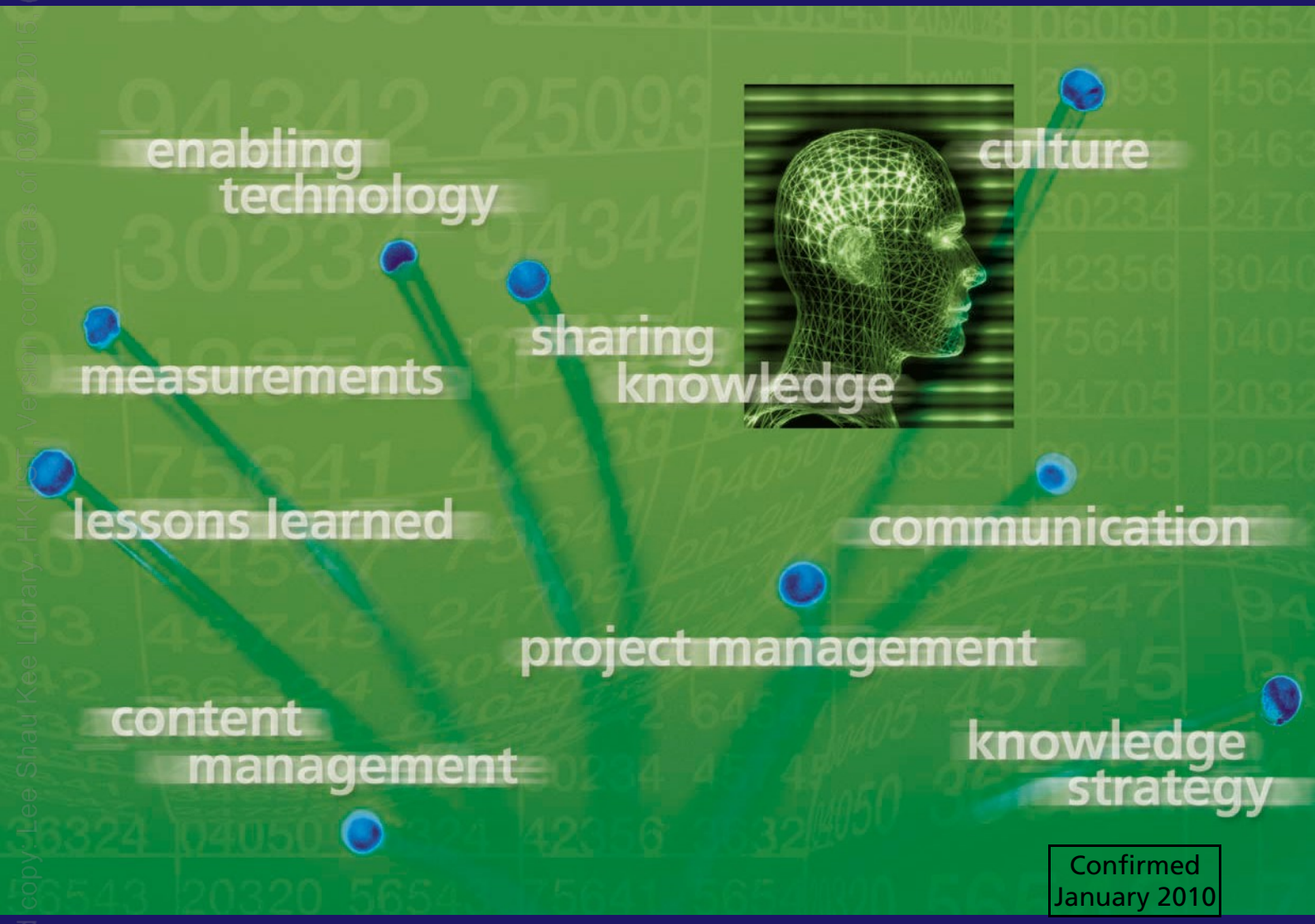
PD 7503

# Introduction to Knowledge Management in Construction

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Relate to the work on this standard

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# Foreword

The purpose of this document is to bring '**informed clarity**' to the understanding and practice of knowledge management (KM) in the construction industry.

To date, the value of KM has been primarily recognized in a number of highly competitive areas of private industry, including the pharmaceuticals, energy, consulting and manufacturing industries. Much of the public sector and some areas of private industry, such as construction, still have some way to go before they gain the full benefits of effective KM.

In 2001, the well received 'Knowledge Management: A Guide to Good Practice' (PAS 2001) was published. The subsequent publication of sector specific guidance documents, such as this one, complements the comprehensive but generic PAS 2001.

This document is consistent with and forms an integrated whole with existing and planned BSI KM-related documentation including:

- PAS 2001 - Knowledge Management: A Guide to Good Practice
- PD 7500 - Knowledge Management Vocabulary
- PD 7501 - Managing Culture and Knowledge: Guide to Good Practice
- PD 7502 - Measurements in Knowledge Management: Guide to Good Practice

# Introduction

The document outlines the idea of KM and the many ways it can benefit the construction industry and then summarizes the key issues to be addressed when introducing KM to a company. The document aims to stimulate the reader by providing a set of case studies which outline examples where construction industry companies, both large and small, have applied and benefited from KM.

On offer is concise guidance to those wishing to make progress in this area, but it is not intended to be comprehensive – readers should refer to PAS 2001 and the other BSI KM literature for more detailed guidance where appropriate.

## Industry issues

Different industrial industries, by the nature of their size, structure and activities will have differing KM needs. The construction industry is no different in this, it having a number of key differentiators from many other industries. The construction industry:

- is large, comprising between 10 % and 11 % of the UK GDP,
- is highly disaggregated in terms of:
  - company size (small and medium enterprises (SME) to large multinational enterprises (MNE))
  - company activity (engineering, planning, development, architecture, material/products suppliers etc.)
  - user (home-owner, health, education, commerce, industry),
- comprises a large number of organizations, and
- is highly project focused, with teams forming for projects and breaking up afterwards.

## Target audience for the document

From the above analysis it is clear that the construction industry is highly disaggregated. A ‘one size fits all’ approach will not work in such an industry and the document needs to be aimed at the part of the industry where maximum impact can be gained.

To this end, the primary audience of this document is SMEs within the industry. These companies are able to apply appropriate resource to implement the necessary actions to benefit from KM. Within these companies this document is in part aimed at the board member who may have been tasked with knowledge-related matters – possibly the Chief Executive Officer or Technical Director.

Micro-SMEs (≤10 people), although making up a substantial proportion of the construction industry, are unlikely to take significant benefit from the more formal and complex KM practices, as their primary function is to tackle communication and information exchange across large organizations.

Larger companies in the sector may well be well advanced in implementing KM practices. They will most likely be aware of current management thinking on the issues, will have appropriate resources and will have a track record of implementing new ideas. This audience may be more advanced in their KM thinking and if so, would perhaps gain more benefit from other BSI KM literature – for details of these publications see References and further reading.

# Contents



# Figures

# 1 Scope

This Published Document gives guidance on KM in the construction industry. The construction industry is a particularly complex one, often with a wide range of specialist companies working together, sometimes with a complex customer structure, to design and build a single building or set of buildings. This complexity can result in process inefficiency and the need for remedial and repair work, all of which can have significant cost implications to both the contractors as well as the building owners and users. The document introduces KM as a way of avoiding potentially costly mistakes by streamlining the flow of knowledge and information within the construction process and across the supply chain.

Although this Published Document discusses various different management sciences (for example environmental management) it does so only, by way of example or analogy. This Published Document is primarily oriented to KM and is not intended to cover other specialized management sciences.

# 2 Construction and KM

## 2.1 Construction industry – a suitable case for KM

Accounting for 10 % of the UK's Gross Domestic Product and employing 1.4 million people, construction is by any measure a vast industry. As complex as it is large, the industry is composed of thousands of companies, ranging from micro-SMEs to giant multinationals, representing a multitude of different design, engineering, building, manufacturing and management professionals.

Several layers of different skills come together on each building project to produce an often unique product. Designers, engineers and contractors, who may use different means to convey the same information – design drawings, mathematical formulae, on-site communication, etc – often work together on complex projects often lasting months or years. Major projects will also involve many operational layers: clients, project management teams, main contractors, subcontractors – of which there may be dozens, even hundreds.

It has been estimated that defects in the UK construction industry cost at least £1 billion to repair or rebuild every year [1]. Many of these defects are the result of the inefficient use and communication of information. Not surprisingly in so complicated a system, knowledge cannot be effectively managed without specific action to make this happen.

***"… if only we knew what we know, we would be three times more profitable"*** [2]

On the plus side, there is no lack of construction knowledge available. This is not only held within individuals and companies in the industry, and in a range of guidance material, but also in the formal regulations and standards applying to the industry. The trick is to manage this wealth of knowledge so that it is properly communicated and applied. KM is a process which can help integrate the disparate range of construction industry issues such as health and safety, risk management and risk avoidance.

## 2.2 What is KM?

The BSI Knowledge Management Vocabulary (PD 7500) defines KM as;

***"The creation and subsequent management of an environment which encourages knowledge to be created, shared, learnt, enhanced, organized and utilized for the benefit of the organization and its customers."*** [3]

KM might sound like the sort of initiative that the construction industry – not necessarily renowned for its quick uptake of new ideas – could happily ignore until it goes away.

But that is just not the case. The terminology may be new, but the use and sharing of knowledge has always been there. An example of KM could be a bricklayer passing on his knowledge to an apprentice, so that the skills continue into the next generation.

Today's KM is about combining people, processes and technology to deliver to business and client requirements (see Figure 1).

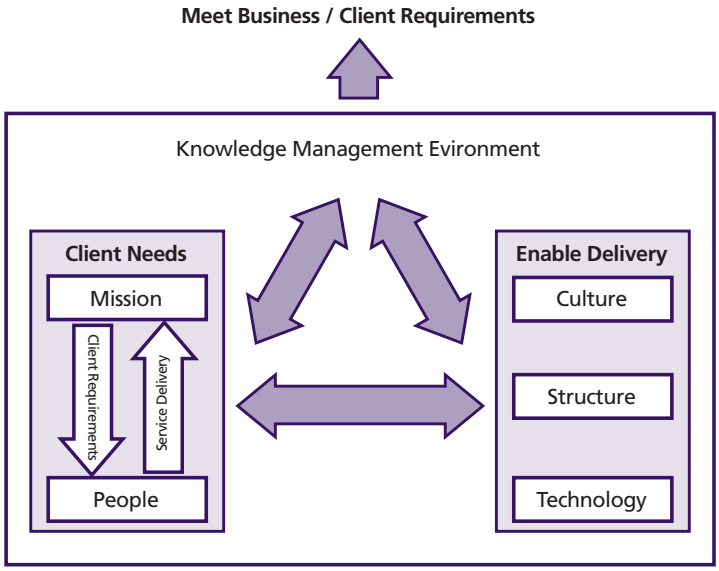


**Figure 1 – An organization's KM approach should meet its business and client requirements**



It is common sense that knowledge not shared will not be fully used and may eventually be lost. Mistakes will endlessly recur because the company as a whole doesn't learn from them, and the same problems have to be solved from scratch over and over again. Not sharing knowledge could mean continually 'reinventing the wheel'.

The obvious results are wasted time and money, in addition to disgruntled staff.

## 2.3 Where does KM stand today?

The need for sharing knowledge hasn't changed but working environments have. Businesses are more complex, the quantity of information on offer is ever growing, and change happens ever faster – to the point where a guidance manual can be out of date by the time it is printed.

The traditional, often informal, means of sharing knowledge are often not enough on their own anymore. But on the plus side, alongside these changes has emerged the technology to effectively systematically manage, use and share great quantities of rapidly developing information. Relatively recent information technology advances – such as e-mail and intranets – make it possible to capture and share knowledge across an organization whatever its size.

However this does not just happen by itself. It needs a properly thought-out strategy, the right approach by staff and management, and enabling technology – in other words it needs KM.

# 3 Why should organizations consider KM?

## 3.1 KM in the construction industry

There are those that might argue whether KM can really be applied to the construction sector, with its often-quoted stereotypes of machismo and technophobia. However, the following clauses outline specific aspects and activities of the sector where KM can positively impact.

## 3.2 Unique projects – the need to draw on previous experience

Despite moves towards standardization, buildings and other built structures do not come off a conveyor belt identical to one another. Design, use of materials, environmental conditions, etc. vary from project to project. With each new project is a new set of problems, but some repeated ones as well.

The more projects completed, the more problems are encountered and solved. What is needed is a way of remembering the solutions for use in future projects, and that is where KM comes in. Put the project reports on a database with an effective search engine and make this wealth of experience immediately available to everyone in the company. Particularly useful information includes charges, costs, which jobs were profitable and which were not - all of which is invaluable when costing a new job.

You don't have to be a large company to build a valuable database. An SME construction contractor could build an order database providing information on how much has been spent on previous projects for suppliers, materials and sites, which greatly aids with cost analyses.

Taking previous project data a step further, producing guidance documents drawing on one construction site's experiences can help other sites involved in similar activities benefit from previous experience.

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### Case Study: Top Tips

Taylor Woodrow is a construction company employing more than 6000 people worldwide. As part of their efforts to communicate best practice across a very dispersed organization, they produce a series of documents providing a quick and visual way of capturing what has gone well – and what to avoid – on construction sites. The documents are regularly reviewed by technical experts and include examples such as the following for reclaimed timber:

| Advantages of Using Reclaimed Timber | Disadvantages / Pitfalls of Using Reclaimed Timber |
|---|---|
| – Old timbers can have a story behind them that enhances the value of a building | – Need to manage the risk of embedded nails |
| – Old timber is often of a high quality | – Can have a high moisture content |
| – Reusing old timber reduces the embodied energy in a building | – Wastage can be high, depending on the sizes of timber available and the sizes required for the project |

## 3.3 Fragmented industry – the need to communicate

The construction sector consists of a huge number of disparate companies of all sizes and representing very wide-ranging expertise and activities. On many jobs several very different companies often work together. This can cause problems because poor communication and interpretation of design information, for example, can be a major failing in construction projects.

A KM system can streamline the construction process across the supply chain. CAD drawings can be e-mailed between architects and the design team, and then printed for tradesmen on site. This can ensure that accurate, up-to-date drawings are being used by the bricklayers and other trades, saving time and expense on errors and jobs having to be redone.

Taking this further, web-based systems (Intranets and Extranets) can make all relevant project information accessible to all in a participating company and across the whole project team. There are other options, for example taking digital photographs of the site to ensure that architects, engineers and surveyors make joint decisions based on the same information.

## 3.4 Mobile staff and changing teams – the need for accessible, central information

People working on construction sites often have to move around a great deal and work in ever changing teams. Readily accessible, centrally held information – in a database or Intranet – is particularly helpful for them. In such a mobile work environment it is also valuable to have details of staff and their skills in a central database. This allows the company to 'know what it knows' in as much detail as possible.



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### Case Study: Finding the right person

Arup is a global (7000 staff in 70 countries) design company that is well known for projects ranging from the Sydney Opera House to London's Millennium Bridge. Key to Arup's business success is the innovation and creativity of its people. This demands that the company knows what it knows in as much detail as possible.

When it was small, experts were 'known' through personal networks (still a powerful mechanism for many). As the company grew, a collection of 'recognized' experts was written up into a paper based 'yellow pages'. However, given the pace of change in business, Arup realized that they could no longer guarantee an up-to-date, definitive list of skills and a new approach was needed to reflect this.

Unable to find an available KM product that completely met their needs they developed the Arup People tool. This uses a simple web template to give every member of staff a personal intranet home page on which they record their skills and interests, maintain a list of their regular internal contacts and upload web links and documents. All of this information may then be browsed or searched in the application's web interface, either by the member of staff themselves or others in the organization. When all of the pages are aggregated they make up an Arup-wide profile that allows quick and easy access to all of the company's knowledge.

One simple example justified the cost of the project. An Arup person in Hong Kong received a call from a client seeking specialist advice for a project in New York. Whilst on the phone, he used Arup People to identify the single best person to match the client needs, and was able to forward a CV which had been uploaded by the individual concerned. The client recognized Arup's capabilities and awarded a major contract on the spot – whilst the individual in New York was asleep!

## 3.5 Handover to clients – the need to inform owners and managers

Building owners and managers often run into problems in operating and maintaining a new or refurbished building because the information they were given at handover was inadequate. A well-managed programme of knowledge handover that starts at the tendering stage and continues to a period after practical completion, can greatly enhance client satisfaction.

This process can be made a lot easier and less onerous if operating and maintenance manuals can be transferred electronically.

## 3.6 Community relations – the need to communicate with local people

One of the difficulties faced by construction companies is the hostility of communities local to construction sites, who fear disruption, noise, dust, parking problems and so on. Studies have revealed that proper and continual communication – of the sort that can be enabled by effective KM – with these communities can increase their acceptance of the problems caused by construction work.

As well as the essential face-to-face meetings with local representatives, local people can be updated on the progress of the project in a number of ways. Project teams can help them to understand how construction projects work and communicate the successful outcomes of previous projects, through paper and electronic newsletters and websites accessible through local libraries and community centres, etc.

## 3.7 External knowledge – the need to make good use of available guidance

The construction industry is blessed with a wealth of knowledge that is produced and held outside of the individual and companies. This not only includes a range of guidance material, but also the formal regulations and standards applying to the industry.

The sheer quantities of this information can be overwhelming, as well as expensive, cumbersome, difficult to find and manage, and increasingly not available in paper form. Provision of company-wide access to the web gives staff the opportunity to have manageable, searchable access to this rich source of information and to view suppliers' websites.

## 3.8 What about SMEs?

About 85 % of the construction sector is made up of small or medium sized companies. Many smaller companies take the view that they don't know or don't need to know enough to make KM worthwhile. But they might be surprised. Looking at a small painting and decorating business, the owner's knowledge could include:

- How to get the most out of a gallon of paint (to reduce costs and painting time)
- How to clean brushes so that they last a long time (to reduce costs)
- How to encourage repeat customers (to grow the business)
- How to minimize the impact of people living in the house being painted
- How to develop efficient painting techniques (to reduce costs and time)
- How to take advantage of new painting inventions (to improve service)
- How to assess and respond to particular customer expectations and requirements
- How to learn new techniques (to increase customer satisfaction) [4]

This knowledge makes the business profitable: conversely lack of this knowledge by staff will cut into profits.

# 4 How should organizations tackle KM?

## 4.1 General

There is no strict formula for establishing KM. The exact approach will vary depending on the type and size of organization, whether the business is just starting or well established, and what the objectives are - is the initiative designed to generate and apply new knowledge, to define existing knowledge to stop the company 'reinventing the wheel' or a combination of the two? However the critical considerations around which to develop a programme are described in Figure 2. Failure to consider any one of these could lead to partial or complete failure of a KM initiative.

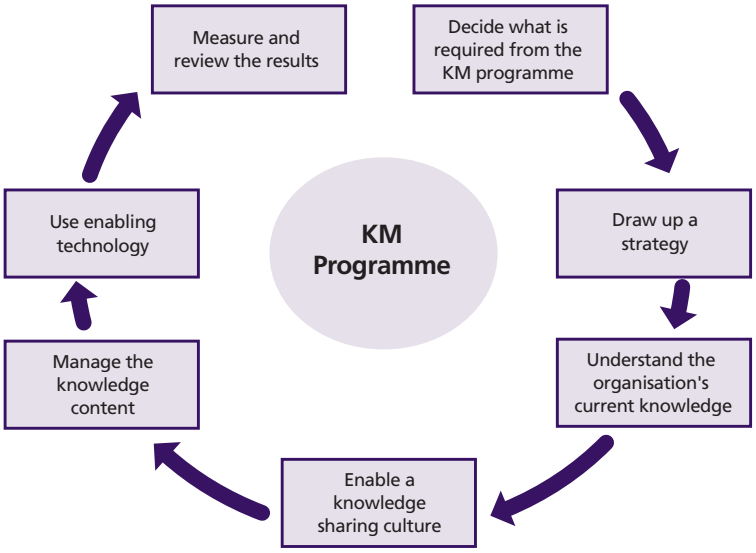


**Figure 2 – Seven critical aspects of KM**

## 4.2 Decide what is required from the KM programme

KM cannot be considered as an end in itself - it is a means of improving your business. To get the most out of KM it has got to be aligned to the wider direction, needs and business strategy of the organization.

Identify the key areas where KM could make a difference. For construction companies this will often be a wish to make building projects run more smoothly and cost effectively. They will therefore tend to focus on previous project data. Companies reliant on wide-ranging specialized skills held by their staff may focus on maintaining detailed, up-to-date information on employees' expertise.

If a key part of the business is developing new construction components, then the focus might be on managing research knowledge. If a lack of marketing has been identified, then KM could help manage pricing, promotion, product location, etc. A KM programme may also help serve clients in a more co-ordinated, consistent manner, or indeed to respond more rapidly to changing competitive conditions.

## 4.3 Draw up a strategy

Having decided what the KM programme needs to focus on, the next step is to draw up a strategy for developing the programme. As an intrinsic part of this activity the following factors should be considered:

- How to organize the company's knowledge so that it can be accessed efficiently
- How to establish the means of obtaining required knowledge and keep it updated
- How to set up ways in which staff members can communicate, share information and collaborate with each other
- How to keep the staff informed of what the plans are and of the programme's latest outputs
- How to establish pilot initiatives to achieve early wins and measurable business gains
- How to measure progress – this can be difficult in financial terms, but some form of measurement is vital – e.g. higher customer satisfaction, fewer product failures, etc

## 4.4 Understand the organization's current knowledge

If something is going to be managed, then it should also be measured as a part of a continual tracking process. Knowledge is no exception, so an audit is often a good place to start. What does the organization know? Where is this knowledge held? Who can get to it?

Knowledge audits may be particularly necessary for larger more complex construction companies, but will be valuable for smaller companies too, sometimes bringing to light key vulnerable areas. For example, when someone with valuable (or even essential) information is about to retire, there is a risk of losing that knowledge because it has never been shared, or captured and stored and then made available to others.

A knowledge audit should start off by asking what knowledge is required to support the business strategy and operate efficient processes. Once specified, the audit itself generally involves two tasks. The first is finding the knowledge throughout the organization, i.e. what people have written down or entered into systems, the outside sources they use – libraries or websites for example – and their own knowledge, skills and experience. The second is finding out how people process this information and so, how well they use and share it.

The audit may throw up some 'quick wins' – easy actions that will produce benefits immediately. It may also identify bottlenecks to the proper flow of information.

A successful audit will generally involve a mix of interviews, questionnaires, and discussion groups - for details see PAS 2001 [5].

## 4.5 Enable a knowledge sharing culture

The key to successful KM is a willingness of the people in the company to adopt this approach - to share and teach, and to learn from others. That often means changing the way they work.

This can be difficult, but developing a knowledge sharing approach is vital – for more detail on cultural issues see PD 7501 [6]. To help change organizational culture, it may be necessary to address such things as:

- **Focus on billable time**
  In many companies culture and practice encourages an inability or reluctance of busy people to find time to contribute to a shared knowledge base. They should be given the opportunity and incentives to break out of this mind-set.

- **Attitude - 'Knowledge is power'**
  Companies often have a competitive internal environment where having unique knowledge is seen as power and job security. As a result, far from sharing their knowledge, people hoard it to improve their own position or that of their section.

  Staff have got to be encouraged to break this habit and rewarded for doing so. They have got to feel that they will, in turn, receive valuable knowledge. Crucially there should be a no blame culture – if knowledge shared proves not to work the person who supplied it should not be blamed.

- **Leaders that 'walk the talk'**
  Senior people should be seen to use the company's KM tools, share knowledge themselves and speak about how KM helps them to be better at their jobs.

- **Providing the opportunity and motivation for knowledge sharing**
  People often have little opportunity or time and space to make contact with groups of colleagues to share knowledge with. Successful KM relies on people interacting with other people. The company should provide enough time and space to actively share, collaborate and innovate. Often this can be via phone, e-mail or Intranet, etc, but many construction professionals exchange knowledge more effectively through personal contact.

  When people are asked to share their knowledge, a natural reaction would be to ask - what's in it for me? Staff should be made aware that they are working in an environment where knowledge sharing is enabled and expected, and also results in some sort of reward or other advantage.

  Staff can be motivated to share through many means - through senior management recognition or peer review, etc. Studies have shown that no one form of award/recognition works better than another, provided they are fairly administered, highly publicized and supported by senior management.

**Establishing a culture of knowledge sharing is essential for a KM initiative to succeed.**

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### Case Study: The importance of culture

A manufacturing joint venture in the Middle East, between a local and an international US company replicated the same basic manufacturing process as in several identical plants elsewhere. However, this local company had visionary local Managing and Personnel Directors. Between them, they focused the organization very much on recruiting the best possible staff and providing challenging development opportunities. Despite the country's strong culture of command and control management, they developed instead a culture based on sharing and reviewing knowledge between the team members.

They worked closely over 18 months with two UK consultants, who provided a large amount of face-to-face coaching and supported this with a detailed analysis of the culture of the organization. A competence framework involving both task and process competencies, and using both a top-down and bottom-up approach, was implemented very successfully.

As a result, for example, the changeover time for two large reaction vessels was reduced from 18 days to six days, and then reduced further to three days. Furthermore, the productivity and quality of this joint venture was higher than in any similar plant anywhere in the world, including the US parent sites, and the wastage was lower. In addition, the safety record of this local plant became the highest in this Middle East country.

## 4.6 Manage the knowledge content

### 4.6.1 General

A KM programme should aim to provide the right knowledge to the right people, at the right time, in the right place and at the right cost.

Not surprisingly this is easier said than done. The key to it is establishing a well-defined management process to create, capture, prepare, share, maintain and purge the contents of the KM system (see Figure 3).

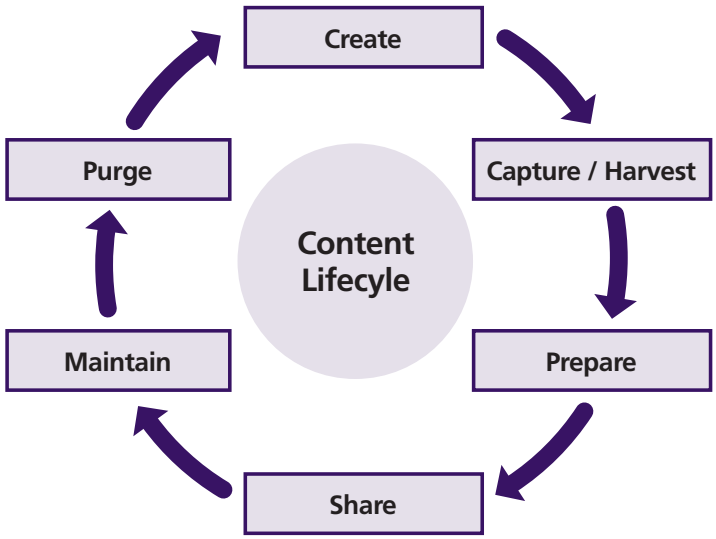


**Figure 3 – The content lifecycle**

### 4.6.2 Create

Not every piece of information generated by the company will need to be shared. Consider the main activity of the company when segregating what is to be shared from the rest. As previously discussed, a construction company is likely to want to include information from earlier projects to provide solutions for problems in future projects, a company producing innovative products and designs might focus on developing new knowledge etc.

### 4.6.3 Capture

Ideally the company will give responsibility for gathering and managing content to a knowledge manager. This person can oversee the input of required knowledge from, for example:

- Project reports and other deliverables
- Accounting information form previous projects, costs, charges, profit margins, etc
- Project team de-briefing
- Transcripts of presentations
- Induction and training courses
- Staff skills, expertise and experience details

### 4.6.4 Prepare

Once a knowledge source has been identified as containing information worth sharing, it needs to be processed and prepared for further use. This may include:

- Scanning for confidential or customer-sensitive information
- Reviewing to ensure accuracy
- Risk assessing to adhere to policies of copyright, privacy, etc
- Dating for re-assessment to ensure the content is reviewed

### 4.6.5 Share

This involves making the knowledge content available in applications such as databases and intranets and providing users with query tools to help them find what they want (see 4.7).

If staff cannot find and use the knowledge stored in the company, it may as well not exist.

### 4.6.6 Maintain

Once placed on the system an item of knowledge should be reviewed regularly to make sure it remains valid and updated as required.

### 4.6.7 Purge

Most items of content will have a useful life at the end of which they should be deleted to prevent obsolete information from being accessed, and to stop the system being overloaded with redundant material. Construction might be seen to be an important exception to this general rule. Generally buildings last for a considerable length of time (30 years +). Problems within structures may not reveal themselves until towards the end of this lifetime, and knowledge to remedy these problems may have been lost if purging is too rigorous. When purging, ensure that the information is *really* redundant.

## 4.7 Use enabling technology

The first point to emphasize is that technology itself is not the key to successful KM – this lies in developing a willingness among staff to share, teach and learn knowledge. Technology simply provides the tools to do this more effectively.

The IT system supporting KM should be easily understandable, accessible, usable and flexible. Its job is to store, transfer, update and give ready access to the company's knowledge. The information should be easily searched and subsequently shared.

The other important point is that KM does not necessarily need complex and expensive technologies. The level of technologies – such as those listed in Table 1 – and investment can be tailored to the needs and resources of the company. For more detail on technology use in KM, please refer to PAS 2001 [5].

**Table 1 – Available Technologies**

| Technology | Use |
|---|---|
| E-mail and electronic documentation | Rapid distribution of documents, drawings, etc, allowing greater more rapid consultation, production of more accurate up-to-date material, paper and time saving |
| Web access | Access to suppliers' information, standards, regulations general guidance |
| Company website | Provision of information on company and current projects, etc for staff, potential customers, partners and other interested parties |
| Digital photography | Aids consultation between construction project participants |
| Project databases | Access to previous project, account, supplier, etc. Information in searchable form |
| Staff expertise database | Immediate up-to-date, searchable access to company expertise |
| Intranet/Extranet systems | Effective communication, consultation and sharing of information throughout the company and/or the participants in a construction project |

When looking for the right systems to meet their particular needs, companies should work closely with their IT suppliers. This is particularly important for SMEs that do not have their own specialist IT people.

Expert advice can help, for example, to ensure the system is properly searchable. Basic search tools will find specific words or word combinations in a mass of information, and most will rank the results in accordance with the closeness of the match. There are also many, more advanced means of finding specific items from a huge stock of information that can make it easier to pick out what is needed. These can be combined with various navigational aids to further refine the search process.

But it is important to resist the temptation to over-complicate the system with sophisticated navigational tools. With the help of the IT supplier, the system should be tailored to the needs and levels of computer literacy of the staff using it, as well as being aligned to the overall strategic needs of the organization.

### Case Study: Using technology to facilitate knowledge transfer

Damond Lock Grabowski (DLG) is a 75-strong architectural practice with offices in London and Leeds. DLG wanted to manage information more efficiently during projects, promote a more collaborative approach to building design and construction and to make key cost-savings in the distribution of information. However the large file sizes associated with CAD drawings, plus concerns about security, meant that e-mail was alone not going to be enough.

After consulting with the Internet service provider to gain inexpensive access with reasonable data transmission rates, a document management system was installed. This uses a single hub, accessed through the Internet, giving authorized team members (from DLG and other companies) access to all project information, regardless of their location. They can view CAD files, monitor project schedules, review material specifications, see site photographs and other illustrations, and 'redline' engineering drawings.

A number of benefits have been achieved including:

- Drawings and other documents can be distributed more quickly and more cheaply than paper-based systems, and changes can be agreed almost instantaneously.
- Giving access to data from a single source ensures that all design, construction and management decisions are based on the most up-to-date information.
- Interfaces between team members are clarified, promoting more disciplined adherence to work processes and revision of procedures, thus ensuring that the overall project programme is constantly reviewed.
- DLG has been able to offer an enhanced service to its clients, and reposition itself in the project team as a facilitator, ensuring access to up-to-date information.

***Source:*** *IT Construction Best Practice. The case study was produced by the Building Centre Trust and funded under the Partners in Innovation Programme.*

## 4.8 Measure and review the results

Establishing a KM programme involves costs. To prove that this investment has been successful the company should develop measurements of return-on-investment. Business measurements could include:

- Strategic effectiveness, e.g. shorter time to create winning proposals, new strategic customers, and higher rate of innovation and growth of high-value orders
- Organizational effectiveness, e.g. improvements in employee satisfaction, product and service innovations
- Job effectiveness; i.e. whether the KM process is giving support to each employee's job performance, are there increased hits on a website or in the amount of use made of a particular KM application

General company cost benefits in favour of investing in KM can include:

- Lower cost and inaccuracy than paper distribution
- Fewer mistakes due to more current and accurate information sources
- Less need for expertise to be replicated everywhere because people are connected through KM tools
- Lower costs of recruitment and administration through using intranets
- Reductions in the direct and indirect costs of getting people together physically, through utilisation of remote working with its lower fixed costs

Demonstrating return on investment can be easier at the project level. A baseline figure such as the predicted, or actual, cost of a similar project, can be obtained and then compared with the actual costs of the project when KM has been applied. For more detail on measurements in KM see PD 7502 [7].

# 5 Conclusion

Starting a successful KM programme involves combining several elements. It can seem a bit daunting at first, but remember KM should serve, not drive the business – it should be specifically geared to help implement the business strategy of the company.

However in order to maximize the chances of success for any KM initiative, the seven critical considerations identified from clause 4.2 onwards should be dealt with in turn:

- **Decide what is required from the KM programme**
- **Draw up a strategy**
- **Understand the organization's current knowledge**
- **Enable a knowledge sharing culture**
- **Manage the knowledge content**
- **Use enabling technology**
- **Measure and review the results**

To help build a fuller picture of the many facets of KM, other BSI publications that tackle these in greater detail are listed in References and further reading.

# 6 References and further reading

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