

Is a Tech Supercluster Possible in Canada?

Kevin Lynch

Governments around the world have expended considerable energy in the past two decades trying to replicate the perfect storm of academic, industrial, intellectual and quality of life variables that produced the innovation Mecca of Silicon Valley. While Canada has made strides toward creating a domestic Austin, Bangalore or Sydney, our standing in rankings of superclusters has stalled. BMO Financial Group vice-chair and former clerk of the Privy Council Kevin Lynch has a prescription for rectifying that.

It is September and hundreds of thousands of students are streaming into Canadian universities, carrying their dreams and our future. It is a time of anticipation and angst, and not just for students.

The questions we should be asking ourselves are challenging: Will our universities find the quality and quantity of students they seek? Will our businesses find the entrepreneurial, creative, resilient and skilled graduates they need? Will our students find the jobs they want and are trained for? Will we retain our best graduates or lose them to other countries? Will we attract great minds from around the world?

The common denominator in all this is talent—the basic fuel of a knowledge-intensive, innovation-driven economy. Canada's tech and innovation talent needs are multifaceted—more depth in STEM, more scope in global marketing, more experience in CO-OP, more coding skills in all disciplines, more exposure to entrepreneurial cultures, and more interdisciplinary teamwork and cross-fertilization. And such talent tends to congregate in clusters and for good

reason, drawing energy, ideas, capital, and culture from each other—much like the craft guilds of old.

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Innovation ecosystems translate knowledge, research and technology into innovative business ideas and commerce. After a slow start, Canada now has an extensive array of innovation incubators, and in all provinces. Even better, we have four Canadian centres—Toronto, Vancouver, Montreal and Waterloo—among the global top-25 in the COMPASS 2015 start-up ecosystem rankings.

But before we take a victory lap, the

start-up ecosystems that registered the largest declines between the 2012 and 2015 COMPASS rankings included Vancouver, Toronto and Waterloo, while centres as disparate as Austin, Singapore, Berlin and Bangalore made great strides upwards in the rankings. Waterloo, while exhibiting above average start-up growth performance, was penalized in the rankings for its relatively small size.

Why pretty good is unlikely to be good enough is underscored by American analysis suggesting that the economic gains (IPOs, exits, venture capital financing, valuations) go disproportionately to the dense and deep top-tier ecosystems. According to COMPASS research: “Over the coming years, we expect Silicon Valley to stay in the lead, capturing 30-50 per cent of the total exit pie, the next three start-up ecosystems capturing an additional 30-50 per cent of the pie and the following top 16 start-up ecosystems capturing the remaining 20 per cent of the total exit pie.” In short, if you don't own a piece of the podium, the global start-up pickings are rather thin and building a herd of gazelles is more wishful thinking than analytic planning. And, Canada's “not good enough” grade is only reinforced by our 24th ranking on innovation in the World Economic Forum's Global Competitiveness Index and our 22nd position for business spending on R&D among all OECD countries.

The top tier “super innovation ecosystems” share several core attributes: an entrepreneurial culture where geeks are gods; deep talent pools that draw from around the world; great research uni-

Chart 1: The 2015 COMPASS Global Ranking of Innovation Ecosystems

2015 Ranking*	Ecosystem	Change in Rankings from 2012
1	Silicon Valley	-
2	New York City	+3
3	Los Angeles	-
4	Boston	+2
5	Tel Aviv	-3
6	London	+1
7	Chicago	+3
8	Seattle	-4
9	Berlin	+6
10	Singapore	+7
11	Paris	-
12	Sao Paulo	+1
13	Moscow	+1
14	Austin	New
15	Bangalore	+4
16	Sydney	-4
17	Toronto	-9
18	Vancouver	-9
19	Amsterdam	New
20	Montreal	New
:	:	:
24	Waterloo	-9

* The methodology for the ranking index is composed of **performance** (value of the ecosystem) weighted at 30%; **funding** (aggregate VC investment) weighted at 25%; **market reach** (% of foreign customers and funders) weighted at 20%; **talent** (quality, availability, cost) weighted at 15%; and **experience** (% employing best start-up practices) weighted at 10%.

versities that interact with the surrounding environment; abundant risk capital, both angel and venture capital; enormous scalability of new innovations; and the brand power to continually refresh themselves from globally mobile talent and capital.

As the federal government consults on what a national innovation strategy should look like and where it might place its “big bets”, a key question to be asked is whether we can build a top global tech supercluster in Canada, and equally whether we can afford not to. In this context, the Toronto-Waterloo Corridor car-

ries the unique potential for Canada to develop a top-five global tech supercluster. It has most of the ingredients: population size (over 6 million), strong research universities and colleges (University of Toronto, Waterloo, McMaster and Guelph, among others, anchor the corridor), vibrant immigration, a major international airport, a global financial centre, and two innovation ecosystems ranked in the top-25 globally. The opportunity is to make the whole of the Toronto-Waterloo innovation corridor much greater than the sum of its parts; the challenge is that it takes more than

geography and statistics to build an innovation super ecosystem.

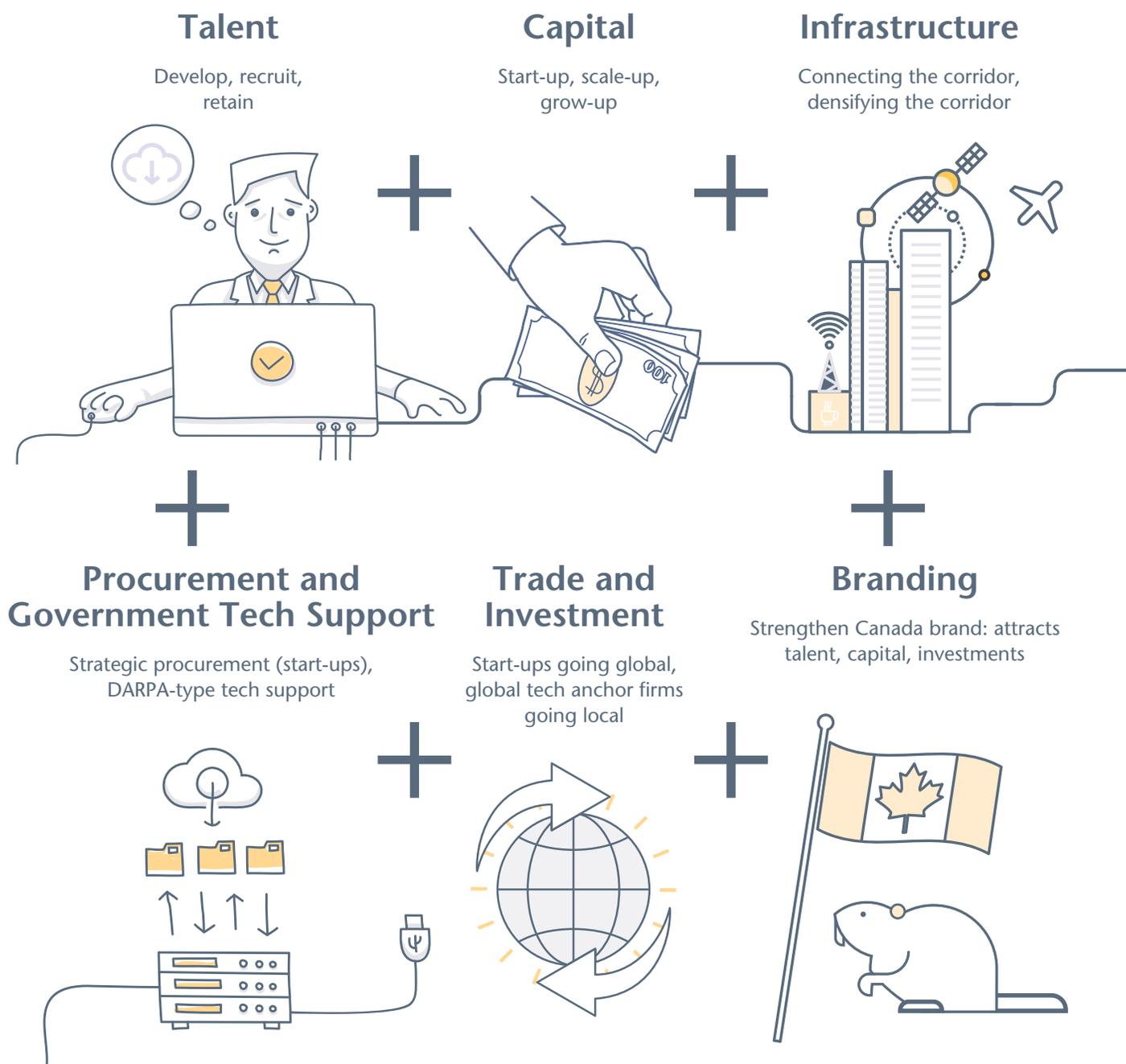
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The COMPASS analysis of the strengths and weaknesses of the Waterloo innovation ecosystem provides some useful clues to tackling the challenge. According to COMPASS, the pillars of Waterloo’s success are “top technical talent, a deep sense of community, and the unmatched cooperation and coordination between stakeholders,” combined with a co-op program where students graduate with two years of relevant work experience and a strong entrepreneurial and problem-solving mindset that sets it apart. The Waterloo challenges are impediments to dynamic scaling, weakness in “going global” to support growth, relatively small market size, and a funding gap in the availability of “seed funding” compared to top global innovation ecosystems.

Within the Toronto-Waterloo corridor, we already produce superb technical talent, creative ideas, and entrepreneurs. They have repeatedly shown they can build game-changing technology right here at home. But to capture the full potential of the Toronto-Waterloo innovation corridor, we must think transformatively—not incrementally—not be risk averse and create global buzz by the very boldness of the vision.

Building a top-five innovation supercluster requires bold leadership from

Chart 2: Building Blocks for a Global Top-5 Toronto-Waterloo Innovation Ecosystem



government, the private sector and universities, buttressed by the ambition and confidence that we can take on the world and win.

So what are the building blocks that could turn the Toronto-Waterloo Corridor into a global top-five innovation ecosystem? Chart 2 sets out schematically six building blocks to the podium: talent, capital, infrastructure, procurement and government tech support, trade and in-

vestment, and branding. While not uniquely applicable to the Toronto-Waterloo corridor, a coordinated set of initiatives across these six building blocks would have a major multiplier impact on the corridor.

Clearly, *talent* is key: we have to develop more, attract more and retain more. On the development side, we need more STEM graduates, more graduates with a global sales and marketing training, more co-op edu-

cation and more co-op partnerships across universities in the corridor, and more involvement of business in dual vocational training models with colleges in the corridor. On the recruitment side of talent is a combination of branding and opportunity. With Brexit and a divisive public discourse in the United States, there is an unparalleled opportunity to burnish the Canada brand in these markets (and globally), and to use it more concertedly to market the strength of

the Canadian higher education system. This would enhance the capacity to attract students, researchers and entrepreneurs to the corridor.

On the retention side, the buzz of a dynamic corridor with more start-ups and more opportunities is itself a key element, but co-op and earlier associations between prospective employees and employers and globally competitive job offers are also part of the retention mix.

A crucial enabling policy initiative to leverage talent attraction is a “*global talent/skills visa*” that would allow Canadian companies and institutions to recruit world-class talent through a streamlined process that provides responses faster than our main talent competitor, the US, say with three weeks as a benchmark.

On the infrastructure front, the objective is an intensely connected corridor. This clearly requires rapid rail, and the recent announcement by the province of Ontario, Metrolinx and CN, hopefully complemented by federal infrastructure support, is a major step forward. But while necessary, it is neither sufficient nor leading-edge. A dedicated bus lane on the highway, combined with regulatory approval for an Autonomous Vehicle lane, rapid air service between Toronto Island Airport and Waterloo and ultra-high speed internet would all build world class connectivity in the corridor.

Governments can play an important role on both the scale-up and financing fronts through strategic procurement for innovative start-ups/SMEs. It is extremely difficult today for start-ups to sell their products and services to either federal or provincial governments given the high degree of risk-aversion built into procurement processes. The same can be said with respect to procurement by large established Canadian corporations. This makes it hard to sell abroad if you cannot show sales at home, and it makes bank financing less likely without receivables.

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Governments around the OECD are rethinking the concept of industrial policy, shifting more to a technology focus rather than traditional sectoral approaches. The federal government should consider developing a civilian DARPA-type technology support vehicle that, like the longstanding Defence Applied Research Program Administration models in the United States and Israel, can greatly assist moving leading edge basic research towards applied technologies that can solve classes of problems and are available to entrepreneurs and start-ups to turn into commercial applications.

The federal (and provincial) governments, in conjunction with research universities and others, should also consider making some big research/technology bets that will create critical research mass in high-risk, high-return areas. Examples could include quantum technologies, artificial intelligence, aspects of medical research, advanced manufacturing, etc. The Perimeter Institute for Theoretical Physics is a great example of a successful big bet.

Following on from the COMPASS analysis of the core attributes of top-tier innovation ecosystems, we need targeted trade initiatives in support of start-ups going global (this could be a combination of the trade commissioner service, and Export Development Canada) and investment attraction “campaigns” to lure global high tech anchor firms to locate in the corridor with global mandates—here, Google in Waterloo is a strong exemplar.

Then there is the COMPASS observation that we face a “funding gap”

relative to top-tier ecosystems. The challenge here is not a paucity of proposals but a choice of where to get the greatest leverage at the least fiscal cost with the lowest risk of unintended consequences. Possible initiatives that deserve more consideration are: angel investor tax credits; matching programs for VC and angel investments; dedicated BDC office in the Corridor; DARPA-type program among others.

To conclude, the challenge for Canada is going from good to great. Building a global top-five innovation ecosystem can and should be part of this transition.

Over the past quarter-century, Canada has demonstrated an impressive capacity to adapt well to a changing world; over the next decade we are going to be tested by unprecedented shifts in demographics, global connectivity, climate change, technological change, slowing productivity and volatility. The status quo is not a model for future success in this rapidly changing world if our objective is to restore Canada’s growth potential and improve the prosperity prospects of the next generation. There is no reason why Canada cannot be an innovation leader provided we are willing to aim for the podium, not just for participation. A top-tier tech supercluster would move us smartly in this direction. **P**

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