Crafting a Knowledge Strategy[1]

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Abstract

Knowledge strategies are often inflexible and unable to cope with the emergent properties that characterise the complex and dynamic environments of the 'knowledge age'. Knowledge strategy should encompass (i) actions that are *intended* to result in anticipated business outcomes; and (ii) actions that *emerge* as a result of the many complex activities that are undertaken within an organisation. This paper describes an approach to designing a knowledge strategy that encompasses both of the above elements. The proposed approach has three parts that work in parallel: (i) a knowledge framework; (ii) a knowledge environment; and (iii) knowledge initiatives. The paper provides an overview of the proposed knowledge strategy design, describes each part separately, and combines them to provide an integrated approach that allows the theory, techniques, and tools of knowledge management to be used effectively in improving business outcomes.

Introduction

Most knowledge-management practitioners share a common view on the theory and practice of 'strategy'. Strategy, it is generally agreed, is a plan to be executed in the future to achieve specific objectives. However, this view of strategy is limited and potentially dangerous because it obscures the rich and paradoxical nature of the wider concept of strategy, and it can result in significant opportunities and danger signs being overlooked.

Mintzberg, Ahlstrand and Lampel (1998, p.9) have encapsulated the paradox of strategy with the following observation:

> Ask someone to define strategy and you will likely be told that *strategy is a plan*, or something equivalent—a direction, a guide or course of action into the future, a path to get from here to there. Then ask that person to describe the strategy that his or her own organization or that of a competitor *actually* pursued over the past five years—not what they intended to do but what they really did. You will find that most people are perfectly happy to answer that question, oblivious to the fact that doing so differs from their own definition of the term.

Strategy, therefore, should be viewed as a combination of: (i) the actions that are *intended* to result in anticipated business outcomes; and (ii) the actions that *emerge* as a result of the many complex activities that are undertaken within an organisation. This paper

[1] This paper was written after completing a successful knowledge strategy project for a client. I would like to thank my collaborator on that project, Paul Dowling of IBM, for his insightful thoughts and engaging conversations that helped consolidate my ideas.

describes an approach to designing a knowledge strategy that encompasses both of the above elements.

The term ‘knowledge strategy’ first appeared in the management literature in the late 1990s in response to the observation that initiatives in knowledge management were rarely linked with initiatives in business strategy (Zack 1999). This failure to link the two is apparent to the present author whenever it becomes necessary to pose the question: ‘What knowledge is important to your organisation?’. This question is impossible to answer without a knowledge of the organisation’s business strategy. As Stewart (1997, p.70) has observed: ‘Knowledge assets, like money or equipment, exist and are worth cultivating only in the context of strategy’.

Zack (1999) has used the term ‘knowledge strategy’ to refer specifically to an organisation’s business strategy that takes into account its intellectual resources and capabilities. Such a knowledge strategy involves the identification of knowledge gaps and surpluses and then, through the implementation of a ‘knowledge management strategy’, these gaps and surpluses are managed to enhance organisational performance.

From a practitioner’s perspective the distinction between ‘knowledge strategy’ and ‘knowledge-management strategy’ is unnecessary because, in practical terms, it is difficult to separate the act of identifying important knowledge and the act of implementing knowledge initiatives to close knowledge gaps. To emphasise the importance of aligning knowledge-management initiatives to business needs, the present paper uses the term ‘knowledge strategy’ to refer to the identification of valuable knowledge assets *and* to the implementation of the business initiatives that leverage and develop these assets with a view to improving organisational performance.

To take full advantage of both the intended and emergent strategies, it is necessary to shift the emphasis from a stepwise planning approach to the development of principles, heuristics, and patterns that can be applied to enhance the overall knowledge environment of an organisation. This requirement to change the emphasis from *developing plans* to *formulating principles* was highlighted for the present author when he was recently asked to lead a consulting group in Melbourne, Australia. The group’s first task involved the development of a strategy for the coming year. This resulted in, among other things, a list of four focus areas for the group to pursue with a view to delivering consulting services. Within two weeks of completing the strategy a significant opportunity arose that lay outside the ambit of the four focus areas that had been previously identified. The group wished to seize this new opportunity, but immediately realised that its strategy was inflexible and unable to cope with the emergent properties that characterised the complex and dynamic environment in which the group was working.

In response to situations of the type described in the above anecdote, this paper proposes an approach to crafting a knowledge strategy that is designed to address such shortcomings. The proposed approach has three parts that work in parallel:

- a knowledge framework (principles, heuristics);
- a knowledge environment; and
- knowledge initiatives.

The paper: (i) provides an overview of the knowledge strategy; (ii) describes each part separately; and, finally, (iii) combines them to provide an integrated approach that allows the theory, techniques, and tools of knowledge management to be used effectively in improving business outcomes.

Overview of the knowledge strategy

Figure 1 provides an overview of the proposed knowledge strategy approach. In brief, the individual parts of the knowledge strategy, and their overall interaction, are described below.

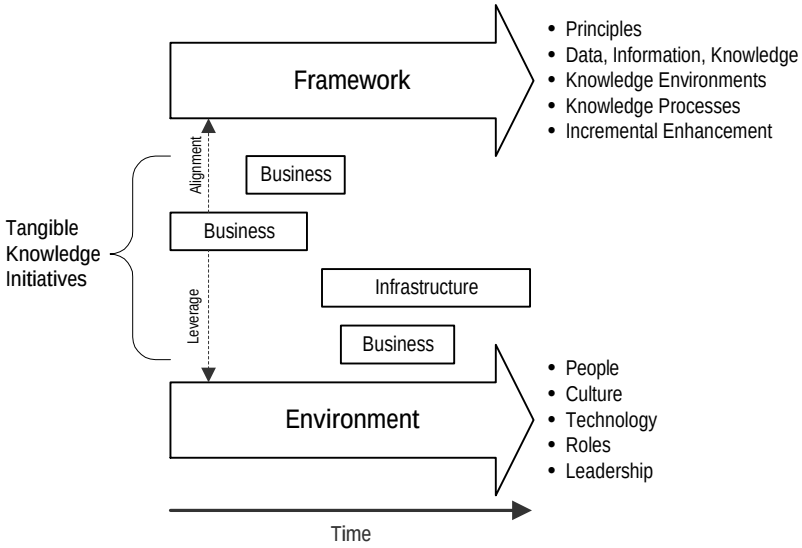

Figure 1: Knowledge framework, knowledge environment, and tangible knowledge initiatives in a knowledge strategy

Knowledge framework

The knowledge framework describes how an organisation thinks about knowledge and knowledge management as it relates to its business.

The framework can include basic principles and definitions (such as the differences among the terms ‘data’, ‘information’, and ‘knowledge’) and foundation concepts (such as the idea of a knowledge environment, the existence and characteristics of knowledge processes, and how knowledge environments are improved through incremental enhancement). These issues are discussed more fully below.

Knowledge environment

The knowledge environment supports the creation, discovery, understanding, and sharing of knowledge in the pursuit of business outcomes. Enablers in the environment determine its effectiveness. These enablers include people (their attitudes and abilities), roles, leadership, culture, and technology.

Knowledge initiatives

The knowledge initiatives provide the action that results in business benefits. These initiatives *align* with the knowledge framework (as described above) and *leverage* the knowledge environment (as described above). Such initiatives can be designed to serve a particular business requirement, or can be designed to provide a general infrastructure to serve many business requirements. Knowledge initiatives provide feedback to the framework and environment, and thus enable the framework and environment to evolve appropriately.

Having provided a general overview of the knowledge strategy, the following sections of the paper elaborate on the approach to crafting and implementing an effective knowledge strategy. The rest of the paper is presented as follows:

- knowledge framework;
- knowledge environment;
- knowledge initiatives; and
- conclusion.

Knowledge framework

The nature of a framework

The purpose of any conceptual framework is to provide the mental constructs that support understanding. Piaget (1969) has referred to these mental constructs as ‘schemata’. Schemata evolve over time as they are exposed to new inputs. This is a two-way process: the inputs are organised and understood according to the schemata, and the schemata are modified to take account of the new inputs.

An example of a conceptual framework can be seen in the relationship between the public service and the elected government in the Westminster system. A public servant in the Westminster tradition provides policy advice to the government of the day. Based on this advice (and other expert input as required), policy is then created by the elected government. In turn, the policy is administered by the public service. In this case the public servants’ conceptual framework is their understanding of the Westminster system of government with all the defined roles, elements, and objectives that make up that framework.

The knowledge framework thus provides a conceptual understanding of knowledge management for the people in an organisation. Of course, people in organisations already

have an understanding of knowledge and information before an intentional knowledge-management program is introduced. They know implicitly that people are knowledgeable and that information systems are not. They know which information sources they trust. They know the people they can approach to ask a question, and they know the people they should avoid.

Despite the existence of this sort of implicit conceptual framework, knowledge management developed as a purposive discipline in response to the realisation that knowledge is an organisation's only long-term sustainable competitive advantage (Prusak 1998). In a time of increasing competition and complexity, organisations could no longer leave knowledge to chance, and were compelled to move from an *ad hoc* approach to knowledge to an intentional model. A knowledge framework is important because it is an intentional approach to how people in an organisation view knowledge in that organisation. Their understanding of knowledge management directly affects how they make sense of the events around them and any new information they receive. In short, it affects every aspect of their understanding, and in turn their decisions and behaviour.

A knowledge framework consists of the principles, concepts, and methods of knowing (or heuristics) that define how people think about knowledge. Each organisation will evolve a knowledge framework appropriate to its particular needs, and reflecting its distinctive history, industry, and culture. A knowledge framework evolves because people (and, by extension, organisations) can absorb new ideas only incrementally, with each new idea building upon those that came before it (Piaget 1969). An initial knowledge framework will therefore change over time as the level of understanding grows. For example, an organisation might start by introducing the concept of the differences among the terms 'data', 'information', and 'knowledge'. Over time these concepts will become assimilated into the organisation's culture and mindset, as evidenced by the increasingly accurate use of these terms in everyday conversations. At a later stage the concept of complex adaptive systems might then be introduced, thus evolving the knowledge framework to a more comprehensive structure.

Elements of a knowledge framework

The following key elements should, from the outset, be included in a knowledge framework:

- key principles of knowledge management;
- an understanding of the differences among the terms 'data', 'information', and 'knowledge';
- an understanding of knowledge processes;
- the concept of enhancing a knowledge environment; and
- an understanding of types of knowledge assets.

Each of these is considered below.

Key principles of knowledge management

The following three principles of knowledge management provide a foundation for any knowledge framework (Snowden 2000a).

- *Knowledge is volunteered, never conscripted*. It is counter-productive to force anyone (for example, by using fear) to divulge what they know. Even in circumstances in which it seems that a person is being successfully cajoled to provide knowledge, the recipient can never be sure that the information is complete or accurate. Providing an environment in which people are *encouraged* to volunteer what they know provides superior results. Such an environment might involve such enablers of knowledge transfer as the development of a climate of trust and the provision of sufficient time.
- *People always know more than they can say, and always say more than they can write.* The process of converting what is known into speech or written words invariably results in the degradation of the original knowledge. To explain what is known in a conversation takes one level of effort. However, to write down what is known takes an even greater effort, and significantly increases the chances of misinterpretation. This is not to say that the process of capturing what people know is to be avoided. However, it must be recognised that there is a definite degradation of knowledge when such knowledge capture is undertaken.
- *Most valuable knowledge is known only when it is needed to be known.* If a manager is asked how he or she undertakes a role, that person will be able to relate a reasonable amount of information. However, if that person is observed undertaking his or her role, it will become apparent that there exists a whole range of additional knowledge that is used to make judgments and take decisions. This knowledge is brought to bear only in the context of a particular problem. It is remembered when it is needed.

These three principles should remain at the forefront of any organisational designer's mind whenever an initiative is proposed to harness the knowledge, capabilities, and skills of people.

Differences among data, information, and knowledge

Davenport and Prusak (1998) provided one of the early practical descriptions of 'data', 'information', and 'knowledge' designed for knowledge-management practitioners.

According to these authors, the term 'data' is applied to a set of discrete, objective facts about events. In an organisation, data can most usefully be understood as (Davenport and Prusak 1998, p.2):

> … structured records of transactions … there is no inherent meaning in data … it provides no judgement or interpretation and no sustainable basis for action … it is essential raw material for the creation of information.

In contrast, 'information' is a message—an aural or visual communication—from a sender to a receiver. Information is intended to change the perception of the receiver, thus affecting the receiver's judgment and behaviour. According to Davenport and Prusak (1998, p.3):

> It [information] must inform … the receiver, not the sender, decides whether the message he gets is really information.

Of course, people learn by means other than direct information. For example, by observing the weather people learn that dark clouds are frequently followed by rain. This observation is not 'information' in the sense of a message sent by design to inform the recipient. Rather, this learning is a matter of sense, induction, and understanding.

Finally, 'knowledge' is a changing combination of experiences, values, information, and insight that provides a basis for evaluating and incorporating fresh input. In the case of individuals, knowledge is developed and applied in the minds of knowers. Knowledge can also be embedded in documents and other repositories, and in organisational routines, processes, practices, and norms (Davenport and Prusak 1998, p.5).

It should be noted that there is no strict linear relationship from data, to information, to knowledge. It is therefore unnecessary to delay the tackling of knowledge issues until data and information are in order.

Knowledge processes

Knowledge can be viewed as a thing *or* as a process. Indeed, these perspectives can be taken simultaneously (Snowden 2000a).

When viewed as a *process*, there are four a designer should take into account when crafting a knowledge initiative:

- creating knowledge;
- finding and accessing knowledge;
- sense-making; and
- sharing knowledge.

Some authors include the concepts of capturing, disseminating and using knowledge as key knowledge processes (Nonaka 1994, Coombs & Hull 1998), but the present study argues that these processes are encapsulated in those listed above.

Enhancing a knowledge environment

Every organisation already has an environment in which processes exist to help people create, find, make sense of, and share knowledge. Knowledge management strives to enhance that environment. As Alexander *et. al.* (1977, p. 3) has observed in the design of towns:

> These patterns can never be 'designed' or 'built' in one fell swoop—but patient piecemeal growth, designed in such a way that every individual act is always helping to create or generate these larger global patterns, will, slowly and surely, over the years, make a community that has these global patterns in it.

Although Alexander *et. al.* was referring to the design of towns, the words apply equally well to the knowledge environment of a complex organisation. It is impossible to effect large-scale change in a complex environment in one fell swoop. The approach should be incremental, whereby the projects that are identified and undertaken encapsulate the characteristics that the knowledge designer wishes to imbue throughout the organisation. The key success factor is the organisation's ability to identify these desirable characteristics and to apply them consistently to every project that is undertaken.

Types of knowledge assets

Snowden (2000b) developed the following categorisation of knowledge assets to help people move away from a simplistic (and potentially misleading) dichotomy of tacit knowledge and explicit knowledge:

- artefacts;
- skills;
- heuristics;
- experience; and
- natural talent.

Taking the initial letter of each type, this categorisation is commonly referred to by the acronym 'ASHEN'. Each of the types is considered below.

Artefacts

A knowledge artefact results from capturing or codifying knowledge. Examples of knowledge artefacts include documents, databases, and processes.

Skills

A skill is an activity with a measurable competency. Organisations are usually good at managing skills. Skills registers are often established and training programs are put in place to increase people's competency.

Heuristics

The term 'heuristics' refers to 'methods of knowing', and is especially used to refer to practical trial and error. Such exercises in practical trial and error often result in what are commonly called 'rules of thumb'. 'Rules of thumb' help people to make decisions quickly,

especially when they are under pressure. They are particularly useful when facts are unknown. These ‘rules of thumb’ might never be made totally explicit, and are commonly passed between members of staff as stories and anecdotes. Examples include:

- ‘never respond to a tender unless you have been working with the client’;
- ‘don't try to buck the quality assurance system’; and
- ‘get your boss involved if things are going to get messy’.

Experience

Experience can be collective or individual, and is therefore a difficult knowledge asset to manage. In many cases it is difficult to identify specific experiences and, in the case of collective experience, it is sometimes difficult or impractical to reassemble the group that has the requisite experience for the task at hand.

Natural talent

Some people are naturally proficient in particular activities, and this natural talent is practically unmanageable. The best strategy is to identify natural talent and to nurture it wherever possible, by providing those individuals with opportunities to put their gifts to best use.

Summarising the knowledge framework

To recapitulate, the basic elements of a knowledge framework are:

- key principles of knowledge management;
- an understanding of the differences among the terms ‘data’, ‘information’, and ‘knowledge’;
- an understanding of knowledge processes;
- the concept of enhancing a knowledge environment; and
- an understanding of types of knowledge assets (the five ‘ASHEN’ elements).

As organisations add concepts, definitions, and approaches that are appropriate to their particular circumstances, there will be an incremental modification of the framework over time. One mechanism for ensuring the appropriate evolution of a framework is the implementation of tangible initiatives that result in feedback to the framework. This mechanism is discussed in greater detail under ‘Knowledge initiatives’ (below).

Communicating the knowledge framework

As Figure 1 suggests, it is difficult (and unnecessary) to communicate the ideas contained in a knowledge framework before embarking on knowledge initiatives. In the absence of a specific initiative the ideas in a knowledge framework are purely theoretical, and people learn best in the context of solving real problems, when the subject matter is relevant to their needs (Knowles, Holton and Swanson 1998) The communication of the knowledge framework should therefore occur simultaneously with the instigation of knowledge initiatives.

Denning (2001) used such an approach when he introduced knowledge management into the World Bank using storytelling. Before doing so, he trawled through the bank's history to identify examples of how knowledge initiatives had already made a difference in the organisation. He then retold these examples in the form of stories that encapsulated the ideas of a knowledge framework with a view to igniting the imagination of the bank's decision-makers and persuading them to support future knowledge initiatives.

Each knowledge initiative must accord with the ideas contained in the knowledge framework. This begins with the design of the initiative and persists throughout its lifecycle. For example, when designing a 'lessons-learned' system that records in a database anecdotes of what staff have learnt, the designer must take into account the principle that knowledge is volunteered, not conscripted, and design features that increase the likelihood of 'lessons learned' being provided freely, without coercion.

Leadership is very significant in determining the success or otherwise of communicating a knowledge framework. If the leaders of an organisation act in accordance with the ideas of the knowledge framework, others will see the value of it. However, in many cases, leaders will require persuasion and education. As in the case of Denning (2001), there is a role for a leader (perhaps even an 'evangelist') in knowledge management who can act as a change agent in helping the organisation to see the value of adopting knowledge management.

Knowledge environment

If knowledge can only be volunteered and never conscripted, an organisation should strive to enhance its knowledge environment to provide the optimum conditions in which knowledge processes can flourish.

However, it should be noted that an organisation can be viewed as having multiple knowledge environments. For example, the knowledge environment required to support research and development might differ markedly from the environment to support the organisation's sales process.

Whatever the nature of the particular environment under consideration, a knowledge environment in general is comprised of a range of elements (or 'enablers') that affect knowledge processes. These include:

- people—behaviour, attitudes, and skills;
- culture—values, beliefs, and 'how we do things around here';
- roles and responsibilities;
- strategy;
- workplace design;
- technology;
- communities and their practices;
- content;
- organisational structure;
- budget;
- leadership; and
- incentives, sanctions, and motivation.

Each of these is briefly discussed below.

People—behaviour, attitude, and skills

People react instinctively to situations. To think through every decision faced in their daily lives would consume an inordinate amount of mental and physical energy. This instinctive reaction is influenced by their habits of thought—that is, by their attitudes.

Some attitudes directly affect how knowledge is created, found, and shared. For example, when a person learns a new technique, is it their habit to demonstrate it to a colleague? Have people developed the habit of seeking out new and relevant knowledge, or do they rely on the knowledge they have always used?

Attitudes are difficult to change, although the theory of 'cognitive dissonance' provides one model to effect attitude change (Festinger 2002). However, the acknowledged difficulty in changing attitudes is one of the reasons for recruitment being an important factor in effective knowledge management. It is possible to recruit for desirable attitudes, and the recruitment process should be geared to select people who will enhance the organisation's knowledge environment.

People's skills also affect an organisation's capacity to undertake knowledge processes. However, it is easier to learn skills than it is to modify attitudes and behaviours, and attitudes and behaviours have a greater and more persistent impact on the knowledge environment.

Culture

An organisation's culture is constituted by the behaviour and norms that flow from the shared attitudes, assumptions, values, and beliefs of the people in it (Egan 1994). Conversely, the established values and beliefs of an organisation significantly affect the behaviour of its people.

There can sometimes be a difference between the espoused values of an organisation and what it actually does in practice. For example, if an organisation ostensibly espouses knowledge-sharing but, in practice, rewards individuals who hoard knowledge, by for example, promoting them, the organisation is perpetuating a behaviour that that contradicts its espoused objectives (Argyris and Schon 1974).

A useful indicator of an organisation's real values is contained in its budget. If an organisation says that knowledge management is important, but provides no resources or budget to implement its objectives, it can be assumed that knowledge management is not really valued by the senior decision-makers.

Culture is influenced by leadership styles, organisational history, incentives and sanctions, attitudes, beliefs, and the dialogue that occurs in all parts of the organisation. Of these, Charan (2001, p. 76) has emphasised dialogue:

> The quality of the dialogue determines how people gather and process information, how they make decisions, and how they feel about one another and about the outcome of these decisions. Dialogue can lead to new ideas and speed as a competitive advantage. It is the single-most important factor underlying the productivity and growth of the knowledge worker. Indeed, the tone and content of dialogue shapes people's behaviours and beliefs—that is, the corporate culture—faster and more permanently than any reward system, structural change, or vision statement I have seen.

Roles and responsibilities

Assigning responsibility for a task helps people to focus on what is important and what needs to be done to meet business objectives. Roles and responsibilities in a knowledge environment can include senior roles such as that of a 'chief knowledge officer', or roles for various people to gather the lessons learned from a project team, or to act as conduits for knowledge transfer.

It is also important that the various 'line managers' understand their roles and responsibilities in enhancing the knowledge environment. Everyone in the organisation has a role to play. This might be as simple as knowing and practising the organisation's knowledge-management principles (see above).

Strategy

As noted above, knowledge can be valued only in the context of an organisation's business strategy. Because people are inundated with increasing volumes of information, it is vital that they attend to the right information in a timely fashion if they are to discern what is important and convert it to useful knowledge. People will be able to apply the right filters and master the complexity of a situation only if they understand their organisation's strategy as it applies to their particular roles.

Workplace design

The way in which an organisation is physically designed affects the flow of information and knowledge. For example, if everyone is segregated into separate offices the opportunity for dialogue is diminished, thus adversely affecting the knowledge environment.

Communication by modern technology (such as telephone and email) is no substitute for personal contact. People need to interact personally with their colleagues if they are to understand and make best use of the available information and knowledge (Cohen and Prusak 2001). An effective workplace design that fosters personal communication can play an important role in facilitating this.

Technology

Knowledge-management technologies include any tool that assists people with the processes of creating, finding, sharing, and making sense of knowledge (Ruggles 1997).

Tools that assist with innovation, creation of new insights, and making sense of information include business intelligence software, mind-mapping tools, whiteboards, decision-support systems, and collaborative technologies (such as threaded discussions and real-time chat software).

Technologies that assist in finding and accessing knowledge include directories (of people and information), search engines, expertise-location software, email, yellow pages (hardcopy and electronic), telephones, data warehouses, portals, collaboration software, and all forms of intranets, extranets, and internets.

Collaboration software, 'lessons-learned' systems, document-management systems, file systems, and email can all assist people in sharing knowledge.

Of course, knowledge processes can occur effectively with little assistance from technology. Two collaborators working together in the same room can productively find, share, and create knowledge without any sophisticated tools, documents, and databases. However, if the number of collaborators is increased, if they are spread across multiple time zones, and if their information and data requirements are increased, the tools of information technology and telecommunications become increasingly important.

A team spread across Melbourne, London, and New York working on the design of a new motor car might need the following technologies to work effectively:

- analytical tools to make sense of the vast array of data generated from experiments;
- collaboration software to share ideas and results while team members on the other side of the globe are sleeping; and
- telephones and 'instant chat' capabilities, email, and calendaring tools to schedule the essential face-to-face meetings that create the social capital without which the knowledge processes would fail, despite the most sophisticated technological assistance.

Communities and their practices

Communities provide a focus for the creation, discovery, and sharing of information and knowledge (Wenger, McDermott and Snyder 2002). The nurturing of effective communities of practice can deliver significant benefits to an organisation and provide an environment in which trusted members can test new ideas and discuss past failures, and thus enhance learning. Such learning can then be made available to other communities (formal and informal) within an organisation.

Content

The type and quality of information available to an organisation significantly affects the knowledge environment. The content contained in conversation is just as important as the content stored in any knowledge repository.

Organisational structure

The structure of an organisation affects the flow of knowledge. Rigid hierarchical structures can impede knowledge flows, both vertically and horizontally. However, a well-defined hierarchical structure can sometimes improve the understanding that people have of their personal roles and objectives.

Budget

The allocation of financial and human resources significantly affects a knowledge environment. Significant long-term enhancement of an organisation's knowledge environment occurs if there is an appropriate level of investment in knowledge-management initiatives.

Leadership

An organisation's knowledge environment is significantly affected by leadership style. The behaviour of leaders sets the standard for the behaviour of everyone else in an organisation. A leader's actions in dealing with knowledge greatly affect the knowledge environment.

Incentives, sanctions, and motivation

Applying effective incentives and sanctions is complicated by the many factors that motivate people to act. In a complex environment barriers can be erected and dismantled to affect the flow of knowledge. The use of incentives and sanctions is a means by which designers can manipulate these flows.

Naylor, Pritchard and Ilgen (1980) have provided a general model of motivation based on four criteria. The model begins with an assessment of the needs of an individual or group. These needs include recognition, achievement and, perhaps, monetary reward. The importance of each varies, depending on the individual and the organisational culture. The second factor is the level of action required to create the end product. For example, this might be the effort required for consultants to document their last project in a knowledge repository. To increase motivation, ways must be found to minimise the time and effort required to undertake a given activity. Next, the activity should be evaluated. An individual, a peer, or a manager can carry out the evaluation. The evaluator should be respected by whomever is being evaluated. Finally, the evaluation leads to an outcome that helps to meet the originally defined needs. Callahan, Johnson and Shelley (1996) applied this model to design an initiative to motivate scientists to describe their scientific datasets.

For a practical discussion of motivation relating to intranet content, the reader is referred to Hall (2001).

Summary of enablers

Apart from the many enablers discussed above, other enablers exist. These include trust, reputation, and business process. Any knowledge initiative should therefore look beyond a single-dimension solution (such as a technological solution). Rather, there should be a multi-factorial approach to enhancing the knowledge environment and evolving a knowledge framework. This should then be realised in a targeted knowledge initiative.

Knowledge initiatives

A knowledge initiative is a project designed to provide business value while enhancing the overall knowledge environment. The identification of valuable knowledge initiatives is determined through the development of a knowledge map.

Knowledge mapping

Knowledge initiatives can be identified from a knowledge-mapping exercise. Knowledge mapping can be done at almost any level in the organisation (enterprise, business unit, section, or team), and with different degrees of detail (depending on how detailed the business processes are described).

As previously noted, Snowden (2000a, 2000c) has provided a method for knowledge mapping that is based on story-telling techniques. This is a means for gleaning knowledge

assets that would otherwise remain undetected using conventional analytical techniques (such as surveys and structured interviews).

The result of a knowledge map is a list of prioritised knowledge initiatives. The process of knowledge-mapping links business objectives with knowledge assets—that is, it links *business strategy* with *knowledge strategy*.

Patterns of knowledge initiatives

Organisations undertake knowledge initiatives every day: new mentoring schemes are established, knowledge-sharing initiatives are devised, and search-and-find solutions are implemented. An examination of these initiatives reveals a set of patterns—that is a set of common characteristics relating to specific solutions. These patterns can be reapplied, with adaptation, to solve new problems.

Examples of patterns of knowledge initiatives include the following:

- mentoring;
- knowledge sharing;
- leadership training;
- document and records management;
- competitive intelligence;
- search and find;
- lessons learned;
- innovation management;
- communities of practice;
- expertise location;
- recruitment;
- workplace design;
- collaboration;
- training and education; and
- email management;

These patterns can be combined and modified or used independently. An organisation builds a catalogue of knowledge-initiative patterns that describes the characteristics of each pattern. This catalogue includes such information as: the type of problem the pattern solved; when to use it; other related patterns; who in the organisation is experienced in implementing the pattern; and examples of the implemented pattern.

Conclusion

This paper has presented an analysis of the building blocks required for a knowledge strategy—a knowledge framework, a knowledge environment, and knowledge initiatives. An

overall knowledge strategy is defined by how these three components interact to help an organisation enhance its knowledge environment.

The framework and environment evolve in parallel through the implementation of tangible knowledge initiatives. The aim is to identify and implement initiatives that are coherent with the framework and environment while simultaneously using the initiatives to evolve the framework and environment. Elements 'evolve' because the full outcome of any initiative cannot be known in advance. The traits that turn out to be successful will be replicated in future projects whereas the unsuccessful characteristics will be modified or discarded. Unplanned initiatives can be incorporated easily into the strategy as they emerge.

A knowledge initiative can have two broad objectives:

- providing immediate business value (such as implementing a mentoring scheme for a new software development project, or a document-management system that addresses a particular business process); or
- developing a capability that enhances the knowledge environment (such as providing collaborative technologies for all employees to use, or establishing an ability to locate relevant expertise rapidly).

These two broad objectives are illustrated in Figure 1 as the business initiatives and infrastructure initiatives respectively.

The proposed approach to knowledge strategy presented in this paper is simple and flexible. The most important aspect of the exercise is to develop and communicate the knowledge framework in conjunction *with* the initiatives—because the framework influences the other elements of the knowledge strategy.

Communicating the knowledge framework should start with the people who are responsible for identifying and implementing business initiatives. In many cases these are the senior and middle managers of the organisation. If senior management does not perceive the value of knowledge management, it is necessary to tackle individual projects in which knowledge management *can* influence design, and apply the approach at that level. The successful completion of a limited project then forms the basis for encompassing a wider portfolio of projects.

It is imperative that organisations develop knowledge strategies in this 'knowledge age'. The process of developing the strategy is far more important than any individual knowledge artefact it might create. Through its development, a knowledge strategy encourages the emergence of a level of understanding that facilitates an organisation's best use of its most important resource—knowledge.

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