CHAPTER 5

KNOWLEDGE MANAGEMENT
IMPLEMENTATION

5. KNOWLEDGE MANAGEMENT IMPLEMENTATION

This chapter describes a basic approach to the implementation of a knowledge management initiative. A number of aspects are discussed on the success factors of a knowledge management project, an implementation approach, and a futuristic view on knowledge management. In conclusion, a phased implementation plan for a knowledge management project is presented.

5.1   Successful Knowledge Management Projects

During the concept phase of a knowledge management project, management has to anticipate the desired outcome of a knowledge management initiative.

Visible short-term success indicators of knowledge management initiatives are [5]:

❑   an increase of organisational capital, i.e. intellectual or financial;

❑   growth in the resources involved with the project, e.g. people;

❑   growth in and higher utilisation of organisational knowledge sources;

❑   the degree to which the project is an organisation wide initiative; and

❑   the degree to which the project is independent of a few individuals' contributions.

Possible long-term benefits of knowledge management initiatives could include:

❑   staff retention and attraction;

❑   higher productivity of knowledge workers;

❑   reduced cost;

❑   better decision making;

❑   faster response times;

❑   accelerated rate of innovation;

❑   shared best practice – across different business units; and

❑   higher knowledge retention.

The project sponsor of the knowledge management project should steer and motivate initiatives with these indicators and results in mind.

5.2   Knowledge Management Implementation Approach

The preferred approach to a knowledge management implementation is that of a phased approach (see *Figure 29: Knowledge Management Implementation Approach*) which includes the following growth phases:

❏ *Initiation Phase:* Start the initiative on a small scale as a pilot project in an environment with a high success potential. The project success will earn project facilitators the right to continue and provide the energy for a bigger scale initiative.

❏ *Contagion Phase:* The success of one environment will influence the acceptance of other environments as the word spread.

❏ *Cultural Transformation Phase:* As employees start to perceive the benefits of sharing knowledge and using the knowledge base, the culture and values drivers of the organisation will start to change in favor of the knowledge management paradigm.

❏ *Maturity Phase:* As employees show a widespread adoption of the new philosophy, the organisation reaches maturity, prepared for a full-scale knowledge management project.
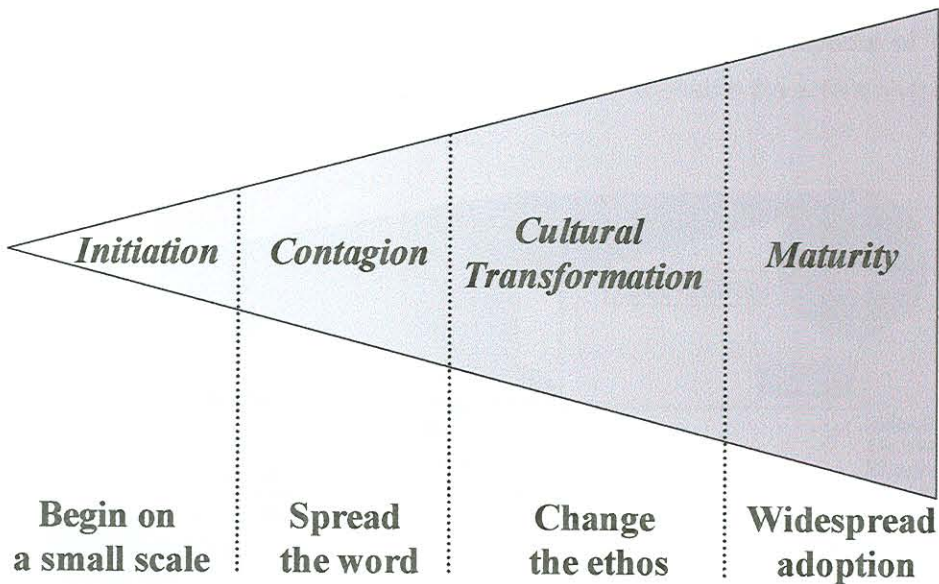

Figure 29: Knowledge Management Implementation Approach

5.3   Future Development of Knowledge Management

Even though current knowledge management technologies are low in maturity the accelerated development cycles of these technologies project tremendous future opportunities for knowledge management initiatives. The Gartner Group predicts that the change in the focus of knowledge management initiatives, as illustrated in *Figure 30,* will take place in three different dimensions [3]:

❑ the user's perception of the *relevance* of available knowledge;

❑ the degree of *dynamism* and *flexibility* of the knowledge base; and

❑ the level of *interaction* within the community during knowledge creation.

The Gartner Group continue by indicating that three different phases will transpire during the next few years.

❑ The *retrieval phase* focuses on the organisation's explicit knowledge and on creating static repositories with document lists, which are owned by individuals.

❑ The *knowledge connectivity phase* focuses on developing a higher degree of connectivity between people and focuses on retaining the tacit knowledge owned by and created in the organisation.   This will increase the relevance of the knowledge contained in the systems.

❑ The *co-ordinated enterprise phase* aims at integrating all the aspects of the organisation, i.e. the people, processes and objects, to enable the active sharing of answers within the entire organisation.
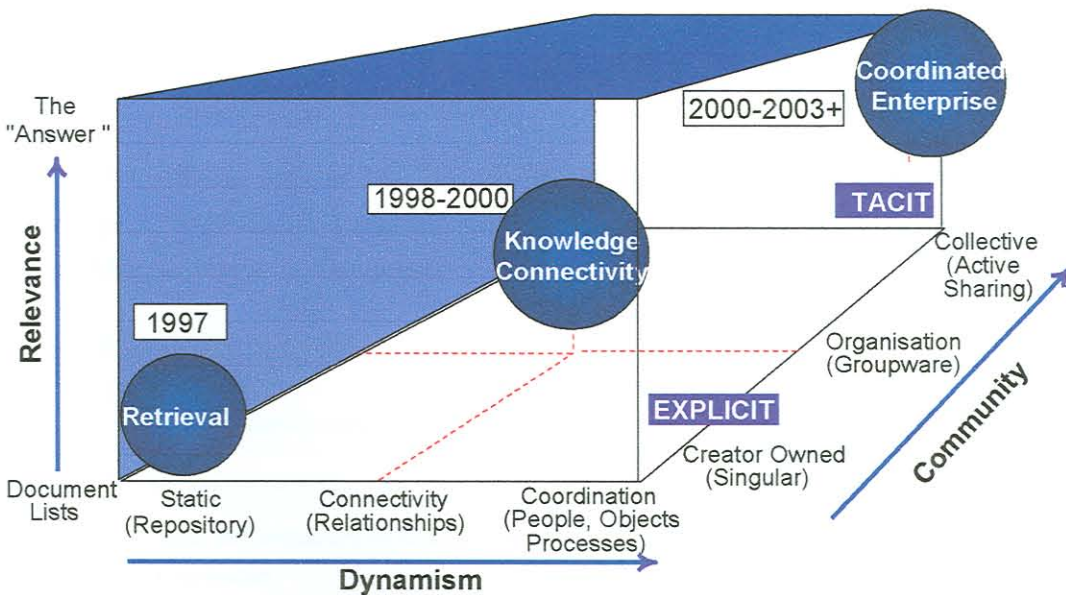

Figure 30: Knowledge Management Development Phases

The implementation steps and deliverables of each of these phases depend on the development and availability of enabling technology.

Phase 1:   Retrieval

The most important activities involved with the retrieval phase are to **store**, **access** and **maintain** knowledge. *Table 5: Retrieval Phase* gives the different tasks and deliverables relevant to this phase.

Table 5: Retrieval Phase

Implementation	Deliverables
Identify the knowledge requirements of the organisation	Knowledge requirements identified
Investigate the current technology architecture of the organisation	Current technology architecture defined and modelled
Investigate, choose and implement available enabling technology (e.g. DMS, Search engine, agents)	Implemented software
Identify the different Centres of Excellence (COE) and communities of interest to establish ownership, knowledge maps, development responsibilities and communication procedures	COE and experts' area of responsibility defined
Identify sources of knowledge and populate the repository	Populated knowledge repository
Map the knowledge cube	Company's knowledge cube mapped
Establish maintenance process of knowledge base	Maintenance process in place
Implement measures to monitor the effectiveness of the Knowledge Base (KB) and implement incentives	Measurement System

Phase 2:   Knowledge Connectivity

The most important activities of this phase are to **identify**, **distribute** and **share** knowledge. *Table 6: Knowledge Connectivity Phase* gives the different tasks and deliverables applicable to this phase.

Table 6: Knowledge Connectivity Phase

Implementation	Deliverables
Enhance the connectivity between employees	Connected employees
Investigate, choose and implement technology to enable tacit sharing in the organisation	Implemented collaborative tools
Develop a skills template and yellow pages of employees	Yellow pages

Implementation	Deliverables
Develop training strategy and material according to the organisation's knowledge needs and knowledge cube	Training procedures and material in place
Enable the sharing within the communities of interests	Effective communities of interest in place
Develop measures for the intellectual capital of the organisation and incorporate into financial measures	Measured Intellectual Capital

Phase 3:   Coordinated Enterprise

The most important activity involved in this phase is to **integrate** the objects, processes, and people within the organisation. *Table 7: Coordinated Enterprise Phase* gives the different tasks and deliverables applicable to this phase.

Table 7: Coordinated Enterprise Phase

Implementation	Deliverables
Establish the integration requirements of the organisation in terms of the objects, people and processes	Integrated enterprise requirements
Develop the business architecture by identifying the objects and mapping the business processes	Organisation's business architecture
Investigate, choose and implement an object-based knowledge base	Implemented integration software
Populate the objects and processes of the organisation (business design)	Populated knowledge base
Monitor the level of integration between the objects, people and processes of the organisation	Integrated enterprise

5.4   Knowledge Management Implementation Phases

Currently, there are a number of companies mentioned for their unique approaches to knowledge management, e.g. British Petroleum, Ernst & Young, Xerox and World Bank (see Appendix A4 for case studies on these organisations).

Not withstanding the fact that various knowledge management initiatives emerge, no best practise, standard methodology, or 'plug and play' solution will solve every organisation's knowledge management needs.   Knowledge's uniqueness within different organisations and the novelty of the knowledge management discipline, demand a steep learning curve from organisations to refine the art of managing the intangibles.

This section suggests and discusses a few generic phases for a knowledge management implementation initiative as stated in *Figure 31: Knowledge Management Implementation* Phases.

Phase 1 - **Establish a common KM vision**

Phase 2 - **Create a common language/ understanding (top-down)**

Phase 3 - **Gather info on company's knowledge needs (bottom-up)**

Phase 4 - **Develop and execute the KM strategy**

Phase 5 - **Develop measures to indicate the success of the initiative**

Phase 6 - **Develop an infrastructure to enable KM**

Phase 7 - **Establish a process to renew knowledge**

Figure 31: Knowledge Management Implementation Phases

The first few steps focus on gaining acceptance on the concept of knowledge management from all the employees of the business area concerned. From this an assessment of the organisation's knowledge requirements flows serving as an input to the knowledge management strategy. The measurement of the organisation's intellectual asset worth is used to measure the success of the initiative. The final phases include developing and establishing infrastructure and processes according to the knowledge management strategy, after which the implementation cycle is repeated.

5.5 Phase 1 – Establish a Common Knowledge Management Vision

The initial phase of the knowledge management initiative includes defining the organisation's knowledge management requirements. During this phase management has to:

- gain a sufficient understanding of the business philosophy of knowledge management;

- buy into the new initiative;

- define new roles and responsibilities in the organisation, e.g. Chief Knowledge Officer (CKO) and knowledge managers, who can drive the knowledge management strategy and facilitate the change process;

- accept the challenge to establish a knowledge sharing culture; and

- develop a common understanding and expectation around the benefits and outcome of knowledge management.

Unless the management team fully accepts the knowledge paradigm and adjusts their management style and culture in favour of the knowledge age perspective, they will be unable to instil a culture conducive to knowledge management.

Once ownership has been established for such an initiative, the responsible parties have to conceptualise each component of the knowledge management framework, i.e. the strategy, process, people and technology and develop a plan to communicate and establish the framework within the company.

5.6 Phase 2 - Create a Common Language / Understanding (top-down)

In the second phase, the team responsible for the knowledge management initiative has to establish a common language and understanding among all the employees of the business unit around the terms and paradigm of the knowledge age.

This phase requires a huge amount of commitment and energy from *change agents* to facilitate a change in the way of thinking throughout the company. In their attempt to emphasise the priority of knowledge management, the change management team needs sufficient top-management support as well as simple tools to educate employees and create participation across the different levels of the company. This includes various techniques such as story telling, metaphor development, education programs, simulation (e.g. games), and various types of communication media. It involves a process of 'propaganda' where change agents are trained to teach the company knowledge management principles.

The potential for unrealistic expectations and the possible occurrence of fear among employees make this the most critical phase in the life cycle of the knowledge management initiative. The best way to gain a high rate of adoption is to ensure buy-in from the *influencers*, i.e. employees on different levels of the organisation that have a strong influence on employees' opinions. Often, these influencers are used as change agents to influence others to the benefit of the knowledge management project and to ensure that employees understand the principles and benefits of knowledge management.

Communication plays a significant role in the attempt to change employees' behaviour from the hoarding of information to the sharing of information. This includes establishing an open-door environment, breaking down of traditional information barriers and opening-up large amounts of information to a broader audience.

The implementation of knowledge management calls for *new roles* and responsibilities across the organisation to support the new processes on individual and team level, e.g. the codification and usage of knowledge sources. Training is a large influencing factor in any successful initiative as it supports the new skills, roles, and responsibilities that are required for the learning organisation. Management should consider training as an investment in the long-term success of a knowledge management implementation [18].

5.7   Phase 3 - Gather Information on Company Knowledge Needs (bottom-up)

The aim of the information-gathering phase is to determine what knowledge assets exist in the organisation, in what form it exists, where it is situated, and who owns it. One approach to this phase is to perform a knowledge audit in order to:

❑   measure the current performances of the organisation in terms of knowledge management and the need for such an initiative;

❑   identify the available sources of knowledge and the current knowledge needs;

❑   map the different employees and their knowledge needs in the company;

❑   gain an awareness of the competitive knowledge of the company;

❑   measure the organisation culture according to learning and growth;

❑   measure the organisation climate for knowledge sharing and job satisfaction;

❑   evaluate the level of empowerment and enablement in the company;

❑   evaluate the use of current knowledge communication structures and the effectiveness of these; and to

❑   identify the communities of interest active in the company.

Conducting interviews across the organisation using knowledge disclosure techniques can provide very valuable information. A knowledge audit includes techniques such as:

❑   *extraction / listening* – to establish what type of decision are made and problems are faced as well as learning and judgement are required in a particular position;

❑   *critical incident questioning* – to determine the low- and highlights of a position;

❑   *network analysis* – to determine the knowledge connections in the organisation; and

❑   *anonymous virtual community* – to provide the opportunity for anonymous contributions to the knowledge management process.

A knowledge assessment interview (see Appendix A1 for an example of an interview) and survey (see Appendix A2 for an example of a survey) provide valuable information and can include questions on the:

- degree to which knowledge seeking is part of the job;

- activities that require knowledge;

- extent to which the user applies knowledge;

- type of decisions an employee makes in the organisation;

- sources of knowledge used and the effectiveness thereof;

- frequency of the use of the knowledge;

- degree of difficulty to access appropriate knowledge;

- knowledge resource needs; and

- availability of best practise, methodologies, trends and opportunities.

It is important to continuously manage the expectations of employees created throughout the process and to facilitate participation across all the levels of the organisation. Finally, the results of the knowledge audit have to be analysed and fed back to the participants before the development of a knowledge management strategy can follow.

5.8   Phase 4 - Develop and Execute the Knowledge Management Strategy

The chief knowledge officer and other knowledge managers are responsible for the development of a knowledge management strategy from the knowledge audit results.

5.8.1   Knowledge Management Strategy

The primary consideration for a knowledge management strategy is to differentiate between the application of a knowledge retention or knowledge creation strategy within the business unit (see paragraph 4.1.1 on page 39). This decision depends on the profile of the environment and will, to some degree, dictate the rest of the knowledge management strategy.

5.8.2   Knowledge Management Project Strategy

Develop a plan for the rollout of the initiatives within the knowledge management project, including decisions on the required outcomes, responsible parties, time frames, and budgets. The project strategy should address all the aspects of the knowledge management framework (see chapter 4 on page 38).

5.8.3 Intellectual Capital Driven Strategy

An effective framework to use in the development of a knowledge management strategy is that of the intellectual capital model (see section 3.4 on page 25). The ultimate objective for a knowledge management project is to increase the intellectual assets of the organisation. MTN is a good example of an organisation that has developed and communicated their organisation's knowledge management strategy around such a structure [21]. A few examples of the components of their strategy are displayed in Figure 32: MTN Intellectual Capital Strategy.

❑ MTN's strategy in terms of the organisation's *external structure* was to develop profiles of all their different types of clients and to develop products to serve each type of client.

❑ In order to develop the *external structure* and *personnel competence* of the organisation they decided to leverage their relationship with international cell phone suppliers to develop their employees through an exchange program.

❑ MTN's *personnel competence* was addressed by establishing connected knowledge management teams and incorporating job rotation as well as by creating awareness through knowledge management games, e.g. Tango.

❑ Intellectual capital measures and incentives as well as knowledge forums were introduced to facilitate the interaction between the *personnel competence* and *internal structures* of the organisation.

❑ The *internal structure* of the organisation required an Intranet site, accessible by all the employees.

❑ The *internal* and *external structure* interfaces necessitated easy accessible customer related information.
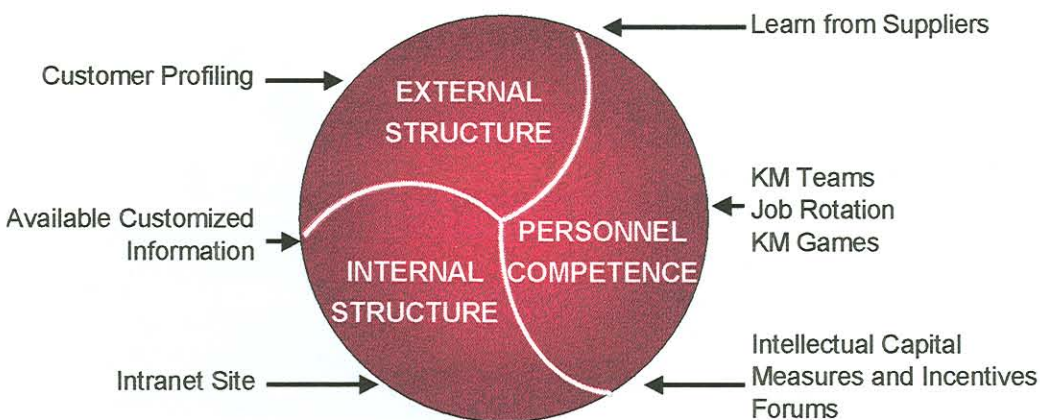

Figure 32: MTN Intellectual Capital Strategy

5.9   Phase 5 - Develop Measures to indicate the success of the initiative

Although it may be difficult, it is vital to measure the intangible assets of the organisation. Growth in an organisation's intellectual capital is an indication of the degree to which the knowledge management initiative has been successful.   In addition, these results assist in the identification of problem areas and give management an indication of the return on investment.

Possible measures for a knowledge management initiative include:

❑   measures of the intellectual assets of the company in terms of the organisation's personnel competence and its internal and external structures (see Appendix A3);

❑   metrics on the effectiveness of the knowledge management system, e.g. measuring the frequency with which the system is used and the degree of user satisfaction; and

❑   evaluation of the organisation's mapped knowledge cube (see paragraph 4.3.1.2 on page 56) in order to identify knowledge gaps for future development and training.

The results of the different measures can be used to incentivise employees and in so doing reinforce knowledge-related behaviour.

5.10   Phase 6 - Develop Infrastructure to Enable Knowledge Management

A variety of technologies and products exist that can support parts of a knowledge management infrastructure solution for each specific environment (as discussed in section 4.4 page 61). The different types of knowledge management technologies are illustrated in *Figure 33*.

KM – Intelligent Agents, Innovative Systems, XML

Collaboration – GroupWare, Business Intelligence, Video Conferencing, Teamroom, Electronic Meeting, Distance Learning, Chat

Coordination – Workflow, Search and Retrieval, Document Management Systems, Knowledge Locators, Organic People Finder, Dynamic Link

Messaging – Intranet, Group Calendar/E-mail/Schedule

Figure 33: The Classification of Knowledge Management Technology

Lotus Notes's Domino server is currently a preferred supplier of integrated solutions in relation to these different types of technologies, i.e. messaging-, co-ordination-, collaboration-, and specialised knowledge management technology. These different types of technologies build on each other and are discussed in the following paragraphs.

5.10.1 Messaging Technology

Messaging technology is the most familiar of the four types of technologies and refers to technology that enables unsynchronised communication among employees in the form of group scheduling and Intranet software. The foundation of a knowledge management infrastructure, i.e. an intranet, is implemented on three different levels of impact.

1. *Company wide intranet* that provides generic organisational information that is very structured, almost rigid and strictly maintained. This is to ensure that high quality information is available to everybody and where required even to the client.

2. *Competency centre intranet* contains domain specific knowledge that is accessible by all the participants of a specific competency or body of knowledge. The information is less structured and controlled, may have a level of replication and consist of the group's unique terms and language.

3. *Trusted community intranet* refers to an intranet for a small and close community of experts that share a common understanding, a high level of trust and honesty as well as a willingness to share their mistakes. This infrastructure requires a higher level of flexibility that enables experts to share their ideas and concepts in an unstructured format.

5.10.2 Co-ordination Technology

The 'pointer to people'-concept in a knowledge base refers to the documentation of just enough information about a practise to facilitate the contact between an interested reader and the person with the details by providing the latter's contact details, e.g. organic people finder.

In addition, this so-called co-ordination technology gives an indication of available knowledge through, for example, document management systems, search engines and knowledge locators. Finally, it not only refers to the co-ordination between people, or people and knowledge, but also to the co-ordination of activities through automated workflow capabilities.

Co-ordination technologies, also referred to as Document Management solutions, are discussed in more detail in Appendix A5.

Alternative approaches to initiate the implementation of co-ordinating technology are to:

❑ start with an empty document management system, make it available to all the employees, train them in using it and allow them to enter their knowledge;

❑ contract a few key players to establish a base of knowledge that can be used as benchmark for critical knowledge and information;

❑ appoint a dedicated team to take ownership of the population of the knowledge base; or to

❑ appoint certified practise experts who will be responsible for the knowledge base content and for the gathering of knowledge from other people in the organisation within their specific domain.

5.10.3 Collaboration Technology

Collaboration technology refers to the *socialisation* - knowledge creating process, where knowledge is created due to the sharing of tacit knowledge (see paragraph 4.3.1.1 on page 54). This includes verbal, written and face-to-face communication.

The following matrix identifies a few alternative infrastructure decisions to enable this socialisation process (see *Figure 34: Socialising Matrix*). It illustrates the different degrees of interaction that exist within the organisation, i.e. communication between individuals, collaboration between different groups, collective learning across the organisation, and connectivity with the external environment.

First, identify the alternative means to facilitate the interaction between different entities. Secondly, prioritise between the alternative means to decide on the implementation of required technology over a specified time frame. This includes:

❑ deciding with what means the organisation will interact with the internal and external environment;

❑ investigating alternative means for such an interaction, e.g. through an interactive webpage; and

❑ prioritising between the alternative methods of interaction.

The objective of collaboration software is to establish total connectivity between the different entities within and outside of the organisation to facilitate effective knowledge transfer.
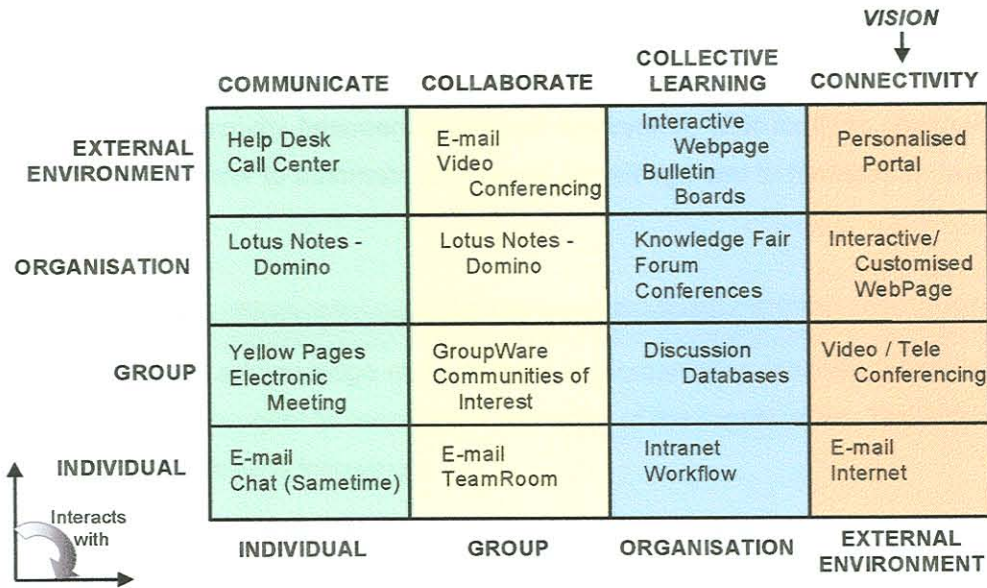
	COMMUNICATE	COLLABORATE	COLLECTIVE LEARNING	CONNECTIVITY
EXTERNAL ENVIRONMENT	Help Desk Call Center	E-mail Video Conferencing	Interactive Webpage Bulletin Boards	Personalised Portal
ORGANISATION	Lotus Notes - Domino	Lotus Notes - Domino	Knowledge Fair Forum Conferences	Interactive/ Customised WebPage
GROUP	Yellow Pages Electronic Meeting	GroupWare Communities of Interest	Discussion Databases	Video / Tele Conferencing
INDIVIDUAL	E-mail Chat (Sametime)	E-mail TeamRoom	Intranet Workflow	E-mail Internet
	INDIVIDUAL	GROUP	ORGANISATION	EXTERNAL ENVIRONMENT

VISION ↓ (above CONNECTIVITY)

Interacts with (lower left axis label)

Figure 34: Socialising Matrix

5.10.4 Knowledge Management Technology

Specialised knowledge management technology can only operate effectively if the rest of the infrastructure components are in place. Most of these specialised technologies are still in the development phase of their product life cycles. An example of these includes *innovative systems* that support the development of knowledge. *Intelligent agents or push technologies* support users by searching available knowledge sources and informing employees of new additions to the knowledge base or to the internet that correlate with their interest.

5.10.5 Infrastructure Implementation Requirements

To conclude, a few points on the implementation of a knowledge management infrastructure:

❑ implement an infrastructure with a *knowledge repository* for the storage of knowledge in an organised way, linked to its original source;

❑ establish *enterprise application integration* (EAI) across the organisation systems and standardise IT accordingly;

- develop a strategy to *maintain and protect the knowledge store* and enhance the use of it by developing and customising the system according to the users' needs;

- provide users with *sufficient training* to ensure the effective use of the system; and

- establish connectivity between users and the system with *multiple channels of knowledge transfer* to automate the flow of knowledge and to facilitate innovation and learning.

5.11 Phase 7 - Establish a Knowledge Renewal Process

The final phase of a knowledge management implementation initiative involves the establishment of a process to renew the knowledge of the organisation. The activities of this phase includes the following:

- managing the implementation of the knowledge management system and the establishment of an effective knowledge creating process;

- integrating knowledge capturing and knowledge management related activities into the employee's daily tasks;

- providing sufficient support in terms of the knowledge base with an online help facility, research personnel and people to connect knowledge needs to experts;

- imbedding a discipline of quality knowledge management among knowledge workers, e.g. to codify their knowledge into an explicit form for others to re-use;

- involving employees in the development of their personal profiles (yellow pages);

- establishing a customised standard process for managing the knowledge capital, based on best practice;

- co-ordinating the mapping of the business processes for possible automation and increased knowledge capital utilisation; and

- overcoming resistance to change by developing self-directed teams and communities of interests to facilitate opportunities for knowledge transfer with a high level of face-to-face contact between employees.

The final phase triggers the reiteration of the total implementation process. This forms a continuous implementation cycle, whilst every successive implementation grows in focus area and in level of impact on the organisation.

5.12 Conclusion

The implementation approach suggested in this chapter is an example of the phases involved with conducting a knowledge management initiative. Embarking on a knowledge management initiative implies that management has identified the need for and defined the benefits of establishing a knowledge management capability in the organisation.

It necessitates that employees on all organisation levels be informed of the new knowledge-sharing paradigm, as knowledge sharing is not a natural behaviour in traditional organisations. It requires initiatives to get people interested in using available knowledge enablers through training, demonstrations and promotional events.

Management should as part of their business strategy, identify the knowledge needs of the organisation. They should identify knowledge domains and appoint specific employees to conduct research in these domains as well as populate the knowledge repositories.

Creating a positive learning environment, in which knowledge management will take place, is as important as having the best technology available to support the capturing, representing and extracting of knowledge. A positive learning environment manifests where:

❑ the need for continuous learning is recognised;

❑ a culture is established that encourages learning and the sharing of knowledge; and

❑ opportunities and means are available to support learning activities, knowledge sharing and the reinforcement of new knowledge and skills.