

Criteria 11: Advanced Knowledge Management practices

This chapter contains:

- Overview
- The benefits of Advanced Knowledge Management practices
- Evidence Required for Accreditation
- Good Practice guidance
- Case Study: TOBIN

Employers that inspire!

Criteria 11

OVERVIEW

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Knowledge management is getting the right information to the right people at the right time, and helping people create knowledge and share and act upon information in ways that will measurably improve performance

NASA

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Common sense says we must learn from successes and failures. The effective management of ‘know-how’ in the workplace and the intelligent application of lessons gleaned from past successes (and failures) will inevitably lead to better results in the present and the future.

Successful people apply this common sense throughout their working lives but the same logic does not automatically apply to a team or to an organisation.

Knowledge Management (KM) is about systematically and routinely making use of the knowledge in, and around, your organisation and applying it to key activities. KM is about systems for acquiring crucial knowledge, linked to business strategy. Just as importantly, KM is about preventing “brain-drain” if human capital (staff) who possess tacit knowledge leave the organisation. Being able to share knowledge around an organisation is vital in this regard. [See Chapter 7: Knowledge Sharing activities]

An effective approach to knowledge management can significantly influence an organisation’s competitive advantage as well as contributing to the professional development of the engineering professionals working there.

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Criteria 11: Purpose of Advanced Knowledge Management practices

PURPOSE OF ADVANCED KNOWLEDGE MANAGEMENT PRACTICES

- Identifying where your potentially lucrative knowledge is located (and is it created internally or available externally).
- Plan for the acquisition of knowledge where knowledge deficits occur
- Allow good ideas and best practices to be shared
- Minimise continuity risks by eliminating 'knowledge silos'
- Increase the commercial potential of what your organisation 'knows' i.e. turn Knowledge into a commodity
- Clear and accountable knowledge roles: Compliance, risk review, lesson learned are sub-sets of knowledge management



Criteria 11: Evidence for Accreditation

11.1 Knowledge Management strategy

- A Knowledge Management strategy is defined with leadership accountability and sufficient resources to begin making significant impact on results
- There is a broad-based competency in KM across the company
- [At audit] Staff and management can give examples of how they fulfill their knowledge roles



HOW CAN YOU DO THIS IN PRACTICE?

- Top management need to own and promote your Knowledge Management strategy
- Knowledge Management is explained as part of your induction process
- Processes, practices and measurements are formalized and integrated with core business activities. Link procedures to your overall quality control system
- Ensure that your CPD Policy and supporting HR Policies encourage employees to share and manage 'know how'
- Do you design jobs so that people can interact in a way that stimulates the development and sharing of new ideas?
- Do you appraise and reward people for continuous learning and sharing of ideas?
- Are your training & development plans focussed on doing the job or on maximising potential for knowledge creation?
- Do you have a policy on Mentoring?
- Do you have a policy on Job Shadowing/ Special Assignment/Job Rotations/ Secondments?

Criteria 11: Evidence for Accreditation

11.2 Identification and mapping of important knowledge sources

- The various Knowledge Management aspects of technology, processes and people are identified and highlighted to staff
- Subject Matter Experts are identified and flagged for ease of contact
- [At audit] Management can give examples of how the various components integrate to accelerate business results
- [At audit] Staff can give examples of how they use various sources

HOW CAN YOU DO THIS IN PRACTICE?

- Everybody has a part to play. Start by looking at communication and culture. What barriers to KM exist? What aspects of KM get rewarded? What non-KM behaviours are being reinforced? Begin to promote KM with high-value knowledge and a focused pilot project. Let demand drive additional initiatives. [See section on Knowledge Mapping later in this chapter]
- Take a systematic approach to 'codifying' technical and business knowledge by initiating regular (monthly/fortnightly) lunchtime briefings delivered by appropriate members of staff or suppliers. Could you record them and pod-cast them so they are available again when required Just-In-Time?
- Ensure that employees who attend training courses/seminars store training notes/conference materials/reference books in a library accessible to all engineering staff
- Introduce a "Lessons Learned" database where key learning from particular projects is recorded and classified on a shared database. The retrieval of information from this database and the input of new information into this database should become part of how the organisation does business
- Reward those who manage and map Knowledge effectively.

Criteria 12: Evidence for Accreditation

11.3 Process to acquire knowledge to bridge 'knowledge gaps'

- An assessment of knowledge held and knowledge needed is undertaken periodically
- [At audit] Management can give examples of how knowledge needed is acquired



HOW CAN YOU DO THIS IN PRACTICE?

- Knowledge can be bought, rented (consultants) borrowed (or stolen and improved upon!).
- Conduct a strategic review of what knowledge is required by the organisation. Use your Multi-Annual Business Plan as a gauge of Knowledge requirements.
- If the engineering personnel in your organisation are dispersed across different departments/business units, it would be wise to initiate an engineering forum.
- Assess your external linkages/Memberships of Professional Bodies/Affiliations with Learned Institutions and their role in Knowledge acquisition

Criteria 11: The concept of codification: Knowledge Management (KM)

OVERVIEW

A map allows you to crack the 'code' of a landscape. The map-maker can be thought of as a codifier.

Today, most premium car models come fitted with a GPS device, offering user-friendly satellite navigation. The toil of generations of map makers, ordinance survey workers and telecommunications engineers has been 'codified' into a small-electronic device which allows us to embark from our homes and drive in any direction, safe in the knowledge that our GPS system will get us there.

The ultimate aim of KM is to put organisational knowledge into a 'code' that makes it accessible to those who need it to drive the business. [NOTE: This does not mean computer code, necessarily]

As all knowledge is explored, used, and better understood, less of it remains the property to a person or few people, and more of it is transformed into some systematic form that can be communicated at low costs. In some cases, as the principles underlying the piece of knowledge come to be understood, they can be written down. In other cases, a procedure that was developed to produce some end becomes routine, and repeatable, which implies that it can be broken down into component pieces, each of which is sufficiently simple that it can be described verbally, or embodied in a machine. This, again, is a process in which tacit knowledge becomes codified.

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Criteria 11: The concept of codification: Knowledge Management (KM)

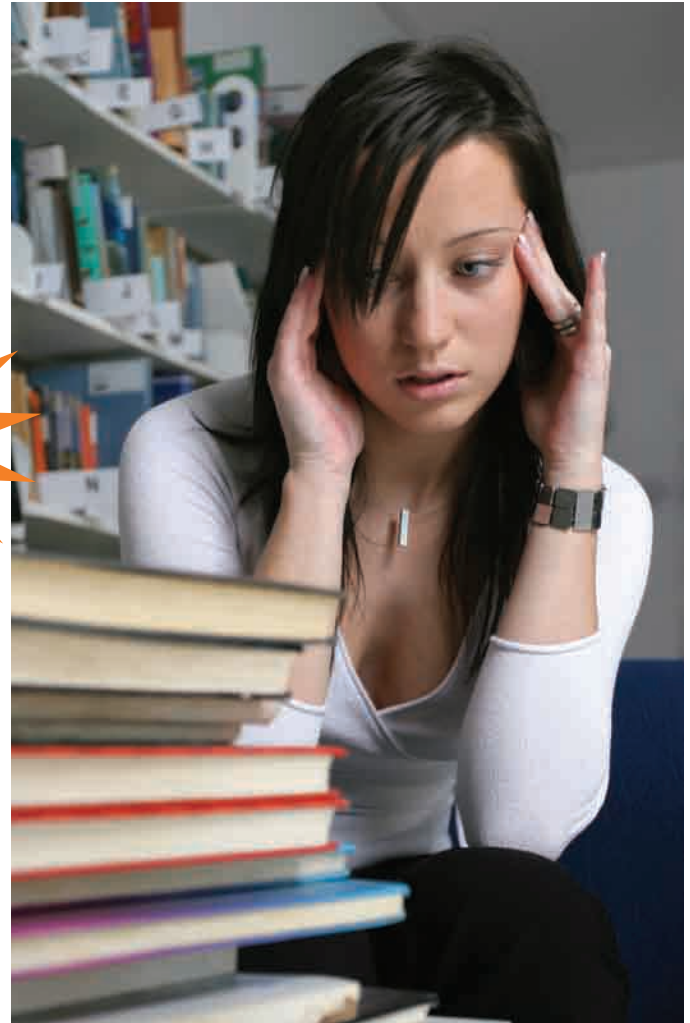
Where to Start

The first focus of Knowledge Management then should be to convert knowledge into applicable formats. Obviously, new technologies play an important role in knowledge 'codification' but any KM system is redundant without human interaction i.e. people can find and use the knowledge.

EMPLOYERS THAT WANT TO PUT KNOWLEDGE INTO FORMS THAT MAKE IT ACCESSIBLE SHOULD KEEP IN MIND THE FOLLOWING FOUR PRINCIPLES:

Tip!

- 1. Managers must decide what business goals the codified knowledge will serve.** For example, companies whose strategic intent involves getting increasingly involved in the energy sector may choose to 'codify' as many energy innovations as possible. Knowledge Mapping has to be tied to the strategy of your organisation.
- 2. Managers must be adept at identifying knowledge existing in various forms appropriate to reaching your business goals**
- 3. Knowledge managers must evaluate knowledge for usefulness and appropriateness for codification.** Not all corporate knowledge can be codified. Relevance is far more important than completeness when it comes to putting knowledge in usable forms
- 4. Those converting knowledge into accessible and applicable formats (codifiers – but not necessarily computer code!) must identify an appropriate medium for codification and distribution.**



Criteria 11: The concept of codification: Knowledge Management (KM)

Economic Benefits

Codification reduces the costs and improves the reliability of information storage and recall. Provided the media remain readable, and the language is not forgotten, in principle the knowledge can be stored and retrieved indefinitely. Many aspects of knowledge acquisition -- transport and transfer, reproduction, storage and even access and search, are all functions the costs of which fall dramatically with codification.

A second way in which codification provides benefits is that through codification, knowledge becomes a commodity. It can be more precisely described and specified in terms of content and intellectual properties. Knowledge becomes transferable independently of the transfer of other things, such as people, in which the knowledge is embedded. This facilitates market transactions in knowledge that are difficult to enact when knowledge is tacit.

For the richest tacit knowledge in an organisation, codification might simply mean locating someone who has certain knowledge and pointing the seeker to them, encouraging them to interact. Remember, human interaction is at the heart of KM.



This commoditization of knowledge is not new but it is finding new applications. In recent years, in the UK, for example, Post Office Consulting set about developing and adopting a range of tools, techniques and processes to further this vision of knowledge work within a new organisation.

Examples of the tools adapted and developed internally by Post Office Consulting were the After Action Review technique, a CV/Skills database, the role of 'Knowledge Mentors' and a technique for capturing tacit knowledge called the 'Knowledge Interview.' Under the aegis of a 'Knowledge Programme', a 'Knowledge Cycle' was developed which defined Post Office Consulting's KM process as the continuous need to 'capture, deploy, use, and review' knowledge.

In the words of the CEO at the time, "we are no longer managers in Royal Mail delivering letters, we are knowledge workers in a consultancy delivering knowledge."

Chapter 11: The range of options for Knowledge Management

Here are just some of the ways in which CPD Accredited Employers have advanced their Knowledge Management practices by making implicit knowledge, explicit and codified.

Files
Minutes
E-mails
Manuals
Procedures
Special Reports
Project Completion Reports
Lessons Learned database
Library
Databases
Document management system
Corporate literature
Shared Drives
Drawings
Archives
Publications
Wikis
CRM systems
Checklists
Patents



See also Chapter 7: Knowledge Sharing Activities

Criteria 11: Advanced Knowledge Management

	Strategy	People	Process	Technology	
LEVEL 5 - Knowledge Centric	Business Strategy is continuously adjusted to reflect the organisational learning from knowledge management	A culture exists that encourages free flow of knowledge throughout the enterprise	Communities of Practice are formally linked	Corporate I/T infrastructure integrates knowledge management both internal and external to the organisation	Here's the direction you move toward
	LEVEL 4 - Knowledge Managed	KM strategy is defined with leadership accountability and sufficient resources to begin having significant impact on results	There is a broad-based competency in KM across the company. Formal organisations for supporting KM emerge	KM processes, practices, and measurement are formalised and integrated with core business activities	
LEVEL 3 - Knowledge Enabled	KM Strategy is defined as part of the business strategy but no leadership (e.g. CKO) accountability is assigned	Rewards are in place to encourage creation, sharing and reuse of knowledge; Learning becomes a cultural norm	KM processes are integrated into business processes and knowledge is embedded in business processes	Data Warehouse and Document Management technologies are in place to support knowledge capture, sharing, and reuse	Here's what you typically do first
LEVEL 2 - Knowledge Aware	Leadership recognition of the importance of KM relative to business but has not yet incorporated it into its strategy	People are aware of limited KM capabilities, however there is no perceived leadership commitment to KM	Limited processes exist for KM (Tacit and Explicit Knowledge is available but difficult to access)	Basic KM enablers are present (e.g. e-mail)	Here's where most organisations are today
LEVEL 1 - Knowledge Chaotic	Corporate strategy is focused internally and knowledge has no impact on the corporate direction	People within the company are resistant to change and routinely hoard knowledge	No process exists for creating, sharing and applying knowledge	KM enabling technology is not present	

Criteria 11: Knowledge Mapping

Finding the sources of knowledge you want to codify is obviously essential. If you don't know where it is, you can't do anything with it and are unlikely to know what it is. Mapping corporate knowledge sources is key then.

The principal purpose and the clearest benefit of a Knowledge Map is to show people in the organisation where to go when they need expertise. The engineer with a good knowledge map has access to knowledge sources that would otherwise be difficult or impossible to find.

Be warned. A firm's organisational chart is a poor substitute for a knowledge map. Generally, it will not tell you where people actually go to find knowledge. Key knowledge can, and does exist anywhere in a company.



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Criteria 11: Knowledge Mapping

Knowledge Mapping

Initially, knowledge mapping should focus on a clearly defined need. A traditional construction firm which has a new strategic focus on rail works, for example, might realize that its knowledge of rail projects is highly diffused and disorganised to begin with. Start with areas that “scream to be mapped” to help a specific project or process become more efficient or compliant.

Assembling the Map

Every employee has a little piece of your Knowledge Map in their head. Creating an organisational map is just a matter of combining these ‘mini maps’. Organisations that develop knowledge maps are increasingly using surveys that ask employees what knowledge they feel they have and where did they get the knowledge they need to do their jobs.

Talking to the knowledge source suggested by one person, then following up with the people they mention and then the people those people suggest can lead to just about whatever information you need. The ‘Six Degrees of Separation Theory’ refers to the notion that there are no more than six steps separating any one individual from all the other people on earth!



A knowledge map can refer to documents and structured knowledge, to people or to both. The five stages of the project:

1. Develop a structure of knowledge competencies and levels
2. Define the knowledge required for particular jobs
3. Rate the performance of individual employees in particular jobs by knowledge competencies
4. Implement the knowledge competencies in an on-line system
5. Link the knowledge model to training programmes and CPD

Using the employee rating process to build an on-line knowledge map that can be accessed company-wide a manager building a team for a new project can query the on-line system and ask, for example: “Give me the top five candidates who have leadership skill levels of 80 percent of the competencies for this job and where they are based.”

How could you scale this idea for your organisation?

Criteria 11: Summary: Knowledge Mapping

Knowledge Mapping will demonstrate that your company's management value knowledge and support its exchange. Don't underestimate the symbolic value of knowledge mapping to your company's culture.

Clarity of purpose, accuracy, availability and ease of use are the essentials of a good knowledge map. Although technology can help achieve them, some of the most successful maps are not electronic at all.

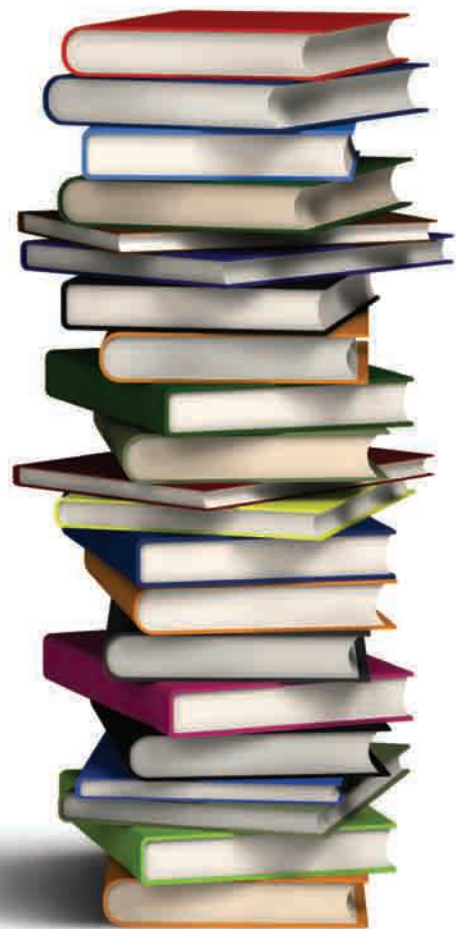
When building a knowledge map and codifying knowledge, it is wise to run a pilot phase, test the results on an end user, for example, a recent hire or a graduate, and check that the knowledge you are trying to get across is actually the knowledge that is conveyed.

Bear in mind, while big companies have knowledge control centres similar to operational control centres even refined systems cannot substitute for the judgment of experienced individuals in complex situations and how instinct or 'hunch' plays a big part. A Mentoring system, for example, is a Knowledge Map indicating those who have amassed valuable knowledge and those who wish to acquire it from them. Mentoring can help pass on valuable rules-of-thumb and 'hunch' knowledge which otherwise would be very difficult to codify and map.

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Criteria 11: Knowledge Management and CPD

To begin Knowledge Management with a focus on an organisational learning project would be a good idea but firms rarely do this. Often technology seems to be the first appeal. Depending on what sector an engineering practice is in, the concepts and approaches involved in making a start may differ, but they may include:

- Thinking about your organisation as a 'system'
- Building and facilitate communities of learning and practice
- Focusing on issues of professional development and 'mastery'
- Creating less hierarchical, more 'self organising' company structures
- Planning with the use of scenarios

Each of these concepts has a value as a means of advancing knowledge management since they largely address cultural and behavioural issues. Knowledge Management ultimately involves good sense and managerial basics.

Robert Kelley and his team at Carnegie Mellon University have been carrying out a longitudinal study examining Knowledge Management and organisational learning for the past 20 years. Kelley has been asking knowledge workers the same question since 1986. The question is this:

What percentage of the knowledge you need to do your job is stored in your own mind?

The results of this study are interesting, especially for those who are focused on knowledge transfer as the dominant mechanism for building individual, team and organisational capability in companies.

Kelley's results point to a dramatic decrease in the percentage of knowledge people need to hold in their heads in order to do their jobs.

In 1987 respondents felt that they needed to hold 75% of the knowledge they needed in their heads. By 1997 this figure had dropped to between 15% and 20%.

The figure by 2006 was less than 10%.

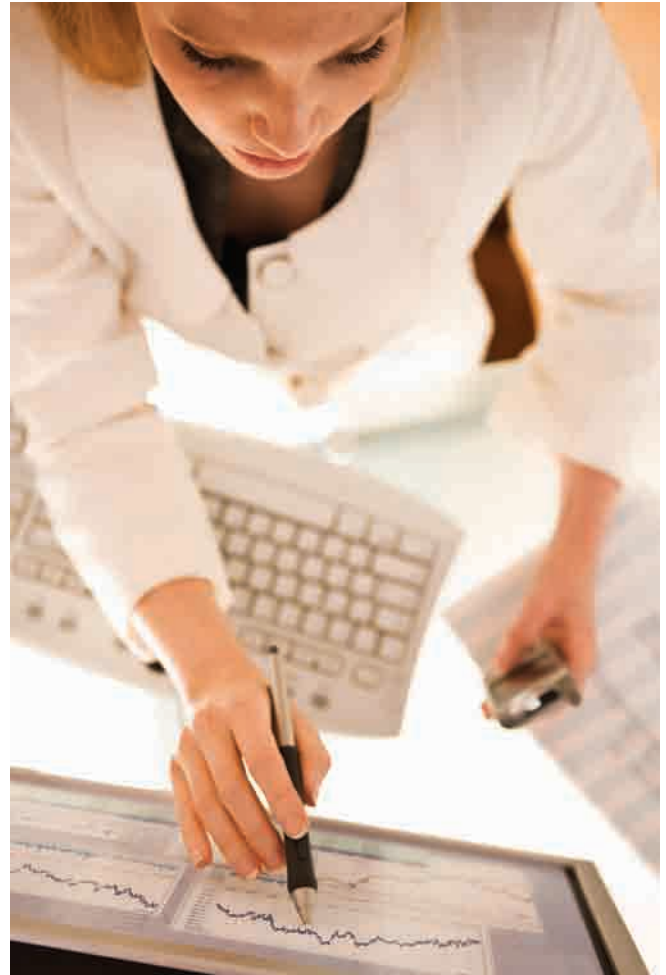
Criteria 11: Knowledge Management: Top Tips



Tip!

In analyzing KM systems in leading CPD ACCREDITED EMPLOYERS, Engineers Ireland has identified a number of factors that seem to occur where KM has been a success.

1. There's a lot of knowledge out there. For effective KM, focus in on the importance of 'current' knowledge for decision making and control e.g.: important financial or engineering decisions. Knowledge of the market you operate in is increasingly as important as technical know-how.
2. Equally important is the ability of your staff to comprehend and absorb knowledge. Don't assume people will go out of their way to interpret a 'fuzzy' message. Research shows they won't!
3. Good knowledge management systems require a small number of specialists to make it work. Leading organisations have appointed 'knowledge champions'; Directors of Knowledge or Chief Knowledge Officers (CKOs).
4. Knowledge management won't work unless behavioural issues are facilitated by good HR practices. The two are inextricably linked.
5. Knowledge Management systems should be subject to cost/benefit analysis and KPIs e.g.: time saving on projects.
6. Knowledge Management should facilitate freeing of people for more creative work. Knowledge is a creative process. Doing the same thing, day in day out, won't inspire. Shake things up and see what knowledge springs forth!



Criteria 11: Three Thoughts

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Firms are organisations that know how to do things

Economist Sidney Winter

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If Knowledge has an expiry, who's checking your Best Before labels?

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Share your knowledge. It is a way to achieve immortality

The Dalai Lama

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Case Study: TOBIN

Criteria 11: Case Study

CASE STUDY: *Tobin builds knowledge infrastructure*

Engineering is a knowledge business and pro-active knowledge management coupled with Continuing Professional Development are key strategic tools in strengthening that business, writes Eamonn Harrigan, Finance Director with Tobin Consulting Engineers where a KM strategy has been successfully implemented.

Our embrace of a knowledge management approach had its roots in a strategic development initiative launched within the firm in 2001. This culminated in the launch of the Tobin Consulting Engineers Strategic Plan 2004-2009 which identified seven strategic objectives. One of these objectives is "Maximising the value of Tobin's knowledge assets, knowledge infrastructure, and knowledge processing capabilities". The proactive KM strategy came about originally through recognising that the value in our business is primarily based on the knowledge of our skilled professionals. We add value to our business by capturing, leveraging and disseminating that knowledge through our organisation.

"Walking goodwill"

The firm's initial commitment to KM was premised on the fact that we are a knowledge business. For this type of business there are no substantial physical fixed assets or inventory. Rather the real assets of the business are the people, their knowledge and contacts. This "walking goodwill" is the value of the business and therefore any enhancement of this through proactive KM coupled with Continuing Professional Development benefits the company. In addition, with the pace of technological change it is clear that all employees should be encouraged to upskill on a regular basis.

There were six important initial steps in establishing the KM strategy:

- Setting up of a KM Group
- Reorganisation of Directory and Subdirectory structures on company servers
- Amendment of our CPD system to capture and collate knowledge
- Reorganisation of the company hard and soft copy libraries
- Regular in-house seminars/presentations by employees with specific skills/knowledge
- Development of a Tobin Intranet which acts as the main point of entry to the KM system. The ongoing improvement of this intranet has given the firm a framework on which to base the KM system.

Culture change

There were several challenges to be faced in the process:

- Technical difficulties – a substantial investment was required in software
- Change management – a subtle culture change was required to encourage, facilitate and reward knowledge sharing. This is an ongoing process and takes significant time and effort.
- Time availability – in a busy working environment it is difficult to persuade key personnel of the value of using time to further company-wide improvements which do not immediately show added value.

It is a costly process because the initial resources required are of necessity at a high level. In common with any other business initiatives in order to be successful there is a need for top management commitment and this time is of its nature expensive. The process needs to be developed at this level and pushed out to other levels in the organisation in a series of clear tasks if the costs are to be controlled.

Criteria 11: Case Study

Involving the engineer

It was and is onerous to take on this project. Due to its perceived “soft” nature, it can be difficult to engender interest among engineers. In a busy demanding workplace a demand for further time input from an engineer must be carefully thought out. Engineers involved in project work do not have a surplus of available time and the roll-out must be carefully managed to convince employees of the benefits and the practicality of the system.

The initial impact of the strategy was immediate based on the reorganisation of the company server. A standard subdirectory structure was set up for each project and, with a small amount of training; this very quickly began to show value in terms of locating quickly and easily all necessary documentation. This also supported the document control requirements of our ISO 9001 2000 system. A second early and very clear benefit was the identification, through the CPD system, of in-house experts. This system enables us to build small teams around these experts to ensure the knowledge is disseminated. It allows us to grow the business but also ensures that the company is not over-dependent on any one individual. Another key impact was the identification of skills gaps thereby giving focus to both our recruitment and training strategies.

The KM focus has benefited the firm from the individual perspective of each engineer and collectively as an organisation.

Individual Engineer Benefits

- Ability to identify easily who to contact
- Recognition for one’s knowledge and skills
- Enables career development through planned knowledge development
- Improves both internal and external marketability

Organisational Benefits

- Identification of critical areas of knowledge
- Recognition of skills gaps
- Identification of in house experts
- Organisation of existing knowledge to make it easily and quickly accessible
- Encouragement and recognition of knowledge sharing
- Assists development of Communities of Practice – interdepartmental groups with a common interest
- With a geographical spread of offices the KM system provides a structured system of linkages.
- Enables expansion of the services offered
- Prevents/reduces reinvention of the wheel
- Makes it easier and quicker for new staff to integrate and to learn company systems
- Lack of KM can be a severe hindrance to growth

Strategic measures

It is difficult to precisely allocate a correlation between KM implementation and bottom line improvement. The KM initiative in Tobin Consulting Engineers is part of an overall series of strategic measures contained in the company strategic plan. KM is one of seven strategic objectives which have combined to deliver improved performance. The overall strategic plan implementation has led to increases in turnover year on year and more importantly in profitability. The other objectives are also intrinsically linked to the KM objective and none of these objectives are self-sufficient.

Knowledge Management is an ongoing process. The Tobin Intranet is a key tool in the ongoing development of KM. This is being redesigned and actively promoted to employees as a means of knowledge sharing.

Criteria 11: Case Study

Ongoing process

In tandem with the KM drive the Project Management system is being improved and incorporates project initiation, implementation and closure. A formal review process is part of project implementation and this process identifies project specific issues and therefore lessons learned. This data is now being captured and will form the basis of a lessons learned database – to include both project-specific lessons and generic lessons. Further development of the Communities of Practice concept is planned to enable us to create centres of expertise in particular areas which cross geographical and interdepartmental boundaries.

The firm as a whole is going through a planned growth phase and the KM initiative has been essential in supporting this. In a smaller firm KM is really taken as read – everybody knows everybody and has a good idea of their skills and competences. As the firm has enlarged this personal contact with all employees becomes much more difficult and must be supplemented with more formal methods of capturing and disseminating knowledge. By developing our KM process we have ultimately assisted the planned growth of the firm.



The overall strategic plan implementation has led to increases in turnover year on year and more importantly in profitability



Lessons learned

To sum up, our experience yielded a number of important lessons on KM implementation:

- Careful planning is essential
- Expensive in terms of time and finance
- Needs a champion or several – it is very important to get a few key people to enthusiastically take on KM at the outset. This will both drive and drag others along.
- Must be properly developed into clear steps before being rolled out
- Must be rolled out in bite size pieces – early wins are essential to provide encouragement. Improved information access at an early stage gives tangible benefits – people can find information more easily. It is more difficult to demonstrate the benefits from capturing the “soft” or tacit knowledge. There is however great value in extending KM beyond “where is” knowledge and into “how to” knowledge.
- Each step must deliver an identifiable benefit – this will be difficult to quantify but employees must at least intuitively understand the benefit in order to generate enthusiasm
- KM should be part of overall strategic development – it permeates the whole business management system and should not be seen as a stand-alone process.
- KM process is one of continuous development.
- KM includes many day-to-day activities (telephone calls, conversations, brainstorming...). The system should promote, facilitate and support these and other interlinked activities. It would be a mistake to assume there is a single IT solution to implement a KM system.
- Properly managed KM can mitigate the impact of the loss of key employees.
- The rewards in financial terms and in the way the culture of a company can be changed are significant and worth the effort.