

## UPDATE - 2019



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# Introduction



The May 2017 report, *Seizing the Opportunity: Building the Toronto Region into a Global Fintech Leader* (the “original report”), jointly prepared by Toronto Finance International, Accenture, and McMillan LLP, presented Toronto as an emerging global ecosystem for burgeoning financial technology start-ups to begin their journey and grow with confidence. The original report also recommended actions to bolster the ecosystem further. This year we revisit the Toronto region fintech ecosystem to understand how we have progressed.

The original report offered detailed insights into the Toronto region fintech ecosystem (Part 1. *Toronto Region Fintech Ecosystem Market Scan*) by highlighting the region’s operational advantages as a fintech hub, most notably its position as a base for leading start-up accelerators, technology investors, and highly skilled talent. These factors helped the region as one of the growing global fintech ecosystems. The intent of this refresh is to assess the progression of the Toronto region ecosystem in recent years.

Earlier, we examined six technology trends of the Toronto region fintech ecosystem (Part 2 of the original report) and indicated the region’s potential to develop a global comparative advantage in Artificial Intelligence (AI) by leveraging globally recognized universities and a top-tier talent pool in related fields. This year, we study the Canadian landscape of four technologies, including AI, blockchain, cybersecurity, and quantum computing, with a focus on recent developments, key trends, and challenges within each technology’s landscape.

Regulatory and Policy Environment Analysis of the region (Part 3 of the original report) emphasized the need for a balanced regulatory framework for fintech start-ups. The fintech ecosystem participants viewed the existing regulatory framework as an impediment to innovation and growth. This year, we build on some of the key regulatory and policy developments federally and in Ontario since the original report was published, many of which are consistent with the recommendations made.

The original report positioned the Toronto region at number seven overall, alongside peers such as Hong Kong and Berlin, when benchmarked against 14 leading and emerging global hubs (Part 4 of the original report). This year we revisit the rankings of these global hubs with the inclusion of India (representative of Mumbai, New Delhi, and Bangalore), which is quickly establishing itself as a fintech hub, and whose rapid growth is attracting the attention of dominant fintech ecosystem players across the globe. Our research is based on quantitative analysis of data from various public and proprietary data sources in conjunction with interviews and discussions with various stakeholders of the ecosystem.

This year we update the report with the latest findings on maturity of the Toronto region fintech ecosystem, partnership models among its participants, proposed regulatory changes, and provide a comparative view of the key global fintech hubs.



## Part 1.

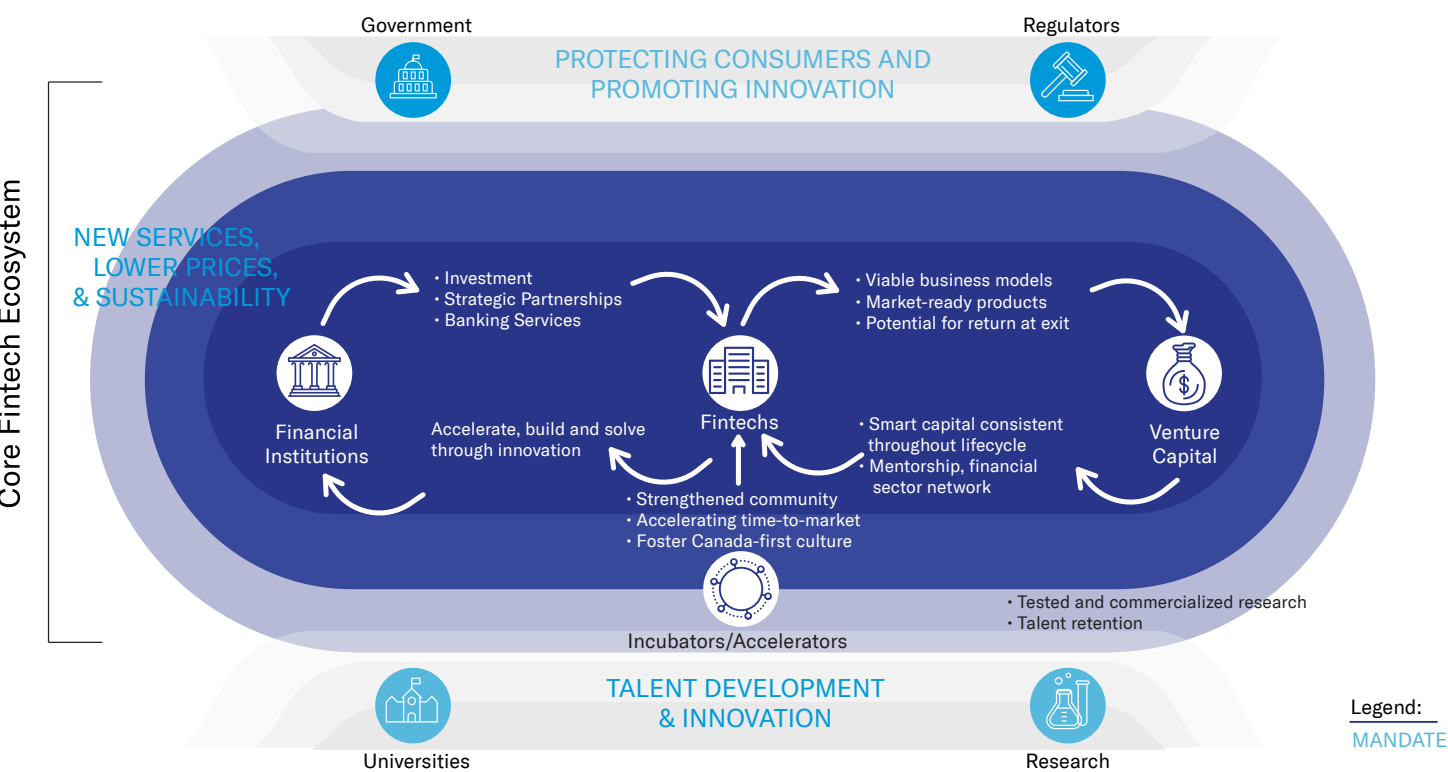
# Toronto Region Fintech Ecosystem Analysis

We begin by providing the overview of following key ecosystem participants and detailing the findings of fintech ecosystem research in the Toronto-Kitchener-Waterloo corridor (what we will refer to as “the Toronto region,” or simply “the corridor” or “the region”).

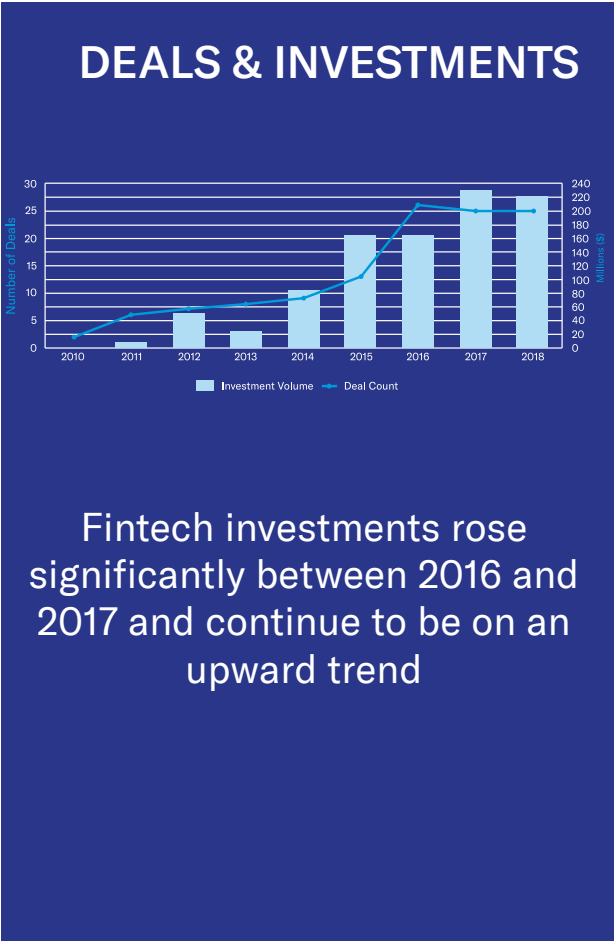
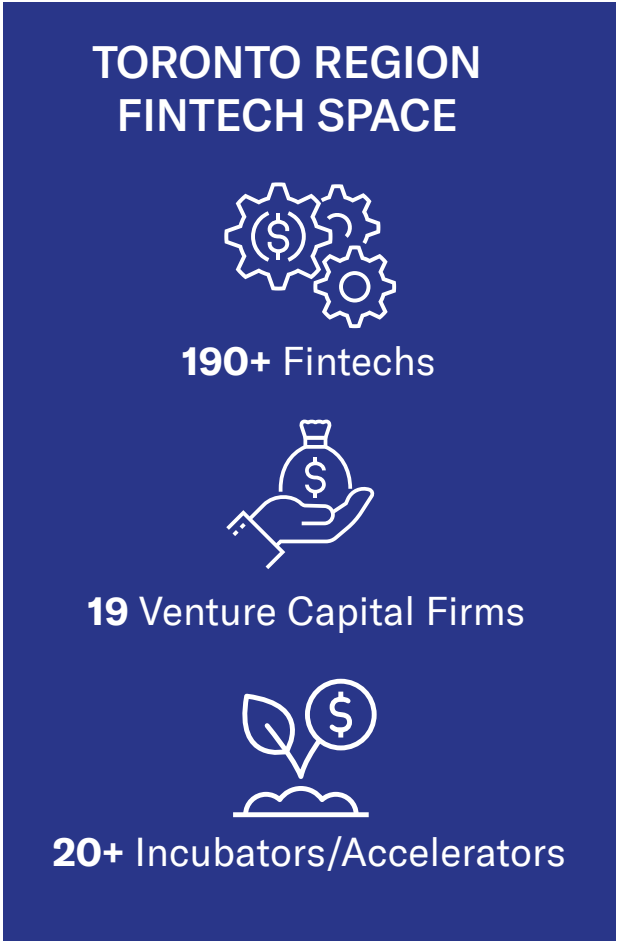
- Fintech Start-ups
- Venture Capital Companies
- Financial Institutions
- Incubators and Accelerators

We also identify common themes based on our research including discussions and interviews with ecosystem stakeholders. For a high-level overview of these participants' interaction within the ecosystem, please see Figure 1.

Figure 1: Fintech Ecosystem - Overview



Notes: Accenture analysis on fintech ecosystem participants and their interactions within the ecosystem.



# Fintechs

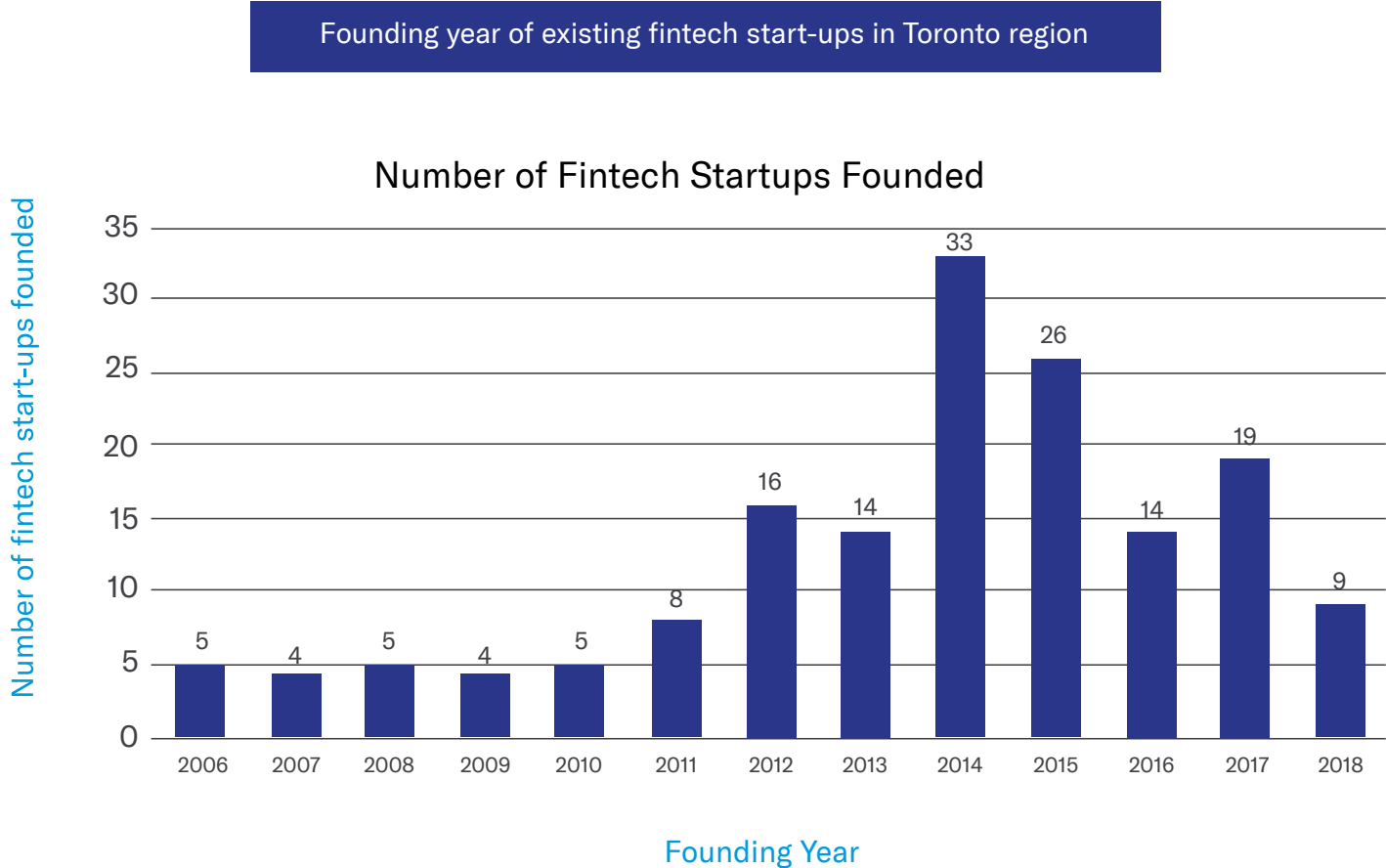
Fintech start-ups play a key role in the growth and innovation of the financial services industry through new or improved products and services. There are currently 194 such companies operating in the Toronto region of which 42 were founded on or after 2016.<sup>1</sup> Our definition of a fintech start-up is based on the following criteria (refer to Appendix A):

- companies founded after the year 2000
- headquartered in the Toronto corridor
- whose main products leverage technology to offer financial services that complement or compete with products provided by established FI's

## Declining trend in number of new fintechs founded in the region

In the Toronto region, the number of fintech start-ups founded each year has shrunk compared to 2014 (see Figure 2).<sup>3</sup> The trend can be attributed to increased maturity of the ecosystem, which has moved beyond the early growth stage. This is evident with the growing number of fintechs, 15, which have raised more than \$40 million – an increase from 6 as compared to the original report.<sup>4</sup> The venture capitalists (VCs) are increasingly focused on funding fintech start-ups looking to scale their operations. Our conversations with the fintech ecosystem leaders pointed to a trend where access to angel and pre-seed funding is becoming more difficult for founders of new fintech start-ups.

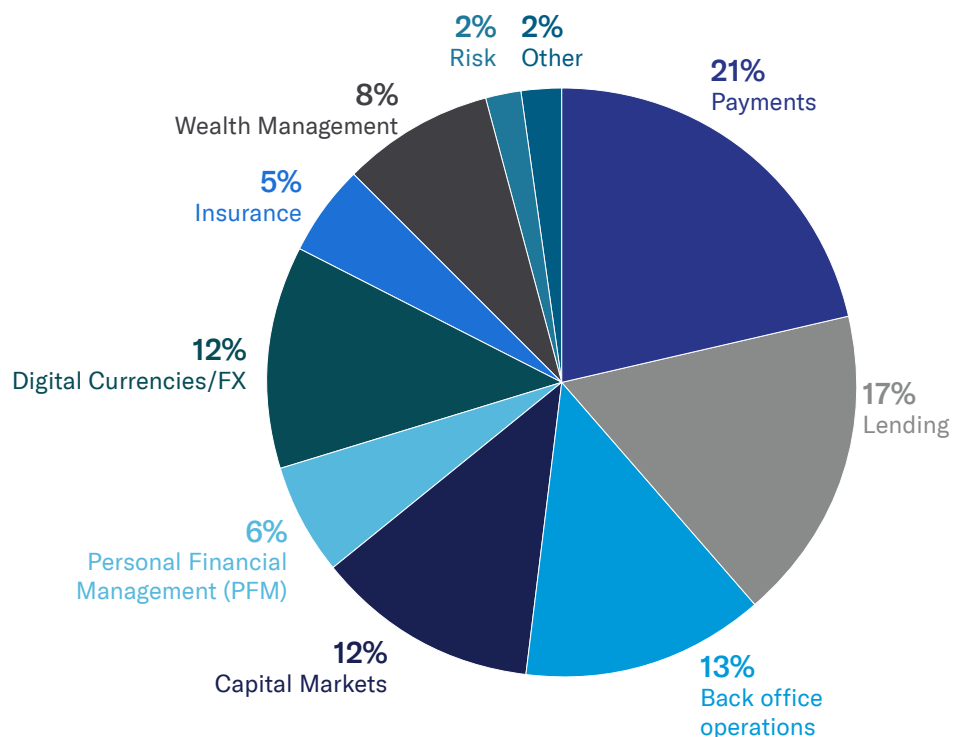
Figure 2: Founding year of existing fintech start-ups that are headquartered in the Toronto region<sup>2</sup>



Sources: Accenture analysis on CB Insights, Crunchbase, and Pitchbook Data.  
Notes: Please see Appendix A for the full list of these fintech start-ups. The Figure includes number of fintechs that were founded in 2006 or later to highlight growth trends. These numbers may vary from the original report with the inclusion of additional data sources.

Figure 3: Distribution of fintech start-ups by financial services offerings in the Toronto region<sup>5</sup>

#### Distribution of fintech start-ups by financial services offerings in the Toronto region



Sources: Accenture analysis on CB Insights, Crunchbase, and Pitchbook Data.  
Notes: Please see Appendix A for a full list of fintech start-ups.

## Fintech start-up's product and service offerings are growing

Fintechs headquartered in the Toronto region offers full spectrum of major financial services offerings, with the highest concentration, 21 percent, in payments, slightly lower than the original report – 26 percent (see Figure 3).<sup>6</sup> As fintech start-ups expand their products and services, digital currencies/forex offerings have doubled to 12 percent as compared to 6 percent in the original report.<sup>7</sup> Interestingly,

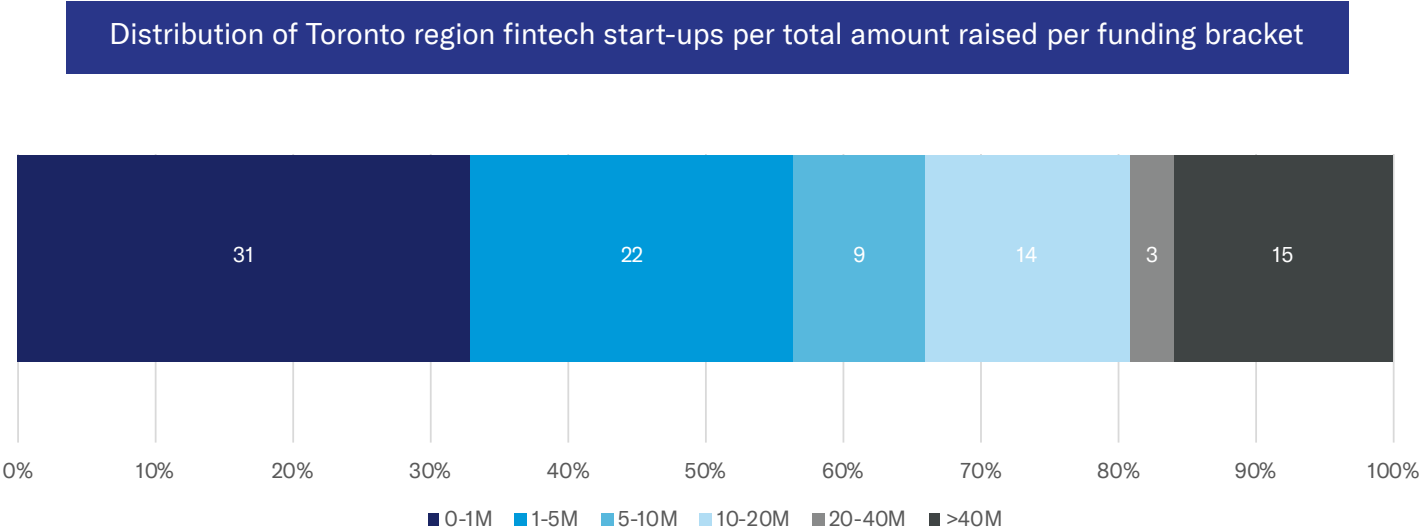
our research noted increased disruption in lending and insurance space. Executives also indicated that they are increasingly pitched with innovative ideas primarily focused on front office including sales origination while there is enormous potential in legacy back-office, B2B market, and claim processing which have largely remained unchanged for decades.

# Existing fintechs are scaling their businesses

Increased access to later stage funding, an emergence of fintech focused VCs, and the establishment of global accelerator offices in Toronto has led to an improved environment within which existing fintechs can scale their operations and offerings. There has been a significant rise in mid-stage financing of fintechs in the region with 41 companies raising more than \$5 million by 2018 as compared to 21 in the original report.<sup>8</sup> The number of companies raising more than \$20 million increased to 18 from 10 in the original report (see Figure 4).<sup>9</sup> 7 of the 15 fintechs, which raised more than \$ 40 million, reached the milestone within four years of foundation demonstrating the strength of the region in supporting the growth of start-ups beyond early stages.<sup>10</sup> We also found that there are several Canadian fintechs who have been recognized internationally. For instance, Wealthsimple and League have been included on the FINTECH 100 list for three years in a row.<sup>11</sup> For a list of leading fintechs in the region, please see Figure 5.

Wealthsimple and League have been included on the FINTECH 100 list for three years in a row.

Figure 4: Distribution of the Toronto region fintech start-ups by total financing raised (based on publicly disclosed information)<sup>12</sup>



Source: Accenture analysis on CB Insights, Crunchbase, and Pitchbook Data.



The region is growing at a rapid pace; however, it remains small compared to global fintech hubs

Toronto is seeing increased interest in fintech investments, boasting one of the highest growth rates globally with a CAGR of 118 percent (see Figure 9).<sup>13</sup> While fintech activity in the region is on the rise, it still trails leading global fintech hubs such as London, New York, and San Francisco. For example, as a percentage of global fintech deals by value (pre-IPO equity), from 2010 to 2018, Toronto represents 1 percent compared to other hubs which account for 5.4 percent, 8.1 percent, and 19.7 percent respectively (see Part 4 of this report for a global benchmarking of the Toronto region fintech ecosystem).\*

Boasting one of the highest growth rates globally with a CAGR of 118 percent.

Figure 5: Leading fintech start-ups in the Toronto region<sup>14</sup>

Leading fintech start-ups in the Toronto region							
 Borrowell	 CARTA WORLDWIDE	 coinsquare	 digIt	 DREAMPAYMENTS	 EQUIBIT GROUP	 ethoca	 FENTURY
 finaeo	 Financeit	 FLEXITI FINANCIAL	 foxquill	 FundThrough	 Hockeystick	 KOHO	 Kooltra
 League	 lendified	 Lending Loop	 nanoPay Frictionless Payments	 Nest WEALTH	 NexusCrowd	 Overbond	 paybright
 PitchPoint solutions	 planswell	 progressa	 Q4	 Quandl	 remitbee	 SECURE KEY	 Sensibill™
 shopify	 soundpays A BETTER WAY TO PAY	 STREET CONTEXT	 versapay	 wave	 Wealthsimple	 ZAFIN	 ZENSURANCE

Source: Accenture analysis on CB Insights, Crunchbase, and Pitchbook Data.

Notes: Our selection criteria for leading fintechs are as follows: (a) fintechs that have publicly disclosed more than \$500,000 in financing and (b) fintechs that have received considerable national media coverage for their products or services.

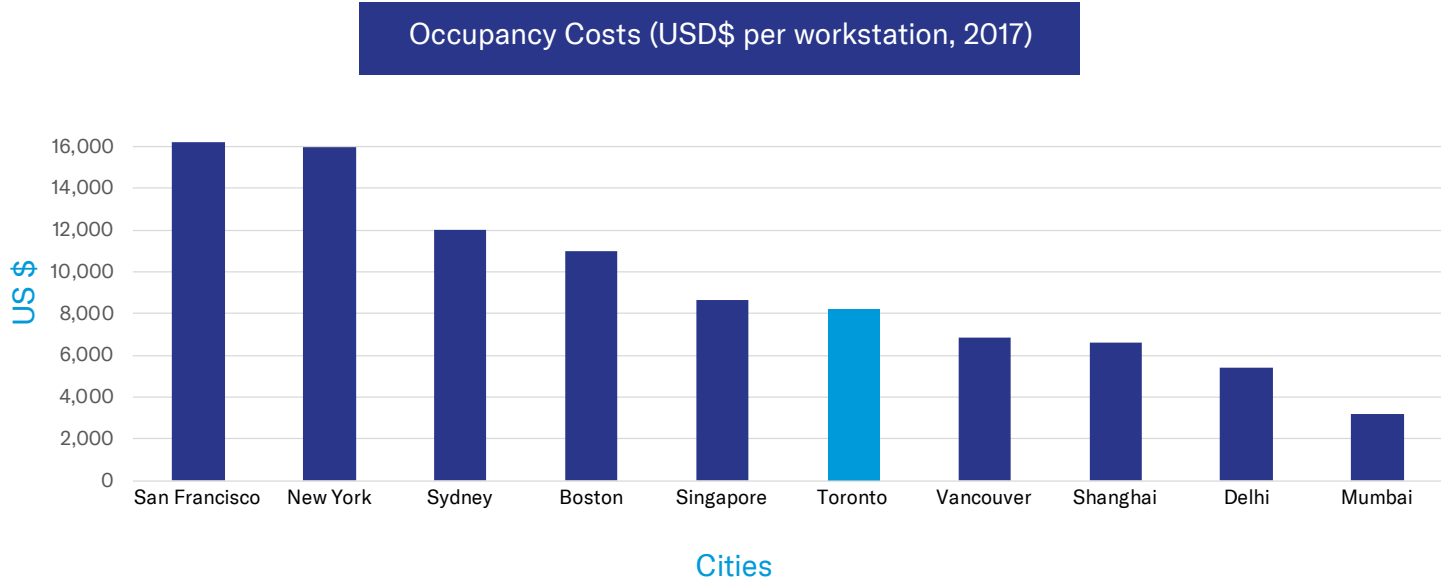
\* China numbers for 2018 are obfuscated and not included in the calculations.

# Operational advantage of the Toronto region over other fintech ecosystem

The Toronto region continues to offer a cost-effective environment to start a company. There are multiple factors which provide an operational advantage to such start-ups compared to other fintech hubs. The renowned universities in the region play a pivotal role in developing high quality talent that remains affordable due to relatively affordable salaries after adjusting for currency conversions. The relatively lower cost of infrastructure (see Figure 6) and affordable talent, allows start-ups to reduce their cash-burn rate, which is critical to their survival during early stages. Proximity to strong financial institutions in the region provides fintech start-ups with much needed access to customers, essential to test and improve their products, as they seek to grow their offerings (see Figure 11). In our interviews, various ecosystem participants indicated that the region is becoming increasingly attractive to VCs and global accelerators who are now discussing moving their offices to Toronto.

The region is becoming increasingly attractive to VCs and global accelerators who are now discussing moving their offices to Toronto.

Figure 6: Occupancy costs (USD\$ per workstation, 2017)<sup>15</sup>



Sources: Cushman & Wakefield, 2017

# Venture Capitalists

In addition to providing funds, venture capital firms support fintech start-ups with mentorship for the founders, executive talent identification, as well as industry contacts as start-ups seek to market their products and services with opportunities to scale their operations. In return, venture capital firms seek high return on their monetary investments. In recent years, the region has improved on some of the key gaps identified in the original report such as availability of fintech-focused venture capital funds and later-stage funding options.

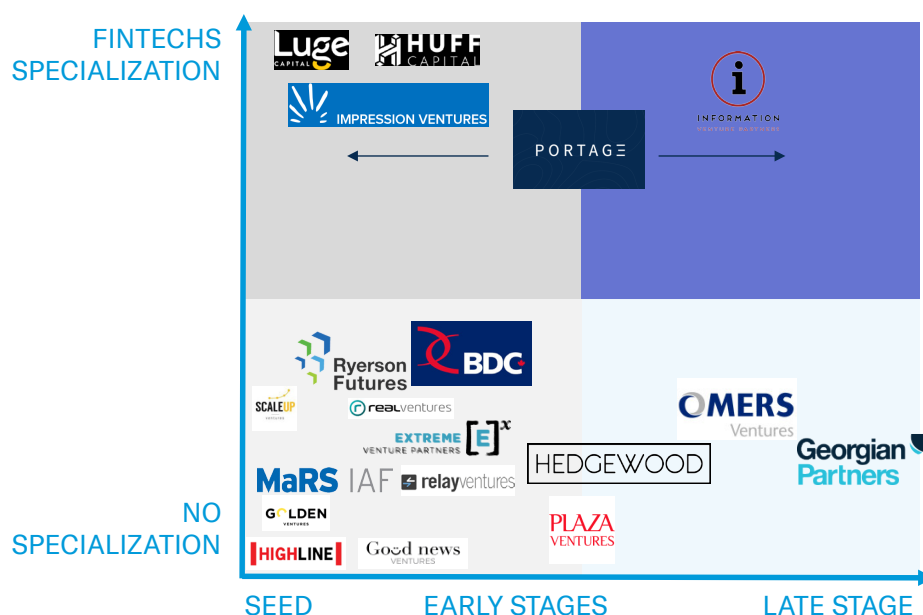
Our research on fintech funding in the region focused on equity investment (angel or venture capital). At the time of this report, we identified 19 venture capital firms that have made publicly disclosed investments in fintech start-ups (see Figure 7).<sup>16</sup>

## Emergence of fintech focused VC firms

In recent years, Toronto has witnessed an increased VC focus on fintechs as the industry is on the brink of major transformations in near future. For instance; Montreal based Luge Capital, a VC fund opened in October 2017, has a major presence in Toronto with a focus on investing in early stage fintechs.<sup>17</sup> Another notable VC is Roar Ventures which intends to support AI start-ups operating in the financial services industry.<sup>18</sup>

Figure 7: Venture capital firms in the Toronto region, by sector and investment-round specialization

### Toronto region-based venture capital firms investing in fintech start-ups



Notes: Venture capital firms in the Toronto region that have publicly disclosed investments in the region's fintech start-ups.

## Robust growth in funding

Toronto's funding environment has improved in the last several years, as proven by an increase in the value of pre-IPO equity financing deals in fintech start-ups. For instance, in 2014, the total value of pre-IPO equity deals was \$83.7 million; in 2017, the total deal value nearly tripled to \$230.4 million.<sup>19</sup> The accelerated investments continued in 2018 with total deal value of \$ 220.9 million across 25 deals (see Figure 8).<sup>20</sup> The Toronto region continues to be among the fastest growing fintech hubs in the world (see Figure 9).

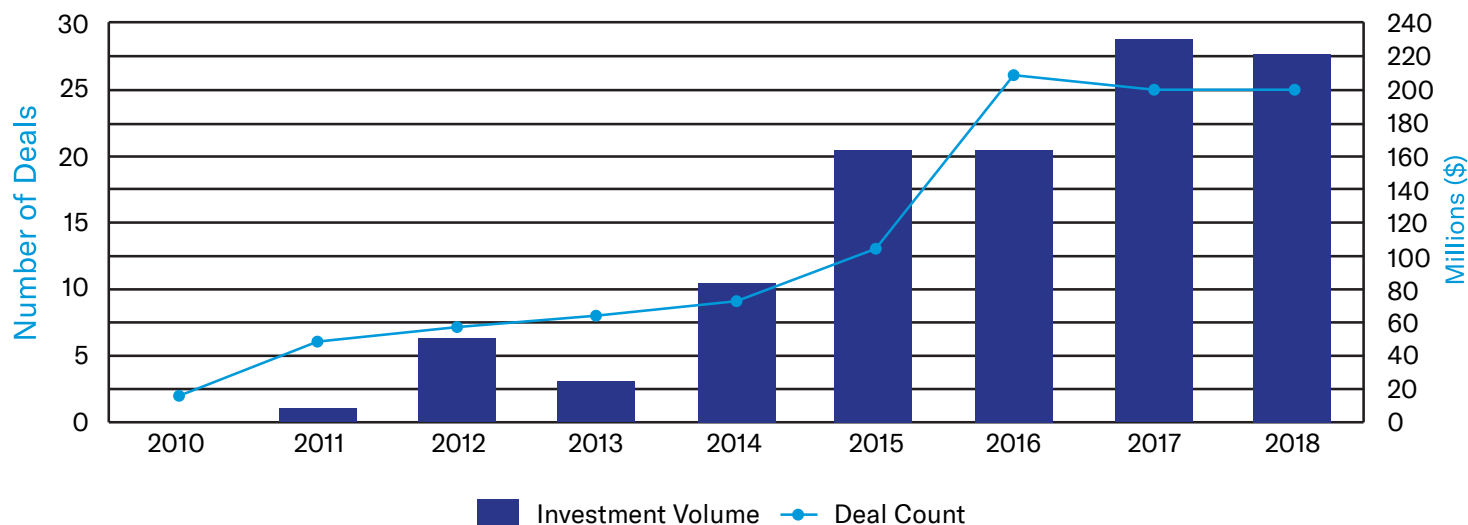
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## The Toronto region continues to be among the fastest growing fintech hubs in the world.

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Figure 8: Pre-IPO equity investment in the Toronto region fintech start-ups<sup>21</sup>

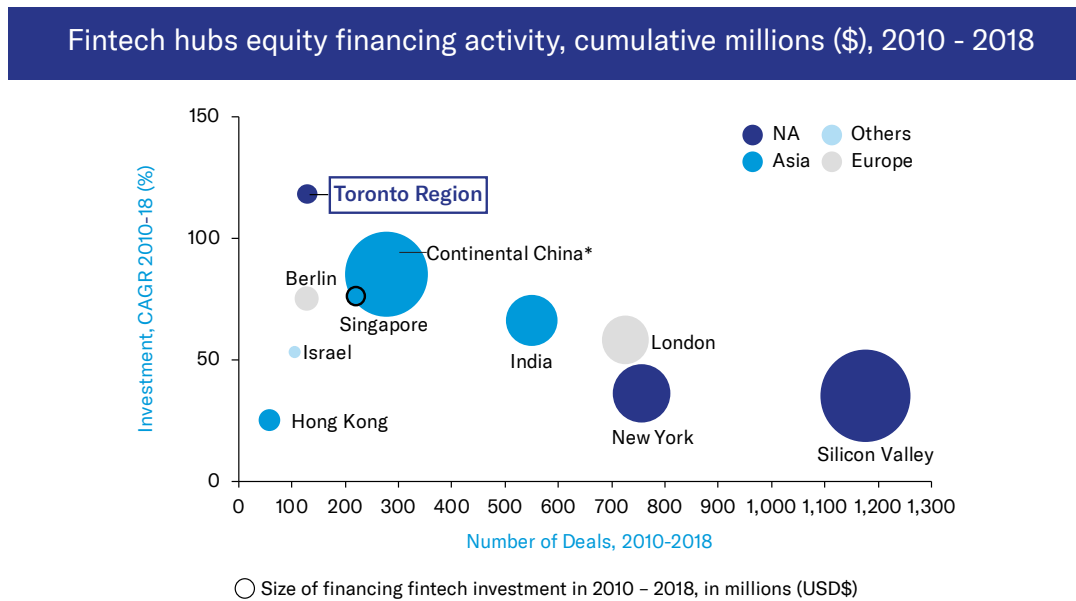
### Pre-IPO equity investment in the Toronto region fintech start-ups



Sources: Accenture analysis of CB Insights Data

Notes: Yearly volume of equity financing (Pre-IPO Angel, Seed, Series A+, and Private Equity) for fintechs currently operating in the Toronto region. For definition of funding rounds, please refer to Appendix C.

Figure 9: Fintech start-ups equity financing activity globally<sup>22</sup>



Sources: Accenture analysis of CB Insights Data

Notes: Annual volume of equity financing (Pre-IPO Angel, Seed, Series A+, and Private Equity) for fintechs currently operating in the Toronto region. For definition of funding rounds, please refer to Appendix C.

\* China numbers for 2018 are obfuscated and not included in the calculations.

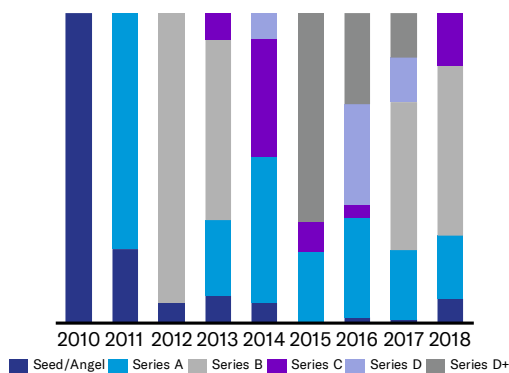
## Mid and later stage funding has improved in the region

Over the last two to three years, the region has seen significant improvement in mid and later stage funding (series A or beyond). With the Toronto region fintech ecosystem maturing and existing fintech start-ups expanding their businesses, investors

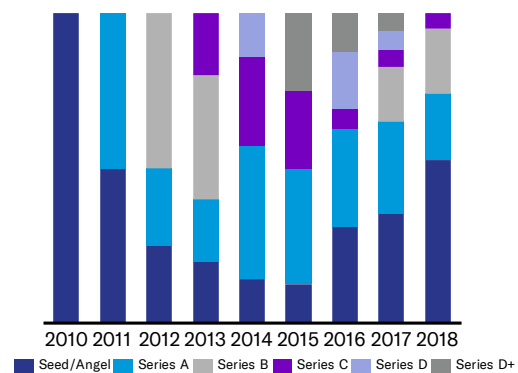
are now increasingly focused beyond angel or seed investments (see Figure 10) and have attracted many US VCs to the region. This has led to a situation where it is increasingly difficult for new start-ups to access early stage funding. This sentiment is echoed in interviews with stakeholders, who indicated that early stage investors are becoming more selective with new fintech start-ups.

Figure 10: Distribution of financing stages for fintech start-ups in the Toronto region<sup>23</sup>

### Equity financing distribution (by \$)



### Equity financing distribution (by # of deals)



Sources: Accenture analysis of CB Insights Data

Notes: Pre-IPO deal flows for current fintech start-ups in Toronto region. For definition of funding rounds, please refer to Appendix C

## Greater US VC investment in Canadian fintechs

The Toronto region is experiencing increased interest from US VCs, with about 43 percent of Canadian VC deals in 2018 are expected to include US-based investor participation which has consistently grown from 27 percent in 2014.<sup>24</sup> This has further improved funding availability in Toronto and, along with key mentorship opportunities for founders and access to executive talent, opens the start-ups to the United States' more sizable market. This, in turn, encourages fintech start-up's growth and helps cultivate industry relations to increase sales.

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**43 percent of Canadian VC deals in 2018 are expected to include US-based investor participation.**

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# Financial Institutions

Financial institutions continue to play an increasingly critical role in ecosystem growth as their active participation and collaboration provide fintechs with crucial mentorship and guidance (product feedback, navigating regulatory environments, etc.), access to resources (proprietary data and tools), financing needed to succeed, and access to a larger consumer base. In return, fintechs support financial institutions by rapidly advancing their offerings to customers through innovative products and services.

## Increased participation in the ecosystem

Canadian financial institutions are investing in creating a conducive environment for collaboration through partnerships with incubators, accelerators, and VCs along with experimenting with novel fintech products and services (see Figure 11 and Figure 12). For example, in October 2018, TD's unique Patent for Startups Program announced three inaugural start-ups - senso.ai, boro.one, and Cinchy.co - joining the program. The aim of program is to help start-

ups navigate patent processes and support them through seed-stage funding while allowing them to retain the rights to their technology and platforms.<sup>25</sup>

FIs now have dedicated innovation groups tasked with identifying fintechs or other partners who can help address their most pressing needs and business challenges through digital, innovative, and competitive solutions driven by new technologies. Engagement levels between incumbent financial institutions and fintech start-ups can range from experimentation to proof of concept to complete acquisition. For instance, in 2018, Travelers Insurance acquired a majority stake in Zensurance, a Canadian fintech offering purchase and management of insurance packages.<sup>26</sup>

## Key challenges of partnerships between FIs and fintechs

Although, the partnership between FIs and fintechs in the region has grown significantly in recent years, there are key challenges on both sides of the partnership. In our discussions with executives of Canadian financial institutions, one problem outlined was difficulty in finding the right fintech

Figure 11: Examples of partnerships between the Canadian fintech start-ups and financial institutions

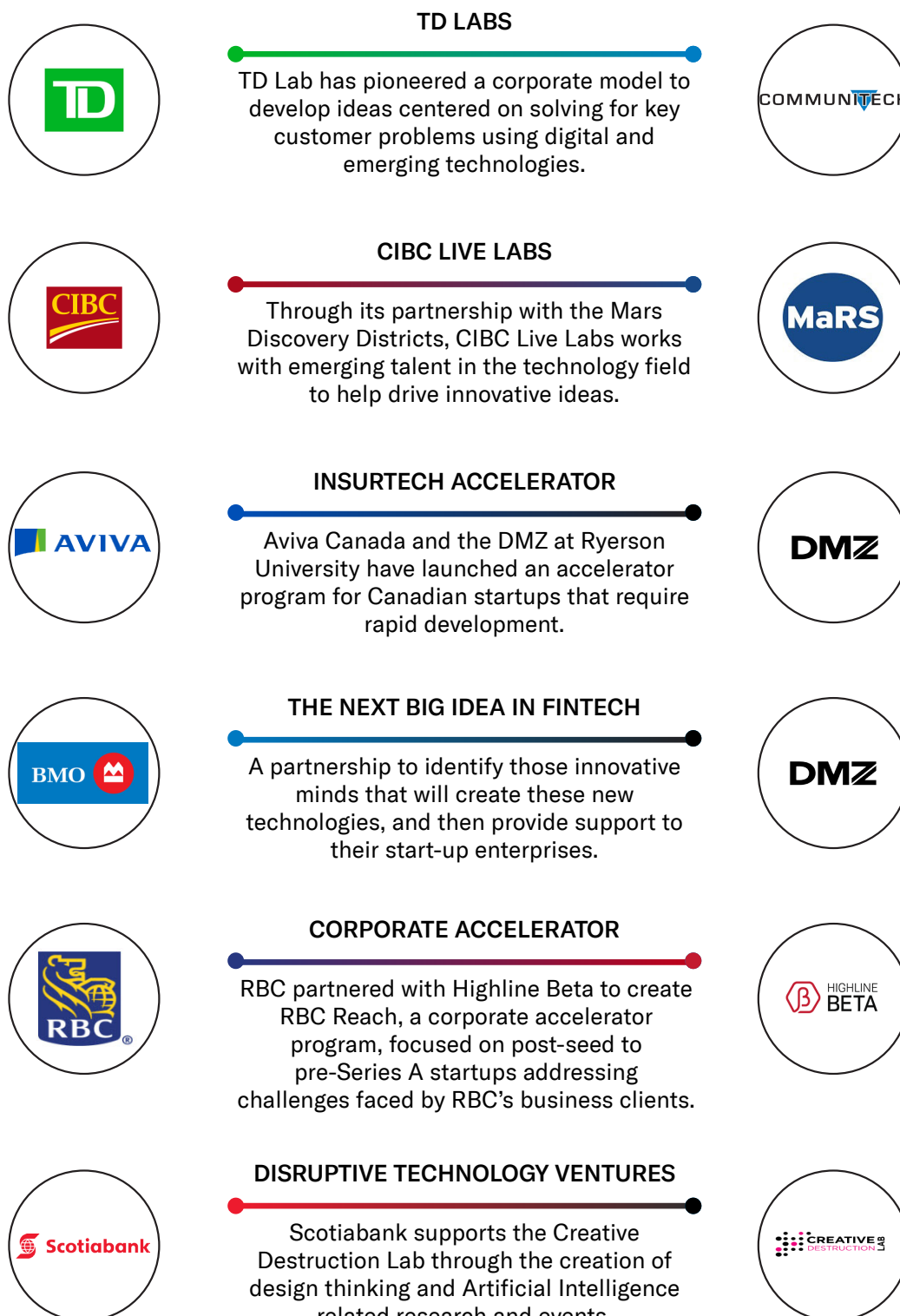


Note: Compared to original report, there have been notable increase in collaboration between Canadian fintech start-ups and financial institutions.

offering enterprise-ready products or services meeting the scalability and security requirements of FI's systems. The incumbents have remained cautious amid various cyber security attacks around the world, which can potentially cause financial and reputational losses. Also, with a relatively lower

technology adoption rate as compared to other global fintech hubs, Canadian businesses tend to look for proven solutions when partnering with fintechs (see Part 4 of this report - Global Fintech Ecosystem Benchmarking).

Figure 12: Examples of partnerships between financial institutions with incubators or accelerators





# Incubators and Accelerators

Incubators and Accelerators – many of which have academic and industry partnerships – provide essential services to fintechs in the form of office space, mentoring, and guidance, and structured, cohort-based programs aimed at developing, commercializing, and scaling innovative products and services.

In recent years, a significant number of incubators and accelerators have emerged in the region, supporting the development of a start-up ecosystem (see Figure 13 for the list of incubators and accelerators in the region). These programs, considered among the best in the world, have played a significant role in helping start-ups scale their business. In February 2018, Ryerson University's DMZ was ranked the number one university-based incubator in the world.<sup>27</sup> The fast-developing ecosystem of the region is also attracting global accelerators. In 2017, US seed accelerator Techstars became the first international accelerator to open a Toronto office, signaling the growing global perception of Toronto's market maturity.

As outlined in the original report, fintech-focused efforts by the ecosystem participants are essential for Toronto to keep pace with global fintech growth. The presence of fintech-focused accelerators in the region is helping start-ups to access specialized resources. For instance, Leadervest, a fintech-focused incubator, provides specialized mentorship to fintechs through an advisory consortium of fintech consultants. In another example, the Royal Bank of Canada announced the RBC Reach accelerator in July 2018, in partnership with Highline Beta, focusing on delivering innovative solutions to challenges faced by its banking clients.<sup>28</sup>

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**Ryerson University's DMZ was ranked the number one university-based incubator in the world.**

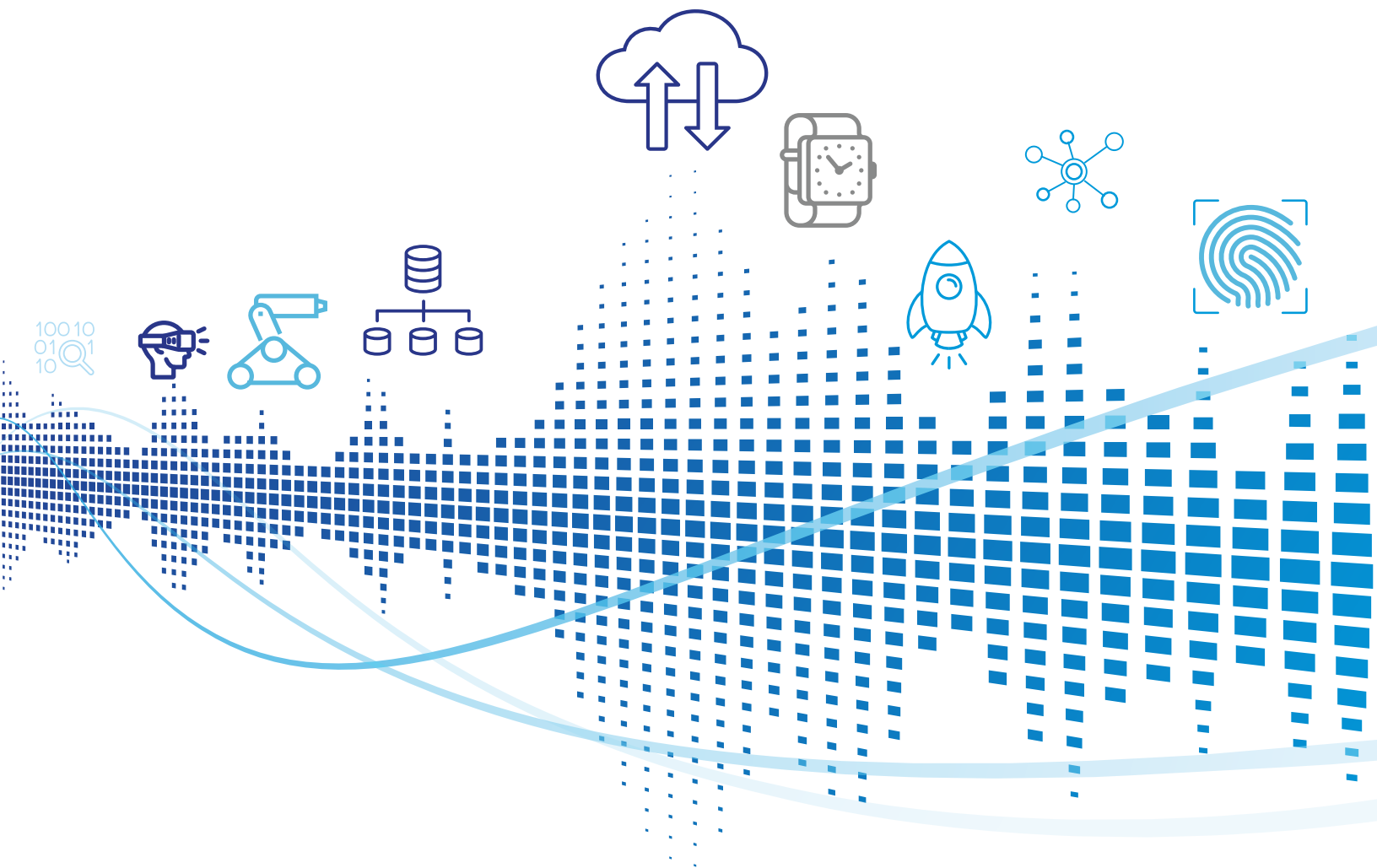
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Figure 13: List of incubators and accelerators in the Toronto region

Incubator/ Accelerator	Description
Accelerator Centre	The Accelerator Centre helps build sustainable, globally competitive companies with the potential to make a significant impact in the development of new technologies, the economy, and the community. It features a four phase, milestone-based program and mentorship model to help start-ups get their products to market faster, increase sales, and scale globally.
Communitech	Communitech supports tech companies at all stages of their growth and development – from start-ups to rapidly-growing mid-sized companies and large global players. It provides workspace, programs, and partners to grow start-ups into global companies.
Cookhouse Lab	Cookhouse Lab helps grow insurtech companies by providing a “test kitchen” in which insurers can collaborate and share knowledge. Innovation experts, legal counsel, designers, and entrepreneurs all come together to create the customer experience of tomorrow.
Creative Destruction Lab	Creative Destruction Lab is an accelerator based at the Rotman School of Management at the University of Toronto. The program is designed for massively scalable, deep-science, technology-based ventures that have the potential to transform the social, industrial, and economic landscape.
Decentral	Decentral is home to tech start-ups and entrepreneurs that focus on disruptive and decentralized technologies.
DMZ at Ryerson University	DMZ at Ryerson University offers a four-month growth accelerator for high-potential start-ups looking to grow and scale their business.
Extreme Accelerator	Extreme Accelerator assists international start-ups relocating to Canada.
FinTech Growth Syndicate	The FinTech Growth Syndicate provides start-ups and corporate innovators the tools and expertise they need to grow their businesses and accelerate their response to the changing needs of their clients.
Founder Institute	Founder Institute operates as a global early-stage startup accelerator which enables entrepreneurs to launch new technology companies.
HalTech Regional Innovation Centre	Focused on start-ups in Halton region, Haltech provides technology start-ups with mentorship, entrepreneurship, workshops, access to private funding, and grant programs.
IBM Innovation Space	The IBM Innovation Space is a Toronto-based incubator that provides start-ups with a collaborative space to innovate and disrupt the market.
ICUBE UTM	ICUBE UTM is part of the Institute for Management & Innovation. It provides a business accelerator for early-stage business development and commercialization services through curriculum, advisory services, workspace, speakers, and mentorship.
[IN]Cubes	INCubes offers several incubation programs. The INCubes Funnel Program is designed around core product and business deliverables. From there, companies enter the Acceleration Program, which is a hands-on program designed to help companies engage customers and investors early and effectively.

Incubator/ Accelerator	Description
Innovation Guelph	Innovation Guelph helps start-ups start, grow, and thrive by providing mentorship and business support services.
Leadervest	Leadervest is Canada's leading FinTech consulting incubator-accelerator to launch and globally scale Canadian startups.
MaRS District Fintech Hub	The MaRS District Fintech Hub connects the financial services sector with start-ups developing next generation technology in emerging payments, financial services, peer-to-peer transactions, alternative lending and crypto-currencies.
Next Canada	NEXT Canada is a national, non-profit organization that helps grow talent to build new ventures and encourage technology adoption.
OneEleven	OneEleven provides a peer network, investment capital, partners, on-demand services, and strategic support to help high-performing technology start-ups navigate growth.
Ryerson Futures	Ryerson Futures is an accelerator program focused on market-changing ideas and high-trajectory start-ups.
Techstars	The Techstars Accelerator program is a three-month mentor based program providing access to financial, human, and intellectual capital with focus on technology oriented companies.
Toronto Business Development Centre	The Toronto Business Development Centre provides a 3-month program for Canadian entrepreneurs. The incubator provides a wide range of tools and resources to help entrepreneurs stand out among the competitive Canadian landscape and scale globally.
University of Toronto, Hatchery	The University of Toronto Hatchery supports entrepreneurship and start-up launch by providing legal, accounting, marketing, and intellectual property services.
Velocity	Velocity is a leading entrepreneurship program at the University of Waterloo and the largest free start-up incubator in the world. Velocity provides the knowledge, tools, space, and network that start-ups need to be successful, from idea to product development to commercialization.
ventureLAB	VentureLAB helps technology entrepreneurs build high-growth, innovative, scalable businesses.
York Entrepreneurship Development Institute	The York Entrepreneurship Development Institute helps entrepreneurs create a business plan, executive summary, and pitch-ready business model through a 16-week program that includes formal academic lectures, workshop-based training in entrepreneurship, and mentorship by key industry leaders.

Notes: List and brief description of incubators and accelerators in the Toronto region.



## Part 2.

# Technology Trends

The original report highlighted that need to establish a leadership position in a specialization or capability to gain a comparative advantage over other hubs internationally, like Tel Aviv's global leadership in cybersecurity. In our interviews this year, almost everyone recognized Canada's leadership in artificial intelligence and the contributions of academia in producing highly skilled talent.

In this section of the report, we examine the key technology trends in the Toronto region focusing on both mature and early-stage technology capabilities, which are significant to maintain and drive high degrees of innovation within the region. In the sections below, we outline four technology trends and capabilities including artificial intelligence (AI), blockchain, cybersecurity, and quantum computing.

# Artificial Intelligence

Artificial Intelligence can be broadly defined as a constellation of technologies that can be combined to allow our machines to sense, comprehend, act, and learn – with particular emphasis to techniques leveraging statistical machine learning.<sup>29</sup>

Many businesses around the world are applying Artificial Intelligence across functions to achieve increases in revenues and profits while achieving efficiency gains. This typically starts with an Intelligent Automation journey validating the value in the technology with potential growth in scale and scope as the organization's AI capability matures. According to a global study conducted by Accenture, investments in AI are likely to boost cross-industry global revenue by 38 percent between 2018 and 2022.<sup>30</sup> This AI-driven business value in all industries is expected to reach \$3.9 trillion globally by 2022.<sup>31</sup>

Canada is considered among the world leaders in AI research with well-regarded academics playing a pivotal role in the development of this technology. Geoffrey Hinton, often known as the godfather of neural networks for his pioneering research in the area, is a professor at the University of Toronto. The City of Montreal is known for the highest concentration of researchers and students of deep learning in the world, with almost 9000 students in AI and related programs.<sup>32</sup> In 2017, the Canadian government committed \$125 million through the pan-Canadian AI strategy to establish Canada's international leadership in AI, in partnership with three newly established AI institutes – the Vector Institute in Toronto, the Alberta Machine Intelligence Institute (Amii) in Edmonton, and Mila in Montreal.<sup>33</sup>

AI provides incredible opportunities in the financial services industry across lines of business and functions. The application of AI focuses on improving customer experience, enhanced judgement, cost avoidance, and offering new products and services depending on the organization's adoption of technology and business priority. In 2016, the Royal Bank of Canada established the Institute for Research "Borealis AI," which aims to support its innovation strategy through academic collaborations with world-class research centers in artificial intelligence for exploration in machine learning theory and applications.<sup>34</sup> In January 2018, TD acquired artificial intelligence start-up Layer 6 AI to tap the technology's potential.<sup>35</sup> BMO started

offering artificial intelligence powered customer service in 2018 through Twitter and Facebook chatbots in partnership with Toronto based start-up Massively and Vancouver-based Finn.ai respectively.<sup>36</sup> In 2017, Scotiabank partnered with Toronto-based start-up DeepLearn.ing to develop an AI based tool to improve credit card collections.<sup>37</sup>

The Toronto region is well known for producing world class AI talent from globally recognized institutes providing deep AI expertise. Recognizing this, various global organizations have set up their AI research centers in Canada to partner with the leading AI ecosystem providing early access to talent and cutting-edge AI research. Although the Canadian ecosystem is maturing, it still suffers from brain drain, especially to the US, which has more established hubs, and offers more lucrative compensation.

Investments in Canadian AI start-ups continue to grow, demonstrating the perceived strength of the region's ecosystem and its global value proposition. Toronto has established itself with the highest concentration of AI start-ups in the world.<sup>32</sup> In July 2017, Element AI raised \$102 million in Series A funding from its investors.<sup>38</sup> Another Canadian AI start-up, Coveo, secured \$100 million investment from a US-based investment firm earlier this year.<sup>39</sup> Integrate.ai, a Toronto-based AI start-up, raised \$30 million in Series A funding in the Summer of 2018.<sup>40</sup>

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## Toronto has established itself with the highest concentration of AI start-ups in the world.

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Due to multiple factors, scalability remains a key challenge for Canadian AI start-ups. Businesses in Canada tend to experiment with new technology after it is proven in other markets, especially in the US and Europe, leading to delayed adoption. According to a 10-country survey conducted by Accenture, Canada ranked ninth on AI adoption rate ahead of Brazil and lags leading countries including the United States, China, the United Kingdom, and Germany.<sup>41</sup>

As ecosystem partners increasingly recognized the wide-ranging impacts of AI, “Responsible AI” has become one of the most widely discussed AI-related topics. It seeks to address the challenges of biased algorithms, data use permissions, accountability of decisions, and legal ramifications surrounding AI. In a survey conducted by Accenture, 63 percent of AI adopters indicated they had established “an ethics committee that reviews the use of AI”, with 70 percent conducting ethics training for their technologists.<sup>42</sup> Canada has seen multiple efforts to address this gap. The CIO Strategy Council co-founded by the Chief Information Officer for the Government of Canada, Alex Benay, is leading efforts to create ethical AI standards and policies. The current focus is on data access and privacy, along with ethical design and use of automated decision systems.<sup>43</sup> The Treasury Board Secretariat (TBS) of Canada is working on the responsible use of AI in government.<sup>44</sup> In November 2017, The Montreal Declaration, an initiative of the Université de Montréal, was announced for responsible development of AI, which aims to provide clear principles for how AI will respect well-being, autonomy, justice, privacy, knowledge, democracy, and for its own responsible development.<sup>45</sup>

## Blockchain

For centuries, businesses and, in some cases, entire industries have been built on the simple principle of trust between multiple parties, which requires countless sequential data reconciliations by constantly communicating data back and forth. However, this business of trust, beset with inefficiencies, is being disrupted and transformed with the advent of blockchain technology, a concept which is only ten-years-old. The technology can be defined as a distributed ledger that can record transactions securely and permanently between parties in which reconciliation is an integral part of the transaction itself. Blockchain is revolutionizing global economic markets by ‘sharing’ databases

to conduct transactions without the need for intermediaries which were previously required to act as trusted third parties to verify, record, and coordinate transactions.

Although nearly all industries are still in the nascent stages of blockchain adoption, global cross-industry spending on blockchain is expected to remain strong, with an average CAGR of 73.2 percent, reaching USD\$11.7 billion by 2022.<sup>46</sup> Financial services industry is expected to continue to lead the blockchain investments, with over 35 percent share of expected worldwide spending by 2022.<sup>47</sup> Recently, Brazil launched its first digital bank Pitalia, which offers financial services on blockchain<sup>48</sup> and companies in other countries such as Malta are applying for licenses to start similar banks.<sup>49</sup>

Blockchain's primary value propositions—lower costs and higher efficiencies— are driving the use cases for experiments in financial services. For example, if fully adopted, banks can process payments faster and more accurately while reducing transaction processing costs and the requirement for exemptions. Other emerging use cases include trade finance as well as securities settlement processes. In May 2018, HSBC and ING carried out the first-ever live cross-border commercial trade finance transaction using R3's Corda platform.<sup>50</sup> While such a transaction would normally take about 10 days to process, the banks were able to complete the secure, paperless transaction in 24 hours.

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## Toronto is also home to arguably Canada's leading blockchain thinktank, the Blockchain Research Institute

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Canada has seen the growth of blockchain firms such as HIVE, a TSX Ventures-listed cryptocurrency fintech focused on capital markets, as well as the expansion of established international players such as Consensys. Decentral, a Toronto based accelerator, has played a significant role in the development of the leadership at decentralized smart contract platform Ethereum. The Toronto region's blockchain ecosystem is strengthened by the province's academic and research community which publishes over half of Canada's overall academic research, with many of the country's top academic institutions engendering blockchain papers and research clusters in Ontario. Toronto is also home to arguably Canada's leading blockchain thinktank, the Blockchain Research Institute, which is funded by both industry and government. Other hubs and advocacy groups are gradually beginning to surface across the country such as the Blockchain Association of Canada and ColliderX.

Much of the progress made towards developing and industrializing academic findings has been in the form of early adopters doing proofs of concept and pilots. A leading example of this is Project Jasper commissioned by Bank of Canada, Payments Canada, and TMX group in partnership with Accenture and R3.<sup>51</sup> The proof of concept, the first of its kind, focused on tokenization of securities and cash to perform on-ledger settlements. The outcome signified the importance of collaboration among ecosystem participants to realize the potential of blockchain.

The region will continue to play its part as Canada's leading blockchain fintech hub, with half of Canadian Distributed Ledger Technology (DLT) start-ups already headquartered in the city.<sup>52</sup> 43 percent of these start-ups remain focused on blockchain, payments or banking solutions, and more than half offer market-ready products or services indicating adequate access to resources.<sup>53</sup> As the blockchain start-ups look to scale in the near future, the emergence of blockchain-focused investment firms in the region such as NextBlock, Outlier Ventures, and Gilga Capital are expected to play a significant role in the maturity of the ecosystem.

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## With half of Canadian Distributed Ledger Technology (DLT) start-ups already headquartered in the city

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Canada's longer-term challenge lies in moving from clustered blockchain experiments to cross-enterprise blockchain pilots. Blockchain ecosystem participants must put more emphasis on cross-collaboration. This will not only drive robust partnerships and consortia capable of accelerating the results of research into commercialization, but also agreeing on sets of industry best practices and shared standards that are essential to leveraging the potential of the technology.

Although Canadian business is often seen as risk-averse, a regulatory environment which is conducive to DLT innovation and is supported by early adoption in government presents a compelling means to get organizations thinking beyond Bitcoin and cryptocurrencies and refocused on the continually evolving set of blockchain solutions and applications. Recent regulatory developments such as the approval of Canada's first blockchain ETF and the Canadian Securities Administrators (CSA) regulatory sandbox, coupled with blockchain pilots within the National Research Council and the Government of Canada are encouraging signs for the region.

## Cyber Security

Canada's financial system processes daily cash payments of \$175 billion and over \$500 billion in trades of stocks and bonds.<sup>54</sup> FIs' recent growth in innovation, digitization, and speed of service along with the vast stores of data financial institutions hold, has led the financial services industry to become the prime target of cybercrimes. As cyber-attacks become more sophisticated and diverse, FIs need to continuously enhance their cyber security approach and build better collaboration with ecosystem partners.

Top threats faced by the sector include phishing, malware, and attacks on payment systems and ATMs (skimmer devices, ABM faceplate, man-in-the-middle, demolition/theft). In 2019, the industry may experience threats to biometrics data, which, unlike passwords, are authentication means to various services and once stolen can't be revoked. This can potentially provide unauthorized access to a vast array of services. The risk is compounded by a rapid increase in the digital marketplace with 68 percent of Canadians using online and mobile banking.<sup>55</sup> The wealth of information stored and transmitted via mobile devices creates unique security risks and is a valuable target for attackers. According to NowSecure analysis, 35 percent of communications sent by mobile devices are unencrypted.<sup>56</sup> In 2018, the number of Trojans attacking users of mobile devices has more than doubled as compared to 2017.<sup>57</sup> Beyond incumbent FIs, fintechs and crypto-exchanges also stand to become targets due to the low maturity of their security systems.<sup>58</sup>

Bank executives are aware of the threat cyber risks and data breaches present for the FI sector, with 52 percent of executives in the Canadian financial services sector believing that cybercrime is likely to be the most disruptive economic crime over the coming years.<sup>59</sup> Keenly aware of the serious reputational risk and their role as custodians of data, TD's Deputy Chairman Frank McKenna was quoted as saying, "We have 25 million customers and their data is a sacred trust".<sup>60</sup>

While a financial institution can take steps to bolster its cybersecurity with siloed internal initiatives, the effectiveness of these are dependent to an extent on the support of the ecosystem, spanning from research and development, to start-ups and accelerators, to government, as well as private

sector players outside the financial sphere. Ecosystem players have recognized that strong collaboration is required to share best practices in rapid cyber threat identification, prevention, and detection leading to overall improvement in the level of security across the ecosystem.<sup>61</sup>

The Government of Canada unveiled a National Cyber Security Strategy in mid-2018 to focus on the battle against cybercrimes. This strategy consolidates different federal cybersecurity operations into one clear national authority, the Canadian Centre for Cyber Security, aiding entities in both private and public sectors in establishing and improving their cyber security measures.<sup>62</sup> The Bank of Canada has also begun working with the six major Canadian FIs to increase cyber resilience within the payments ecosystem.<sup>63</sup>

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## The Government of Canada unveiled a National Cyber Security Strategy in mid-2018 to focus on the battle against cybercrimes.

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Given the monetary and reputational risks at stake, banks, too, see the benefit in these public-private partnerships. The Joint Operational Resilience Management Program (JORM), for example, includes the Department of Finance, Canadian financial market infrastructures (FMIs), large Canadian banks and the Canadian Bankers Association, and conducted an exercise to assess escalation and communication protocols and public messaging



at a national level during a systemic crisis for the financial sector.<sup>64</sup> TD became the first Canadian bank to join the Canadian Institute of Cybersecurity (CIC), where the Institute partners with TD's technology teams to develop methods to detect and prevent cyber threats.<sup>65</sup>

Elsewhere, the Canadian cyber security ecosystem had some notable developments this year. The Accelerator Centre based out of Waterloo, ON, is helping grow zabu.io, a Canadian cyber security company building user-focused tools for small and medium sized enterprises, which develops an automated score to visualize, understand, and reduce cyber risk exposure, helping cyber security become accessible to a larger demographic.<sup>66</sup> The Government, through its Concierge Service (part of Innovation Canada), has helped scale and support EasyPatternZ technology, which uses Artificial Intelligence to strengthen IT security and compliance with real-time analysis of the exposed risks of an organization.<sup>67</sup> Canadian VC funds and educational institutions are also leveraging international partnerships. For example, Awz HLS Fund I, a VC cyber technology fund, brought an Israeli investee company, PCYSYS, on a North American tour to launch their technology with stop overs in Toronto and Montreal.<sup>68</sup>

Still, the Canadian cyber security space has a shortage of skilled talent. The demand for cyber talent in Canada is increasing by 7 percent annually, with companies struggling to fulfill more than 8,000 cyber security roles between 2016 and 2021.<sup>69</sup> The 2018 National Cyber Security Strategy recognized the talent gap and is supporting Canada-wide efforts to develop cyber skills, having pledged more than \$500 million over five years, part of which will provide up to 1,000 student work placements in cyber security jobs.<sup>70</sup> Canadian universities are helping to develop new talent in the cyber security space with support from research institutes such as the Canadian Institute for Cybersecurity at the University of New Brunswick, the Cybersecurity and Privacy Institute at the University of Waterloo, and the Global Cybersecurity Resource Program at Carleton University. The Northeastern University's Toronto campus offers an MSc in Information Assurance and Cybersecurity.

Both public and private sectors have begun to realize the importance of building a thriving and holistic ecosystem spanning from academia and research to fully commercialized solutions, able to share

leading practices and innovative solutions. Increased VC funding, enabling start-ups to scale their solutions, and responding to threats posed by new technologies such as quantum computing that may require a whole new set of cyber security solutions will be essential for Canadian financial institutions to protect their assets from cyber threats in the years to come.

## Quantum Computing

Quantum computing harnesses and exploits the laws of quantum mechanics to process information. Classical computers use transistors as either on or off representing a one or a zero of a bit respectively. In contrast, quantum bits, or qubits, can exist in many states of these values simultaneously – known as superposition – allowing them to process and store more information and perform many different calculations at the same time. Quantum computing holds the promise of highly efficient algorithms and an exponential increase in computational speed that can address the issue of niche business applications currently leveraging traditional techniques.

Quantum computing is increasingly attracting the interest of financial services firms that are seeking to process transactions, trades, and other types of data as fast as possible. The opportunities in financial services includes use cases such as portfolio risk optimization, fraud detection, financial derivatives pricing optimization, and high frequency trading. Barclays and JPMorgan Chase have been experimenting with IBM's quantum computing technology by joining the IBM Q Network.<sup>71</sup> Royal Bank of Scotland, Goldman Sachs, and Citigroup have funded quantum computing start-ups.<sup>72</sup>

Industrialization of quantum computing is still some time away as the quantum computers available now have not yet surpassed the classical computing alternatives. The industry recognizes the limitation is in the engineering to make a scalable machine, not the physics of how a quantum computer works, meaning that it will not be long before quantum becomes viable for business applications at scale. 1Qbit and D-wave, prominent global players based out of Canada, offer quantum computing on an as-a-service model, which makes the technology accessible and removes the hurdles of preparing and operating the hardware. Governments around the world are also supporting quantum computing initiatives. In December 2018, the US congress

approved the National Quantum Initiative Act, aiming to create a unified national quantum computing strategy.<sup>73</sup> Additionally, the Canadian government in Budget 2018 committed \$15 million over three years to Institute for Quantum Computing at University of Waterloo's Transformative Quantum Technologies program.<sup>74</sup>

The estimated global market of quantum computing is expected to reach \$10.7 billion by 2024,<sup>75</sup> which has propelled investments in the quantum computing ecosystem around the world. The Toronto region has seen significant investments in quantum-related research since 2000 led by Mike Lazaridis, BlackBerry co-founder.<sup>76</sup> In 2013, he along with Doug Fregin, another BlackBerry co-founder, created Quantum Valley Investments with fund of \$100 million to help commercialize quantum-related research.<sup>77</sup> The ecosystem is evolving with the emergence of numerous start-ups in the region focusing on quantum computing (Xanadu, Qindom, Quantum Benchmark) and the world's first quantum machine learning start-up program at Creative Destruction Lab. The partnerships of global giants such as Google with start-ups in the region indicates the availability of highly skilled talent which can be attributed to globally recognized institutes (Institute for Quantum Computing, the Perimeter Institute for Theoretical Physics, the Quantum NanoFab Facility).<sup>78</sup> The Toronto region (more broadly) has all the right elements of the quantum life-cycle—from R&D all the way through new product commercialization.

Today's quantum computers are yet to pose significant threats to modern encryption methods<sup>79</sup>, however, within 8 years (as published in a paper by Accenture) quantum computing will be able to breakdown current encryption methods in second<sup>80</sup>. Mitigating these quantum computing vulnerabilities will require an approach that combines traditional cryptography with quantum cryptographic methods to provide effective, strong, and end-to-end encryption.<sup>81</sup> At an ecosystem level, this impending change will drive application, software, and hardware vendors to incorporate quantum-safe solutions into their products—or risk losing their competitive advantage. In the enterprise C-suite, it will require planning and budgeting for a complex infrastructure transition for all cryptographic services spanning many business processes and communications. It is imperative that financial services companies be prepared to defend critical infrastructure and information from future threats. Canadian start-up ISRA, based out of Waterloo, is working towards quantum-safe solutions to protect vulnerable systems against quantum-enabled attacks.

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**The Toronto region  
(more broadly) has  
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## Part 3.

# Regulatory and Policy Environment Analysis

The original report highlighted the need for a more balanced regulatory framework for fintech businesses. The Report found that at the time of its release both industry incumbents and new entrants viewed the existing regulatory framework for fintech companies as an impediment to innovation and growth. It analyzed this framework and outlined a number of regulatory and policy initiatives, both

established and proposed, which if implemented would help to foster a more prosperous fintech sector in Ontario. The following provides an update on some of the key regulatory and policy developments in Ontario, many of which are consistent with the recommendations made in the original report.

# Proposed Legislative Amendments to Modernize the Fintech Regulatory Framework

On August 11, 2017, the Department of Finance released its second consultation paper, *Potential Policy Measures to Support a Strong and Growing Economy: Positioning Canada's Financial Sector for the Future*<sup>82</sup> (the “**Second Paper**”). The Second Paper launched the final stage of consultations related to the impending regulatory changes in the financial sector. The Second Paper took into account comments and recommendations received in connection with its first consultation paper released in 2016, and requested feedback on the implementation of a number of measures including (i) supporting a competitive and innovative sector, and (ii) modernizing the framework, among others. Specific items discussed included the powers of fintech businesses, collaboration between federally regulated financial institutions and fintechs, and open banking.

In early 2018, the Canadian government announced plans to begin modernizing the fintech regulatory framework as it affects federally regulated financial institutions (“FRFIs”). Legislation that received royal assent on June 21, 2018<sup>83</sup> implements certain amendments to the *Bank Act*<sup>84</sup>, *Insurance Companies Act*<sup>85</sup> and *Trust and Loan Companies Act*<sup>86</sup> proposed by the 2018 federal budget. Some of these amendments will enable FRFIs to better participate in the fintech sector. These changes include<sup>87</sup>:

- broader powers for FRFIs to refer customers to other entities;
- broader powers for FRFIs to collect, manipulate and transmit information without regulatory approval;
- new powers for FRFIs to engage in technology-related financial activities in-house or through a third party, and commercialize in-house developed activities or provide these to a third party;
- new powers for FRFIs to provide identification, verification and authentication services; and
- new powers for FRFIs to invest in entities that primarily engage in financial services<sup>88</sup>.

Further, in June 2018, the Canadian Department of Finance published draft amendments to the regulations under the *Proceeds of Crime (Money Laundering) and Terrorist Financing Act*<sup>89</sup>. The draft amendments, among other things, seek to modernize the legal framework to limit potential areas of exploitation. Specific issues addressed included areas potentially applicable to fintech businesses, such as prepaid cards, virtual currencies, and foreign money service businesses.<sup>90</sup> In addition, the draft amendments will effect changes to certain identification and authentication requirements, which may benefit some fintech businesses.<sup>91</sup> Examples include the elimination of the prohibition on scanned or photocopied identification documents, or the ability to rely on customer identification performed by other entities.<sup>92</sup> The regulations will come into force on the first anniversary of the day on which they are registered, which has not yet occurred.

## Regulatory “Super” Sandbox

On November 7, 2017, the then Minister of Finance for Ontario, Charles Sousa, announced that the government of Ontario would be implementing a “regulatory super sandbox”.<sup>93</sup> The “super sandbox”, as the Minister described it, would help to facilitate product and service innovation and experimentation by businesses in the fintech space by providing certain regulatory exemptions to qualifying companies.<sup>94</sup>

## The Competition Bureau

In December 2017, Canada’s Competition Bureau published its market study report entitled *Technology-Led Innovation in the Canadian Financial Services Sector*<sup>95</sup> aimed at determining why fintech adoption in Canada has lagged behind other jurisdictions. After an 18-month study of the industry, the Competition Bureau produced a list of 30 recommendations<sup>96</sup> focused both on technical improvements, and on broader policy objectives that would modernize fintech regulation to allow for a more innovative and competitive environment. Some of the policy recommendations included technology-neutral regulation, regulation based on principles rather than prescriptive rules, regulating entities in proportion to their risk to the financial system, and identifying a fintech policy lead for Canada to facilitate fintech development.<sup>97</sup>

## Open Banking

Open banking is an emerging trend in jurisdictions outside of Canada, and recent developments domestically suggest increasing dialogue in Canada on merits of open banking. Open banking would allow financial institutions to exchange consumer information more freely, using, among other things, application programming interfaces. One view is that this free information exchange could create ancillary benefits for consumers and for financial institutions, including increasing competition and promoting innovation. Others have expressed concern that data privacy and cybersecurity issues must be addressed before Canada adopts open banking.<sup>98</sup> In August 2017, the Canadian Government considered the merits of open banking in its Second Paper, discussed above. The Competition Bureau also called for a review of open banking in the recommendations suggested in its market study discussed above.

On September 26, 2018, Minister of Finance Bill Morneau announced the establishment of the Advisory Committee on open banking.<sup>99</sup> The Minister's announcement marks the first step in the Government of Canada's formal review of the benefits of open banking, as discussed in the 2018 Federal Budget.<sup>100</sup> In January 2019, the Department of Finance Canada released a consultation paper on the merits of open banking, following the appointment of the Advisory Committee.<sup>101</sup> Upon conclusion of the consultation, the Committee will deliver a report assessing the merits of open banking for Canada, with a strong focus on protecting consumer privacy, ensuring the security of financial transactions and maintaining the stability of the financial sector. The Committee will consider implementation opportunities and challenges later in 2019.

## Securities Regulation

On August 24, 2017, the Canadian Securities Administrators (the "CSA") published Staff Notice 46-307 *Cryptocurrency Offerings*<sup>102</sup>, which confirmed that certain fintech businesses engaged in the cryptocurrency space may fall under the jurisdiction of Canadian securities regulators. The notice also provided guidance to those potentially subject to the securities laws.

The Ontario Securities Commission (the "OSC") has also implemented an advisory committee of its own.<sup>103</sup> In February 2018, the OSC announced the members of its fintech advisory committee, which will advise OSC staff on trends, developments and challenges in the fintech space from a securities perspective.<sup>104</sup> In addition, international fintech cooperation agreements have been established between a number of Canadian securities regulators and their international counterparts.<sup>105</sup> Some examples include agreements with the Australian Securities and Investments Commission<sup>106</sup> ("ASIC"), the U.K. Financial Conduct Authority (the "FCA")<sup>107</sup>, the Abu Dhabi Global Market Financial Services Regulatory Authority<sup>108</sup> (the "FSRA"), and France's Autorité des marchés financiers<sup>109</sup> ("AMF France"). On August 7, 2018, the FCA announced the formation of the Global Financial Innovation Network ("GFIN"), comprised of 12 financial regulators, including the Ontario Securities Commission ("OSC") and Quebec's Autorité des marchés financiers ("AMF Quebec").<sup>110</sup> The main functions of the GFIN will be to enable collaboration and shared innovation between markets, to provide a forum for joint policy work and discussion, and to provide companies with an environment to test cross-border solutions.<sup>111</sup>

In addition, the Investment Industry Regulatory Organization of Canada ("IIROC"), the national self-regulatory body that oversees all investment dealers and trading activity on debt and equity marketplaces in Canada, appears to be moving towards policies that may be more flexible for incumbents and fintechs who are looking to innovate. In 2018 IIROC announced a three-part strategy that would accommodate new business models, while ensuring that investors are protected and have access to a wide choice of products and services. "IIROC is committed to interpreting its rules as flexibly as possible, or changing them to accommodate new service offerings without compromising investor protection or choice," said Andrew Kriegler, IIROC President and CEO.<sup>112</sup>

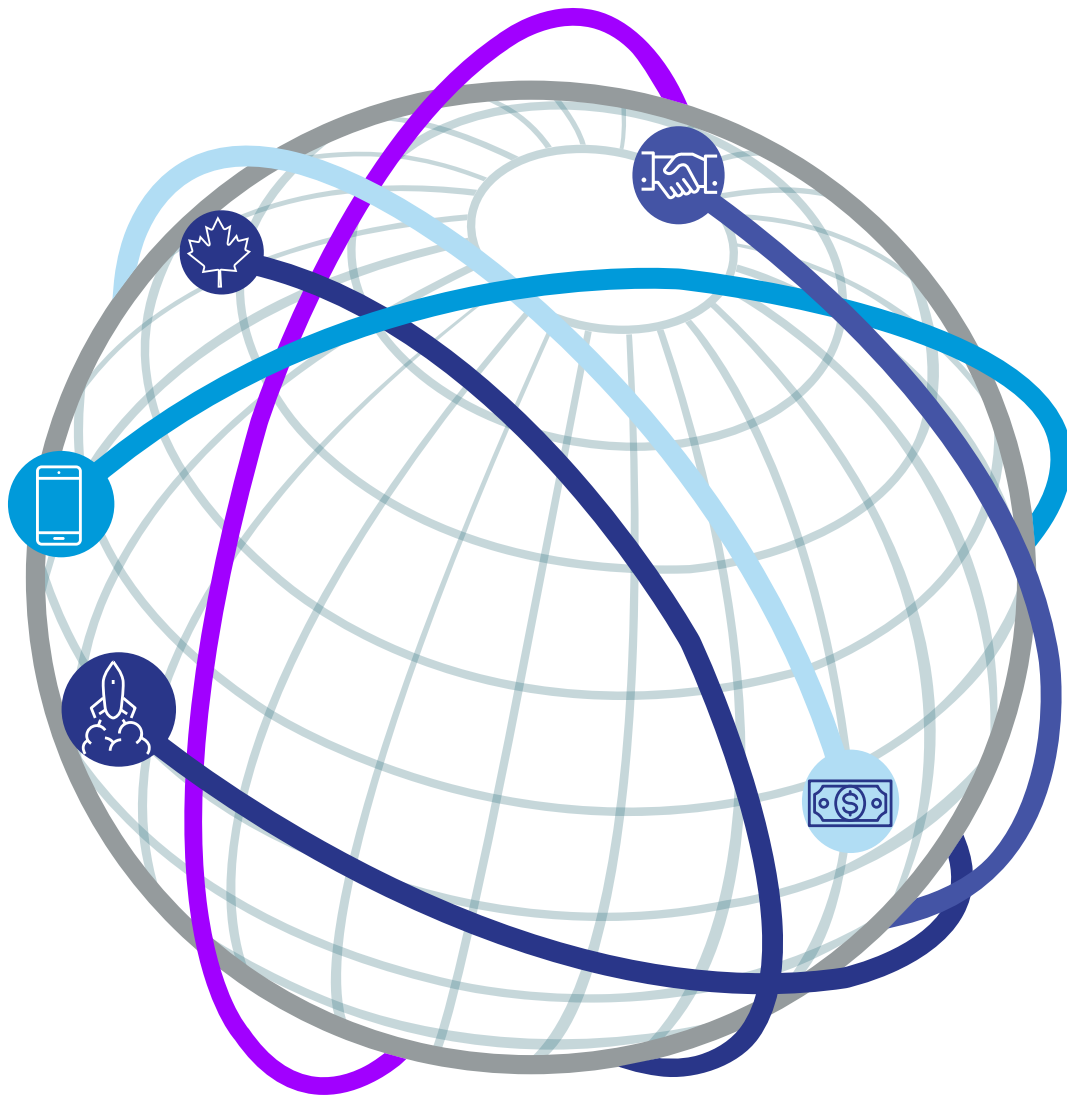


## Payments

On July 7, 2017, the Department of Finance published a consultation paper that proposed an oversight framework for retail payments.<sup>113</sup> The task force for the payments systems review had recommended the adoption of a functional, rather than institutional, approach to payment oversight, in order to remain consistent with international trends.<sup>114</sup> In addition, the oversight framework would include tiered measures to reduce the regulatory burden on lower risk entities, as well as recognition of other statutes that create requirements that are substantially similar to those contained in the payments oversight framework.<sup>115</sup> The framework also considers implementing an advisory service to assist smaller firms with navigating the regulatory environment as

they enter the market.<sup>116</sup> The oversight framework proposed would apply to a payment service provider that performs any of the identified core functions listed by the Department of Finance.<sup>117</sup>

Further, in December 2017, Payments Canada released its report, *Modernization Target State: Summary of the Key Requirements, Conceptual End State, Integrated Work Plan and Benefits of the Modernization Program*<sup>118</sup> providing further details on its payment systems modernization project, which began in 2015. Recently, an emerging sub-sector of the fintech industry known as payments technology or “paytech” has been disrupting the payments industry in Canada, further supporting the need for a more modern oversight framework for payments.



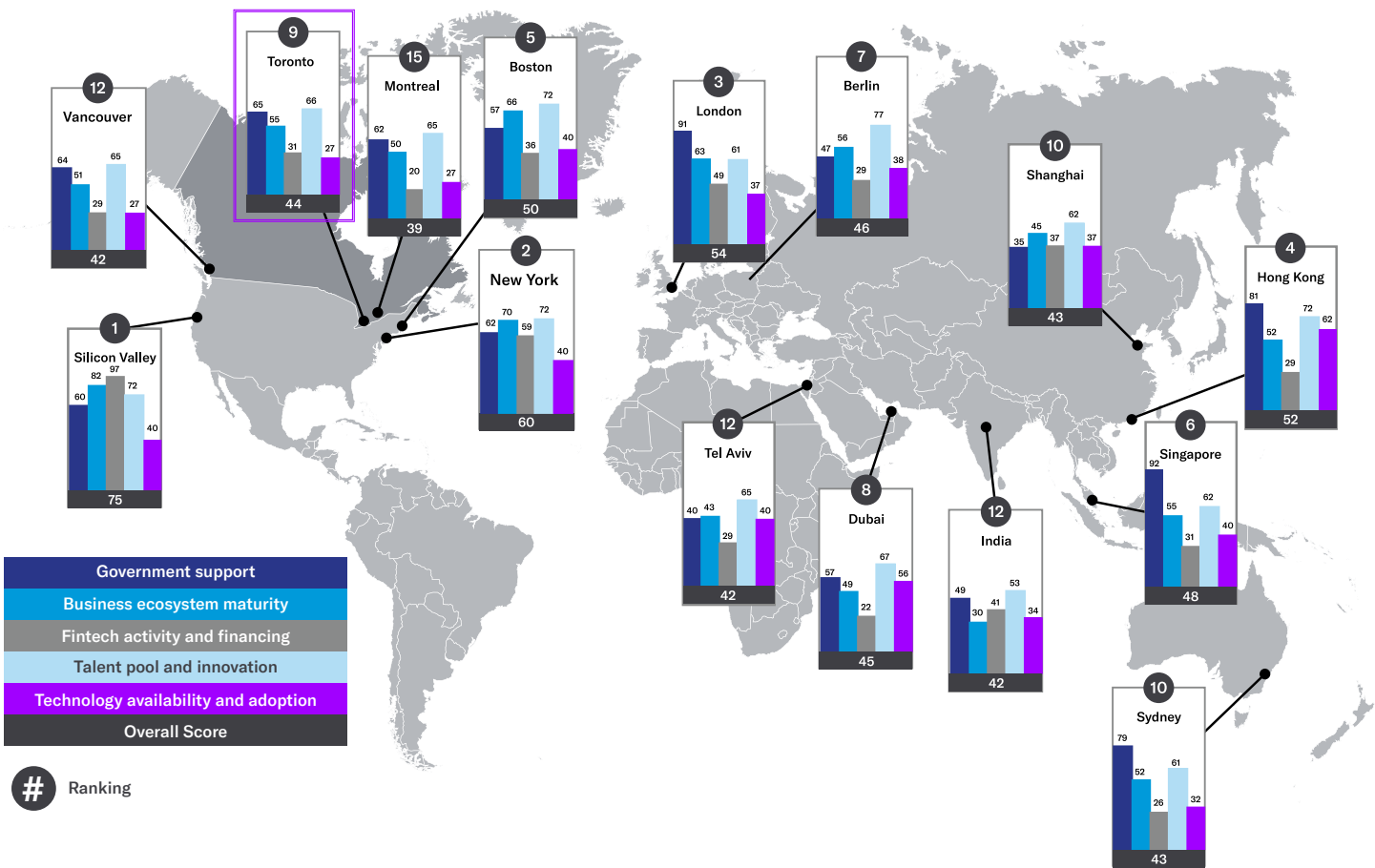
## Part 4.

# Global Fintech Ecosystem Benchmarking

This part of the report ranks the Toronto region fintech ecosystem against leading and emerging global fintech hubs. In addition to the 14 fintech hubs we analyzed in the original report, this year we included India, which is experiencing a fast developing fintech ecosystem. The benchmarking analysis was carried out across five dimensions, including (1) government support, (2) business ecosystem maturity, (3) fintech activity, adoption and financing, (4) talent pool and innovation, and (5) technology availability and adoption. The details on the benchmarking methodology and metrics selection are detailed in Appendix B.

This year, our benchmarking analysis placed the Toronto region ninth compared to seventh in the original report (see Figure 14 for a complete ranking of all 15 hubs). The decline in ranking can be attributed to a strengthening of government support and improvements in talent and innovation for other fintech hubs such as Hong Kong and Berlin. Our analysis indicates that the Toronto region needs to address the challenges of its fintech ecosystem to remain competitive as a leading global fintech hub.

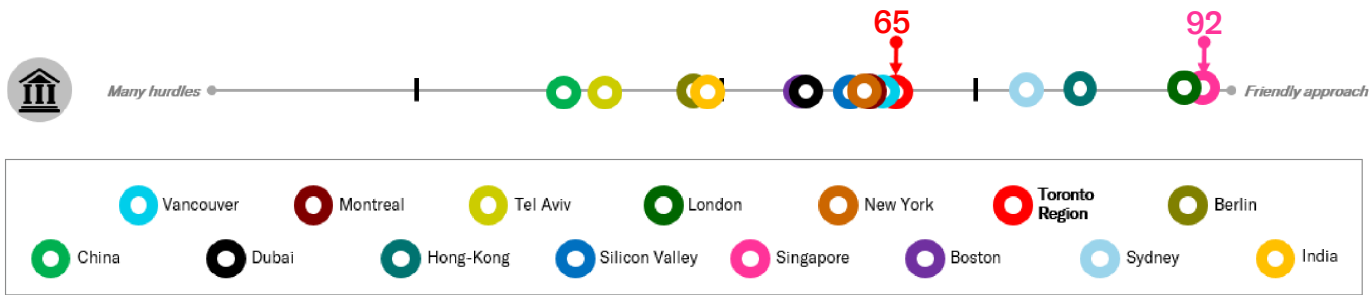
Figure 14: Ranking of 15 global fintech hubs



## Government Support

This metrics group evaluates general government support for private businesses, as well as fintech-friendly initiatives or policies, such as implementing fintech regulatory sandboxes. Every hub evaluated (except the new addition this year: India representative of fintech activities in Mumbai, New Delhi, and Bangalore) as part of this report managed to improve their government support score as compared to research conducted in 2017. Singapore remains the leader in government support, with clear and ongoing public directives aimed at supporting fintechs. London has maintained its position from 2017 as a close second with its equally

strong fintech strategy. The Toronto region's fifth place score is unchanged from the original report, as distinct government support is still lacking compared to other major global hubs, although the region's generally business-friendly environment, including the low cost and time required to start a business, buoys this lack of fintech-specific support to some extent. The Toronto region scores low on fintech focused government and regulatory programs ranking as compared to other leading hubs in this category. The region, if supported with clear fintech strategy and regulations, can accelerate its position among leading fintech hubs globally.



Source: Accenture analysis: Accenture Research FinTech Hubs Maturity Model  
Notes: For metrics used, refer to benchmarking methodology



## Business Ecosystem Maturity

This metrics group evaluates each hub's general start-up ecosystem attractiveness and development (i.e. across all sectors, not specific to fintech), such as the quality of life, inflow of foreign direct investments, and economic value of the start-up ecosystem. Toronto saw its ranking for business ecosystem maturity remain unchanged at sixth position this year, tied with Singapore and slightly behind Berlin. Although the Toronto region continues to score high on both cost and quality of living

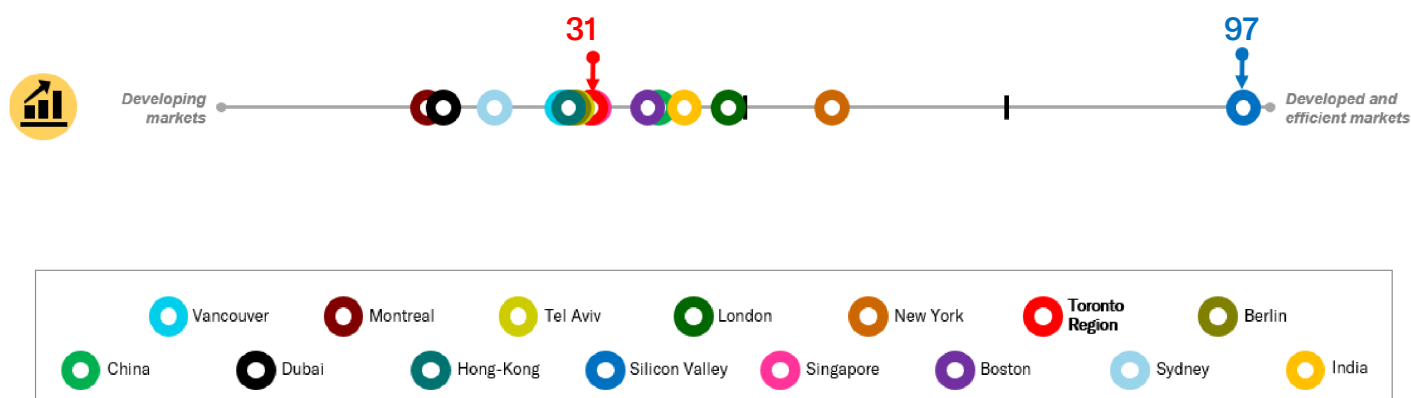
compared to some other major hubs such as Silicon Valley, New York and London, overall investment in Toronto remains low in comparison to these hubs. Toronto remains high on the Global Financial Centres Index; however, it continues to trail in terms of absolute start-up ecosystem value due to its smaller size compared to other fintech hubs.



## Fintech Activity, Adoption and Financing

This metrics group assesses volumes of fintech-related investment and financing activities, with Silicon Valley's activity continuing to outstrip that of all other major ecosystems by a large margin. Although most of the hubs have seen activity increase this year and their scores rise as a result, the Toronto region still occupies seventh place (same as that of the original report) with Singapore, behind New York and London as with ecosystem maturity above. Toronto scores high on the general concentration of fintech activity but is still only host to a small fraction of global fintech deals (pre-IPO equity) compared to leading hubs such as Silicon Valley, New York, or London. From 2010-

2018, Toronto was responsible for 1 percent of global fintech deals by dollar value while the leading hubs accounted for 19.7 percent, 8.1 percent, and 5.4 percent respectively.<sup>‡119</sup> By number of deals, Toronto's share is close to 1.5 percent as compared 12.5 percent, 8.0 percent, and 7.7 percent of leading hubs, Silicon Valley, New York or London, respectively.<sup>‡120</sup> As outlined in Part 1 of this report, the region has been among the fastest growing hubs in the world scaling up from a much smaller base and hence it must continue to accelerate growth if the Toronto ecosystem wishes to remain a relevant global fintech hub in the coming years.

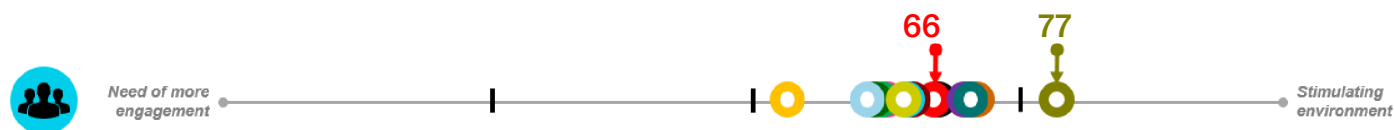


<sup>‡</sup>China numbers for 2018 are obfuscated and not included in the calculations

# Talent pool and innovation

This metrics group assesses each hub’s talent pool quality and innovation ability or culture. Berlin along with US hubs - Boston, New York, and Silicon Valley – leads this category with high scores on the quality of education, as well as their ability to attract talent from abroad. The Toronto region lies in the middle of the pack. It remains an excellent source for financial and technical expertise which is reflected in the high scores in metrics such as quality of education, mathematics and financial literacy ratio. It can further its position among the leading hubs

in this category, with closer university-industry collaboration on research and development leading to innovative solutions driven by real world business challenges while promoting innovation culture in the industry. This category remains more tightly clustered than any other in this report, although the gap between some ecosystems has begun to widen since 2017. If this trend persists, a uniquely strong pool of talent and culture of innovation could quickly become major differentiators in the global fintech ecosystem.

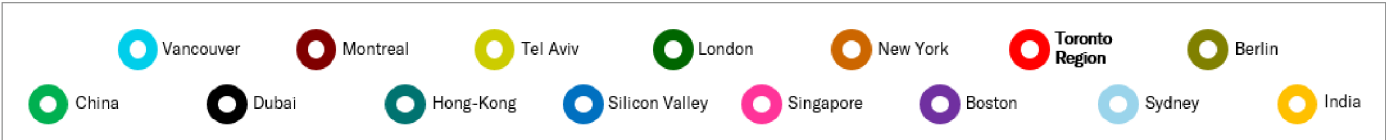


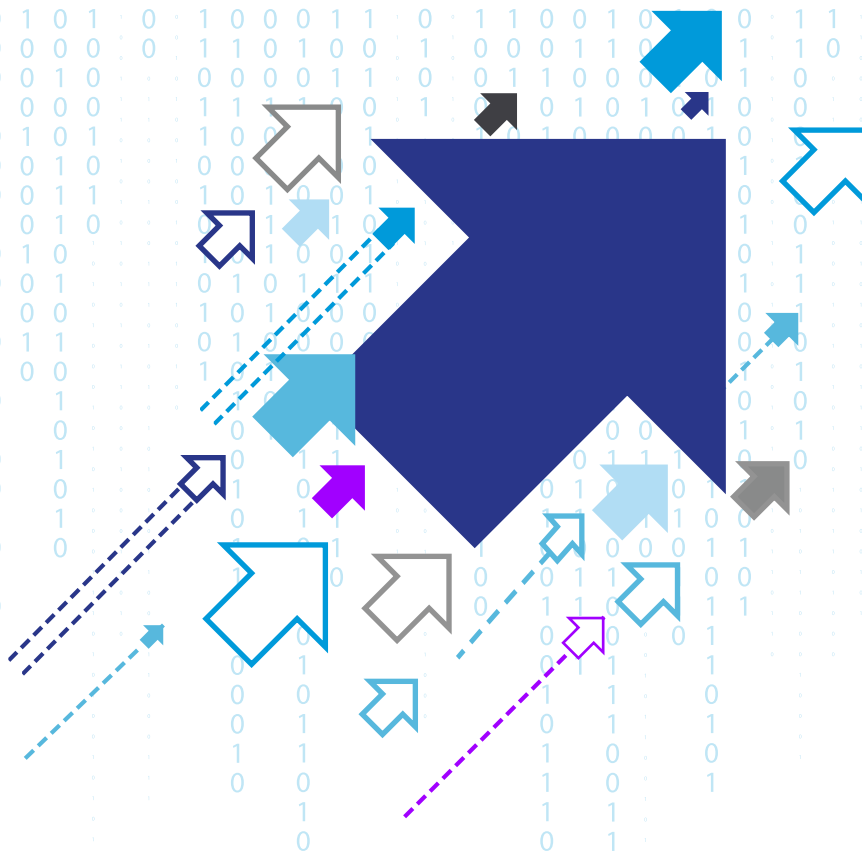
# Technology availability and adoption

This metric group assesses mobile usage and connectivity, as well as relative market opportunity to adopt to new technologies. Shanghai, alongside the report’s newest addition India, dominate this category due to these respective hubs’ high volume of mobile connections, in absolute terms. Toronto and the rest of the Canadian cities evaluated this year have remained in a following position, with relatively lower number of mobile connections largely due to relatively smaller size of market. These hubs score comparable to other US based fintech hubs on metrics measuring usage of technology to conduct businesses however, trails in embracing

disruption metric, as US businesses are early adopters of products and services based on new technologies, leading to overall lower score of Canadian hubs.

In summary, we expect prominent fintech hubs such as Silicon Valley, New York and London to continue to lead in terms of deals and fintech innovation. Our analysis suggests that a fintech friendly business and regulatory environment is becoming one of the key differentiators between emerging hubs.





# Conclusion

Although the Toronto region fintech ecosystem is growing rapidly compared to other global fintech hubs, it still has a nominal share of global fintech deals (by number of deals and size of deals). To accelerate growth and innovation further, the region needs a regulatory environment which allows innovation while ensuring security and strength of the financial services industry. We recommend an approach which focuses on openness, proximity, and global awareness of the fintech ecosystem.

## Openness

We define “openness” as an environment that incentivizes innovation and drives collaboration among ecosystem participants. We believe that a high degree of openness is a fundamental step towards creating the conditions in the ecosystem necessary to attract and retain fintech start-ups, investments, and talent along with collaboration in the ecosystem.

**Governments need to develop and articulate a clear fintech strategy to align and prioritize efforts to drive the collective growth of the fintech ecosystem.**

The original report highlighted the need for a clear fintech strategy by the federal and provincial governments with the intent of supporting innovation and growth for the Canadian financial services sector. Over the past two years, the Ontario and Canadian governments have been active in implementing various fintech-related initiatives that they have proposed. Both governments are clearly pursuing a strategy focused on promoting innovation in the domestic fintech industry. Although progress has been gradual, it is promising to see Ontario and Canada following through on their plans; however, it may be too early in the process to know how these initiatives will affect fintech businesses, and whether Canada will be able to keep pace with the equivalent

regulatory developments internationally. These are steps in right direction, however in the absence of a defined fintech strategy, the ecosystem will lack identified fintech priorities, divergent innovation, and investment programs. There may be a strong need for an industry-led panel, involving leading participants in the ecosystem—such as fintech founders, executives at financial institutions and venture capital firms, academia and researchers—to advise government and policymakers on all fintech related matters.

## Modernize regulatory frameworks to reflect changing business models, technologies and priorities.

The original report outlined that regulatory uncertainty around fintech along with a heavy burden of compliance have a detrimental effect on the growth and innovation in the financial services sector. Since then, there have been proposed regulatory sandboxes and legislative changes to modernize Fintech Regulatory Framework including amendments enabling federally regulated financial institutions to better participate in the fintech sector. Canadian governments need to move quickly on proposed regulatory sandboxes along with modernizing regulations for fintechs to ensure Toronto remains competitive among the global fintech hubs. A forum, driven by government and regulatory bodies, is needed to engage fintech start-ups (and incumbent financial institutions seeking to offer fintech solutions), offer regulatory guidance, and industry feedback regarding potential future reforms.

## Proximity

Our definition of proximity is the levels of engagement and collaboration between participants of the fintech ecosystem, which encourages them to share and collaborate on ideas that result in technological improvements.

## The Toronto region needs access to sophisticated funding at the seed-level with continued growth in the local later-stage (series B and beyond) funding.

The Toronto region has seen increased VC investments from the US (see Part 1) along with increased local later-stage growth funding indicating growing access to capital for fintech start-ups. However, access to funding at the seed level has become difficult, as indicated by the small number of start-ups founded in the region in recent years and confirmed in our discussions with fintech ecosystem executives. If Canadian fintech start-ups are to compete on the global stage, access to local later-stage funding is key to growth of the local ecosystem. At the same time, access to seed funding is essential to encourage entrepreneurs to think big and have confidence in the ecosystem to take a leap from innovative ideas to a commercial product.

## Closer and more frequent engagement and collaboration among fintech start-ups, well-established financial institutions, and venture capital firms will further accelerate the growth of the ecosystem.

While there has been significant increase in the engagements among the fintech ecosystem partners in recent years, it can be strengthened further with more close and frequent engagements. Financial institutions can create platforms where a fintech's products and services can be tested to gain better understanding and examine alignment with the firm's strategic objectives while allowing fintechs to test their products for enterprise readiness.

## Governments, universities and businesses alike need to do more to encourage the commercialization of research.

The Toronto region has a strong presence of globally recognized universities, research teams, and organizations that drive the development of new and emerging technologies. The region has seen the emergence of technology specific institutes such as Vector Institute and Creative Destruction Lab, which aim to create AI research commercialization opportunities. As highlighted in the original report, the Toronto region could benefit greatly with an institute focused on developing new solutions and commercialization of latest research on new technologies specific to the financial services industry. Such an institute focused on a vertical could help the Canadian financial services sector grow into a leadership position on the global stage.

## Create the opportunities and conditions that will attract and retain top talent.

The original report highlighted the need of a comprehensive talent strategy, defined by federal and provincial governments in consultation with industry, to create policies and initiatives that will grow, attract, and retain talent within the Toronto region. In recent years, although there has been some improvement, the region still lacks focused efforts to address the challenge holistically. To establish the Toronto region as a leading global fintech hub there is an immediate need to take proactive and focused measures, which will create compelling and lucrative opportunities, to attract and retain talent.

## Global awareness

We define global awareness as an ecosystem's overall reputation across international fintech hubs, which has a direct impact on its ability to attract and retain fintech start-ups, talent, and investments, both nationally and globally.

## Dedicate efforts to raise the Toronto region fintech ecosystem's global profile.

Leading global fintech ecosystems (for example, Silicon Valley and Singapore) can attract global fintechs outside those ecosystems through their profiles on the global stage. In recent years, Toronto's profile globally has been greatly enhanced, as shown by the establishment of offices of global accelerators in Toronto, such as Techstars. The city will also host Collision, North America's fastest growing technology conference for 3 consecutive years, starting in 2019.<sup>121</sup>

The original report outlined the importance of establishing global cooperation agreements for the development of Toronto's brand globally. Canadian government and regulations have taken steps in the right direction. In August 2018, the Ontario Securities Commission (OSC) and Quebec's Autorité des Marchés Financiers (AMF) joined Global Financial Innovation Network ("GFIN"), along with other international financial regulators, which aim to create "global sandbox" to enhance regulators' ability to collaborate on innovation-related topics.<sup>122</sup>

Canada could also focus on collaboration with other countries based on a "Fintech Bridge" model - a collaborative framework to develop fintech policy enabling closer and stronger collaboration on fintech between governments, financial regulators and the industry. In March 2018, Australia and UK established the "UK-Australia Fintech Bridge".<sup>123</sup>

The federal and provincial governments should focus on providing more resources to organizations with assigned ownership and responsibilities to promote and highlight the Toronto region fintech ecosystem's appealing factors to the international business community,

# Appendix A.

## Fintech Start-ups in the Toronto Region

### Selection criteria for fintech start-ups (194 identified in total):

- (a) Private companies founded after the year 2000 and in operation at the time of this report.
- (b) Business operations are headquartered in Toronto, Kitchener or Waterloo.
- (c) The main business models leverage technology to offer financial products and/or services that complement or compete with products or services provided by financial institutions in the market today (e.g. banks, trust companies, and insurance firms).

The above selection criteria aim to pinpoint our analysis on tech start-ups with financial-services-focused product or service offering(s) and are participants within the Toronto region fintech ecosystem.

### Selection criteria for leading fintech start-ups (40 in total—bolded in the table below):

- (a) fintechs that have publicly disclosed more than \$500,000 in equity financing.
- (b) fintechs that have received considerable national media coverage for their products or services.

The above selection criteria aim to highlight fintech start-ups within the Toronto region fintech ecosystem that have secured relatively sizable financing and received considerable media coverage.

Capital Markets	Digital Currencies/FX	Personal Financial Management (PFM)	Wealth Management
AlgoTrades Algorithmic Trading Systems Ark Paradigm BHRD bigterminal Crowdmatrix <b>Equibit</b> FinancialSharp Finatechal Finmaven <b>Hockeystick.co</b> I2T CLUB Investrica <b>NexusCrowd</b> Nvest Omega ATS <b>Overbond</b> <b>Q4</b> Qmetrica <b>Quandl</b> Retail Derivatives Trader Silqe Stockrender <b>Street Context</b> Vuru	Balance BitRush Corp BlockEQ Blockstation Citizen Hex Coincad Coinkite <b>Coinsquare</b> Consilium Crypto Cryptiv Hodlbot Hut 8 Mining HyperBlock Technologies Jaxx Liberty <b>Kooltra</b> Masscoinex.com MLG Blockchain Consulting MoneyPot Newton.co Paycase Securacoin StockBet Today Finance zeroone.ai	CompareMyRates.ca Evree <b>Fentury</b> Helium Investments Inc. Invisor Financial LegacyTracker MyPlanMap <b>Planswell</b> RateHub Salt Edge Inc. <b>Sensibill</b> WayPay	Betterworth <b>d1g1t Inc.</b> Ducovest (now Stocktargetadvisor) Emerging Star FIIN INC. <b>Finaeo Inc.</b> findbob Justwealth Manzil <b>Nest Wealth</b> Piggy the Bank QWeMA Group Smart Money Invest Vicis Labs <b>Wealthsimple</b>



Payments	Back Office	Lending	Insurance
AscendantFX Capital Inc. AvidRetail Brim <b>Carta Worldwide</b> Collective POS Solutions Delego Software Digital Retail Apps <b>Dream Payments</b> Drop Dwello GoldMoney (TSE: XAU) GroupPay Inc. KoreConX Loadhub Moni (Financial Software) <b>NanoPay</b> <b>Paybright</b> Payfare Inc. Payment Rails payment source PaymentEvolution Paymobile Plooto Pungle Qubit Industries Quid <b>Remitbee</b> Remitware Payments RiverPay SmoothPay Snappay <b>Soundpays</b> STACK Fintech Sweet Tooth Tacit Innovations UGO Wallet Uremit Virtual Next Inc. Vouchr Wallet Savvy Zetawire <b>Shopify</b> ‡	APrivacy Ltd. BeanEvo BI-Metrix Inc. Blue C802 CaseWare RCM Inc. Commercial Passport CXO Corporation eBridge Connections Fusebill GlobalTrade Corporation Hubdoc MindBridge Naborly NorthOne Onist Operant.AI PriceMetrix Reportin Senso.AI Sqirl Capital Tier1CRM Inc Triyosoft Vena Solutions <b>VersaPay</b> <b>Wave</b> <b>Zafin</b>	BetterCapital Blanc Labs <b>Borrowell</b> Every <b>Financelt</b> <b>Flexiti Financial</b> <b>FundThrough</b> GoDay.ca Health Smart Financial Services Helium Loans HiEnd Systems (HES) Judi.ai <b>Koho</b> Langhaus Financial Ledn <b>Lendified</b> <b>Lending Loop</b> lendu Lowestrates.ca Moregidge Newton Connectivity Systems Paymentflex Technologies, LLC Peerfunder <b>Pitchpoint Solutions Inc.</b> <b>progressa</b> R2Crowd Rates.ca RateSupermarket.ca Rise Asset Development Savvy smarter.loans Trichome Financial WeiFund	BrokerLift ClientDesk Encircle <b>Foxquilt</b> Jauntin <b>LEAGUE</b> PolicyMe ProNavigator Tuque Inc <b>Zensurance</b>
			Risk
			Applied Recognition, INC <b>Ethoca</b> <b>SecureKey Technologies</b> Security Compass

‡ Shopify provides various services through its cloud-based, multi-channel commerce platform designed for small and medium-sized businesses including payments and lending to its customers.

# Appendix B.

## Fintech Hub Benchmarking Model and Methodology

The objective of the benchmarking model is to rank the Toronto-Kitchener-Waterloo (“Toronto region”) fintech ecosystem against other global fintech hubs on a set of quantitative metrics. Those metrics were chosen to take into account their assumed impact on fintech hub development and the consistency and availability of data across the fintech hubs included in the model.

The methodology of the Fintech Hub Benchmarking Model is comprised of five main sections:

### a) Hubs selection

We included 15 fintech hubs in the model, based predominantly on data showing where recent fintech activity is concentrated, as well as a Canadian-centric view to allow for a national comparison. Moreover, we wanted to have a reasonable selection of the hubs across the main geographies, while at the same time having a larger sample of North American hubs to cover thoroughly main regional competitors of the Greater Toronto Area hub.

Country	Hub
Australia	Sydney
Canada	Montreal
Canada	Toronto region
Canada	Vancouver
China	Shanghai
Germany	Berlin
Hong Kong	Hong Kong
Israel	Tel Aviv
Singapore	Singapore
United Arab Emirates	Dubai
United Kingdom	London
United States	Boston
United States	New York
United States	Silicon Valley
India	Representative of Mumbai, New Delhi and Bangalore



## **b) Metrics and groups selection**

Forty-six single metrics were used in the benchmarking model. Those metrics were chosen to take into account their assumed impact on fintech hub development and the consistency and availability of data across the fintech hubs included in the model. Metrics were sourced from datasets maintained by institutions, including the World Economic Forum, UN, ITU, the World Bank, CB Insights and Crunchbase. We grouped the 46 single-metrics included in the model into sub-groups, which were then subsequently grouped into five main groups, which in our opinion explain well the different areas that influence the way fintech hubs are developing. The groups and sub-groups chosen are:

### **Government support**

- **General government support**

Fintech space comprises mainly early/growth-stage companies, for whom it is important to have supportive government policies—either when it comes to starting a business or growing it.

- **Fintech-related support**

Financial services are usually more regulated than other industries, so it can be beneficial for fintech start-ups to have an FS regulatory approach more in alignment with their needs.

### **Business ecosystem maturity**

- **Ecosystem attractiveness**

The broad hub ecosystem should be attractive for new business ventures—attracting both the influx of foreign capital and employees (thanks to the hub's good living conditions).

- **Ecosystem development**

The development of a fintech hub can be easier when the whole ecosystem is already well-developed—meaning there are clusters of other firms, start-ups in other areas are growing, and it can be observed that people in the hub have entrepreneurial attitudes.

### **Fintech activity and financing**

- **Fintech activity**

Fintech development is to some extent based on the “snowball effect”—it is easier to develop new fintech companies if there are already several active fintech businesses in the area and there is a growing number of potential employees with fintech experience that can come up with new ideas.

- **Financing options**

Fintech companies and start-ups need to have access to different financing options. Based on their growth stage it may mean venture capital financing, bank financing or capital markets financing (IPO).

### **Talent pool and innovation**

- **Talent pool**

All tech start-ups (so also fintech ones) are dependent on access to the pool of talented and skilled (mostly in science, technology, engineering and mathematics (STEM) workforce, which can be either grown internally within a country/hub or attracted from abroad.

- **Innovation capacity**

Some countries score low in various innovation rankings despite having large pools of educated people. Thus, it is vital to be able to translate education efforts into innovative projects instead of repetitive tasks.

- **Technology availability and adoption**

Two aspects are important for tech start-ups to develop—access to quality technological solutions so they can compete with other solutions and a large pool of potential customers using new technologies (and as a result to be able to have scale effects when offering products/services).

### c) Metrics normalization

As the raw data for single-metrics were of different units and scales, data rescaling was applied to each of the datasets. Each numeric variable was scaled in the range [0,100] by using one of the two normalization formulas:

$$x_{new} = \frac{x - x_{min}}{x_{max} - x_{min}} * 100 \quad (\text{for metrics using normal scale}) \text{ or}$$

$$x_{new} = \left(1 - \frac{x - x_{min}}{x_{max} - x_{min}}\right) * 100 \quad (\text{for metrics using inverted scale})$$

Where:

- $x$  is the value of the variable before normalization.
- $x_{new}$  is the value of the variable after normalization.
- $x_{min}$  is the lowest value for a particular metric before normalization.
- $x_{max}$  is the highest value for a particular metric before normalization.

After rescaling, a score of 0 means the lowest possible result while a score of 100 means the highest possible result for each single metric.

### d) Group scores

The index was calculated by using expert weighting based on the assessment of the importance of given factor for the overall score supported with the regression analysis that proved the weighting to be valid in describing hubs' maturity. For each sub-group, the score was obtained by calculating the weighted average of the normalized values for all metrics in each sub-group. Then, scores for groups were calculated by using the weighted average of normalized values for all sub-groups included in each of the five main components

### a) Regression Analysis

Regression analysis was used to assess the correlation between the overall index (obtained via normalizing and creating weighted averages of 46 metrics—which collectively represent fintech hub development maturity drivers) with fintech activity (measured by number of deals) in recent year in each of the hubs analyzed. The regression specification used was:

$$D_{i,t} = \alpha + \beta \cdot I_{i,t}(K) + \varepsilon_{i,t},$$

$$i = 1, \dots, 15$$

$$t = 1$$

Where,

- $i$  is each of the 15 regions
- $t$  is time 2017
- $D$  is global share of number of fintech deals in given region
- $a$  is a constant term
- $I$  is the overall score of the index
- $K$  is a set of explanatory metrics used to calculate the index
- $\Sigma$  is an error term

The regression analysis showed significant relation between the Index and defined output variable, confirmed by the following statistics:

- $R^2=84\%$
- Adjusted  $R^2=83\%$
- F-statistic = 69.54
- Probability (F-statistic) = 0.00%
- Index score t-statistic = 8.34
- Probability (t-statistic) = 0.00%.

# Appendix C.

## Funding Types<sup>124</sup>

**Angel:** An angel round is typically a small round designed to get a new company off the ground. Investors in an angel round include individual angel investors, angel investor groups, friends, and family.

**Pre-Seed:** A Pre-Seed round is a pre-institutional seed round that either has no institutional investors or is a very low amount, often below \$150k.

**Seed:** Seed rounds are among the first rounds of funding a company will receive, generally while the company is young and working to gain traction. Round sizes range between \$10k–\$2M, though larger seed rounds have become more common in recent years. A seed round typically comes after an angel round (if applicable) and before a company's Series A round.

**Series A and Series B** rounds are funding rounds for earlier stage companies and range on average between \$1M–\$30M.

**Series C** rounds and onwards are for later stage and more established companies. These rounds are usually \$10M+ and are often much larger.

# Endnotes

- <sup>1</sup> Accenture analysis of Crunchbase, CB Insights, and Pitchbook Data. Source: © CB Information Services, Inc.—used by permission
- <sup>2</sup> Accenture analysis of Crunchbase, CB Insights, and Pitchbook Data. Source: © CB Information Services, Inc.—used by permission
- <sup>3</sup> Accenture analysis of Crunchbase, CB Insights, and Pitchbook Data. Source: © CB Information Services, Inc.—used by permission
- <sup>4</sup> Accenture analysis of Crunchbase, CB Insights, and Pitchbook Data. Source: © CB Information Services, Inc.—used by permission
- <sup>5</sup> Accenture analysis of Crunchbase, CB Insights, and Pitchbook Data. Source: © CB Information Services, Inc.—used by permission
- <sup>6</sup> Accenture analysis of Crunchbase, CB Insights, and Pitchbook Data. Source: © CB Information Services, Inc.—used by permission
- <sup>7</sup> Accenture analysis of Crunchbase, CB Insights, and Pitchbook Data. Source: © CB Information Services, Inc.—used by permission
- <sup>8</sup> Accenture analysis of Crunchbase, CB Insights, and Pitchbook Data. Source: © CB Information Services, Inc.—used by permission
- <sup>9</sup> Accenture analysis of Crunchbase, CB Insights, and Pitchbook Data. Source: © CB Information Services, Inc.—used by permission
- <sup>10</sup> Accenture analysis of Crunchbase, CB Insights, and Pitchbook Data. Source: © CB Information Services, Inc.—used by permission
- <sup>11</sup> Heap, Ben, Ian Pollari, H2 Ventures, and KPMG. 2018. “2018 FINTECH100 Leading Global Fintech Innovators.” <https://h2.vc/wp-content/uploads/2018/11/Fintech100-2018-Report.pdf%0Awww.fintechinnovators.com>  
“2017 FINTECH100 Leading Global Fintech Innovators.” 2017. [https://h2.vc/wp-content/uploads/2018/09/Fintech100-2017-Report\\_sm.pdf](https://h2.vc/wp-content/uploads/2018/09/Fintech100-2017-Report_sm.pdf).  
H2 Ventures and KPMG, 2016 FINTECH100: Leading Global Fintech Innovators, available at: <https://h2.vc/reports/fintechinnovators/2016>.
- <sup>12</sup> Accenture analysis of Crunchbase, CB Insights, and Pitchbook Data. Source: © CB Information Services, Inc.—used by permission
- <sup>13</sup> Accenture analysis of CB Insights Data. Source: © CB Information Services, Inc.—used by permission
- <sup>14</sup> Accenture analysis of Crunchbase, CB Insights, and Pitchbook Data. Source: © CB Information Services, Inc.—used by permission
- <sup>15</sup> Cushman & Wakefield, 2017
- <sup>16</sup> Acecnture Analysis of Crunchbase, CB Insights, and Pitchbook Data. © CB Information Services, Inc.—used by permission
- <sup>17</sup> Silcoff, Sean. “Fintech VC fund Luge Capital opens with \$75-million backing from Caisse, other Quebec institutions - The Globe and Mail”, (2018), available at: Globe Mail <https://www.theglobeandmail.com/business/technology/article-new-fintech-vc-fund-luge-capital-hits-the-track-running-with-7/>.
- <sup>18</sup> “Looking Forward: Investing in AI for Fintech”, (2019), available at: twg.io <https://twg.io/blog/looking-forward-investing-in-ai-for-fintech/>.
- <sup>19</sup> Accenture analysis of CB Insights Data. Source: © CB Information Services, Inc.—used by permission
- <sup>20</sup> Accenture analysis of CB Insights Data. Source: © CB Information Services, Inc.—used by permission
- <sup>21</sup> Accenture analysis of CB Insights Data. Source: © CB Information Services, Inc.—used by permission
- <sup>22</sup> Accenture analysis of CB Insights Data. Source: © CB Information Services, Inc.—used by permission
- <sup>23</sup> Accenture analysis of CB Insights Data. Source: © CB Information Services, Inc.—used by permission
- <sup>24</sup> Clark, K. (2018). Is Canada tech's next frontier? VCs think so | Pitchbook. [online] Pitchbook.com. Available at: <https://pitchbook.com/news/articles/is-canada-techs-next-frontier-vcs-think-so>
- <sup>25</sup> TD Canada Trust. (2018). Patents for Startups program delivering control and peace of mind to innovators. [online] Available at: <https://newsroom.td.com/featured-news/patents-for-startups-program-delivering-control-and-peace-of-mind-to-innovators>

- 26 Adriano, L. (2018). Travelers takes majority stake in Zensurance. [online] Insurance Business. Available at: <https://www.insurancebusinessmag.com/ca/news/group-benefits/travelers-takes-majority-stake-in-zensurance-109161.aspx>
- 27 Dmz.ryerson.ca. (2018). DMZ is the number one university-based incubator in the world by UBI Global | The DMZ. [online] Available at: [https://dmz.ryerson.ca/press\\_releases/dmz-ubi-2018-ranking/](https://dmz.ryerson.ca/press_releases/dmz-ubi-2018-ranking/)
- 28 Rbc.com. (2018). RBC announces launch of RBC Reach ◊ a corporate accelerator program for startups. [online] Available at: <http://www.rbc.com/newsroom/news/2018/20180703-rbc-reach.html>
- 29 [https://www.accenture.com/t20180917T080227Z\\_\\_w\\_\\_/us-en/\\_acnmedia/PDF-86/Accenture-Explained-A-Guide-For-Executives.pdf#zoom=50](https://www.accenture.com/t20180917T080227Z__w__/us-en/_acnmedia/PDF-86/Accenture-Explained-A-Guide-For-Executives.pdf#zoom=50)
- 30 Accenture.com. (2018). Reworking the Revolution: Are you ready to compete as intelligent technology meets human ingenuity to create the future workforce? [online] Available at: [https://www.accenture.com/t20180613T062119Z\\_\\_w\\_\\_/us-en/\\_acnmedia/PDF-69/Accenture-Reworking-the-Revolution-Jan-2018-POV.pdf#zoom=50](https://www.accenture.com/t20180613T062119Z__w__/us-en/_acnmedia/PDF-69/Accenture-Reworking-the-Revolution-Jan-2018-POV.pdf#zoom=50)
- 31 Gartner. (2018). Newsroom. [online] Available at: <https://www.gartner.com/newsroom/id/3872933>
- 32 Global Affairs Canada, "Canada a Leader in Artificial Intelligence (AI)", at p. 2, [Online]. Available: [https://www.international.gc.ca/investors-investisseurs/assets/pdfs/download/Niche\\_Sector-AI.pdf](https://www.international.gc.ca/investors-investisseurs/assets/pdfs/download/Niche_Sector-AI.pdf). [Accessed: 03- Feb- 2019].
- 33 CIFAR. (n.d.). Pan-Canadian Artificial Intelligence Strategy. [online] Available at: <https://www.cifar.ca/ai/pan-canadian-artificial-intelligence-strategy>
- 34 Borealisai.com. About | Borealisai.com. [online] Available at: <https://www.borealisai.com/en/about/overview/>
- 35 LIGAYA, A. (2018). TD acquires Toronto-based AI Startup Layer 6. [online] The Globe and Mail. Available at: <https://www.theglobeandmail.com/report-on-business/td-acquires-toronto-based-ai-startup-layer-6/article37537469/>
- 36 Ligaya, Armina. "BMO launches AI-powered chatbots on Facebook, Twitter as mobile banking rises - BNN Bloomberg", (2018), available at: Can Press <https://www.bnnbloomberg.ca/bmo-launches-ai-powered-chatbots-on-facebook-twitter-as-mobile-banking-rises-1.1027744>.
- 37 Vomiero, Jessica. "Scotiabank partners with AI startup DeepLearn.ng to develop credit card payment system | BetaKit", (2017), available at: Betakit <https://betakit.com/scotiabank-partners-with-ai-startup-deeplearni-ng-to-develop-credit-card-payment-system/>.
- 38 "Element AI Raises Historic \$102M USD (\$137.5M CAD) Series A Funding Round from DCVC and Leading Global Institutions." 2017. 2017. <https://www.newswire.ca/news-releases/element-ai-raises-historic-102m-usd-1375m-cad-series-a-funding-round-from-dcvc-and-leading-global-institutions-628388163.html>.
- 39 "Coveo Announces \$100 Million Investment Led by Evergreen Coast Capital", (2018), online: <https://www.coveo.com/en/company/news-releases/2018/coveo-announces-100-million-investment-led-by-evergreen-coast-capital>.
- 40 "Integrate.ai Raises \$30M in Series A Funding | FinSMEs", (2018), online: <http://www.finsmes.com/2018/09/integrate-ai-raises-30m-in-series-a-funding.html>.
- 41 Accenture. "Organizations Preparing For Ethical Use of AI | Accenture", (2018), available at: <https://www.accenture.com/ca-en/company-news-release-artificial-intelligence-finds-study>.
- 42 SAS, Accenture Applied Intelligence & Intel. "AI Momentum, Maturity and Models for Success - Based on findings from a global executive survey", (2018), online: <https://www.sas.com/content/dam/SAS/documents/marketing-whitepapers-ebooks/third-party-whitepapers/en/ai-momentum-maturity-success-models-109926.pdf>.
- 43 LIGAYA, A. (2018). TD acquires Toronto-based AI startup Layer 6. [online] The Globe and Mail. Available at: <https://www.theglobeandmail.com/report-on-business/td-acquires-toronto-based-ai-startup-layer-6/article37537469/>.
- 44 "Responsible use of artificial intelligence (AI) - Canada.ca", online: <https://www.canada.ca/en/government/system/digital-government/responsible-use-ai.html>.
- 45 The Conversation. (n.d.). Here's how Canada can be a global leader in ethical AI. [online] Available at: <https://theconversation.com/heres-how-canada-can-be-a-global-leader-in-ethical-ai-90991>
- 46 Soohoo, Stacey & Jessica Goepfert. "Worldwide Blockchain 2018 - 2022 Forecast : Market Opportunity by Use Case - 2H17 Update" (2018) August IDC Inc, online: <https://www.idc.com/getdoc.jsp?containerId=US44184218&pageType=PRINTFRIENDLY>.



- 47 Soohoo, Stacey & James Wester. "Blockchain : Worldwide Technology Market Update and Spending Outlook" (2018) September, available at: <https://www.idc.com/getdoc.jsp?containerId=US44268418&pageType=PRINTFRIENDLY>.
- 48 Benjamin Johnson. "First Digital Bank in Brazil running on Blockchain Technology", (2018), online: <https://tokenmantra.com/first-digital-bank-in-brazil-running-on-blockchain-technology/>.
- 49 "Exclusive: Malta To Get A Blockchain Bank", (2018), online: <https://finance.yahoo.com/news/exclusive-malta-blockchain-bank-024310968.html>.
- 50 "HSBC and ING carry out blockchain trade finance transaction", Finextra (5 November 2018), online: <https://www.finextra.com/pressarticle/76237/hsbc-and-ing-carry-out-blockchain-trade-finance-transaction>.
- 51 Jasper Phase III - Securities Settlement using Distributed Ledger Technology (2018),online: [https://www.payments.ca/sites/default/files/jasper\\_phase\\_iii\\_whitepaper\\_final\\_0.pdf](https://www.payments.ca/sites/default/files/jasper_phase_iii_whitepaper_final_0.pdf).
- 52 Accenture Research
- 53 Accenture Research
- 54 Payments Canada. "Strengthening Our Cyber Defences - Bank of Canada", (2018), available at: <https://www.bankofcanada.ca/2018/05/strengthening-cyber-defences/>.
- 55 Canadian Bankers Association. "Focus: Banks and Cyber Security | Focus: Banks and Cyber Security", (2018), available at: <https://cba.ca/banks-and-cyber-security>.
- 56 Accenture consulting. "Mobile Banking Applications: Security Challenges for Banks", (2017), available at: [https://www.accenture.com/t20170421T060949\\_\\_w\\_\\_/us-en/\\_acnmedia/PDF-49/Accenture-Mobile-Banking-Apps-Security-Challenges-Banks.pdf](https://www.accenture.com/t20170421T060949__w__/us-en/_acnmedia/PDF-49/Accenture-Mobile-Banking-Apps-Security-Challenges-Banks.pdf).
- 57 Kaspersky. Cyberthreats to financial institutions 2019: OVERVIEW AND PREDICTIONS (2019).
- 58 The Conversation. (n.d.). Here's how Canada can be a global leader in ethical AI. [online] Available at: <https://theconversation.com/heres-how-canada-can-be-a-global-leader-in-ethical-ai-90991>
- 59 PwC. Canadian Banks 2018 The innovation journey: Eyes on execution Cybersecurity (2018).
- 60 The Canadian Press. "TD Bank partners with Canadian cybersecurity centre, aims to tackle online threats - National | Globalnews.ca", (2018), available at: <https://globalnews.ca/news/4176113/td-bank-canadian-cybersecurity-centre/>.
- 61 The Conversation. (n.d.). Here's how Canada can be a global leader in ethical AI. [online] Available at: <https://theconversation.com/heres-how-canada-can-be-a-global-leader-in-ethical-ai-90991>
- 62 Public Safety Canada. "New Cyber Security Strategy bolsters cyber safety, innovation and prosperity - Canada.ca", (12 June 2018), available at: <https://www.canada.ca/en/public-safety-canada/news/2018/06/new-cyber-security-strategy-bolsters-cyber-safety-innovation-and-prosperity.html>.
- 63 "Bank of Canada seeks to improve collaboration in fight against cyberattacks", (2018), available at: <https://www.finextra.com/newsarticle/32085/bank-of-canada-seeks-to-improve-collaboration-in-fight-against-cyberattacks>.
- 64 Payments Canada. "Strengthening Our Cyber Defences - Bank of Canada", (2018), available at: <https://www.bankofcanada.ca/2018/05/strengthening-cyber-defences/>.
- 65 The Canadian Press. "TD Bank partners with Canadian cybersecurity centre, aims to tackle online threats - National | Globalnews.ca", (2018), available at: Glob News <https://globalnews.ca/news/4176113/td-bank-canadian-cybersecurity-centre/>.
- 66 "Bringing Clarity to Cybersecurity for Small and Medium Enterprises - The Accelerator Centre", (2017), available at: Accel Cent <http://acceleratorcentre.com/zabu-making-sure-small-and-medium-sized-companies-are-cyber-safe-with-cyber-assessments/>.
- 67 Innovation, Science and Economic Development Canada. "Artificial intelligence invention sends cybersecurity to new heights - Innovation Canada", (2018), available at: Gov Canada <https://www.ic.gc.ca/eic/site/080.nsf/eng/00032.html>.
- 68 AWZ HLS Investment Fund. "Israeli Cyber Security Startup PCYSYS Launches Penetration-Testing AI in North America", available at: News Wire <https://www.newswire.ca/news-releases/israeli-cyber-security-startup-pcysys-launches-penetration-testing-ai-in-north-america-682371412.html>.
- 69 Shankar Bradley. "Report: Canada struggling to keep up with demand for cybersecurity talent | BetaKit", (2018), available at: Betakit <https://betakit.com/report-canada-struggling-to-keep-up-with-demand-for-cybersecurity-talent/>.

- 70 McLeod James. “Canada facing a talent crunch when it comes to cybersecurity experts — and things look likely to get worse | Financial Post”, (2018), available at: Financ Post <https://business.financialpost.com/technology/canada-facing-a-talent-crunch-when-it-comes-to-cybersecurity-experts-and-things-look-likely-to-get-worse>.
- 71 IBM. “IBM News room - 2017-12-14 IBM Announces Collaboration with Leading Fortune 500 Companies, Academic Institutions and National Research Labs to Accelerate Quantum Computing - United States”, (2017), available at: <https://www-03.ibm.com/press/us/en/pressrelease/53483.wss>.
- 72 “Starting the Quantum Incubation Journey with Business Experiments - DIGITALE WELT | Das Wirtschaftsmagazin zur Digitalisierung”, (2019), available at: Digit Welt <https://digitaleweltmagazin.de/en/2019/01/28/starting-the-quantum-incubation-journey-with-business-experiments/>.
- 73 Smith, Lamar. “H.R.6227 - 115th Congress (2017-2018): National Quantum Initiative Act”, (2018), available at: <https://www.congress.gov/bill/115th-congress/house-bill/6227/text>.
- 74 Innovation, Science and Economic Development Canada. “Canada’s Science Vision”, (2018), available at: Gov Canada [http://www.ic.gc.ca/eic/site/131.nsf/eng/h\\_00000.html](http://www.ic.gc.ca/eic/site/131.nsf/eng/h_00000.html).
- 75 Siegel, G., 2018. Quantum Computing Market Forecast to Reach \$10.7 billion by 2024. EIN Presswire. Available at: <https://www.einpresswire.com/article/451012857/quantum-computing-market-forecast-to-reach-10-7-billion-by-2024>.
- 76 Pender, Terry. “Waterloo very much in the game in quantum computing | TheRecord.com”, (2019), available at: Record (Washington) <https://www.therecord.com/news-story/9121482-waterloo-very-much-in-the-game-in-quantum-computing/>.
- 77 Ibid.
- 78 McLeod James. “Meet the Waterloo startup that’s partnering with Google and IBM to make quantum computing a reality | Financial Post”, (2018), available at: Financ Post <https://business.financialpost.com/technology/meet-the-waterloo-startup-thats-partnering-with-google-and-ibm-to-make-quantum-computing-a-reality>.
- 79 Carrel-Billiard, Marc, Dan Garrison & Carl Dukatz. “Think Beyond Ones and Zeros” (2017) Accenture 3, available at: [https://www.accenture.com/t20170628T011725Z\\_\\_w\\_\\_/ca-en/\\_acnmedia/PDF-54/Accenture-807510-Quantum-Computing-RGB-V02.pdf#zoom=50](https://www.accenture.com/t20170628T011725Z__w__/ca-en/_acnmedia/PDF-54/Accenture-807510-Quantum-Computing-RGB-V02.pdf#zoom=50).
- 80 Accenture. Preparing intelligent enterprises now for a secure future (2018), available at: [https://www.accenture.com/t20190108T193338Z\\_\\_w\\_\\_/us-en/\\_acnmedia/PDF-87/Accenture-809668-Quantum-Cryptography-Whitepaper-v05.pdf#zoom=50](https://www.accenture.com/t20190108T193338Z__w__/us-en/_acnmedia/PDF-87/Accenture-809668-Quantum-Cryptography-Whitepaper-v05.pdf#zoom=50)
- 81 Accenture.com. (2018). [online] Available at: [https://www.accenture.com/t20190108T193338Z\\_\\_w\\_\\_/us-en/\\_acnmedia/PDF-87/Accenture-809668-Quantum-Cryptography-Whitepaper-v05.pdf#zoom=50](https://www.accenture.com/t20190108T193338Z__w__/us-en/_acnmedia/PDF-87/Accenture-809668-Quantum-Cryptography-Whitepaper-v05.pdf#zoom=50)
- 82 Department of Finance Canada, Potential Policy Measures to Support a Strong and Growing Economy: Positioning Canada’s Financial Sector for the Future, online (pdf) : <https://www.fin.gc.ca/activty/consult/pssge-psefc-eng.pdf>.
- 83 Budget Implementation Act, 2018, No. 1, SC 2018, c. 12.
- 84 Bank Act, SC 1991, c 46.
- 85 Insurance Companies Act, SC 1991, c 47.
- 86 Trust and Loan Companies Act, SC 1991, c 45.
- 87 These changes are consistent with the recommendation in the Report at page 53 and the discussion of partnerships with fintechs on page 43.
- 88 KPMG, The Canadian Fintech Landscape, online (PDF): <https://assets.kpmg.com/content/dam/kpmg/ca/pdf/2018/10/the-canadian-fintech-landscape.pdf>.
- 89 Proceeds of Crime (Money Laundering) and Terrorist Financing Act, SC 2000, c 17.
- 90 Department of Finance Canada, Regulatory Initiative: Regulations Amending Certain Regulations Made Under the Proceeds of Crime (Money Laundering) and Terrorist Financing Act – Forward Regulatory Plan 2018-2020, online: <https://www.fin.gc.ca/legislation/frp-ppr/2018-2020/08-eng.asp>.
- 91 This initiative is consistent with the recommendation in the Report at page 53.
- 92 Government of Canada, Canada Gazette, Part I, Volume 152, Number 23: Regulations Amending Certain Regulations Made Under the Proceeds of Crime (Money Laundering) and Terrorist Financing Act, 2018, online: <http://www.gazette.gc.ca/rp-pr/p1/2018/2018-06-09/html/reg1-eng.html>.



- <sup>93</sup> Justin Giovannetti, “Ontario to ease regulations on financial startups”, The Globe and Mail, (7 November 2017), online: <https://www.theglobeandmail.com/news/national/ontario-to-ease-regulations-on-financial-startups/article36873205/>.
- <sup>94</sup> This initiative is consistent with the discussion and recommendations in the Report at pages 47-51.
- <sup>95</sup> Competition Bureau Canada, Technology-Led Innovation in the Canadian Financial Services Sector: A Market Study, online (pdf): [http://publications.gc.ca/collections/collection\\_2018/isde-ised/lu54-65-2017-eng.pdf](http://publications.gc.ca/collections/collection_2018/isde-ised/lu54-65-2017-eng.pdf).
- <sup>96</sup> Competition Bureau Canada, Regulatory highlights following the Competition Bureau’s Market Study, online: <http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/04392.html>.
- <sup>97</sup> Supra note 95, at pages 8-9.
- <sup>98</sup> See the discussion of open banking at pages 39-40 of the Report.
- <sup>99</sup> Department of Finance Canada, News Release, Minister Morneau Launches Advisory Committee on Open Banking, September 26, 2018, online: <https://www.fin.gc.ca/n18/18-085-eng.asp>.
- <sup>100</sup> This initiative is consistent with the recommendation in the Report at page 53.
- <sup>101</sup> Department of Finance Canada. “Department of Finance Canada Launches Consultations on Open Banking”, (2019), available at: <https://www.fin.gc.ca/n19/19-002-eng.asp>.
- <sup>102</sup> Cryptocurrency Offerings, CSA Staff Notice 46-307 (August 24, 2017).
- <sup>103</sup> This initiative is consistent with the recommendation in the Report at page 52 related to establishing dedicated fintech teams.
- <sup>104</sup> Ontario Securities Commission, News Release, OSC Announces Fintech Advisory Committee Members for 2018, February 7, 2018, online: [http://www.osc.gov.on.ca/en/NewsEvents\\_nr\\_20180207\\_fintech-advisory-committee-members.htm](http://www.osc.gov.on.ca/en/NewsEvents_nr_20180207_fintech-advisory-committee-members.htm).
- <sup>105</sup> This initiative builds on initiatives discussed in the Report at page 48.
- <sup>106</sup> Australian Securities & Investments Commission, News Release, 17-430MR ASIC broadens fintech cooperation with Canadian regulators, December 12, 2017, online: <https://asic.gov.au/about-asic/news-centre/find-a-media-release/2017-releases/17-430mr-asic-broadens-fintech-cooperation-with-canadian-regulators/>.
- <sup>107</sup> Financial Conduct Authority (UK), News Release, FCA and OSC sign Co-operation Agreement to support innovative businesses, February 22, 2017, online: <https://www.fca.org.uk/news/press-releases/fca-and-osc-sign-co-operation-agreement-support-innovative-businesses>.
- <sup>108</sup> Ontario Securities Commission, News Release, Notice Of Co-Operation Agreement Concerning Innovative Fintech Businesses With The Abu Dhabi Global Market Financial Services Regulatory, October 26, 2017, online: [https://www.osc.gov.on.ca/documents/en/20171026\\_nca-services-regulatory-authority.pdf](https://www.osc.gov.on.ca/documents/en/20171026_nca-services-regulatory-authority.pdf).
- <sup>109</sup> Ontario Securities Commission, News Release, Canadian securities regulators sign agreement with the French Autorité des marchés financiers, February 8, 2018, online: [http://www.osc.gov.on.ca/en/NewsEvents\\_nr\\_20180208\\_csa\\_csa-sign-agreement-with-french-amf.htm](http://www.osc.gov.on.ca/en/NewsEvents_nr_20180208_csa_csa-sign-agreement-with-french-amf.htm)
- <sup>110</sup> Financial Conduct Authority (UK), News Release, Global Financial Innovation Network, August 7, 2018, online: <https://www.fca.org.uk/publications/consultation-papers/global-financial-innovation-network>.
- <sup>111</sup> Ibid.
- <sup>112</sup> “IIROC focuses on evolution of advice in Canada’s investment landscape”, (2018), available at: IIROC [http://www.iiroc.ca/Documents/2018/4f580371-2080-42f8-85d1-5624edffaea3\\_en.pdf](http://www.iiroc.ca/Documents/2018/4f580371-2080-42f8-85d1-5624edffaea3_en.pdf).
- <sup>113</sup> Department of Finance Canada, A New Retail Payments Oversight Framework, online: <https://www.fin.gc.ca/activty/consult/rpof-cspd-eng.asp>.
- <sup>114</sup> The initiatives in this section are consistent with the discussion in the Report at page 36 – 37, and the recommendations at page 44.
- <sup>115</sup> Supra note 113
- <sup>116</sup> Ibid.
- <sup>117</sup> Ibid.
- <sup>118</sup> Payments Canada, Modernization Target State: Summary of the Key Requirements, Conceptual End State, Integrated Work Plan and Benefits of the Modernization Program, December 2017, online (pdf): [https://www.payments.ca/sites/default/files/21-Dec 17/modernization\\_target\\_state\\_en\\_final.pdf](https://www.payments.ca/sites/default/files/21-Dec%2017/modernization_target_state_en_final.pdf).

- <sup>119</sup> Accenture analysis of CB Insights Data. Source: © CB Information Services, Inc.—used by permission
- <sup>120</sup> Accenture analysis of CB Insights Data. Source: © CB Information Services, Inc.—used by permission
- <sup>121</sup> Zubairi Amira. “Confirmed: Collision conference relocating to Toronto in 2019 | BetaKit”, (2018), available at: Betakit <https://betakit.com/confirmed-collision-conference-relocating-to-toronto-in-2019/>.
- <sup>122</sup> McCarthy Tétrault LLP. “OSC And AMF Join Global Financial Innovation Network - Finance and Banking - Canada”, (2018), available at: <http://www.mondaq.com/canada/x/735154/Financial+Services/OSC+And+A+MF+Join+Global+Financial+Innovation+Network>.
- <sup>123</sup> Badour, Ana & Nicole Chiarelli. “Australia and UK Establish ‘Fintech Bridge’: A Model for Canada? | McCarthy Tétrault”, (2018), available at: McCarthy <https://www.mccarthy.ca/en/insights/blogs/cyberlex/australia-and-uk-establish-fintech-bridge-model-canada>.
- <sup>124</sup> “Glossary of Funding Types – Crunchbase | Knowledge Center”, available at: <https://support.crunchbase.com/hc/en-us/articles/115010458467-Glossary-of-Funding-Types>.

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Please note that McMillan contributed those parts of the report dealing with the legal and regulatory aspects of the fintech ecosystem while Accenture contributed to those parts dealing with the economic and technological aspects of the ecosystem.

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