Managing Organisational Knowledge in SMEs: how can it help you improve your business?

Workshop Report

held on 4 November 2003 in Glasgow, UK
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Introduction

This report concentrates on Managing Organisational Knowledge in Small Medium Enterprises (SMEs) workshop that was held in Glasgow on 4 November 2003. It is based on the discussions among the delegates, the majority of which were practitioners in the construction industry.

This report is divided into four sections. The first section outlines the workshop aims, objectives and the discussion topics. The workshop set-up, discussion topic allocations and group compositions are given in Section 2. Section 3 focuses on the synthesis of the discussions, the conclusions drawn from the synthesis and the feedback received from the workshop delegates are given in Section 4.

Section 1: Workshop Aims, Objectives & Discussion Topics

This workshop was organised as part of the DTI-funded ‘Knowledge Management for Sustainable Construction Competitiveness’ project\(^1\). Its aim was to provide insight into knowledge management (KM) in SMEs and the important factors for consideration. In addition, it sought to explore and capture the needs, expectations, challenges and user requirements of construction industry organisations for knowledge management programmes. The intention is to accommodate these requirements in proposed guidance documents and training materials/programmes on KM for the wider benefit of the construction industry.

The targeted objectives for addressing the above aims were:

- To provide an awareness of knowledge and its management, its complexities and benefits to SMEs;
- To identify the strategic and practical issues that arise for SMEs that want to introduce a knowledge management strategy;
- To provide an opportunity for people to engage with a community of businesses and organisations interested in knowledge management in the construction industry;

\(^1\) The project is funded under the Partners in Innovation (PII) Programme (CI 39/3/709). Further details on the project is available on the project web-site: http://www.knowledgemanagement.uk.net
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- To share experience and learn from others involved in the process.

The following discussion topics were identified in order to capture users' needs, expectations and KM requirements:

2. What benefits would you (or your organisation) expect a KM initiative to deliver?
3. Main challenges SMEs (would) face in implementing a KM programme.
4. Knowledge sharing across the supply-chain & absorptive capacity of SMEs.
5. What are your and your organisation's KM training needs? What would be the appropriate training methods and modes for you and your organisation? What role would IT play in KM training in your organisation?

Section 2: The Workshop Set-up

The event was advertised mainly among construction organisations with a view to increase the attendance of practitioners. ITCBP, CBPP, Centre for the Built Environment (CBE), Federation of Master Builders (FMB), National Specialist Contractors Council (NSCC), and Construction Products Association (CPA) kindly helped the research team to disseminate information about the workshop. There were 29 delegates from 21 organisations, 14 of which are involved in design and construction at operational level.

The afternoon was divided into two sessions. Firstly, Mr John Easton of The Parr Partnership and the Research Team made presentations on KM. The first presentation set out to share the story of the evolution of the Knowledge Management practices in The Parr Partnership through the experience of Mr Easton, who is a Senior Architect. The presentation by the Research Team focused on the Knowledge Management for Sustainable Construction Competitiveness project and the study findings to date. The second presentation concentrated on:

- the specific features of knowledge production in the construction industry;
- knowledge practices in software & computing services, manufacturing, agriculture and construction sectors;
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- techniques and technologies for KM in the construction industry.

Further information on these presentations is included in Appendix 1. The presentations were followed by group discussions. Presentations by group speakers and a general discussion session concluded the event.

The delegates were divided into three discussion groups prior to the workshop. The nature of both the organisations that the delegates represented and their ‘day-jobs’ were the two criteria used in allocating delegates to groups. Here, the fundamental aim was to spread the delegates evenly in order to get a balanced representation in each group.

Also, each group was allocated four of the five discussion topics that have been listed above. The discussion topics and their allocation per group are given in Error! Reference source not found. (see Appendix 2). Topics 3 and 5 were assigned to all groups as the research team considered them to be of significance in managing organisational knowledge in SMEs. The group compositions are given in Error! Reference source not found. (see Appendix 2). The table shows that construction organisations, governmental and quasi-governmental, and academic organisations were represented evenly in each group.

Section 3: Synthesis

This section concentrates on the responses to the discussion topics. Hence, it is divided into five sub-sections to cover the responses to each discussion topic separately. The raw responses from each group can be found in Appendix 3.


Two groups discussed this topic. Both groups stated that KM initiatives should be implemented in organisations as they would result in organisational change and improvements. The delegates said that organisational change, increased profits, becoming a ‘learning organisation’ and improved connectivity would be the outcomes of successfully implemented KM initiatives.

The factors which were cited as the challenges that organisations would face in implementing KM initiatives (see Appendix 3 for a full list), can be divided into four categories. The cited challenges relate to:

- organisational culture & structure;
• people’s perception of knowledge & knowledge management;
• characteristics of knowledge; and
• economics of KM.

Organisational culture becomes a barrier to KM specifically when employees are not motivated to ‘manage’ their knowledge. Employees constantly find themselves under high time pressure, which does not allow time for reflection on past experience, or invest ‘that little extra time’ on responding to queries from their colleagues. It has also been mentioned that it might take a long while for the ‘top-level’ KM initiatives to ‘filter down’ the organisational hierarchy. Delegates considered this time lapse as a barrier, as it would be difficult to maintain the initial momentum until the KM initiatives are ‘filtered down’.

Delegates agreed that knowledge was still perceived to be ‘power’. Thus, employees were reluctant to share their knowledge with their colleagues in order to remain and be seen as valuable or ‘important’ to their organisations. The low level of job security within the industry was considered to strengthen the employees’ reluctance in sharing their knowledge.

There is still ‘cynicism’ about the longevity of KM as a management approach. Many people in the industry consider KM to be ‘another fad’, which is likely to fade away in the short-to-medium term. This creates reluctance among senior managers to invest in KM.

The group discussions pointed to the fact that knowledge was rather ‘slippery’, in that it was difficult to identify the knowledge that was ‘worthy’ of retention, i.e. knowledge that would give organisations competitive advantage. Unless this is done, it is highly probable that the cost of capturing knowledge would spiral due to high volumes of knowledge embedded in construction organisations. The delegates agreed that it would be difficult to ‘collect’, ‘package’, ‘retrieve’, and ‘disseminate’ knowledge, even if organisations identified which knowledge to retain. Added to these difficulties, was the need to ‘validate’ knowledge before it could be used.

Most emphatically, the discussions on the economics of KM centred around the cost of IT systems. High cost of introducing IT systems was mentioned among the barriers to implementing KM initiatives. This can be a reflection of the fact that the industry still sees a close synergy between KM and IT systems that would assist in capturing knowledge.
Where & how to start?

Both groups acknowledged that it was necessary to have ‘inspirational champions’ and senior management support, and to ‘empower people’. This indicates that practitioners are aware of the social dimension of KM, as well as its technology dimension.

In terms of the actual starting point in implementing KM initiatives, one group stated that knowledge mapping, e.g. identifying ‘what the organisation knew’ and ‘the organisation’s areas of expertise’, would be the starting point. The second group agreed that knowledge sharing across the supply-chain could be the starting point. This suggests that the starting point that would be most appropriate to individual organisations can only be identified by considering a whole host of issues. These include, among others: size of organisation, type of knowledge which would give organisations competitive advantage.

2. What benefits would you (or your organisation) expect a KM initiative to deliver?

The benefits, which the delegates stated that the KM initiatives could deliver, can be categorised as follows:

- Increased competitive advantage;
- Improved efficiency;
- Creation of a ‘learning culture’;
- Improved use of existing knowledge, expertise, skills and competences inherent in the organisation;
- Enriched business environment;
- Future risk minimisation.

It was agreed that KM could assist organisations in ‘avoiding duplication’ and ‘minimising errors’, and thus improving efficiency. The delegates stated that this could be achieved by improving the ‘connectivity’ of employees within an organisation. One delegate stated that ‘connectivity’ could be increased by providing information on ‘what people knew’. Once organisations had an account of the expertise, skills, competence and knowledge of their employees, then it would be easier to allocate the ‘right’ people to the ‘right’ jobs, and thus to ensure consistency of service quality.

The ‘softer’ benefits of implementing KM initiatives were also accredited. It was agreed that KM initiatives could help:
• build social relationships between employees; and
• create a 'learning organisation' whereby the employees were empowered to innovate and learn from each other.

Increased job satisfaction was considered to be a natural outcome of the above benefits.

Once again, it was apparent that the industry was risk averse. KM was regarded to be a means to minimising future risks to the company through the retention of historic project knowledge. The difficulty of first identifying which knowledge would be needed in the future, then categorising and retrieving historic project knowledge was also acknowledged by the delegates.

3. Main challenges SMEs (would) face in implementing a KM programme.

All delegates agreed that it was not possible to come up with a definitive list of challenges in implementing a KM programme. There was consensus that the challenges would be different from one organisation to another depending on a whole host of factors, e.g. the nature of business, size of organisation.

At a generic level, the ambiguity faced in defining KM and in identifying its potential benefits was considered to be a challenge that needed to be overcome before any attempt to implement specific KM initiatives. This suggests that not rolling the KM initiatives under the KM banner might be strategically advantageous. This should also reduce the risk of alienating the employees, who may not know what KM is about.

The challenges with specific reference to SMEs can be divided into three groups:

• organisational culture;
• measuring the impact of KM;
• the characteristics of knowledge.

The only challenge which was mentioned by all discussion groups, was the need to measure the impact of KM initiatives on employees' performance and the organisations' efficiency. The difficulty faced in justifying the cost of implementing KM initiatives against the value they could deliver to the organisation, was considered to be an important challenge that needed to be overcome. The discussions on measurement were, almost exclusively, related to the difficulty of making a business case for implementing KM initiatives. This shows that delegates believe that they need to quantify the short, medium and long term benefits of KM. This finding raises the need for further research on making a business case for KM.
It was also felt necessary that organisations introduced and integrated their employees’ knowledge competences to their appraisal systems.

Two of the three discussion groups raised organisational culture as a barrier to implementing KM initiatives. The discussions on organisational culture were associated with the ‘knowledge is power’ syndrome and resistance to change in both cases. It can thus be argued that KM initiatives might have to be accompanied by a move towards organisational change if they are to be successful.

Knowledge is contextual and personal. These characteristics result in important challenges that SMEs need to overcome. First, they need to find innovative ways of mapping and disseminating personal knowledge and experience. The delegates stated that the scale of this problem increases as organisations become larger and dispersed geographically. Second, organisations need to ensure that they capture their employees’ tacit knowledge before they resign or retire. This second challenge seemed to relate mostly to the SMEs where the level of staff turnover is high.

4. Knowledge sharing across the supply-chain & absorptive capacity of SMEs.

Some delegates found it difficult to understand what “absorptive capacity” meant. In very simple terms, absorptive capacity was defined as an organisation’s capacity to learn from outside the organisation.

Both groups that discussed this topic stated that the contractual arrangements would promote or inhibit knowledge sharing across the supply-chain, and thus have an impact upon the absorptive capacity of the organisations. It was apparent that clients that continuously procure large projects, increasingly rely on framework/partnership type agreements. Such agreements were considered to encourage, or even oblige, knowledge sharing across the supply chain. As a result, clients were seen to ‘play an important role’ in promoting knowledge sharing across the supply chain.

A delegate from a small organisation stated that they would be willing to share their knowledge, if they were part of a framework-type agreement. He mentioned that guaranteed successive work was the main reason why they would share their knowledge. This implies that an organisation’s confidence that sharing knowledge will not result in loss of competitive advantage plays a more important role than organisational size in their preparedness to share knowledge.
Delegates who had been involved in framework type agreements were aware that knowledge sharing was not necessarily a one-way process, but it was a two way process. They stated that knowledge suppliers could in turn become knowledge recipients. This process was valued as it would help organisations in increasing their competitive advantage.

‘Knowing each other’ was mentioned among the factors which impinged upon knowledge sharing across the supply chain. This suggests that trust is closely related to knowledge sharing.

5. What are your and your organisation’s KM training needs? What would be the appropriate training methods and modes for you and your organisation? What role would IT play in KM training in your organisation?

It was agreed that employees in large, medium and small sized organisations needed KM training. The delegates stressed that training needs would depend on a number of factors that included:

- Nature of business, e.g. consultants & contractors;
- Size of organisation;
- The hierarchical level at which trainees are;
- The roles & responsibilities of trainees.

The timing of KM training was raised in one of the discussion groups. Although the delegates agreed that employees needed KM training, it was felt that such training should be provided only after some progress has been made in implementing KM initiatives, such that employees had seen the benefits of KM before they were asked to undergo KM training.

Delegates considered internal training to be more beneficial than external training. Their view was that internal training could be more sympathetic to the organisation’s and employees’ training needs. It was agreed that KM training could be aligned with the continuous professional development (CPD) that consultants are obliged to undertake.

E-learning could be advantageous in that it would help overcome problems associated with geographical dispersion and reduce the time that the training would take. It could thus make senior managers more willing to allow their employees undertake KM training.

The issue of ‘jargon’ was also raised. The delegates felt that KM training materials should be free of ‘jargon’ and the language should be ‘simple’ to understand.
Once again, the significance of ‘inspirational mentors’ and ‘passionate champions’ in KM training was acknowledged.

**Section 4: General Discussion & Conclusions**

In conclusion, the delegates agreed that KM initiatives could deliver business process, financial and organisational improvements. These are in line with the project strategy which aims at providing outputs that really impact upon the economic, social and environmental performance of the construction industry organisations.

It was stated that organisations could face challenges that were associated with organisational culture, people’s perception of knowledge & knowledge management, characteristics of knowledge, and economics of KM in successfully implementing KM initiatives.

Getting senior management support and having an ‘inspirational champion’ was considered to be the first step in implementing KM initiatives. Mapping the existing knowledge and expertise within an organisation, and encouraging knowledge sharing among employees were mentioned as important practical steps. It was suggested that the clients’ could play a pivotal role in promoting knowledge sharing across the supply-chain.

Delegates agreed that employees needed KM training. They also stated that specific training needs of organisations and employees would differ, and that these would have to be taken into consideration in preparing training materials.

Overall, the delegates found the workshop useful and worthwhile for their time and effort. Many of them expressed their satisfaction informally after the workshop and stated ‘the afternoon has yielded inspiration/ideas’ to start making changes in their organisations straightaway. The following are some quotes from the feedback forms:

‘First class from the food to the organisation. We need to set-up a network for all participants. Please engage me in your future work.’

‘Presentation by The Parr Partnership was very thought provoking.’

‘Very good! I learned much from others. I could see that problems experienced are common across other organisations and disciplines.’
'Very well prepared! Enjoyed the workshop group discussions most.'

The delegates were keen to set-up an interest group, and possibly a web-based discussion group, on Knowledge Management. This request has been kindly followed up by Mr. Easton. A discussion group on ‘Knowledge Management in Construction’ has now been set up on Pulling Together web-site (http://www.pullingtogether.co.uk). The Research Team finds the practitioners willingness to take part in (future) research and strengthen the established network encouraging.
Appendix 1

Presentations
John Easton - BArch (Hons) BSc RIBA ARIAS SEDA
Senior Architect - The Parr Partnership

A workshop organised as part of the ‘Knowledge Management for Sustainable Construction Competitiveness’ project funded by the Department of Trade & Industry under the Partners in Innovation Programme (CI 39/3/709)
Glasgow Caledonian University
4th November 2003.

Aims

This paper, and the workshop presentation that it arises from, set out to tell the story of The Parr Partnership’s evolution of Knowledge Management practices through the experience of one of their project architects.

The intention here is to:

• Tell the story of the Practice’s experience
• Highlight the achievements and the pitfalls
• Identify key lessons for other practitioners

Practice background

The Parr Partnership are a commercial private practice with over eighty staff, lead by seven partners, based in six offices across Scotland and England. The Practice has a number of key skills, including masterplanning, design innovation, envelope design, conservation, interior design, space planning, building regulation assessment, and graphic / 3D modelling.

The Parr Partnership’s growth, particularly over the last twenty of its forty years, has largely followed the growth and development of the IT industry in the UK. Numerous large inward investment projects principally from America and the Far East enabled the development of a commanding position in that market. The recent decline of this sector has prompted diversification, and a move into emerging markets including PFI Schools, biotechnology, luxury city centre apartments, and leading framework agreements.

John Easton

John Easton studied architecture at the University of Dundee in the mid 1980’s, and practiced with Gauldie Wright and Partners in Dundee before joining Reiach and Hall, first in Edinburgh then in Glasgow, before finally moving to The Parr Partnership in Glasgow as a senior architect in 1990. Apart from a brief spell establishing an office in Glasgow for Reiach and Hall, his career has been devoted to designing and running construction projects, so far with a total of over 60 and a construction value exceeding £500M.

John’s interest in knowledge management began in the late 1980’s, prior to a realisation that this aspect of organisational science had a name, and certainly before the nature and value of intellectual capital began to be properly understood by the construction industry in the United Kingdom.
The need – drivers for change

My interest in design and construction knowledge arose in the late 1980’s and early 1990’s when as a young architect I began to understand some of the characteristics of daily professional practice:

- **Volatility** - Architectural practice (and to a similar extent building construction) was an uncertain business, subject to sharp and sometimes sudden changes in workload. The analogy with shipbuilding seemed particularly clear – if you have an order its great, if you don’t it is potentially disastrous. Design has a short shelf life. Essentially building design is consumed as it is produced, often literally, as a building is constructed. Design for most building types cannot be stockpiled in lean times against future demand, and if our designer’s leave their skills and our competitive edge leave with them.

- **Inefficiency** - Building design was generally inefficient, involved a lot of needless repetition, and avoidable risk. Practical experience was not being captured, and if it was it certainly wasn’t being passed on effectively.

- **Stagnation** - Daily practice often involved some hard lessons, many of which were not learned properly due to pressure of time. The same construction detail might be copied and reused without considering questions of context, leading sometimes to avoidable failures, or conversely previous good solutions were overlooked or discarded needlessly.

- **Un-sophistication** - The architectural profession was focused solely on the business of “delivery”, and unlike businesses in other industries such as manufacturing, had dared not consider examining other, possibly better, ways of operating for fear taking their eye of the ball.

The development of KM practices

An interest in knowledge and data systems began for me around the late 1980’s. At that time mini and personal computers were emerging as useable tools for architectural drafting, and PC’s were being used increasingly for word processing. Other business sectors were making use for computers for a far more extensive range of purposes, but the architectural design profession still viewed them primarily as graphic tools.

Initial Focus – Data Management

I began in my own time to experiment with some of the new data management software that was emerging at that time. For the first time it was possible to write programmes without knowing code, and to evolve, revise and develop tools for handling information. Starting from a simple data model as a prototype it was possible to build and refine tools for a variety of uses.
New ways of working

The initial objective was to address a pressing need for effective document management, to improve the tracking of drawing issues and receipts that previously were recorded by hand. I began by creating data tools that I then ran in parallel with the Practice’s manual systems until the Partners became sufficiently comfortable to allow their widespread use. An improving understanding of the potential of data management software within the Practice then saw the introduction of document creation applications such as door or window schedules.

After the initial introduction of database technology most of the subsequent improvements were championed by technical (non IT) staff through trial and error in the course of their daily project work. Database development was not allocated a budget, nor was time set aside to produce the menus, scripted routines, or other refinements that would improve performance. So while data management tools allowed a massive forward step in the control and production of information, ultimately their full potential was not realised. Perhaps more significantly, the benefits that could have arisen from feedback through data analysis were missed, such as using past records as an aid to estimating effort for new projects.

After the initial advances of the early 1990’s further improvement was confined to limited minor refinements.

The Introduction of Quality Assurance

Around the same time that data management tools were being introduced The Parr Partnership first introduced Practice wide quality management procedures. This was a response to the perceived fragmentation of standards and working methods across the Practice’s offices, and the consequent exposure to increased risk.

Quality assurance introduced procedures and standards that provided greater consistency. But like the data management tools, after initial early advances the improvements to overall performance tailed off. And like the database solutions the next few years were spent refining that initial work.

Despite the improvements that QA brought, I believed strongly that this was only part of the solution. It was the Practice’s professional indemnity insurers, who understandably are concerned primarily about minimising their client’s exposure to risk, who shaped those QA procedures to a large extent.

I view risk management as akin to goalkeeping. Goalkeepers are there to stop bad things happening, but the best that QA can do when it is driven by risk minimisation is to avoid loosing. This essentially self-limiting objective would not provide the means by which we could excel. What was needed was something less rigid that would actively support consistently positive outcomes, design excellence, and the development of a signature that was identifiably our own. In essence, something was needed that would allow the ball (key knowledge) to be passed to the forwards (our designers) as they raced towards the net.
Growth in Practice Knowledge Sharing - Triggers for Accelerated Change

Most of the real improvement in knowledge management has occurred since 2001 and is linked to a number of changes within the Practice. These changes were introduced in response to a perceived need to "modernise" but were a series of separate initiatives rather than an integrated strategy.

Data Management – an out of the box solution

In the late 1990’s new software became available for data management developed in the UK specifically for architects. Archetype software (www.archsoft.co.uk) provided an out of the box solution to data management that even in its early versions could handle a broader range of tasks than had been developed internally with Paradox, and did so through a user friendly interface. Archetype lacked the facility to perform bespoke data queries, but more than made up for this with its ease of use and with its scope, encompassing Practice management as well as project management tools. So Paradox was gradually phased out and replaced by a product that offered at the outset fuller benefits than our own attempts at applications development ever achieved.

Establishment of Focus Groups

From 2001 a number of focus groups were formed within the Practice, drawn from technical staff at all levels and with representation from each of the offices.

A Procedures Committee had been established in the early 1990’s to manage and monitor Quality Assurance. This was augmented in 2001 by groups to focus on Technical issues (the production of design information), Sustainability, and Marketing.

In addition an IT Support Group was formed for the first time, to implement and manage the new computer tools. Prior to that point computer management had been a secondary task for a nominated architectural technician in each office, supported in more recent times at Practice level by a senior architectural technician who was provided with network administrator training. Even now, all IT support staff within the Practice have an initial qualification in architectural technology. This was a conscious choice, to ensure that hiring IT professionals who might have their own agenda did not skew the core values of the Practice. While this undoubtedly slowed the overall rate of improvement, it was seen as an essential safeguard.

Introduction of Windows 2000

Defence against data theft and against malicious intrusion into computer networks was the a leading concern that slowed the pace of development through the 1990’s, often causing the Practice to lag behind current developments until an appropriate level of comfort was reached. That changed with the introduction of Windows 2000, which brought with it a set of security features that would provide much of the protection that was wanted. Growth in the effective use of IT accelerated from the point when...
Windows 2000 was adopted, although to exploit it to the full it was necessary to increase the number of support staff dedicated to computer management from one to two.

**Office linking by data tunnels**

The main advance that improved security allowed was the introduction of a Practice wide broadband network, and the investment in associated hardware. Increasingly this enabled the Practice to operate as a single virtual office, unlocking the potential for data and knowledge sharing.

**Introduction of a Practice Resource Server**

A key early component of the Practice network was a dedicated “resource server” to serve as a knowledge store and reference source for architectural staff. The resource server is accessed through a web browser interface and is structured around the output of the focus groups; Technical, Procedures, Marketing, and Sustainability. The resource server was trialed initially to deliver the work of the Sustainability Group, in the form of a “Sustainability Quick Guide”. This provides guidance in a number of areas:

- **Home Page** - This introduces the guide and the focus groups members, provides contact details, and asks for feedback.
- **Policy Guidance** - Practice policy on the relevant topic is set out clearly.
- **Technical Guidance** - is provided under a number of topic headings, including links to information and resources outside the Practice.
- **On-line Tools** - Where these are available, links are provided to on-line tools (e.g., with sustainability, BRE’s Whole Life Cost Comparator software [http://www.solsticetrial.com/wlcconline/](http://www.solsticetrial.com/wlcconline/))
- **Studies** - Reports from study trips or conferences, and case studies on specific projects are provided to assist with research.
- **Internet Links** - A comprehensive indexed list of Internet links is provided.
- **Database of Skills and Interest** - The results of a knowledge survey on the topic are included in the form of a searchable database.

**Context Based Knowledge Searching**

Of all of the features of the Sustainability Quick Guide, it is probably the skills database that holds the earliest promise for knowledge sharing.

A staff survey was conducted, based on a questionnaire that broke down sustainability into a series of sub-topics. Staff were asked to record both their experience and their interest in each topic, and to indicate whether they would like to learn more or
One of the dilemmas of business, and of the design business in particular, is that often we do not know what we know. The survey results were recorded in a simple database and query results are presented in the web browser.

A conscious decision was made to record interest as well as skills, since this would indicate where further training might be appropriate, along with a willingness to learn. By this means it is possible to align the staff’s personal and professional interests as closely as possible with the architectural and business aims of the Partnership. The intention is to rerun the survey periodically and to make the survey questionnaire part of the induction process for new staff.

Query results include contact details for the individuals who have the knowledge that is being sought or who have expressed an interest in the subject, and the searcher is encouraged to establish direct contact as the next step. By doing this it is possible to acquire not simply facts, but also to develop understanding, since the story told by the more experienced practitioner will set the knowledge in its proper context. That first contact might be followed by an exchange of drawings or other material that the more knowledgeable practitioner can recall from archives. This removes the need for the less knowledgeable colleague to conduct “cold” archive searches that could produce unreliable or out of date guidance.

A key advantage to this search and exchange process is that, if the knowledge is there, reliable solutions will naturally come to the surface time after time. Construction knowledge and design details will be exchanged and reused because they work, and, crucially, they will be improved or adapted to fit the new context. This process leads to the sharing and natural evolution of good design. In addition, as good solutions are exchanged and developed, and exchanged and developed again over time, it will lead to the natural development by consensus of a “style” that represents the Practice. A signature. The historical alternative, of a design manifesto, or reliance on standard details, or pattern books, is prescriptive, misses the crucial issue of context, and is unable to sustain growth through evolution.

The following scenarios illustrate the importance of establishing links between practitioners to facilitate meaningful conversation and knowledge sharing:

**Typical Scenario #1**

**Scenario**  
An existing retail client is considering us to design stores for them in Poland.

**Dilemma**  
We don’t know Poland and we don’t speak Polish.

**Hidden solution**  
One of our architects (in a different office) is Lithuanian and is fluent in technical Polish.

**Problem**  
How do we discover that we have this knowledge?
**Typical Scenario #2**

**Scenario**
One of our designers is considering rammed earth as a wall construction.

**Dilemma**
He is uncertain how to specify and detail rammed earth.

**Hidden solution**
One of our Partners (from another office) has personally built rammed earth walls and could advise him.

**Problem**
How do we discover that we have this knowledge?

In the first case, which occurred before the facility for knowledge searching was introduced, the contact between knowledge and need was never established. In the second case the contact was supported and knowledge was exchanged.

**On-line Communities of Practice**

The Parr Partnership’s experience with knowledge management provides some interesting lessons, but it is worth remembering that the Practice and its capacity to adopt knowledge sharing practices is not typical. It’s all a matter of size:

- There are 30,275 registered architects in the United Kingdom
- More than 2/3rds work in practices of 10 or less
- Many operate as sole practitioners

So how then do smaller organisations find or share knowledge. For many it should be easy to share knowledge within their organisation, since usually it will operate from one office and often the technical staff will all work in the same room. Sophisticated technology appears less relevant when there are opportunities to exchange experience through open discussion, or by overhearing conversations and chipping in. But the knowledge base will be limited in these circumstances, simply by the small number of practitioners in the work group. In this case the solution is to network these smaller organisations into a larger community of practice.

The Internet supports a number of such on-line construction communities. Most notable is RIBANet ([www.architecture.com/go/Ribanet/Home](http://www.architecture.com/go/Ribanet/Home)) hosted by the Royal Institute of British Architects to support members with email, real-time chat, news, and discussion forums. Or for the general construction community there are newer services like Pulling Together ([www.pullingtogether.co.uk/](http://www.pullingtogether.co.uk/)).

**What's Next**

The focus groups still have more work to do, and the resource server will receive more information as the others follow up the initial trial conducted by the Sustainability group. In addition the QA procedures are being transferred from their desk side manual form to a paperless searchable electronic medium, including the catalogue of forms, checklists, and model letters.

The next step is more connectivity. Initial trials have been started with Microsoft Netmeeting as a tool for real time collaboration.
And Intranet News Groups will be established as a forum for question and answer.

As the size and quality of the knowledge base develops, selected elements will also be posted on the Practice’s web site. This will be structured at three levels. Publicly accessible elements will be enhance the Practice’s Internet presence and promote the Practice’s reputation as an authority on selected topics. Other elements will be provide clients, contractors, or current design teams with password protected access to selected parts of the knowledge base, to provide briefing guidance or information on best practice or on compliance with regulations.

But most importantly, there will be more focus on human issues and on supporting productive contacts and exchanges between individuals who need or have knowledge.

Key Lessons for Effective Knowledge Sharing

So what are the lessons to be drawn from fifteen years of working towards better knowledge sharing:

- Data capture is only the start
- Explicit knowledge grows stale, tacit knowledge exchange is the true challenge
- Understand context, context is everything
- Empower staff
- Support conversation
- Pass on personal experience
- Avoid being prescriptive
- Build people not just buildings

The Quest

And as an experienced architect and construction practitioner, the values that motivate me now are based increasingly on a realisation it is people and not facts that lie at the heart of our quest to make better buildings:

- Hand on Knowledge
- Realise that information is not power
- Mentors earn respect
- Today’s Teachers will be tomorrows leaders
- Intellectual capital is our only true asset

Next Steps

If you are interested in knowledge exchange, please feel free to contact me and help to build a community of practice for construction knowledge sharing.

john.a.easton@member.riba.org

Any views or opinions presented here are solely those of the author and do not necessarily represent those of The Parr Partnership.
Managing Organisational Knowledge in SMEs: how can it help you to improve your business

4 November 2003

Welcome!

Workshop is Part of the DTI Funded Study on KM

- A 2-year study entitled: “Knowledge Management for Sustainable Construction Competitiveness”
- Partners in Innovation (PII) - Focus programme involving academia and Industry

Research Team

Prof Charles Egbu
Dr Esra Kurul
Glasgow Caledonian University

Prof Paul Quintas
Dr Vicky Hutchinson
Open University Business School

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Dr Ahmed Al-Ghassani
Loughborough University

Project Partners

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

Project Outputs

- Identification of specific features of K-production & application in construction (WP1)
- A systematic analysis of knowledge practices in other sectors: lessons for construction (WP2)
- Examine & document different technologies for KM, including their relative effectiveness (WP3)
- Map out training, career path and background of KM specialists in construction (WP4)
- Training materials on KM (WP5)
- Web-site: www.knowledgemanagement.uk.net
- Workshops
- Publications in magazines and journals

Aims & Objectives of the Workshop

- To provide an awareness of knowledge and its management, its complexities and benefits to SMEs
- To identify the strategic and practical issues that arise for SMEs wanting to introduce a knowledge management strategy
- To provide an opportunity for people to engage with a community of businesses and organisations interested in knowledge management in the construction industry
- To share experience and learn from others involved in the process
WP 2
A systematic analysis of knowledge practices in other sectors: lessons for construction

WP2: researched KM in four sectors
- Software & Computing Services
- Manufacturing
- Agriculture
- Construction

Aim: to analyse knowledge management in four sectors & identify lessons for the Construction industry
- Research methods
- Findings – the highlights
- Comparisons across sectors

Firms sizes:
- from 'one-man-band' IT consultants and small manufacturing firms (< 10 staff)
- to major multinational corporations
Informal KM
- **generating** new knowledge
- **communicating** or **sharing** knowledge
- **searching** for knowledge
- **combining** or **transforming** knowledge
- **capturing & storing** knowledge
- **mapping** knowledge
- **applying** and **re-using** knowledge

Informal: typical questions
- 'When you are solving problems, or doing creative work, where do you get your ideas from?'
- 'Are there people that you communicate with regularly, such as by e-mail, or face-to-face contact, where you discuss work generally?'

Formal KM
- 'Were these initiatives established as a result of a formal **business case**?'
- 'What are the **aims** of initiatives?'
- 'Who sponsors or champions these?'

Findings: the highlights
- IT consultants do it on the internet
- Manufacturers do it in Mode 1
- Farmers do it in discussion groups
- Construction does it in chains

'IT consultants do it on the internet'
- **K Generation**: use multiple sources. Internet provides access to technical information, casual comments, discussions & formal white papers.
- **Sharing**: Internet-based chat rooms, discussion groups and bulletin boards are platforms for knowledge sharing between enthusiasts, practitioners and manufacturers.
- **Capture**: document thoughts on potential 'bugs' in products, thoughts on inefficiencies within the firm and ideas for improvements and ideas for new business.

IT Quotes: Where do new ideas come from?
- 'Frequently from things you've seen before.'
- 'For product ideas we look to Microsoft first. Copy. Plagiarise. We look at competitors' systems – find information on the system, look at clients' products. Buy it and take it apart. See how it works.'
Manufacturers do it in Mode 1

- **Formal** science or engineering knowledge
- **Knowledge-gap**: knowledge-intensive firms have gap between them & others. Gap source of competitive advantage for innovating firms, but for diversifying firms the gap needs to be filled.
- **Capture**: very limited. In one case, project files were not kept. In another, prices were kept in a personal, rather than a shared file. Only in one case was there an informal attempt to capture new knowledge. An attempt at formal knowledge capture took the form of the skills database.

Manufacturing quote:

'It is half-arsed, but it will probably grow because the company is keen to pursue multi-skilling.'

Farmers do it in discussion groups

- Combine **experiential knowledge**, based on life-long learning, with formal further education.
- Engage in a variety of activities where they learn from one another & share experience, eg cereal discussion group (17 years), potato group (4 or 5 years), royal highland show.
- **Long-term, strategic** perspective on business, accounting for local, European and global factors.
- **Low profit** margins are a driver of innovation.

Network of farmer:

- fellow farmers
- farm open days
- agricultural shows
- Scottish Natural Heritage
- Forestry Commission
- Farming and Wildlife Advisory Group
- Farm vet
- Scottish Agricultural College
- Scottish Quality Meat (formerly Meat & Livestock Commission)
- NFU (for political info on e.g. CAP reform)
- Southeast Environmental Rural Affairs Department
- Morden Institute (mainly for advice on domestic livestock diseases)

'Construction does it in chains'

- **Verbal communication** solves day-to-day problems. For project staff, this is almost entirely within the company or the immediate supply chain.
- The industry values experience very highly and personal communication emerges as the most common way of sharing learning from experience. The industry finds it very difficult to capture knowledge gained from experience.
- Most companies regard **training** as a means to improve on their existing knowledge.

Construction quote:

Knowledge, skills & expertise described as, 'Having come from the ranks, being a lifelong learner and learning from others.'
Knowledge creation in Construction:
- Confined to oral communication within the project team
- Practitioners are not exposed to different types or source of K.

<table>
<thead>
<tr>
<th>Source</th>
<th>Manufacturing</th>
<th>Farming</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>x</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Problem</td>
<td>Internal</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>External</td>
<td>x</td>
<td>1</td>
</tr>
</tbody>
</table>

Knowledge sharing outside the firm in Construction:
- No sharing beyond commercial agreement or purchase of services

<table>
<thead>
<tr>
<th>Source</th>
<th>Manufacturing</th>
<th>Farming</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>active participation in trade associations, networking organizations, training programmes</td>
<td>discussion groups (internal)</td>
<td>formal KM initiatives to share within the firm</td>
</tr>
</tbody>
</table>

Knowledge capture in Construction
- Desire to capture knowledge gained from experience

<table>
<thead>
<tr>
<th>Source</th>
<th>Manufacturing</th>
<th>Farming</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>One attempt at formal KM capture in a large firm, through limited in success</td>
<td>None</td>
<td>[\text{various formal attempts to capture lessons learnt following past project failures}]</td>
</tr>
</tbody>
</table>

Knowledge searching & sourcing in Construction
- Trade press for business development opportunities
- Staff, particularly project staff (both on- and off-site) do not source beyond the project team

<table>
<thead>
<tr>
<th>Source</th>
<th>Manufacturing</th>
<th>Farming</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Journals, Internet, gateways eg. Envirolink Northwest, databases eg. DTI Future Energy Solutions, electronic news up-dates</td>
<td>Research on request from Scottish Agricultural College</td>
<td>Company libraries, trade &amp; national press</td>
</tr>
</tbody>
</table>

Formal KM success factors

<table>
<thead>
<tr>
<th>Factor</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simplicity</td>
<td>Initiate must be simple to understand. It must be obvious what the aim is, the tools or technique must be simple to use and it must be evident what the benefit is.</td>
</tr>
<tr>
<td>Human interface</td>
<td>Users interface with a person, not an IT system of the initiative which used databases, those where users interfaced with someone who interrogated the database on their behalf were successful, whilst the initiatives where users had to interface directly with the database were not.</td>
</tr>
<tr>
<td>Evaluation</td>
<td>Initiatives are assessed regularly and evaluations include qualitative and quantitative data. In many cases, this includes anecdotal evidence. The performance evaluation of the knowledge management staff, and in some cases the general staff, is related to the usage of the KM tool or technique.</td>
</tr>
<tr>
<td>Champions</td>
<td>No effectiveness of the champion affects the success of the initiative. It was essential to have a genuine champion for the initiative. In addition, managers were supported by being given material, such as presentation slides, which helped them promote the initiative during the course of their daily work.</td>
</tr>
<tr>
<td>Internal marketing</td>
<td>Marketing was used to communicate to staff, not only the existence and function of the initiative, but to promote the initiative and its benefit for staff. Internal marketing involved highlighting the initiative’s plus points, such as how it could help the individual work more quickly, find answers more easily or produce better solutions. Telling the initiative’s success stories was also crucial.</td>
</tr>
<tr>
<td>Rewards</td>
<td>Rewards or incentives were given for knowledge sharing and re-use. These could be Somebody to value from large cash rewards (forantonies) to key items (car or sharing). Both initiatives were successful. Rewards are useful for demonstrating the strength of the company’s commitment to knowledge management, but a small token of gratitude can be as effective as large ‘prizes’.</td>
</tr>
</tbody>
</table>
WP 1: Knowledge Production, Sources & Capabilities in the Construction Industry

What will I cover?
- Current conceptual struggle
- Objectives of WP1
- Key findings

Current conceptual struggle
- Assets, resources, intellectual capital
- KM processes capabilities

Objectives
- To examine and identify the specific characteristics of knowledge production in the construction industry;
- To document the key types of knowledge resources and capabilities relevant to the sector

Focus of WP1
- Triggers of knowledge production
- Knowledge sources & capabilities in the construction industry
- Knowledge production from industry, organisation & project perspectives

Main triggers of knowledge production
- Need to solve problems
- Motive to innovate
- Managing change
- Mapping knowledge
- Capturing/storing knowledge

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Competition

Generating producing knowledge

Comparison

tran...
Triggers of Knowledge Production

- Majority of triggers related to problem-solving & change management
- Problem-solving: main trigger at all levels

Triggers of knowledge production: examples

<table>
<thead>
<tr>
<th>Problem-solving</th>
<th>Managing Change</th>
<th>Innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dealing with complex projects</td>
<td>Managing changes to the project</td>
<td>Using new, innovative building materials, systems, services</td>
</tr>
<tr>
<td>Managing team member interfaces (e.g. consultant-contractor)</td>
<td>Managing organisational change</td>
<td>Coping with the uniqueness of projects</td>
</tr>
<tr>
<td>Addressing value engineering issues to deliver best value</td>
<td>Addressing the need to comply with standards (Quality Assurance, Health and Safety, etc.)</td>
<td>Dealing with the need and willingness to be ‘ahead of the game’, ‘move the market’</td>
</tr>
</tbody>
</table>

Knowledge sources

<table>
<thead>
<tr>
<th>Internal to the Organisation</th>
<th>External to the Organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other individuals (i.e. colleagues)</td>
<td>Other individuals (e.g. project team, supply-chain)</td>
</tr>
<tr>
<td>Team(s)</td>
<td>Communities of Practice (including project teams)</td>
</tr>
<tr>
<td>Routines</td>
<td>Other networks (e.g. seminars, exhibitions, conferences, etc.)</td>
</tr>
<tr>
<td>Competences</td>
<td>Repositories (e.g. regulatory documents, trade publications, web-sites)</td>
</tr>
<tr>
<td>Repositories (e.g. manuals, code of practice, reports/organisational documents)</td>
<td>Knowledge gate-keepers (e.g. universities, professional institutions)</td>
</tr>
</tbody>
</table>

The influence of industry characteristics on k-production

Characteristics that PROMOTE
- Move towards change (focus on quality, Latham & Egan Reports)
- Move towards collaborative forms of procurement
- Enlightened clients
- Willingness to improve efficiency
- Early involvement of contractors
- Respect towards all stakeholders

Characteristics that INHIBIT
- Reluctance to change & embrace new ideas
- Confrontational, litigious, fragmented industry & organisations
- Lack of trust
- Lack of R&D

The influence of organisational culture on k-production

Aspects that PROMOTE
- Environment which encourages innovation
- Willingness to embrace technological developments
- Awareness of the importance of knowledge production
- Empowerment of staff
- Motive to become more entrepreneurial

Aspects that INHIBIT
- Time pressure
- Inward looking silo mentality
- Reluctance to change & embrace new ideas
- Inability & unwillingness to share knowledge across business
- Difficulties in finding the ‘right’ person, information and knowledge

The influence of the characteristics of individual projects on k-production

<table>
<thead>
<tr>
<th>Project Characteristics promoting knowledge production</th>
<th>Project Characteristics inhibiting knowledge production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective team composition &amp; high level of expertise</td>
<td>Ineffective team composition &amp; low level of expertise</td>
</tr>
<tr>
<td>Presence of trust between team members’ team stability</td>
<td>Lack of trust between team members’ team instability</td>
</tr>
<tr>
<td>High levels of project complexity</td>
<td>‘Re-inventing the wheel’ syndrome</td>
</tr>
<tr>
<td>Need to address a problem / challenge by finding bespoke solutions</td>
<td>Adequate project resources (time, budget, etc.)</td>
</tr>
<tr>
<td>Adequate project resources (time, budget, etc.)</td>
<td>-</td>
</tr>
</tbody>
</table>
**Way forward**

- Focus on problem-solving, innovation, managing change & consider appropriate strategies for dealing with them
- Identify appropriate knowledge sources & efficient means of harnessing these sources
- Create an environment which supports knowledge production

**WP3 Techniques and Technologies for Knowledge Management**

**Objectives of Work Package 3**

- Identify and document different types of techniques (non IT tools) and technologies (IT tools) for KM used by organisations.
- Identify existing methods for selecting techniques and technologies for KM.
- Examine strength and successes of the techniques and technologies.

**Scope of Work Package 3**

Work Package 3:

- Discusses techniques and technologies for KM
- Examines the use of KM tools within UK construction organisations
- Presents current approaches for selecting most appropriate KM tools
- Identifies limitations of existing approaches, and
- Presents guidelines for better selection of KM tools

**Key Findings - 1**

Generic:

- A host of technologies and techniques exist for KM in organisations.
- Selection of appropriate technologies appears to follow a more structured approach than the selection of techniques.
- There is a need for guidance in the approaches employed by organisations for selecting appropriate technologies and techniques for KM.
Use of KM techniques is more evident as compared to KM technologies. In construction organisations, potential benefits of technologies for KM are not fully understood. High cost of specialist IT tools is the main deterrent for their adoption and implementation. Cost, flexibility and functionality have been identified as the three main factors for selecting KM technologies.

The construction industry does not view technologies to be the 'be all and end all' solution to KM. Companies adopt technology only if there are definite, quantifiable business benefits which stretch across the company. Most construction organisations do not adopt a structured approach for selecting KM techniques and technologies. The is approach mainly 'reactive'.

Construction specific:
## Appendix 2

### Workshop Set-up tables

<table>
<thead>
<tr>
<th>Discussion topic</th>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>√</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>√</td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td>√</td>
</tr>
</tbody>
</table>

**Table 1.** Discussion topics per group

<table>
<thead>
<tr>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carillion plc</td>
<td>Association for Project Management</td>
<td>EC Harris</td>
</tr>
<tr>
<td>Davis Langdon Consultancy</td>
<td>Babtie Group</td>
<td>Glasgow Caledonian University</td>
</tr>
<tr>
<td>Faulkner Browns</td>
<td>Fraser Brown Newman</td>
<td>NPS Property Consultants Ltd</td>
</tr>
<tr>
<td>Glasgow Caledonian University</td>
<td>Glasgow Caledonian University</td>
<td>OUBS</td>
</tr>
<tr>
<td>HBG Construction</td>
<td>HAA Design Ltd</td>
<td>Rowland Design Associates</td>
</tr>
<tr>
<td>Health &amp; Safety Executive</td>
<td>John Dickie Construction</td>
<td>The Parr Partnership</td>
</tr>
<tr>
<td>Loughborough University</td>
<td>Loughborough University</td>
<td>University of Salford</td>
</tr>
<tr>
<td>OUBS</td>
<td>Woolgar Hunter</td>
<td>Watson Construction Group</td>
</tr>
<tr>
<td>Skillbase Services</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 2.** Group Composition
Appendix 3

Issues Raised During Discussions
## Discussion Topic 1

Why, how and where to start KM? - formal & informal KM processes; KM techniques & technologies.

<table>
<thead>
<tr>
<th>Group 1</th>
<th>Group 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WHY?</strong></td>
<td><strong>WHY?</strong></td>
</tr>
<tr>
<td>1) Organisational change</td>
<td>1) Improve connectivity (through Intranet)</td>
</tr>
<tr>
<td>2) Increase profit by avoiding repetition of mistakes, learning from past experience.</td>
<td></td>
</tr>
<tr>
<td>3) Transform organisation to a ‘learning organisation’</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>CHALLENGE(S)</strong></th>
<th><strong>CHALLENGE(S)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Culture</td>
<td>1) Collecting, packaging, retrieving, disseminating information is difficult</td>
</tr>
<tr>
<td>a. ‘People don’t write things down’</td>
<td>2) Top-level KM initiatives take a while to filter down</td>
</tr>
<tr>
<td>b. IT</td>
<td>3) Time pressures on staff which does not leave any time ‘to contribute to the knowledge-base’</td>
</tr>
<tr>
<td>c. Motivation</td>
<td>4) Identifying the knowledge that is worthy of capture is necessary in order to avoid very high cost of trying to capture very high volumes of data. However, this is difficult.</td>
</tr>
<tr>
<td>2) Need to validate ‘knowledge’</td>
<td>5) Cynicism towards KM- ‘KM is just another fad’</td>
</tr>
<tr>
<td>3) Cost of IT (as a barrier)</td>
<td></td>
</tr>
<tr>
<td>4) ‘Knowledge is power’ syndrome among owners/managers of SMEs.</td>
<td></td>
</tr>
</tbody>
</table>
### Why, how and where to start KM?- formal & informal KM processes; KM techniques & technologies.

<table>
<thead>
<tr>
<th>HOW?</th>
<th>HOW?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Share knowledge of lessons learnt with the supply-chain</td>
<td>1) Knowledge mapping (‘identify what we know and our areas of expertise’)</td>
</tr>
<tr>
<td>2) Ensure two way exchange of knowledge in the supply-chain</td>
<td>2) Use technology as a tool to map knowledge</td>
</tr>
<tr>
<td>3) Align organisational values in the supply-chain (‘make cosy flow of</td>
<td>3) ‘Bring together the knowledge-base of different experts’</td>
</tr>
<tr>
<td>knowledge across the supply-chain’)</td>
<td>4) Get senior management support</td>
</tr>
<tr>
<td>4) Need KM inspirational champions</td>
<td>5) Re-use knowledge- in putting in further bids for example</td>
</tr>
<tr>
<td>5) Provide training through:</td>
<td>6) ‘Empower’ people</td>
</tr>
<tr>
<td>a. Mentoring (inspire mentors)</td>
<td>7) Target knowledge that would give competitive advantage</td>
</tr>
<tr>
<td>b. ‘Train the trainer’</td>
<td></td>
</tr>
<tr>
<td>c. Internal workshops</td>
<td></td>
</tr>
<tr>
<td>Group 2</td>
<td>Group 3</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>1) Improve efficiency</td>
<td>1) Minimise future risk to the company by retaining historic project</td>
</tr>
<tr>
<td>2) Remove duplication</td>
<td>knowledge</td>
</tr>
<tr>
<td>3) Improved connectivity</td>
<td>2) Improved efficiency through removing uncertainty about processes</td>
</tr>
<tr>
<td>4) Allocating the ‘right’ person to the ‘right ‘task</td>
<td>3) Create a ‘learning culture’</td>
</tr>
<tr>
<td>5) Disseminating the knowledge &amp; expertise throughout the organisation</td>
<td>4) Deliver ‘added-value’ to clients</td>
</tr>
<tr>
<td>6) Achieve competitive edge</td>
<td>5) Ensure consistency of service quality over time</td>
</tr>
<tr>
<td>7) Minimising errors through knowledge sharing</td>
<td>6) Enriched working environment through building human relationships</td>
</tr>
</tbody>
</table>
Main challenges SMEs (would) face in implementing a KM programme.

<table>
<thead>
<tr>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Culture</td>
<td>1) Budgetary limitations</td>
<td>1) Difficulties in structuring data</td>
</tr>
<tr>
<td>2) Lack of motivation</td>
<td>2) Difficulty in quantifying the return on investment (ROI)</td>
<td>2) Scale &amp; cost issues</td>
</tr>
<tr>
<td>3) “What is KM?”- need to identify</td>
<td>3) Cultural barriers</td>
<td>3) Risk of losing knowledge of people who leave small companies</td>
</tr>
<tr>
<td>4) Cost vs benefits of implementing a KM initiative</td>
<td>a. Resistant to implement something</td>
<td>4) ‘Depends on business- challenges for consultants is different than contractors’</td>
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<td></td>
<td>b. ‘Knowledge is power syndrome’</td>
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<td></td>
<td>4) Difficulty of disseminating the expertise among a group of people</td>
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<td>5) Introducing &amp; integrating knowledge competences to the appraisal system to encourage staff</td>
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</tbody>
</table>
Discussion Topic 4

Knowledge sharing across the supply-chain & absorptive capacity of SMEs.

<table>
<thead>
<tr>
<th>Group 1</th>
<th>Group 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Share knowledge &amp; lessons learned across the supply-chain</td>
<td>1) ‘What is absorptive capacity?’</td>
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<tr>
<td>2) Pass your cost saving ideas onto others</td>
<td>2) Knowledge <em>will be</em> shared if the client demands</td>
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<tr>
<td>3) Identify potential areas of improvement across the supply-chain</td>
<td>3) Client plays an important role</td>
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<td>4) ‘Know each other’</td>
<td>4) Some clients ‘push’ partners to share knowledge through Framework</td>
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<td></td>
<td>Agreements</td>
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</tbody>
</table>
What are your and your organisation’s KM training needs? What would be the appropriate training methods and modes for you and your organisation? What role would IT play in KM training in your organisation?

<table>
<thead>
<tr>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) People &amp; passion (‘again champions’)</td>
<td>1) ‘Difficult to articulate’</td>
<td>1) KM training is needed, but:</td>
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<tr>
<td>2) ‘Simple speak’</td>
<td>2) E-learning, on-line training</td>
<td>a. it is difficult to understand ‘jargon’</td>
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<tr>
<td>3) Inspirational mentors</td>
<td>3) Train people on how to find knowledge in an organisation &amp; how to share it with others</td>
<td>b. deliver the ‘right’ training across the organisation</td>
</tr>
<tr>
<td>4) Training tailored to meet the identified needs of people at different levels of the organisation with different roles to play</td>
<td>4) CPD, weekly discussions of technical topics are means of training that could be used</td>
<td>2) Continuous professional development (CPD)- compulsory for consultants</td>
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<td>5) Internal training would be more beneficial</td>
<td></td>
<td>3) More training needs to be done at operatives’ level</td>
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<td></td>
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<td>4) Training is still ‘ad hoc’ in construction</td>
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</tbody>
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