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Applied Knowledge & Innovation

Research : Knowledge Management Guidelines

The following text is taken from a booklet compiled in 1998 by Dr. John L. Gordon and Colin Smith, Principal Lecturer, School of Engineering, Liverpool John Moores University as an output from a project supported by the European Regional Development Fund.

This booklet is also available in paper format via the products screen.

We would also like to thank the following companies for their help in this work :

- British Aerospace (Samlesbury)
- Rolls Royce & Associates Ltd.
- Harland Machine Systems
- Borden Decorative Products
- Michelin Tyre plc.
- Pilkington Glass
- Richard Millington & co.
- Barco, Dextralog Division
- TDS CAD Graphics

+ other unnamed companies.

An Introduction

These guidelines are intended to help senior people in forward looking organisations to appreciate and understand the aims and potential of knowledge management. The guidelines are deliberately written in an uncomplicated way. They have however been compiled as a result of a three year collaborative project involving several leading companies and two academic institutions.

Although there will be many views concerning the design and implementation of a knowledge management scheme, we hope that these guidelines will present the issues clearly and give helpful advice without being too prescriptive. It is likely that knowledge management will benefit most organisations but the details of its implementation will clearly differ from company to company.

We have written the guidelines so that they answer the key questions such as 'what is knowledge management?', 'why is it important?' and so on. It will be most constructive if the reader of the guidelines tries to imagine how the ideas and suggestions might work in her/his own company. It is the intention of the guidelines that the experienced reader use their own experience and knowledge of company procedures to interpret the information enclosed and enrich it, making the resulting knowledge gained more specifically applicable to an individual organisation.

What is Knowledge Management?

Knowledge Management is the process by which a company both values its knowledge resource and seeks to manage it effectively within the main stream of company activities.

Knowledge Management is the pulling together of knowledge from several sources and in several formats into a shared focus and language for a particular set of objectives and activities.

Knowledge Management is primarily focused on knowledge possessed by people. Most commentators on knowledge management also include systems that store and process information, such as databases, knowledge bases and distributed information systems.

Knowledge should be thought of as a strategic asset which is an essential organisational component. The strategic nature of knowledge means that it must be part of the decision making process during the management of change. To fail to account for knowledge during managed change can lead to serious problems. Unless one is managing knowledge, one is very probably not managing change. Therefore, we view knowledge management at a strategic level - a level which does not require precise detail but which can provide decision support during the management of change.

It is generally accepted by commentators that there are two types of knowledge:-

(i) Articulated Knowledge

The articulation may be through

- speech
- writing
- drawings
- patents
- computer programs or mathematical relationships

(i) Tacit Knowledge

This cannot be verbalised. It cannot be articulated. It dwells within peoples' minds and governs their interactions with and

responses to other people in a particular context.

Knowledge is more than information:

Databases can store records of facts, figures, data, rules, patterns and connections. At present, they have limited power to create anything new or to innovate.

Knowledge is more powerful:

It enables a person to innovate. Possession of knowledge enables people to create new knowledge. This is what distinguishes knowledge from information. Karl Wigg, a consultant and practitioner of Knowledge Management in the USA, sums it up succinctly by saying

> *'Information describes circumstances, situations and problems whereas knowledge enables people to handle problems and to solve them.' [2] [3] [4]*

An individual possesses his or her knowledge:it is loaned to the company or group only if the individual wishes to make it available. An individual can share knowledge and can co-operate with others to use knowledge only if that person is motivated to do so.

Related to these definitions is the topic of Intellectual capital.

Why is Knowledge Management important?

Several case studies which were carried out during 1993 and 1994 demonstrated that companies are making costly mistakes by ignoring knowledge management. The cost to a company can often be both immediate and long lasting. Indeed, a company may suffer severe damage from the loss of a crucial part of its knowledge asset. Managers may be left wondering what happened as they frantically try to repair a situation which could have been avoided.

What has made knowledge management desirable and why have mistakes been made now and not in the past? It is likely that the results of pressures on business to down size, become more efficient and to streamline have also resulted in businesses operating much closer to their critical level than before. Staff reductions mean that staff are now almost fully committed, leaving little spare staff resource to deal with the unforeseen. This has lead to greater pressure on management who must now predict as much as possible leaving less to chance. Part of this need to predict the effects of change and of future activity is the need to manage the knowledge asset. It is of course, likely that knowledge related mistakes were made in the past, however they may not have had such catastrophic consequences.

Why Practice Knowledge Management?

Knowledge Management has always been practised in one form or another. People have been appointed for their knowledge, expertise or potential. People have been promoted for their abilities in handling complex managerial problems. Today, the competitive pressures are intense and the market place is fast moving.

Companies need to identify the crucial knowledge and competencies that will enable them to remain competitive. Knowledge Management is a responsibility of the Board of Directors. It needs to be coupled with the strategic, long-term decision making processes. There is also a need for formalised methods of knowledge management to be included as a normal function of management. This will lay the foundations for future development of companies' capabilities and also enable continuous improvement of existing methods and systems to be carried out.

Technology and information systems develop very quickly. Knowledge of their potential application and their operation has to develop in step with these improvements.

Organisations are no longer as stable as they used to be. There is a rapidly shifting world of created and recreated organisations, or structures within organisations which disperses the articulated knowledge around the company. As organisations reduce their headcount, knowledge (articulated and tacit) moves out of the organisation). Consequently the deep knowledge about the organisation (the tacit knowledge) is less strong, and the articulated knowledge can be diminished and weakened.

There is need to mobilise human resources quickly and flexibly. Responding to a proposal for new development or to a client's requirements involves linking up and working with people both inside and outside the organisation.

With regard to knowledge, we need to 'know what', 'know how' and 'know who' in order to mobilise these resources.

Increasingly, we will need to 'know where' the sources of knowledge reside in the distributed organisation or community of organisations in order to fulfil business requirements.

Knowledge Loss

Knowledge may be lost to an organisation through many causes, some of them not obvious until the actual loss has occurred. An important function of knowledge management is therefore to prevent that loss, to 'safeguard knowledge.' Common causes of knowledge loss include those listed below.

1. An expert is overloaded, and cannot deal with all requests for his particular knowledge and expertise. In effect, his knowledge is lost to the problems triggering those requests. To prevent the loss , additional experts must be engaged, or, better still, knowledge transfer initiated from expert to practitioner
2. The culture of the company does not encourage sharing of knowledge. Rewards are seen to be gained by keeping knowledge to oneself, maintaining the power that knowledge can confer. In such a case, 'Knowledge Management' includes the process of modifying the culture so that knowledge sharing is rewarded rather than knowledge retention.
3. A culture of blame is in existence which discourages individuals or groups developing their knowledge through experience of innovation and risk taking.
4. Knowledge is available but lies dormant waiting for a catalyst to release it. For example, a person might be working in one context, yet possess substantial knowledge that might be far more use in another context.
5. Knowledge is rejected because of the 'Not Invented Here' Syndrome. Good ideas might be crushed because of this, and the knowledge and potential development of knowledge can be lost to the organisation because it is not communicated or used.
6. Knowledge may be lost to an organisation through neglect. Neglect includes lack of challenge so that a person's knowledge, expertise and skills become forgotten, extinct or obsolete. It includes lack of provision for acquiring new knowledge and experience.
7. Knowledge may also be lost to the organisation through retirement, redundancy, resignation or even through promotion. When a person is promoted, new responsibilities prevent the detailed application of knowledge in the original responsibilities.

How might Knowledge Management be developed / implemented?

Knowledge Management must establish a culture in which knowledge sharing is rewarded rather than knowledge retention. The form of reward might be something as simple as public praise for sharing knowledge. It could be extended to include financial reward or promotion. The appraisal system could change its emphasis from pure performance appraisal to

assessing how effectively a person has shared essential knowledge. A development of this could include ascertaining how much new knowledge a person has acquired or developed, or what gaps exist in a person's knowledge that need to be filled.

Management will need substantial knowledge of communication processes, and develop high skills in communication and in motivation. They will also need substantial knowledge of the culture and values of their organisation and how to work within them and use them to advantage. This knowledge is termed 'navigational knowledge' by Wiig.

Planning for Knowledge Management

1. Develop a clear understanding of why Knowledge Management is being undertaken.The key to this is the set of business objectives. These may be one or more of the following:-
    - to focus on developing relationships with customers (understanding their requirements, giving them better service and delivery, informing them of potential developments)
    - to focus on product leadership (better, more innovative features, higher quality, better value for money, improved reliability)
    - to focus on operational excellence (reduced lead times, better forecasting of delivery times, improved performance in meeting delivery promises, better quality of manufacture)
    - to increase market share in particular sector up to a specific percentage through improved marketing, sales organisation competitive pricing, and availability and performance of product.
2. Obtain what Wiig calls a 'knowledge landscape' of the Company to identify those areas that are likely to give a large payback. [Wiig 2,3,4]
    - Focus on the knowledge requirements for competent execution of complex tasks.
    - Identify areas where knowledge is missing for particular functions, tasks or projects.
    - Identify repositories of knowledge, and determine whether any of the gaps in the knowledge requirements may be filled from these repositories.
    - Identify bottlenecks in knowledge transfer or knowledge distribution, and attempt to remove them.
    - Identify how to organise appropriate approaches to standardise knowledge acquisition so that knowledge can be cumulated and merged with other knowledge

Knowledge Transfer

Risk of Knowledge loss and creation of gaps in knowledge result from many possible causes. Managerial action needs to ensure that transfer of knowledge takes place assisted by Information Technology and formal Knowledge Acquisition techniques.

1. Departmental barriers may restrict the flow of knowledge between groups. In such cases, the company structure needs to be examined to assess whether multifunctional teams would encourage the flow of knowledge between functions or groups when it is needed.
2. High value knowledge should be transferred from specialists to practitioners. This releases the specialists time for development of new knowledge.
3. A knowledge audit, forming part of an appraisal and review process can reveal the strength of a person's knowledge and enable it to be matched to a deficiency of knowledge in another activity.
4. Focus on the means of capturing knowledge from people and for organising and sharing it. Devise and implement appropriate standardised procedures for knowledge acquisition so that knowledge can be cumulated and merged with other knowledge.
5. Set in place procedures to identify how knowledge can be codified as part of every professional function so that it is possible for the wider organisation to draw upon it and use it.

A Specific Example:

The collaborative Knowledge Management project run by the NWAIAG follows several of the key principals outlined above. It has implemented its knowledge management ideas as a supply, demand structure [6].

Some of the highest priority features which managers would require of a computerised Knowledge Management Tool include:

- Providing Information
- Current staff knowledge levels.
- Current company knowledge requirements.

Answering questions

- What knowledge is most at risk?
- What is the gap between knowledge owned and knowledge needed?

Analysing change

- What if project 'x' finishes?
- What if project 'y' is started?
- What if we lose staff member 'a'?

Two of the main vehicles which are used to supply information are in the AKRI project are:

1. A time line, which is similar to a standard project planning / management tool with the addition of knowledge gap analysis and risk analysis over all time periods.
2. and a hierarchical graph view of the companies knowledge asset, taking knowledge dependencies into consideration.

Risk

is defined as the risk of loosing an item of knowledge from the company. Knowledge loss has been discussed earlier but the risk of loss may depend on several factors. It may depend on age, on health, or even on gender.

Gap

is defined as the knowledge gap between what a company knows (its knowledge asset) and what a company needs to know to carry out its obligations. Companies should have a much greater knowledge asset than is needed at any one time. However, deficiency may show up in cases such as specialist or expert knowledge. Details of how risk and gap are calculated can be found elsewhere, indeed the precise details of these calculations is in further need of refinement and may, in the end, depend on a particular company's view.

These, and other functions are made available for future time periods so that prediction is supported.

What benefits have been derived from Knowledge Management?

One difference between the knowledge management of say 20-40 years ago and that of today is that many tools are being developed to help in the complex task of capturing knowledge from people and representing it in ways that are accessible

to other people for their effective use.

Some IT systems are universal tools that enable group members to submit ideas and information on a network to a wider forum of users.

Other systems are more formally structured where the knowledge is codified and structured , and used in such contexts as customer help desks. A major benefit of these is that the help desk operator's personal knowledge is supplemented by additional information that has been contributed from many sources (such as service engineers, users or customers) An effective enquiry and retrieval system enables an up-to- date and consistent information to be given to enquirers. Furthermore, the company reduces the risk of corporate memory loss if employees leave.

Help desks can be used internally by companies to provide solutions to frequently recurring problems or frequently asked questions. Knowledge Management includes deciding what knowledge should be included in the system and how it should be represented within the system for easy retrieval.

The Swiss Bank have identified the following long term benefits from their Know-How project.

- Improved Investment Decisions.
- Directed Search (for information).
- Banker Credibility.
- Current Information (reducing lead time for information availability).
- Cost Reductions (reduced manufacturing and distribution costs).

Who is Doing Knowledge Management?

AKRI Member Companies.

Several companies which form part of the AKRI network are investigating the use of knowledge management. These companies include British Aerospace, Borden Decorative Products, Michelin Tyres, Rolls Royce & Associates Ltd, Richard Millington & Co Ltd, BICC etc. Their work has involved both internal and collaborative investigations. They have also performed knowledge management trials using a prototype Knowledge Management Tool.

At least two of the companies have organised a management seminar programme about Knowledge Management.

One company is currently extending their own IT systems to include the key elements of the knowledge management project.

Swiss bank.

The Swiss Bank Corporation are implementing a Know-How project. This is intended to solve the considerable problems associated with large volumes of important information which is regularly distributed as paper documents.

Chief Knowledge Officer.

Many companies are creating the post of chief knowledge officer (CKO) or an equivalent role to manage the processes of capturing, distributing, and effectively using knowledge (Tom Davenport, Techweb, CMP Publications Inc, 9/5/94).

Organizations that have adopted this position include:

- Hoffman-LaRoche
- GE Lighting
- Xerox PARC

and several consultancies, including

- Ernst &Young
- Gemini
- McKinsey
- A partner at a New York executive search firm says he is being asked to fill an increasing number of such jobs. The role of a chief knowledge officer is complex.

Skandia

Skandia (a financial services company) has developed the Skandia Navigator which can report on the intellectual as well as the financial state of an organisation. Skandia has a Director of Intellectual Capital , Leif Edvinson, who maintains that, although a balance sheet shows how well a company has done in the past, an Intellectual Capital report can indicate how well it can do in the future.

Hewlet Packard

Hewlet packard has developed a directory of its own experts which contains guides to the backgrounds and expertise of individuals who are knowledgeable on particular topics. It was initially confined to the research labs, but the hope is that it will extend to the whole of HP.

HP also has a very effective help desk to support dealers who frequently had problems and phoned the company for guidance. Now, answers to frequently asked questions have been put on-line, and the dealers can access the system directly. Much effort is devoted by the company into maintaining the topicality of the database.

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Dr. John L. Gordon and Colin Smith 1998

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Page updated : February 1, 2006

Web Site by Funzig Web Design and Development