

# IMPACT: A Framework for Linking Knowledge Management to Business Performance

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**Abstract:** A number of organisations have recognised the importance of managing their organisation knowledge in a more structured manner. However, the question arises as to how to evaluate the benefits of a Knowledge Management (KM) strategy and its associated initiatives on the performance of the organisation. This paper presents a framework for the assessment of the likely impact of KM and discusses findings from an evaluation workshop held to critique the framework.

**Keywords:** Knowledge management, business performance, evaluation

## 1. Introduction

Business organisations are becoming increasingly aware of the need for innovative approaches to responding more effectively to clients' demands and changes in the market place. Knowledge Management (KM) is central to this and is increasingly recognised as an integral part of an organisation's strategy to improve business performance. A key issue in the implementation of KM strategies is the evaluation of the likely impact. The difficulty for many organisations stems from the fact that the implementation of KM initiatives has often been ad hoc, without a coherent framework for performance evaluation. A Knowledge Management (KM) initiative can be developed to improve the performance of a simple task and its impact easily evaluated. However, as we move away from simple tasks to organisation-wide systemic problems, KM initiatives become more complex and intertwined. This makes it difficult to evaluate the impact of these initiatives on business performance. There is therefore a need for a performance-based approach to KM that explicitly shows the interactions between KM initiatives and a set of measures for evaluating their effectiveness and efficiency. The Knowledge Management for Improved Business Performance (KnowBiz) project is a three-year research project, sponsored by the EPSRC and industrial collaborators, aimed at investigating the relationship between KM and business performance. As part of the project, an initial concept of an KM framework was developed (Robinson et al, 2001). This concept has now evolved into an operational framework refined through a follow-up technical workshop with the project's industrial collaborators.

This paper presents the development of a framework for Improving Management Performance through Knowledge Transformation (IMPACT) and discusses findings from the application of the framework based on an evaluation workshop held with industrial partners. Two distinct types of performance measures are identified to evaluate KM initiatives - an effectiveness measure, which relates to the degree of realisation of the strategic objectives and an efficiency measure reflecting the nature of the process used to implement KM initiatives.

## 2. Linking KM strategy to business performance

Knowledge within the business context can fall within the spectrum of tacit (implicit) knowledge and explicit (codified) knowledge. Tacit knowledge is stored in people's heads and is difficult to share. Explicit knowledge is captured or stored in an organisation's manuals, procedures, databases, and is therefore, more easily shared with other people or parts of an organisation. Organisational knowledge is a mixture of explicit and tacit knowledge and the role of KM is to unlock and leverage the different types of knowledge so that it becomes available as an organisational asset. However, a key issue in KM is the evaluation of the likely benefits. KM strategies are more likely to be successfully implemented if a performance-based approach is adopted that explicitly shows the interactions between KM initiatives and a set of performance measures for evaluating their effectiveness and efficiency.

Carrillo *et al* (2000) suggested that KM could be integrated into key performance indicators

(KPIs), and other performance measurement approaches. There is evidence that some organisations are now implementing various types of business performance measurement models such as the Balanced Scorecard (Kaplan and Norton, 1996) and the Excellence Model (EFQM, 1999). A recent survey of construction organisations shows that about 40% already have a KM strategy and another 41% plan to have a strategy within a year (Carrillo *et al*, 2003). About 80% also perceived KM as having the potential to provide benefits to their organisations, and some have already appointed a senior person or group of people to implement their KM strategy.

However, a major problem in KM is evaluating its likely impact on business performance. Performance is therefore a key issue and performance measurement models provide a basis for developing a structured approach to KM. Business performance measurement models are being used increasingly to encourage organisations to focus on measuring a wider range of business performance issues relating to processes, people and product. A recent survey conducted by the KnowBiz research team shows that over 35% of construction organisations are using either the Balanced Scorecard (BSC) or the Excellence Model (EM) and about a quarter (26.4%) are using other measurement systems, mainly the Egan KPIs or bespoke models. Over 90% of organisations using the BSC or the EM also have or plan to have a KM strategy in the short term (within a year). However, a significant factor identified in the case studies is the lack of co-ordination between business improvement and KM (Robinson *et al*, 2003). Linking KM to business performance could make a strong business case in convincing senior management about the need to adopt a KM strategy, particularly when the ability to demonstrate benefits of KM is becoming more important in the competition for funding.

### 3. Research methodology

This framework is a deliverable for an ongoing UK government EPSRC-sponsored research project supported by a number of industrial collaborators. A variety of research methods were used including literature review, questionnaire survey, industry case studies and semi-structured interviews for the development of the framework. A literature

review identified the key issues in knowledge management and performance measurement. A questionnaire survey and case studies with industrial collaborators were undertaken to identify practices, motivation, barriers and enablers in the application of KM and business performance measurement. The initial concept of the framework was developed based on the findings from the literature review, questionnaire survey and case studies. The framework was further developed, reviewed and refined through a follow-up technical workshop and the applicability of the KM framework was validated through pilot studies and an evaluation workshop with industrial collaborators.

## 4. The IMPaKT Framework

A knowledge management strategy should not only facilitate the transformation of the various types of knowledge within an organisation but should provide an evaluation mechanism to measure the effectiveness and efficiency of any strategy. A three-stage framework for Improving Management Performance through Knowledge Transformation (IMPaKT) has been developed to link KM to performance measurement (see Figure 1).

The framework recognises that to be able to assess the *impact* of knowledge management, KM initiatives have to be aligned to an organisation's strategic objectives. Key issues at each stage are further explored through Templates (illustrated in the subsequent sections) supported by detailed guidelines. For each stage, there are steps or thought processes required to structure business problems.

### 4.1 Stage 1 - Developing a Business Improvement Strategy

The aim of Stage 1 is to provide a structure for formulating a strategic business plan by identifying the external (business) drivers, defining strategic objectives or goals, identifying critical success factors, and developing measures for monitoring performance improvement. The outcome of Stage 1 is a business improvement plan with performance targets and measurable indicators to assess performance. Table 1 shows a condensed version of the template for developing a business improvement strategy.

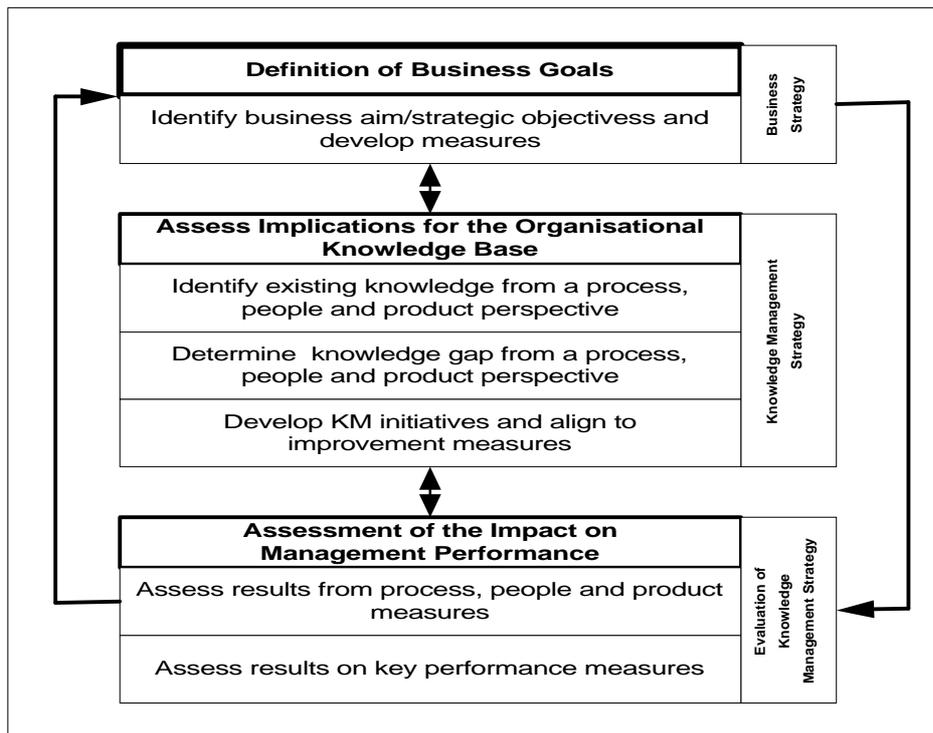


Figure 1: IMPaKT Framework

Table 1: Developing a business improvement strategy

STAGE ONE STEPS	
1.1	Choose a business problem with a knowledge dimension. This is achieved by asking whether there is any knowledge the organisation ought to have to improve the situation or solve the problem
1.2	Place the business problem in a strategic context by relating it to your external business drivers, strategic objectives and critical success factors
1.3	Select an appropriate set of measures to monitor progress towards achieving your strategic objectives, and identify the business processes they relate to
1.4	Identify previous, current, target and benchmark scores for various performance measures and establish the performance gaps

Steps 1.1 to 1.4 are supported by detailed guides such as a glossary to facilitate the understanding of key terms of the Framework, a sample of performance measures with their metric definitions and examples of possible

benefits arising from improvement in key performance measures.

The first step in Stage 1 is to choose a business problem and to analyse the knowledge dimension of the problem. KM problems are business problems that are associated with, related to, or caused by a dysfunction in the processes of obtaining/capturing, locating/accessing, sharing or the application of knowledge. The next step involves putting the business problem in its strategic context by identifying the organisation's external and internal forces. For example, the external business drivers (external forces) are the *key issues* influencing an organisation to achieve or cope with radical changes in the business environment. These issues could, for example, be technological (e.g. the need for innovation), market or structural factors (e.g. expansion/ downsizing), etc. The selection of measures for performance monitoring is also a crucial aspect of Stage 1. The improvement measures are driven by the firm's strategy and will therefore reflect the strategic objectives of the organisation.

## 4.2 Stage 2 - Developing a KM Strategy

The aim of Stage 2 is to clarify whether the business problem has a knowledge dimension and to develop specific KM initiatives to address the business problem. The outcome of Stage 2 is a KM strategic plan with a set of initiatives and implementation tools to support business improvement. Table 2 shows a condensed version of the steps involved in identifying the knowledge implications of a business strategy and for developing knowledge management initiatives for business improvement.

**Table 2:** Identifying KM problems and initiatives

STAGE TWO STEPS
2.1 Clarify the knowledge dimension of your business problem by identifying the KM process(es) involved
2.2 Develop specific KM initiatives to address the business problem
2.3 Select possible tools to support the KM process(es) identified in the context of your business problem
2.4 Identify possible relationships between KM initiatives and performance measures and show how they relate to the strategic objectives (the Cause-and-Effect Map)
2.5 Prepare an Action Plan and identify change management and resources required

Steps 2.1 to 2.5 are also supported by detailed guides such as a questionnaire to identify the KM sub-processes involved, a matrix for the selection of the most appropriate KM tools and a checklist to identify possible barriers and facilitators prior to implementation.

Identifying the KM sub-processes associated with the business problem is the first step in clarifying a KM problem. Knowledge management consists of distinct but interrelated processes that are not linear but can be cyclical and iterative. Examples of KM processes are generate, propagate, transfer, locate and access, maintain and modify (Anumba *et al*, 2001). Others have used different classifications of the KM life cycle e.g. generate, codify and transfer (Ruggles, 1997); creation, location, capture, share and use of knowledge (Tiwana, 2000); discovery and capturing; organisation and storage; distribution and sharing; creation and leverage, retirement and archiving (Robinson *et al*,

2001). The next step is to identify the KM initiatives required. KM initiatives are systematic goal-directed efforts for addressing a KM problem in order to achieve business improvement. For example, a KM problem associated with client satisfaction could be improved by utilising more effectively information that already exists within the organisation about clients. It may also include other initiatives such as setting-up a post-tender forum with clients or project closure meetings to share information. A set of KM initiatives identified should align with the KM strategy. However, KM tools are required for the implementation of initiatives. A range of tools can be selected including both IT-based (hardware and software) and non-IT-based systems (Robinson *et al*, 2001). The hardware tools comprise the platform required to support an organisation's knowledge management strategy. The software tools vary from simple databases and groupware to intelligent decision support systems such as expert systems and business intelligence tools. The non-IT-based systems will focus on such tools as informal dialogue, mentoring, communities of practice, formal network meetings and research collaboration forum to harvest new ideas. It is also vital to assess an organisation's readiness before a KM strategy is implemented. An appropriate knowledge management context should be developed and its readiness assessed against the *reform* needed, *resources* required and *results* monitoring mechanism in place prior to the implementation of KM. KM is useful but there is a need to have the necessary reform in place, have adequate resources and to be able to demonstrate the benefits through a result-oriented approach.

## 4.3 Stage 3 - Developing a KM Evaluation Strategy and an Implementation Plan

The aim of Stage 3 is, therefore, to provide a structured approach for evaluating the impact of KM initiatives on business performance. The outcome of Stages 1 and 2 of the IMPaKT Framework is a business improvement strategy underpinned by KM. The outcome of stage 3 is a KM strategy and an implementation plan with priorities and an appreciation of likely impact of various KM initiatives on business performance or key performance measures. This stage is the most challenging, as the justification of KM initiatives depends on the expected benefits (e.g. performance improvement). Two distinct types of performance measures are identified; measures of effectiveness and measures of

efficiency. Measures of Effectiveness are outcome-based measures relating to the degree to which target performance measures are achieved but does not take account of the cost of implementation. Measures of Efficiency are process -based measures relating to the nature of the KM system used in implementation and are a ratio of expected benefit or utility per unit of KM investment. It is, however, recognised that organisations at the embryonic stage of KM may not have a full-scale measurement framework but may need to start with basic qualitative performance measures to demonstrate the benefits (APQC, 2001). More concrete measures may have to be developed as an organisation progresses to a transformation stage where KM implementation is mature and well co-ordinated. Table 3 is a condensed version of the steps for KM Evaluation.

Steps 3.1 to 3.5 are supported by various guides developed such as a KM cost and benefit component checklists, and a KM guide to evaluation/assessment techniques.

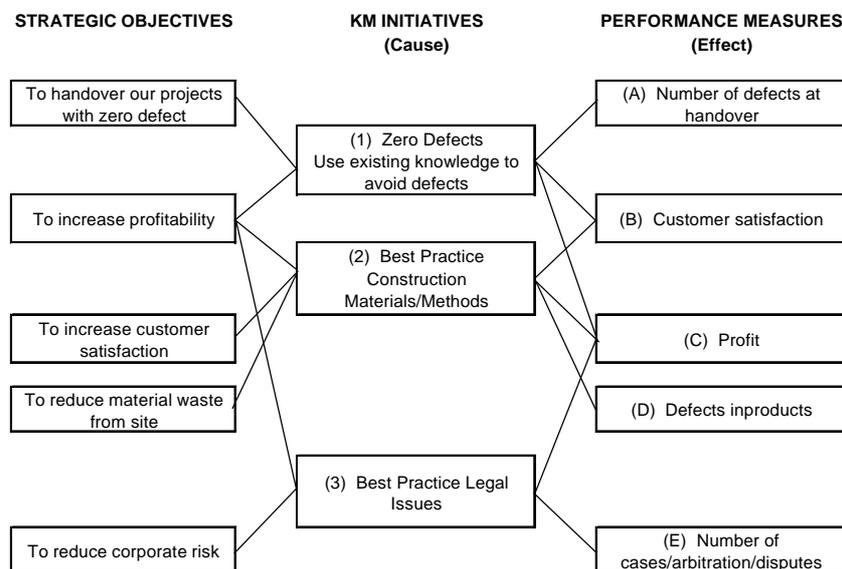
4.3.1 Measures of Effectiveness

KM strategies need to be aligned to strategic objectives. These links will enable an assessment of the effectiveness of KM in terms of the degree to which strategic

objectives are realised. The Cause-and-Effect Map (Figure 2), showing possible relationships between KM initiatives, performance measures and the strategic objectives they relate to, forms the basis for determining the contribution of each KM initiative to the performance measures.

**Table 3:** Developing KM evaluation strategy and an implementation plan

STAGE THREE STEPS	
3.1	Use the Cause-and-Effect Map developed in 2.4 to assess the likely contribution of the KM initiatives to the performance measures
3.2	Assess the probability of success of your KM initiative in improving your performance measures (the effectiveness measure)
3.3	Identify the cost components for implementing each KM initiative and the possible benefits (the efficiency measure)
3.4	Choose an appropriate method to assess (ex-ante) the impact of each KM initiative on your business performance
3.5	Prioritise your KM initiatives based on the two measures of performance



**Figure 2:** Cause-and-Effect Map

The first step in the assessment process is to identify the cause-effect relationships. The second step is to evaluate the impact quantitatively or qualitatively. A KM initiative may have varying impact on performance measures i.e. the impact of an initiative may be

greater in some than others. The impacts or contributions are determined using direct weighting techniques such as ranking and rating.

### 4.3.2 Measures of Efficiency

Determining the contribution of a KM initiative in improving performance score is not sufficient on its own to make strategic decisions, particularly where there are other competing initiatives and resource constraints. The efficiency of the process used to implement the KM initiatives should also be evaluated. This will also help uncover the real costs of KM initiatives. Information technology (IT) tools and technologies form one third of the time, effort, and money that is required to develop and use a KM system (Tiwana, 2000).

'Information technology costs is the most obvious, but the bigger, and often, hidden costs are associated with people' (APQC, 1997) and the related time/cost associated with setting up human interactive systems and process reengineering or adjustments to core and supporting business processes. There are various inputs or cost components of a KM initiative as outlined below:

**KM team** component represents the cost associated with both the core (e.g. knowledge managers) and support team (e.g. IT personnel) required for implementing knowledge management initiatives.

**KM infrastructure** component represents the costs associated with providing the setting up IT and non-IT systems to provide knowledge creation and sharing capability.

There are different types of cost associated with KM such as staff costs, organisational or (re)organisational costs, hardware and software costs. As different KM hardware and software tools are used for the implementation of KM initiatives, consideration should be given not only to their appropriateness in terms of functionality (i.e. ease of use, integration, focus and maturity) but, also cost. Costs could be direct or indirect, one-off/lump sum (e.g. purchase and initial installation cost of hardware and software, consultant's fee etc.) or recurrent/periodic (e.g. hardware/ software maintenance costs, staff costs etc) or occasional costs (e.g. hardware upgrades, support staff costs etc).

There are also different types of benefits to be expected such as:

**People** e.g. direct labour saving, reduction in staff turnover;

**Processes** e.g. direct cost savings, increased productivity;

**Products** e.g. direct cost savings, increased sales; and

**Other** e.g. repeat customers, new customers.

### 4.3.3 Evaluation Methods

The aim of evaluation is to identify the input i.e. the nature of KM initiatives and their output i.e. the consequences (both positive and negative) in terms of changes in performance or contribution to business benefits or losses. Table 4 shows the various evaluation techniques included in the framework.

**Table 4:** Evaluation Techniques

Evaluation Technique	When to use it
<b>Cost minimisation analysis:</b> This involves a simple cost comparison of KM initiatives as it is assumed that the consequences (outputs) are identical or differences between the outputs are insignificant. It does not therefore take account of the monetary value of the consequences (outputs).	When output of KM initiatives are identical in whatever unit of measurement is used.
<b>Cost effectiveness analysis:</b> This involves the comparison of KM initiatives where the consequences (output) are measured using the same natural or physical units. The assumption is that the output is worth having and the only question is the cost of the input to determine the most cost-effective solution.	When output of KM initiatives are measured in the same natural or physical units e.g. number of accidents prevented, reduction in absenteeism or waste, training man-hours, etc.
<b>Cost utility analysis:</b> This involves a comparison of KM initiatives (inputs) which are measured in monetary units with the consequences (outputs) measured using utility or a preference scale. Utility refers to the value or worth of a specific level of improvement measured by the preferences of individuals, teams or organisation with respect to a particular outcome.	When a significant component of the output <i>cannot</i> be easily measured, quantified or expressed in monetary units Useful in making internal comparison between divisions when there is, for example, a decision to introduce a pilot project within an organisation.
<b>Cost benefit analysis:</b> This approach provides a comparison of the value of input resources used up by the KM initiative compared to the value of the output resources the KM initiative might save or create. Consequences of KM initiatives are measured in monetary terms so as to make them commensurate with the costs.	When a significant component of the output <i>can</i> be easily measured, quantified or expressed in monetary units Useful in determining return on investment (ROI), Internal Rate of Return (IRR), Net Present Value (NPV) or Payback Period of KM investments.

A number of these techniques can therefore be recommended in the framework depending on

(a) the existing techniques used by the

organisation and (b) the level of detail required in evaluating the KM initiative.

## 5. Framework evaluation

As part of the research programme, two one-day workshops were planned for the development of the IMPaKT framework. The first workshop was conducted at the end of the first year of the research project to assess and refine the initial concept and to provide ideas for the detailed development of the framework. A second workshop was held at the end of the second year. This was an evaluation workshop aimed at assessing the robustness of the framework that has evolved. Participants familiar with KM and business improvement issues were invited to the workshop following a consultation with the project's industrial collaborators. There were thirteen participants including a director of technical services, senior business improvement and knowledge managers, account manager, business systems and IT managers, both from the construction and manufacturing industries. Over three-quarters of the participants has a high level of awareness on KM (76.9%) and business improvement (84.6%) issues.

### 5.1 Evaluation Methodology

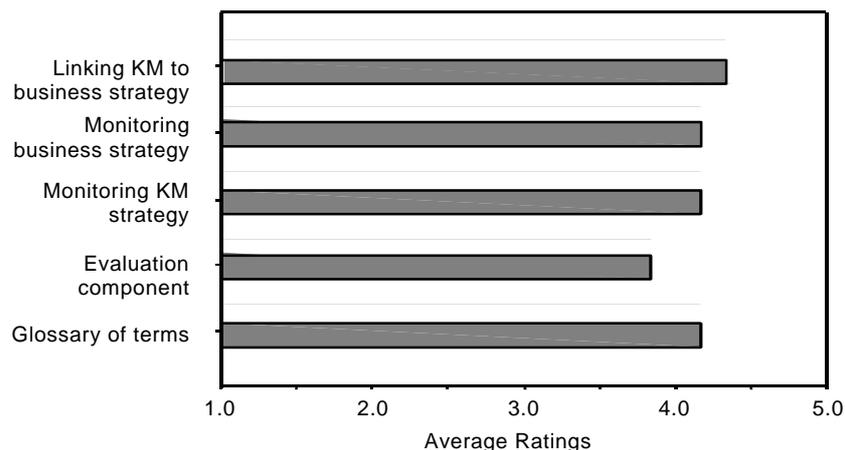
The evaluation workshop started with a presentation of the outline of the framework, a workshop brief and workshop manual consisting of tasks list with supporting diagrams and guidelines. Participants were organised into four teams of three to four people, with research team members acting as

workshop facilitators. The workshop was divided into two sessions. Session 1 was based on the use of Template 1 to develop a business improvement strategy with a KM response, and covered Stages 1 and 2 of the framework. Session 2 was based on using Template 2 to develop a KM evaluation strategy and an implementation plan and covered Stage 3 of the framework.

Each group was asked to choose a business problem with a knowledge dimension and to structure the problem using a template provided by the IMPaKT framework. Each team went through the evaluation exercise using different examples of business problems. At the end of the workshop, a group discussion was held to identify issues regarding the use of the templates and an evaluation questionnaire was given to participants to complete. The evaluation questionnaire consisted of statements reflecting key aspects of the framework's capabilities. Participants were asked to rate each statement with respect to the degree to which they agreed or disagreed with it and to provide suggestions for improving the framework.

#### 5.1.1 Findings and Feedback

The results based on the analysis of the evaluation questionnaires completed by the workshop participants are shown in Figures 3 to 6. The questionnaire used a rating scale from 1 (strongly disagree) to 5 (strongly agree).



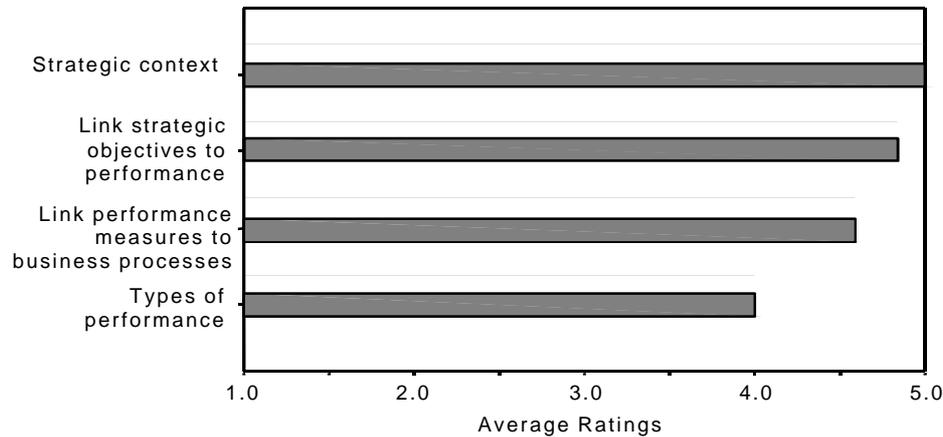
**Figure 3:** Average ratings of key components of overall framework

The overall approach of the IMPaKT framework was rated well in terms of the framework's capabilities to link business improvement and knowledge management,

and for developing and monitoring business improvement and knowledge management strategies (see Figure 3). The glossary of terms accompanying the framework was

considered helpful in the evaluation process. However, there were some concerns about the terminology. It was suggested that simplifying or refining some definitions could help as some of the terms used could mean different things to different people or organisations. The evaluation component was also found to be useful, although, it was rated slightly lower than the other aspects of the framework. It was

noted that the development of the framework represents a significant attempt to conduct a structured approach to assessing the benefits of KM to be able to convince senior managers. Detailed findings of the components of the framework are presented in subsequent sections. Figure 4 is a summary of the average ratings for Stage 1 of the framework.

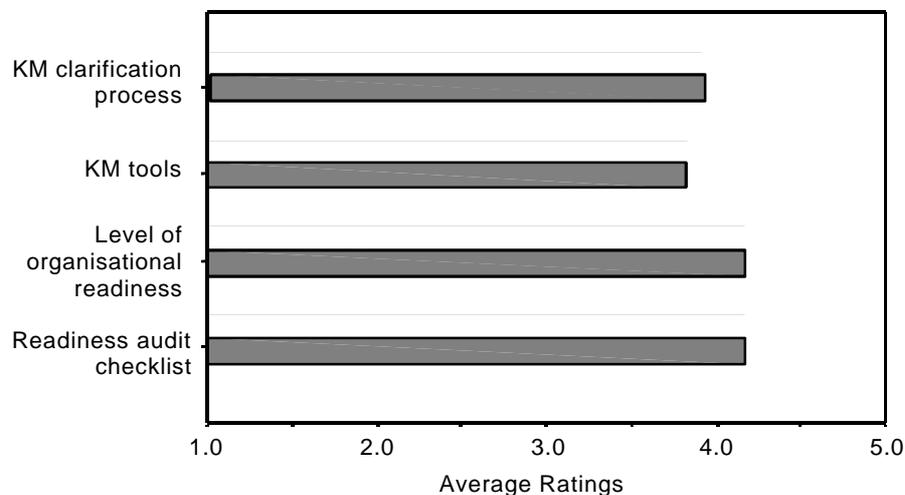


**Figure 4:** Average ratings of key components in Stage 1

All of the participants strongly agreed that the framework allows an organisation to be able to put its KM/business problems into a strategic context. The need to align the strategic objectives of an organisation to performance measures, and to be able to relate performance measures to the business processes they impact on, was also found to be useful aspects of the framework, as the ratings for both are high. The performance monitoring aspect encapsulating the different types of performance scores (previous, current, target and benchmark scores) were

also considered to be important, although the average rating of 4.00 is not as high as other aspects.

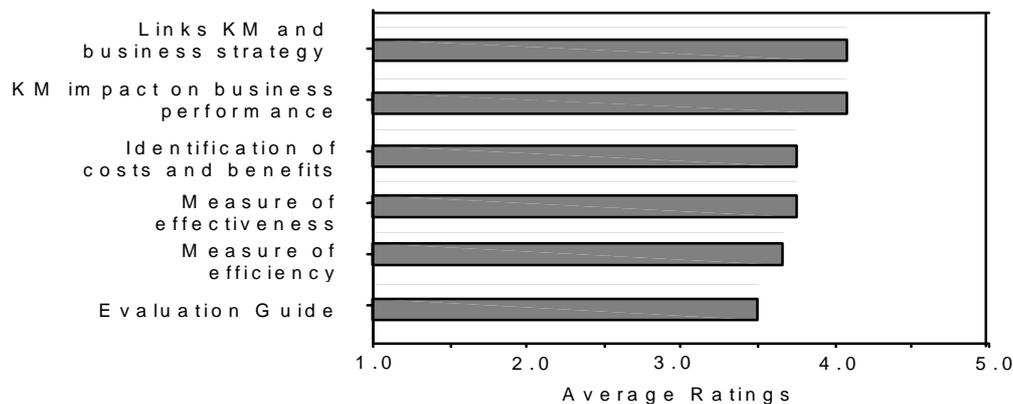
Figure 5 is a summary of the average ratings for key aspects of Stage 2 of the framework. The KM clarification process was found to be useful, so are the KM tools required in the implementation as part of a business improvement strategy.



**Figure 5:** Average ratings of key components in Stage 2

Another key issue is the level of organisational readiness to implement KM. This is relevant since, regardless of the enthusiasm and resources directed towards improving KM, these efforts may not be successful because there may be fundamental technical and social issues that need to be addressed. For example, installing a skills yellow page could bring benefit but if employees are not willing to provide updates of their experience then the skills yellow pages will rapidly become outdated. Participants agreed that organisational readiness is not only a very significant factor to consider prior to implementing a KM strategy, but the accompanying checklist provided was useful in identifying the barriers and facilitators to KM. Template 1 for stages 1 and 2 of the framework was considered quite clear and very useful in working through the issues or

problems selected. One participant commented that it was 'useful thought process to go through, well focussed and easy to use'. Other participants noted that the template also provides a link with the external environment (external drivers) of an organisation and is a good template for a general business problem. However, it was suggested that in dealing with some of the issues arising, it is important for senior management to be involved especially for key strategic issues. Although the workshop was based on structuring hypothetical business problems, it was acknowledged that the framework could be more easily implemented in a company set up where real data is widely available. Figure 6 is a summary of the ratings for key aspects of Stage 3 of the framework.



**Figure 6:** Average ratings of key components in Stage 3

Average ratings of slightly over 4 shows that participants agreed that the framework does facilitate an understanding of the links between business improvement and KM, and also provides a basis to be able to assess the impact of KM. It was also found to be helpful in identifying the potential cost and benefits of KM initiatives. The measures of effectiveness and efficiency are thought to be good approaches for assessing the impact of KM on business performance. However, the ratings for the evaluation guide to help identify the most suitable techniques to assess the impact of KM initiatives was only slightly above average. Some participants simply focused on cost benefit analysis. This is, in part, due to their familiarity with, or popularity of cost benefit analysis (CBA) compared to other evaluation techniques.

## 6. Discussion

Template 2 was relatively more difficult to use compared to Template 1, although it was acknowledged that the intention is clear. Template 1 had undergone a number of iterations and pilot testing before being presented at the evaluation workshop. However Template 2 was relatively new thus the workshop proved a valuable exercise in providing areas for improvement. Some participants found it quite complex as evaluation is considered a difficult area. However, the Cause-and-Effect Map was found to be very useful as the starting point for the evaluation. It was also found to be useful to 'facilitate a structured way of thinking about a problem' and a 'good way to explain to management how everything is related - performance measures, initiatives and strategic objectives'. There were suggestions

that the Cause-and-Effect Map could also be used as a summary of the first session of the workshop based on Template 1. The checklist for identifying costs was found to be well laid out and helpful, although it was noted that the approach to costing might be different depending on the cost models used in individual organisations. The benefit side was more difficult to address, however, it was agreed that the checklist does help in providing some structure in the evaluation of benefits. Further refinement of the cost and benefit evaluation checklists will continue. But it was suggested that putting more details into it could probably make it more complicated and possibly renders it less credible. There was also some concern about the repetition on Template 2. However, due to the paper-based version being used in the workshop it was felt that certain aspects had to be repeated to assist participants but this problem will be overcome in an electronic/ automated version of the framework, which would also enhance delivery. Other suggestions include clarifying some of the headings to reflect the tasks list, and simplifying Template 2. Issues were also raised about how the framework could be introduced to senior management and the level of details of a KM implementation plan to be provided to senior executives.

All the recommendations made at the evaluation workshop have been addressed in the version of the template described in Tables 1, 2 and 3. The framework therefore provides a solid basis for developing KM strategies that are not only coherent but also consistent with the overall strategic objectives of an organisation. The next stage of the research involves refining the IMPaKT framework further, and developing an automated version and an IT architecture to facilitate the implementation of KM strategies, and integrating it into an existing KM tool called CLEVER. CLEVER helps organisations to identify specific KM problems and guides users through providing solutions to these problems (Anumba *et al.*, 2001).

## 7. Conclusions

The development of a three-stage Knowledge Management framework (IMPaKT) to enable the impact of KM on business performance has been presented and discussed. The robustness of the framework was assessed through a technical workshop with industrial collaborators and a post-workshop evaluation questionnaire. The findings based on the questionnaires analysed and the discussions provide sufficient evidence of the potential of

IMPaKT as a structured framework for developing a KM evaluation strategy as part of business improvement. The two measures of performance proposed to determine the effectiveness and efficiency of KM initiatives does not only ensure that appropriate initiatives are selected but enables the ranking of KM initiatives in terms of level of impact on business performance and on specific performance measures. The increasing number of organisations now implementing the Balanced Scorecard and the Excellence Model means that KM can be readily linked to performance measures. The initial focus of the work reported and the evaluation is based on analysis from both construction and manufacturing organisations. However, IMPaKT is a generic framework applicable to other sectors as well. Further development and fine-tuning of the framework will continue as part of the on-going KnowBiz Research Project.

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# KM as a Chemin Faisant: The Valtech Experience

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**Abstract:** *Valtech* is a Paris-based consulting firm established in 1993 and devoted to e-business technologies. The company was initially structured as a distributor of new information technologies to the French and European market, which secondarily provided training in the use of its products. Valtech now positions itself as a pure knowledge-transfer firm that instructs clients in the strategic use and development of cutting-edge electronic technologies. Valtech organized itself according to KM principles in 1993, but only became aware of KM as a formal organizing framework in 1998. While the adoption of KM is often “pushed” onto companies by the academic or consulting communities, Valtech pulled itself toward KM organizing logics by the New Age of business it defined for itself. It is in this way an excellent example of strategic commitment and organizational design from a KM perspective. It is also relatively unique in that most of the literature records KM adoption from a “push” rather than a “pull” perspective.

**Keywords:** Knowledge Management, knowledge creation, organizational learning, knowledge transfer, case study

The proper names that are employed in this text are pseudonyms excepting those of the Company founders, the CKO and the Assets Manager. All quotes and interview transcripts are authentic, verbatim and have been validated by the Company.

## 1. Introduction

The taxi drops us next to the Grande Arche that dominates the sector of Paris known as *La Défense*, the heart of France’s industrial elite. The air is crisp on this November morning, the revolving door that stirs us into the stainless steel building cools it even more as we find ourselves in front of a receptionist who sits amiably at what otherwise would pass as a street vendor’s designer kiosk. It is shocking orange. She stops chatting with a spiked-haired and tattooed young man to greet us with a broad smile. We later conclude that the spiked hair sits atop a programmer’s brain because anything else would be insulting to the context. Framing this scene are black on white walls in a cow motif sprinkled with grayscale photos, all of which embrace 6 canvass chaises longues in 6 colors which themselves surround a silver coffee table of the free-form variety. We have entered the universe of a (maturing) start-up: the address is 4 Place des Vosges, Paris La Défense, and we have stepped into the world of Valtech (<http://www.valtech.com>).

The receptionist announces our presence and we take the stainless steel elevators deeper into Valtech territory. The colours and patterns on the walls of the fourth floor are no less striking than those in the entrance. We pass an espresso bar as Valtech’s Chief Knowledge Officer guides us to the glass-enclosed conference room and invites us to sit on orange stools that do, in fact, serve well as

chairs because of two little arms that discreetly embrace the small of the back. This may be a designer environment, but it seems to pay attention to the people that enter it.

Michel Ezran smiles as he untangles LAN cables that spout from the middle of the conference table and plugs in his notebook. He sits back and says, “*We’re happy to talk about KM in Valtech but beyond the academic value of publishing a case, I’d like to get some business benefits as well. Let’s talk about the dissemination plan.*” This, it turns out, is consistent with one of the company’s core values: Valtech is all about emerging technologies and business benefits. The formal mission statement reads: *We are dedicated to creating value from technology. Value and Technology* are the grammatical as well as the commercial roots of *Valtech*. Its value proposition has shaped impressive growth since 1993: the company has nearly doubled its number of employees each year (reaching 1,000 in 2001), retained and extended its intellectual capital<sup>1</sup> and expanded operations across 6 countries. Valtech’s IPO was offered at € 7.35 on 13 April 1999 and less than a year later its stock was selling at € 37.70 on France’s Nouveau Marché. None of the company’s annual reports have shown a loss nor less than an 86% increase in turnover.

<sup>1</sup> The founders of Valtech are still present and over 92% of the people that joined the company during the first 5 years remain.

This impressive record is on track as we speak but things are not completely serene.

*“Formalizing KM was a natural evolution for us, it’s working but unevenly around the company and we’re wondering what we should do next. This office now has 300 employees instead of 30; the company has about 1,000 and things have changed.”* (Ezran)

## 2. Valtech

Jean-Yves Hardy, Olivier Cavrel and Eric Mouilleron founded Valtech in 1993 with the objective of developing a highly profitable business, not to pursue a passion for technology. Rather than experts in emerging software technologies, they describe themselves as sufficiently informed to perceive the needs, trends and potential business benefits of a fast-moving techno-business environment.

The initial business concept focused on importing new information technologies into the French market from other parts of the world. North America, in particular, was developing software technologies in the early 1990’s that were relatively unknown in France, hence indicating an unexploited market that seemed rich with promise. Valtech began by selling object-oriented technology products and offering training services that accompanied the sales function. With agility, the company identified and then embraced successful new technologies as soon as they emerged, adding products such as Corba, OMT, Java and EJB to its portfolio.<sup>2</sup> Valtech designed its approach to training services such that customers became relatively autonomous in the use of a technology once they completed a course. It also began to expand its core business during this period by introducing consulting services – a logical extension of sales and skills transfer in the product range.

From the mid-1990’s Valtech doubled its staff each year, opened new locations, expanded its core business (training services), increased its consulting activity and reduced the volume of software it distributed until stopping this activity in 1998. The Valtech brand was established at that point, the industry growing and the

business volume for this company – then viewed as one of France’s new industrial sweethearts – outstripped its human resources.

It may be said that Valtech bypassed adolescence and entered a corporate maturity phase only five years after its founding. This passage to maturity was marked, in particular, by the decision to abandon product sales and focus exclusively on two fundamentals: (1) knowledge acquisition (high internal expertise, accomplished in a variety of ways) and (2) knowledge transfer (profitable dissemination of internal expertise, accomplished primarily through training and consulting services).

The following year, 1999, marked a turning point as the company began an expansion strategy that would be paired with the launch of its IPO. On April 13 Valtech was in the national spotlight as it offered 830,000 shares at € 7.35 on the Nouveau Marché in Paris and raised ~ € 6.1 million. The IPO was well received by investors who over subscribed the offer by 1,200% in less than a week (Les Echos, 1999). Valtech’s Chief Acceleration Officer, Eric Mouilleron, commented that, *“The offering of Valtech stock in France will support our future acquisition strategy. The country managers in each market have a shopping list, and acquisitions will start to take place shortly after the IPO”* (<http://www.valtech.com/pressrelease>).

Mergers and acquisitions began with USA-based Expede Inc., a technology services company that specialized in distributed systems development. Press headlines in March 1999 read, *“Valtech extends global leadership positioning in advanced technology consulting”* (M2 Presswire, 1999) and Jean-Yves Hardy, Valtech’s President, stated, *“Expede has a proven project delivery process and a staff with extensive advanced technology experience. The combination of expertise, market position and technical assets made the acquisition an obvious one for Valtech”* (Anonymous, M2 Presswire, 1999). The Expede operation became a template as the company swelled from 150 employees across 6 locations in 1999 to over 1,000 employees across 6 countries and 12 locations by the end of 2001.

## 3. Managing Valtech

From 1993 to 1998 Valtech assembled young and dynamic people who wanted to work in the information society’s avant-garde, and doubled their numbers each year. This collection of youthful expertise, the company’s own youth

<sup>2</sup> Created in 1975, object oriented technologies were on the cutting edge in 1990. CORBA is a distributed object architecture that allows objects to inter-operate across networks regardless of the language in which they were written or the platform on which they are deployed, and OMT is a method for analyzing software and the predecessor of UML. ?EJB

as an entity, the technological frontiers it navigated and other factors combined to produce the Valtech culture: an ensemble of rules, routines, systems, structures and a thick layer of psychosocial expectations that can be characterized by the following:

- Personal commitment to work
- Company commitment to individuals
- Agility with new technology and avant-garde business
- Informality and community
- Speed

The early Valtech was informal to the point of being unstructured. While it stocked itself with IS and sales expertise, for example, it had added only 1 administrative employee to shoulder HR and accounting functions by 1998. Corridors and offices, on the other hand, were animated by employees looking for the expertise needed to make a project work because, "...you simply did whatever it took to get the job done" (Paul, consultant). Recruitment was a feelings-based process, career development an organic affair and turnover unheard of ... not only because Valtech had trouble finding enough of the *right* people, but also because the people it employed found a comfortable fit with its knowledge-intensive organization. Policies and procedures existed, but not on paper: they stirred through the company culture and were absorbed on an experience basis. When a newcomer asked about an operating policy the general response was, "There are no rules, but everyone knows them" (Franck Halmert, Knowledge Assets Manager). The majority of employees were passionate about their work but the other message was also clear: only full commitment was admitted and the pace was fast.

This portfolio of technological, pedagogical and human competencies wove together a distinctive competitive edge for Valtech. The challenge, known by all, was to create customer value by applying expertise and transferring skills. Valtech and its employees were constantly working to stay on the leading edge of new developments because its technological and business environment moved fast, and obsolescence was swift and costly. But the company had few financial worries, was expanding and seemed to stay on top of its situation. Motivation, enthusiasm, challenge and initiative were the hallmarks of work during this period.

Around 1999 Valtech began confronting new internal challenges, occasioned by continuous growth on all fronts and a shifting business environment. The leadership worked to maintain the company's sense of community, and it continued to value the motivation and loyalty of its staff. But the organization was becoming more hierarchical despite itself and as Jean-Pierre explained, "It's hard to organize a nice, company-oriented weekend with the group when you have Sweden, America and South Korea in the equation." Valtech thus began to employ vision and mission as a partial antidote to its growing complexity and dispersion. The management style remained active: the founders were hands-on and kept the business model clear: reconciling business objectives with technology solutions. The *Valtech Way* was prescribed, which included leading-edge expertise, enabling clients through knowledge transfer, opportunistic development and business agility.

#### 4. KM in Valtech

Knowledge has always been Valtech's only real asset. From its inception the company's core activity consisted in mapping new technologies, determining their potential, developing internal expertise and then applying it to the marketplace. This expertise was (a) repatriated to Valtech and (b) injected into new or developing product markets. In doing so, the company was also learning (c) how to capture and transfer skills and (d) how to deliver customized solutions to its clients. Valtech's intellectual capital therefore grew in *single loops* and *double loops*: it learned about technologies, products and markets (single loops), but it also learned how to continue learning (double loops) (Argyris & Schön, 1978). While the typical Valtech engineer of this period learned and transferred what (s)he learned, the company learned from the acquisition/transfer process and created a secondary stockpile of company-specific intellectual assets. "I think you could explain some of it this way," said Michel Ezran, and Figure 1 emerged from the conversation that followed.

	Product	Process
Valtech	1 <i>Acquiring technology</i>	2 <i>Stockpiling expertise</i>
Customer	3 <i>Installing technology</i>	4 <i>Transferring expertise</i>

**Figure 1:** The Valtech Learning Environment

These knowledge assets were unformalized: they existed and their existence was acknowledged, but between 1993 and 1998 no systems or structures were dedicated to their management. Informal discussions, collaborative work, hallway encounters, team-based projects and drinks after work were the managerial method. Knowledge assets were therefore deeply embedded in everyday action. Emergent routines assembled new technology-based, employee-rooted knowledge assets; consulting teams applied these assets with (not to) clients; client engagements generated meta-knowledge on how to transfer or install the expertise; the employee's increased knowledge was brought back into the company. Small numbers, geographic proximity and a high level of professionalization allowed consultants to know who knew what in the company and how to access the expertise when necessary. At the beginning of 1999 Valtech's 151 employees were spread across 5 offices in 3 countries and the spontaneous community it had once been was changing. Interactions were less impulsive due to size and dispersion; routines that had been the signatures of community spirit were fading; business leverage and capitalization were entering the management vocabulary.

Against this backdrop, top management decided in early 1999 that the position of R&D manager – until then focused on the development of training materials – would be transformed into that of Chief Knowledge Officer with a budget representing 7% of the company's turnover (considered as an expense) and reporting directly to the CEO. A month later the position of Asset Manager was created and charged with capitalizing on training know-how and expertise. The 2 people that assumed these roles thus formed the nucleus of Valtech's formal KM initiative. Neither knew of Knowledge Management as a

domain of study and practice at the time, but their situation took on the contours of a now-familiar logic: the CKO would focus on knowledge formalization in the consulting function, while the Assets Manager would mine the training function for greater returns.

Their first 6 months were devoted to structuring a lessons-learned system that would capture the meta-knowledge acquired by consultants during a client engagement. Each client solution, they reasoned, was a source of fast-decay experience that could be formalized, codified and made accessible for genuine business benefits. They also began structuring the company's ensemble of training expertise, a body of content and pedagogy that varied across topics, client populations and geography.

The results were mixed. Despite Valtech's communicative culture, middle managers balked at the idea of adding their know-how to a "database" because, in large part, it required time. The different operating styles and cultural expectations in offices outside France also complicated the task. A standardized production process for training material was established, on the other hand, and the portal *my.valtech.com* was launched in July 1999, which web-enabled the work of the KM team. Valtech employees now had access to commercial and technical documents for re-use, learning and support.

The KM movement was now underway and gaining speed. Its manifestation in *my.valtech.com* was important as a sign that things were in motion; as a tool that consultants could actually use in their daily work, and as a communications vehicle that facilitated corporate information flow. "*I think this early portal sped up the integration of acquisitions and helped our revenue stream by making it easier for people to service our clients, and I think it was eventually seen that way. But not immediately,*" said the CKO in 2002. A Denver-based R&D lab was also launched with the objective of merging French content and American pedagogical know-how. The goal was to develop leading-edge training packages for consultants, nested in a library that was consistent from one pedagogical unit to another. The CKO also published a standardized project management method – the *Valtech Unified Process* – that was aimed at the delivery of e-business projects on time and on budget.

By the end of 1999 the KM team numbered 10 people and results were satisfying, at least in France. Based on this, Valtech's KM strategy was formalized: *contribute to business value-added by capitalizing on skills, know-how,*

*expertise and past experience.* This emphasized the capture and re-use of know-how from the company's two core activities, training and consulting (Figure 2).

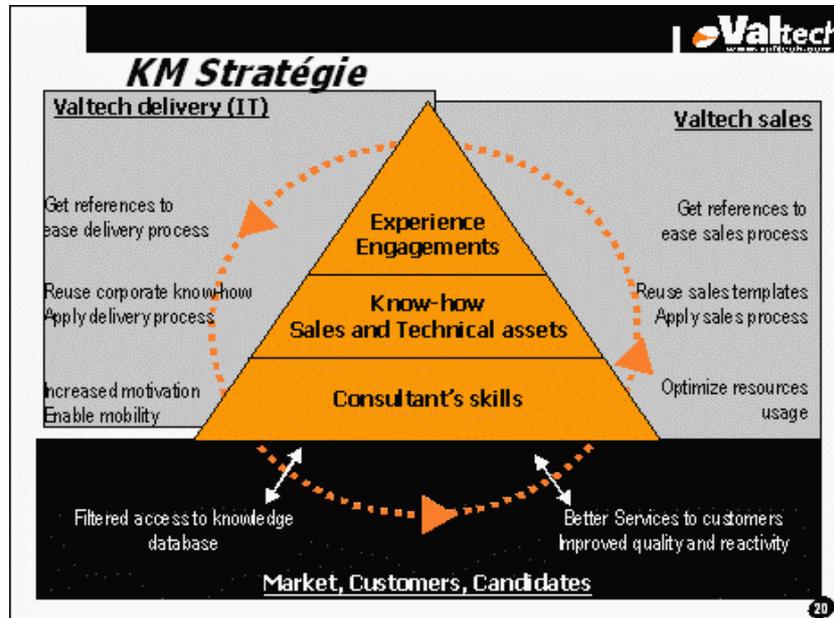


Figure 2: The Valtech KM Strategy

*my.valtech.com* provided access to this intellectual capital, a portfolio of model projects (exemplars) and advice from qualified experts. Portals of all kinds require the expert and tailored content that makes a visit worthwhile, however, and this challenge was attacked by creating *KM Correspondents* in each Valtech location: a group of volunteers who would promote the KM effort, capture local content and assist in its formalization (Figure 3)

learning; and (c) productivity, by displaying content, artifacts and exemplars.

Nonetheless, problems did exist. One difficulty involved content management because contributions remained uneven and difficult to obtain. *KM Correspondents* were recruited on a relationship basis; their contributions were voluntary and the returns from their efforts, personal. Hence, *my.valtech.com's* lifeblood – front line insights and experiences – remained outside of traditional management processes, including remuneration and time allocation. But the concept was in keeping with the *Valtech Way* (skill transfer through collaborative work) and therefore in conceptual harmony with the culture.

By the end of 2000 an assessment of the KM function and the company's emerging needs chartered the structure of a new portal, defined around five objectives.

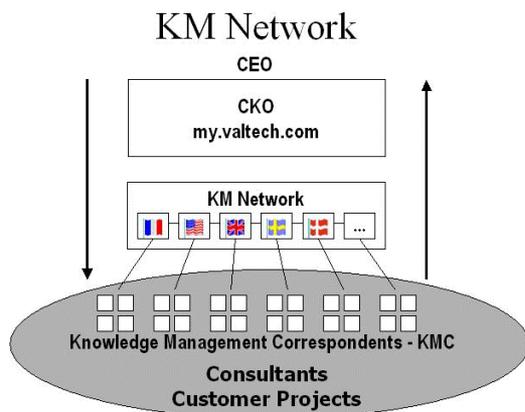


Figure 3: The Valtech KM Network

*my.valtech.com* developed into an icon of the Valtech culture, leveraged on three levels: (a) corporate life, by sharing news and contacts; (b) competency development, by facilitating

**Productivity**, through the access, transfer, retrieval and re-use of information and expertise;  
**Efficiency**, by providing access to the *right* information at the *right* time and facilitating communication flows;  
**Visibility**, aimed at clients (extranets) and Valtech employees (intranets);

**Capitalization**, the systematic and methodological accumulation of intellectual assets;

**Client value-added**, through high quality service delivery, access to Valtech know-how and empowered client relationships.

The company was entering a period of financial turbulence, however, due to the worldwide decline of technology shares and Valtech's aggressive M&A policy. Top management continued its support and launched the project, but restricted the overall KM budget to 4% of turnover, reassigned 5 members of the KM team to other functions and closed the Denver R&D lab.

While *my.valtech.com* continued its role in the company, *project@valtech* was prototyped by a project team with representation from each location and user group, and its introduction was supported by a change management program that included the following:

- Meetings with key actors to plan the project's deployment;
- Surveys to measure satisfaction and perceived problems during the pilot phase;
- *Think Orange* days (Valtech's official color) and internal newsletters designed to attract the interest of employees;
- Meetings and training sessions, held throughout the organization, aimed at fast applicability to everyday work and ease-of-use;
- Surveys to gather information and develop the user base, directed at the KM network, consultants and middle managers;
- An email campaign that kept employees updated as to the project's objectives, benefits and development;
- A periodic review with top management

The adoption of *project@valtech* was phased in over time and 6 months after its introduction, its utilization was widespread. *"The change management program was a big factor, something you don't give enough attention to normally. But in our case it got everybody on track and was a big key to success,"* according to Bernard (consultant). The CKO agreed and added, *"It's clear from our experience, and hundreds of our consulting assignments, that the world's best technology goes nowhere without the right kind of organizing around it."*

The KM team began to analyze return on investment for *project@valtech* at the end of 2001. It searched for results in two broad categories:

Objective and measurable: including timesaving in accessing and delivering information, re-use of knowledge, systematic capitalization of experience, user satisfaction;

Subjective and perceived: including work methods in project teams, faster business development, increased collaboration between Valtech offices, better project management.

As of May 2002, results were abundant and encouraging for the second category but difficult to assess for the first. The KM team found it devilishly hard to link hard, quantified evidence to the positive but subjective judgments of the KM initiative. It assessed "clicks" and user contributions but judged these types of measures to be intermediate, as opposed to fundamental, appraisals.

The time of innocent spontaneity passed with the introduction of *project@valtech* and the KM team positioned itself at the heart of Valtech's business. It continued to organize *return-on-experience* sessions, for example, *"...but only in the late afternoons so that they didn't interfere very much with client schedules,"* said Franck Halmert. The work of KM correspondents was legitimized with objectives assigned to local management and KM-specific elements integrated in the job descriptions of correspondents themselves. *"Our KM program is built around investment in sales support channels, in services on the company intranet, in a network of active correspondents in each office, in a strong and continuous training program supported by the training department"* (Valtech annual report, 2000, p. 8).

In early 2002 the company announced organic growth of 15% and revenues of € 121.5 million for 2001, a 42% increase over 2000. The slogan, *think globally and act locally*, seemed to be working since consultants were using Valtech's international network and the company's position in most of its markets was strengthening.

The KM team began integrating *my.valtech.com* and *project@valtech* into a new and more comprehensive portal. Results after 3 years of work are concrete, uneven and encouraging. The third generation portal is anticipated by line employees because they now expect real benefits that will help them deliver real results. The KM network is disappearing into the company's normal everyday activity – the best of all worlds. Some

clients praise the access to information and experience that quickly deployed extranets provide in consulting assignments.

The major issue remains KM's ROI. *"Fundamentally speaking, we are skeptical, skeptical regarding quality, regarding KM. But intellectual and business logic has provoked us to develop the KM program and it's making sense,"* said Jean-Yves Hardy. *"But there is a critical need for measurement. We are at the parting of the ways: either we continue investing in KM or we stop. Only a clear ROI will help us make the right decision."* Common measures, such as frequency of use and client satisfaction, are deemed inadequate because the KM team embraces a more strategic perspective on its work. *"For Valtech, the future of KM will be defined by KM-based products that are replicable and easily transformed into models for clients. We also need easy and reliable measurement systems, and easy ways to port our KM tools into extranets that wrap clients and providers together in a consulting assignment,"* said Hardy. He continued, *"We want to develop a very pragmatic firm where we can provide instant access to exemplary projects and highly qualified expertise."*

## 5. Discussion

The research for this case history employed an ethnographic methodology over 9 months (ending Spring 2002) and included informal observation, structured interviews, corroboration, textual/archival analysis and photographic recording. The authors had full access to company records and personnel, including Board members, the CKO and his staff. This paper is a significantly abridged version of the full case history. It nonetheless describes, we would argue, a company that is currently an excellent example of KM-based strategic commitment and organizational design, but which arrived at this state as a result of competitive pressures and new organizing logics.

Valtech optimized its product range and service delivery by reorganizing according to Knowledge Management principles at the group level. In the company's collective mind, it was **"pulled"** to this policy by business necessity and organizational exegesis rather than **"pushed"** by academic or consulting trends. This, we argue, departs from a number of other cases in the literature where the "hype" surrounding KM seems to have driven a conversion experience that caused one or more top managers to impose strange new

systems and structures on an unwilling organization.

After an initial period where informal knowledge sharing featured in its culture, Valtech formally embraced KM to manage its fast-paced development, achieve scale efficiencies and reach higher levels of business performance. KM at Valtech is squarely focused on business performance, but relatively unique in that it arose naturally ("organically," in the words of its founder) as a result of new organizing logics. This has been a "chemin faisant" in the mind of this company or, from the French, a path it traced as it navigated its way forward. *"KM is federative for the brand, the corporate culture, and defines our business model,"* said Valtech CEO JY Hardy in April 2002.

This case history presents 9 elements that both academic insight and Valtech's experience advance as important factors in a KM initiative:

**Commitment.** Valtech's KM initiative was the product of several dynamics but from the perspective of sustainable organizational development, top management's decision to commit the company and its resources was clearly a key. Among the formal and informal symbols of this commitment in evidence, the KM team's direct report to the CEO is prominent.

**Strategy & integration.** Flowing from the above, the company formulated and refined a KM strategy that featured the integration of KM structures and systems in its everyday business. KM was firmly linked to business benefits.

**Resources & infrastructure.** Valtech allocated resources commensurate with the objectives of its KM effort (budget, staff, infrastructure). The KM team numbered up to 10 people and financing has varied between 4% and 7% per year of the company's ever-growing turnover.

**"The way we do things here."** A KM-friendly culture earmarked the company's working environment, often forming around the conviction that knowledge was Valtech's only real asset. The company exercised in this way Argyris's prescription for the learning organization: technical mastery combined with effective teamwork, productive client relationships and the meta-ability to critique internal practices (Argyris, 1991; Schein 1994).

**Task and Process.** Edgar Schein (1994) has commented that most academics and managers hold the assumption that,

"...management deals with hard things - data, money, bottom lines, payoffs, production, competition, structure. And it is even better if these hard things can be quantified." But he goes on to say that learning organizations pay at least as much attention to process – the way they achieve results. Valtech's management achieved a balance on this count, concerning itself as much with the soft and subjective ways it organized itself as with the hard results it obtained.

**Constructive agitation.** Valtech made growth, development and improvement a part of its culture. This permeated KM initiatives such as the Denver R&D lab and *Valtech University*, which, though considered imperfect, were attempts to meet the needs of motivated engineers who needed to stay at the top of their fields.

**Tools & technologies.** Valtech combined cutting-edge KM systems with change management and effective organization. *my.valtech.com* became a backbone of corporate communication partly due to effective portal/intranet technology, and partly because it was well adapted to the company. *project@valtech* took the next step by deeply embedding itself in the core business (giving consultants the advantage of offering project-based extranets to clients, for example).

**Single-loops, double-loops.** The company valued, and the KM effort focused on, the meta-knowledge that developed when a Valtech engineer worked out a solution with a client. Single-loop learning refers to the simple acquisition of knowledge in such situations, while double-loop learning implies, "...*cognitive rules or reasoning people use to design and implement their actions*" (Argyris & Schön, 1978).

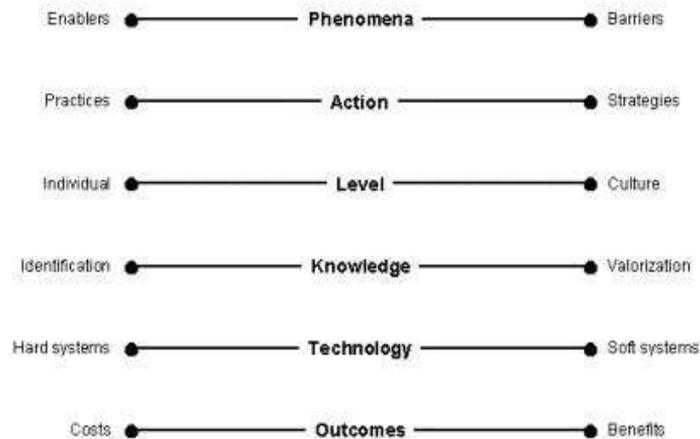
**Assessment.** The evaluation of results stamped each step of Valtech's KM development and the evaluation process was always anchored in business objectives. Quantitative and qualitative criteria have been employed. Though considered inadequate, the KM team used these measures to shape its systems, structures and organizing principles on as clear a view as possible of the needs of its client (Valtech) and the impact of its efforts.

Ryder and Wilson (1997) have observed that complex systems evidence a natural tendency

toward decentralization of information and control. This, they write, "...holds true for a swarm of bees ..., a market economy, or a learning infrastructure." The 9 elements noted provide concrete examples of such decentralization, in service of organizational effectiveness and business success. As a parallel, it is interesting to note that each of these 9 elements fits comfortably in the literature devoted to *learning organizations*. Kerka (1995), for example, has written that the following are often considered important characteristics of the learning organization:

- Continuous opportunities for individual and group learning;
- Learning considered essential to goal attainment;
- Individual performance linked with organizational performance;
- Rules, routines and systems that foster inquiry and dialogue;
- A culture where people consider it safe to share openly and take risks;
- Creative tensions valued as a source of energy and renewal;
- Systems and structures aimed at awareness of and interaction with the environment.

The 9 elements (**Commitment through Assessment**) that were identified at Valtech are, however, increasingly cited as *key success factors* or *KM enablers* by the KM practice literature (Chauvel & Despres, 2002). Figure 4, which summarizes the findings in this article, provides additional perspective on Valtech. *Phenomena* refer to structural or functional conditions in a company that are responsible, at some level, for the success or failure of a KM initiative. Most of the 9 elements noted above are *enablers* in this regard. *Action* refers to observable actions that range from broad, corporate strategies to more individualized practices or behaviors. Organizational action at the level of practices points to the development of an infrastructure that is dedicated to the management of knowledge and includes many of the systems, structures, routines, work habits and technologies noted in the paragraphs above.



**Figure 4:** Dimensions of Concern in Applied Knowledge Management

By *Level* we refer to the units of social aggregation - individuals, groups, organizations, cultures, environments - at which a company aims its KM initiative(s). In this regard Valtech clearly has a wide embrace but seems particularly focused on 3 levels: groups and individuals within the company, and their external business environment. The dimension *Knowledge* refers to the practical issue of identifying useful knowledge and then putting it into effective action. This remains a significant concern for Valtech and the KM team, which has to date adopted a defacto policy of Utilitarianism (*if it's accessed by our users, it must be useful and if it works with a client, it must be good*).

The dimension of *Technology* points to the tools and techniques that are employed in KM and includes IS/IT solutions as well as human-social technologies that are more concerned with the social psychology of organizing a knowledge-based enterprise. On this count Valtech appears to be employing IS/IT solutions that both arise from and are generative of new human-social technologies, in a spiral of action that seems far from planned or predetermined. The approach is tactical and focused on the short to medium term. Finally, *Outcomes* concern the upshot of a KM initiative and, in the vernacular, this dimension focuses on the 'so what' issue. Here, the words of Valtech's CEO are unequivocal: "... *there is a critical need for measurement. We are at the parting of the ways: either we continue investing in KM or we stop. Only a clear ROI will help us make the right decision.*"

## 6. Conclusion

The case history has outlined Valtech's (<http://www.valtech.com>) journey from start-up to a multinational knowledge-intensive firm, tracing its development and specifying the conditions that motivated its organizing along KM principles. We have identified some of the systems, structures, phases of development and successes/failures the company has encountered along this path. Both external and internal observers have identified a number of distinctive features in Valtech associated with KM phenomena, including organizational culture, emergent routines, work rules, management styles, adaptive and generative organizational learning, and autopoietic processes. It can be said that Valtech's experience with Knowledge Management is shaping its history. Unknowingly, the company initially acted on KM principles in order to cope and survive in its environment. Four years later its approach to KM was formalized with strategies, resources and action. Today, and despite a lack of concrete evidence, Valtech believes that its investment in KM is playing a major role in the company's success.

## Appendix 1

### Milestones in KM at Valtech

End of 1998: emergence of formal need for knowledge capitalization

Early 1999: creation of the CKO position

March 1999: creation of the Asset Manager position

January - June 1999: formalization of the consulting function

Actors; Task definition and mapping; Mapping of expertise and knowledge

Documentation;

January – June 1999: formalization of the training function  
 Actors; Training course material; Content publications process  
 July 1999: creation of *my.valtech.com*  
 July 1999: creation of Denver R&D Lab  
 January 2000: KM strategy formalized  
 January 2000: KM tools disseminated  
 2000: creation of KM Network and Correspondents  
 2000: retooling of *my.valtech.com*  
 Early 2001: decision to invest in a new KM portal  
 Mid-2001: introduction of *project@valtech* and rollout of change management program  
 End of 2001: new policy and organizational role for KM Correspondents  
 January 2002: *my.valtech.com* and *project@valtech* merged and integrated

*Organizational Learning Working Paper 10 004.* [www.sol-ne.org/res/wp/10004.html](http://www.sol-ne.org/res/wp/10004.html).

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# Reconsidering the tacit-explicit distinction - A move toward functional (tacit) knowledge management

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**Abstract:** To move beyond the technology focus and adequately embrace knowledge, organisations need a working conceptualisation of knowledge. Within the literature, the dominant conceptualisation converges around the acknowledgement of tacit and explicit types distinctly. This paper argues that a more fundamental approach is necessary. The *functional view* is a theory on the nature of knowledge that serves as a promising alternative. By placing knowledge within the context of goals and formalisation possibilities, it can help transform organisations from information-intensive to truly knowledge-based.

**Keywords:** Knowledge management, tacit-explicit distinction, nature of knowledge, functional view

## 1. The structural complexity driving knowledge

The recognition that knowledge is a precursor to organisational success permeates the literature: Nonaka and Takeuchi (1995) pay heed to knowledge's role in product innovation, De Leo (1997) to its facilitation of operational improvements, and Baumard (1999) to its role in reducing marketplace ambiguity. But before accepting their premise *that* knowledge is important, we must understand *why* it is important—that is, the concrete factors necessitating its presence in the organisation. Although Davenport and Prusak (2000), Quintas (2002) and earlier scholars mention drivers like heightened competition and the importance of continuous innovation, they fail to adequately convince us of today's knowledge necessity. In essence, they miss a discussion of globalisation's *structural complexity* of matching supply and demand.

### 1.1 Causal processes

In explicating this complexity, we first turn to the fact that the global economy entails the acceleration of doing business across borders—as evidenced by the tripling of global goods and services exports from 1980 to 2001 (WTO 2002). For companies participating in this acceleration, knowledge of different cultures and rule-regimes becomes crucial; although transport and communication developments have obviated the geographic barriers of conducting business in new environments, other obstacles (cultural, legal, operational, etc.) remain. Furthermore, as an outgrowth of the trade acceleration, the global economy has witnessed the rise of more demanding consumers. That is, because the acceleration implies heightened competition and hence unlimited supply choices, consumers can place greater demands on their purchases. For suppliers, this translates

into the necessity of knowing and meeting the needs and preferences of specific segments; it necessitates the personalisation of products and services. Finally, in staying abreast of consumer and cross-border trading requirements, organisations are met with the dynamic growth—or structural expansion—of the global economy, wherein continuous change takes place. These changes occur in the form of new technology, processes, product cycle times, cost structures, and so on. And as Liataud and Hammond (2000) note, to handle these changes, companies must be “faster, more agile, and crucially, more *intelligent*” (italics original, p 4).

### 1.2 Alleviating the complexity: Moving beyond technology

In attempting to alleviate the structural complexity and fully embrace knowledge, organisations have progressively turned to technologies that enable knowledge codification and manipulation—from intranets/extranets to document management tools to knowledge-based systems. But despite the proliferation of these technologies, the management of knowledge remains a major challenge. This is well evidenced by Strassmann's (1999) analysis of more than 1,500 U.S. industrial firms, which showed zero correlation between information technology expenditure and firm profitability. Based on this study—and his subsequent estimates of firms' knowledge assets—Strassmann (2001) concludes that knowledge has simply been used as a means of justifying increased information technology spending, and for most organisations, has failed to improve profits.

Picking up on this so-called ‘productivity paradox’, Johannessen et al. (2001), Dunford (2000) and other knowledge scholars suggest that the failure of technologies stems from their focus on explicit and codifiable knowledge.

Drawing most often on the epistemological system of Polanyi, they argue that such a focus implies the neglect of the second, equally significant, part of a company's knowledge base—namely, tacit knowledge. As will be illustrated below, the recognition of a tacit dimension does not adequately serve to advance the management of knowledge. While agreeing that a conceptualisation of knowledge is necessary in order to move beyond the technology focus, we argue that a more fundamental view is needed. The main objectives of this paper are thus to (1) discuss the practical limitations of the tacit-explicit conceptualisation, (2) reveal the deeper implications of this discussion and (3) describe an alternative, functional approach to knowledge. Acknowledging the functional view's roots in computer science, the paper will conclude by (4) illustrating its value for knowledge management – a value that reaches beyond the scope of pure technology. In moving toward these goals, it is appropriate to briefly revisit the tacit knowledge trajectory.

## 2. The emergence of the tacit 'dimension'

Pushed along by philosophers such as Gilbert Ryle, William James and Michael Polanyi, the modern epistemological trajectory has moved from a positivistic paradigm to a more balanced paradigm—one that recognizes the presence of the experiential and personal facets of knowledge alongside the objective and scientific. Definitively, this shift has expressed itself through the likes of Ryle's (1949) 'knowing how' and Polanyi's (1966) 'tacit dimension.' Polanyi's work is exemplary in that it argues that the elimination of the personal, tacit dimension will in essence destroy all objective knowledge, as it provides the perception and mental models that enable us to understand the comprehensive whole of an entity. In exemplifying, Polanyi considers how we recognize the face of an acquaintance: We know the appearance of the face in its entirety by 'attending from' the tacit particulars and 'attending to' the explicit whole of the face. Thus, although we can delineate the face among a crowd of people, we are often unable to articulate precisely how we know the face. This, Polanyi argues, is tacit knowing, and it is the foundation for all knowledge.

Polanyi's line of thinking has long since surfaced in other theoretical disciplines, and with the help of Nelson and Winter (1982), the realm of economics was by no means overlooked. Nelson and Winter's tacit knowledge is defined in terms of the

organisation's automatic (and often unconscious) skills, such as the ability to choose the right job applicant or make the right investment. They suggest that the organisation's tacitly driven skills are often the basis for organisational routines, which in turn govern smart business behaviour and hence organisational success. Following their lead, a plethora of scholars (e.g., Nonaka & Takeuchi 1995; Spender 1996; Baumard 1999) began to dominate the economics literature in their convergence around tacit knowledge. Unlike Polanyi and Nelson and Winter, however, these scholars commonly offer a clear, bounded distinction between tacit knowledge and its supposed counterpart, explicit knowledge.

As we have seen, the overreaching thread within their conceptualisations includes the notion that explicit knowledge is that which is explicable and transmittable; essentially it is an information stock that exists outside the individual and/or organisational mind. Tacit knowledge definitions are less concurrent, but on the whole their authors argue that it is highly contextual and bound to individual experiences or firm processes, thus making it either impossible or less conducive to codification and transfer. As such, organisational tacit knowledge is said to be expressed in terms of employee skills, problem solving abilities and mental models, whilst explicit knowledge manifests itself in the form of mathematical expressions, instruction manuals, product blueprints, and so on (e.g., Nonaka & Takeuchi 1995).

Adherence to this distinction in the accumulating wealth of literature is grounded in the notion that it is tacit knowledge that will determine the degree to which companies remain competitive. The rationale being that while explicit knowledge is more easily managed, tacit knowledge has more value, being derived from particular circumstances and therefore difficult to imitate externally. Thus, citing the importance of tacit knowledge to prosperity, as well as the lack of evidence for the positive impact of explicit knowledge solutions, researchers are calling for the addition of techniques and cultures to promote tacit knowledge transfer. Nonaka and Takeuchi (1995) suggest a four-phase knowledge management process to facilitate the interplay of tacit and explicit knowledge—a process ideally initiated through face-to-face employee socialization. Subsequent authors (e.g., Johannessen et al. 2001; Dunford 2000; Lubit 2001) likewise recommend targeted

interpersonal solutions such as apprenticeships, mentoring and narrative storytelling in order to ensure tacit knowledge's place beside formalized explicit knowledge.

### 3. Inadequacies of the distinction

Although useful in theory as a means of reminding organisations to manage the entirety of their knowledge base, the tacit-explicit distinction does not adequately serve to guide organisations through the knowledge management process. An adequate knowledge view should, first and foremost, help in tuning strategic goals to knowledge goals, and further, should help in determining and realizing knowledge formalisation possibilities. The tacit-explicit approach misses on both accounts.

#### 3.1 Goal-dependency issues

The simple classification of knowledge into tacit and explicit does not directly and concretely substantiate the relationship between goals of an organisation and the essential role of knowledge in achieving these goals. Failing to clearly align goals that rigidly govern the knowledge process only serves to ensure that knowledge initiatives remain within the level of information production and distribution – as codified knowledge is often gathered that is irrelevant to the functional objectives of the organisation. In the end, this equates to limited knowledge transparency and application, as the organisation remains trapped in an information-intensive frame of reference. It also important to note that the absence of a goal orientation hinders the awareness that knowledge is an essential asset for optimal business performance and, as a consequence, that knowledge management is a need-to-have activity instead of just a nice-to-have activity.

#### 3.2 Formalisation issues

As noted in section 2 above, authors of the distinction within the knowledge management literature distinguish tacit and explicit types primarily on the basis of ease of transfer or codification/formalisation. Spender's (1996) account deviates slightly in its recognition of tacit knowledge as knowledge that is 'not yet explicated,' thus suggesting that it exists on a continuum and can potentially be formalized (as Polanyi has long since told us). Attempts at operationalising the tacit-explicit approach are complex and limited, as we see through the examination of, for example, Schulz and Jobe (2001), Zack and Serino (2000) and Davenport

and Prusak (2000). Their somewhat vague discussions of knowledge codification converge around the idea that the 'richness' or 'abstractness' of knowledge determines whether it should be managed through people (tacit) or through technology (explicit).

If we lend specificity to their discussions, and enrich the tacit-explicit distinction with a formalisable/non-formalisable dimension, we more clearly see the issues, alternatives and complications involved in its management (Figure 1). Here we define formalisation as the process of representing knowledge using a data structure. A data structure can be a text, a flowchart, a decision table, a record in a database, etc.

	Formalisation impossible	Formalisation possible
Tacit	Knowledge management through humans	Are there any chunks of knowledge worth formalising?
Explicit	Impossible	Render it more Knowledge-based?

**Figure 1.** Tacit and explicit knowledge mapped to formalisation possibility

The figure displays three possible states: (1) tacit knowledge cannot be formalised, (2) tacit knowledge can be formalised and (3) knowledge is explicit. These states in turn reveal what we deem as the key deficiencies in the tacit-explicit approach to knowledge management:

1. It does not help to assess whether knowledge is formalisable;
2. It does not account for knowledge that falls in between the dichotomous range of formalisable and non-formalisable knowledge;
3. When knowledge is deemed not formalisable, it does not clarify what it is that people have when we say they have knowledge, nor does it clarify how we utilize human capacity for tacit knowledge management;
4. When knowledge is deemed formalisable, it does not help to select and evaluate knowledge representation formalisms such as text, flowcharts, database records, rules and formulas;
5. When knowledge is already explicit, it does not support the improvement of the representation, nor does it help in deciding to move another to knowledge

representation formalism;

6. When knowledge is explicit, it does not help in determining the *value* of rendering explicit knowledge more efficient, transparent and maintainable.

In short, the tacit-explicit distinction is a rather superficial instrument. What is needed in its place is a *theory on the nature of knowledge* that precedes and advances knowledge management. It is to this that we turn below.

## 4. Functional object-types as an alternative

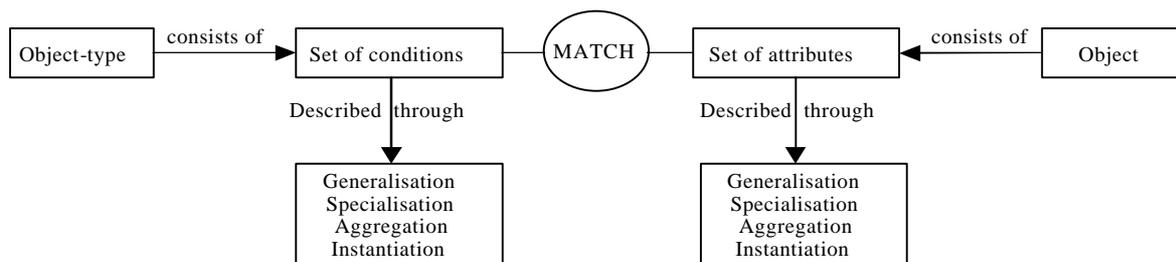
### 4.1 Knowledge is matching

In moving toward a more fundamental view on knowledge, it is useful to return to Polanyi's (1966) conceptualisation. Although often overlooked in current discussions on tacit knowledge management, Polanyi's central notion of 'attending away' from the particulars of an entity and 'attending to' its joint whole lends much to our understanding of knowledge. Polanyi explains that the relationship between the particulars and the whole are functional, in that we rely on our awareness of the particulars in our ability to attend to the whole in our achievement of a joint purpose. How could we otherwise recognize the face of an acquaintance, play the piano or ride a bicycle skilfully if we were not able to coordinate our idea of successfully accomplishing these acts with our mental and

physical performance of them. Knowledge, then, establishes a relationship between the particulars and the whole of the entity: it provides an "*understanding* of the comprehensive entity which these two terms jointly constitute" (Polanyi 1966, p 13, italics original).

A scheme that further contributes clarity to the notion of knowledge as a process of understanding comprehensive entities (or concepts) is that of Ogden and Richards (1946). Ogden and Richards explain that a concept consists of an object-type, an object and a term. The object-type refers to a set of conditions, the object to the real-world entity that complies with these conditions, and the term to the label that denotes the object-type. A child, for instance, develops the object-type 'ball' to structure and act upon her environment. An object that matches conditions such as 'round form' and 'it rolls when you kick it' qualifies as a ball. The actual word 'ball' symbolises or labels the object-type.

Drawing on such discussions, we define knowledge as the competence to realize goals by matching object-types and objects (Figure 2). The child's ability to identify a ball by matching 'round form' and 'it rolls when you kick it' to the real world object 'ball' is thus knowledge. The child's ability to kick the ball by matching her concept of 'ball kicking' to the real world action of kicking a ball is also knowledge.



**Figure 2.** Matching object-types and objects

The relation between an object-type and its objects is that objects are referents that should comply with the object-type. Objects are the real-world counterparts of the object-type. As noted in the examples above, objects need not be physical phenomena; they may also be formed by a sequence of activities. Furthermore, because real-world object-types and objects can be highly complex, basic abstraction mechanisms are necessary in

helping us to describe them (Figure 2). These include the generalization of specific object-types into a general category (balls are a generalization of footballs); specialization of general object-types into a specific category (football is a specialization of balls); aggregation of several object-types into a new object-type (the child's mental and physical abilities, plus the presence of the ball are the aggregated object-type of kicking a ball); and

the instantiation of a real world object-type (the way the child kicks the ball is an instantiation of all ball kicking).

If object-types determine the conditions of knowledge, then knowledge about concepts depends upon the definition, or construction, of the object-type. From this we conclude that in order to understand the nature of knowledge, we need to understand how object-types are constructed. The functional view provides us with such an understanding. Although other views on how to construct the conditions of an object-type exist, including the classical view, the prototypical view and the probabilistic view, we focus on the functional view (for an in-depth mutual comparison of these views see Van Der Smagt 1985; Hendriks 1986; Lucardie 1994). The functional view is unique in that it more clearly assigns goals as central to knowledge, and further, it recognizes that in the real world objects may present themselves in many different ways. This is evidenced through two basic characteristics of the functional view: (1) the goal-oriented selection principle and (2) functional equivalence.

#### 4.2 The goal-oriented selection principle

Constructing an object-type is a strikingly difficult activity. Illustrative is the description of the object-type 'water' (Lucardie 1994, pp 80-91). An indefinitely large number of conditions potentially qualify for incorporation into the object-type 'water'. Consider the following characteristics: at sea level water boils at 100°C; the saturation pressure of water at 6°C is 0.6 cm mercury; water is a liquid with a refraction-index for sodium light of 1.33299 (at 20°C); liquid water has maximum density at 3.98°C; the viscosity of water vapour at 20°C is  $9.6 \times 10^{-3}$  cP; water is a set of H<sub>2</sub>O molecules; water is a set of T<sub>2</sub>O molecules; and water is a set of D<sub>2</sub>O molecules. Given the innumerable possibilities, how then should we describe water? Is it something that boils at 100°C? Should we describe water through its isotopes T<sub>2</sub>O or D<sub>2</sub>O?

Water is by no means the only object-type that displays an overwhelming array of conditions. In fact, all object-types are describable by a great number of conditions. A selection principle is thus needed. The functional approach operationalises a selection principle by assuming a goal or context of classification. Again, for the object-type 'water', goals need to be introduced such as 'quench one's thirst' or 'produce H<sub>2</sub>SO<sub>4</sub>'. Whereas the first goal

requires attributes describing the drinkability of water, the latter goal requires the evaluation of the object attribute H<sub>2</sub>O (T<sub>2</sub>O or D<sub>2</sub>O). Thus a change of goals or context alters the content of an object-type. Instead of having one object-type 'water', we distinguish several object-types 'water', each of which is true in relation to a certain goal or context.

#### 4.3 Functional equivalence

Functional equivalence denotes the phenomenon that objects are identical—even if they possess quite different attributes—because they can perform the same function. In other words, objects may vary in attributes, but if they match one of the constructs of a goal-constituted object-type, they are functionally equivalent. Functional equivalence can be traced to three basic mechanisms: conditional relevance, conceptual interaction and variation limited to goal-constructed categories.

- *Conditional Relevance.* The first mechanism of functional equivalence refers to the phenomenon that, under specific conditions, other attributes may become important for determining class membership. Their relevance is conditional upon circumstances that also need to be incorporated in the object-type. This is exemplified in Figure 3 below, which shows the object-type 'client' with three conditions: bank account duration, business performance and wealth. The conditions 'wealthy' and 'not wealthy' are only relevant if 'bank account 12' and 'performance >50 and 75'.
- *Conceptual Interaction.* Categorizations of attributes of objects may influence each other. This phenomenon is called conceptual interaction. It manifests itself in the mutual influence of the categorizations of the attributes. Figure 3 shows conceptual interaction between 'bank account' and 'performance'. Another category of 'bank account' leads to another categorization of 'performance.'

Variation limited to goal-constructed categories. The third phenomenon contributing to functional equivalence refers to the situation where objects may have different attribute values, but that this variation is limited to, or falls within, goal-constructed categories. Objects 3 and 4 in the figure below have different but functionally similar values for 'performance'. The variation of 'performance' is

limited within the goal-constructed category  
30.

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#### A. Object-type 'Client'

(Bank account 12 months)	(Performance 50)	→ Normal client
	(Performance >50 and 75) (not wealthy)	→ Normal client
	(Performance >50 and 75) (wealthy)	→ Special client
	(Performance >75)	→ Special client
(Bank account > 12 months)	(Performance 30)	→ Normal client
	(Performance > 30)	→ Special client

#### B. Functionally similar objects

Object 1: (Bank account 10 months), (performance 20) (wealthy)  
 Object 2: (Bank account 12 months), (performance 45) (poor)  
 Object 3: (Bank account 30 months), (performance 5) (poor)  
 Object 4: (Bank account 30 months), (performance 29) (wealthy)

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**Figure 3.** The object-type 'client' and functionally equivalent objects

## 5. The value of the functional view

As the functional view gives insight into the basic characteristics of knowledge, it helps to clarify the fuzziness that surfaces when organisations attempt to construct and handle knowledge. As exemplified below, the goal-orientation of the functional view helps organisations more accurately define and use knowledge, while the underlying characteristic of functional equivalence helps to guide organisations forward through the operational processes of knowledge formalisation.

### 5.1 Installation of a goal-orientation

One of the most promising benefits of the functional view, is that it helps the organisation to start working from a goal or system of goals. A goal-oriented approach disentangles the confusion that often occurs when an organisation attempts to manage an object-type (e.g., an employee, a service, a product, or a client) while not taking into account that multiple goals are involved. As an example, we turn to a case where a computer system was used to help determine students' eligibility for university scholarships. The object-type 'scholarship student' that was incorporated into the system led to complaints from students who were overlooked for a scholarship because the system mistakenly failed to classify them as a 'scholarship student'

(mismatch). It subsequently appeared that the rather complex object-type was constructed using the government's goal 'should suit budget,' while the universities linked to the scholarships had the implicit goal to acquire as many scholarship students as possible. Analysis revealed that at least two distinct object-types 'scholarships' should have been distinguished based upon the different goals of the actors involved. In addition to the efforts spent handling students' complaints, the costs to reconcile both object-types in an adapted system were substantial. The inclusion of goals and the related distinction of several object-types (and objects) would have eliminated irrelevant information, and increased transparency of knowledge. When goals determine which conditions are relevant for the definition of an object-type, knowledge becomes something in use as a function of the organisation's goals. This prevents knowledge from becoming obsolete, or just a sitting stock of information; for when the goals change, knowledge changes with it. This is true irrespective of whether knowledge is processed through humans, systems or both.

### 5.2 Assessment of formalisation potential

Beyond goal alignment, the functional view helps to assess the formalisation potentials of knowledge. Where As objects are functionally

similar, but are heterogeneous through conditional relevance and conceptual interaction, the formalisation potentials of knowledge are low. On the other hand, when similar objects are homogenous in the sense that the same attributes apply and the number of conceptual interactions is limited, formalisation is possible. Thus, through a measurement system, the functional view can help assess which knowledge can be managed through people and which through computer systems. More specifically, by measuring the number and complexity of conditional relevancies and conceptual interactions in a knowledge area, we can assess the degree of homogeneity (or heterogeneity) of that area. The degree of homogeneity is proportionate to the degree of formalisation, which is an indication of whether (and to what degree) knowledge should be put into computer systems or managed through humans. For example, in building a knowledge-based system for a municipality to allocate dwelling space to its inhabitants, it appeared that the object-type 'medically urgent person' was highly heterogeneous. It was thus decided that the knowledge-based system would assign the decision of whether a person is medically urgent to human experts who could easily handle the heterogeneity.

### 5.3 Evaluation of representation formalisms

Finally, the functional view is helpful in selecting and evaluating appropriate knowledge representation techniques for specific types of knowledge. Besides formulas and mathematical functions for representing knowledge of a compensatory nature, other formalisms exist for knowledge that is less homogeneous, including text, programming languages and flow charts. By defining the characteristics of a given representation technique, and determining these characteristics' ability to handle the functional equivalence of a specific knowledge area, we can determine whether it is a suitable match. Without a framework to select and evaluate knowledge representation formalisms, organisations often turn to the representation of knowledge in Lotus Notes or databases while the nature of functional equivalence requires other formalisms. As a consequence, maintenance costs accumulate quickly.

## 6. A functional blueprint

Stepping back from the examples above, we find it useful to close with a case where the

functional view served as a driving force in a comprehensive knowledge management initiative. At the Department of Strategic Legal Affairs within the Ministry of Traffic and Trade in the Netherlands, the functional view helped in designing and implementing a blueprint of the knowledge-based organisation. The blueprint described the goals of the department, the processes necessary in achieving these goals and an assessment of the knowledge needs related to the processes. Specifically, for each process problems were identified through knowledge spectacles, and thus pinpointed as either knowledge fragmentation, lack of knowledge or unbalanced knowledge accessibility. The blueprint then measured the gap between the state of the department as a knowledge-intensive, information-based organisation (the As-Is situation), and as a knowledge-based organisation (the To-Be situation). The blueprint contained descriptions of the stages that would, step by step, transform the department into a knowledge-based organisation. Within each stage of this transformation, the blueprint guided the department through the use of knowledge enablers, including human resource management, organisational culture, processes, information technology architecture (e.g., the internet) and strategy. The choice of knowledge enabler(s) for a given knowledge area was then functionally assessed based upon the level of homogeneity for that area.

This blueprint is now being implemented to improve the department's performance. For example, a new information technology architecture was built to generate licenses consistently and quickly. This system, called QuickKlic, prevents claims (due to the improved and consistent licenses) and shortens the production time of a license by at least a factor of ten. QuickKlic was put into operation a few years ago, and combined with a new working methodology, the system has realized major improvements. Also, as a result of the functional view blueprint, knowledge-based human resource management has been implemented at the department. This initiative, called the Strategic Personnel Management Project, identifies individual knowledge needs within a five-year time frame, and tackles these needs through education and the hiring of new types of employees who are evaluated on their knowledge sharing.

## 7. Conclusion: A promising view on knowledge

The complex interplay between supply and demand forces organisations to embrace new business models built around knowledge; it forces them to become knowledge-based. The knowledge-based organisation is the organisation that optimises the application of knowledge to reach operational and strategic goals. It is about finding the most efficient, transparent and effective way of representing knowledge. It is about decreasing information flows and increasing knowledge flows. Neither the technology focus nor the tacit-explicit distinction suffices in helping organisations realise a knowledge-based paradigm.

By providing a framework in which organisations can align goals, assess knowledge and select appropriate knowledge solutions and representation formalisms, the functional view offers a promising alternative. And one that can be operationalised. During the last ten years, the functional approach has been successfully applied in various economic sectors—the cases mentioned above are just a few examples. The next step is to clarify the intricacies of the view in scientific publications, which in turn will help initiate its acceptance as a serious approach to handling organisational knowledge. Maybe then organisations can begin to move past their technology focus and toward being truly knowledge-based, which in turn will equate to better performance.

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# Reframing the Knowledge Debate, with a little help from the Greeks

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**Abstract:** Knowledge is a topic that covers many disciplines with writers attempting to formulate an understanding of it and its relevance to their field. Philosophical frameworks may offer a way to gain a deeper appreciation of its relevance to management and organisations, looking in particular at Socrates, Plato and Aristotle.

**Key Words:** philosophy, management, knowledge, organisations

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## 1. Introduction

There has been a plethora of writing in the field of knowledge management with a great deal of the literature focused in the area of how it might be applied in business. This paper considers two difficulties that may emerge from this. Firstly, there appears to be no firm convergence about what we mean when we talk about knowledge and, secondly, the constructs used by writers to talk about tacit and codified knowledge are less evident as a way of understanding knowledge in the philosophical writings here.

In order to move consideration of the area forward, it seems worthwhile at this juncture to take a fresh look at what the early thinkers in the arena of knowledge understand this to mean. What Socrates, Plato and Aristotle may offer is insight into how we could view knowledge within the current writing in this area. This paper looks at some current writing in this field, considers some of the literature on knowledge in Greek philosophy and attempts to draw some insight between these and present problems in the current writing.

## 2. The Current Position

A variety of writers describe knowledge in terms of assets, intellectual capital, knowledge work with each ascribing a different meaning to that. So that Fahey and Prusak (1998) call knowledge "what a knower knows", whilst Stewart (1997) refers to it as "one man's knowledge is another man's data".

Much of the current work in the area of knowledge has emerged from the initial work of Michael Polanyi. His seminal work "The Tacit Dimension" (1966) has paved the way for others to view knowledge in a compartmentalised way. In this work he attempts to encapsulate what he perceives as one of the dimensions of knowledge - namely its tacit quality (ibid). The core element of this is that "we can know more than we can tell" (ibid). The implication of this statement is that there are aspects of what we know that we cannot clearly enunciate. Other writers, including Nonaka and his work in knowledge cycles, have taken up this facet of knowledge in recent years. Nonaka (1991) has reiterated this distinction between tacit and explicit knowledge, saying, explicit knowledge is formal and easy to communicate, e.g. akin to instructions for the operation of a machine; whereas tacit is more difficult because it is harder to communicate, personal and difficult to formalise (ibid). His research, based on fieldwork in Japanese companies, has been used as a basis for arguing that these companies have a different perspective of organisations. He thinks that this affects how knowledge is created in organisations as he says it becomes a "way of creating a particular vision or ideal" (1991, p. 97).

Leonard (1998) also talks about knowledge, this time within an organisational context. She sees it as continually renewing, with the physical systems in an organisation retaining knowledge because they are encouraged by the managerial systems created, to assist

learning. These, in turn, are supported by values. Leonard (1998) talks about learning as the grounding for knowledge. This seems to support the distinctions made by Nonaka when he talks about tacit knowledge.

The traditional stance has been to progress through information to knowledge and finally wisdom. Davis & Botkin (1994) take a different approach, talking about knowledge as the application and productive use of information. This would suggest that there is an interaction between knowledge and information. This is echoed, although not directly, with Von Hippel's (1994) reference to "sticky information", which suggests that there is a correlation between the cost of information and the expertise required to obtain it and the amount of information required. It must be acknowledged that these writers approach this area from differing perspectives; however there appears to be an implicit acknowledgement of knowledge when Von Hippel talks about 'stickiness' and how this can be paralleled with knowledge. Whilst Davis & Botkin (1994) explicitly see knowledge in terms of information and its use by the individual, Von Hippel (1994) perceives degrees of information. In essence, the greater the degree of difficulty in accessing information, the more 'sticky' it becomes.

It is clear that there are a number of different views about what knowledge, both tacit and codified, is and its relationship with information. This presents difficulties for organisations as they are encouraged to manage an asset termed knowledge, whilst it is not always clear what is meant by the terminology. To adopt a philosophical stance may provide additional insight to aid organisations in making knowledge productive for them.

### 3. A Philosophical Approach

Epistemology is derived from the Greek word, episteme, meaning knowledge. This branch of philosophy is concerned with understanding the nature, limits, structure, origin and criteria of knowledge. The earliest contributors to this field are the Greek philosophers. This paper looks specifically at Socrates, Plato and Aristotle's writings to assess what contribution they may offer to current perspectives.

#### 3.1 Socrates

All that is known about Socrates' philosophy is derived from the writings of Plato. Socratic theory has largely been based on the

conception that knowledge is intertwined with a perception of the separateness of man's body and soul. This has led to a quite distinctive view of knowledge.

The role of a philosopher is centred around this concept of separateness. In his work, *The Phaedo*, Socrates attempts to address this, conceiving a philosopher as a "lover of wisdom". In order to be a philosopher, Socrates says he needs to separate the needs of his soul from that of his body – "whoever of us is prepared to think most fully and minutely of each object of his inquiry, in itself, will come closest to the knowledge of each" – 65e. He sees the logical conclusion of this as being – "knowledge is nowhere to be gained or else it is for the dead" – 66e, because it is only at death that the body and soul are separated. From this understanding of the role of a philosopher, there are two important aspects of the Socratic conception of knowledge. Firstly, the interrelationship between the body and soul and knowledge, which allows Socrates to develop a theory of Forms, and, secondly, the belief that knowledge is not acquired but recollected as it is innate to the individual.

The result of the interrelation between body and soul is that, according to Socrates "...we have got pieces of knowledge of all those things before birth... if having got them, we did not on each forget them, we must always be born knowing, and must continue to know throughout life: because this is knowing – to possess knowledge one has got something, and not to have lost it; or isn't loss of knowledge what we mean by forgetting" – 75d (*The Phaedo*). This means that the choice is that we were born with certain innate knowledge and we were later reminded of things that we'd already known – 76b (*The Phaedo*). The implication of this is that Socrates conceives knowledge to exist within the individual and any efforts to ascertain knowledge are bound up with a process of aiding an individual to recollect what is already within them.

This position is supported in another of Socrates' work, *The Meno*. As with the *Phaedo*, this work does not deal directly with knowledge, but contains indirect references to knowledge. Although the central theme of the book is concerned with trying to ascertain what constitutes virtue and whether it can be taught, knowledge is considered as a possible explanation of virtue. The idea that knowledge is innate is revisited as Socrates states that it is impossible for a man to inquire into what he

knows or doesn't know. He believes that man cannot inquire into what he knows because he knows it and he cannot inquire into that which he does not know because he doesn't know into what he should inquire. To illustrate this point he questions a slave boy in such a manner as to suggest that the answers the boy gives must have already existed within him and that it was only through careful questioning that this pre-existing knowledge was elicited.

Bound up with this idea that knowledge always exists internally to the individual is the belief that, according to Socrates, knowledge can be taught, but only in so far as it is done by prompting innate recollection. Thus, learning is actually nothing more than recollection of that which is already known. Consequently, a person does not acquire knowledge through learning; rather learning is a process of recollecting the knowledge that already exists in the person. This view is particularly clearly illustrated in *The Phaedo*. The essence of this is that "learning is actually nothing but recollection" – 72e. Socrates argument for this is that in order to be reminded of something, it must have been previously known. If knowledge is present in this way, it is recollection of what has previously been known.

In order to illuminate this point, Socrates attempts to describe how it is that we know what equality is. He asks what it is about the essence of knowing that something is equal that enables someone to say that two things are equal. We know of a thing that is equal. How did we get knowledge of this? If the senses are used to examine that which is the abstract concept of equal, then knowledge of equal must have existed before the senses (according to Socrates, before birth). He uses a similar illustration looking at the concept of good. If we know something is good and can compare other things with that by using terms such as "not as good/ worse/ better", then we must have some sense of what good is. Thus, in order to use our senses to be able to draw these comparisons, we must have known what was good before we had our senses.

### 3.2 Plato

Plato's influence in later philosophical thought has been written, in part, due to the formalisation of Socratic thought and his own development of this. Whilst his earlier dialogues reflect Socrates' views, his later works, in particular *The Republic*, reflect his

own thinking in terms of the role of the philosopher and knowledge.

Like Socrates, he was concerned with philosophy for the good of the soul and less in what we might conceive as its practical application. He is similar to Socrates in conceiving the separateness of the body and soul and appears to view the role of the philosopher in a similar light. In *The Republic*, he introduces these thoughts by examining the role of the philosopher, which he defines as "someone glad to sample every subject and eagerly sets about his lessons with an insatiable appetite" – 475c. With this base, he attempts to examine the distinction between belief and knowledge. His view is that knowledge is concerned with what he sees as reality and the realm of the real. Belief on the other hand is concerned more with the unreal and incomprehension.

This separation is most closely seen in what Plato describes as Forms. He sees a fundamental difference between mere opinion about the visible realm, what we sense in terms of real objects and his theory of Forms. Thus he is concerned with what justice might be, or to understand what a thing really is. What is in the arena of what we can sense is unstable, because what we physically sense might be wrong. Instead, with the Form, he believed that we could know this independently as it was not simply based on opinion, but also because it was possible to give an account of why the belief was true.

To try to illustrate this Plato relied heavily on allegory. In *The Republic*, he cites several of these, the most famous perhaps being that of the Cave. This describes a situation of a person, able to see shadows in a cave, as they are shackled to others. One person is subsequently unshackled, taken outside and above ground to the light. This is intended to exemplify both the role of the philosopher and their role towards other people. This person then returns to the cave to explain to those remaining what the shadows mean.

In essence, Plato is suggesting that at the lowest level of reality are shadows, pictures and other images, centred in conjecture and therefore highly unreliable. The physical realm also has ordinary physical objects and our perception of them provides the basis for belief. In the realm of the intellect are the simple Forms and systematic knowledge of

them. At the highest level are the significant Forms, or as Plato describes them, virtues, e.g. good (which Plato describes as the ultimate virtue). To apprehend these is through intuition; that we know what is good is by reason of the intellect, instead of apprehending this by sense. Another example of this would be in relation to justice, i.e. to know a just act, we must know what justice is abstractly, which exists separately from examples of just acts.

### 3.3 Aristotle

Differing greatly in approach and substance to both Plato and Socrates, Aristotle saw knowledge clearly focused in the realm of the world. He is also more closely aligned to current thought and practice in the scientific community as the logical, systematic approach he adopted appears to be more concerned with the practical use of knowledge. Where Plato and Aristotle concurred was in attempting to answer the question - what is the form that makes things what they are? However, they approached this question differently.

Aristotle's thinking commences from the standpoint that all knowledge begins with our knowing things about objects in the physical world. The result of this is that to discover principles and causes for things, it was necessary to conduct extensive observation. He believed that the world could be understood at a fundamental level through the detailed observation and cataloguing of phenomenon. Thus Aristotle was concerned with observing as many examples as possible and using these observations to derive underlying principles. In this way, he thought that reason could provide knowledge of ultimate truths.

Using this method, he sought to categorise knowledge. He was able to observe that certain things can be said to be true all the time. Thus he could say that certain objects, as he described them, are true all the time, e.g.  $1 + 1 = 2$ . He was therefore able to identify certain characteristics that these objects had, which was that they had certainty and precision. Other objects he considered did not fit into this category, e.g. human behaviour. In those circumstances he could say that the characteristics of this were probability and uncertainty. The importance of this is that Aristotle did not insist that certainty was always required.

Aristotle defines the difference as "we must be satisfied to indicate the truth with a rough and general sketch: when the subject and the basis

of a discussion consist of matters which hold good only as a general rule, but not always, the conclusions reached must be of the same order. For a well-schooled man is one who searches for that degree of precision in each kind of study which the nature of the subject at hand admits" (Ethics I.3).

Before Aristotle could answer the question – what is the form that makes things as they are – he tried to deal with - what is a thing. His answer was that the individual substance is primary. As well as being individual it is numerically one. Here Plato and Aristotle diverge because Aristotle stated that if this individual substance did not exist, then nothing else could. Plato thought that it was the form that gave the reality to everything else.

Once a definition has been given for what a thing is, then it is necessary to look at what makes it what it is. Here Aristotle thought that a thing had an essence, given in the definition of the thing. This definition that gives the thing essence has a characteristic format. The fundamental difference between Aristotle and Plato and Socrates was on this idea of separateness. Aristotle did not separate what is said of a thing from the thing itself, whereas for Plato Forms exist independently of the thing.

## 4. Problems and Possible Directions

There are a number of problems with what is being said by current writers in the area of knowledge and knowledge management. All appear to be concerned with the fundamental question – what are we talking about when we discuss knowledge? Looking at the specific difficulties these writers have, it is possible to pinpoint material difficulties that exist and also consider what contribution the work of the Greek philosophers may have to make in connection with this.

Firstly, there appears to be confusion between what is meant by knowledge, tacit and explicit, and information. This confusion manifests itself in the disparate definitions of these terms. When Polanyi (1966) talks about tacit knowledge, "knowing more than we can tell" he is implicitly suggesting that there are aspects that we as individuals cannot convey to others. The outcome of this is that there are difficulties inherent in the communication of tacit knowledge, but this could equally apply to all forms of knowledge, as there appears still to be confusion surrounding the terminology of knowledge itself. Nonaka (1991) has attempted to address this, saying that to

convert something from tacit to explicit knowledge requires a process of articulation. However if Polanyi's view is that there are certain things that we cannot articulate then Nonaka's construct of the knowledge spiral as a way of moving from tacit to explicit or vice versa lacks cogency. Nonaka (ibid) also says that a vision or ideal is sufficient to constitute knowledge as, he says, 'it is highly personal'. However organisations frequently attempt to verbally explain their mission or ethos in written form as described by Leonard (1998) in her example of the "HP Way" (a statement by Hewlett Packard to convey the ethos of the company to its employees). Where the boundary lies between what is meant by knowledge, tacit or codified, and information appears to be blurred with the example of Leonard (1998), particularly if information is considered to be data with meaning.

Linked to this confusion, there appears to be additional uncertainty among writers in how they define tacit and explicit knowledge. There appears to be no adequate description that distinguishes explicit knowledge from information. Nonaka's view is that explicit knowledge is easy to communicate. Davis and Botkin (1994) similarly describe this type of knowledge as 'formal, systematic, easily communicable, like formulae'. Taking these expressions in conjunction, it is evident that they could easily express a description of information and thus this only magnifies the difficulties in the distinction between information and codified knowledge. It also suggests that there is still no unified view of what knowledge really is and how it differs from information. Whilst there is no agreement on what constitutes knowledge, any attempt to manage it becomes increasingly difficult as we cannot manage what we cannot understand.

Looking at the philosophical position of Socrates to Aristotle, the first main distinction appears to be that these writers seem to have approached the area of knowledge from a different direction. They appear to have made no distinction between that which is tacit or explicit. There is no discussion of information or data. Socrates may be more closely linked with how Polanyi talks about knowledge in so far as they both appear to see that knowledge is something internal. The distinction between them appears to be that Socrates' approach implies that it is possible to discover that knowledge which is innate to the individual, perhaps by careful examination, allowing an individual to recollect what they already know. This does not sit entirely comfortably with

Polanyi, as his view would not always permit that which is internal to the individual to be made explicit. Aristotle represents a more closely aligned perspective with current writings, as he believes that general statements might be made from observation of the real world. In that case, he could be said to be more closely linked to writers such as Nonaka, who, although they make a distinction between tacit and codified knowledge, do allow for the possibility that one can be transformed into the other. However Aristotle differs in that he perceives such things as human behaviour as not being capable of certainty in terms of knowledge. This would suggest that there is a point at which observation of real world phenomena cannot allow a complete deduction to a theory particularly in the area of human behaviour.

With the standpoint of the Greek philosophers that there appears to be no distinction made about that which is tacit, codified or information, this might be both positive and negative. Whilst they do not distinguish these terms, they offer a different interpretation of what knowledge is. Importantly, they all appear to acknowledge that knowledge resides within the human. However, Socrates implies that effort should be directed to ways of eliciting what is internal and Aristotle suggests that sufficient observation offers a degree of certainty, albeit weak. In addition, by not defining knowledge in terms of what exists inside and outside the individual they are not faced with the difficulties that appear to be inherent in current writings where these boundaries are blurred.

Finally, in relation to tacit knowledge there are inherent difficulties in translating what we understand by knowledge into something meaningful for others. Nonaka talks about tacit knowledge as something that is hard to explain or communicate and Polanyi actually believes that there are things that we simply cannot communicate. The implication of these views is that it raises the issue of what place learning and experience have in the creation and transfer of knowledge and how, if at all, knowledge can be communicated. Within an organisational context, the work of Schein raises interesting issues for consideration in the field of knowledge. Schein's (1984) work relates to organisational culture but may have resonance for this area. Schein (1984) talks about organisational culture having levels, with values being the second level as they underpin the outward symbols of a culture. In the same way, instead of continuing the debate around

what constitutes knowledge, it may be appropriate to consider what factors such as an individual's own experience, learning and values have in transforming information into knowledge or being the essence of what constitutes knowledge. Leonard (1998) talks of organisations needing to continually innovate, destroying what has gone before and sees values and norms as the personality of an organisation. There seems every possibility that the same could be applicable at an individual level.

Although Socrates does not use the word tacit in his writings, both Plato and Socrates appear to be concerned with what is innate to the individual. It would appear that their conception, that by careful examination of the individual a person can recollect that which they already know, raises interesting issues touched on by Leonard and Schein and the role of values, culture and experience as having relevance for writers in the area of knowledge. Aristotle, despite adopting what would be considered a more traditional scientific approach, still highlights uncertainty in human behaviour, which would have implications for dealing with what writers describe as tacit knowledge. The key feature of all the writers is that they do not appear to make the same, possibly artificial, distinction between that which is tacit and that which is codified. Instead of adopting this construct they are much more concerned with aligning knowledge to the individual, describing its properties, its essence. In this regard, it is perhaps an erroneous approach to try to compartmentalise knowledge, but instead it would be more beneficial for organisations to see the individual as the knowledge base and use that as the starting point with knowledge. Using the approach adopted by Socrates, it is possible to acknowledge that efforts to manage knowledge are then more clearly directed at an individual level, as he would consider that knowledge resides in the individual rather than in terms of managing information as seems to be the current stance.

Thus, it is evident that people writing in the area of knowledge and knowledge management appear to have blurred the boundaries between knowledge, both tacit and explicit, and information. The potential impact of this is that for people to manage knowledge, they should be clear about its boundaries and its interaction with information and data. The evidence, particularly from the writers considered in this paper, does not appear to support that position. The outstanding feature

of the Greek philosophers is that they offer an approach that seeks to unify knowledge as a concept rather than break it down. By adopting this approach, there is a greater focus on the individual and their essence as the bearer of knowledge.

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# Management Consultancies and Technology Consultancies in a Converging Market: A Knowledge Management Perspective

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**Abstract:** This paper looks into the consultancy processes and professional practices of management consultants and of technology consultants from a knowledge management perspective.

The process of consultancy in both cases was characterised by the following categories drawn from the analysis of interviews: boundaries, actors, process and information. The findings for each type of consultancy were synthesized into two different narratives. Considerable differences in the way they operate were identified in terms of: the definition of the context of the problem and risk assessment; negotiation through the client system and the use of language and vocabulary in the consultancy process, leading to the development of different professional discourses and different approaches to the facilitation of organisational learning

**Keywords:** Consultancy processes; knowledge transfer; organisational learning; professional discourses; power; Grounded Theory; narratives

## 1. Introduction

Consultancies provide good examples of organisations whose core aim is to manage, trade and sell knowledge – but do all consultancies do so in similar ways?

In the last five years there has been convergence in the UK consultancy market between the offerings of management consultancies and technology consultancies (Block, 2000). The management consultancies formed from the Big 5 accountancy practices (PriceWaterhouseCoopers, KPMG, Arthur Andersen, Ernst and Young, and Deloitte and Touche), had, in the past, concentrated on medium to long-term projects, turning high level strategic visioning into achievable operational goals (typically two to five years for benefits realisation). They saw that systems integration could fit into their offering, and the lower profit per unit of work was more than offset by the volume of work undertaken.

Marshall McLuhan (1969) stated 'the medium is the message'; for electronic and mobile commerce, businesses turned to the medium experts (technologists) rather than the message experts (marketeers and management consultants) for advice. With technology underpinning modern businesses, the systems integrators were asked for more long-term strategic advice, as clients recognised benefits realisation did not just come with the delivery of a system. The larger, more successful of the integrators, such

as ICL, Logica, and Xansa (formerly FI Group), developed this offering and bought strategy-orientated technology consultancies (DMR, DDV, and Druid respectively), not least to counter the threat posed by the encroachment of the Big 5. The resulting homogenisation was accepted even by the management consultancy trade press, when, in 1998 technology firms were included for the first time in its annual survey figures (Abbott, 1998).

This paper is based on a study (Kirk, 2001) that started with an idea that, despite this convergence, there remained differences in approach between the two groups. General technology literature presupposes objective goals for major technology projects (Hoque, 2000) within predefined power frameworks, whereas general consultancy literature suggests a more subjective approach, with goals and success being negotiated concepts between consultant and client (Sadler, 1998). Initial interviews with both types of consultant and their clients had also suggested a difference between the two, perhaps in the type of work, or initial information gathering for that work.

## 2. Methodology

Grounded Theory (Glaser and Strauss, 1967) was adopted in this study, as a means to derive a framework from a qualitative study and from the analysis of data that was generated from a series of interviews.

Grounded Theory comprises explicit coding procedures, but also allows for theory development. It is to be used jointly with theoretical sampling, as a basis for collecting new data. Preliminary interviews provided some initial data for this study. Analysis of this data enabled the construction of an interview guide, which was used to generate the main data set that was then analysed.

There are four stages in Grounded Theory, and although they are listed here in a linear fashion, in practice, the process tends to be iterative (and on occasional iterations, non-sequential):

- the Constant Comparative Method of qualitative analysis: compare incidents, and apply them to categories (the open coding categories resulting from this stage are listed in Appendix 1);
- integrating categories and their properties (the axial coding categories that emerged in the study are listed in Appendix 2 and discussed in more detail in the next section);
- delimiting the theory;
- writing the theory.

Using semi-structured interview guides based around categories or themes derived from the preliminary work (through open and axial coding, Strauss and Corbin, 1990), a group of management and technology consultants, as well as some of their clients, industry analysts and recruiters, were interviewed, to show differences or similarities between the two groups.

This study used a multiple-role sampling strategy (see figure 1). This was a refined revisit to the former study strategy, again to enable data triangulation. The x-axis considered actors as either internal or external to the consulting process (again, these were clients and consultants), whereas the y-axis considered actors according to complexity of their perspective. Consultants involved with either one or other type of consultancy and external actors with a homogenous market overview (such as industry analysts and recruiters), were seen as having a single perspective. Actors with detailed experience of both types of consultancy, be that internal or external, were seen as having a dual perspective.

dual perspective	<b>Group Two</b> Consultants, who have worked for both technology and management consultancies, internal participants	<b>Group Three</b> Clients, external participants in the consultancy process, who have worked with technology and management consultancies
single perspective	<b>Group One</b> Technology consultants and management consultants, the internal participants	<b>Group Four</b> Non-participatory sources, industry analysts and recruiters, with a single, potentially objective, perspective, or market overview
	internal sources	external sources

**Figure 1:** Sampling strategy for interviewee selection

The broad categories of data presented in Appendix 2 remained the same throughout the study, although their properties were refined extensively. Finally, the findings for each type of consultancy were synthesized into two

different narratives (Czarniawska, 1998), representing the perspectives of management consultants and of technology consultants.

A narrative is more suitable for describing events in broader contexts (Czarniawska, 1998), as opposed to other presentation methods, such as a conditional path, which is useful for looking at events in specific situations (Strauss and Corbin, 1990). Given the range of contexts possible in consultancy situations, the narrative approach has been chosen for this study. The conceptualisation of the categories and their relationships to a narrative, or story line, provides the researcher with a foundation to construct a full descriptive narrative, or story, about the central phenomenon. This story may contain several scenarios, made up of causal conditions (events that lead to the occurrence of a phenomenon), phenomena and consequences. The phenomena will have a context, a specific set of properties/conditions along a dimensional range. In the scenario there will also be action/ interaction strategies to manage or respond to a phenomenon.

### 3. Analysis of results: a framework for the process of consultancy

#### 3.1 The main categories and their inter-relationships

The process of consultancy in both technology consultancies and management consultancies was characterised by the following categories drawn from the analysis:

- **boundaries**, related to the definition of the type of problem addressed by the consultancies, type of solutions,

boundaries for success and measures of success;

- **actors**, related to the definition of the nature of the participants and of their roles and to the delimitation of competencies in the consultancy process;
- **process**, related to the determination of the nature of the consultancy process (whether it is prescriptive or emergent, for example), of the ownership of the problem and to the sources of knowledge about the process;
- **information**, related to the type of information that is used throughout the process, its sources, the degree of complexity, and its elicitation methods.

The broad categories of data that emerged have remained the same throughout the study, although their properties were refined extensively. Appendix 2 describes in detail the properties and dimensions of each category and discusses them against previous work on the nature of consultancy.

Figure 2 aims at explaining, not only the relationship of the categories, but also how these categories are involved in the generic process of consultation, whether by a technology or a management consultant. Figure 2 has been drawn in a sequential fashion, starting with 'Consultant' and using arrows to move from one actor or object to another, via an action. In practice the procedure is iterative, but a sequential notation is used here to establish strong relationships.

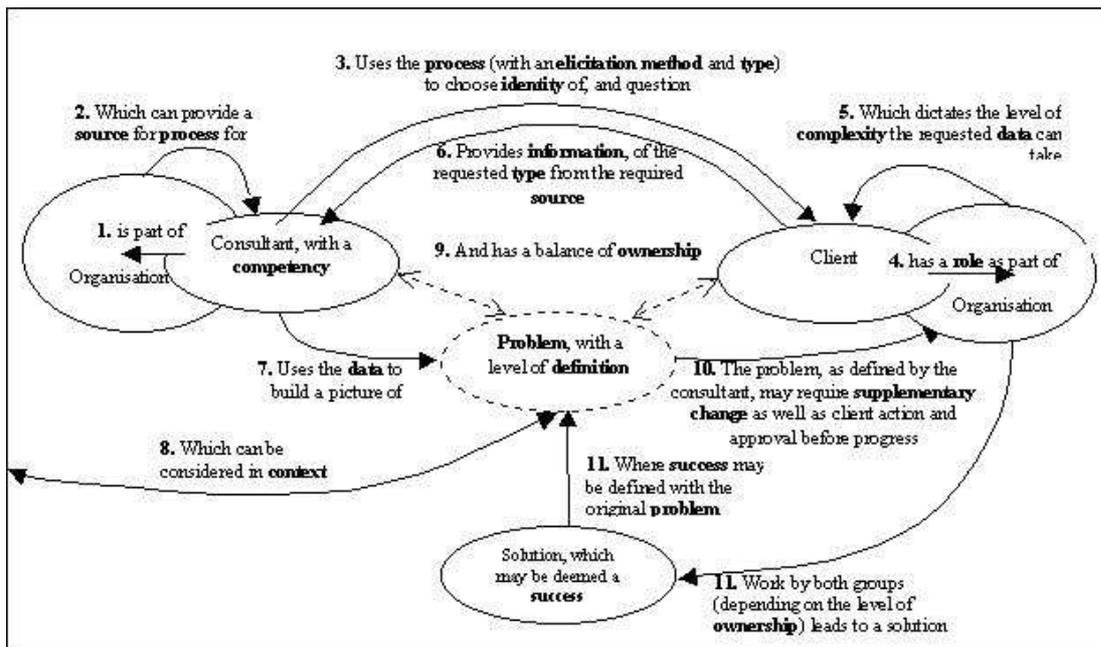


Figure 1. Relating the categories to consultation procedure and to each other

The process hinges on the consultant-client relationship and the questioning of the latter by the former to retrieve **information**. This questioning, or **process** is heavily dependent on the **competency** of the consultant and espoused paradigm for consultancy, to the extent that it shapes the **identity** of the client that is used as a source, the **elicitation method**, and the **type** of information requested and its **source**. However, prior to this interaction, it must be remembered that both parties are individuals within their respective organisations, and those organisations can influence the procedure. For the consultant, the organisation may provide a **process source** (or the consultant may be the source); for the client, the organisation dictates the **role** of that individual, and may also dictate the level of **complexity** of the information provided. The client then provides the requested type of information or information to the consultant from the required source. It is this information that allows the consultant to build a picture of the **problem**, and its **definition** is dependent on the initial information provided by the client. This process is repeated by the consultant if there is a lack of definition regarding the problem. Such probing can also define the **context** of the problem, if the consultant so chooses or if the processes used by the consultancy organisation require it. This process of building a picture of the problem also entails negotiating the **ownership** of the problem, which can lie towards the client or the consultant, or between the two. Once there is a defined problem, the consultant can then suggest ways to move towards a solution. This solution may require some **supplementary change** by the client before it is attainable. Irrespective of the supplementary change, there will be a need for approval and action by the client before a solution can be achieved. The level of client intervention is dependent on the **ownership** of the problem, but some action by both client and consultant enables work towards a solution. Depending on the definition, this solution may be considered a **success**. This definition of success will be part of the original **problem definition**.

Despite the fact that both types of consultancy could be characterised through a generic framework based upon the four categories that were identified and the presence of some similarities, the results of the study showed that there were also considerable differences in the way they operate.

Both groups concentrated on building a picture, using uncoded, qualitative interview data from numerous sources. Although both groups recognise the subjective nature of reality, the technology consultants tended to be focussed on achieving a single objective view of the problem situation, whereas the management consultants appeared to focus on negotiating potential views of the problem and especially the process that was to be undertaken. If we consider the subjective/objective ontological axis as a sliding scale, the management consultants appeared to foster a more 'pluralist' view of the consultancy problems and processes than the technology consultants.

By using the interview data, in the form of the statements, to link the categories, we can build the following narratives to represent the perspectives of both groups of consultants.

### 3.2 Constructing a narrative for the management consultant

"We start with the original drivers, which are broad, 'get closer to the customer', and pin it down to some performance metrics.". This 'definition' statement was common for both groups, but management consultants were keen that "You have to understand their [the client's] appetite for change" with client actors playing an important part in this process, since "Details of who sponsors the project is absolutely critical." The emphasis is on "due diligence, and risk assessment." This softer information had to be considered within the organisational context, in that they would "assess the board, assess the sponsors, who are in favour, who are against, can we win them round?" "Undertake a stakeholder analysis to see if we can sideline any people who threaten the project." Here the process is explicitly named: "There are generic processes; we first assess the readiness for change at board level, we then form focus groups to disseminate what the new way of working will mean, we then assess the organisation's readiness for change at other levels". "This shows either the homogeneity, or stratification, of belief throughout the organisation." From this description of the process, it appears a structured approach, but it is interesting that none of the steps are about gathering information relating to CRM (which was the aim of the project these last statements relate to), rather, the focus is on generic information about change, and the client referred to is a powerful client rather than

an information client. "We use qualitative analysis for testing the higher levels in the organisation, and quantitative for the final [lower level] change audit". Again there is explicit naming of activities and approaches and constant use of the personal plural, 'we'. This is part of a process "These are briefing documents [for the rest of the project], with the way they work, project history, how they fit in with respect to their industry."

The core categories can be seen as the **process type** and **process source**, since the narrative depicts the management consultants using vocabulary from the codified process source, to explain the management of a prescriptive process.

### 3.3 Constructing a narrative for the technology consultant

"Clients usually lack either skills or time." "You have to get the client to understand what they are trying to do", "they would have a technical person and I would take a technical person, and we discuss it that way." This suggests an approach to consulting that is biased towards the 'technical expert' role. The way to gathering information is to "create briefing materials, so the client understands the context, and topic checklist to cover," "the most productive way is to question them about the nature of the problem." This shows the emphasis on information, as compared with the concentration on role and power by the management consultants. "Consultancy is about politics and people management," and "you need executive levels of support," suggest an awareness of power boundaries; "The senior exec that sponsors the project decides who is involved full stop", but also that these power boundaries remain unchallenged. Gathering softer information is done "By devious means," "it's about knowing what's going on" (focus on using a simple vocabulary to describe situations), "it's a semi-formal process", "flexibility is the key, formal methodologies are too rigid". The following is more about the interpretation of concrete signs that are indicative of a poor political situation; "Are they quibbling over 1K on a bill? Is there a definite strategic vision to the project? That's when you know [the project is likely to fail]." The whole information gathering process revolves around interacting with clients, and the roles are understood "economic buyers, recommenders [sic], etc.", but "the most difficult thing is getting access to the right people." The concentration on a single, objective worldview is reflected by the statement, "It is about trying to understand the

true situation behind the appearance." This worldview is closely tied to the technology consultants' own immediate experience, which he or she regards as complex and in some ways indefinable. This leads to a distrust of seemingly more simplistic information gathering methods, "Quantitative data analysis is too broad brush for the sort of work we do", "questionnaires tell you nothing."

The core categories here are **problem definition** and **process type**: all aspects of the narrative are focused around the definition and then emergent management process of the problem situation.

## 4. Converging market, different offerings

As demonstrated by the two narratives that represent the perspectives of both groups of consultants, despite the presence of some similarities in the general process of consultancy that is undertaken by both groups, there were also considerable differences in the way they operate. These similarities and differences are discussed in terms of:

- the context of the problem and risk assessment;
- negotiation through the client system: change, power and transfer of knowledge;
- the use of language and vocabulary in the consultancy process, leading to the development of different professional discourses and different approaches to the facilitation of organisational learning.

The following sections discuss these points in more detail.

### 4.1 Problem context and risk assessment

Whilst both groups undertake projects at a 'blue sky' stage, helping the client to define the project and the metrics for success of that project, the management consultancies have formalised and codified their risk assessment processes with respect to individuals, power and politics. This analysis helps to define the project, its context and its boundaries (Checkland and Scholes, 1999). The technology consultants also undertake stakeholder analysis, but the process seems to remain internal to the consultant and appears, therefore, to be circumscribed to specific areas of intervention of each consultant and to remain within the knowledge repertoire of each individual consultant. It does not appear to be documented and explicitly codified, which

raises questions on how learning around these issues after the event occurs.

Both groups appear to undertake what Schein (1985) refers to as 'process consulting'. Neither group is solely brought in as an expert resource (French and Bell, 1984), although the technology consultants put themselves closer to this role than the management consultants.

The technology consultants bring pre-understanding (Argyris, 1990) to situations that is based on their past professional background, but perhaps because of this tend to do less scouting (Kolb, Rubin and McIntyre, 1979) or risk assessment. They tend not to focus in considering their own position in the situation, and view the problem as isolated, lacking the extra level of reflection that Checkland and Scholes (1990) deem necessary to define context.

The management consultants attempt to define the context for the problem, and seek to define boundaries for the project, separate from the organisational boundaries, and use the influence of powerful actors within the client to aid them in this process. This risk assessment in its broadest sense, constantly considering people, power and their alignment, continues throughout the course of the project.

Context is hugely important, since it is an explicit negotiation of power, in both senses of the word. The technology consultants, by their lesser emphasis on context definition, appear to foster a tacit acceptance of client power structures.

Another important distinction lies in how contradictory information is managed. The technology consultants were less willing to consider contradictory information and present it to their client, whereas the management consultants were more comfortable in their attitude towards it. This can be interpreted in two ways.

Firstly, the Burrell and Morgan (1979) paradigms can be considered as sliding scales rather than four distinct groups, with the technology consultants, although accepting of the pluralist nature of social reality, still having a greater affinity with the functional paradigm in their modes of organisational intervention, more so at least than the management consultants. This could have roots in the historical background of the two types of consultancy, with the focus of technology consultancy lying in the delivery of precise

solutions, often in the shape of a computer based system.

Secondly, we can consider the nature of the client-consultant relationship. Harris (1973) refers to child-child, parent-child and parent-parent transactions in social situations. An acceptance of contradiction and complexity in a relationship (here between consultant and client), suggests that the relationship between client-consultant, as well as their perceptions of the problem situation, may be perceived as evolving and negotiated throughout the process, whereas a view of the process of consultancy as the provision of a solution to a problem, as traditionally inherent to technology consultancies, may lead to (apparently) simpler relationships that are based on demand and satisfaction. The management consultants, with their emphasis on power and negotiation, their focus on creating an organisational discourse, and the resultant shared responsibility, have a dialogue that may allow them to explain and handle the contradictions more easily.

#### **4.2 Negotiating through the client system: change, power and transfer of knowledge**

Both groups tied their definition of success to client definition, but also to the amount of client involvement in definition, again suggesting both groups are, at some point, involved in process consultation (Schein, 1985). This view is reinforced by the belief of both groups that they are involved in work where managing change is the most important element of the work.

The two groups had different competencies, with the management consultant placing emphasis on organisational knowledge, and the technology consultants erring towards utilising specialist knowledge rather than passing it on. According to the model proposed by Schein (1985), this is a significant differentiator, since by his criteria, the management consultants remain in the 'process consultation' mould, but the technology consultants practise is indicative of the 'doctor-patient' or 'technical expert' role.

An interesting dimension in discussing this issues lies in the career background of the consultants that were interviewed. Client and recruiter interviews suggested that the technology consultants tended to come from a background of specialised professional practitioner experience, often started in industry, rather than the 'career consultant'

that typified staff from the Big 5. The continuing survival of the technology consultant was due to some inherent skill built on their professional experience, meaning that the organisation alone was not enough to make the employee a technology consultant.

The different career background of the two types of consultant could suggest that the basis for power, in each case, is built in a different way – the technology consultant relying on expert knowledge and the management consultant on organisational intervention and negotiation skills.

Results from this study confirmed the technology/professional and management/career consultant split, with one notable exception, Interviewee A, who had been recruited to a Big 5 practice from a technology consultancy. Recruitment for the Big 5 has previously taken place essentially from other Big 5 practices, or from other organisations at a very junior or very senior level (Interviewee L, recruitment consultant). The appointment of an intermediate level consultant from a technology firm (such as Interviewee A), with no client following, would have been very unlikely a few years ago (Interviewee L, recruitment consultant), suggesting at least a recognition of convergence and a tacit acceptance that other types of consultants, can fit with management consultant processes and language.

Further differences emerge when considering the Lippit and Lippit (1984) client system. The technology consultants concentrated heavily on the target (those that are the focus of process) and benefit (those who will benefit from the efforts of others) clients, whilst the management consultants focused their efforts on leverage (those who can make or break the process) clients, almost to the exclusion of other parties. This is an important difference, since by courting powerful individuals in the client organisation the management consultants are more able to affect change. The concentration on benefit and target clients by the technology consultants amounts to an avoidance of leverage clients, which in itself is tacit acceptance of the client organisation power structures. Again, this puts the management consultants in the change pole and the technology consultants in the order pole in the Hirschheim and Klein (1989) model of organisational intervention (based on Burrell and Morgan, 1979).

The management consultants were far more prescriptive in their processes than the technology consultants. For the technology consultants, this emergent approach (where the process is driven by mental checklists or the memory of a similar project), along with the pre-understanding in defining the problem provided by their original professional background, suggested that the individual consultant is the main owner of the process. For the management consultants, the process is more driven by their organisation, in the form of process literature and models that are deployed.

If we refer to the i-space model by Boisot (1998) the technology consultant approach (especially in the areas of risk assessment and client negotiation) appears to be working closer to the non-codified, undiffused, and concrete information (i.e., specific to particular situations) axis. The management consultant approach is codified, diffused throughout the organisation, and abstract (in the sense of being led by processes that are generally applicable across different projects).

These different processes of intervention in the organisation and of negotiation within the client system lead to the creation of different organisational locales, as arenas (Strauss et al., 1981) for the consultancy process.

The management consultancy approach, whose focus is on process, tends to aim at developing an organisation wide arena, where the collation and distribution of client project information is centrally controlled and there is an attempt to generate an organisationally accepted view of what the project is and where it is going, through the creation of different focus groups (smaller localised arenas) across the organisation that are dependent of the control of the centre.

The technology consultancy, whose focus is on the problem definition, tends to focus, once the problem is defined, on specialist areas that address the different components of the problem and form specific arenas where knowledge seems to be contained and there appears to be a more limited integration of information and process and cross-fertilization of knowledge across the various arenas.

The way these arenas are formed and function is further reinforced by the role of language and the development of interpretative repertoires, as discussed in the following section.

### 4.3 Language, discourse and organisational learning

The above sections raise issues of knowledge management within the two different modes of intervention that seem to characterise the two types of consultancy. Language and discourse seem to have an important role in the process of knowledge transfer and approaches to organisational learning.

The codification (Boisot, 1998) of the risk assessment process by the management consultants encourages the development of explicit naming and labelling, so that the group has a sophisticated shared vocabulary with which to discuss and dissect client situations (*ex: "we first assess the readiness for change at board level, we then form focus groups to disseminate what the new way of working will mean, we then assess the organisation's readiness for change at other levels."*). *"This shows either the homogeneity, or stratification, of belief throughout the organisation"*(Interviewee C, management consultant).

This vocabulary is incorporated in a discourse, composed of multiple constructions, each describing individual dimensions of a situation. The common organisational vocabulary lets management consultants describe their tasks in a way that allows definition, understanding, and abstraction, which makes possible their explanation to an individual who has not experienced that situation. This discourse could be therefore seen as serving to aid socialisation (Chomsky, 1986) and learning within their organisations and amongst client organisations, and hence support knowledge management practices in the consultancy process (Nonaka and Konno, 1998).

The discourse of the technology consultants was based upon single phrases that were used to cover very complex situations (*ex: "it's about knowing what's going on"*, Interviewee F, management consultant), reflecting the tacitness of the understanding of this situation by the individual consultant. This discourse did not appear to be immediately geared towards supporting group sharing or learning both within the consulting organisation and between the consultancy and its clients. Most of the stakeholder analysis and risk assessment that was also carried out by the technology consultant appeared to remain bounded to the specific areas of intervention of each individual consultant and remained largely tacit. This may relate to the traditional career background of the technologist as a subject expert focused

on specific areas of intervention, hence possibly more individually or small team oriented. However, whether this completely undermines organisational learning can be questionable.

What seems clearer is that there are different organisational practices amongst the two groups in relationship to knowledge sharing and organisational learning and that the development of professional discourses plays an important role in that.

Another view on this issue relates to how power relations can be reproduced in different ways through discourses (Foucault, 1971, 1972; Hackley, 2000). The focus on the development of a shared discourse (Strauss et al., 1981) and a shared interpretative repertoire (Hackley, 2000) may be a vehicle for reproducing ways to control events and situations, of establishing *'the right way to do things'*. This theme is explored by Hackley (2000: 246) in the context of another type of knowledge intensive organisation, the advertising agency: *"Assimilate the right discourses in the right way (such as the 'corporate way' or the 'strategic imperative') and a credible professional identity could be constructed through momentary authoritative expressions of them"*.

We propose that an important way to **manage the knowledge base within consultancy organisations**, involves developing **organisational vocabularies and professional discourses** (Strauss et al. 1981) supported by **interpretative repertoires** (Hackley, 2000) that are shared within the consultancy and with the client organisations. The representatives of each type of consultancy in this study seem to have different practices in developing and, most of all, in situating their discourses in the undertaking of the process of consultancy.

Whereas the management consultants that took part in this study referred to the explicit development of these discourses as an integral part of the consultancy process, aiming at the use of a common language as a vehicle for generating common understandings of the process with the client system, the technology consultants seemed to focus on problem definition and problem boundaries and to foster a more tacitly oriented view of the process and of the client system that is represented through a simpler vocabulary.

## 5. Conclusion

This study had a focus on finding out whether there are process differences between the professional practices of management consultants and technology consultants in a converging market.

Analysis has shown that despite similarities that could be represented in a generic model for consultancy, there were also significant differences between the two groups of consultants. Whilst both undertake similar work (undefined 'blue sky' projects) and use similar techniques to ensure success (sharing ownership with the client with varying degrees), the management consultants have formalised and codified their risk assessment processes with respect to individuals, power negotiation and politics. This analysis, and subsequent power mapping, gives the management consultants greater confidence when trying to leverage the client into accepting change. Their approach is oriented towards defining the process of consultancy itself and negotiating its acceptance, by courting powerful stakeholders (leverage clients) that may influence the results of the project, constantly considering people, power, and their alignment.

The technology consultants also undertake stakeholder analysis, but the process is an internal one by the consultant. This localises the analysis to specific areas of the consulting organisation and the resulting knowledge appears largely not formally documented. Their approach is oriented towards defining the problem to be addressed and its boundaries. The existence of key stakeholders is acknowledged, but there is no attempt to influence their power basis. Instead, they appear to concentrate on target and benefit clients whose role is focused on information provision.

These different processes of intervention in the organisation and of negotiation within the client system lead to the creation of different organisational locales, as arenas (Strauss et al., 1981) for the consultancy process.

Language, through the development of professional discourses, appears to play an important role in the management of the knowledge base regarding projects and in the enabling of organisational learning within consultancy organisations. The management consultants and technology consultants have different practices regarding the development

of these discourses and in situating them in the process of consultancy.

The situation of these discourses in '*the play between powers*' (Alvesson and Skoldberg, 2000, p.229), within the consultancy process, leads to different patterns of negotiation through the client system. These different processes of negotiation relate in turn to different understandings of the nature of the consultancy process and of the rules that guide it and, ultimately, to the creation of different organisational locales, as arenas (Strauss et al., 1981) for the consultancy process.

These different locales or arenas can coexist in the same organisation and in the same consultancy project, without necessarily undermining each other or clashing with each other, as exemplified by the coexistence of different types of consultancies and consultants within large projects, where the various professional groups claim expertise in different areas of concern.

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## APPENDIX 1

### Open coding categories

Independence (clarity of thought), dimensions:  
High independence, high value, high creativity, to low independence, low value, low creativity

Independence (difficulty to work with), dimensions:

High independence, high degree of cultural change/low culture fit, to low independence, high degree of cultural fit/low degree of culture change

Cultural fit /integration, dimensions:

High to Low

Type of problem, dimensions:

Define, or undefined

Type of behaviour approaching that problem, dimensions:

Proscriptive model, to emergent model

Awareness of process, dimensions:

Awareness of use of proscriptive model, or no awareness

Explicit stating/coding of process, dimensions:

Stated/coded, to unstated/uncoded

Type of solution/extent of solution, dimensions:

Tightly defined solution, to lack of definition, high potential degree of change

Ownership of problem, dimensions:

Consultant, to client

Process, dimensions:

Technical expert, consultant ownership, to organisational learning, dual ownership

Extent of change/uncertainty, dimensions:

Tightly defined solution, to lack of definition, high potential degree of change

Boundaries for success, dimensions:

Tightly defined solution, to lack of definition, high potential degree of change

Measures of success, dimensions:

Tightly defined solution: solution with minimal cultural upheaval/change, to lack of definition: solution, with the process of discovery and reason for a solution

## APPENDIX 2

### Axial categories

#### Category: Boundaries

Subcategories:

*Problem*. Dimensions: defined or undefined

Are projects (pre)defined mainly by the client, prior to the consultants starting, or by the consultants on entry, or as part of the entry process? This category is similar to the boundary negotiation for different types of consultancy proposed by Schein (1985), where a problem can be defined (as occurs in the 'purchase of expertise' model of consultancy) and

undefined (as occurs in the 'process consultation' model). These are two (extremes) of the three models suggested by Schein, the third, 'doctor-patient', lying somewhere between the first two.

Defined, sample statement: "*Sometimes [the client] doesn't get you involved until the work is commissioned*" (interviewee G, technology consultant)

Undefined, sample statement: "*Start with the original drivers, which are broad (eg 'get closer to the customers'), then transform that into some SMART deliverables,*" (interviewee C, management consultant)

*Context.* Dimensions: attempt to define or do not attempt to define

Does the consultant attempt to define the context of the problem, and the political or sociological settings for it, or does he/she tacitly accept the client context? Hirschheim and Klein (1989) suggest the radical humanist and critical theorist roles for those consultants who do not tacitly accept the client boundaries, and the interpretative and functionalist for those consultants who do. This category also had some relation to the work of Checkland and Scholes (1990), with their emphasis on project context and boundary. As discussed previously, Kolb, Rubin and McIntyre (1979) suggest all consultancies have certain elements, 'scouting' being one of these. Did both types of consultancy undertake the same amount of 'scouting' to define a situation?

Attempt to define, sample statement: "*Have to understand their appetite for change and set that against their level of ambition.*" (Interviewee C, management consultant)

Don't attempt to define, sample statement: "*At [technology consultancy] they are keener to get on and do the deal, they are more sales led. At [management consultancy] they are hot on making sure the deal is well crafted*" (interviewee A, technology turned management consultant)

*Success.* Dimensions: systems-oriented or change-oriented

This category aims to emphasise whether the measures of success are based around the technology (a

system has been delivered, it works, this is the saving), or based around the original need that led to the solution. Questions were directed at interviewees in an area of consultancy (Customer Relationship Management (CRM) and eCRM) that *could* lead to technological solutions, but need not necessarily do so. How did the consultant recognise how the goals were defined? Change-oriented consultancy suggests more complexity, and subjectivity. The most subjective stance is that what is successful is what is successful for the client. The most objective is systems implementation orientated. Was there a link between a lack of client definition, and systems implementation for the technology consultants? The category is an extension of the 'task' and 'responsibility' areas for the types of consultancy proposed by Schein (1985).

Systems-oriented sample statement: "*What are you there for? Is it a new product for existing technology? A new product with new technology, a new product because of new technology, or is there technology in place that is suitable?*" (Interviewee G, technology consultant)

Change-oriented sample statement: "*any consultancy work is mostly about change management, and the issues surrounding this area. Whatever you are doing you have to keep this in mind*" (interviewee E, management consultant)

*Supplementary change for project delivery.* Dimensions: included in project remit, or excluded from project remit.

This is linked to success, and the definition of the project. Is the change necessary for delivery and benefits realisation, intrinsic to the project for both groups of consultants? This category is an amalgamation of themes, again from Hirschheim and Klein (1989), with the category extremes taken from their desire for radical change/ desire for order and regulation axis, but it also draws on the work of Schein (1985), and his models of consultancy. Schein suggests task boundaries as specific or resolution and learning-orientated. A correlation between resolution/learning

orientation, and radical change, and also between project specific work, and order and regulation was identified during the interviews. Both consultant groups are engaged in work that *could* lead to ISD projects; does either group define the task solely according to the system task?

Included in project remit, sample statement: *"The change isn't always recognised right at the start, whatever happens, you have to identify the organisational change requirements, and decide who is going to deal with what"* (interviewee F, technology consultant)

Excluded from project remit, sample statement: *"if you need change, you need a change management team in the client as well"* (interviewee A, management consultant)

### Category: Actors

#### Subcategories

*Consultant competency.* Dimensions: knowledge orientated or transfer of knowledge orientated

Does the subject response indicate they are holders of specialist knowledge, or geared towards organisational learning? This is a straightforward comparison to Schein's models of consulting (1985).

Knowledge orientated, sample statement: *"With any SI, it is straightforward technical expertise/expert resource"* (interviewee A, technology turned management consultant)

Transfer of knowledge orientated, sample statement: *"Also look at other significant change projects in that business, see where the project is or has been hurting, how it has been happening, and key people who have already learnt lessons from working in that area, bring them on or learn from them"* (interviewee A, technology turned management consultant)

*Client identity.* Dimensions, target client, or leverage client

The aim was to see if interviewees made a distinction between the different types of client, and to see if either had a bias towards which they gained information from. These correspond to work by Lippit and Lippit (1984), and the different actors in a client system. The author felt the two most relevant roles

are target client and leverage client, since a bias towards dealing with the target client is more politically naïve than concentration on the leverage client.

Target client, sample statement: *"You expect a single sponsor or owner, and if not there is a problem"* (interviewee F, technology consultant)

Leverage client, sample statement: *"Need to understand the roles, economic buyers, recommenders, stakeholder analysis, different roles"* (interviewee F, technology consultant)

*Client role.* Dimensions: informative or powerful

When the consultant talked of clients, how did they describe them? Did they distinguish between the two roles, and whom did they try to deal with? This is different from the client identity, since both client roles can be found in each identity. This category also considers the work by Lippit and Lippit (1984), but in the context of work by Burrell and Morgan, in that to affect radical change, there must be the involvement of powerful actors, as opposed to informative actors who would merely aid work within existing boundaries.

Informative, sample statement: *"Need to find trusted sources, not higher up individuals, and then try and validate or verify that data"* (interviewee B, management consultant)

Powerful, sample statement: *"Then see if we are able to sideline opposition, or if we can't, we get that person involved, try and present the business case to them, essentially give them special attention to win them round"* (interviewee C, management consultant)

### Category: Process

#### Subcategory

*Process type.* Dimensions: prescriptive or emergent

Was either group more prescriptive, and if so, how so, and in what area of information gathering? Did this seem to make a difference? This category is taken, indirectly, from the work of Boisot (1998), and is connected to the *codified/uncodified information* subcategory. If the knowledge about process lies with the organisation, does

this necessarily make the process more prescriptive? If the process is 'owned' by the consultant, does it appear more emergent?

Prescriptive, sample statement: *"There is a generic process in which we look at what needs to be achieved and what tasks are required to achieve that, inputs and outputs, where the output could be creating a mindset in a client group"* (interviewee C, management consultant)

Emergent, sample statement: *"There are too many things that depend on the culture of the organisation for it ever to be prescriptive"* (interviewee G, technology consultant)

*Ownership.* Dimensions: consultant-owned or client-shared

Was there a bias towards more consultant owned projects for the technologists? This category is taken from work by Schein (1985).

Consultant-owned, sample statement: *"The difficult thing is getting to speak to the right people for the right amount of time"* (interviewee G, technology consultant)

Client-shared, sample statement: *"All successful projects tend to be joint efforts between the consultant and client. You need to work together on these things"* (interviewee F, technology consultant)

*Process source.* Dimensions: codified or uncoded

What guides the process method? Is it written down, or is it internalised? This category is taken from the work of Boisot (1998). Where does the knowledge about process lie, who is the owner? Is it codified, and 'owned' by the organisation, or is it uncoded, and 'owned' by the consultant.

Codified, sample statement: *"For predefined sets of work you tend to use frameworks, balanced scorecard and the like, with clients too, run through models with them, so they can see the value"* (interviewee A, technology turned management consultant)

Uncodified, sample statement: *"It is a semi formal process, yes it is formal but it is internalised, so that it becomes natural*

*without checking boxes, but yes, it must be done"* (interviewee B, management consultant)

## Category: Information

Subcategory

*Source.* Dimensions: codified or uncoded

What type of information is gathered, and where is it gathered from? This category is similar to the subcategory of *process source*, again based on the work of Boisot (1998), but this time applied to the knowledge of the client organisation. Is there a concentration on one or other type of information? Where does the knowledge about client organisation lie, and who is the owner? Is it codified, and 'owned' by the client organisation, or is it uncoded, and 'owned' by the client employees.

Codified, sample statement: *"[When you start], any work done by any other consultancy is helpful, even if apparently unrelated"* (interviewee C, management consultant)

Uncodified, sample statement: *"you don't necessarily know what you need or whether another person already has it, [until you speak to them]. Each project depends on the issues associated with it. The atmosphere of your data gathering is very different for a [sic] [each]project, which may cause downsizing by 50%"* (interviewee G, technology consultant)

*Type.* Dimensions: objective or subjective

Given that the questions revolve around information gathering, is there any difference in how the two groups treat, or concentrate on, different types or sources? This category corresponds to work by Burrell and Morgan (1979), given the objective/subjective axis to their model, but here it is applied to information. The application, as with source, depends on ownership of information, but the favouring of one or other of the information types suggest a judgment on the part of the consultant, that corresponds directly to either the objective or subjective end of the Burrell and Morgan axis.

Objective, sample statement: *"Difficult to understand the real, true situation*

*behind the appearance*" (interviewee E, management consultant)

Subjective, sample statement: "*Where the organisation believes it is, as opposed to where it actually is*" (interviewee E, management consultant)

*Complexity*. Dimensions: complementary or contradictory

How do the different groups treat contradictory information? How do they cope with it? Do they treat it differently? The ability to cope with contradictory information is indicative of complex and mature approach. The two extremes relate the consultant-client relationship to the transactional analysis parent-child or parent-parent relationships, the former, simplistic, with black and white definition, the latter, complex, with room for grey areas. There is also the influence of the Burrell and Morgan (1979) objective/ subjective axis, with the concentration on complementary information suggesting a simplistic approach favouring a single 'organisational' viewpoint. The contradictory information suggests a more pluralistic method, taking account of the different actors that make up the client.

Contradictory, sample statement: "*it will show a lack of homogeneity of belief*

*through the organisation, perhaps some stratification*" (interviewee C, management consultant)

Complementary, sample statement: "*Look at both sources, which is the most reliable? Have to present both sides to the sponsor, but you don't want that, its better to have a single argument*" (interviewee G, technology consultant)

*Elicitation method*. Dimensions: qualitative or quantitative

Do the different groups favour, or concentrate on, different methods to elicit this information? Kuhn (1961) suggests the quantitative approach favours a positivist paradigm. Does either group favour this paradigm, or is there more of a pluralist, qualitative paradigm?

Qualitative, sample statement: "*No questionnaires or quantitative analysis, as this is too broad brush for the sort of work that we do*" (interviewee D, technology consultant)

Quantitative, sample statement: "*look at analysis of existing customer data, have they got that customer data, what is the business problem, who are the customers, that's how to work it out*" (interviewee F, technology consultant)

# Right Questions to Capture Knowledge

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**Abstract.** Existing tools that are used to support the process of transferring tacit knowledge into explicit knowledge do not support the affection of individuals and their knowledge, but rather data and information processing. A more personalised view of knowledge is required, and a toolbox has been constructed in order to increase the individual's capacity to describe his/her own situation within organisations. This is assumed to motivate the person to contribute with knowledge. An empirical investigation of a prototypical nature has been conducted. The empirical results are positive for eliciting knowledge.

**Keywords:** Knowledge Management, Knowledge Transfer, Motivation, Holism, Knowledge Reuse.

## 1. Introduction

It is argued that our society is highly focused on immaterial concepts such as ideas, information, and human relations (Castells 2000; Kelly 1998; Lyttkens 2001). This focus puts Knowledge Management (KM) into a totally new position within an organisation. A common statement is that knowledge is looked upon as the most important resource. Organisations are aware of the competitive advantage in transforming individuals' tacit knowledge into well-structured explicit knowledge to be reused. Different technological tools, like applications based on advanced databases, the Internet, groupware technologies, are developed to support this transmission process. In general, knowledge is extracted from the person who developed it, thereafter made independent of that person, and reused for various purposes (Hansen et al. 1999). The primary purpose is to transform tacit knowledge into storable explicit knowledge.

However, it is difficult to capture knowledge as symbolic descriptions (Garavelli et al. 2002), and many of the solutions support a rather static or technological view. There is a dominating IS/IT perspective with an overemphasis on explicit knowledge (Stenmark 2001). Existing tools do not stimulate individual affection in order to generate knowledge, but rather data and information processing. When knowledge systems are built, it often seems that we forget that we cannot extract this from individuals without their participation, motivation, or awareness of their knowledge. There is a neglect of a personal dimension.

Traditionally, Western philosophers have generally agreed that knowledge is "justified true belief" (Nonaka & Takeuchi 1995). It emphasises the absolute, static, and nonhuman nature of knowledge and is typically

expressed in prepositional forms in formal logic (Nonaka 1994). On the other hand, it has been commonplace in philosophy in recent years to challenge assumptions that knowledge is a timeless phenomenon and to suggest instead that truth is a story that is actively and creatively constructed (Blackler et al. 1998). A more pluralistic view assumes that there are different forms or types of knowledge. Nowadays, the focus of the discussion is varied; knowledge can, for example, be embodied, embrained, encoded, embedded, and or encultured (Blackler 1995).

If a more personalised view of knowledge is applied, it can be transferred in brainstorming sessions and "one-to-one" conversations (Hansen et al. 1999). Boland and Tenkasi (1995) argue for the importance of being able to create strong perspectives within a community, as well as the ability to take other perspectives into account. Our knowledge increases (about ourselves as well as others), if our perspectives are continually questioned and if we try to interpret what others want to mediate to us. We must (1) allow individuals to describe and analyse their experiences, as well as (2) letting them take other perspectives into account in order to rewrite other people's ideas and arguments. This is the same as the capacity of understanding and formulating a situation from another individual's point of view (Dixon 1998).

## 2. Making individuals aware of what they and others know

Nonaka (1994) and Nonaka and Takeuchi (1995) argue that the process of knowledge conversion (the dynamic interrelationship between tacit and explicit knowledge) lies at the heart of knowledge creation. Thus they have, with Polanyi's (1966) distinction between tacit and explicit knowledge as a foundation,

constructed a two-by-two table with four modes of knowledge creation: *socialisation* (from tacit knowledge to tacit knowledge), *externalisation* (from tacit knowledge to explicit knowledge), *internalisation* (from explicit knowledge to tacit knowledge), and *combination* (from explicit knowledge to explicit knowledge).

Socialisation is a process where tacit knowledge can be attained without language. A person can learn by observation, imitation, and practice, as the key to acquiring tacit knowledge is experience.

In combination, different types of explicit knowledge are combined. Face-to-face communication is not required to share this type of knowledge, but telephone or e-mail may be used.

Externalisation converts tacit knowledge into explicit knowledge. For example, metaphors and analogies play an important role in articulating tacit knowledge that is difficult to express in language.

Internalisation converts explicit knowledge into tacit knowledge. The process requires action to be deeply rooted in it, where learning is a way of assimilating the knowledge.

The interactive process between externalisation and internalisation constitutes the two important elements in knowledge creation.

The narrating of experience is very important but often overlooked in relation to knowledge production in knowledge intensive organisations (Boland & Tenkasi 1995). Some authors who examine the issue of externalisation of knowledge and concentrate on the processes through which people develop shared conceptions of their activities are for example: Orr (1990), Early (1982), Schön (1979), and Searle (1969). Orr has described different characteristics and the importance of stories in his study of photocopier repair technicians: (1) the idea of using stories is to make sense of ambiguous situations, (2) details are important, and (3) telling is as situated as recounting the context in which the incident occurred.

Early used narratives to set illness in its context and she found the logic in the narratives to be proximate and specific. She stressed multiple medical resources, and that detailing, which provide specific contexts, is an important issue. Schön discussed metaphors from two different perspectives: (1) as anomalies of language which need explaining or explaining away, or (2) as central to the task of accounting for our perspectives on the

world, which brings to the centre how we think about things, make sense of reality, and sets the problems we later try to resolve. Searle has discussed externalisation from a language/action perspective. His hypothesis is that use of linguistic elements is governed by certain rules and places a heavily reliance in the intuitions of the speaker.

When we narrate our experience, we also construct and validate the self (Boland & Tenkasi 1995). By interacting with others in dialogues, we are aided in formulating thoughts and tacit skills, as well as forced (or having the opportunity) to structure our thoughts and mental models and express them in an understandable way (in words and/or in images) for others. In the externalisation-internalisation situation, we learn (1) when we talk (when we express ourselves and/or explain something), (2) when we listen to others, and (3) when we give feedback to others, or receive it.

One problem concerning tacit knowledge is that the individual is not fully aware of what he/she knows. The Greek philosopher Socrates, who developed a specific technique for dialogues, addressed this issue. A well-known example is when Socrates is leading the uneducated slave Meno to a solution of an advanced mathematical problem. By inductive and deductive questions, Socrates deduces the right answers (Perris et al. 1988). By using the information a person already has, adequately formulated questions can support him/her in articulating and structuring the knowledge. This leads to an increased awareness of the person's knowledge and his/her relation to the world around (Boland & Tenkasi 1995).

The "resistance" an individual meets in dialogue is of great importance. As in cognitive psychotherapy, it is here assumed that the right questions will help individuals to relieve their knowledge (Perris 1989). In general, questions should promote individual awareness and mutual comprehension and not lock the individual, not mislead, or give him or her incorrect associations. Some examples are: What do you mean by...? How do you know that...? Could you give me an example? Do you know how others see it?

Cognitive psychotherapy is a learning process in which the goal is for the individual to receive new knowledge about him/her self (ibid). It is an active, directive, and humanistic process characterised by *collaborative empiricism*, where two individuals cooperate in an investigating way. They collect facts and present hypotheses, to thereafter analyse their

acceptability, whether they should remain or be rejected and replaced. Our knowledge increases when others question us, and also when we try to interpret what others have said to us.

### 3. Motivating people to share knowledge

Individual development of employees is necessary if the whole organisation is to develop. Perris's (1989) explanation of knowledge growth will serve as an explanation of individual development: "Knowledge growth means the process which leads to a reach beyond the current state of clarity, competence and comprehension, or, in other words, that a cognitive/emotional restructuring of view based upon him/her self, upon others and reality takes place" (p. 2112, authors own translation). It is after all, the individual's motivation, engagement, and ability to communicate knowledge and experiences to others that underlies the possibility for the organisation to learn.

McDermott (1999) has reported, (as also referred to in Garavelli et al. 2002), that in almost all successful cases of KM, the key factor is the *human role* in the interpretation process (and, as mentioned before, motivation and engagement plays a significant part here). Senge (1995) quotes Kazuo Inamori (the founder of Kyocera, world leader in advanced ceramic technology in electronic components, medical material, and office and communication equipment):

"Either it is about research and development, company management, or some other side of the working life humans are the driving force. And humans have their own will and their own way to think. If not the co-workers are motivated by them selves to fight for growth and development ... it will not be any growth, no increased productivity, and no technical development."

(p. 135, authors own translation)

Motivation is often defined by an individual's needs, goals, and motives (Mabon 1992). Maslow's hierarchy of needs (widely known in the psychological motivational area), addresses the following steps: (1) physiological needs, (2) safety and security, (3) solidarity, (4) the striving for appreciation, and (5) to realise self. The lower level must be fairly satisfied before the next can be taken upon.

Many individuals within organisations have problems with an awareness of their value or their own capacity to work. Employees are often not aware of their goals in the workplace, explicit goals in personal life, comprehensive business goals, or their role in the larger whole. This results in a difficulty to understand the effect of their own actions, which makes it problematic for them to contribute to learning and to effectively make use of their motivation. Traditional organisations are constructed to support only the first three levels in Maslow's hierarchy, that is to say, food, accommodation, and belonging (Senge 1995). How can this favour personal development, cooperation, and shared visions?

Incoherencies and contradictions that feature within organisations are often obscured (Blackler 1995). This may be due to a conventional imagery of organisations, which liken it to a rational machine, in which individuals learn to work within the situation in which they find themselves. Engeström (1987) models, in his 'General Model of Activity Systems' an holistic approach, relationships that exist between; (1) the *individual*, (2) the *community* in which the individual is a part, (3) the *conception(s)* the individuals have of their joint activities with colleagues in the community, (4) *instruments or concepts* in the organisation, (5) *division of labour*, and (6) *social rules*. Factors (1), (2), and (3) provide the basis for the model, depicted as a triangle, and factors (4), (5), and (6) impose relations between them. Engeström is striving to not separate the individual from the collective, or the social from the technical (Blackler 1995), but acknowledges incoherencies, paradoxes, and conflicts as potential driving forces for change. Not only individuals or the organisations should be the unit for analysis, but the whole socially-distributed activity system.

It is not easy to find a way of representing the suggestions that knowledge is provisional, mediated, situated, contested, and emotional in a straightforward way (Blackler et al. 1998), but Engeström captures many of the points summarised above in his general model of activity systems.

### 4. Aim and method

A toolbox has been constructed, in order to increase the capacity of the individuals to describe and be aware of their own situation in a structured way. An empirical investigation of a prototypical nature has been conducted. The method has similarities with Yin's (1994) description of case studies and explanation

building, when analysing the data. The important characteristic for explanation building is that the final explanation is a result of a series of iterations.

Yin describes the case study as an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident (ibid). Yin suggests that a case study can be exploratory, descriptive, or explanatory. The author subscribes in general to an exploratory case study, thus investigating if the toolbox can be applied for acquiring and representing knowledge for it to be reused in organisations.

Sources of evidence have principally been upon *focused open-ended interviews* with employees in two different knowledge-intensive organisations – a medical clinic and a University department, both with a population of approximately 20 individuals. 17 interviews have been conducted in total. The interviews resulted in questions to be used in the toolbox and methodological construction. Four seminars were needed to create empirical data, which primarily resulted in methodological reconstruction.

Each interview started with questions worked up from theory and earlier practices. After each interview, the questions were evaluated in consultation with the respondent according to pre-defined evaluation criteria. It was important that the questions should teach the individual something about him/her self. It was also important that some of the answers were suited for being stored in a knowledge representation system. Thereafter, the questions were redesigned, and the procedure reinitiated. The goal with the toolbox is that it should be a dynamic tool that does not contribute to a quiescent organisation (like several models or methods often do in their conclusion), but forces individuals to continually rethink their actions, their implicit assumptions, their relations to other individuals, and to their environment.

## 5. Field results

In the initial state, ideas were derived and questions were formed. They were, in general, taken from Senge (1995) and from his descriptions of learning organisations. Senge is describing three learning disciplines – *systems thinking, personal mastery, and mental models*. When we think systematically, we are using system archetypes (more developed structures that we continually come

across in life). It is shown, for example, that there are rather simple patterns behind complicated management issues (ibid)). Most important is to strive for individual coherency and connection. Personal mastery is to explain one's personal visions, to retain creative tensions, to have a focus on both the vision and real life and that this tension between vision and real life generates energy with which to realise the vision. When we are working with our mental models (previous conceptions that keep accustomed thoughts and behaviours), we need to separate real facts derived from ones own experiences and generalisations created from them. Openness and truth are two important factors.

The questions to the respondents treated issues like; the employees most important assignment at work, how to carry out this assignment, problems, formal and informal activities for sharing knowledge in the organisation, private and work-related goals and visions, if it was possible to relate the private goals and visions with the work-related ones, perceived ability to be aware of ones value and part in the organisation, etc. The respondents were also asked if they were positive or negative to sharing their answers with others in the organisation, for example to publish them on their Intranet. Their opinions to this were rather divergent. However, to make organisations internal valuable knowledge explicit in a structured and available way increases its competitive advantages (Dixon 1998). This makes it extremely important to investigate how it might be collected, treated, and stored.

One standpoint has consistently permeated the survey, for knowledge to be shared motivation, will, and comprehension of the motive for sharing knowledge must exist. When some of the interviews had been carried out, it was perceived that the respondents were not so engaged as they were hoped to be. During one interview the respondent was asked to talk about any central reference in his life – authors, books, inspiring person(s), etc., something central in this individual's thoughts that affects and permeates his actions and behaviour. This process discovered that the respondent was not explicitly aware of this central source or its effect, and unexpectedly a totally new discussion arose, beneficial for both respondent and interviewer.

However, to get an appreciation of an individual's central references may be difficult. It was later shown, for example, that if the interview (with the structure that eventually developed) opened with too specific a

question, too far away from the individual's field of specialisation, the respondent's focus was misguided from the start and had difficulties later discussing his/her central references.

Results from the interviews and seminars demonstrated, a remarkable difficulty for individuals to consciously comprehend what they really know or how they carry out an assignment. It was observed to be of great significance that the interviewer persistently repeats, verifies, and concretises the respondents' descriptions. What is more, it may be of assistance for the respondent to compare his/her own method with others.

Further summarising remarks can be drawn upon following methodological analysis:

- If an interviewer is (too) familiar with the area under examination and documents specific descriptions from a respondent, there is a risk that specific descriptions documented from a respondent may not be sufficiently general and accessible to others. In the opposite scenario, there is a risk that an interviewer not familiar with the area may document specific descriptions lacking specificity, commonly referred to as contextualising (circumstances relevant to an event or fact).
- There was a more favourable response from the respondent to questions if he/she perceived some form of control over them. For example, instead of a specific question like, 'What do you think about this...?', it was preferable to ask, 'Is it possible to answer if...?', this incised confidence and relaxation.
- Within organisations there is a continual change of subjects of matter with time. There must be some procedure to assimilate these questions for continual discussion for the organisation to mature.

### 5.1 Management aspects

Conventionally, the management must be a part in the efforts for becoming a learning organisation (or for the organisation to change at all). Several authors claim that there is a need for individuals with formal responsibility according to KM, that is to say, knowledge managers. Rogers and Agarwala-Rogers (1976) describe the function of a Liaison, an individual who integrates and interconnects

parts within an organisation. Kreps (1990) discusses that in order to develop proactive organisations, organisation members must be trained to establish effective communication relationships with knowledgeable individuals in the organisation. A knowledge manager is necessary for the organisation to be assured of continual progression. He/she must do things like open opportunities for individuals to interact with each other and thus to benefit knowledge exchange in a dynamic manner. This person could further take part in meetings and overhear current topics. The author assumes that questions, which force individuals to continually reflect on their behaviour, are extremely important. These should be learned about in order to confront them. However, every organisation has its own culture, issues, and values, which makes it important to study them in their context as well.

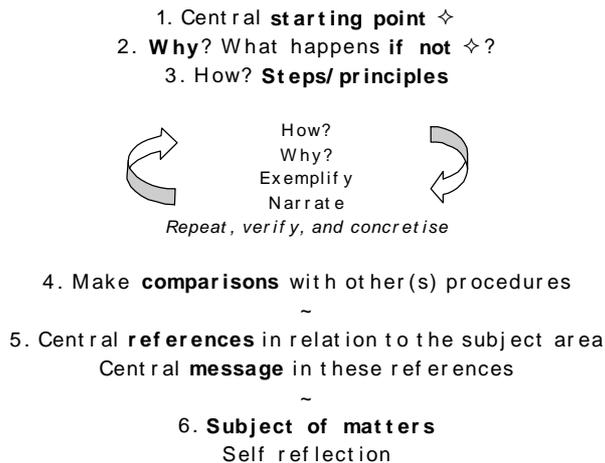
### 6. Proposed solution

The toolbox was continuously reevaluated according to the following three criteria:

1. It should be easy to use and understand.
2. The procedure for using the toolbox should not be time-consuming.
3. It should be possible to store some of the answers in a knowledge representation system in order to make them available to others.

A visual description is presented below (fig. 1). Two major streams may be recognised in the toolbox; one knowledge generating part (1-4), and one part for developing the individual (3-6).

The procedure begins with a *central starting point*, for example with the question, 'what is the most important assignment to you in your working life?'. The opening phase should be general enough to not mislead the individual in an incorrect direction, and specific enough to attract attention for him/her. Thereafter, to verify that the topic is of significance and worthy to handle, one should question what happens *if not*.



**Figure. 1** Approach for Increasing the Individuals Capacity to Describe His or Her Situation in a Structured Way

As a third phase, the issue will be dealt with in an iterative manner in different *steps* and/or *principles*. In general, the interviewer continuously repeats, verifies, and concretises the respondent's description by asking how and why, and requesting him/her to exemplify and narrate the issue. Ambrosini and Bowman (2001) have developed a similar method – a mapping process, based on cognitive and causal maps, semi-structured interviews, and metaphors. The mapping process (with focus on a special issue) raises questions like; 'What causes A to happen?', 'How does A happen?', 'Could you tell me an example about B?', and 'Could you narrate a story about the occurrence of C?' Since tacit knowledge has a cognitive dimension, is practical, context specific, and difficult to formalise (ibid), this approach will help individuals articulate the tacit and often taken for granted knowledge.

The following example illustrates the procedure described above: A respondent was asked to explain how she proceeded in a particular matter, and from the beginning she found it somewhat ridiculous to discuss the issue (she thought this was widely known in the organisation). However, during the session a structure started to evolve, and finally when she saw her story in a formalised representation, she understood its value for others.

Fourthly, *reflection and comparisons* with others behaviour or procedures will take place. The technique of Repertory grids has been used (Kelly, 1963). These consist of a chart in which "elements", usually placed in columns, are rated by adjectival phrases or simple adjectives known as "constructs" set in rows.

For example, to the constructs 'trust' and 'honesty', a nurse may have the following directional relationships: "nurse to patient", "patient to nurse", "nurse to colleagues", "colleagues to nurse", etc.

An individual's *central references*, as already discussed in Chapter 5 (Field results), will be sought next. One could, for example, ask if there is someone the respondent is inspired or influenced by in a particular matter. This gives an opportunity to start to unwind some of his/her underlying assumptions. The psychoanalyst Erich Fromm used a similar technique in his studies of the German working class. His classical question: 'Name three people, living or dead, that you admire the most, and why?', has been used to interpret the ideal and characteristics the respondent values and aspires to in order to characterise him/her self (Rendahl 1992). It is important to get an appreciation of the individual's unique knowledge and skills to strengthen him/her and let the organisation benefit from it.

At this point in the empirical tests, when steps 1-5 had been conducted, it was observed that the discussion of other issues and extraction of knowledge (steps 1-4) from the respondent became increasingly unhindered. The interviewer had attained an appreciation of the respondent, and he/she in turn received assistance in revealing underlying assumptions or mental models related to the knowledge to be elicited. This helped a number of individuals to further relate their behaviour to other actions.

In the final stage, individuals' specific *subjects of matter* will be given attention, that is to say, those thoughts which occupy their minds. This is in order to reveal his/her thoughts on colleagues' dilemmas and concluding resolutions from such thoughts.

## 7. Summary and concluding remarks

- The empirical evidence in the survey shows that the toolbox is well suited for being used for eliciting knowledge.
- Even if the process of eliciting knowledge, as described in the model in Chapter 6, is not too extensive, both reusable formal knowledge representations and personal involvement are achieved.
- In total, the whole procedure (steps 1-6) might only take about 15 to 20 minutes to go through.

In conclusion, the model described supports both an individual and a collective endeavour for knowledge within organisations, and Engeström's (1987) General Model of Activity Systems is requested upon for illustrating this. It supports a view of knowledge as culturally situated, technologically mediated, and socially distributed. Individuals must be allowed to describe and analyse their experiences, as well as to take others' perspectives into account (and adequately formulated questions, in a given structure, are believed to support the individual in articulating and structuring his/her knowledge). This procedure must be carried out proactively and deliberately within the organisation, and, as shown above, can be conducted in a relatively straightforward way.

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# Developing an Instrument for Knowledge Management Project Evaluation

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**Abstract:** Many knowledge management (KM) projects have been initiated, some of which have been successes but many have been failures. Measuring the success or failure of KM initiatives is not easy, and in order to do so some kind of measurement process has to be available. There are three points at which evaluation of KM projects can, and should be, done: (1) when deciding whether to start and where to focus, (2) once under way, following up on a project and making adjustments if needed, and (3) when completed, to evaluate the project outcomes. This paper concentrates on the first two areas by developing a general instrument for evaluation of KM projects.

**Keywords:** Knowledge management, Evaluation process, Measurement instrument, Success factors.

## 1. Introduction

Nonaka contends that Japanese firms are successful because they are innovative (Nonaka 1995). In particular, they are able to create new knowledge and use it to produce successful products and technologies. Management consultants took up this argument and began to preach it to companies in the United States, Europe and the Far East. Soon, companies started to adopt new initiatives focusing on managing knowledge. After introducing these knowledge management (KM) initiatives, which was a complex process itself, came the need for measuring their effectiveness. Unless evaluation is done there is no way to gauge the direction in which the KM initiative is heading. In case the KM initiative is going in the wrong direction corrective action could be taken to put it on the right track but this requires that there is some measure indicating the risk. The problem is that measuring KM initiatives is anything but a trivial task. Another problem encountered is that there is not much literature focusing on evaluation of KM initiative implementation.

In this paper, process evaluation and its dependent factors are discussed first and their application to KM is considered afterwards. A KM project evaluation instrument is developed and presented. The central factors associated with good KM project practice included in the evaluation instrument are: organisational environment, technical and managerial support, utilisation of knowledge and technology, existence of strategy and goals for KM projects. It is proposed that using this instrument an organisation can get a feel for

their strengths and weaknesses regarding their KM initiatives. The authors argue that, for KM project evaluation purposes, each organisation planning to test such an instrument should include only those factors, which are determined to be critical in their KM environment.

## 2. Evaluation of business processes

This paper deals with KM projects, which are a kind of business projects, and how to evaluate them. Thus some more general definitions of basic concepts are useful. A business process is any broad collection of activities within a company whose ultimate goal is to improve the performance of the company e.g. KM initiative projects, Change management, Quality management, Customer relationship management, Supply-Chain management, and Marketing. In the following subsections some definitions of the process itself and its evaluation are presented:

### 2.1 Definitions

Evaluation of business processes has emerged over the past few years as a valuable management tool. It is based on the systematic collection of information about business processes, projects, initiatives, products, personnel and programs. Evaluation of processes allows us to understand how things could be done as seen from a novel perspective compared to the existing way of doing things. It helps in revealing problems and bottlenecks, to clarify options, reduce uncertainties, and provide information about programs, policies and processes within

contextual boundaries of time, place, values and politics (Quinn 1990).

Talwar defines a process as (Talwar 1993): *a sequence of pre-defined activities executed to achieve a pre-specified type or range of outcomes.*

According to Ould there are two types of processes (Ould 1995):  
the sort that starts when necessary and finishes some time in the future;  
the sort that are running constantly.

When it comes to evaluation of processes which is an important part of this discussion, two definitions are offered below.

UNICEF (1991) defines evaluation as, *a process which attempts to determine, as systematically and objectively as possible, the relevance, effectiveness, efficiency, sustainability and impact of activities in the light of specific objectives.*

In this paper we rely and base our discussion on these definitions.

## 2.2 Importance of evaluation of business processes

Academics and practitioners have realised the need for the evaluation function within business processes, and very recently have been focusing on the use of evaluation as a strategic tool for knowledge and information acquisition and construction with the aim of facilitating decision making and organisational learning (Segone 1998). Sherwood-Smith (Sherwood-Smith 1994) states that evaluation supports informed decision making which is necessary in every stage of any business process initiative. By gathering information and generating knowledge, those involved in or affected by the business process have the opportunity to understand the issues involved in the process.

Another advantage of evaluation is knowledge construction and capacity building (Segone 1998). Evaluation facilitates the process of knowledge transfer to similar situations. According to Segone lessons are transformed into knowledge when they are analysed, disseminated and internalised within an organisation through evaluative processes. Therefore, evaluation can be used in a business process as a tool to gather information, systematise the lessons learned and then disseminate this information to

facilitate similar projects, processes, or change initiatives in the future (Vakola 2000).

## 2.3 Factors in evaluating business processes

Evaluation and dissemination of lessons learned is crucial in every business sector (Boyd & Robson 1996). Consequently, evaluation of lessons learned is important throughout the KM initiative processes because it can impact on decision making during all stages of the process. To ensure successful process development, the following key factors are to be considered:

- Existence of a plan as to how to introduce and manage a process.
- Ensuring commitment from both management and personnel.
- Identification of activities to focus upon within a business process and deciding how to do the data collection accordingly.
- Fostering communication to help to increase involvement and commitment.
- Increasing the understanding of problems/success factors and refining ideas based upon lessons learned.

In case of KM initiatives, there are other central factors as well, i.e. socio-technical environment (Coakes 2000; Segone 1998). The social environment of the organisation and its information technology set-up can play a crucial role in fostering a knowledge intensive environment.

## 3. Knowledge Management (KM)

Knowledge is an expensive commodity, which, if managed properly, is a major asset to the company. In the workplace of the future, the fiercest competition apart from the customers may be for the hearts and minds of employees. Most companies invest in their knowledge assets by recruiting knowledgeable people in the first instance and then further by training them. The company can gain competitive advantage by retaining and managing the in-house knowledge to help to exploit the business advantage. It is not only the employee who walks out of a door on leaving an organisation. The most expensive asset i.e. working knowledge also leaves the organisation with the employee. Working knowledge which includes factors such as intuition, wisdom, experience, numerous undocumented insights and informal networks is hard to gain but can be easy to lose. The

*Economist* (Sept 8<sup>th</sup> 2001), comparing differences between Nokia and Ericsson states that

*Most managers recruited by Nokia have stayed with the company. That is quite different from Sweden's Ericsson, whose management has sprouted a string of entrepreneurs eager to branch out, frequently with unfortunate results.*

### 3.1 Definition

Knowledge is complex and controversial, and can be interpreted in many different ways. Much of the KM literature sees knowledge in very broad terms, covering basically all tacit and explicit aspects of an organisation's knowledge. This includes structured data, patents, programs and procedures, as well as the more intangible knowledge and capabilities of people.

KM encompasses the way that organisations function, communicate, analyse situations, come up with novel solutions to problems and develop new ways of doing business. It can also involve issues of culture, custom, values and skills as well as relationships with suppliers and customers. There is an abundance of definitions about knowledge and KM. A few basic definitions are provided before the evaluation of KM initiative process is discussed.

According to Davenport & Prusak (Davenport & Prusak 1998):

*Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organisations, it often becomes embedded not only in the documents and repositories but also in the organisational routines, processes, practices, and norms.*

Knowledge can be viewed both as an object to be stored and manipulated and as a process of simultaneously knowing and acting - that is, applying expertise. As a practical matter, organisations need to manage knowledge both as an object and a process.

KM is potentially difficult to define and measure because it is complex, multi-dimensional, and process-oriented. KM is also a critical component of effective group performance in a number of domains, including consultancy,

law, local government, aviation, medicine, and the military. Given this complexity, it may be necessary to create several operational definitions, one for each of the various knowledge measurement dimensions and processes.

Although a fair amount of research has been devoted to the development of KM, much less effort has been devoted to the evaluation of KM initiative processes. Evaluation is important for example, to determine whether the organisation's investment pays off in terms of demonstrable performance improvements. In many domains, however, changes in performance are difficult to measure because of uncontrollable factors that exist within the larger organisational context.

## 4. Evaluating KM: Instrument Development

Evaluating KM initiatives as a special case of business processes is proposed to be of critical interest. A general instrument for measuring the success of KM projects is developed and presented below. The instrument allows one to see how advanced and prepared an organisation is with respect to KM initiatives. The instrument is composed from two sources: Firstly, issues raised in various academic research and business articles regarding KM, and secondly, various questionnaires on the Internet (KPMG 2001). The instrument also encompasses issues related to business management in general. The purpose of this instrument is not to measure the concrete results and outcomes of a KM initiative; rather it is to gauge the status of an existing or about to begin KM initiative. Based on the findings organisations can home-in on the problem areas and conduct further investigation to find more suitable approaches. The instrument is in the form of a questionnaire to be distributed internally within the organisation planning or conducting a KM project. The questions are intended to encourage thinking and finding information on which KM is based, directly or indirectly. The most central factors associated with good KM project practice are included. These factors cover organisational environment, technical and managerial support, existence of strategy and goals for KM projects, utilisation of knowledge and technology. Sample questions are suggested for each group of factors. To find the strong and weak areas e.g. a Likert type of scale could be used when answering questions. Note that the questions implied are a sample of possible questions. Each

organisation has to identify what is relevant for them and add and delete questions as well as reformulate them to fit their purposes and context. In the following we briefly discuss the key areas for each factor mentioned above.

#### 4.1 Organisational Environment

We have chosen to introduce the questionnaire by presenting issues related to the organisational environment. Often KM projects are considered technical projects with emphasis on utilising technology to solve KM problems. We do not underrate the role technology can play in KM, but by starting with organisational issues we will point to the importance of a knowledge friendly atmosphere for such projects to succeed. Under this factor the following key areas are discussed: social aspects, culture, incentives, and trust issues. The areas discussed will overlap to a certain extent and it is not too useful to try to keep the different areas all distinct.

##### 4.1.1 Social Aspects

As mentioned in the beginning knowledge should be seen, discussed and developed not just as a technical artefact but in the light of social environment within which it is used. The real information system is built on organisational culture and interpersonal communication. Innovation within companies can be addressed by thinking of it as a social process. According to Hansen KM is about people, their work practices and their work culture (Hansen 1999). An analogy can be drawn with rowing crews. The boats only gains speed when all the rowers are in sync with one another, otherwise the boat loses momentum. The following questions try to capture how these issues are experienced in the company.

1. All employees are ready and willing to give advice or help on request, from anyone else in the company (Inkpen 1996).
2. Informal networks across the organisation are encouraged.
3. Multi-disciplinary teams are formed and managed.
4. Staff is rotated to spread best practice and ideas, or the natural internal staff turnover is actively capitalised upon in this regard.
5. Training is available for those who want to improve their communication skills.
6. Management uses different means to facilitate knowledge dissemination and

creation e.g. mentoring programs, project debriefing, learning games, training programs, story telling etc...

7. There is a strategic program in place to collect and analyse business intelligence information to assist with business strategy development.
8. Technology is shared with suppliers/clients where appropriate to enhance relationships (Davenport & Klahr 1998).
9. There is a program of active participation in business conferences and other discussion forums to share and learn ideas and experience.

##### 4.1.2 Culture

Organisational culture reflects the behaviour within an organisation, which either enables or hinders effective KM. Every organisation has its own culture which has an influence on the way people work. The importance of interaction between employees cannot be understated and thus it is imperative that the culture does not hinder the interaction, which forms the basis of knowledge creation.

1. Failure is not stigmatised, rather it is seen as an opportunity to learn (Lucier & Torsilieri 1997).
2. Recording and sharing knowledge is routine and second nature to promote continuous knowledge exchange.
3. Looking for the best practice, or work that can be re-used is a natural, standard process.
4. Knowledge sharing is seen as a strength, knowledge hoarding as a weakness.
5. Time is allowed for creative thinking.
6. Employees are encouraged to learn more and develop themselves.
7. There are no restrictions on access to information unless it is confidential or personal.
8. A common language exists for exchanging and clarifying information to people with different backgrounds.
9. Efforts are made to combine the ideas of different cultures within the organisation (Nonaka 1998).

##### 4.1.3 Incentives

These questions are aimed to show whether the organisation properly rewards those who support the efforts towards KM. Employees give their maximum output when their efforts are recognised and appreciated (Davenport, de Long & Beers 1998). Incentives should be

used to encourage employees to repeat their performance and aim for even better results.

1. Good KM behaviour (e.g. sharing, re-using etc.) is actively promoted on a day-to-day basis.
2. Bad KM behaviour (e.g. hoarding, not using best practices etc.) is actively discouraged.
3. Good KM behaviour is monitored and built into the appraisal system.
4. Individuals are visibly rewarded for teamwork, knowledge sharing and re-use and re-use of knowledge.
5. Training and development programs in KM behaviour and procedure are encouraged from point of recruitment onwards.

#### 4.1.4 Trust Issues

1. Knowledge sharing and willingness to take the time to help others is based on trust and confidence. The importance of trust in the exchange of information cannot be overstated in an organisational context. Trust enables strengthening of interpersonal communication. The following questions cover some of these issues.
2. People are engaged in decisions that directly affect them.
3. Explanation is given about why decisions are made the way they are.
4. Expectations from the employees after changes are stated clearly.
5. Work groups see themselves as interdependent with others outside their team.
6. When it comes to problem solving, groups and/or individuals regard themselves as part of a larger, integrated entity.
7. People are genuinely interested in helping one another to develop new capacities for decision making.
8. There are different personality types within the organisation that allow people to cluster into groups of compatible types.
9. Usage issues (e.g. experts' willingness to use databases or share their knowledge) are understood by management.

## 4.2 Technical and Managerial Support

Next we discuss the managerial and technical support that is required for successful KM projects. KM initiatives can be started based strictly on the availability of new technology.

However, if the managerial support is missing even a successful project might fail when it comes to utilisation of the system in the long run. In other words the project might be successful, but the program fails. Two areas are discussed here: (1) organisational structure, and (2) awareness and commitment.

### 4.2.1 Organisational structure

This topic addresses the degree to which the organisational structure supports KM (Blackler 1995). Knowledge-based organisations are associated more with networks and teamwork rather than the traditional bureaucracies. This condition reflects the fact that the availability of knowledge depends on organisational structure. In a hierarchical system information mostly flows vertically, while in a matrix type of organisation information flows both vertically and horizontally. In a network type of organisation the direction is based on the need. The issue of what knowledge is needed and where it is used in an organisation is very complex. Knowledge has different uses by different people in different situations, and the issues of transfer and interpretation of that knowledge are considerable. The questions try to uncover the situation.

1. Formal networks exist to facilitate dissemination of knowledge effectively.
2. A flexible, well-structured, up-to-date knowledge map exists to point staff in the direction of the knowledge they seek.
3. Information useful for different units is available to a number of different users in different formats.
4. A Chief Knowledge Officer (CKO) is in place, and effective with the appropriate degree of authority to facilitate knowledge creation.
5. There are a number of dedicated knowledge workers in place to support and assist the knowledge processes (i.e. creation, storage, dissemination etc.).

### 4.2.2 Awareness and Commitment

This subsection covers the interest an organisation shows in its KM endeavour. The questions investigate whether staff understands the concept of KM and whether senior management is committed to its use. The more business functions are linked and share information, the better the company will be able to tap into the knowledge of its workforce. Good support at the highest level helps not only in getting the projects off the

ground but also provides support after their commencement.

1. At all levels there is a general understanding of KM, with respect to how it is applied to the business.
2. Business functions e.g. Customer Service and Support, Human Resource, Information Technology, Learning and Training, Project Management etc. are related with KM.
3. KM is given representation at the board level by creating an extra seat on the company's board of directors.
4. Senior management demonstrates commitment and action with respect to KM policy, guidelines and activities.
5. Senior management supports knowledge sharing, learning and other desired 'KM' behaviour.
6. At the senior level there is an ongoing review of the effectiveness of KM for the whole company.
7. Intellectual assets are recognised and valued.
8. Senior management has a good understanding of the skills of their staff.

### 4.3 Strategy and Goals for KM Projects

Strategy and goals are areas closely related to the previous factor. They show whether the organisation has committed to a program of KM improvement and how this program is managed to ensure business benefit. KM should always be considered in its business context and measuring the effect in business terms is the most important, although very difficult, task. In this paper we do not attempt to do this kind of measuring but restrict our efforts to measure the project success only. Still, strategy and goals for KM projects should be considered at this level. By its very definition a strategy lays out an action plan, which can be followed by employees. Strategy helps in clarifying minute details relating to the initiative.

1. KM projects have already been initiated.
2. There is a vision for how KM should integrate into the business.
3. It is clear how KM initiatives support the business plan.
4. There are defined responsibilities and a budget set for KM initiatives.
5. KM principles are set (e.g., definitions of key knowledge and guidelines for knowledge creation and management).

6. There is clear ownership of KM initiatives, either by the business unit or the whole business.
7. There is a program of initiatives in progress to improve KM.
8. There is a close relationship between the strategic program and the learning program within the organisation.

### 4.4 Utilisation of Knowledge and Technology

Collecting data and extracting information from the data is a central and for organisations, but these tasks by themselves are not KM. Data and information management, most organisations are quite experienced with and good at. Only when information is turned into knowledge by applying and using it we can talk about KM. In this section we are looking for the role of information technology in the KM process, the need for continuously maintaining and protecting organisational knowledge, and the basic issue of using and applying knowledge.

#### 4.4.1 Information Technology

Information technology provides one of the strongest focuses of KM developments, and a wide range of systems offering capabilities in KM should be promoted. Despite the many impressive benefits that information technology has clearly brought, there is great concern about major problems that arise, especially with large complex systems. There is also the overconfidence on technological solutions to take into consider. In this subsection we attempt to identify whether the information technology (IT) in place is sufficient and used effectively enough to support KM.

1. People use existing IT effectively as normal working practice.
2. IT is leading edge and is fully supported.
3. Technology is a key enabler in ensuring that the right information is available to the right people at the right time.
4. IT makes the search for information easier.
5. IT allows effective communication across boundaries and time zones.
6. Process tools and technologies are related to KM.
7. There is investment in infrastructure development to support groupware and collaborative computing tools.
8. Information is used to make sense of changes in the environment, create

new knowledge and/or make decision about a course of action.

#### 4.4.2 Maintenance and Protection

Maintenance operations for adapting to changes in the product or production environment should be in place. Increasingly sophisticated technology demands highly skilled and knowledgeable people to ensure it consistently operates to the highest standards, so that product quality is not compromised. If data, information and knowledge assets are not maintained, they deteriorate much as any other assets and become useless. Thus it is important to know how well the organisation protects and maintains its information and knowledge.

1. There are regular reviews to delete out of date information and ensure regular updates from designated information owners.
2. Effective cataloguing and archiving procedures are in place for document management, whether held electronically or not.
3. Key information to be protected, such as customer information, is identified and measures are in place to ensure it stays in the company should key employees leave.
4. Intellectual assets are legally protected.
5. There are complete IT security procedures in place (backup, recovery etc).
6. Regulatory and compliance requirements are clearly published and understood; they are monitored to ensure compliance.

#### 4.4.3 Using and Applying Knowledge

The main purpose of KM is to ensure that the business actually uses and exploits the knowledge inherent in the company in an effective manner. One simple reason why a company should use inherent knowledge is that it is already within the company and if it remains untapped it is going waste. Also lessons learned should be incorporated within the company without delay to improve the stock of knowledge. The purpose of this subsection is to identify how well the company uses and applies its knowledge.

1. To improve decision making, critical knowledge is elicited and prioritised.

2. Ideas to exploit pools of information are reviewed and acted on for potential business benefit.
3. Best practice in internal methods are reviewed and propagated.
4. Knowledge provision is targeted towards major decision points in key business processes.
5. Use of knowledge and information is controlled in line with regulatory and compliance requirements.

To conclude, this instrument is presented as a sample and each individual organisation is encouraged to change it according to its own needs and limitations. The factors that were mentioned above are those which organisations should focus on when going into a KM initiative. The presence of these factors in a KM project indicates an opportunity for a successful project and process, whereas the absence of these factors is suggested to lead to project failure. More questions and sections can be added or removed to customise the instrument for the needs of a particular organisation. Based on the results of the assessment action should be taken at senior levels to further improve business operations via KM.

## 5. Summary and Conclusion

The paper begins with a brief introduction to KM and the evaluation of business processes. Then factors for evaluating KM initiative processes are presented. Following, a sample instrument for basic data collection for KM assessment is developed. An underlying message has been to advocate the feeding of the results of the measurements back into the business/development cycle for gaining real benefits. The instrument provided is intended to be a starting point and it is up to each individual company to modify the instrument to fit their business goals. Based upon the findings of the instrument, further investigative studies can be taken regarding problem areas. Further studies can allow focus on some specific industries to get the status of KM across the whole industry. Additionally a regional analysis of KM initiatives can be undertaken. Research could also be done on the success/failure factors of KM initiatives and on developing a dynamic KM model to be used by different organisations. Another study could be done about evaluating which factors are common among different organisations and why this should be the case.

Measurement is essential to making the value of knowledge accessible to managers and others who need to justify expenditures in some concrete way. While several different approaches are available for evaluating the effectiveness of a KM initiative, certain principles remain invariant. For example, the primary objective is to determine (1) if a KM initiative makes a noticeable difference in the dependent variables, and (2) the magnitude of the effect. The aim of the instrument presented in this paper is to focus primarily on the KM initiative process rather than on measuring the business process outcome. Measurement of process outcomes is important enough in its own right to be treated separately. It also requires an entirely different approach. Metrics for measurement of outcomes of a KM initiative will be a topic for further research and investigation and the next paper.

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