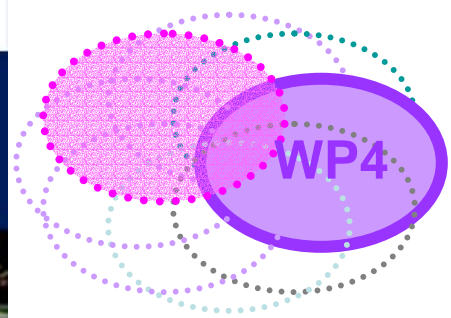


# Knowledge Management Specialists

## Work Package 4 - Final Report

March 2004



Knowledge Management for  
Sustainable Construction Competitiveness



[www.knowledgemanagement.uk.net](http://www.knowledgemanagement.uk.net)

# Knowledge Management Specialists

## Work Package 4 - Final Report

March 2004

This project is supported by the Department of Trade and Industry (DTI) as part of the 'Knowledge Management for Sustainable Construction Competitiveness' Project (Partners in Innovation: CI 39/3/709).

Support is also gratefully received from the following industrial partners:

Association for Project Management (APM), Ballast Plc, Balfour Beatty plc, Centre for Advanced Built Environment Research (CABER), Construction Best Practice Programme (CBPP), Construction Productivity Network (CPN), EC Harris, HBG Construction Ltd., IBM UK Ltd, IT Construction Best Practice (ITCBP), Kier Construction, Movement for Innovation (M4I), National House Building Council (NHBC), Ove Arup.

We are also grateful to the following companies who contributed to this work-package by making staff available for interviews: Balfour Beatty, Balfour Kilpatrick, BSRIA, Bovis Lend Lease, Broadway Malyan, Canary Wharf Contractors Ltd, Carillion Plc, Costain, EC Harris, Faulkner Browns, Franklin Andrews, Fraser Brown Newman, Gifford Consulting, HBG Construction, Llewelyn Davies, Mowlem PLC, MWH UK, Ove Arup, Taylor Woodrow Construction, WSP.

### Research Team:

<b>Prof Charles Egbu</b>	<b>Dr Carolyn Hayles</b>	<b>Glasgow Caledonian University</b>
<b>Prof Paul Quintas</b>	<b>Dr Vicky Hutchinson</b>	<b>Open University Business School</b>
<b>Prof Chimay Anumba</b>	<b>Kirti Ruikar</b>	<b>Loughborough University</b>

**Project Officer (on behalf of the DTI):**

**Dr Anna McCrea- Davis Langdon Consultancy**

# CONTENTS

OVERVIEW.....	1
EXECUTIVE SUMMARY .....	3
1. INTRODUCTION.....	6
2. BACKGROUND.....	7
3. THE INTERVIEWS.....	10
4. INTERVIEW OUTCOMES .....	13
5. KEY OUTCOMES .....	24
6. SUMMARY.....	26
7. CONCLUSIONS.....	28
8. REFERENCES.....	31
APPENDIX 1.....	33



## OVERVIEW

This final report is one of the deliverables of a 2-year comprehensive study, which commenced in July 2002 and is funded by the Department of Trade and Industry (DTI) as part of the Partners in Innovation Programme (PII). The study is entitled “Knowledge Management (KM) for Sustainable Construction Competitiveness” (Partners in Innovation: CI 39/3/709). The primary aims of the study are to investigate the challenges associated with the management of knowledge resources and capabilities for construction. Also, to establish how effective the strategies for managing these resources and capabilities are at contributing to project success and sustained organizational competitiveness. The targeted objectives for addressing the above aims are:

1. To identify the specific features of knowledge production in the construction industry – i.e. identifying what are the key types of knowledge resources and capabilities relevant to the sector (e.g. theoretical construction, engineering and design knowledge, plus experiential knowledge, etc.), the triggers of knowledge production and the challenges associated with producing ‘new’ knowledge.
2. To investigate and document the main challenges (including economic, social, technological, environmental) associated with the implementation, exploitation and embedding of KM practices within construction organisations of varying sizes and specialities.
3. To examine and document the different approaches (including processes and technologies) used for knowledge production, absorption (across boundaries), capture & retrieval, transfer, sharing, exploitation and for measuring and comparing KM performance; together with their relative effectiveness as knowledge management tools. It will also investigate and document the vagaries of factors that lead to successful KM practices in different sizes of organisations and in organisations that are at different levels of KM implementation.
4. To explore knowledge management practices in other sectors (e.g. manufacturing, finance, IT, retail) with the view of documenting good and best practices for the benefit of the construction industry.
5. To examine the backgrounds and on-going training and skills of knowledge management specialists. Map out their career paths, examine and document the impact of this new role on the future of the construction industry.

6. Produce a study report, which could be used as a policy document and would influence the direction of both government and those concerned with improving the industry's performance.
7. Produce a training material on KM and disseminate the outputs of the study on KM widely in the industry.

The planned outputs of the study include reports for construction organisations and policy makers, fact sheets, training materials for workshops, seminars and CPD purposes; journal and conference articles. The dedicated web-site for detailed information on the study and for disseminating some of the study outputs is:  
<http://www.knowledgemanagement.uk.net>

## **EXECUTIVE SUMMARY**

This final report on 'Knowledge Management Specialists' addresses the fifth project objective of "Knowledge Management (KM) for Sustainable Construction Competitiveness" (Partners in Innovation: CI 39/3/709) which involves examining the backgrounds and on-going training and skills of knowledge management specialists. The key objectives of WP4 are to:

- Map out the career paths of knowledge management specialists; and
- Examine and document the impact of this new role on the future of the construction industry.

20 Knowledge Management Specialist were interviewed from a cross section of the Construction Industry and the results of these interviews are summarised within this report. In addition to these interviews a questionnaire was produced and circulated amongst Knowledge Management Specialists (KMS). The results of this questionnaire survey will be published at a later date.

The report therefore provides an outline of the questions asked during the one-to-one interviews, and the reasons for covering them. The report then presents the results of these interviews, providing a summary, where appropriate, of the types of individual taking on responsibility for knowledge management within organisations, their training and background, and then addresses development of the role of knowledge manager and perceptions on how this may change over the next 5 years. The following are the main conclusions of this final report:

It was established that most KMS operating within the UK construction industry are:

- First generation KMS;
- In senior management positions where their appointment was made by the CEO;
- Established construction professionals with seniority and respect help to get the job done;
- Have a working knowledge of the organisation in which they are employed (its structure and practices), established over a decade or more; and
- Motivated by challenge not formal push-factors.

It was determined that the key competences and skills required to be a successful KMS include good quality: communication; strategic thinking; management; leadership; personal knowledge; personal attributes; tools & techniques; and IT literacy.

Despite seniority and board level support, KMS report that it is difficult for the 'trickle-down effect' to take place and colleagues to buy-in to some KM initiatives. They also faced other challenges. The most significant of these were:

- Time and cost constraints;
- Organisational culture; and
- Failure to provide a tangible demonstration of the value of KM during the early days/months.

Perceived factors shaping the future role of the KMS within the construction industry in the UK fall into two categories, namely:

- Communication and culture: the need for improved dialogue and communication within and between organisations to support collaborative working; and
- E-commerce and IT developments.

These KMS are starting to have an impact on the way organisations go about their business. As such it is agreed that KM is part of the culture change taking place within the industry, and that this will not be an overnight success, but take time. Introduction to KM within the university and college syllabus will help speed up the process.

Recent encouragements (the UK government's prerequisite to achieve industry-wide improvements and the desire of individual organisations to seek competitive advantage) will support and go some way to making the case for KM.

Changing people's behaviour is cited as the biggest impediment to knowledge transfer within organisations. Ironically, it is only after the technology exists that many firms realise how vital the people factors are.

*KM is more than sales pitch. It is an approach to adding or creating value by more actively leveraging the know-how, experience and judgement resident within and, in many cases, outside of an organisation (Ruggles, 1998).*

## 1 INTRODUCTION

This final report on 'Knowledge Management Specialists' addresses the fifth project objective of "Knowledge Management (KM) for Sustainable Construction Competitiveness" (Partners in Innovation: CI 39/3/709) which involves examining the backgrounds and on-going training and skills of knowledge management specialists.

The key objectives of WP4 are to:

- Map out the career paths of knowledge management specialists; and
- Examine and document the impact of this new role on the future of the construction industry.

This was done using one-to-one interviews and postal questionnaires and built on work previous undertaken by Ruggles (1998), Lesser & Prusak (2001), and McKeen *et al.* (2003).

## 2 BACKGROUND

The last decade has seen an increased interest in KM by organisations in a variety of sectors, and by academia (Despres and Cheuvel, 1999; Grant, 2000; Ives, *et al*, 1998; McAdam and McCreedy, 1999a; von Krogh and Grand, 2000). There is strong and compelling evidence that the effective management of an organisation's knowledge sources and capabilities is vital for improving organisational competitiveness (Cross, *et al.*, 2001; Egbu and Botherill, 2001; Kamara, *et al.*, 2002; Quintas, 2002).

It is commonly argued that the main driver behind the increased interest in KM is the recognition that knowledge is an asset, just like the physical assets of an organisation (Ives, *et al.*, 1998; Wiig, 2000). Thus, the initial approaches to KM focussed on managing and making more efficient use of an organisations' 'intellectual capital'. However, the current focus appears to be in developing KM initiatives which take account of both the existing knowledge assets and, the *processes* and *capabilities* of an organisation.

It is important for KM initiatives to aim to tap into the existing knowledge in an organisation. Competences and capabilities (unlike resources) are unique to each organisation, and so are the sources of competitive advantage (Grant, 1991). In this report we look at knowledge-focused activities currently underway within organisations operating in the UK construction industry. In addition to generating new knowledge, these knowledge-focused activities aim to tap into an organisation's existing knowledge by introducing new systems which exploit and enhance the processes and capabilities already in place in order to gain competitive advantage.

Previous research undertaken by Ruggles (1998) determined 8 categories of knowledge-focused activities:

1. Generating new knowledge;
2. Accessing valuable knowledge from outside sources;
3. Using accessible knowledge in decision making;
4. Embedding knowledge in processes, products and/or services;
5. Representing knowledge in documents, databases and software;

6. Facilitating knowledge growth through culture and incentives;
7. Transferring existing knowledge into other parts of the organisation; and
8. Measuring the value of knowledge assets and/or impact of KM.

Ruggles obtained these eight categories in 1997 by interviewing 431 US and European Organisations from an assortment of industry sectors, asking them what they were doing to manage knowledge, what they could be doing to manage knowledge, and what were the greatest barriers to managing knowledge.

He identified the four principle examples of KM efforts underway:

- Intranet development;
- Data warehousing – the creation of knowledge repositories – an organisation’s “what we know”;
- Decision-support tools; and
- Groupware (to encourage/enable collaboration).

Ruggles (1998) also identified a should-do list (intended KM initiatives still to be put in place):

- Mapping sources of internal expertise;
- Creating networks of knowledge workers; and
- Establishing new knowledge roles e.g. Knowledge Management Specialists (KMS) or Chief Knowledge Officers.

In this study we wanted to determine what the Construction Industry in the UK is currently doing to manage knowledge. In doing this we were looking to establish whether the organisations studied had developed the four principle examples of knowledge management effort identified in other industries and also whether these organisations were anywhere near implementing the to-do list Ruggles (1998) identified.

In particular, for WP4 of the study, we were keen to establish the backgrounds of the individual KMS interviewed and whether this has an impact on the types of KM efforts established.

In addition we wanted to ascertain whether the current generation of KMS have any training needs, and/or would recommend training for future KMS.

Finally we were keen to find out whether the KMS interviewed had a feel for how their role may develop over the next five years, how they saw knowledge capture changing and the industry response to this.

### 3 THE INTERVIEWS

KMS from 20 organisations operating in the UK Construction Industry were interviewed for this research. The organisations represented by these individuals are identified in Table 1.

**Table 1 Contributing Organisations**

Organisation	Size	Main area of business
Balfour Beatty	Large	Engineering, construction and services provider
Balfour Kilpatrick	Large	Building Services provider
BSRIA	Large	Building services technology & information
Bovis Lend Lease	Large	Project management and construction services
Broadway Malyan	Large	Architects, landscape design, town planning
Canary Wharf Contractors	Large	Contractor for buildings, facilities & infrastructure
Carillion Plc	Large	Business and construction services
Costain	Large	Engineering and construction
EC Harris	Large	Real estate, infrastructure, industrial & construction consultancy
Faulkner Browns	Small	Architects, interior designers and architectural technologists
Franklin Andrews	Large	Construction Economists
Fraser Brown Newman	Small	Architects specialising in social housing
Gifford Consulting	Large	Consulting services in engineering and design
HBG Construction	Large	Construction and support services
Llewelyn Davies	Large	Architects, planners, interior & graphic designers
Mowlems	Large	Construction and support services
MWH UK	Large	Knowledge-driven service provider for construction
Ove Arup	Large	Real estate, infrastructure, industrial & construction consultancy
Taylor Woodrow	Large	Developer, living and working environments
WSP	Large	Management and consultancy services for property, land & construction

Small = <250 employees

The twenty interviews took place over a three month period between December 2003 and March 2004. Each interview took on the same format:

- Conducted by a research fellow from Glasgow Caledonian University;
- Recorded for research purposes; and
- One-hour duration.

The interviewer followed a set of pre-determined criteria. These fell under a number of headings:

- Organisational business & structure;
- Job profile;
- Background training and education;
- Interest in further training;
- Challenges and opportunities in current role;
- Importance attached to position within organisation and industry;
- Measurement of benefits; and
- Challenges and opportunities for future role and impact.

The topic guide used by the interviewers can be found in Appendix 1. These topics were chosen in order to meet the research criteria whilst providing enough information to develop case studies to qualify the research outputs.

During the next section, reference is made to four KMS types as determined during the interviews. These are:

- The IT KMS;
- The construction professional now in a formal KMS role;
- The construction professional who still works on projects but has KM as an additional remit (a less formal role); and
- The researcher/Librarian/Communications expert brought into the role from outside of the construction industry. See Table 2.

**Table 2 Matrix of the Four KMS Types**

	<b>Type 1</b>	<b>Type 2</b>	<b>Type 3</b>	<b>Type 4</b>
<b>Job Specification</b>	IT background	Construction professional	Professional with project level responsibilities	Information officer
<b>Team</b>	Operates within IT and support services	Operates alone and/or with an assistant	Operates in project teams with some connection to support services	Operates alone
<b>Responsibilities</b>	IT KM	KM initiatives (collaborates with IT)	Project responsibility and KM responsibility (collaborates with IT)	Promote internal communication through KM initiatives (collaborates with IT)
<b>Background</b>	IT	Architect/ Engineer	Architect/ Engineer	Various including librarian /researcher
<b>No.1 challenge and major opportunity</b>	Colleague buy-in and Board level support	Colleague buy-in and Board level support	Colleague buy-in and Board level support	Colleague buy-in and Board level support
<b>Importance &amp; contribution measurement</b>	Board level support Linked to organisation's targets	Board level support Linked to organisation's targets	Board level support Linked to organisation's targets	Board level support Linked to organisation's targets
<b>The future</b>	Continued growth of KM	Continued growth of KM	Continued growth of KM	Continued growth of KM

## **4 INTERVIEW OUTCOMES**

### **4.1 Introduction**

Of the 20 KMS interviewed, 17 were male and 3 Female. The majority of KMS interviewed hold a senior position within the organisation and report directly to a company director at board level.

### **4.2 Organisational business & structure**

The knowledge manager or knowledge management team usually sits within support services which often compose of IT services, Library services, business improvement, information services, and so on, unless the KMS is doing this work as an extra (e.g. Table 1, Type 3). Most KM specialists are therefore an 'overhead'. A small number of, 20% of those we interviewed, have project level responsibility.

### **4.3 Job profile**

An examination of KMS job profiles established that their role in implementing formal KM initiatives varies significantly from organisation to organisation. Examples include:

- IT and intranet responsibilities;
- Library services;
- Organisation-wide knowledge sharing initiatives;
- Coordinating information sharing between individuals;
- Championing business improvement (dependent on seniority); and
- Promoting and implementing best practice (dependent on seniority).

### **4.4 Impact of culture structure on KMS's performance**

The results of the Interviews demonstrate that the impact and effectiveness of KMS depend on a number of factors, which also relates back to their position within the organisation. Despite board level support, KMS report that it is difficult for the 'trickle-down effect' to take place and as a result frequently the difficulties reported by KMS are:

- Colleagues needing to see things working before being prepared to 'buy-in'; and
- Data input to gather detailed data seen by colleagues as time consuming (unless direct benefits are evidential) and therefore is always put to the bottom of the pile of things to do.

KM implementation has proven to be most effective in organisations with structured in-house training programmes, pre-existing or implemented to meet KM objectives.

#### **4.5 Background training and education**

85% of all KMS interviewed were professionals, the majority of whom were educated to degree level with some post graduate training for example engineering, architecture, project management, most of who had worked their way up through their respective organisations, having gained skills and contacts along the way.

As a result the following benefits were identified:

- Awareness of organisational structure and practices; and
- Seniority and respect help to get the job done.

The 15% who were KM trained 'in-comers' (e.g. Table 2, type 2) were less senior, with little knowledge of the industry (training in other sectors) but skilled in the application of KM tools and techniques.

Figure 1 shows the variation in backgrounds that Construction KMS have. Of the 20 interviewed, 40% were engineers by training (principally civil & structural, although mechanical and electrical engineers were also represented).

**Figure 1 Construction KMS Backgrounds**

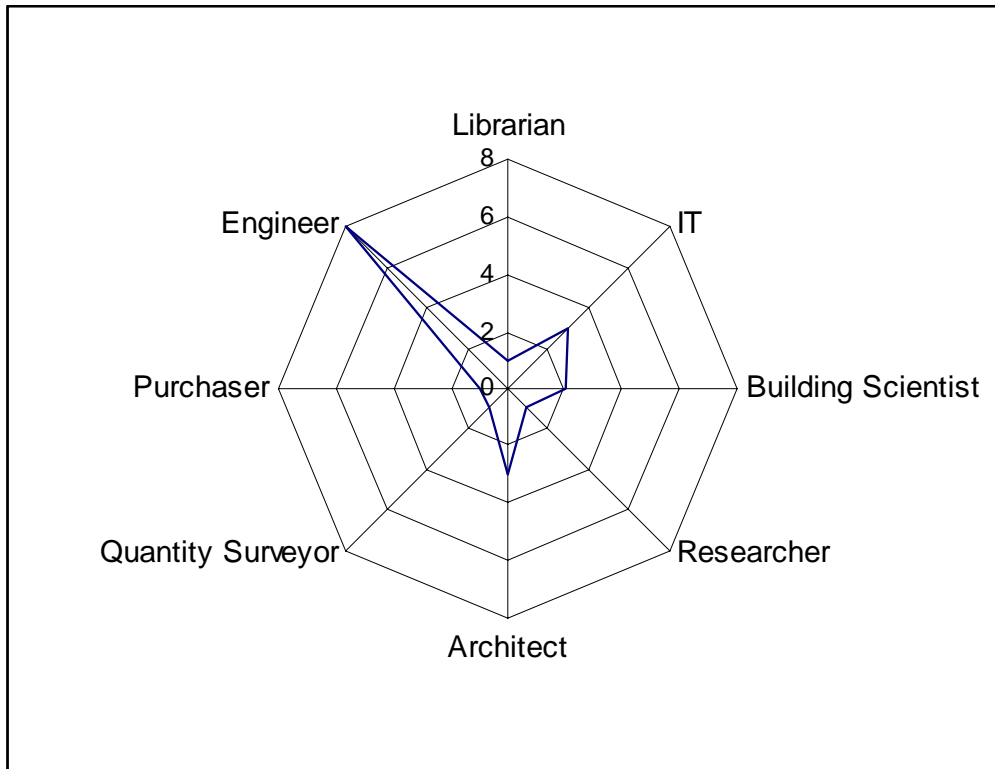


Table 3 gives examples of the career paths taken by some of the KMS interviewed, identifying and mapping out the various roles and responsibilities they undertook prior to becoming KMS.

The object of this mapping is not just to exemplify the diversity between KMS operating within the UK construction industry but also to demonstrate the wealth of experience many KMS bring to the job, confirming the invaluable contribution experience and knowledge picked up along the way can have, particularly when developing KM strategies.

**Table 3 Mapping career path of KMS over the past 20 years  
Ten Examples**

Years past	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
KMS 1	KMS		BSM		Financial Director			Divisional Accountant													
KMS 2	BIM			CQAM			PQAM		SA	PE	SE										
KMS 3	KMS/Librarian						Librarian														
KMS 4	KMS	PR		SB	APM																
KMS 5	Architect & BPF				Architect & Quality Manager								Architect								
KMS 6	BIM			SEM		Chief Eng.											CM				
KMS 7	KMS	Senior CAD Developer						CAD Developer													
KMS 8	KMS	EM		Various Engineering Grades								Lecturer		Various Eng							
KMS 9	KMS	PM	EC	Agent		SubAgent		Engineer													
KMS 10	QA Manager		PL	PM		CM		TSD				BSD	CO	QA Engineer			CE				

**Key**

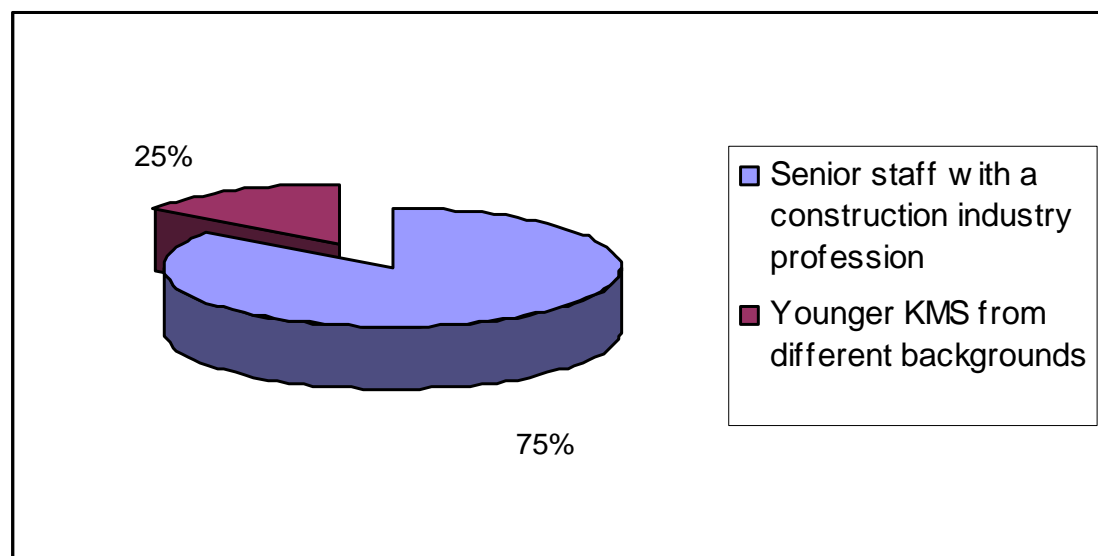
APM	Assistant Purchasing Manager	BIM	Business Improvement Manager
BPF	Business process Facilitator	BSD	Business Services Director
BSM	Business Systems manager	CE	Cost Engineer
CM	Contracts Manager	CO	Commissioning Manager
CQAM	Company Quality Assurance Manager	EC	E-Commerce
EM	Engineering Manager	KMS	Knowledge Management Specialist
PE	Project Engineer	PL	Planning Manager
PM	Project manager	PQAM	Project Quality Assurance Manager
PR	Procurement Manager	SA	Site Agent
SB	Senior Buyer	SE	Site Engineer
SEM	Safety and Environmental Manager	TSD	Technical Services Director

#### 4.6 Interest in further training

The majority of KMS showed little interest in further training; believing if anything specific came up they thought would be useful, they would attend (e.g. CPD courses); but they had no burning desire to gain additional skills or a qualification in KM. For 85% of those interviewed, project-level experience and an understanding of the business have provided most of the skills they believe they require to do the job.

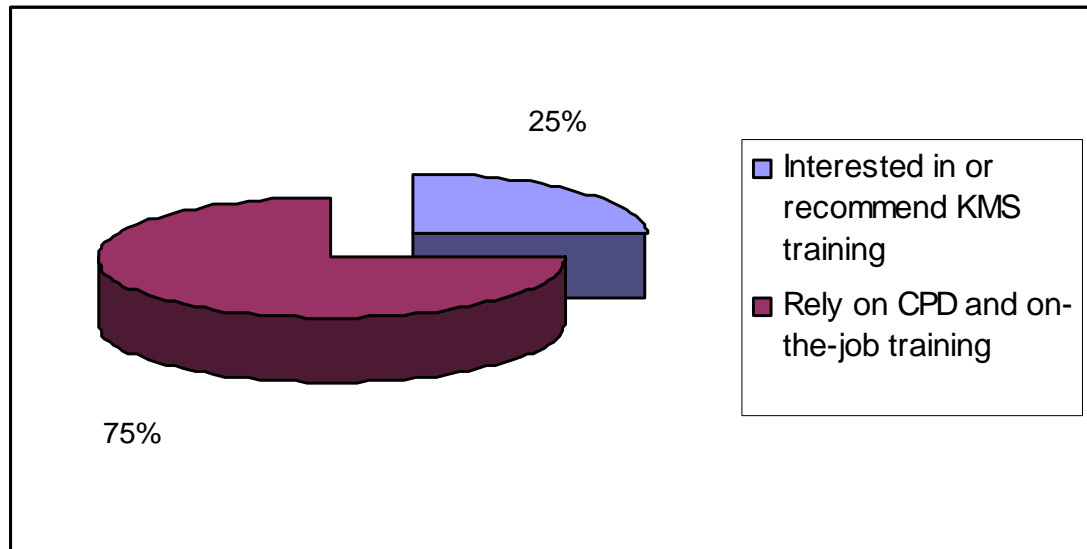
When asked about training others in the role, two different responses came through, dependent on the career path of the interviewee (Figure 2):

**Figure 2 KMS Construction Industry Experience**



Training is consequently viewed differently by different practitioners. Those Type 2 & 3 KMS (see Table 2) consider training to be on the job (CPD) and do not consider specialist KM training a necessity. Type 1 & 4 KMS (see Table 2) recommend some form of IT, information, and research training viable (see Figure 3 below).

**Figure 3 KMS Training Requirements**



#### 4.7 Key skills and attributes of a KMS

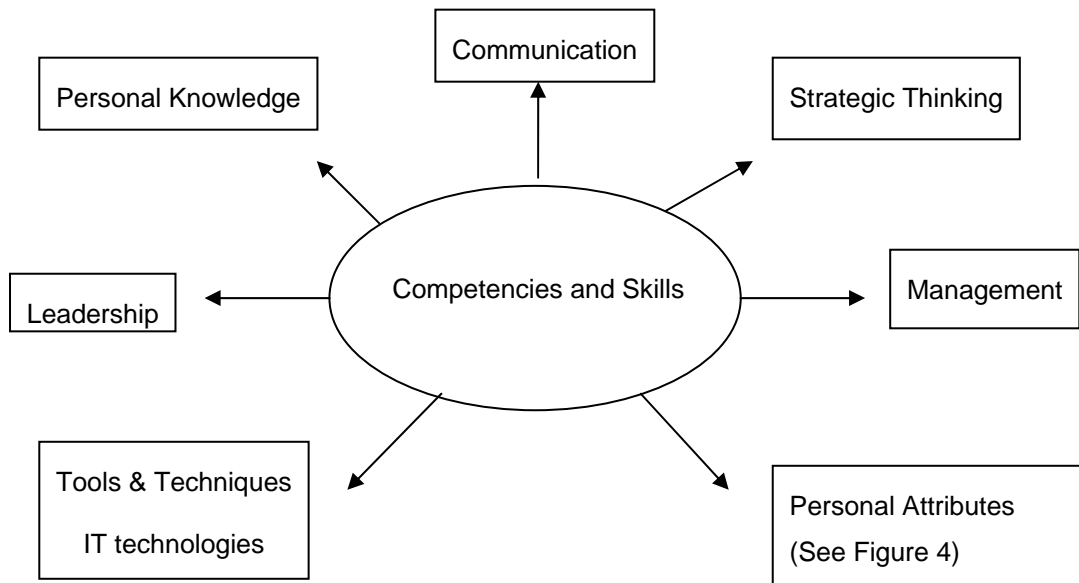
The KMS were in agreement that the following competences, skills and attributes are essential:

- Interpersonal skills (particularly effective communication); and
- IT literacy.

These can be further broken down into key competences and skills required (Figure 4) and personal attributes desired (Figure 5) in order to do the job.

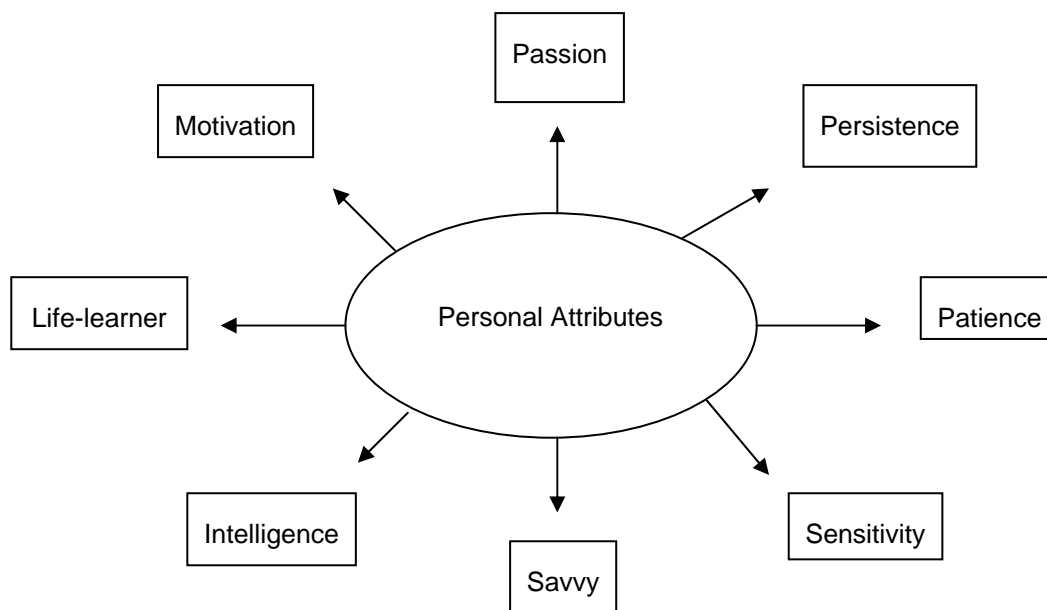
Figures 4 & 5 therefore outline what many interviewed believed to be essential for successful KM.

**Figure 4 Key competences and skills picked out by KMS interviewed**



Knowledge of the industry and preferably in-house experience were frequently seen as an advantage by some and essential by others.

**Figure 5 Top 10 personal attributes picked out by KMS interviewed**



The KMS were asked to suggest topics they believed would be useful if a KM course was to be put together. The following areas were suggested:

- Interpersonal skills (including good communication);
- IT literacy and web navigation;
- Key Performance Indicators (KPI)s and benchmarking;
- How to access latest good practice - where to find information quickly and efficiently;
- How to best utilise advisory services; and
- How to learn from others and extract tacit knowledge.

#### **4.8 Challenges and opportunities in current role**

The interviewees were asked to describe challenges they faced, the factors that may work against them. The following summarises the key challenges presented:

- Colleagues reluctance to contribute – KM needs ‘buy-in’ across the organisation;
- Time and cost constraints;
- Old culture - being afraid to ask and seek information;
- Tangible demonstration of value during the early days/months;
- Failure of colleagues to see beyond individual project;
- Failure of colleagues to see the benefits of knowledge sharing (as individuals, as an organisation and as the industry as a whole); and
- An organisation’s aging workforce who are somewhat reluctant to embrace change.

#### **4.9 Importance attached to position within organisation and industry**

As a result of board level support in every instance, it is well documented that there is support at the top. However in most cases it was reported that encouraging those lower down in the organisation to work differently provides more of a challenge. There are a number of opportunities / factors assisting KMS activities:

- Support at board level;
- IT literate graduates coming through who are used to sharing knowledge and are not afraid to ask questions;
- Gradual realisation of the value of knowledge to an organisation;
- Culture change – promotion of best practice and business improvement by DTI, CBPP, Construction Excellence, etc;

- Realisation of corporate benefits from individual learning (knowledge acquisition and sharing); and
- In-house incentives – linking sharing of knowledge with performance reviews and potentially pay reviews.

#### **4.10 Measurement of contribution and benefits**

The interviewees were asked to suggest the benefits they believe they as KMS can deliver in-house. Their responses were varied, some of which are listed below.

- Awareness of potential benefits of knowledge sharing to industry, the organisation and in personal development;
- Positive effect on 'bottom line';
- More effective project delivery;
- Delighted clients leading to repeat work;
- Position / status within industry;
- Redefined as industry leaders; and
- Demonstration projects – Constructing Excellence.

The KMS were asked to outline benefits they believe they have already delivered. Cited in the list were the following:

- Better communication;
- People less afraid to ask;
- Winning work;
- Successful project partnering;
- Breakthrough examples include: online tendering, project access across the board, shared knowledge across the supply chain, on-line project progress, ownership, snag recording, etc;
- Utilising IT project Management via intranet (e.g. added value, reduced costs, keeping to time, less communication problems on-site, less snags); and
- People to people information sharing (post IT advancements).

Measurement of individual KMS's contribution took on a number of forms. In common was the support from the top allowing time and resources to be spent to improve knowledge transfer across organisations and project teams. Examples include:

- None, accept role of KMS as an overhead;

- 'Time will tell' adage;
- Annual personal targets;
- Short term goals to set initiatives in place;
- Long term goals – reduced snags, time and cost savings, etc; and
- Contribution to organisational KPIs.

When asked to consider the impact on or contribution to the industry now, KMS believed KM was assisting in the following improvements:

- Streamlining business activities;
- Improved productivity;
- Better time management;
- Best practice;
- Supply chain management;
- Increasing importance of IT;
- On-line collaboration;
- On-line project monitoring; and
- On-line internal systems.

#### **4.11 Challenges and opportunities for future role and impact**

Finally the KMS were asked to consider the future in terms of their contribution and how they saw things developing as a result of KM tools and procedures being increasingly utilised over the next five years.

All those interviewed see KM as continually evolving to meet the changing needs of the industry. Most KMS would see KM as 'people supported by IT'. There is a clear shift in focus from IT tools which have now been implemented, to direct conversation and just-in-time information. This includes the introduction of communities of practice and knowledge brokers in some organisations alongside the introduction of more innovative continuous improvement tools and techniques as they come on the market.

When asked to comment on factors shaping the future of their role within the construction industry in the UK, the following headline bullet points were frequently referred to:

- Increasing need for improved dialogue and communication within and between organisations;
- Increasing cross-fertilisation of ideas;
- E-commerce;
- Improved IT literacy with a new generation of workers; and
- Culture change – collaborative working/partnering/PFI/PPP which require this paradigm shift.

## **5 KEY OUTCOMES**

### **5.1 KM in construction**

- KM projects have been widely successful;
- Fruits of success evident in organisations including intranets, collaborative networks, electronic knowledge and information repositories which have become part of daily work for many operating in the UK Construction Industry;
- These initiatives have gone some way to reshape organisations;
- The ambiguity attached to the role of KMS is heightened when not able to determine direct success of KM initiatives;
- Even with buy-in from the top, KMS find it difficult to 'prove' the importance of and benefits to being employed in such a position; and
- It is predicted that there will be a wide impact of the knowledge management specialist on the future of the construction industry.

### **5.2 KMS profile**

- Those interviewed were the first generation of KMS in UK Construction;
- 85% held graduate degrees;
- Most people who take on KM roles have worked their way up through the organisation and been there for more than 10 years;
- Effective KM depends on first-hand knowledge of the organisation;
- KMS existing reputation within organisation can aid KM 'buy-in' by colleagues;
- KMS at present represent the first people appointed of the organisation to that role. More than half the appointments were made by CEOs;
- 90% were appointed from within the organisations in which they were based;
- The aims and goals of the KMS were found to be broad and ambitious;
- KMS were motivated by challenge not formal push-factors;
- The career paths of knowledge management specialists are mixed;
- Ambitious goals;

- High level responsibility;
- Modest budget (often part of another budget e.g. IT); and
- In most instances the KMS has one other member of staff in a supporting role however it is intimated that this is set to change.

## 6 SUMMARY

Comparing the results of this current study with that of Ruggles (1998) and subsequent studies undertaken by Lesser & Prusak (2001) and McKeen et al (2003) we find that the construction industry and its use of KMS appears to be on a par if not ahead of other industries.

For example McKeen et al (2003) used Ruggles (1998) as a reference point to determine whether aims and challenges of KMS efforts have remain consistent and to determine whether any progress has been made.

As outlined in Section 2, Ruggles (1998) established that the four most common KM projects underway in 1998 were the following:

- Intranet development;
- Data warehousing – the creation of knowledge repositories – an organisation’s “what we know”;
- Decision-support tools; and
- Groupware (to encourage/enable collaboration).

Of those 41 organisations interviewed by McKeen et al (2003)

- >90% had intranets;
- 80% had knowledge repositories;
- 50% decision support tools; and
- 56% groupware.

Of those twenty organisations interviewed in our study:

- 100% had intranets;
- 100% had knowledge repositories;
- 80% had decision support tools; and
- 70% groupware.

These results may reflect the nature of the construction industry, the need to learn from projects and the way in which construction is heading, including the growing importance of IT in the procurement and management of projects. Also the time of

the studies may impact on the results as IT and technological advancements have continued to develop exponentially over the past five years.

Also, when looking at the to-do list created by Ruggles:

- Mapping sources of internal expertise;
- Creating networks of knowledge workers; and
- Establishing new knowledge roles e.g. Knowledge Management Specialists or Chief Knowledge Officers.

McKeen et al (2003) report that by 2001, Lesser *et al* had established that :

- 55% completed expertise maps;
- 68% developed internal networks of knowledge workers; and
- 54% established new knowledge roles.

Our sample of 20 construction organisations shows that since 2001:

- 70% have completed expertise maps;
- 15% developed internal networks of knowledge workers;
- 100% of organisations had established knowledge roles; and
- 60% of organisations (not including those KMS interviewed) have established additional knowledge roles to assist the principle KMS.

This reveals that the industry has been quicker to put IT in place than it has to develop the 'people' aspect of KM. Ruggles (1998) cited IT taking centre stage too much, despite the fact that the 'should do's were non IT specific. It appears that it is an evolutionary process, and it has been necessary to put IT supported networks in place before building up 'communities of practice' and people-centred networks.

## **7 CONCLUSIONS**

20 Knowledge Management Specialist were interviewed from a cross section of the Construction Industry and the results of these interviews are summarised within this report. In addition to these interviews a questionnaire was produced and circulated amongst KMS. The results of this questionnaire survey will be published at a later date.

There are five principal conclusions and/or implications for the success of KM to come out of this study, these are outlined below.

### **7.1 KMS competencies, skills and attributes**

Most KMS operating within the UK construction industry have similar competencies, skills and attributes. These are as follows:

- First generation KMS;
- In senior management positions where their appointment was made by the CEO;
- Established construction professionals with seniority and respect help to get the job done;
- Have a working knowledge of the organisation in which they are employed (its structure and practices), established over a decade or more; and
- Motivated by challenge not formal push-factors.

In addition the KMS interviewed were in agreement on what makes for a successful KMS. Good quality communication; strategic thinking; management; leadership; personal knowledge; personal attributes; tools & techniques; and IT literacy were all valued.

### **7.2 Buy –in**

Despite seniority and board level support, KMS report that it is difficult for the ‘trickle-down effect’ to take place and colleagues to buy-in to some KM initiatives.

This is an important issue and there appear to be mixed messages. Cooperate leaders believe enough in the value of KM to take an active role and interest in creating these positions, but frequently do not see tangible returns that justify

significance cash investment. It appears that although these executives understand that knowledge is highly people-based, they are stuck with an investment model that is geared primarily towards technological implementation.

The main challenges remain much the same:

- Changing people's behaviour; and
- Finding ways to measure the value and performance of knowledge assets.

This may change as word gets out; people attend meetings such as 'doing the knowledge' whether other organisations show the benefits of initiating, supporting and implementing sometimes costly (initial outlay) KM initiatives.

### **7.3 IT and training**

Determining what knowledge should be managed has become less of a concern, attempts seem to be in place to manage any and all knowledge, with the assistance of IT.

IT literacy is a big hurdle. For example construction contractors will be forced to be IT literate or they will not be able to tender for jobs in the not too distant future. As a result, resources are allocated to IT initiatives, which it is found still drive knowledge management within UK construction, in order to out bid competitors and win work.

Training materials should include an overview of computer packages available e.g. groupware and decision support tools.

However awareness not training appears to be the key. A greater understanding of how the business works coupled with an understanding of how knowledge (both IT and people based) can be used and manipulated to gain competitive advantage.

Interestingly there is a shift by some of the forward-thinking organisations and identified by McKeen *et al* (2003), in using knowledge to an organisations advantage by packaging it and turning it into goods and services for other organisations to buy. It will be interesting to see whether this shift, also identified in this current work within the UK construction Industry, is set to continue.

### **7.4 Finance**

Calculating the impact of these changes also remains a problem. Many of the KMS interviewed cite long-term organisation wide goals as methods of measurement.

KMS are unlikely to get the resources they need until they can persuasively demonstrate the return in investment; it is believed this day is coming.

The survival of the KMS within UK construction may depend on making that economic case, assisted by organisations exhibiting competitive advantage through such investment.

In event the most talented and dedicated KMS is unlikely to make much headway in a large organisation without resources at his/her disposal. However, convincing others of the value of sharing knowledge probably depends more on powers of persuasion than on big budgets

### **7.5 Culture change**

Results of this survey suggest that people within the organisations studied have frequently shown a reluctance to change their ways of work, not embracing KM and this change of culture to facilitate its full effect. Employees are still reluctant to use these new products to share what they know with each other, with their colleagues (despite financial incentives) or to obtain new knowledge themselves that they can profitably apply to their work.

Effectively changing people's behaviour and calculating the economic benefits of knowledge work – challenges identified by Ruggles (1998), Lesser *et al* (2001) and McKeen *et al* (2003) are important unfinished business for the KMS.

### **7.6 Closing Remarks**

- It is agreed that KM is part of the culture change taking place within the industry and will not be an overnight success, but take time. Introduction to KM within the university and college syllabus will help speed up the process.
- Recent encouragements (the UK government's prerequisite to achieve industry-wide improvements and the desire of individual organisations to seek competitive advantage) will support and go some way to making the case for KM.
- Changing people's behaviour is cited as the biggest impediment to knowledge transfer within organisations. Ironically, it is only after the technology exists that many firms realise how vital the people factors are.

## 8 REFERENCES

Cross, R., Parker, A., Prusak, L. and Borgatti, S.P. (2001) "Knowing what we know: Supporting Knowledge Creation and Sharing in Social Networks." *Organisational Dynamics* 30(2):100-120.

Despres, C. and Chauvel, D. (1999) "Knowledge Management(s)." *Journal of Knowledge Management* 3(2):110-120.

Egbu, C. and Botherill, K. (2001) "Knowledge Management and Intellectual Capital: benefits for project based industries", Proceedings of the Construction and Building Conference (CoBRA), London: RICS Foundation.

Grant, R.M. (1991) "The Resource-based Theory of the Competitive Advantage: implications for strategy formulation." *California Management review* 34(Spring):114-135.

Grant, R.M. (2000) "Shifts in the World Economy: the Drivers of Knowledge Management." Pp. 27-53, in *Knowledge Horizons*, edited by C. Despres and D. Chauvel. Woburn, MA: Butterworth-Heinemann.

Ives, W., Torrey, B. and Gordon, C. (1998) "Knowledge Management: an emerging discipline with a long history." *Journal of Knowledge Management* 1(4):269-274.

Kamara, J.M., Anumba, C.J. and Carrillo, P.M. (2002) "A CLEVER Approach to Selecting a Knowledge Management Strategy." *International Journal of Project Management* 20(3):205-211.

Quintas, P. (2002) "Knowledge Management in the 21st century", in *Deciphering Knowledge Management*, edited by Clegg, Booth, Clarke & Sominan. New York: Springer Verlag.

Lesser, E. & Prusak, L. (2001) "Knowledge at Risk in an Uncertain Economy." *Knowledge Connections*, 3 (2).

McAdam, R., McCreedy, S. (1999) "A Critical Review of Knowledge Management Models." *The Learning Organisation* 6(3):91-100

McKeen, J., Staples, S. & Cohen, D. (2003) "Examining Knowledge Managers." *Knowledge management Review*. Sample Issue.

Ruggles, R. (1998) "The State of the Notion: Knowledge Management in practice." *California Management review* 40(3).

von Krogh, G., Grand, S. (2000) "Justification in Knowledge Creation: dominant logic in management discourses." Pp. 13-35 *Knowledge Creation: a source of value*, edited by G. von Krogh, I. Nonaka and T. Nishiguchi. Basingstoke, London: Macmillan Press Ltd.

Wiig, K.M. (2000) "Knowledge Management: an emerging discipline." Pp. 3-26 *Knowledge Horizons: the present and the promise of knowledge management*, edited by C. Despres and D. Chauvel. Woburn, MA: Butterworth-Heinemann.

## **APPENDIX 1 – Interview Guidelines**

### **Information about the Company**

1. Tell me a bit about the company (main areas of business, when was the co established- longevity)
2. The organisational structure (size, centralisation, stratification, etc.). Where do you (& your team- if any) sit within this structure?

### **The Role of Knowledge Management Specialist (KMS)**

1. Tell me a bit about what you do (business activities, main roles & job duties).
2. Do you have any project-level role/responsibility? If yes, what are they?
3. I presume you have formal KM initiatives, informal processes in place. Also, the organisation is making use of KM tools (both techniques & technologies) in order to implement these. Would you please give me an account of these?
4. What role do you think you play in implementing the KM initiatives, processes, etc.?
5. Tell me a bit about the organisational culture and structure. How do you think structure & culture have an impact on how you perform your role & fulfil your responsibilities?

### **Background/Training & Education**

1. When were you appointed as a KMS in this organisation?
2. Had you performed a similar role in other construction organisations/industries prior to your current role? If yes, could you give me some more detail about these roles- responsibilities, duration for which you held that position, the reason for leaving?
3. Could you give me a detailed account of the positions you held in the 10-15 years prior to being appointed to your current role- responsibilities, duration for which you held that position?
4. What is your educational background? Concentrate on college onwards.
5. Which training/education that you have had best places you in your current role?
6. Which key skills do you think you are using in order to fulfil your current responsibilities (it might be useful to think what makes you good at your job)? How about knowledge? Competencies? Attributes/Attitudes?
7. Which of these SKAs do you think lead to success in your job?
8. Do you feel you have any training and education needs that would help you to do your job better? If you do, would you please tell me:
  - a. Content/ which subjects you think you need training on?
  - b. Which of these you would like to fulfil now? In the next 5 years?
9. Would you please tell me what you think would be the best way to fulfil your training needs, e.g. internal CPD, external CPD, university course (type: post

graduate diploma, masters)? Mode of training: PT, distant learning, e-learning?

10. What are the ten key ingredients that make for a successful knowledge management specialist?
11. If one were to devise KM training materials, courses; what might these focus on?

### **Challenges & Opportunities**

1. What do you think are the main challenges you face in carrying your work?
2. What factors do you think are likely to assist your activities as a KM specialist?

### **Importance attached to the KM specialist & Benefits they deliver**

#### **Importance in company**

1. Please tell me a bit about the level of importance do you think does your organisation attach to your role?

#### **Benefits & Measurement**

1. From your point of view, what benefits do you think you can deliver to your organisation as a KMS? Would you please give me an account of the benefits that you have already delivered to the company as a KMS?
2. Is your contribution to the organisation as a KMS measured? If yes, how?

#### **Importance within the industry**

1. What do you think might the increasingly important role of KMSs contribute to the industry?
2. And in what ways would you say the industry realises/acknowledges the contribution you are making as a KMS?

#### **The Future**

1. How do you see your role developing/changing/evolving in the future? What are the key factors that are likely to shape your role in the future?
2. Given the ongoing changes in the industry, how do you think the kind of roles KMSs perform are likely to impact upon the industry in the next five years?
3. In the future (next 5years), what particular factors are likely to impact upon your contribution to the industry?