

Concentricity and Synergy for Increased Innovation, Accelerated Growth and Enhanced Competitiveness of Canadian SMEs / KBEs in the Global Economy

How the principles of *business clusters, business networks, and business incubators* can be combined for concentration, synergy and acceleration of innovation by and growth of Canadian enterprises, particularly small and medium-sized enterprises (SMEs) / high technology knowledge-based enterprises (KBEs), which are the real engines of economic and employment growth in the rapidly expanding global economy.

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We are living in a very exciting era. We are experiencing a geometrically accelerating curve of innovation, convergence of emerging sciences and technologies, and dynamic new entrepreneurship. Many of these dynamic new firms are small and medium-sized enterprises (SMEs) and knowledge-based enterprises (KBEs), including numerous high growth firms called Gazelles, which develop and exploit explicit and tacit knowledge as intellectual capital, leverage innovation, and access and harvest global business opportunities.

This amazing phenomenon is driving productivity increases, economic and employment growth, increased shareholder value for leading firms, and social prosperity for leading nations around the globe. This is risk and reward, entrepreneurship and prosperity, in the expanding global economy.

Leading nations have identified the overall strategy and the components that are influencing this exciting trend. It is the concentricity of multiple new economy business strategies, the synergies of multiple components within these new economy business strategies, the resultant acceleration of entrepreneurship in new enterprise growth, and the enhanced competitiveness of these enterprises in the global marketplace.

The simple truth is that ***business clusters, business networks, and business incubators***, when brought together in concentricity, can provide the potential for dynamic SMEs / KBEs / Gazelles to collaborate and compete in investment, knowledge management, innovation, technology, commercialization, marketing, and export market development to thereby accelerate entrepreneurship in new business enterprises that strive for excellence and opportunity in national and global markets.

Business clusters are local / regional geographic concentrations of organic, complex and interrelated systems composed of large anchor firms, multiple small and medium-sized enterprises (SMEs), soft / institutional infrastructure, and hard / physical infrastructure. The aggregate value added process within business clusters includes capital investment, knowledge development and

management, research and development, innovation, technology, commercialization, marketing, and international trade.

Ten (10) critical success factors characterize successful business clusters:

- First, government organizations invest in critical soft / institutional and hard / physical infrastructure, which provides support in education, research and development, technology transfer, commercialization, financial investment, export development, and access to resources / utilities / transportation, etc.
- Second, government organizations and business groups form a powerful public-private sector partnership to agree, focus, strategize, harmonize, and collaborate in supporting the vision and implementation of a successful local business cluster on a long-term basis.
- Third, large and small enterprises compete intensely with one another to be first to market and exploit new markets to maximize revenues and profits.
- Fourth, these enterprises also collaborate with one another to overcome marketplace impediments and increase access to the development and marketing of highly innovative new products, services, and processes.
- Fifth, this intense activity generates an economic externality called a “knowledge spillover,” which informs multiple stakeholders, and spurs new innovation, in resourcing, product, service, process, organization, and market access.
- Sixth, a spectrum of capital investment from personal to angel to venture to institutional lending is available to support entrepreneurship and growth.
- Seventh, entrepreneurship is understood, accepted, desired, encouraged, and supported in multiple ways, and critical business skills are developed for each of the multiple stages of business development, from start-up to first growth to expansion to export market development to internationalization of business operations.
- Eighth, a critical focus is put on attracting direct foreign investment to the local business cluster, which should be relatively easy for successful business clusters since success attracts success.
- Ninth, international comparisons and benchmarking is undertaken to seek international best practices, on a sector by sector basis, e.g., ICT, biotechnology, forestry, agriculture, manufacturing, tourism, arts and culture, etc., to support high growth firms / gazelles, and to seek whole cluster / cross-cluster / and mega cluster international best practices which lead to the formation of high functioning business clusters, the creation of technopoles, and the creation of constellations.

- Tenth, continuous learning or learning organization principles are applied by the cluster principals, public and private sectors, to seek to be more innovative and to renew the cluster and its multiple components, keeping the cluster evergreen.

Within business clusters, and also occurring in many economic sectors more generally, is a unique phenomenon of interfirm collaboration called ***flexible business networks***. These highly innovative networks allow groups of three to twenty-five or more SMEs to form ***soft and hard networks***, to collaborate in order to innovate and to compete, and to build scale, scope and speed in order to gain access to larger and more challenging markets more quickly. There are six main types of flexible business networks: horizontal networks, vertical networks, cross-sectoral networks, emerging and converging science and technology networks, public and private sector networks, and virtual networks (more distant firms with common interests linked by internet to share knowledge factors). The activities of business networks can include joint purchasing to reduce input costs; joint innovation to develop a new product, service or process; joint marketing and exporting to reach larger scale and more challenging markets; supply chain support to large firms; convergence networks, etc.

There are six (6) critical success factors in flexible business networks:

- First, common purpose / shared leadership / values alignment.
- Second, complementarity of knowledge / skills / resources.
- Third, shared efforts and costs.
- Fourth, shared benefits and profits.
- Fifth, continuous learning environment.
- Sixth, essential business skills development by stage of business development

Business incubators have evolved considerably over the past decade. We now recognize first, second and third generation business incubators. First generation was the re-habilitated warehouse, which offered free space, utilities, and access to an economic developer, for a fixed period of time. Second generation was the same re-habilitated warehouse facility but with a little more emphasis on providing fledgling enterprises with access to some basic training in how to prepare business plans and raise capital offered by the local entrepreneurship centre, with modest fees charged, again for a fixed period of time. Third generation business incubators are now emerging: the new building or rented facility, located in a technology park, at a university, or at a major research and development facility, with defined intake screening and maturity cycles, essential business skills diagnostics and training, continuous mentoring and group learning with highly trained professionals, access to financing sequencing, and access to markets and trade development.

What might be called third generation - type three A, is also emerging concurrently. This is the incubator without walls, generally a single new enterprise, “good to go” as they say at Houston, Texas, but contractually acquired for development purposes by a venture capital group,

with key business skills in planning, financing, marketing, and mentoring brought in as part of a “new team.” This third generation - type three A is a variant, increasingly common, and quite effective.

It is also critical to note there are stage one, two, three and four of enterprise incubation. Stage one is pre-start-up, stage two is start-up and survival, stage three is first growth, and stage four is second growth or expansion with increased capitalization. Beyond this the newly independent and growing enterprise will encounter the exporting stage, the internationalization of business operations stage, and finally the maturity and renewal stage.

The target size group for current conventional business incubators is 20-25 beginning firms. The target time frame for incubation is three years. The target “graduation rate” is 85 percent.

There are seven (7) critical success factors for advanced third generation business incubators:

- First, the management or mentor at the incubator must be highly educated and experienced for the innovation and technology intense global marketplace, with in-depth professional training and experience in all aspects of entrepreneurship and enterprise management by stage of business development.
- Second, business incubators must operate on a clear intake and maturity cycle (three years is ideal), with firm and enabling screening mechanisms for candidate enterprises.
- Third, business incubators must have excellent diagnostic mechanisms for assessing essential business management skills, and excellent mentoring practices to facilitate individual acquisition of essential business management skills by stage of development, current and future.
- Fourth, business incubators must be substantively learning organizations with formal and informal group learning exercises to emulate the real world of how SMEs / KBEs learn “on the street,” including development of critical flexible business networks, which will help fledgling SMEs / KBEs to develop vital cohort linkages and their learning organizations to sustain themselves in the real marketplace.
- Fifth, business incubators must provide access to essential financing, from personal funds of the entrepreneur, to angel investors, to community development capital pools, to venture capitalists, to institutional lending.
- Sixth, business incubators must provide essential assistance in early stage market development and further market opportunities for innovative new products and services developed by fledgling enterprises. This assistance is needed to ensure the essential revenue stream that will keep the firms alive once they go “on the street.”
- Seventh, business incubators must advise graduates of the advisability of joining a next stage business incubator to deal successfully with early stage growth issues and thus ensure continued success and avoid failure.

Now, how to make these vitally important components work in harmony to bring on successful enterprise development and vibrant economic development? The secret is this: we can look at the important factors in the larger case of business clusters and re-engineer these to create high-functioning business incubators which can evolve to become first mini-clusters, then larger business clusters. This is referred to as the “diamond form of business incubators” based on a visual appreciation of a baseball diamond. The key factors, or four corners, of the diamond are: a well structured third generation business incubator with the five critical success factors noted above (the Hamilton Incubator of Technology under Dr. Laurence Hewick as Director of Incubation comes to mind as an ideal model); a university or community college for nurturing and developing knowledge and skills; a well-funded research and development laboratory (a local National Research Council laboratory or provincial laboratory would be ideal); a financial institution with full spectrum financing access (a local branch of the Business Development Bank of Canada would be ideal).

With the four corners of the diamond established, a new intake class of enterprises can be admitted and mentored. Let’s do the math and look at outcomes over a decade: Three intake classes of 25 firms over a decade with an 85 percent graduation rate should yield approximately 60 successful enterprises within one decade. This should be considered the core of a new mini-cluster. The local Economic Development Commissioner will need to work hard to seek additional larger cluster components to attract and invest in to help evolve the mini cluster to a larger main cluster.

Reasonable expectations must be managed. Regular business clusters can take several decades to develop – indeed, in the case of the highly successful Ottawa business cluster, up to 50 years to develop. However, this all began with adroit investment in two new technologies, computers and telecommunications, in two companies, Computing Devices of Canada and Northern Telecom, by the National Research Council of Canada. It was not until the end of the second decade that we began to witness spin-off enterprises, and soon there were about six core firms in the region. Beginning in the third decade, there were a number of enterprising spin-offs. Beginning in the fourth decade, there were multiple new enterprises. The fifth decade is harvesting amazing convergence of emerging sciences and technologies. Ottawa now has 1100 enterprises and only 12 are large scale enterprises. The majority, or 99.8 percent, of all the enterprises in the Ottawa business cluster are SMEs, with a surprising number of KBEs and high growth firms, all which constitutes a globally recognized business cluster.

Ottawa did not know what a business cluster was when it began on this 50 year investment, innovation, technology and growth cycle. It had never heard of business clusters, business incubators, or business networks. It began with a modest NRC investment in the new technologies of computers and telecommunications in two enterprises. Marketplace entrepreneurship drove the innovation, technology, capital investments, and growth. The rest is history.

We know now that the microcosm of advanced third generation business incubators, well-planned and well-managed, can “reverse engineer” the critical success factors of business clusters and their component business networks, and can create within a decade the basis for a viable mini-cluster, which within several decades can grow to become a major business cluster. This is an amazing learning curve.

In conclusion, any region or province of Canada, as long as it has an urban centre with a substantive university or community college, a research and development facility in one or more key economic sectors, and a branch office of a development bank or economic agency with funding resources or a community investment pool, can aspire to similar success.

However, it is essential to take a long-term view, to envisage strategic development over several decades, to sustain this vision and support it continually with critical community leadership and resources, and, most importantly, to combine the power of business clusters, business incubators and business networks, to achieve concentration, synergy, and acceleration effects in this new economy model of innovation, competitiveness and growth that can drive SMEs and KBEs to success in national and global markets. It also requires an over-arching public-private sector partnership, full spectrum financial services, essential business skills for SMEs and KBEs by stage of business development (stages one through five), and expert business mentoring (at each critical stage of business development), all of which are critically important to the overall process, to sustaining the longer term vision, and to achieving the desired longer term results over ten years and onwards.

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