

Building Resilience:

Innovation Ecosystems as the Foundations
for Growth in the 21st Century

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WATERLOO INNOVATION SUMMIT



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Centre for Digital Entrepreneurship
+ Economic Performance





Truly innovative economies are anti-fragile. They don't just remain resilient in the face of change, rather they thrive on it. Resilient economies are made stronger by change and disruption. This is the type of innovation economy we seek to build in Canada, and that we seek to support through this summit.

*Feridun Hamdullahpur,
University President & Vice-Chancellor,
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The Waterloo Innovation Summit

Held annually in Waterloo Region, the Waterloo Innovation Summit is Canada's premier innovation conference. In 2015, the Summit was hosted in partnership by the University of Waterloo and Communitech, Waterloo Region's innovation hub. The event convenes a global audience of public and private sector decision-makers to foster conversations focused on how to build robust innovation ecosystems and nurture the firms and entrepreneurs that will generate long-term prosperity and growth.

Long-recognized as Canada's most innovative university, the University of Waterloo is well positioned to lead a global innovation conversation. As the nucleus of a high-tech and innovation hub, the University's strengths include its focus on experiential education and entrepreneurship and a global reputation for research excellence.

Since 1997, Communitech has helped facilitate the development of talent and a globally-competitive technology ecosystem in Waterloo Region. Communitech is an industry-led innovation centre that supports, fosters and celebrates a community of nearly 1,000 tech companies.

The DEEP Centre

The Centre for Digital Entrepreneurship and Economic Performance (DEEP Centre) is a Canadian economic policy think-tank based in Waterloo, Ontario. Founded in 2012 as a non-partisan research firm, the DEEP Centre's work shapes how jurisdictions build fertile environments for launching, nurturing and scaling companies that will thrive in an increasingly connected world. The DEEP Centre provides objective research and advice on the changing drivers of success in the global economy and the critical interconnections between technology, entrepreneurship, and long-run economic performance. Our goal is to help policy-makers identify and implement powerful new policies, programs, and services to foster innovation, growth, and employment in their jurisdictions.



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Executive Summary: Building Resilient Ecosystems

Hosted by the University of Waterloo and Communitech on September 16-18, 2015, the Waterloo Innovation Summit (WIS) brought together over 280 senior public- and private-sector decision-makers and leaders to discuss the development of effective innovation ecosystems. Over the course of three days, policymakers, investors, startup support organizations, anchor companies and entrepreneurs shared best practice and a vision for the future. Key insights of each keynote speech, panel discussion and fireside chat are available at: <http://waterlooinnovationsummit.com/blog>

A series of key insights and actionable priorities help crystallize the importance of the event. In particular, leaders from across sectors agreed that fulfilling the promise of the global innovation economy remains tied to the development of modern digital and physical infrastructure, improved industry-academic collaboration and the adaptation of government, academia and incumbent firms to the processes and pace of change in a dynamic 21st century knowledge economy. To be sure, these changes and initiatives will build on the significant public and private investments already made into entrepreneurial and innovative ecosystems around the world. But to fully realize the value of these investments and to harness the opportunities brought by disruptive technological change will require a process of follow-on learning, adaptation, investment and partnership creation across both the public and private spheres.

The following report highlights three key themes that emerged as central during the 2015 Waterloo Innovation Summit. These three themes are *Foundations for Growth*, *Scaling Up*, and *Embracing Risk and Disruption*. The report provides a brief review of each theme as well as links to follow-on reading material and related WIS insights. Alongside these reviews is a series of immediately actionable priorities for the further development and refinement of innovation ecosystems around the world.

Figure 1: The Waterloo Innovation Summit – 50 hours of conversation distilled





Why do Innovation Ecosystems Matter?

As Michael Porter wrote in his work on the *Competitive Advantage of Nations*, “the nature of economic competition is not equilibrium but a perpetual state of change.” Understanding these processes of change, and the role of different actors within them, is at the heart of the Waterloo Innovation Summit and its efforts to build more effective innovation ecosystems. Waves of creative destruction generated by processes of technological and economic change create challenges for individuals and institutions at all levels. Effectively managing these processes requires the development of environments – or ecosystems – that can absorb, transmit and adapt to continuous disruption on a massive scale. Whether we call it creative destruction or continuous disruption, one thing has become obvious over the last decade: the volume and rate of this change is accelerating dramatically.

The most successful innovation ecosystems are not rigid hierarchies. They are networks of multiple types of actors – public, private and a variety of intermediaries in between. And these ecosystems, if properly facilitated, are far more resilient to the potentially disruptive and negative impacts of change. As Feridun Hamdullahpur, president and vice chancellor of the University of Waterloo noted during the Summit, “Truly innovative economies are anti-fragile. They don’t just remain resilient in the face of change, rather they thrive on it.”

Nurturing successful ecosystems, and in turn developing the multiplicity of stakeholders that are contained in each, is challenging. As Table 1 highlights, a successful ecosystem relies on a complex mix of enabling inputs that cross sectors and participants.

Table 1: Ecosystem Inputs

1. Talent across sectors and disciplines enabled by strong links with world-class post-secondary institutions
2. Enabling infrastructure and financing environment
3. Government leadership in both policy and regulation
4. Business culture that embraces risk and experimentation
5. Anchor industry firms who absorb and circulate talent and ideas into their local ecosystems
6. Universities that remain on the cutting edge of research, teaching and experiential learning

Enabling an ecosystem for high-growth requires a break from the status quo not just amongst entrepreneurs and business leaders. It also requires a new approach to problem solving amongst academics, educators, investors and policymakers. As Stanford University professors Victor Hwang and Ade Mabogunje note in an article on innovation ecosystems, the key is “how to design systems that foster valuable interactions among its actors. How can leaders engineer serendipity? How can they nurture more connectivity and diversity?”



WIS attendees from across sectors acknowledged the need to address these questions. Ontario Premier Kathleen Wynne captured the necessary adaptation required of government. In her opening address at the Summit, the Premier noted that “Government must look at itself and find ways to innovate within. This is a huge challenge given the entrenched cultures and systems in place but it is part of our requirement to support change and innovation outside of government.” Others, including Suzanne Fortier, principal and vice chancellor of McGill University, echoed the Premier’s comments, noting that universities must restructure how they deliver content and experiences to a new generation of students not content to sit in the classroom. Whether it be the world of governments or universities, these two leaders told Summit participants that the focus must be on redesigning both the structure and the processes of interaction within their respective ecosystems. Only if they do so could the ecosystems around them prosper.

Private actors play an equally key role in this transition. As BlackBerry CEO John Chen remarked during the Summit, successful ecosystems build on the knowledge and activity of large companies like BlackBerry. These anchor companies play an important role in developing talent and recycling it into the broader ecosystem, as well as playing the role of host for new ideas and new innovations acquired through acquisition. Investors, public and private, play an equally important role. As Katherine Barr, general partner at Silicon Valley-based Mohr Davidow Ventures noted, venture capital partners can help young firms build a roadmap for a future that company founders have rarely travelled. A properly functioning ecosystem, according to Ajay Royan, co-founder of Mithril Capital Management, must subsequently have the ability to absorb and recycle experience and funding from entrepreneurs, investors and company executives upon exit, no matter whether defined as successful or not. As Steve Blank said, “In Silicon Valley, we don’t call founders whose firms fail ‘failures,’ we call them ‘experienced.’”

Tied to these ecosystem partners is the need to properly understand the inputs and outcomes of our public and private investments into innovation ecosystems. Collecting better data on firm and entrepreneur outcomes is key to enabling better decision making according to Jonathan Ortman, president of Global Entrepreneurship Networks. Understanding how these investments and subsequent outcomes stack up against other comparative jurisdictions is equally important, according to the co-founder of Startup Compass, JF Gauthier. And here is where the importance of developing, nurturing and refining an innovation ecosystem matters most.

Take, for example, the Canadian situation. Thanks to both public and private investments, Canada has developed one of the most successful entrepreneurial ecosystems in the world. The 2014 Global Entrepreneurship Monitor Report found that Canada is second only to the United States in the share of the working age population either engaged as an entrepreneur or working directly for one. And as the number of entrepreneurs has grown in recent years, the population of ecosystem support organizations has exploded exponentially. While only a handful of business incubators, accelerators, and innovation hubs were in operation a decade ago, the country now boasts a network of more than 140 such organizations providing services and support for entrepreneurs across the country.



Despite these successes, it is clear that much work remains to be done. Increasingly strong foundations are not yet being translated into the creation and growth of globally competitive firms. Indeed, Canada's overall performance in the creation of the type of high growth firms that are key to employment growth and economic prosperity still lags behind other comparable ecosystems and economies. This underperformance highlights that moving from a focus on startups to scaleups is the next challenge waiting for both public- and private-sector policy makers in Canada, and abroad.

The opportunities and challenges facing Canada are at once unique and universal. Jurisdictions around the world continue to struggle to facilitate the confluence of funding, talent and ambition required to build world-class startup ecosystems. As the number of startup companies continues to expand, so too does the number of countries seeking to create the type of innovation ecosystems that can nurture those firms from start-up to scale-up and beyond. Indeed, while the first true ecosystem may have been born in Silicon Valley, the movement has grown to include centres such as Sao Paulo, Beijing, Moscow and Bangalore. A recent study by the Asia Pacific Foundation, for example, noted that there are now over fourteen hundred incubators operating in China, representing a nearly fourfold increase over the last decade.

Around the world, decision-makers are faced with the same question: how can we create robust, sustainable, and inclusive growth in an environment of continuous disruption and change?

Building more resilient innovation ecosystems is the answer.



WIS THEME 1: Foundations for Growth

While successful ecosystems are each unique, they share a set of common foundations that are necessary – but not sufficient – to promote innovation and entrepreneurship. Launching and nurturing a healthy innovation ecosystem requires a solid base of institutions and partnerships among academia, government and the private sector. Indeed, as Jonathan Ortman noted, bringing together a variety of perspectives remains key to ecosystem building and growth.

Universities are central. Noting that the geography of innovation is “not flat, but spiky,” University of Toronto President Meric Gertler highlighted the important role universities play in stimulating innovation and prosperity as critical partners with their host regions. Universities operate as recruitment agencies for students, faculty and specialized professionals who feed the broader ecosystem. But the relationship is not one-way. Rather, universities thrive in environments with rich human capital and a high quality of life.

Government’s role is crucial. Ontario Premier Kathleen Wynne and Mariana Mazzucato (author of *The Entrepreneurial State*) reminded us that many major technological innovations have resulted from public sector leadership. Where government provides vision, resources, and mission-oriented leadership, it plays a critical role in creating ecosystems that can survive and thrive.

Finally, no ecosystem can flourish without the participation of individuals and private sector organizations – be they entrepreneurs, venture capital investors, or anchor firms – that drive value-creation and economic prosperity. These essentials are not just material but cultural. Successful ecosystems need individuals willing to take risks, and successful people and companies willing to ‘pay it forward’ to the next generation.

Who should lead? On that question, opinions have always, and probably will always, differ. But each group has a necessary role to play. Crystal clear, though, is that all actors must be present and actively engaged.

Required Reading:

Mariana Mazzucato,

[*The Entrepreneurial State*](#)

Kevin Lynch & Iain Klugman,

[*“Toronto-Waterloo corridor could be Canada’s own Silicon Valley.”*](#)

Victor Hwang & Ade Mabogunje,

[*“The New Economics of Innovation Ecosystems.”*](#)

Key WIS Insight:

There are huge structural and environmental challenges in our economy. None will be solved passively by markets or actively by governments alone. We need to debunk innovation myths and find new ways to work together and grow.

Ontario Premier Kathleen Wynne

Action Items:

- Better enable industry-academic partnerships, including funding for industry-relevant problem labs
- Focus on building effective research and development support systems
- Invest in necessary infrastructure and connectivity



WIS THEME 2: Scaling Up

Steve Blank threw down the gauntlet for participants: forget about trying to replicate Silicon Valley. It's not possible. Instead, focus on whether you are content to be the 'farm team' that sends talented people and companies to Silicon Valley. What will it take to create an environment where these same players can hit home runs at home? Your destiny, exhorted Blank, is in your own hands.

Blank proceeded to use Waterloo as an example. While Waterloo might be the second most intense startup capital in the world behind Silicon Valley, it lags when it comes to the creation of the kind of high-growth firms that drive employment and productivity growth.

How can ecosystems struggling with the issue of scale build on their success to compete with the best in the world? Bjoern Lasse Herrmann, CEO of Compass, highlighted two key factors: money and talent. Noting Waterloo's high concentration of startups, Herrmann nevertheless pointed to problems in access to early stage funding. Indeed, a number of speakers highlighted the lack of venture capital funding as a major impediment to firm growth.

On the talent side it is not just scientists and engineers, but also experienced managers who will help founders move through the start-up phase to effectively scaled-up global firms. In this regard, smaller ecosystems can suffer from a too shallow talent pool. Filling this pool will require Infrastructure investments, streamlined immigration processes, university-led management development programs more suited to market requirements.

Finally, while all ecosystems need talent and money, they each have specific strengths that need to be identified and built on. As Feridun Hamdullahpur noted, the key for smaller ecosystems and markets is not to duplicate and replicate. Rather they must assess their comparative advantages and identify opportunities for collaboration across ecosystems and ecosystem actors.

Required Reading:

DEEP Centre Inc, [*"A Lynchpin in Canada's Economic Future: Accelerating Growth and innovation with a World-Class Business Acceleration Ecosystem."*](#)

Compass, [*"The Global Startup Ecosystem Ranking 2015."*](#)

Kauffman Foundation, [*"The Importance of Young Firms for Economic Growth."*](#)

Key WIS Insight:

Every ecosystem needs to build on the unique capabilities it has. We can't copy and paste the Valley or Tel Aviv. Rather, there's an element of Engineered Serendipity to it that we need to understand and build upon.

Ajay Royan, Mithrill Capita

Action Items:

- Move beyond startups to focus resources, mentorship and programming on scale-ups
- Build a competitive immigration policy focused on high-tech management talent
- Invest in infrastructure and connectivity



WIS THEME 3: Embracing Risk and Disruption

Risk. Innovation. Disruption. What do these words really mean? What are their implications for budding and existing ecosystems? Is the focus on ecosystems even appropriate? Or, as Communitech's Steve Currie provocatively inquired, is this all just a fad?

A number of WIS participants helped provide answers to these questions. Noting that "most people have little awareness of what's coming down the pipe," Salim Ismail pointed to the confluence of rapid digitization and new business models that are driving massive disruption and exponential change in established industries. Noting the potential for new technologies to drop the cost of demand and supply exponentially, he highlighted the movement from problems of 'scarcity' to ones of abundance.

For the best entrepreneurs and innovators, this rapid disruptive change provides an incredible opportunity for creativity and growth. As Katherine Barr noted, the best entrepreneurs will "swing for the fences, be massively disruptive and think five to ten years ahead of the curve. Don't just innovate for now." For ecosystems, the opportunity is equally clear. "Until you can point to companies that are changing the world," Barr said, "you aren't there yet."

For larger and more established organizations, disruption presents a more significant challenge. As Suzanne Fortier warned, universities must adapt to a new generation of students demanding less separation between the classroom and the world. Large corporations, as Jennifer Smith of Christie Digital noted, must overcome cumbersome internal processes that stifle innovation and engage openly with entrepreneurial ecosystems.

The challenge is perhaps the starkest for government. Can the public sector embrace Mariana Mazzucato's vision of mission-oriented leadership? Or as Salim Ismail cautioned, will top-down government – and even democracy – become untenable?

Required Reading:

Salim Ismail et al. Exponential Organizations: [*Why new organizations are ten times better, faster, and cheaper than yours \(and what to do about it\)*](#).

NESTA & Bloomberg, [*The teams and funds making innovation happen in governments around the world*](#).

Deloitte, [*"Age of Disruption: Are Canadian Firms Prepared?"*](#) Future of Canada Series.

Key WIS Insight:

Our intuition and understanding is flawed. We tend to make plans based on linear change but are seeing exponential change.

Salim Ismail

Action Items:

- Focus on the impossible through public contests
- Extract better data about our ecosystems. You can't improve what you don't measure.



Conclusion and Next Steps

The challenge of building successful innovation ecosystems is about creating environments that nurture creativity, entrepreneurship, and value creation. At a broader level, however, ecosystem building is ultimately about cultivating dynamic environments that can adapt to the challenges and seize the opportunities wrought by ongoing processes of rapid, disruptive change.

As Suzanne Fortier reminded us, being smart and creative is no longer enough to ensure success. Individuals and companies need to be resilient in order to be equipped to sail through the roughest of storms. In that vein, a number of WIS speakers laid out key challenges – from the local to the global – facing entrepreneurs, large companies, government and societies. Mariana Mazzucato challenges us to work to create smart, sustainable, and inclusive growth. Salim Ismail goes even further, arguing that we ultimately need to “re-architect all mechanisms through which we run the world.” Finally, Steve Blank posed a more local challenge, albeit one with national and global implications: You are in charge of your own destiny. What do you want your ecosystem to be?

Building a resilient innovation ecosystem requires talent, technology, and money. But these three factors alone are not enough. Thriving ecosystems are emergent. They are greater than the sum of their individual parts. And healthy ecosystems are defined not only by the presence of individual factors, but by the ways in which the network participants interact, how that network acquires new knowledge about the world, and how that network is structured to produce specific outcomes. At its best, as Ajay Royan noted, such networks constitute a “super-tribe” of peers that both “give back and pull forward.” And when the pieces gel together, as Royan notes, it demonstrates clearly “that Silicon Valley is a state of mind.”

But the complexity of resilient innovation ecosystems cannot deter us from the task at hand. As Waterloo Region itself demonstrates, with the right partners around the table, strong ecosystems can be built. Maintaining and enhancing world class ecosystems and, by extension, the health of broader economies requires that all parties come together to identify strengths on which to build and weaknesses to be improved. As the list of seven “Actions that Build Innovation Ecosystems” highlights, significant effort, investment and coordination is needed across sectors and levels of government to ensure that the promise of the global innovation economy is fulfilled.

In closing the Summit, WIS Chair David Fransen challenged participants to fearlessly identify both the strengths and the weaknesses in their respective ecosystems. Channeling Steve Blank and Katherine Barr, Fransen concluded by exhorting the gathered leaders to swing for the fences. The priority actions that follow are necessary steps towards this goal.



Actions that Build Innovation Ecosystems:

1. Invest in Necessary Infrastructure and Connectivity

Fully developing a region's innovation ecosystem potential means making the rapid, instinctive movement of talent, capital and ideas a priority. Seoul's arrival as an innovation hub is no doubt tied to its status as the world's most wired city thanks to ongoing billion-dollar investments in digital infrastructure. Investments in physical infrastructure are just as important. In Canada, investing in the Toronto-Waterloo Region corridor is a necessary next step.

2. Move Beyond Startups to Scaleups

Recognizing the significant contribution that high-growth companies make to employment and economic prosperity, jurisdictions around the world are focusing increasing attention on 'the art of scale.' And while all ecosystems are seeking to nurture the types of high-potential firms that will serve as anchors for future growth, performance in this area remains uneven. Canada, a clear underachiever, must concentrate resources, mentorship and programming in this area as a necessary next step in the evolution of its innovation ecosystems.

3. Extract Better Ecosystem Data

You can't improve what you don't measure. While the availability of data within and about innovation ecosystems varies, the paucity of consistent, standardized data related to significant public investment in startup assistance organizations, venture capital funds and other systems of public support undermines the ability of policymakers to engage intelligently and effectively. This information gap, moreover, undermines the ability of actors to learn, adjust and – ultimately – to build better ecosystems. This gap needs to be addressed.

4. Take a more Aggressive Approach to the Recruitment of High-Tech Management Talent

Among the most significant challenges facing high-growth firms is a dearth of management talent. While developing this talent organically is a must, firms that currently demonstrate the clear potential to become global powerhouses cannot afford to wait. They need this talent now. Actually, some of them needed it yesterday. Canada's private and public sector leaders must consider how best this talent can be identified, recruited, and moved to where they are needed.

5. Better Enable and Support Industry-Academic Partnerships

Large incumbent firms play an integral role in the economy and in the growth of startups and small and medium size enterprises (SMEs). However, while the largest firms have easy access to academic partnerships, SMEs struggle to configure productive industry-academic relationships. Funding for industry-relevant problem labs structured akin to InnoCentive's crowdsourced problem solving platform is a necessary next step.



6. Focus on Building Effective Research and Development Support Systems

The movement to create innovation ecosystems (or startup communities) has become a global phenomenon. Policymakers are increasingly recognizing that this is where the most important economic growth happens. That said, they are not moving as quickly to retool their R&D support policies. How and where this support is delivered is important. Jurisdictions that underperform with respect to business expenditure on research and development (BERD) or gross expenditure on research and development (GERD) must reconsider both the scale and method of their funding systems. Meeting these challenges requires a focus on outcome-oriented policy.

7. Pursue Disruption

While the aforementioned focus on business investment is necessary, there are also other innovative ways to create a more aspirational business and technology culture, one that is not only capable of identifying and adapting to incoming disruptive forces but capable of pursuing and promoting the disruption itself. Initiatives such as the X-Prize Foundation and the Elon Musk's Hyperloop are examples of how the world's best and brightest are invited to take on seemingly impossible challenges in return for very large monetary rewards and contracts. The dynamics set in train by these competitions generate teams and technologies which simply would not have existed otherwise. This phenomenon, born and perfected in Silicon Valley, is worth considering by others as a very effective device for deliberately generating disruption in pre-selected areas.