

Practical Approaches to Knowledge Management

John L.Gordon, NWAIG, Blackburn College
Colin Smith, Liverpool John Moores University
Simon Scott; British Aerospace
Ian McBriar, ICI
Steve Walbank, ICL
Geoff Bain, North West Water
Peter Unsworth, TDS CAD Graphics

PUBLISHED: In Applications and Innovations in Expert Systems VII, pp17 - 32, SGES Publications.
Eds Ellis R., Moulton M., Coenen F. 1999 ISBN 1-85233-230-1

Abstract

This paper is the result of a study of knowledge management carried out by five companies and two research organisations. The work originates in the Knowledge Management Implementers Forum that meets in Blackburn and involves the organisations listed above. The main purpose of the study has been to help improve several knowledge management programmes through shared experience and the investigation of good practice.

The study itself began with seven position papers. An interview framework that took account of these positions was then devised and used to conduct five separate interviews in each of the five participating companies.

Results were made more objective through a table representing elements of knowledge management. Results and subsequent analysis relied on this table and on the transcripts from each interview. Each of the authors has analysed and verified the components of this work.

It has been possible to make several recommendations that may assist companies wishing to develop their own schemes or to initiate a scheme. Some of these recommendations are fairly obvious but are confirmed by the study; others are less obvious.

Contents

1.Introduction	3.Results and Comparisons	5.Observation and Conclusion
2.The Study	4.Analysis	6.References

Acknowledgements

This work is being partly supported by an **ESF ADAPT project**.

1. Introduction

Following on from a three-year knowledge management project, seven organisations formed a co-operative group for knowledge management. This group meets through the Knowledge Management Implementers Forum (KMIF). Each of the organisations participating in this work are, by implication, interested in the development of KM. The aims of the forum are to exchange ideas and share experience in the area of knowledge management.

The organisations involved are:	British Aerospace (Samlesbury)	TDS Cad-Graphics
	ICI	Liverpool John Moores University
	ICL	NWAIG (Blackburn College)
	North West Water	

1.1 The Organisations Involved

Each of the organisations has specific reasons for being involved in this project and in KM.

The British Aerospace Samlesbury site is a large manufacturing site employing ground breaking technology for Europe's front line military aircraft. The factory works with a well-managed supply chain and works closely with other British Aerospace sites in the manufacture of aircraft components. It has set up a partnership with another Aerospace Company based on exchange of knowledge and therefore needs to value that knowledge.

ICI is one of the UK's leading chemical companies and plays on an international stage. Changes in international supply and demand require ICI to respond quickly to market pressures. This means that the company needs to use its knowledge assets in a well managed way and put systems in place that increase the flexibility and ensure the security of these important assets.

ICL is an international computer based company that has changed from being a world-leading manufacturer to a world leading software and service provider. The mobilisation of a large and dynamic knowledge resource is of prime concern to the new business.

North West Water has fairly recently changed from being a public industry to a leading privately owned water company. Along with this major change has come the responsibility to upgrade and develop infrastructure and maintain a high quality water supply and waste water treatment for a large community. Organisational changes are placing great demands on the knowledge resource, particularly in the area of training for health and safety. Managers responsible for that function are beginning to investigate and develop methods to accommodate this demand.

TDS Cad-Graphics is a medium size company that both manufactures and distributes a range of computer based interactive display equipment. It operates in a highly competitive market and has a need for traditional engineering knowledge as well as dynamic high tech knowledge. The company has to innovate to survive and its interest in its knowledge resource reflects a general openness to new ideas.

Liverpool John Moores University and Blackburn College have been co-operating in applied knowledge management since 1995. This work has taken place under the management of the North West Artificial Intelligence Applications Group (NWAIAAG), a research wing attached to Blackburn College.

1.2 The Starting Points

Each of the companies briefly introduced in section 1.1 is at a different stage in the consideration or use of knowledge management. Each company has its own specific reasons for being involved in knowledge management and is looking for different outcomes to the others, at least initially. This section will briefly discuss these varied motivations and goals.

1.2.1 British Aerospace

British Aerospace (Samlesbury site) operates some very advanced manufacturing processes. There is a growing realisation within the factory that its sometimes unique and generally complex manufacturing knowledge would not be easy to replace if lost, and that it represents a significant part of the value of the company. Much development work has been carried out and the resulting store of knowledge and experience is substantial. This would be hugely valuable to any competitor wishing to enter the field with the same process technology because of the high costs of developing the knowledge from scratch.

A partnership between British Aerospace (Samlesbury) and another Aerospace Company had been formed based on equal exchange of knowledge. Initially it was not possible for BAe to easily see what aspects of its knowledge assets were being shared; it was also difficult to assess the monetary values of those assets. Also, there was no concept of the monetary value of knowledge BAe was receiving in return. This triggered the desire to map and value the knowledge required by and contained within a particular part of the manufacturing activity.

A project was therefore undertaken to analyse the structure of a specific part of the shared knowledge asset, and then to map it in the form of dependency trees. Making this asset visible to managers in this way will facilitate greater control. This may cause the precise nature of knowledge sharing partnerships to be considered more rigorously in the future. Safeguarding the knowledge involves controlling what is released to other companies or organisations and also ensuring that appropriate BAe employees assimilate and apply the knowledge. This requires appropriate education and training.

An earlier initiative to capture manufacturing process knowledge had introduced a scheme at corporate level and this made the new initiative easier to fund and implement at departmental level.

The knowledge management project therefore had three main aims:

- (i) To provide a basis for valuing the knowledge in monetary terms.
- (ii) To determine the structure and extent of education and training required by employees who are concerned with the manufacturing process technology.
- (iii) To represent knowledge in the form of guidelines and procedures that may be used in direct problem solving and diagnostic work. The success of this has led to the decision to extend the analysis to other areas of the business.

1.2.2 ICI

At ICI, the knowledge management scheme is maturer and in part, grew from work that aimed to capture and implement process knowledge through automated systems. Knowledge management is seen as vital at the highest level of the company and draws together input from several existing areas shown in figure 1. At the strategic level this is viewed as managing from the knowledge perspective.

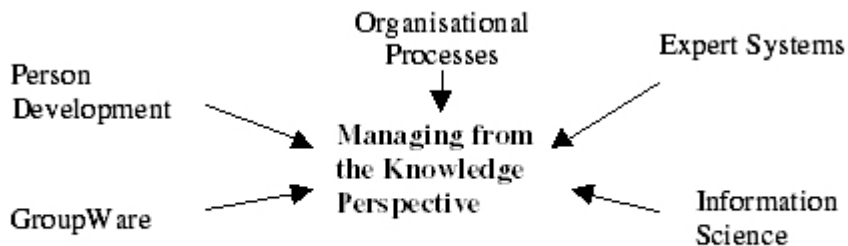


Figure 1.

Knowledge management originated in the separate businesses of ICI and the Knowledge Management Group was brought together as a centre for this area in the company.

Systems have been implemented over many years in which staff were encouraged or required to report knowledge or procedures of many kinds (for example, solutions to problems) on paper based records. These were later substituted by computer based records, however, the archive became large and complex. Location and retrieval of records

relating to specific topics became difficult which resulted in many potentially important records remaining unread. Subsequent initiatives then originated in several of the business units and in many cases took the form of expert systems, particularly in relation to chemical process technology. These have served as useful demonstrations of the potential value of KM.

Significant changes in the company's main business brought about by market and global pressures made it essential that ICI businesses could respond rapidly to change and mobilise its knowledge assets. There is significant interest in the protection of the knowledge asset business and its availability is of prime concern.

Knowledge Management Group has provided services for the individual ICI businesses on an internal market basis and aims at a coherent approach to managing from the knowledge perspective across the whole organisation.

The main characteristics of the ICI, 'Managing from the Knowledge Perspective' approach, are described as follows:

- (i) Each business unit is able to specify what it requires from knowledge management.
- (ii) Formal tools are used for knowledge acquisition but these generally are found to require the expertise of Knowledge Management Group, to be used to full effect.
- (iii) Where knowledge is formally stored in the form of rules, inferences and decision trees, validation is a two-stage process. A systems administrator (someone familiar with the field of knowledge) will compare the system's advice with, say, an expert's advice. If there is a discrepancy, the administrator will take steps to ascertain which of the two is appropriate and will ensure that the system tenders that particular advice.
- (iv) Where knowledge is to be stored in a less rigidly structured form, flexibility is provided through databases within Lotus Notes. Knowledge may be entered by any user of the database but may be checked and reviewed by a Knowledge Editor (who may be the database owner), a role that has evolved over the last 10 years within ICI. The role is to check whether knowledge is current and consistent, and to flag up any conflicts, duplications or inconsistencies for discussion. It is necessary because it is very easy for any employee to enter knowledge or information into the system.
- (v) The information contained within each database is indexed by means of keywords, key concepts and descriptions of the fields.
- (vi) A system sits on top of Lotus Notes that enables each user to create a profile of interest. It then trawls through the indexes and uses this profile to collect a set of references to documents in databases that fit the profile.
- (vii) The personal profiling system has been extended to cover abstracts of internal and external publications.

As the result of recent divestments, internal business is felt to be insufficient to support the group at its current size. The ICI businesses also believe that it is necessary to maintain this critical mass in order to be able to deliver an effective service. Therefore it is intended to divest Knowledge Management Group as an entity and buy back the services they require in the future.

1.2.3 ICL

At ICL, the significant catalyst for the introduction of knowledge management was the company's shift from manufacturing to computer based services. The company is now a knowledge-based industry and therefore is rightly concerned with its knowledge asset. In early 1996 ICL's Chief Executive established the Mobilising Knowledge Project to ensure that ICL improved its own ability to mobilise knowledge assets so that customers could benefit

from its global knowledge and experience. (The term 'Mobilising Knowledge' is seen by ICL as more appropriate than the term 'Knowledge Management', that can sometimes be misleading). The project also addresses the 'islands of information' problem that can easily develop within a large company that contains many separate specialist groups. One of the first initiatives was the implementation of a corporate intranet (Café VIK) now used by over 14,000 users, which has continued to expand over the last three years with additional departments and team web sites. It has been seen as a significant success in enabling a greater sharing of information across the company. Current developments are enhancing this from being a system of several hundred web sites and web based applications to a cohesive knowledge management resource and suite of tools utilising Microsoft technology.

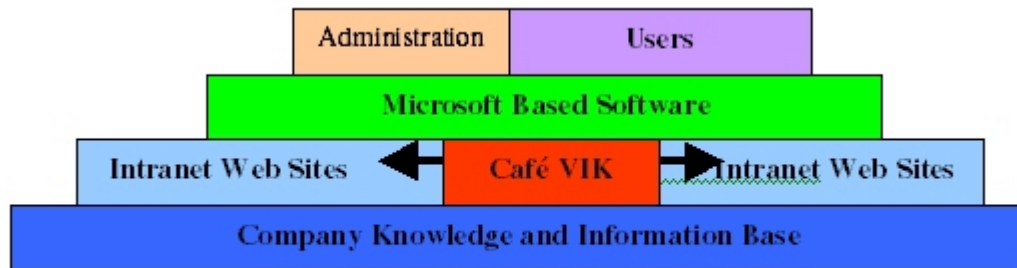


Figure 2.

Figure 2 shows how this initiative is now beginning to bring the knowledge resource under direct control. It began with an Intranet system that was later controlled by 'Café VIK' and is now being further enhanced through the new Microsoft knowledge management suite.

1.2.4 North West Water (Safety Department)

There are three main reasons why a KM scheme was considered in NWW Ltd (safety department):

- (i) Over the last 10 years the Company has undergone considerable change. This has led to much restructuring with consequential retirement of experienced staff at all levels. New managers and staff are now in place but many of them have little or no knowledge of safety.
- (ii) In restructuring, the Company has taken the Health and Safety Executive's advice and made managers completely responsible for all aspects of safety. This resulted in many safety officers retiring and the few remaining ones being asked to act as advisors. New managers were required to have a very comprehensive knowledge of many different technologies and operational procedures. This placed heavy burdens of responsibility upon them and they frequently turned to the remaining advisors for help, often requesting them to travel to the site of operations under consideration. The advisors therefore also became overburdened, and it was clear that a more efficient and effective way was needed of managing safety.
- (iii) New safety legislation is constantly being introduced, consequently safety procedures and safe ways of working are continually being updated. An effective way of communicating these new safety rules to operational management is required, so that they can manage safety knowledge effectively.

Knowledge management at NWW (safety department) is therefore characterised by:

- (i) A compelling need to make a complex and constantly changing body of knowledge, available to specific people so that they can exercise mandatory responsibilities.
- (ii) A compelling need to train those same people in a range of procedures and statutory requirements.
- (iii) Existing essential knowledge is concentrated in the minds of a few overburdened

experts.

(iv) Advice, procedural information and guidance are recorded in a variety of paper-based formats stored centrally and disseminated through a variety of routes.

(v) There are no formal means of ensuring that the disseminated information has reached the appropriate people and that they have properly assimilated it - in other words, that it has become knowledge.

The Safety Training Manager has initiated the current scheme as a pilot development to evaluate its effects. The knowledge that resides within the Safety Department and the knowledge that needs to reside in the various operational departments are now being more thoroughly investigated in terms of structure and content.

Since the scheme is at such an early stage of development, it is not yet possible to say whether knowledge management or some other initiative will be used to address issues related to safety knowledge.

1.2.5 TDS Cad-Graphics

TDS Cad-Graphics was asked to join the Knowledge Management Implementers Forum by the other members. The company is a particularly enlightened smaller manufacturer and distributor and its views on the work of the forum from a smaller company's perspective are seen as important. In general, smaller companies are not able to allocate significant resource to schemes such as knowledge management, even though they potentially have a lot to gain from such schemes. It is thought that it would first be necessary to show a smaller company the practical nature of potential problems that could result from the non-management or mismanagement of the knowledge asset. This could only be effective at senior management level. It would also be likely that a scheme would start with or address only certain key areas that are known to be high risk. The main mechanisms of a scheme would be Knowledge Auditing, Storage and Archive. Smaller companies may be encouraged to see knowledge management in a similar way to the way they view insurance.

1.2.6 LJMU & NWAIA

Liverpool John Moores University and the North West Artificial Intelligence Applications Group began co-operative work in the area of knowledge management in 1995. The first three years were spent in investigative research with several resulting items [1], [2]. The work has involved close co-operation with many companies as well as the study of knowledge management in other publications. A software demonstrator was also produced in 1998 to help businesses to consider their own approach to knowledge management.

1.2.7 The Diversity of Approach and Need.

Each of the organisations mentioned above are approaching knowledge management from a different perspective. This study is not intended to decide on the best approach or to grade particular efforts. It is not only the business carried out by these organisations that is different, but their starting points, their market pressures, their sizes and their internal management needs.

It is therefore most important that readers do not attempt to measure the organisations from this study of knowledge management.

1.3 Aims of the Study

The purpose of this paper is to help organisations develop a new knowledge management policy or to supplement their own work with new approaches. It draws on theory and the experiences of several companies who each have different needs and approaches and are at different stages of implementation. Readers may find that one approach or a specific set of

activities is more suited to their own organisational needs. It is most unlikely that there will be one way to manage knowledge that is the best way for all organisations.

2. The Study

The study was initiated after several meetings of the Knowledge Management Implementers Forum (KMIF). The aim of the work is stated in section 1.3 and is part of the more general aims of the Nwaiag, the organising institution. More information about the Nwaiag can be found on the web site www.nwaiag.com.

2.1 What Questions are Being Addressed?

The KMIF was formed as a mutual interest and self help group. It was also formed to help other organisations by documenting good practice and appropriate methodology. This study also addresses similar questions: What can each company within this scheme learn from each other? What can other organisations learn from this work? It is helpful that, although each of the organisations participating in the study are interested in the concept of knowledge management, they are each at different stages of development and have different views and interpretations. This introduces a large breadth of interest and an opportunity to analyse common and useful features.

2.1.1 How was the Study Carried Out?

During the preparatory meetings, each organisation submitted a brief position paper for consideration by the KMIF. From the resulting discussion, it became clear that there was a healthy diversity of opinion and experience within the forum. It was then agreed to carry out specific interviews in each company using a common interview framework. LJMU and the Nwaiag would carry out the interviews. The interview framework adopted allowed for the diversity of interest to be accommodated and yet allowed some comparison to be undertaken. This comparison would look for similarity of approach and for common approaches to specific elements.

1 How and why it started.

- 1.1 What prompted your company to consider a Knowledge Management Scheme?
- 1.2 How did the initiative originate and who were the main instigators?
- 1.3 What issues were intended to be addressed?
- 1.4 What business problems were to be solved through the application of knowledge management?
- 1.5 Why do you see knowledge management as the way forward rather than other initiatives?

2 How is it being implemented?

- 2.1 What is the scale of the Knowledge Management Project, eg. Company wide or a pilot project.?
- 2.2 Does the project have top management backing?
- 2.3 What are the mechanisms and activities of the project?
 - 2.3.1 Knowledge Auditing.
 - 2.3.2 Knowledge Collection.
 - 2.3.3 Knowledge Storage or Archive.
 - 2.3.4 Knowledge Validation and (up to date).
 - 2.3.5 Knowledge Accessibility. (Can the people who need knowledge, easily retrieve it?)
- 2.4 How has the project evolved and how long has it been in operation?
- 2.5 What are the plans for developing the project?

3 How is it being evaluated?

- 3.1 How is the project being evaluated, mechanisms, procedures etc?
- 3.2 How is it performing against stated objectives?
- 3.3 Have there been any unexpected side effects, benefits or negative consequences?
- 3.4 What is the perception of the staff involved including users?

Table 1. Interview Framework

Table 1 shows the main questions that focused each interview. It was clear from the start that the emphasis developed during each interview would shift due to the particular

emphasis of each knowledge management scheme. The actual interviews were allowed to drift towards each organisation's specialities but there was a deliberate intention to answer each question to some extent at each interview.

3. Results and Comparisons

In order to develop an objective approach to the analysis of the interview transcripts, it was decided to create a table that listed each organisation's position for a range of elements connected with knowledge management. The elements themselves were derived from the interview framework shown in table 1 and the comment obtained during interviews.

The resulting table is only intended to show the implementation of knowledge management elements for comparison or approach and good practice. Attempts to use the table to show more than this would clearly be unjustified since the organisations involved are at different stages and have different objectives.

3.1 Comparative Results

For the sake of table 2 we have separated knowledge from information in the following way: Knowledge is seen as something that is active; it is alive and can achieve something. Information requires interpretation before it can be used. It may also require considerable filtering and condensation before it can be used. In this interpretation, it is nonetheless valid to see both information and knowledge as part of a knowledge management scheme. It simply means that the knowledge is not immediately accessible if information is stored. Knowledge must be derived from the information but it is directly accessible from a knowledge source.

* Developed an interview scheme to estimate the scale of the knowledge management problem.

KM Elements	ICI	ICL	BAe	NWW	TDS
Knowledge Elements					
Implementation of KBS (Knowledge Based System)	High	Med	Med	AckN	AckN
Active knowledge representation (rules etc)	High	Low	Med	AckN	AckN
Elicit Active Knowledge (for KBS)	High	Low	Med	AckN	AckN
Computerised knowledge repository	Med	Low	Low	AckN	Non
Knowledge Structure Elements					
Mapping structure of knowledge	AckN	Non	High	Med	UC
Strategic assessment of knowledge structure	AckN	Non	High	Med	Non
Elicitation of the structure of knowledge	AckN	Non	High	Med	Non
Information Elements					
Computerised information repository	High	High	Med	Low	UC
Accessibility to information repository	High	High	Low	Low	Non
Verifying relevance of information	High	Med	High	Med	Non
Verifying accuracy of information	High	Med	High	Med	Non
Financial Elements					
Assessment of monetary value of knowledge	Non	Non	Non	Non	Non
Managerial Elements					
Scheme Originator (level in company)	High	High	Med	Low	Non
Response to potential knowledge loss	High	Low	Med	Low	UC
Supportive company culture for KM	High	High	High	Low	Med
Viewed as strategically important	High	High	Med	Low	Med
Large scale development in progress	High	High	Med	Low	Non
Responsibility for KM within dedicated group	High	Med	Med	Low	Low

Table Key	
High	High level of activity
Med	Some activity
Low	Low level of activity
Non	No activity in this area
UC	Under Consideration
AckN	Acknowledge need for

Table 2. Comparative Notes

Please Note:

This table must not be considered outside of the context of the analysis.

3.2 Interview Findings

Implementation within the KMIF member companies ranges from a full and comprehensive approach to one of initial investigation. Clearly, it would not be valid to compare two organisations on the basis of these results. However, there is a common theme of information archive and access and a real desire to protect the knowledge asset in some automated or semi automated way.

The interviews did not find that all organisations would eventually choose a common approach. The evolution of approaches is more likely to match the specific needs of the organisations and since these needs are different, the eventual complete knowledge management schemes will be different.

The two main reasons for starting a knowledge management scheme appear to be either a high level directive or the needs of a specific project.

One of the most significant aspects of the archive elements from this study has been the decision to give responsibility for an area of knowledge or a topic area to an individual. This individual is made responsible for the content and the validity of the knowledge or information within his/her area. Some systems provide automated support for this process by automatically checking the age of information and requesting verification of its continued relevance. One system incorporates a formal role (the Knowledge Editor) to assist individual owners in validating the content of an information or knowledge base.

The evaluation of a comprehensive knowledge management scheme is seen as a difficult area. However, in the case of ICI, KMG (Knowledge Management Group) operating inside an internal marketplace, if the service had not been seen by the individual businesses to be desirable and effective, then the group would have been disbanded. Therefore the success of KMG is a strong indicator of the importance of KM within the businesses.

3.3 The Smaller Companies' Perspective

There are many reasons that prevent or discourage smaller companies from implementing knowledge management. It is acknowledged however that these companies are likely to have more to lose than larger companies. They are more likely to employ one or two individuals who are the only holders of key company knowledge. They are more likely to require staff with key knowledge to work outside of their areas of expertise and hence their knowledge would be inaccessible and would decay over time. They are also less likely to justify investment in knowledge based schemes because their investment priorities are more likely to be concerned with essential operational matters.

Smaller companies are unlikely to get involved in knowledge management until they are shown the problems associated with knowledge.

It is suggested that many small or medium size companies would benefit from the sort of structural knowledge audit developed by the NWAIG.

It was noted that in relatively new areas such as Electronics, Computer and Software Engineering, smaller companies are beginning to experience knowledge related problems. These seem to arise from the loss of fundamental knowledge about the appropriate subjects. It is suggested that new staff have acquired broad system-level knowledge but

have consequently received less education concerning the fundamentals. This is seen as a problem for smaller companies who rely on graduates as a supply of their scientific and engineering knowledge. Larger companies seem to be able to retain the fundamentals that they require through an internal and overlapping educational framework.

4. Analysis

The analysis arises from a consideration of each interview and from a study of the table of elements and company positions regarding those elements.

4.1 Beginning a KM Scheme

The two main reasons for initiating a knowledge management scheme are stated in section 3.2. It appears that both of these beginnings are sustainable although it can be noticed that the schemes initiated by high level directive are further advanced than those initiated from specific project needs.

It may not be possible to read too much into this observation from such a small study; however, it is generally true that initiatives of this size and complexity require top level management backing and external specialised help.

It is also the case that a department in a large company can face exactly the same difficulties as a small company in initiating a KM scheme. There will be a lack of staff experienced in knowledge management and its associated systems. A major effort will be required by existing staff to demonstrate convincingly the proposed benefits. There will be much competition from operational functions when making a bid for resources.

4.2 Implementation

The desire to organise and archive company information and provide efficient access seems to stem from a desire to avoid duplication of effort as much as to avoid knowledge loss. This is also the area at which most new software systems are aimed and is possibly the reason that the term 'information' has become mixed up with the term 'knowledge' in the first place. This generates a desire to sell information management systems under the knowledge management banner. It cannot be doubted however, that organisations find this aspect of KM a worthwhile one.

There is less evidence of a high commitment to the management of knowledge as defined in section 3.1 although there is considerable acknowledgement that it is important. This seems odd since there are numerous Expert System tools available and a large support network for this approach is available. It may be that this technology is still seen as too complex for most organisations.

4.3 Evaluation

An implicit, market driven evaluation scheme can be successful. Two different versions of this were found. Both involved an approach based on an internal market; one relied on the co-operation of staff in a non-authoritative implementation framework. However there are other supportive elements to this implicit evaluation. A management benefits scheme implemented by an external consultancy was also in operation in one of the companies.

The Table of KM Elements

There are three areas of potential activity identified in table 2. These are knowledge elements, knowledge structure elements and information elements. The knowledge structure elements relate to the mapping of the structure of knowledge as defined by learning dependency (i.e. in the form of a learning tree). Structural audit of knowledge aims

to identify and map the knowledge and its associated structure contained within a section, department, group, etc, rather than elicit that knowledge or collect supportive information. This is seen as a useful way to increase the visibility of the knowledge asset and enable its direct management [3]. The table also identifies financial and managerial elements. Table 2 shows a greater level of activity in the area of information than of knowledge, as defined in section 3.1. It can also be seen that the relevance and accuracy of information are in general seen to be just as important as storage and access.

In general, successful schemes are seen to originate at a high managerial level with the exception of investigative schemes. A supportive company culture, in which the strategic nature of knowledge is appreciated, is also seen as a vital aspect of a successful knowledge management scheme. Companies in general can be seen to be moving towards the creation of a dedicated group to implement and develop their knowledge management schemes.

5 Observation and Conclusion

This study involved only five companies and two research organisations. Although this is a small sample, it nevertheless represents a broad spectrum of activity and is not simply taken from one successful scheme. The study will undoubtedly answer the first question in section 2.1 and it is hoped will address the second. The main purpose of this study was to learn more about the implementation of successful knowledge management schemes. The study has also benefited from the lack of bias from any particular software supplier and so can be more honest about the roles and value of information and knowledge.

5.1 Management Support

With regard to the role that management play in a successful knowledge management scheme, this study highlights several areas.

- Investigative studies can start without senior management backing.
- Successful schemes have the backing of senior managers.
- Senior management support speeds up implementation.
- Once implemented, knowledge management takes on a strategic role.
- The co-ordination and facilitation of knowledge management shifts towards a dedicated team as the activity matures.

5.2 Expert Systems

It was noted in section 4.2 that the problems that Expert Systems address are seen as important in organisations but that the uptake of the technology is still relatively low. Complexity was suggested as one reason for this. Another reason could be the Expert System community's desire to distance itself from the term 'Knowledge Based System' (KBS), 'Expert System' and most definitely 'Artificial Intelligence' or 'Intelligent Systems'. If organisations are now starting to see the need for knowledge systems and intelligent systems at the same time as the experts are starting to use a more clandestine approach, it is little wonder that organisations are finding it difficult to implement knowledge based systems even when they identify the need. We are not suggesting that this is a major reason for the slow uptake of KBS, only that education may be better than repackaging.

5.3 Knowledge and Information

The popular Knowledge Management press often focuses on information management schemes instead of KM and frequently asserts that knowledge cannot be managed. Our study shows that knowledge is being managed in companies and that the concept of managing knowledge is valid. Two out of the three implementation components of table 2

can be seen to be knowledge related whilst it is also true to say that information management attracts the most attention and investment. However this may not be triggered by business needs of the company; it could be more to do with leadership, culture and infrastructure.

The conclusion to draw from the study is that a comprehensive and valuable knowledge management scheme will address a range of knowledge and information related issues. There is evidence for distinctive yet complementary and integrated components of a successful knowledge management scheme. It is therefore unlikely that all problems can be solved through the use of software.

References

1. Gordon J.L. & Edge M. Focused Knowledge Management Applications and Innovations in Expert Systems, 1997; V, SGES Publications pp207-219.
2. Smith C. & Gordon J.L. Knowledge Management Guidelines. NWAIAAG Publication, 1998.
3. Gordon J.L. Creating Knowledge Maps by Exploiting Learning Dependency, 1999.