of narrative' (Todorov 1969, p.10), studies narration along two major axes : Either the emphasis is placed on the working of the text, its structure and its ending, this is the 'internal' perspective of

structuralists, or the attention is brought to its registration in a verbal interaction, this is the 'external' perspective of the communication sciences.

The methodological ambition of structuralists is, in effect, to develop a categorical system, a mechanism which enables the identification of narrative elements (essentially syntagms and roles) and their threading together into an analysable structure. The structural analyses, and in particular, those of Greimas (1966; 1966) and of Todorov (1966; 1969), employ a high level of abstraction. They often try to cover a very large body of text, establishing very general storytelling rules without a specific literary style or model text. These authors are generally taken up with extracting the basic, fundamental rules of a phenomenon. One of the first authors to extract the specific nature of one of these specific dimensions is Propp (1970) with the analysis of around a hundred Russian tales. Bremond (1966; 1973) goes on to define the logic of possible narratives in four main points:

- The basic unit (the narrative atom) is the 'function', applied to actions and events that when re-grouped in sequences, generates a narrative.
- A grouping of three functions generates an elementary sequence: opening the possibility of the process (behaviour to have, event to foresee), realising this virtuality, and finally closing the process in the form of an achieved result.
- The narrator always conserves the freedom to make function become an act or to maintain it in its state of virtuality.
- The elementary sequences combine themselves to generate complex sequences: linking up from beginning to end, enclave, joining up.

Various authors have attained the isolation of relatively abstract, well outlined categories, and have then elaborated a series of combinations accompanied by restricting rules. This enables the construction of a whole range of 'empty' narrative frames, that in order to tell a story it would be enough to place some more or less real-life characters within these frames. Thanks to successive abstractions, the literary analysers have constructed an abstract prototype of the narrative, a sort of canonic diagram (Fayol 1985). But this structuralist position limits our analysis in social sciences which are certainly in need of a storytelling grammar, but which structures the texts 'to a minimum' without losing too much information.

Telling a story satisfies a narrator's pragmatic aim, for example transferring a personal experience around a more or less memorable event. This orientation prompted by the works of Benveniste on enunciation (1968; 1974), defined as the individual act of creation by which the speaker puts to work the language : a linguistic exchange putting individuals into play (speaker and addressee), in a particular situation. Although this act of narration is individual and specific, it does nevertheless obey certain outlines registered in the language system. It is therefore necessary to distinguish between abstract linguistic material (or model-wording), and the many productions that are acts of address (or occurrent-wording): It is at this second level that we register the problematic of enunciation. The study of enunciation presents itself therefore, as a problematic of the signs or traces in the wording actually produced by the narrator.

Since the object of linguistics must contain a classification of different possible 'address situations', and the specification of certain types of influences that may be exercised in speaking, and certain roles that may be given to oneself or to others (Santacroce 1999). The initial hypothesis is that 'telling', is without doubt the transmission of certain information to others about the object of which one is talking, but it is also 'doing', by trying to act on the listener, and even on the surrounding

people, this is common to ‘the acts of language’ of Austin (1970) and Searle (1972) . Instead of contrasting words with actions, it is better to consider that words themselves are a form of action. Certain statements even have the ability to accomplish the act that they denominate, i.e. ‘doing’ something just by ‘saying’ it: stating that « I promise that I will come », accomplishes an act, the act of promising. The components of narrative activity are therefore always to be re-interpreted as being the product of a ‘communication situation’, crossed by expectations, power issues and recognition. We are concerned with a situation in which the events evolve along the thread of verbal and emotional interactions, which punctuate the exchange of information. The art of telling a story lies in the ‘ability to exchange experiences’ (Benjamin 1936, p. 115), the narrator takes the content of his story from his experience (either his own or that which has been brought to him by others), and what he tells, in turn, becomes the experience of those listening to his story. This manner of viewing narrative activity leads one to think of stories as a process for shaping experience, which concerns as much the storyteller as those who ‘receive’ the story. In looking to put together real-life events into the form of a story, the narrator will draw from factual and imaginary material from the memory that will enable him to retrace his story, whilst at the same time endeavouring to give some kind of presentation of himself. Ultimately, the point of the storytelling approach is to put the emphasis on the development and experience sharing processes that personally involve individuals. Orofiamma (2002), who is working on training processes, insists on the fact that stories encourage us to question the unfolding of events in our chosen course of action, the paths used to build what progressively becomes a personal story. The story goes hand in hand with the attempt to shape personal experience. For our work, we consider then stories about the use of technology as an instrument originating from dynamic interactions between agents, in their attempt at sensemaking and sharing of their social activities. The use of an ICT consists of a succession of activities, carried out by a user to meet a need and achieve a determined function, in reply to a latent or expressed expectation. This exercise becomes ‘Use’ when it has been circulated and has become standard practice. A use is thus characterised by the expectation that it meets, the know-how to which it corresponds, the combination of methods that it uses and the appropriation by its users. So the description of use can be compiled from the following information:

- Who? Characteristics of users and the organisation where the use is in action.
- What? Designation, domain and general description of use
- Why? Expectations, desired objectives, results obtained.
- How? Description of the succession of actions making up the use and the resources employed.

### **Utilization stories: An instance of a ‘Use Case’**

The ‘Use Cases’ are used in the UML modelising language in order to explain the way in which a system can be used. It is not a question of a functional vision of the system, but to capture the needs of users, by expressing them in a way that is suitable for both users and developers. We position ourselves from the point of view of each user, in order to identify the needs that will enable him or her to do their work. The use case must remain intuitive, it is not necessary for users to learn how to decipher a complex notation, since use cases may be expressed in natural language, which simplifies the reading process (Jacobson, Booch et al. 2000).

The use case usually presented in a textual form, it serves as a method of communications and exchange of information between persons who for the most part

have no specific training in modelisation. 'A well-written use case is a use case which is easy to read. It is composed of phrases that respect a unique grammatical form and describe a simple action, in which the actor obtains a result or passes on information to another actor. It shouldn't take more than a few minutes to learn how to read a use case' (Cockburn 2001). The use case strategy consists of answering this question : 'What do you want the system to do for each user ?' (Jacobson, Booch et al. 2000). A situation where each type of system use brings an advantage to the user, is potentially a use case.

Cockburn (2001) puts forward then what he calls 'Use narratives' for writing examples in the situation of such a Use Case. As the objective our approach is not the development of the system but rather that of a feedback of experiences on existing systems (Marti 2004), thus we start from the basis of the 'Use narrative' to understand what the craftsperson does with the ICT. Such a use story is used to 'set the scenery'; it is an unique and specific example. It describes 'how the real world behaves, in this particular case, from the beginning of the situation until its end.' (Cockburn 2001, p.18). The method of use stories fulfils our demands, allowing us to have a methodological frame and, by being written into the techniques of the genius software, it facilitates the IT implementation of the experience base at the centre of the interactive portal.

For the narrator, a use narrative presents itself as an organised system which forces him to search for coherence amongst a number of dispersed events. Use stories describe moments of the actor's daily life, told from his or her point of view. No formalism is imposed, all that counts is ease of understanding. When craftspeople are asked to account their use with the Internet, they express details, their motives, and their reluctance. Above all, the story that he delivers is rich in emotional content.

**First extract of a story:**

... At that time, I immediately thought about creating a website, in order to communicate, seeing that as an extra instrument to the traditional yellow pages, or business cards etc. And I had the initial idea to develop that as advertising more than anything else, because I really like the Internet, and I think that traditional directories are going to disappear, or in any case people are going to consult the paper version less and less and turn more and more to on-line directories, so last year already I said to myself: you have to make a website.

To start learning all these techniques I did a course at the 'Chambre de Métiers'. On the course I learnt one thing, that is that you can't make a site yourself in the way that I wanted to at the beginning by messing around with the programmes that friends had lent me. I said to myself "this isn't for me", if I want to do something neat, either I get it done by a professional, or I don't do anything. So I firstly did a bit of technology watching, I had a look at all the sites of colleagues all over France, people who are in the same profession as me. Either they had done nothing, either they had created a personal page, or they had professional websites. Between the three options I told myself that the personal page was no good, so I chose the professionally one. And the course at the 'Chambre de Métiers' had confirmed my idea that I had to do that. They told us that we wouldn't be able to achieve a clean and tidy result ourselves, but that on the other hand they could help us to choose a professional. So in fact it was very simple, they gave us a model specification and with this specification I got three or four quotes done by companies. Then I chose the one that seemed not only the least expensive, but also the best value for money.

The events such as they happen to a person are relatively consistent, but the story that is told, that's to say, the addressing of these events, may vary according to the storytelling circumstances. Several accounts may be different versions of the same 'story', and what we are trying to capture is the history of processes via the story that is made out of them. Effectively stories invite the narrator to give unity or sense, reconstructing something coherent each time in a different configuration, depending on the context in which the narration fits into. By telling each time, one possible story among other possible stories, the storyteller attaches a part of himself and his relation to the world. In short, there will be as many stories of a same situation as different moments for the storyteller, his version of history will be contingent to his connection with the world at the given moment. The support that we have chosen to give us access to each person's experiences is constituted of some individual's narratives of their personal history.

### **ANALYSING AND INDEXING STORIES OF EXPERIENCES**

On the basis of these collected stories we have used the modelisation of stories specified by Soulier and Caussanel (Soulier and Caussanel 2002; Soulier 2003), in adopting the crafts sector for an analysis: cutting up of stories into narrative atoms and sequences, then graphic representations of stories.

#### **Cutting up of stories into narrative atoms and sequences**

The model (Soulier and Caussanel 2002; Soulier 2003) cuts up stories into narrative atoms (NA from now on), semantically undecomposable, discursive elements. There are three sorts:

- NA DESCRIPTORS give a property to a character or an object in the story (not underlined in the following list). For example, "At that time" or "because I really like the Internet", are Describing NA, they give supplementary information to understand the story and the character. The first NA situates the narrative in time other one indicates the narrator's level of interest in this type of technology and this will have an influence on the subsequent elements of his narration.
- NA EVENTS modify the state of one of the descriptors or bring in new elements of description (underlined in the following list). For example the NA "seeing that as an extra instrument to the traditional yellow pages, or business cards etc." gives us extra information about the characteristics of an element. This indicates for us the narrator's point of view on how useful he considers a site to be. The NA Events are causes of something, and they produce an effect or determine a phenomenon. In effect, the fact that this person views websites as an additional tool to the yellow pages or business cards brings about the action of creating a website.
- NA ACTIONS have an author and a goal, they modify the state of a descriptor or bring in a new element of description (in bold in figure 1). For the NA "And I had the initial idea to develop that as advertising" we distinctively recognise an action because the narrator uses the first person in the singular to explain what he did. The NA Action is the consequence of an event: the narrator is going to develop a site because he thinks that classical directories are going to disappear.

### Example of cutting up into NA:

1. At that time
2. **I immediately thought about creating a website,**
3. in order to communicate
4. seeing that as an extra instrument to the traditional yellow pages, or business cards etc.
5. **And I had the initial idea to develop that as advertising more than anything else,**
6. because I really like the Internet,
7. and I think that traditional directories are going to disappear,
8. or in any case people are going to consult the paper version less and less
9. and turn more and more to on-line directories
10. so last year already I said to myself: you have to make a website.
11. To start learning all these techniques
12. **I did a course at the Chambre des Métiers.**
13. On the course I learnt one thing,
14. that is that you can't make a site yourself
15. in the way that I wanted to at the beginning by messing around with the programmes that friends had lent me.
16. I said to myself "this isn't for me", if I want to do something neat,
17. either I get it done by a professional, or I don't do anything.
18. **So I firstly studied the technology around**
19. I had a look at all the sites of colleagues all over France,
20. people who are in the same profession as me.
21. Either they had done nothing, either they had created a personal page, or they had professional websites.
22. Between the three options I told myself that the personal page was no good, so I chose the professional one.
23. And the course at the Chambre des Métiers had confirmed my idea that I had to do that.
24. They told us that we wouldn't be able to achieve a clean and tidy result ourselves,
25. but that on the other hand they could help us to choose a professional.
26. So in fact it's very simple,
27. they gave us a model specification
28. **and with this specification I got three or four quotes done by companies.**
29. **Then I chose the one that seemed not only the least expensive, but also the best value for money.**

We can then go on to cut up the story according to its structure. Literature on stories points out their common features, and in particular their sequential aspect. Order of events, storyline, distinguishing the story from other documents. The continuity of a story is not necessarily the same as the order of events, this particular configuration can even provide the meaning of the story (Bruner 1990). Ricoeur (Ricoeur 1981; Ricoeur 1983) underlines this aspect 'a story describes a sequence of actions or experiences of a certain number of characters, whether they be real or imaginary. These characters are represented within changing situations (...) in which they react. These changes go on to reveal the hidden aspects of the situation or of the characters, they raise new problematic situations that lead to contemplation or action. The answer

to these questions brings the story to its conclusion (Ricoeur 1981; Ricoeur 1983). For our study we withhold the idea that all stories are made up of four parts :

- Situation: State of something, the starting point.
- Complication: An anomaly appears something comes and gets in the normal course of things.
- Resolution : Resolving action
- Result: Which results in the action or the moral of the story.

This cutting up is presented in Table 1, where we the four parts of the story are found successively. The storyteller chooses to order the succession of events chronologically and subjectively.

The creation of a storyline is the operation that transforms a simple succession of events into a real configuration of a story. The term configuration, that Ricoeur (Ricoeur 1981; Ricoeur 1983) prefers to that of 'structure', designating the action that transforms facts and actions into a construction that gives them meaning. From a more cognitive point of view, one can say that the narrator, to organise his or her experience, makes an assumption (from the initially disparate pieces of information, he is going to deduce a structure of information that he can then compare to a system of categories).

### **Story representation: the cause tree, the script, the indexing**

The next stage consists of identifying the NA which are causally and chronologically linked, in order to carry out graphic representations of stories.

- For causal links, when a craftsperson says “ (2) I immediately thought about creating a website, (3) in order to communicate, (4) seeing that as an extra instrument to the traditional yellow pages, or business cards etc.” we can deduce that he wanted to make a site because he sees that an extra tool instrument. It is the consequence that has led him to this decision. The NAs (3) and (4) are causes of NA (2). And NA (2) is the consequence of NAs (3) and (4).
- For chronological links, we are only interested in actions: when the craftsperson says ‘(29) Then I chose the one that seemed not only the least expensive, but also the best value for money.’, he has previously done a course, studied the technologies around, and got quotes done : (12) I did a course at the Chambre des Métiers (18) So I firstly studied the technology around (28) and with this specification I got three or four quotes done by companies.’ NA (12) comes before NA (18), NA comes before NA (28) etc.

Finally, we identify the actors and the scenes in the text. Scenes are subdivisions of actions at the heart of stories. In reading the extract, two different parts are clearly diffused: the craftsperson’s desire to create a website and the way in which he has gone about it according to his needs.

- **The story script**

The script is a sequence of scenes: it groups together in scenes the ‘action’ type NA. Its objective is to allow us to visualise the ‘actional’ representation of a more or less stereotyped activity.

In our example, the script ‘create a professional site’ describes:

**The actors:** the craftsperson, the Chambre des Métiers, the company creating the site

**The initial conditions:**

*(2) I immediately thought about creating a website,*

- (3) *in order to communicate*
- (6) *because I really like the Internet,*

**The scenes:**

Desire to create a website:

- (2) *I immediately thought about creating a website,*
- (5) *And I had the initial idea to develop that as advertising more than anything else,*

How to do it:

- (12) *I did a course at the Chambre des Métiers.*
- (18) *So I firstly studied the technology around*

**The results:**

- (28) *and with this specification I got three or four quotes done by companies.*
- (29) *Then I chose the one that seemed not only the least expensive, but also the best value for money.*

▪ **Story indexing**

The aim of indexing is to situate the story in a referential that gives in meaning. This referential is made up here along four dimensions corresponding to areas of properties that the stories possess: uses, methods used, intentions and results.

○ The 'Uses' dimension

We are talking here about the use of ICT, so we have established a narrow typology of possible uses, in three dimensions. The 'business' dimension groups together all the uses that have an increase in the craftsperson's business activity as an outcome. This dimension stretches from; uses for replying to client's demands and collecting orders (like the integration of information systems between suppliers and clients), to the online website (enabling direct client sales via the Internet). The informative dimension is connected with anything to do with looking for information online, whether it be above at the craftsperson's level or below for his or her potential clients. The communicative dimension covers all the applications and variations of electronic messaging. For our example, the craftsperson wishes to develop the business and informative dimensions using the Internet:

Business Use > *The website > Creation of website – Presentation of craftsperson*

Informative Use > *Online information for potential clients > Presentation of craftsperson – Presentation of his work > products/services offered.*

The '**Methods Used**' dimension

The methods used correspond to all the intermediaries that enable results to be achieved. They can be human, like for example a web designer or an advisor from the 'Chambre de Métiers', they can be financial, material (like a computer, a modem...) or temporal (such as the time devoted to site maintenance, training etc.).

In this case the methods put into action are:

Human Methods > *web designer – 'Chambre de Métiers' advisor – the craftsperson*

Time devoted > *training course*

The '**Intentions**' dimension

Here we try to point out the craftsperson's underlying objectives that led to such or such behaviour. We discover categories like: to be like everyone else, to save money, to open oneself up to new horizons, because its more practical...

In the example we find notably:

*The ICT opens up new horizons > Finds new clients*

*Creating a website > Business card*

*The ICT are a source of competitiveness.*

The '**Results**' dimension

This last dimension arises from intentional behaviour and groups together all the results, whether they are positive or negative. For the positive results we find categories such as '*to avoid wasting time*', '*to improve brand image*' etc. In the negative results we can see saturation of email box, 'financial or human cost' etc...

The first extract did not show the results of uses of the Internet, in order to find out them out it is necessary to read the end of the craftsman's story:

**Second extract of a story:**

I have already had people calling me to tune their pianos, and I think that it is going to continue to grow. I don't count only on that though as it is word to mouth in particular that works for crafts business like mine(...)

Apart from the Internet, I use email a lot, with suppliers for ordering pieces from them, with clients to send them photos of pianos, and replying to their questions. Because I also put a contact page on the site, with a form to fill in and data base: surname, first name and email are compulsory. On it people can ask questions about tuning, pianos etc.. and so I reply to them by email.

I also use the Internet to find technical information, a lot for the profession, production, to see what others are doing on the Internet. It is also helps me a great deal for studying the piano market, because it seems to be really growing due to the Internet.

I also use it for training and education, which's something that I really like, passing on my skills and the skills that you need for this profession in general. It is a bit unusual of a profession, not like a baker, where you can easily be trained with a CAP<sup>4</sup>, with the price of a piano, the know-how is dying out. So I am interested in anything to do with training young people, and in that area, technical manuals, there aren't any technical manuals in this trade unlike in Germany or the United States. That means, in concrete terms, that young people who want to learn to tune a piano, can't find a manual to act as a study reference outside of the workshop or working with someone, so I have therefore translated two works, one from German and from by an American, one of them has been published, the other is going to come out before Christmas. I and use the internet to make these two books known, it isn't lucrative at all like rest (...). I have put a page called 'publications' on my site and I have put resumes on it of the two manuals. And I hope then to put on an order form so that people can order on the site and make a link with the editor.

This extract contains positive results for the craftsman:

For the daily activities of the business > *Sending messages* > *Different sorts of documents: text, tables, photos, videos etc.*

For business and communication > *Finding new partners – developing relationships with partners* – *Communicating with partners.*

Finding information > Technical > Professional

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<sup>4</sup> CAP =

All of these operations (cutting up of NA and sequences, cause tree, story script, indexing elements) are aimed at encouraging a targeted search from stories that are accessible in the experience base, through the automation of all these functions in a programme.

- Search according to the index
- 'Full-text' research in stories
- Search of specific NA in several stories
- Management of comments on stories
- Calculation of statistical information from all the stories collected...

Outside of its observational capacity, the portal's job is to favour the acquisition of ICT in the crafts sector via the exchange and adoption of good practices.

### **KNOWLEDGE SHARING AND INNOVATION IN THE CRAFTS SECTOR**

We have constructed an experience base that fulfils the characteristics that are necessary for such a tool: supply, indexing, consultation, and re-use. In the sharing phase, we are able to show that the structuring of knowledge in this way is likely to improve its re-use. This re-use can then encourage innovation and competitiveness of small businesses.

#### **Improving reuse, by managing cognitive distance**

In the IT domain, the reuse of components is defined as a supplementary use or repeated of an artefact. Different sorts of re-use exist, they can be classified in six categories (Frakes and Terry 1996):

- 'Development scope': components that can be reused originate from an internal or external source of the project.
- 'Modification': corresponds to the degree of change to the object that is to be reused. There are three possibilities: adoption, adaptation or rejection.
- 'Approach': refers to the different techniques for applying reuse.
- 'Domain scope': the reuse may take place within the same application (vertical) or throughout different applications (horizontal).
- 'Management': The degree of systematic reuse
- 'Reuses entity': relates to the type of object to be reused.

In management, knowledge reuse goes through at least four different activities. The essential first stage is the definition of the research question. The second is the search for and localisation of the expert or the expertise. The third phase is the selection of the appropriate expert from the results of the search. Finally, the fourth is to use knowledge in a recontextualisation process, since the knowledge has been decontextualised at the time of recording and codified (Blair 1984; Lansdale 1988; Ackerman 1994; Ackerman and Halverson 1998). The number and type of interventions that are necessary depends on the 'knowledge distance' between those reusing the knowledge and those who produced it (Markus 2001). The smallest distance possible is when people produce knowledge to reuse it themselves later. The biggest distance that exists corresponds to individuals who wish to reply to new questions, or develop new knowledge, by analysing knowledge produced by other individuals and other objectives. For Markus, the greater the distance, the longer it is to re-write, because the knowledge must be more general and less contextual: understanding is in this case favoured in relation to exactness and details.

In order to characterise knowledge reuse in a small business environment, we have carried out an exploratory study on ten craftspeople. We firstly made the craftsman being interviewed, read the experience narrative of a professional working in the same sector, and allowed him to give his reactions freely on the text. The initial reaction of all the individuals interviewed was to put him or herself in the place of the person telling the story. : *“I feel quite similar to this person, apart from on one point”*: *“That’s true, it’s a very important aspect”*: *“it’s very different for me”*: *“I completely agree on that”*. A non-guided interview has then enabled us to find out the possible reuse according to three axes: modification, granularity, and the horizon for reuse.

For modification, the craftsman appropriates what he has just read:

- Either, through adoption, *“I don’t have too much work, that’s for sure, and that could bring in more (...) and I will do a course like he did”*. In relation to an online sales website, one craftsman tells us: *“I don’t know anything about it and I’m now curious to go and see, it could be interesting for me.”*
- Either, by adapting what he has just read to his own situation: *‘On the other hand, what I’ve not done and which gives me an idea, without being hooked on it like him, is to create a link whereby people can correspond with me.’*
- Either through rejection. *“I don’t agree with what he says about the yellow pages, I have a lot of people calling me who have found out about me that way”*. In relation to a website where people can buy on-line: *“I don’t do that, and I don’t recommend it to people”*.
- Either by rejection and reaction, but developing a completely different idea by association with the initial idea *“I’m not sure about the usefulness of a website, whatsmore there are some big professionals who have had sites for a lot longer and have a lot of choice (...) I would like to do a site on the other hand based on the technical information that I use the web to look for, it’s quite accurate (...) it would consist of my own data that I would make available to others, that’s something that is really missing. Moreover, it would be more beneficial, it would really bring a plus.”*

For the reuse horizon, the craftsman will give a more or less long-term projection in terms of his activity:

- In the short term: *“I don’t know anything about it and I’m now curious to go and see, it could be interesting for me.”*
- In the medium term: *“(…) I think I’ll get round to it, because I think the same as him, it’s going to crescendo, but for the moment it doesn’t interest me.”*
- In the long term: *“but it would take up too much time for me, whatsmore I have never got to grips with IT, maybe one day”*

For the granularity of reuse, concept that is often discussed in the works, ‘La Formation Ouverte’ (Fallery 2004), it can be more or less important:

- An **object** alone can be reused : *“I don’t know anything about it and I’m now curious to go and see, it could be interesting for me.”*
- We can reuse a **sequence**: *‘On the other hand, what I’ve not done and which gives me an idea, without being hooked on it like him, is to create a link whereby people can correspond with me.’*
- We can reuse a project: *“One day I’ll put my hand to it (...) in so far as I know it can really bring me some benefit”*.

Reusing here, is not the transmission of a content, but a problem centred around the autonomous actor who develops activities in his exchanges with the environment: learning to learn, learning to be... we can talk about a learning situation. For Piaget (1974) “To succeed, is to understand a given piece of information, to a sufficient

degree to be able to reach the proposed goals... and to understand is to succeed in dominating in thought the same situations up to the point of resolving the stated problems elsewhere in action.” The sharing of experience narratives put individuals in a situation that allows them to develop new structured knowledge (by assimilating in order to accommodate): upon discovering a procedure (decontextualisation), it is up to the craftsperson to look for situations where he can put it to play himself (recontextualisation).

The works of Ackerman (Ackerman 1994) are also orientated in this direction, in making clear that it is necessary to strike a balance between too much or not enough contextual information. Moreover, as emphasises Markus (2001), knowledge transfer is rather an emergent process than a sequential one, in which pieces of knowledge are linked to other pieces of knowledge that are then capsulated in a final decision. The model also suggests, that ‘reusers’ adapt the knowledge that they have decided to adopt, adapting it or renouncing it.

### **Encouraging innovation, by activating a weak link network**

Our work collecting craftspeople’s experiences with ICT links up quite well with the conclusions of Cochoy’s study (2003), that analyses the use of the Internet in small and medium sized businesses: throughout the collected narratives, we note that small experiences are carried out and that there is a progressive engagement to learning: we see among actors, the affirmation of a remarkable capacity to appropriate new tools, and the appearance of a surprising reflexive awareness of their potentialities (...) the internet enables small actors , perhaps for the first time, to be visible on the international market without having to take on advertising costs that are out of their reach; the Internet gives them the opportunity to diffuse their information for free in an international market place without having to expose themselves; the Internet gives them, finally, ways of preserving old connections and/or tie in new contacts (Cochoy 2003, p. 143).

The new opinion concerning the capacity to innovate in small businesses is due, in part to the progress that has been achieved in the evaluation process (in high innovation sectors, where small businesses do not represent a very large part of the market, the relative advantage in innovation is held by small businesses, (Observatoire des PME européennes, 2003), but especially to the fact the economic and social environment have changed (with advances in technology, obsolescence and globalisation, we are in an era of young businesses, Jovanovic, 2001), and that a certain number of theoretical explanations have emerged that account for the advantages of small businesses in terms of innovation in certain business sectors (absence of bureaucratic constraints, multiple small ‘innovations’ not important enough to be of interest to large businesses, opportunity-seizing strategies, innovations in business often incremental, professional and or community closeness, information-related externalities in the network, local producing systems, level of enthusiasm possible in small businesses where the links between challenges, employees and potential rewards are narrower...).

However, for small or large businesses, competitiveness via durable competitive advantage based on innovation cannot be limited to a single innovation : Carrier et Garand (1996) have whatsmore shown that most innovations are innovations in routine procedures (reuse with adaptation) and not radical innovations. The Knowledge Management approach enables businesses to go beyond punctual approaches, by insisting on knowledge creation (and hence all practices which favour individual or organisational learning). Innovation ‘alchemy’, difficult to describe and

therefore difficult to imitate, must be a permanent and cumulative process to ensure the distinctive competence of a business.

In a small business, since the manager's role in this process is determinant or otherwise almost exclusive, it is in fact very important that he himself can appropriate the tools that will enable him to play his interfacing role better: competitive advantage can then come, not from one individual's creativity, but the capacity to construct an interpersonal innovating network 'of weak links' (Julien, Andriambeloson et al. 2002). As opposed to traditional strong link networks (that constitute for example, accountant, bank manager, suppliers, clients...) these weak link networks are socially distanced from the manager, but they can in fact favour the spotting of weak signals that preconise (Lesca 2004) and help the whole of the business to learn on a permanent basis. For craftspeople, there are many ways for them to construct these weak link networks (training courses, management clubs, professional exhibitions, market study using the Internet, taking on trainees, exhibitions of work, online training, patronage of seniors...), we have shown that a base of online experience narratives is also a tool that enables a business to ensure its learning, thanks to the possibilities that it offers for collecting, sharing and reuse.

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