



“An introduction to Knowledge oriented Strategy KoS and Strategic Knowledge Management Capabilities”

By

P Katsoulakos and A Rutherford

info@inlecom.com

www.kbos.net

This paper examines developments in the fields of economics, strategic management and information and telecommunications technologies in the context of the growing global knowledge economy. It highlights the convergence of management and technological drivers towards Knowledge oriented Strategies which can be supported by strategic knowledge management capabilities exploiting synergetic developments of strategy, knowledge dynamics and semantic based technologies.



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Background

For the last two hundred years, neo-classical economics has mainly recognised two factors of production: labour and capital. However, in recent years, information and knowledge are replacing capital and energy as the primary wealth-creating assets, just as the latter two replaced land and labour 200 years ago.

In the 1990's, the 'knowledge economy' and the 'information society' became the recognised cornerstones of the developed economies. This was reflected in a 1998 world development report stating: "for countries in the vanguard of the world economy, the balance between knowledge and resources has shifted so far towards the former that knowledge has become perhaps the most important factor determining the standard of living - more than land, tools and labour". Consequently, knowledge has been heralded as the key national and company asset but it is difficult to measure, reproduce, diffuse, develop and use efficiently.

More recently, the World Bank's prospective document for Knowledge Assessment suggests the importance for countries to analyse their capabilities for participating in the knowledge revolution. Nations are prompted to examine how their knowledge assets are acquired, sourced, created and utilised in order to devise policy and strategy that fosters the growth of their knowledge economy. Knowledge assets represent the foundation of competencies and capabilities that are deemed essential for growth, competitive advantage, human capital development and quality of life.

The emergence of the global knowledge economy and the associated demands on business strategy has been well understood since the 1980s when the learning organisation concepts became popular. Then, the message was that "the emergence of a knowledge based economy requires a new synthesis of training, education and other forms of communication and learning under the single umbrella of the learning enterprise" [L T Perelman 84]. The learning enterprise was also seen as an intelligent enterprise capable of managing efficiently knowledge based activities, which were shown to be the key to productivity and wealth generation in over 75% of all economic activity¹.

These days companies recognise the worth of their intellectual capital and they are beginning to account for it in their balance sheets². There is considerable evidence that the intangible component of the value of high technology and service companies far outweighs the tangible value of its physical assets. Studies comparing market value to the book value of major companies over a period of two decades shows the dramatic upward rise in intangible value.

¹ "Services restructure the economy" J B Quinn 92.

² A Socioeconomic Resource Statement reports the resources the organization has available to create value in the future. Such statements includes the items on the organization's balance sheet (economic and physical capital), as well as several new components-human capital, organizational capital, and relational capital; Dzinkowski 1998; Guthrie , Petty, and Johanson 2001; Seetharaman , Soon, and Saravanan 2002).



Strategic trends

In this section, we review the broad economic and technology trends that are shaping the opportunities and threats for the future of business organisations. The objective is to set out the broad strategic perspective influencing the requirements for Knowledge Management solutions.

The New Economy

In the last decade, a major preoccupation for economists has been to establish a clear understanding of the so-called New Economy. By the New Economy, we mean two broad trends that have been under way for several years. The first is the globalization of business characterised by the introduction of market forces, freer trade and widespread deregulation around the world. The second trend is the revolution in information technology and the digitization of services creating new companies and new industries and new ways to operate traditional companies

The New Economy Index³ provides interesting insights on knowledge management requirements. The indicators proposed are divided into three groups.

The first group tracks some of the elemental structural changes that collectively mark the transition to the New Economy:

- industrial and occupational change;
- globalization;
- the changing nature of competition and economic dynamism;
- progress of the information technology (IT) revolution.

The second group examines the implications of the transition for the labour force:

- incomes and economic growth;
- job characteristics and prospects;
- employment dynamics.

The third group assesses national performance in terms of three main foundations for growth of the New Economy:

- the pace of transition into a digital economy,
- investment by business and government in technology and innovation,
- progress on the development of education and skills.

According to New Growth economics a country's capacity to take advantage of the knowledge economy depends on how quickly it can become a "learning economy". Learning means not only using new technologies to access global knowledge, it also means using new technologies to communicate and share innovations. In the "learning economy" individuals, firms, and countries will be able to create wealth in proportion to their capacity to learn and share innovation. The

³ <http://www.neweconomyindex.org>



economics of knowledge reflect deep conceptual and structural transformation of our economic activities that has led to a gradual shift to knowledge-intensive activities. This transformation is the result of the expansion of knowledge-based investments and activities and a technological revolution that has radically altered the production and transmission of knowledge and information⁴.

Strategic management

Industrial and resource based theories

Strategic management theory explores how firms can cope with competition and create competitiveness. Sustainable competitive advantage has been traditionally based on three generic strategies⁵: overall *cost leadership*, *differentiation* and *focus*. Traditional strategic management theory mainly explores competition in product markets. According to Porter, strategy should position the company to leverage its strengths and defend against the adverse effects of five forces: bargaining power of suppliers and customers, potential new entrants, substitute products and the number and degree of competitive rivalry. These five competitive forces determine the profitability of the industry in which a company operates.

The classical industrial view on competition has been extended in recent years by the Resource Based View⁶. In resource based approaches the focus has moved from the demand side (the nature of the industry) to the supply side (the accumulation of organizational resources and capabilities). The importance of competition is accepted, but the emphasis is on resources as the source of successful competitive strategy; the focus shifting from value appropriation to value creation.

According to the resource based theory, a company's competitive advantage derives from its ability to assemble and exploit an appropriate combination of resources. Resources represent "anything tangible or intangible that would be both useful and available to an organization in carrying out its value-creating activities"⁷. Individual resources may not yield to a competitive advantage. Resources should be valuable, rare, inimitable and non-substitutable, the so-called VRIN criteria⁸, for achieving sustainable competitive advantage. Therefore, competitive advantage can be attained primarily through dynamic capabilities, representing the synergistic combination and integration of sets of resources which possess barriers to both imitation and mobility.

Resource-based studies emphasize intangible resources as tacit knowledge, patents, learning, strategic intent and intelligence. A special class of intangible resources are core competences

⁴ D.Foray (2004), *The economics of knowledge*, Cambridge : MIT Press, Cambridge (MA)

⁵ *Competitive Strategy* by Michael Porter. Free Press (1980)

⁶ Wernerfelt B. 1984. A Resource-Based View of the Firm. *Strategic Management Journal* 5: 171-180;
Wernerfelt B. 1995. The Resource-Based View of the Firm - 10 Years After. *Strategic Management Journal* 16(3): 171-174.

⁷ Sanchez, Ron, and Aimé Heene (2004). *The New Strategic Management: Organization, Competition, and Competence* (textbook), New York and Chichester: John Wiley & Sons.

⁸ Barney, J. 1991. Firm resources and sustained competitive advantage. *Journal of Management*, 17: 99-120.



which among their defining characteristics have the potential to bring competitive advantage in multiple markets⁹.

The knowledge perspective and dynamic capabilities

A knowledge view of the organisation concentrates on the knowledge resources needed by the company. Spender¹⁰ asserts that the resource-based view may be too narrow by concentrating on the acquisition and protection of critical resources. He suggests that the coordinating capacity of how resources are brought together, coordinated, integrated, and put into use is the essence of the firm.

Moran & Ghoshal¹¹ further stress that it is not resources per se, but the ability to access, deploy, exchange, and combine them that lies at the heart of competitive advantage (1999: 409). They view creation of value as a process that involves the use of resources and the combination of exchanges of these resources amongst partners in a value system and emphasise that corporations are more than financial institutions; they are unique based on their knowledge and learning capabilities.

On the same lines, Grant¹² notes that a knowledge-based perspective on economic organization implies that we are shifting our focus from governance towards the mechanisms and contexts through which coordination is achieved: "if the goal of organizational analysis is to predict the most efficient structures and systems for organizing production, a knowledge-based perspective suggests that the primary consideration is not so much the institution for governing transactions (markets vs. firms) as the mechanisms through which knowledge integration is achieved."

Teece, Pisano and Shuen (1997)¹³ proposed that the competitive advantage of the firm depends on its dynamic capabilities, conditioned by its specific asset positions (its portfolio of knowledge and complementary assets), and the evolution path that it has taken. Dynamic capabilities are defined as "the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments." Teece characterised dynamic capabilities as trajectories of competence development combining flexibility constrained by the firm's history and therefore can be regarded as tacit and idiosyncratic.

"The term 'dynamic' refers to the shifting character of the environment; certain strategic responses are required when time-to-market and timing is critical, the pace of innovation is accelerating and the nature of future competition and markets is difficult to determine. The term

⁹ Prahalad, C. K. and Hamel, G. 1990. "The Core Competence of the Corporation." Harvard Business Review, (May-June): 79-91

¹⁰ Spender, J. C. 1993. Competitive advantage from tacit knowledge? Unpacking the concept and its strategic implications. Proceedings of the Academy of Management Meeting, Miami

Spender JC. 1996. Making knowledge the basis of a dynamic theory of the firm. Strategic Management Journal 17: 45-62

Spender JC, Grant RM. 1996. Knowledge and the firm: Overview. Strategic Management Journal 17: 5-9

¹¹ Moran, P. and Ghoshal, S, (1999), 'Markets, Firms and the Process of Economic Development', Academy of Management Review, 24(3):390-412

¹² Grant, R. M. 1996. Toward a knowledge-based theory of the firm. Strategic Management J. 17 109-122.

¹³ Teece, D. J., Pisano, G., & Shuen, A., 1997, Dynamic capabilities and strategic management, in Strategic Management Journal, Volume 18:7, 509-533.



'capabilities' emphasizes the key role of strategic management in adapting, integrating, and re-configuring internal and external organizational skills, resources and competencies towards a changing environment". The emphasis, from this definition, is on adapting to the changing environment through knowledge management supported innovation.

Eisenhardt and Martin (2000)¹⁴ extended the concept of dynamic capabilities to include "the organizational and strategic routines by which firms achieve new resource configurations"(p. 1107) Such routines include product development, resource-transferring processes, knowledge creation, strategic decision making, and alliance formation. They pointed out that some dynamic capabilities integrate and reconfigure resources, while others allow the firm to acquire and release resources. They stress the importance of "alliance and acquisition routines that bring new resources into the firm from external sources" According to Eisenhardt and Martin dynamic capabilities have many common features across organisations and can be viewed as best practice.

Business Networking

Whereas the traditional, resource-based view deals with competitive advantages resulting from resources controlled by a single firm (Wernerfelt 1984; Prahalad/Hamel 1990; Barney 1991; Teece et al. 1997), the more recent relational view explains the importance of network relations, or more precisely the value of resources that are deeply embedded in inter-company relations (Dyer/Singh 1998). In this context networks can be thought of as an inimitable resource itself, and as means to access inimitable resources and capabilities. The view of companies competing for profits against each other is recognised to be inadequate in a world in which firms are embedded in networks of social, professional, and exchange relationships with other individuals and organizations (Granovetter, 1985; Gulati, 1998; Galaskiewicz & Zaheer, 1999).

In Porter's studies of clusters ¹⁵ he came to the conclusion that modern corporations are highly dependent upon their competitive network relationships. Clusters enable and support business by raising productivity (efficiency), the speed of innovations (effectiveness) and a faster formation of companies and business units (flexibility); the network impact of clusters transforming directly into competitive advantages.

Achrol (1997) suggests that a network organization is characterised "by the density, multiplicity, and reciprocity of ties and a shared value system defining membership roles and responsibilities". Corporate networks vary in terms of structure, pattern of ties, nodal diversity or the variation in the mix of contacts in firms' networks (McEvily and Zaheer, 1999: 1136; Galaskiewicz and Zaheer, 1999).

When firms are confronted with high levels of unpredictability and complexity, they need to create and maintain structures that can quickly extract and filter information from the environment and channel it to the action points. Thus, firms will benefit from large and heterogeneous *organic networks* with loose short term ties which have high information collecting and processing capacities and allow the firm to adapt quickly and continually to changes in its environment.

¹⁴ Eisenhardt, K. M., J. A. Martin. 2000. Dynamic capabilities: What are they? *Strategic Management J.* 21 1105-1122.

¹⁵ Porter, M.E. (1998). "Clusters and the New Economics of Competition," *Harvard Business Review*," 76(6), 77-90.



Knowledge management

Overall, management literature shows two main streams that discuss knowledge. The first, referred to here as the 'learning stream', is based on an approach that views knowledge as an entity and discusses the differences between information and knowledge and the associated implications for knowledge management. The second stream, referred to as the 'intellectual capital steam', concentrates on knowledge as a corporate or national asset that has to be measured, accounted for in the value of the company, and managed in order to increase corporate value.

The two different streams are complementary and provide the cornerstones for the definition of a managerial framework to identify, assess, exploit and manage organisational knowledge. One tool that is now widely used by US companies is Kaplan and Norton's Balanced Scorecard, which combines financial with non-financial measures, such as internal business processes, learning and growth, and various customer-related measures (Kaplan and Norton, 1996).

The 'learning' stream

In the 'learning' stream attention is focused on the different knowledge features (tacit and codified knowledge) that could help managers to introduce knowledge oriented strategies and processes. Knowledge is considered as information with an applied interpretation process that guides action¹⁶. Sveiby (1994, 1997) defines knowledge as a *capacity-to act*, (which may or may not be conscious)¹⁷. Marsick 1999¹⁸ emphasizes the need for systems level, continuous learning in order to create and manage knowledge outcomes. This would result in improvements to the organization's performance and ultimately, in its financial and intellectual capital. Spender¹⁹ asserts that the coordinating capacity of how resources are brought together, coordinated, integrated, and put into use is the essence of the firm.

Nonaka and Takeuchi, 1995²⁰ suggest that the production of new knowledge involves "a process that 'organizationally' amplifies the knowledge created by individuals and crystallizes it as a part of the knowledge network of the organization"; According to Nonaka there are four basic patterns for knowledge creation (Socialisation, Articulation, Synthesis, Externalisation) that exist in dynamic interaction, a kind of spiral of knowledge, moving into higher and higher levels.

¹⁶ Davenport, T., Prussic, L. (1998), *Working Knowledge*, Harvard Business School Press, Boston, MA,

¹⁷ See also (Polanyi,1958) and (Wittgenstein,1995),

¹⁸ Marsick, V., J., Watkins, K, E. (1999). *Facilitating Learning Organizations: Making Learning Count*. Hampshire, Gower Publishing Ltd.

¹⁹ Spender, J. C. 1993. Competitive advantage from tacit knowledge? Unpacking the concept and its strategic implications. *Proceedings of the Academy of Management Meeting*, Miami

Spender JC. 1996. Making knowledge the basis of a dynamic theory of the firm. *Strategic Management Journal* 17: 45-62

Spender JC, Grant RM. 1996. Knowledge and the firm: Overview. *Strategic Management Journal* 17: 5-9

²⁰ Nonaka, Ikujiro, and Hirotaka Takeuchi. 1995. *The Knowledge-Creating Company: How Japanese companies Create the Dynamics of Innovation*. New York, NY: Oxford University Press.



Antonelli (1999; 2000) emphasises the combination of pieces of complementary knowledge, owned and controlled by different agents, in the process of generation of new knowledge and technical change that he defines as “collective knowledge”

Albino et al., (1999, 2001)²¹ concentrates on knowledge flows and on the combination of tacit and codified knowledge. He suggested that knowledge transfer between firms inside a network is linked to four components:

- a) The actors and their openness and their ability to established trusting relations in order to collaborate;
- b) The context divided into an internal context due to the corporate culture, and an external context linked to the nature of industrial relations prevailing inside the network
- c) The content *i.e.* the willingness or not to go beyond ambiguity and uncertainty in order to diffuse transparently or not some pieces of information
- d) The medium *i.e.* the tool used for knowledge transfer which could reduce some ambiguity in communication.

The ‘intellectual capital’ stream

The ‘intellectual capital’ stream defines knowledge assets as a major part of an organisation’s value, hence ‘intellectual capital’ and focus is on classifying, measuring and managing intellectual capital (IC) to help performance improvements.

To be successful organisations need to understand what constitutes their competitive advantage and what capabilities they need to grow and maintain this advantage. Capabilities are based on knowledge and therefore, organisations need to identify and manage their knowledge assets.

Knowledge assets are the knowledge a business owns and uses to obtain business value or needs to develop as part of its strategic plan. Knowledge assets are fundamental strategic levers in order to manage business performance and continuous innovation in a company (Marr and Schiuma, 2001; Mouritsen et al., 2002; Quinn, 1992; Boisot, 1998).

Intellectual capital, include organisational or **structural capital** (the knowledge that is embedded in its organisational design, relations, processes and IT applications), **human capital** (the human resources within the organisation and its suppliers) and **customer capital** (company's ongoing relationships with the people or organisations to which it sells). More recently attention is paid to **social capital** defined as “the stock of active connections among people: the trust, mutual understanding, and shared values and behaviours that bind the members of human networks and communities and make cooperative action possible”²². Nahapiet & Ghoshal (1998) and Tsai & Ghoshal (1998) provide a detailed discussion of the interrelationship between social

²¹ Albino V., Garavelli A.C., Schiuma G., "Knowledge Transfer and Inter-Firm Relationship: The role of the LeaderFirm", Technovation Journal, Vol. 19, 1999.

Albino V., Garavelli A.C., Schiuma G., "Measuring the knowledge codification in learning organisations", Technovation Journal, Vol. 20, 2001

²² Don Cohen and Laurence (2000) Prusak In Good Company: How Social Capital Makes Organizations Work



structure and the creation and maintenance of intellectual capital by firms. Obviously social capital encompasses customer capital.

The expression “intellectual capital” for knowledge assets emphasise the accounting value (Bukh et al., 2001) allowing organisations to place a value on their intangible assets. Internal measurement and reporting of intellectual capital is about knowledge-management activities.

In accountancy terms, an asset is a stock from which services flow. Accordingly, knowledge assets are defined as “stocks of knowledge from which services are expected to flow for a period of time that may be hard to specify in advance” [Boisot 1998]

Intangibles²³ are receiving increasing attention, which has triggered the emergence of ideas for knowledge accounting, based on investment in people’s training and experience, employees learning capacity and knowledge management capabilities.

We distinguish between three aspects of measurement:

1. Measuring company value including intangible assets and specifically intellectual capital
2. Measuring knowledge in terms of its value in supporting business objectives
3. Measuring the effectiveness or maturity of knowledge management capabilities.

²³ The Knowledge Creating Company, I. Nonaka, Harvard Business Review (Nov/Dec 1991; The Knowledge Creating Company, I. Nonaka and H. Takeuchi, OUP (1995).



Information and Communications Technology (ICT)

A number of ICT development streams are relevant to Knowledge Management. They include cognition, Artificial Intelligence, intelligent decision making and problem solving, organisational memories, ontologies, and intranets. However, three key developments have a significant impact on the strategic development of Knowledge Management capabilities:

1. Mobile communications
2. Dynamic integration (web services and intelligent agents)
3. Semantic solutions

Mobility Next Generation Networks (NGN)

The Next Generation Networks (NGN) denoting the infrastructure that will enable advanced new services to be offered by mobile and fixed network operators represents the mobility advancements. Key objectives include:

- Support for a wide range of services and information flows (including real time/streaming/non-real time services, point-to-point, multipoint, broadcast and multicast voice, data, video and multi-media applications),
- Seamless inter-working with legacy networks,
- Support of 'generalised' mobility.

Dynamic Integration

Enterprise integration enables coordinated and synchronised execution of activities across employees and business partners through timely availability of the necessary and knowledge.

Web Services and their related infrastructure for service-oriented computing provide a universal basis for the integration of business processes that are loosely-coupled and distributed among the most disparate entities, both within an organization (e.g. different departments within the company) and across organisational borders (e.g. the partners in a supply chain). The cornerstone for web services is XML which has provided the means to describe computer programmes.

Information agents are computational software systems that have access to multiple, heterogeneous, geographically distributed information sources, and assist their users to find both useful and relevant information. Intelligent agents implement retrieval, analysis, manipulation, and integration of heterogeneous data and information on demand.

An important of dynamic integration is the "*dynamic discovery*" which describes systems, in which clients search through special registries to first discover and then invoke services supporting the capabilities they require.



The Semantic Web and Semantics-based solutions

A unifying vision for all ICT developments is that of the Semantic Web with semantic annotation of data so that programs can understand each other²⁴.

We are currently at the beginning of this new generation of the World Wide Web, which will provide a wide range of intelligent services such as information brokers, search agents, information filters etc.

The Semantic Web, the next generation Web, brings the unstructured data into structured way by managing to add metadata and semantics to the data. These semantics can be further processed and reasoned by the machines. Web provides the flexible platform for data communication and collaboration. The explicit representation of the semantics of data, grounded in ontologies, will enable a qualitatively new level of service. It will weave together a huge network of human knowledge, complement it with machine processability, and allow for automated services that support people in carrying out tasks that are contingent on the expedient use of information and knowledge.

Ontologies are the backbone technology for the Semantic Web and - more generally - for the management of formalised knowledge within the technical context of distributed systems. They provide machine-processable semantics of data and information sources that can be communicated between different agents (software and people). Ontology captures consensual knowledge via co-operation and communication between different people who share the same or similar interests. Ontology provides the required vocabulary of terms and the relations among them.

Ontologies and other technologies underlying the Semantic Web support access to unstructured, heterogeneous and distributed information and knowledge sources. Semantic models are not unique so there will be many ontologies co-exist. Semantic models are not static so they are changing and evolving all the times. Different corporations use different ontologies to handle their business therefore cross corporation communication needs to be based on the mapped ontologies where the jointly agreed semantics are reflected. Ontology Management System (OMS) targets these tasks. Its main functionalities include ontology editing, ontology mapping, ontology versioning and ontology inference.

The next step is to use semantics to understand information and decision-making needs of humans, so that data and human's needs can be semantically intermediated. The scope of semantics-based solutions has also moved from data and information to services and processes.

²⁴ Berners-Lee. Weaving the Web, Orion Business Books, 1999

Knowledge oriented Strategy KoS

A summary of the main points raised is shown diagrammatically in the following diagram pointing to the need for Knowledge oriented Strategies (KoS).



Despite the increased understanding of the importance of dynamic knowledge capabilities in strategy, and advances in knowledge management technologies, one area still seriously underdeveloped is the ability to link Knowledge Management with strategy and competitive advantage. To establish Knowledge **oriented Strategy** a company must understand and articulate the advantage that comes from knowledge as a strategic resource enabling the company to better formulate and execute its competitive strategy. For this a knowledge view of the organisation must be created and used to define its knowledge oriented competitive positioning in the sector or sectors in which it operates. This knowledge view of a company defines a particular type of **context** that links strategy and Knowledge Management technologies.

First, **Knowledge oriented Strategy** formulation should take into account the developments in strategic management thinking particularly the resource based perspective and the interactive nature of intellectual capital development and business networking. .

The strategy itself will then seek opportunities in an environment shaped by the broader New Economy trends and the ICT developments outlined earlier.

The crucial ICT developments are increased mobility and semantic solutions. The resultant outcome is an increased range of services delivered 'through everything everywhere'.



Personalised services about health, goods, travelling, and education are likely to be accessible through mobiles and television channels, customised to individual profiles. Cars, televisions, washing machines and all electronic equipment are likely to be more intelligent and therefore more autonomous. Ultimately, goods will know where they should be transported to, how to fix problems with their functionality and how to dispose of themselves in an environmentally friendly way. The choice for consumers is likely to increase drastically and the resulting customer driven economy will increase the difficulties companies have to maintain good performance.

Turning back to what constitutes strategic knowledge; a starting point is what a company can do to succeed in a highly uncertain and dynamic market place. A common element of competitive strategy is increased speed of understanding of customer perceptions and trends and increased ability to respond faster than the competition to competitive challenges. In this case strategic knowledge should help the company to act faster. The question is what is the strategic knowledge that will enable the company to better formulate and execute its 'fast adaptation' competitive strategy?

Would a company be more competitive if it increased its knowledge about its customers? The answer is there would probably be some performance improvement but clearly it is not the solution. Apart from good customer knowledge, the company needs **a capability to generate new knowledge to explain changes in customer patterns and to create successful responses. It needs dynamic capabilities** for "adapting, integrating, and re-configuring internal and external organizational skills, resources and functional competencies towards a changing environment"- **this is what represents a strategic knowledge management capability**. A crucial dimension is understanding the characteristics of the company's business network, ability to activate appropriate resources and acquire any necessary additional services.

A strategic knowledge management capability should facilitate early recognition of change patterns of from which possible explanations and therefore possible expected change trajectories can be made and then monitored. The key is to understand the change reasons in order to design appropriate responses taking into account the organisational and network constraints and optimising time and cost.

We need therefore to understand better the change patterns to define **context** that activates knowledge and knowledge development.

We need increased automation of knowledge extraction based on such **change context**. In most cases the change context should also initiate **learning cycles** aimed at the creation of **adaptation knowledge** that will support the development of the response. At this stage the use of learning ontologies will provide a crucial tool in this area.

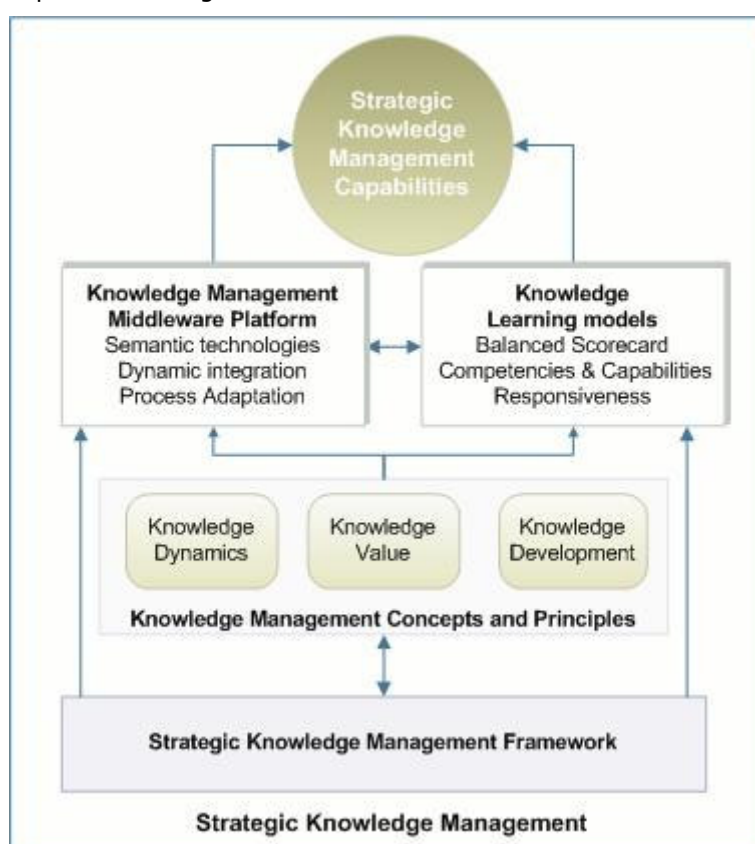


Strategic Knowledge Management Capabilities

A strategic knowledge management capability enables an organisation to combine its knowledge on markets and products with change adaptation knowledge to gain sustainable competitive advantage.

The key requirement for strategic knowledge management capabilities is the **synergetic development of strategy, knowledge dynamics and semantic based technologies.**

This is represented by a Strategic Knowledge Management approach as shown in the following diagram. Service Oriented Architecture **SOA**, semantic web services and related **standards** are now creating the required enabling IT infrastructure.



Strategic Knowledge Management is based on establishing a Strategic Knowledge Management framework that defines all the key elements of Knowledge Management and their interaction with business strategy, organisational design and business processes. Such a framework should guide the specification of knowledge dynamics (knowledge units, degrees of freedom, clustering, transfer, mediation, learning, momentum) as well as knowledge value and knowledge development models. **The Strategic Knowledge Management Framework should create a knowledge view of the organisation and use knowledge dimensions as the basis for its competitive position in a specific industry or market.** Technology and business models can then be combined to produce strategic knowledge management capabilities that will deliver sustainable advantage.



Summary

We define strategic knowledge management as the development of an organisational-wide knowledge management capability designed to provide sustainable competitive advantage.

The 'knowledge economy' and the 'information society' have become the recognised cornerstones of the developed economies as the balance between knowledge and other resources has shifted so far towards the former that knowledge has become perhaps the most important factor determining the standard of living in knowledge economies and the competitiveness of companies. There is considerable evidence that the intangible component of the value of high technology and service companies far outweighs the tangible value of its physical assets. According to New Growth economics a country's capacity to take advantage of the knowledge economy depends on how quickly it can become a "learning economy". In the "learning economy" individuals, firms, and countries create wealth in proportion to their capacity to learn and share innovations.

The Resource Based Perspective of strategy highlights that companies have differentiated resources, capabilities, and endowments and has created an understanding of strategy formulation addressing intangible resources. One of the principal insights of the Resource Based Perspective is that company resources are not of equal importance or possess the potential to be a source of sustainable competitive advantage. Much attention has focused therefore, on the characteristics of **advantage-creating resources**, which possess barriers to both imitation and mobility.

Competitive advantage can then be attained primarily through **knowledge driven dynamic capabilities**, which possess barriers to both imitation and mobility.

Knowledge oriented dynamic capabilities support adaptation to the changing environment through knowledge driven reconfiguration and integration of organisational competencies and innovation. Consequently, knowledge oriented dynamic capabilities provide the basis for **strategic knowledge management** enabling companies to combine their knowledge on markets and products with **change adaptation knowledge** to gain sustainable competitive advantage.

