Toronto's ICT/Fintech Firms in Global Context

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Major Research Questions

- What does the evidence gathered to date reveal about the extent to which Toronto's ICT sector is integrated into global production networks?

- What are the key drivers determining the competitiveness of ICT firms located in the Toronto region?

Economic Overview of Toronto

- Largest city in Canada – 6 million in the GTA – more than 8 in the GGH
- Most diversified economy – Transition from manufacturing to knowledge-based economy and cultural/creative industries
- Strongest financial services sector in Canada
- Scores high on creative occupations & number of Bohemians (Florida)
- Financial services, KIBS, creative &cultural industries are major consumers of digital technologies
- Strong growth in Toronto economy – but still faces major challenges

Key Economic Challenges in the Toronto Region

- Regional competitiveness:
  - Loss of traditional manufacturing base
  - Mismatch between jobs and labour demand
  - Sprawl and transportation congestion (OECD report)
  - Rising housing costs – en route to San Francisco/Silicon Valley
  - Strong research base, weak commercialization record
- Fiscal imbalance between needs and resources at municipal level
- Growing infrastructure demands
  - Long delay in rebuilding infrastructure
  - Large gap to overcome

Drivers of Toronto's ICT Sector

- GTA – 11,500 firms in the ICT sector in Toronto (2011)
- 605 manufacturing firms & 10,900 service firms
- More than 161,000 employees in Toronto ICT sector
  - Cluster is geographically dispersed from Markham to Oakville – Multiple, competing industry associations representing different segments and interests
- Key firms include headquarters of most major MNCs – foreign & Canadian
  - Autodesk, Celestica, CISCO, Constellation, IBM, HP, Microsoft, Xerox, Bell, Rogers, Telus, Microsoft, 500 firms are active R&D performers – 6,600 researchers
  - IBM Software Solutions Lab – 2500 employees
  - Xerox Research Centre in Sheridan Park-100 scientists
- But really multiple realities across these different industry segments

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Toronto's Startup Ecosystem Ranking

- 17th Overall, down from #8 in 2012 due to slow growth

- Shortcomings in Funding and Startup Experience

	Ranking		Performance	Funding	Market Reach	Talent	Startup Exp.	Growth Index
Silicon Valley	1	◄	1	1	4	1	1	2.1
New York City	2	▲ 3	2	2	1	9	4	1.8
Los Angeles	3	◄	4	4	2	10	5	1.8
Boston	4	▲ 2	3	3	7	12	7	2.7
Tel Aviv	5	▼ 3	6	5	13	3	6	2.9
London	6	▲ 1	5	10	3	7	13	3.3
Chicago	7	▲ 3	8	12	5	11	14	2.8
Seattle	8	▼ 4	12	11	12	4	3	2.1
Berlin	9	▲ 6	7	8	19	8	8	10
Singapore	10	▲ 7	11	9	9	20	9	1.9
Paris	11	◄	13	13	6	16	15	1.3
Sao Paulo	12	▲ 1	9	7	11	19	19	3.5
Moscow	13	▲ 1	17	15	8	2	20	1.0
Austin	14	NEW	16	14	18	5	2	1.9
Bangalore	15	▲ 4	10	6	20	17	12	4.9
Sydney	16	▼ 4	20	16	17	6	10	1.1
Toronto	17	▼ 9	14	18	14	15	18	1.3
Vancouver	18	▼ 9	18	19	15	14	11	1.2
Amsterdam	19	NEW	15	20	10	18	16	3.0
Montreal	20	NEW	19	17	16	13	17	1.5

Source: Compass Global Startup Ecosy

Research Methodology

Interviews for Toronto ICT Study
Venture Capital (n=3)
Firms (n=33)
Industry Associations (n=2)

Additionally...
Interviews For Fintech Study
Banks (n=6)
Fintech (n=19)
Government (n=2)
Industry Associations (IA) (n=3)
Incubators (n=2)
Insurance (n=2)
Professional Services (PS) (n=4)
Venture Capital (VC) (n=2)

Human resources performance software
Data-driven health platform
Video game design
Hardware contract manufacturer
Wearables
Digital animation and marketing for health sector
Mobile apps & infrastructure for network operators
Digital B2B marketing software
IT service integrator

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Research Findings: GPN Integration

- Global Production Networks versus Global Marketing Focus
  - Firms producing products or services in Canada but marketing them globally
  - Exception being hardware, which is sourced via global contractors
- Sources of innovation:
  - IT integrators and platform builders cited customers as main external source of innovation, with their in house talent creating custom solutions
  - Contract manufacturers cited global supply chain partners as sources of valuable 'horizontal/lateral' innovation, which increased their value add vis-à-vis their customers
- Use of local suppliers:
  - Recruiting, design services, coding services
  - Some claimed that the ecosystem is not well connected, lack of anchor firms

Research Findings:
Local Context Versus Global Flows

- Assets of Toronto include:
  - Highly-talented STEM labour pool/recent graduates/co-ops
  - Easy to access global cities via airports (particularly Porter on the Island)
  - Quality of life attracts talent
  - Social safety net and healthcare enable workers to take the risk of working for a start-up
- Local Firm collaboration/supply relationships:
  - Software producers build in-house and sell globally within their niche market
  - IT integrators source globally and customize solutions to local market
  - There seems to be little collaboration between local firms, particularly, large Canadian firms do not buy technology from Canadian start-ups
- Founder Networking:
  - Peer networking appears to be strong for sharing of best practices

Local Context Versus Global Flows: Large Contract Manufacturing Firm

- Contract manufacturer ('electronic manufacturing services') assembles both at the printed circuit board assembly level and at the system level, grew out of integrated computer company 20 years ago
  - Less consumer-aimed, more 'higher liability mission critical complex product space'
  - Shifting away from high volume towards high complex, high mix, lower volume
  - Most clients are US enterprise and communication OEMs, storage, networking, ect.
  - Also moving into Aerospace (April 2015 took over aircraft location in Mississauga)
- Lateral/horizontal innovation
  - Cross-sector competencies include bringing the supply chain together, design and the engineering, 150 products launched per month
  - Beginning to drive innovation with OEMs via pre-manufacturing co-design, thanks to knowledge gained from 20 years of a 'window onto the world' to various technology verticals and industry restructuring (shift from vertical to horizontal value chains and innovation)
  - Joint Development and Manufacturing: pre-engineering product solutions ahead of market
  - Recognizing need to create domain-focused ecosystems, partnering earlier in development, ReMAP is a blueprint for how we see that working

Local Context Versus Global Flows: Spotlight on Software Start-ups

- Serial entrepreneur
    - Came from enterprise workforce management software company (whose former employees have produced about 16 other companies)
    - Started a company, sold to major U.S. software company and joined that company as VP for three years
    - Currently starting another company
- Cohort of experienced serial entrepreneurs growing, and collaborating
    - "Not the Valley yet, but still a lot more people than there were 10 years ago, who have done that before, sort of seen that, done it"
    - Biggest obstacle: Best talent leaves due to lack of firm density compared to Silicon valley (approx. 100-300 thousand Canadians in the Valley)
    - Catch 22: we are not plugged into US networks (buyers, investors, talent), you have to live there
- Founding partner of U of T's Rotman Creative Destruction Lab

Local Context Versus Global Flows: Spotlight on TechToronto Meet-ups

- More than 100 firms participate in events
  - Includes firms in the digital space, ICT, hardware, software, and wearable technologies, not cleantech and healthtech
  - Mostly pre-seed, 10+ employees
- Sees itself as an 'unbiased builder'
- TechToronto Meetups draw monthly crowds of 500+
  - Beer & pizza networking where attendees wear nametags indicating they are looking to hire, looking for work, or looking for funding
  - Presentations by founders who share best practices
  - Pass the mic, 1 minute pitch sessions

Research Findings: Research and Development

- Use of Research Institutions:
  - Moderate levels of sourcing innovation from universities & gov. labs
  - Complaint that academia and government research operates on different timelines than industry
- Use of Innovation Programs:
  - Most companies use SR&ED, but complain the paperwork (and 3rd party consultant fees) makes it only marginally worth the effort
- Intermediary organizations (accelerators, Incubators)
  - Most companies did not report much tangible benefit of membership (MaRS) unless they themselves came up through an accelerator (ex: Rotman's Creative Destruction Lab)

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Research Findings: Talent Development

- Talent pool is strong
  - Firms identified strong talent pool (great STEM Post secondary) as a main driver of competitiveness, anchoring them in Canada
  - Some firms cite brain drain for difficulty hiring qualified Electrical Engineers and Computer Science
  - Toronto has many talented software engineers, but competition for them is costly
- Difficulty finding:
  - Software engineers, despite the reputable schools and talent pool
  - Candidates with both STEM technical ability *and* business/marketing talent
  - Employees that are adaptable and don't require too much 'hand-holding'
  - Challenge with bringing key managerial talent from abroad

Research Findings: Government & Associations

- Involvement with local industry associations
  - Mixed participation rates, valued more by firms looking for customers to sell IT services to
  - Some companies took part in Bcorp certification (sustainable, social)
  - Informal founder peer networks viewed as valuable
- Views on changes to SR&ED
  - Many were unfamiliar with the changes, some see it as rewarding inputs (trying) over outputs (results)
  - Compliance paperwork and consulting fee burden was a frequent complaint
  - Some firms called for a streamlined, 'pre-screened' status for repeat (trustworthy) applicants
  - IT integrators complain that their 'development' work of customizing IT service to client needs should qualify, SR&ED is too skewed towards the 'R' and not the 'D'
- Other Policy Measures
  - Government procurement should be used more to benefit Canadian tech
  - Accelerators everywhere "spreads the butter too thin", experience growing and selling is missing
  - Infrastructure (widespread & affordable high-speed internet)
  - Introduce more competition into sectors with protected regulations
  - Programs to tackle affordability issues with commercial and residential real estate

Key Shortcomings in the Ecosystem

- Access to finance
  - Shortage occurs between $500 000 and 5 000 000
- Lack of breadth and depth of firms compared to Silicon Valley
  - There is not the same critical mass of firms comprising the whole technology chain from system, software to hardware design
- Disconnected and conservative domestic market
  - Big Canadian firms do not consume innovative technology from Canadian innovators, instead preferring to import technology after foreign validation
- Talent shortages
  - Some firms lamented the fierce competition for software engineers, as well as the dearth of marketing and business talent (with experience scaling tech companies) as compared to other clusters like Silicon Valley
- Real estate is expensive
  - Tech firms see downtown locations as key to success, but complain about costs of both commercial real estate and residential costs for employees

Conclusion – What is needed?

- Better connect the ecosystem locally
  - Assist large and small firms to connect more, encourage buying Canadian tech.
  - Support organic start-up-led communities like TechToronto
  - Connect serial entrepreneurs with new founders
- Better connect the ecosystem globally
  - Support linkages with clusters like Silicon Valley that serve to strengthen Toronto's cluster
- Build on positive momentum to attract talent and investment
  - Encourage investment and the return of Canadian talent abroad by highlighting the increasing attractiveness and growth of the ecosystem

Next Steps

- Interview larger firms in the ecosystem, including foreign subsidiaries

- Interview more Venture Capital investors

- Interview more policymakers

- Work with TechToronto, PWC, and Career Builder to produce a report offering recommendations for the growth of the Toronto Tech ecosystem based on defined, credible, and measurable metrics