

Towards an innovation super-highway

The globalisation of knowledge strategy

Individuals, organisations and even entire countries are recognising the central importance of knowledge and intellectual capital, to the point now where knowledge strategy has become the focal point of a truly international agenda. [Debra M. Amidon](#) describes the evolution of Entovation, a network that has grown in response to these developments, and looks towards the future emergence of an innovation super-highway.

Today, the knowledge agenda is worldwide, pervades every function and every industry, and has implications for industrialised and developing nations alike. Indeed, it has evolved well beyond national borders; it has set an agenda for international collaboration. Although originally thought to refer only to white-collar, hi-tech workers, there is no such thing as a non-knowledge worker. Originally to have been the focus of just the services sector, there is also no such thing as a non-knowledge-intensive industry. The knowledge of all individuals is important. Knowledge is what makes companies unique, even within the same industry. We have more to gain by building upon the competencies of one another as individuals and nations.

The innovation of which we speak – and must manage – is not a function of the flow of technology, or even of the flow of materials into viable products and services. Rather, it is the learning process – the pace and effectiveness with which knowledge is exchanged – and how swiftly ideas (old and new) are applied. Customers have become so sophisticated and the realities of hypercompetition so prevalent, companies can no longer focus on products from a technology-push perspective. In fact, most customers are not even satisfied with a solution-based product offering. Instead, their knowledge needs to be considered part and parcel of an organisation's ability to innovate.

Potential of knowledge societies

We are just beginning to discover how to value knowledge in our organisations, and to realise that knowledge has no value until it is put to use. Leaders in technological innovation and knowledge management are beginning to converge in their concepts and in their practices. University research initiatives are beginning to proliferate. Nations are launching initiatives for 21st century positioning, and societal organisations, such as the World Bank, the United Nations, the European Union and the Organisation for Economic Co-operation and Development (OECD),

have placed knowledge and learning at centre stage for future sustainable economic development. And this is only the beginning.

There has been a compounding effect from the rapid advances and acceptance of virtual reality, and the phenomenon of virtual networks. Advances in one area appear to affect the other and visa versa. In other words, communications technology is now embodied in a plethora of products and services ranging from the most complex business simulations to video games. This symbiosis makes possible the virtual organisational structures that operate with more fluid, flexible management practices on a global scale.

In 1987, we held the first national 'Roundtable for Managing Knowledge Assets into the 21st Century' (Amidon and Dimancescu, 1987) where we concluded: "If we can agree that the knowledge base of the United States is our most precious resource, then we can begin to manage it more effectively. This requires a re-thinking of how the intellectual capital of each sector – education, government and industry – should be developed and applied to the dual goals of the advancement of science and technology, as well as the international competitiveness of our nation."

It was a national agenda, as illustrated through a series of our own national and societal interventions. Today, 15 years later, it is unquestionably an agenda for international collaboration.

The progressive concepts that initially focused on the enterprise level (the know-how company, the knowledge creating company, etc) were elevated swiftly through their adoption in the realm of economic development by various countries, such as France and Poland, where governments began to address knowledge opportunities – in particular, how to use technology for the sustainability of their countries.

Soon, we saw further evidence of the attention of industrialised nations through the initiatives of the OECD, with lead articles in the *OECD Observer* by Jean-Claude Paye (1996) on policies for a knowl-



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edge-based economy, and Riel Miller (1996) on human capital accounting. The World Bank followed suit with such major initiatives as the publication of its world development report under the title *Knowledge for Development* (1999), which set out to convert the institution into the World Knowledge Bank for developing nations. It followed up with major global partnership conferences – the GKI in Toronto, Canada, and GKII in Kuala Lumpur, Malaysia, which drew 1,200 participants from 90 nations. By the time I visited Beijing in 1998, there were already several study commissions on the implications of the knowledge society for China.

By now, the notion of intellectual capital reporting, originating at Skandia AFS, began to focus on the 'Power of Innovation' (1995) and was adapted to the level of the nation's economy in Sweden. At the same time, several countries – namely Denmark, the Netherlands and Israel – were experimenting with the schema adapted for their countries. The European Union hosted a meeting in Utrecht bringing together ministries of education and commerce, together with leading knowledge professionals, to explore the concept of the 'European Knowledge Union'. Even nations like Peru were holding national conferences on IC as early as 1999, and the World's Fair in Hanover, Germany, created a sizeable 'knowledge park'.

Most recently, the Brookings Institute released its study on intangibles (Lev, 2000), the FASB has issued guidelines, the World Bank has issued new economic indicators and the UN, together with McMaster University, has defined its National Intellectual Capital Index (Bontis, 2002). The US State Department has held briefings on converting nations like Russia to a

knowledge economy, there are proposals for the formation of the Western Hemisphere Knowledge Partnership (WHKP) and the prime minister of Singapore has declared his intention for his country to become the 'innovation nation'.

We need more demonstration projects to create prototypes for new ways of thinking about how research scientists and engineers – across disciplinary, industry and national boundaries – can collaborate on areas of mutual interest. We need more examples of the progress of developing nations and aboriginal communities in establishing new mechanisms to preserve and leverage their own cultural heritage. We need more success stories of how the accelerated creation, movement and application of ideas into products and services can ensure the profitable growth of an enterprise – large-scale organisations as well as small, start-up entrepreneurial firms – and ultimately benefit society. We need more incentives for individuals to value their knowledge, and the knowledge of others, and appreciate the worth of collaboration for the common good.

The knowledge value proposition

Today's companies measure success based upon cost, quality and time. However, as the marketplace becomes hyper-competitive, performance metrics become more complex and intangible, the organisation becomes more networked, people become more empowered and energised, processes become boundless and the enterprise will rely far more upon technology.

We live in an era of 'kaleidoscopic change'.¹ It is not the speed of change of one variable, or the speed of change of multiple variables, that is the most challenging consideration for today's management executives. Rather, it is the compounding effects of the speed of change of multiple variables in creating a business landscape where traditional policies and practices are not sufficient. Just as with a kaleidoscope, one may not know how the weight, shape and texture of pieces combine to form a new image. We do know that there is no turning back. Executives are challenged to manage enterprises in a world where the economic rules have changed and the new ones have yet to be invented.

Technology has been used to increase competition across industries and among individual activities within enterprises in different industries. However, at the same time it has stimulated entirely new forms of collaborative economic activity, such as worldwide research networks, global sourcing arrangements, large-scale development and sharing of databases, new training and

Figure 1 – the Entovation holonomy



education capabilities, faster-response innovation systems, and alliances and networks of companies.

Modern value propositions, then, must balance these complex, interdependent factors: performance economics (intellectual capital), behaviour (social capital) and technology (technological capital). A focus on one aspect will have an automatic effect on the other elements. Only a balance among the three in an innovation process enables an enterprise to be centred and capable of working towards sustained prosperity. The knowledge movement has taken flight in every function, every industry and every corner of the globe, in developing and industrialised nations alike.

The themes of the knowledge value proposition, interestingly enough, correspond to the three sub-themes of the knowledge movement:

- Intellectual capital – The aim of calculating and monitoring intellectual capital is best exemplified by Leif Edvinsson of Skandia AFS (Sweden), Karl-Eric Sveiby (Australia), Ante Pulic (Austria), Baruch Lev (United States) and Charles Goldfinger (Belgium);
- Social capital – This focus embodies the concepts of the learning organisation, articulated by Chris Argyris and Peter Senge (United States), Charles Savage (Germany) and Hubert Saint-Onge (Canada);
- Technological capital – IT as knowledge processing is articulated by Tom Davenport, Peter Keen and David Coleman (United States), Joachim Doering (Germany) and Kent Greenes (UK).

Over the past decade, we have seen the convergence of language and practices wherein proponents of one facet embrace the facets of the other. Practitioners are realising the need to develop a holistic, enterprise-wide strategy that brings together the central aspects of all three themes, while leadership executives understand that the architecture required is far more complex than they originally imagined.

The globe as a network

This all sounds fine in theory, but how might it operate in real life?

Entovation² (created from ENTERprise innOVATION] International was originally designed as an informal Rolodex of 400 contacts from 20 countries. It has grown to the point now where the activities of theorists and practitioners from over 90 nations are linked. We envisioned the world as a holonomy – a nesting of networks ranging from the individual contributor to the societal level (see *figure 1*).

By hooking into the values and visions of one another, we can connect in ways we were never able to before. Synergies occur that would not previously have seemed possible. The growth of

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the network occurred in five stages, from defining distinctive competencies and providing structure to the network, to eventually operating as a fully functioning 'knowledge innovation' system:

- Defining distinctive competencies (1993-1994). We defined distinctive competencies and made the network international in scope;
- Structuring the network (1995-97). We realised that we needed to better structure the network, as a holonomy³, and define the purpose and a set of principles to guide our action;
- Sharing the wealth (1998). Next we sought to share the wealth, position our view of the knowledge economy in a way to promote further dialogue, and enhance visibility through the network and the knowledge press;
- Transforming into an innovation system (1999). We've sought to transform the innovation system, by featuring top colleagues on the website, overhauling the website and serving in an advisory capacity to the World Bank;
- Leveraging collective competence (2000 and beyond). As we look to the future, we will be hosting a global knowledge management roundtable and participating in research on using the architectures, methodologies and research contributed to date from participants in the network.

The engagement process does not operate as a value chain of activities, but as a system dynamic with numerous critical feedback loops in which intellectual capital, reputation learning and client success continuously feed (and are fed by) progress in building access, credibility and competency, all to influence new managerial standards. Everyone – individuals, enterprises and nations – learns from the innovations of one another.

Collaboration among parties is essential and collective wisdom is the only way to create new standards, rather than simply following best practices – a prescription for mediocrity or failure. Recently, we

embarked upon a technology platform to manage an international intranet among select members of the network, and there are plans for the next roundtable meeting – ‘Building Collaborative Advantage’ in New York later this month.

A map of expertise

In order to give visibility to those who support the values and vision of the knowledge economy, we created a graphic representation of the world, including the theorists and practitioners now representing around 50 countries. What appears on the map⁴ in *figure 2* is a diagonal slice of this network.

Those listed come from a variety of disciplines and a wide range of functional responsibilities. There are some recognised thought leaders (for instance, Edvinsson, Nonaka, Pasher, Sveiby, Saint-Onge, *et al*) as well as newcomers, some of whom have just graduated from PhD programmes. Some are CEOs or senior managers, while others are government officials or academic researchers. There are experts in performance measurement, competitive analysis and alliance strategy, as well as in computer/communications technology. They are all playing a role in shaping our new economy.

What these individuals seem to have in common is a sense of values, a compelling vision and standards of operational excellence. They are not *all* the experts; other experts have their own forums. They also are not *all* the students; they have their own internal academic networks. They do, however, represent a cross-section of expertise that promises to provide robust fodder for the further growth of the knowledge economy. In short, I believe the network represents a virtual

community of collaborators working for the common good – a new economic world order based upon knowledge. Using this network as an ‘innovation super-highway’ should result in profitable growth for their own enterprises, the vitality of their national economies and the advancement of society.

We feature representatives from several countries who offered their personal reflections and aspirations. Their messages document the multiple facets of expertise of knowledge professionals, as well as their broad geographic reach in both industrialised and developing nations. Readers will begin to see the emergence of a common language and a shared vision.

There are some startling similarities in the way that problems, issues and solutions are characterised. On the other hand, several counterpoint positions in various topics have also emerged, which leads us to believe that the knowledge field is maturing, to the point now where concepts and practices can be openly debated. This is quite a step forward from where we were only a few years ago.

Three things have been made very clear. First, the broad level of transformation is more a function of behaviour and culture change than of technology. Second, these changes are difficult, but well worth the effort. Third, all seem to feel that we are on the right path towards a more prosperous future.

Proof of concept

All this may still sound very theoretical. However, on Global Learn Day (October 2000), participants in the Entovation 100 (E100) who are featured on the Global Knowledge Leadership Map began a 24-hour dialogue, beginning in the far east (Malaysia, China, Japan) and ending with the research agenda based at the Banff Centre for Management in Calgary, Canada. It was the equivalent of an international intellectual marathon, broadcast live on the internet. It was described as a “sparkling” event. Most participants experienced a new level of understanding of the potential power of the technology and the value of a solid professional network with a clear purpose.

Participation in GLD was an experiment for Entovation, acting as an initial introduction of the Entovation 100 to one another. It is the beginning of what will evolve into a monthly dialogue on innovation strategy, the findings of which will be published as a new intelligence service.

Building social capital

In a recent article, Xenia Stanford, editor-in-chief of KnowMap, performed a social capital and innovation analysis of the Entovation 100.⁵ She described social capital as being much more than the sharing

Figure 2 – the Global Knowledge Leadership Map



of information and the growth of knowledge. Benefits of collaborative and well-functioning social networks include understanding who has specific knowledge and who will benefit from that knowledge. Stanford explored how social capital enables innovation. It can do so through one of the following means, but only if the social network is working well:

- Leadership – Clear, visible and shared leadership within a loose hierarchy allows the sharing of ideas throughout an organisation and encourages innovation;
- Participation – Shared participation in decision making, with willing contributions made and accepted by every member of an organisation, allows innovation on the shop floor;
- Culture – Groups have rules, norms and obligations in which risk taking behaviour is encouraged, which can in turn drive innovation. Socially destructive actions are handled swiftly though fairly;
- Sustainability – Specific capacities of an organisation with the formulation and handling of certain demands means the network can work through issues, build a co-operative group, develop an organisational memory, and create a future vision empowering the network to survive and thrive beyond the ups and downs that are natural in any social group.

Stanford concludes that to turn the social network into innovation capital, it must remain at the leading edge. It must not simply emulate best practices, but rather should reach beyond to new and better ones.

Although the E100 network is still fairly new and constantly reinventing itself with the addition of new members and new joint projects, it has proven that it has the structure and credibility to become even stronger, building social capital and increasing innovative capacity for reaching the marketplace.

Foundation for sustainability

At a recent Alpbach conference, Albert Hochleitner, director general, Siemens Österreich, and president of the board, Austrian Research Centres, suggested that world barriers are transparent. The achievements of the past are losing value. Knowledge – and how to deal with it – is critical to the future survival of nations. “There is little time allotted to deal with strategic planning. Less than two per cent is spent on future perspectives. Some companies dedicate less than one per cent [of their time]. Although the urgent business of everyday life is important, it is not as important as the future.”

Overall, progressive knowledge leaders see a shift from the focus on limited resources – financial, human and technological – that pervaded the industrial age. With a grant from Siemens AG, we asked Jan Wyllie, CEO of Trend Monitor International⁶, to provide an in-depth analysis of the fundamental trends synthesised from the source

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quotes taken from interviews conducted with each E100 member in 1999. By determining key patterns, we have discovered the scope of collective findings among this diverse group of knowledge professionals. What follows are the five meta-views that arise from this process of concept mapping. Their comments have also been categorised according to the dimensions of innovation strategy, and will soon serve as the foundation of an electronic dialogue on the individual topics and on the methodology as a whole.

The identification of the trends below offers a prospectus on the future we are innovating. At first glance, these trends may seem like they come straight from *Pollyanna*. On the other hand, if they are legitimate, relevant observations of the shifts that are taking place in our society, perhaps they do point to a direction that can be embraced by veteran and new knowledge managers alike.

- Meta-view #1 – Economy to holonomy;
- Meta-view #2 – Control to humility;
- Meta-view #3 – Knowing to imagining;
- Meta-view #4 – Limited to unlimited;
- Meta-view #5 – Goals to aspirations.

The challenge is to determine the integral linkage between human potential and economic performance. This vision suggests that something of unprecedented significance and international in scope is emerging:

*A new economic world order
Based upon the flow of knowledge – not technology,
Innovation value systems – not chains,
Stakeholder success – not satisfaction, and
International collaboration – not competition.*

The changes are far more fundamental than people realise. And all the focus on knowledge has always

actually been a focus on innovation, but people were locked into the traditional 50-year-old industrial management models of managing things. The transformation is a human one, and a humane agenda that touches the hearts and minds of all peoples of the world. The prosperity of individuals, enterprises and nations relies upon knowledge as the resource, and innovation as the process.

The Entovation network has the capacity to impact upon multiple spheres of influence around the world.

The UN was created to maintain political stability around the world. The World Bank and the IMF were created after World War II to ensure the movement of financial capital. Today we need a similar infrastructure for the worldwide flow of intellectual capital. If knowledge is the modern asset – the most precious resource – of the 21st century, we have a premise behind the need to create an innovation super-highway for the world trade of ideas.

There are an abundance of case studies describing real benefits that organisations are gaining through systematic approaches to harnessing existing and new knowledge: better products and services, faster time-to-market, improved customer service and reduction of cost through avoiding re-invention of the wheel. And we've illustrated further evidence of the globalisation of the knowledge agenda in its acceptance as a pivotal point of policy by both nation states and international agencies alike.

In summary

Knowledge resides in the minds and hearts of individuals who are called to action. This is one of the reasons that the knowledge – as opposed to the

information or the digital – economy provides a human and humane agenda. The challenge is to connect, with the support of a global technology infrastructure, our capacity to evolve a common language and create a shared vision of what the future might be – and then to act upon it.

The Entovation network has become a robust source of insight that, when harnessed, has the capacity to impact upon multiple spheres of influence around the world – across functions, industries and nations. It is an example of an integral facet of the innovation super-highway – and a work in progress. ■

References

1. Amidon, D, *Innovation Strategy for the Knowledge Economy – the Ken Awakening* (Butterworth-Heinemann, 1997, chapter 2, pp.15-26)
2. Entovation® and Knowledge Innovation® are registered trademarks of Entovation International, Ltd.
3. Holonomy is a concept of nesting of networks best popularised by Lipnack, J. & Stamps, J. in *The Age of Network* (John Wiley & Sons, 1995)
4. For access to the electronic version of the map, visit: www.entovation.com/kleadmap/index.htm
5. This article by Xenia Stanford (2002) is excerpted with permission. Visit: www.knowmap.com
6. For more information on the process and other recent trend reports, visit: www.trendmonitor.com

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