



CRÉATION, DÉVELOPPEMENT ET  
COMMERCIALISATION DE L'INNOVATION

# ICT networks and clusters in Quebec

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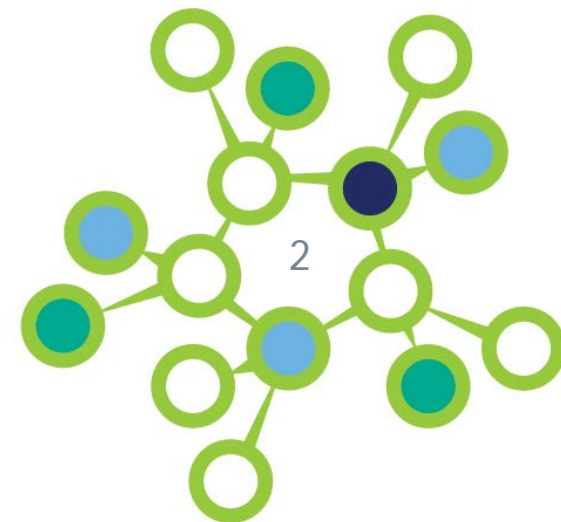
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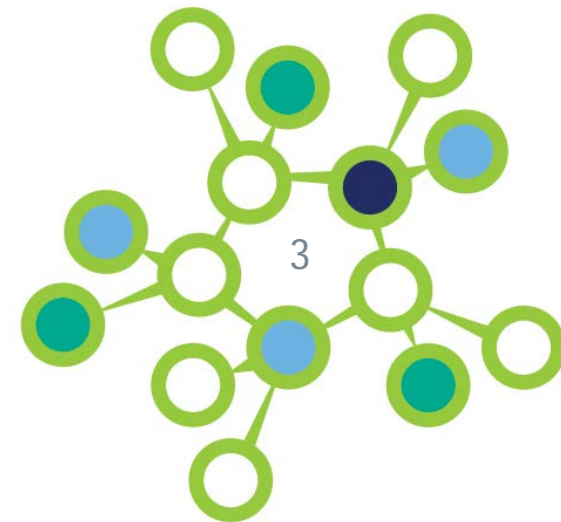
# Objectives of the project

- Role of intermediaries
  - Nurturing greater number of firms
  - Accelerating research-to-commercialisation
- Importance of cluster
  - Their place in GPN GIN? Still pertinent?
- Role of universities within clusters
  - Extent of research collaboration
  - Perception of firms about training
- Local and international links
  - Local collaboration
  - Spread of international network

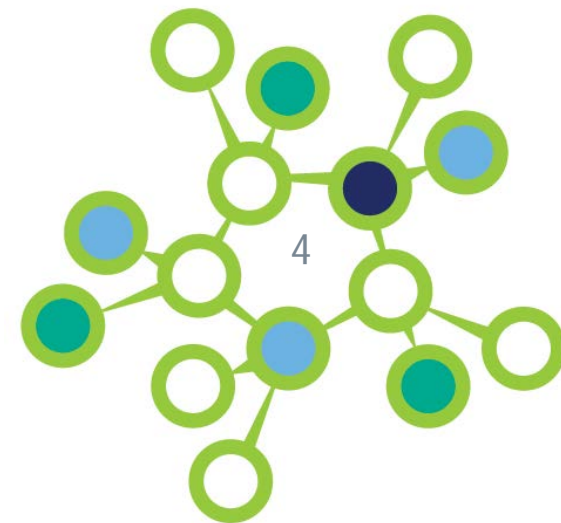


# Methodology

- Case studies
  - 6 interviews with intermediaries
  - 7 interviews with firms
- Initially focused on hardware...
- Inform a questionnaire based approach to be launched in the coming year

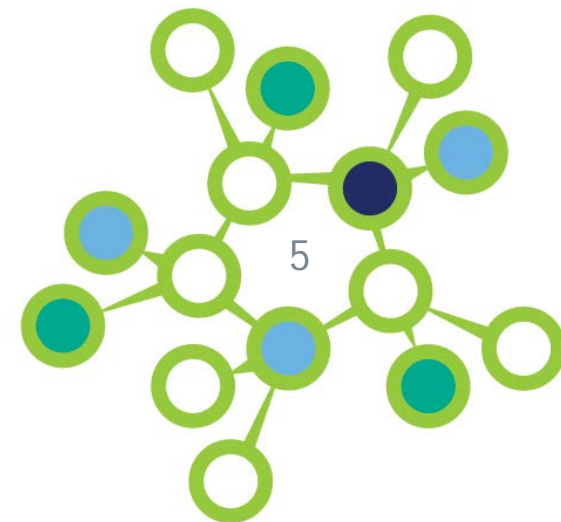


# Innovation intermediaries



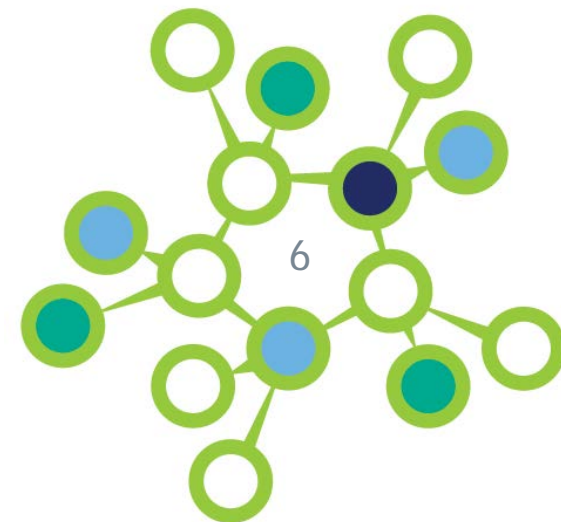
# Intermediaries

- 6 intermediaries were interviewed
  - Int-A: Tech univ-firm collaboration (commercialisation)
    - Piloting and commercialisation of ICT
  - Int-B: Tech univ-firm collaboration (funding)
    - Research infrastructure; problem-solution matchmaking
  - Int-C: Help SMEs (understand and adopt ICT)
    - SME can be active participants or test fields for services or process innovations



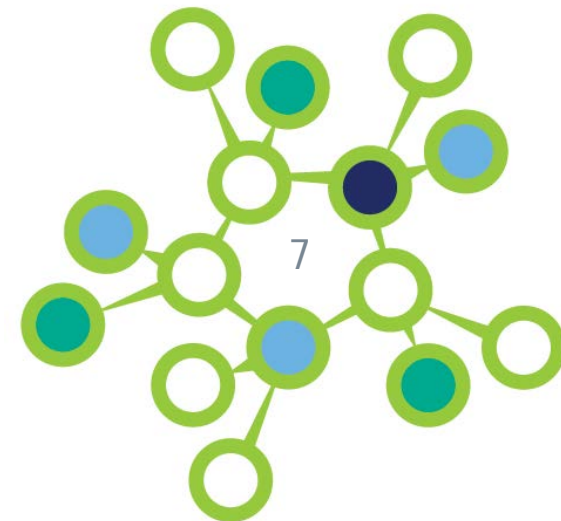
# Intermediaries

- 6 intermediaries were interviewed
  - Int-D: Help companies in the start-up phase
    - Commercial services (market research, integration of external consultants, seminars, customer service)
  - Int-E: ICT univ-firm collaboration (funding)
    - Research infrastructure; problem-solution matchmaking
  - Int-F: University technology transfer office



# Collaboration

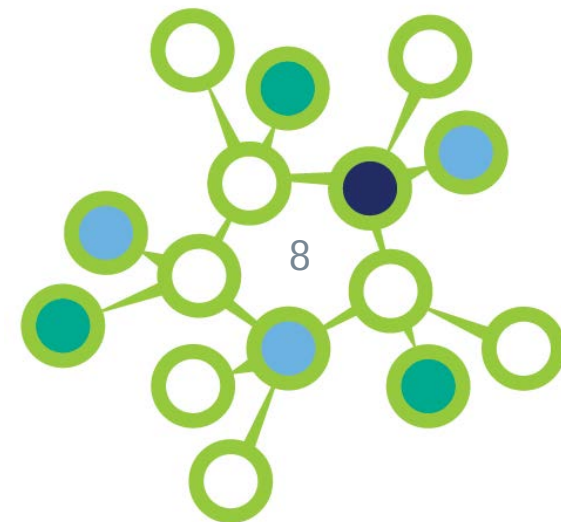
- ◉ Int-B has a vast network of collaborators to help small firms grow
  - ◉ From universities to external consultants (including entrepreneurship academics)
  - ◉ From local development centers to national associations
- ◉ Int-B helps firms identify
  - ◉ Identify their innovation problems
  - ◉ Find the right resources (financial, human or material) to solve their problems,
  - ◉ Get strategic advice





# Collaboration

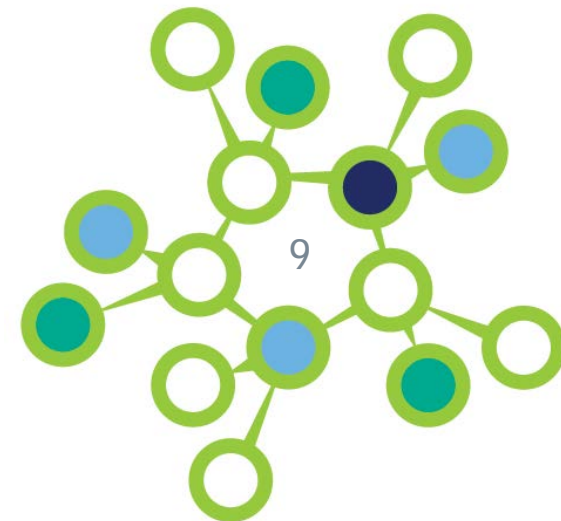
- Int-C helps SMEs
  - Understand new usage of ICT, adopt new ICT usage
  - Provides them with services targeted to their needs (ex: training)
  - Offers occasional for financing





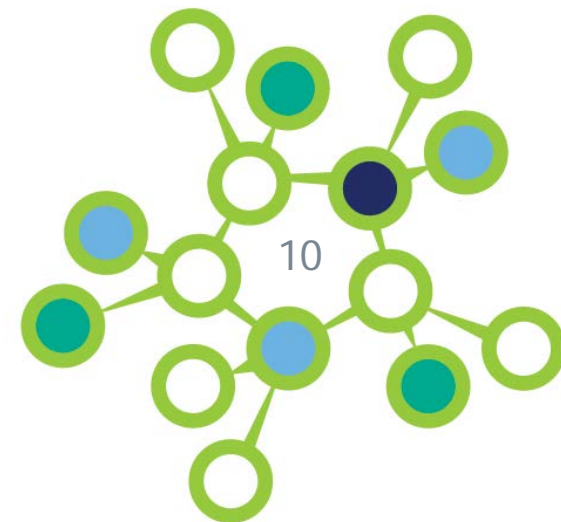
# Collaboration

- ◉ Int-D has a vast network of collaborators to help small firms grow
  - ◉ From universities to external consultants (including entrepreneurship academics)
  - ◉ From local development centers to national associations
- ◉ Int-E often works with collaborators that already know each other
  - ◉ They bring new themes and the organisation helps them liaise with other partners and specific expertise (the organisation's university extended network)



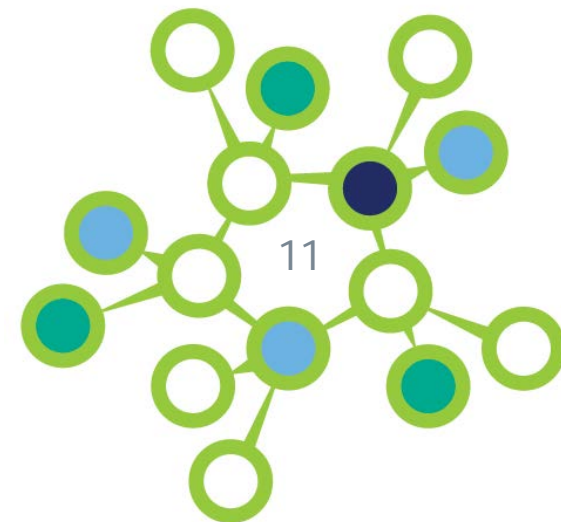
# Collaboration

- ◉ Int-F presents technologies to large international firms with whom the organisation has developed a trust relationship
  - ◉ The development of new firms and the licensing of technologies are its strenghts
  - ◉ “The government suggests that we use Canadian partners but they are currently hard to find. For example, Blackberry were involved in many projects before its financial situation declined”



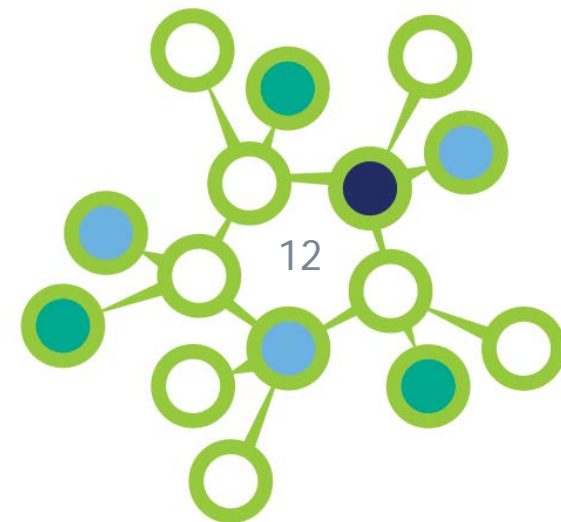
# Open innovation

- ◉ Int-A uses OI in their partnership management to provide services to their clients - they help SMEs
  - ◉ Get in contact with larger suppliers, find financing
  - ◉ Get contact with organisations that can help them in their innovation process (accreditation, protection of intellectual property, etc.)
  - ◉ Get in touch with academia, build their first prototype, fine tune their innovation process
- ◉ Int-B uses OI in web tools to find equipment, problems to solve or solutioners
- ◉ Int-C uses OI to gather people around a topic of common interest and organise research on the topic
- ◉ Int-E states that Quebec is not competitive regarding opening up to international digital networks



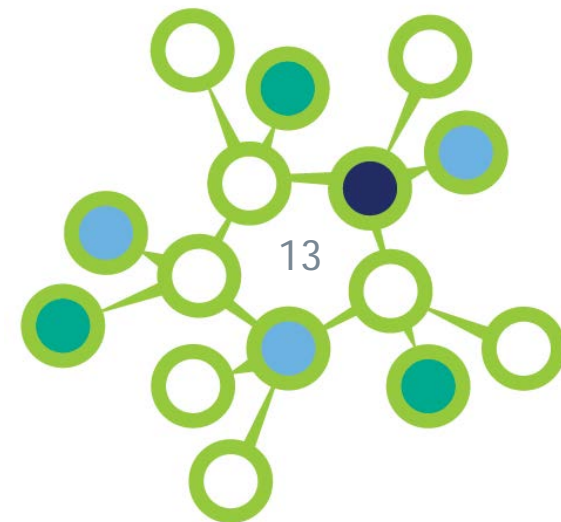
# Open innovation

- Int-D believes that in the health field, open innovation allows well organised attraction poles - some hospitals use OI for software development
- Int-E states that Quebec is not competitive regarding opening up to international digital networks
  - In 5G, critical mass along the Quebec-Ontario corridor with technologies, infrastructures, trial centers to test and appropriate the technologies well integrated and connected internationally is absolutely essential
- As a university tech transfer office, open innovation takes the form of an external path to market for university technologies
  - But not without strong IP protection

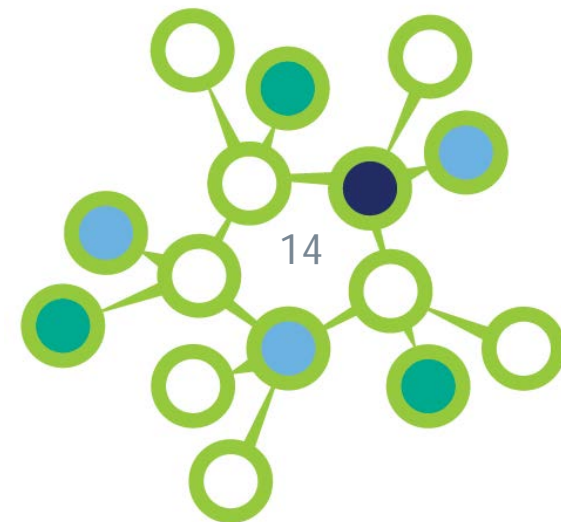


# Public policies

- Industrial Research Assistance Program (IRAP) and Scientific Research and Experimental Development (SR&ED) Programs are crucial to Int-A and Int-B
- Help to tap into international digital networks will be a competitive advantage, but a major obstacle if lacking in scope (Int-E)
- Int-F notes the increasing presence of serial inventors
- Help promote our talent
  - We have some of the best researchers in Optics/Photonics, in AI/OR but nobody knows about it...



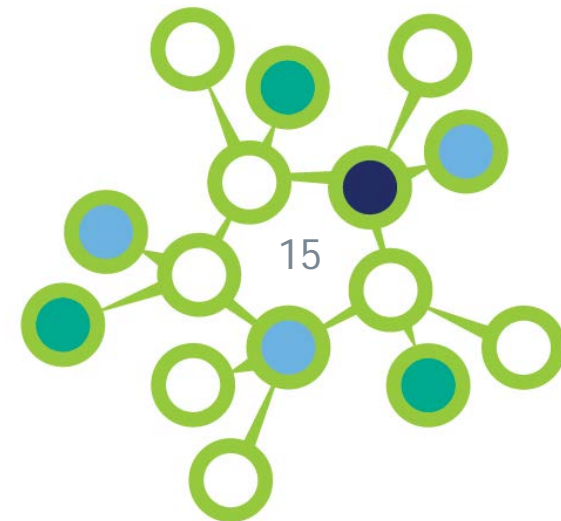
# Firms





# Firms

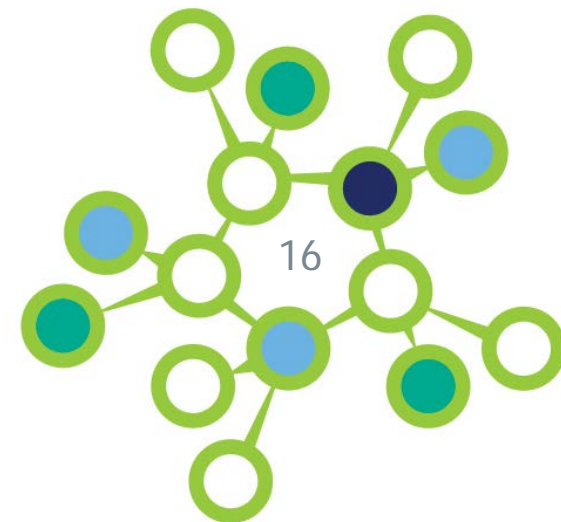
- ◉ Firm-1 : Canadian SME
  - ◉ Designs and manufactures hardware for the entertainment industry
- ◉ Firm-2 Canadian SME
  - ◉ Security software and hardware
- ◉ Firm-3 Canadian SME
  - ◉ Hardware and software in the telecommunication industry
- ◉ Firm-4 International entreprise
  - ◉ Hardware and software in the telecommunication industry





# Firms

- Firm-5 Large Canadian firm
  - Telecommunication hardware and software
- Firm-6 Large international entreprise
  - Hardware and software
- Firm-7 Canadian firm
  - Aerospace and instrumentation hardware
- Most of these firms specialize in high end products



# Firm networks

- Clients

- Canada : Firm-4, 5 and 7 most of their clients are in Canada (aerospace, telecommunication)
- Firm-1: 50 / 50 Canada and International
- Firm-2, 3 and 6 mostly international, especially in USA and Europe

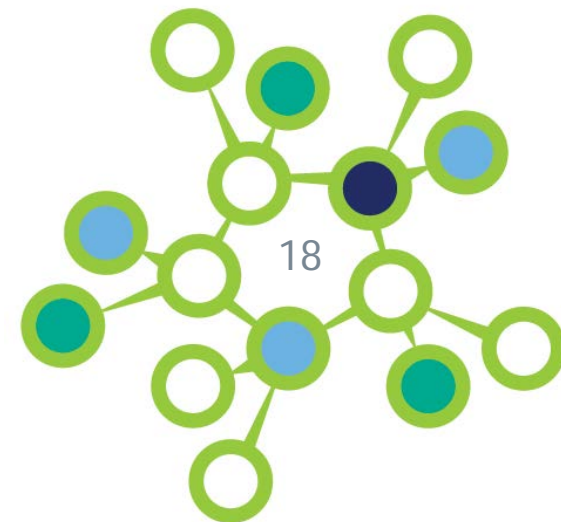
- Suppliers

- Many firms try to work with local suppliers
- International firms (4, 6) rely less on local suppliers, because of foreign headquarters
- In any case, many suppliers outside Canada



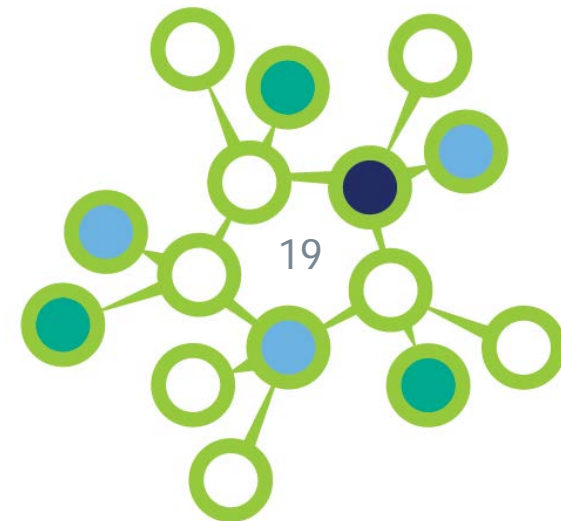
# Firm networks

- Competitors
  - International competition
  - Asia (China) for mass production
  - USA and Europe for high end products



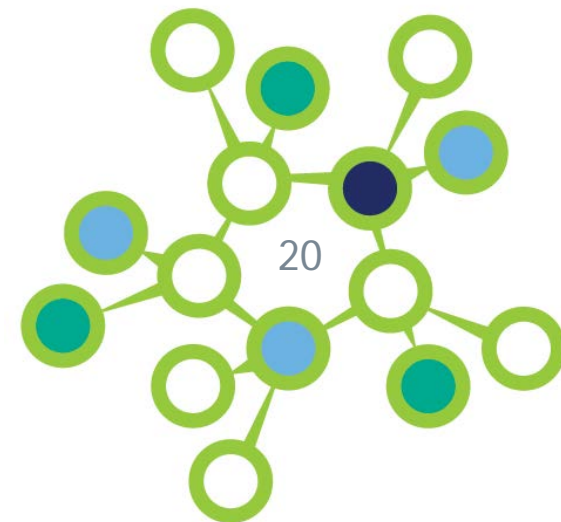
# Firms innovation practices

- Innovation in firms
  - R&D is a major activity in all firms, either large or small, local or international
  - All interviewees said that they have to do a lot of technological innovation in order to stay competitive internationally



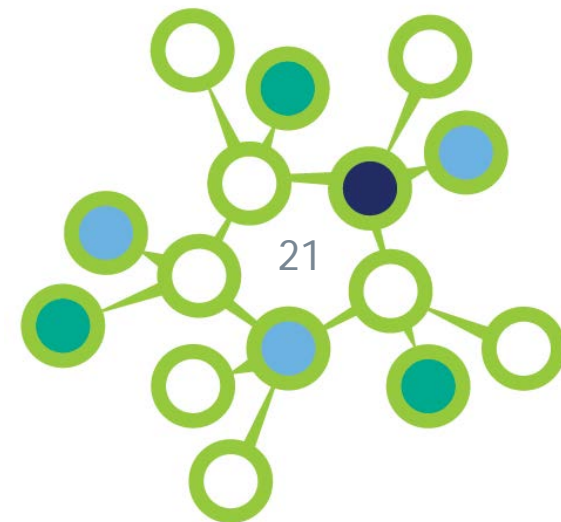
# Collaboration

- All firms have project with universities: research project, internships, MITACS
  - Sometime via intermediaries networks
  - Those projects are mostly in TRL 1-4
  - BUT NOT on their core activities: IP and, for some, for security reasons (raises interesting challenges for data sharing...)
- No major collaboration with other clients, competitors or suppliers – occasional/sporadic
  - Firm-4 and 5 innovated together on a specific project
  - Firm-1 and 6 use data from their client in order to innovate



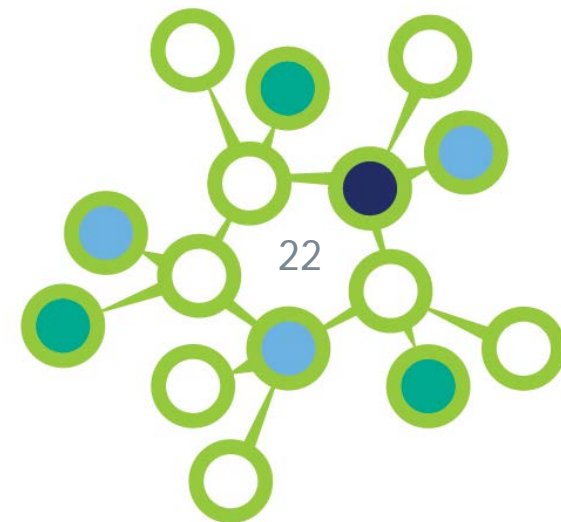
# Why Quebec?

- Firm-1, 2, 3, 7: founded by Canadians
  - Coming from Canada help business (good branding and visibility, easier to export in some countries)
- All firms
  - Specialised and qualified labor force
  - Easy access to some universities research centers/professors
  - R&D tax credits
  - Around Montreal: strong TIC ecosystem
  - Negative aspects
    - Labor force shortages
    - Not enough R&D incentives



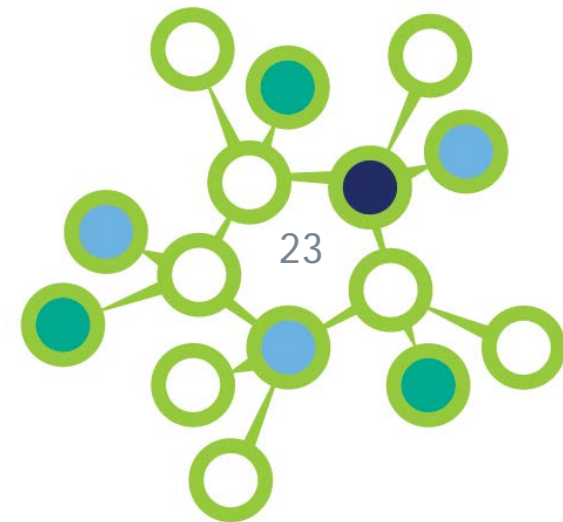
# Public policies

- What do firms have to say about public policies?
  - China is having unfair competition practices
    - Especially state-owned enterprises
    - What can our government do about this?
  - R&D tax credits are nice, but not enough
    - SMEs need help with commercialization
  - Canada's lags behind in terms of technology in the telecom industry
    - Government should push for the most recent technology (ex.. 5G)



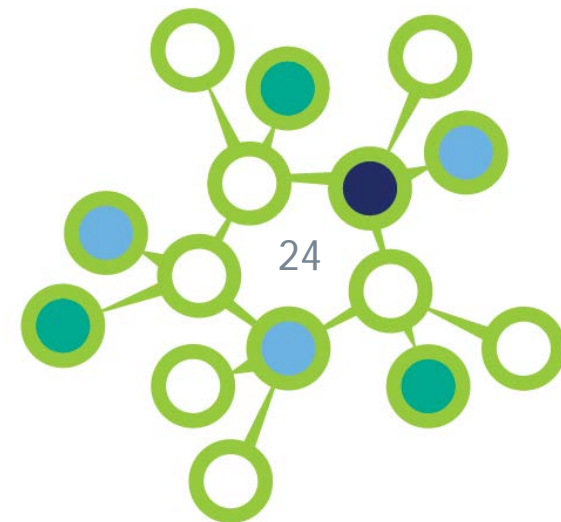


# Future of ICT



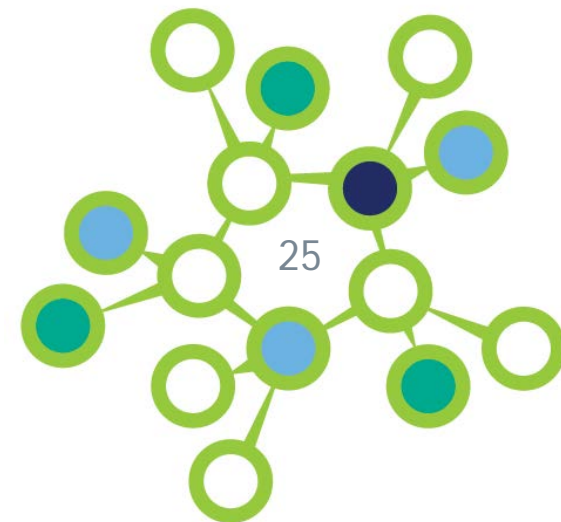
# Future of ICT

- According to Int-A, “in the US, 1\$ for R&D equals to 2\$ invested in the commercialization of a product. We can’t say the same for Canada since it’s only focused on R&D.”
- Hardware? Convergence hardware software?
  - That is so yesterday!
  - The industry is changing too fast and we have to change direction for this research project
    - Providing integrated solutions is what it is all about



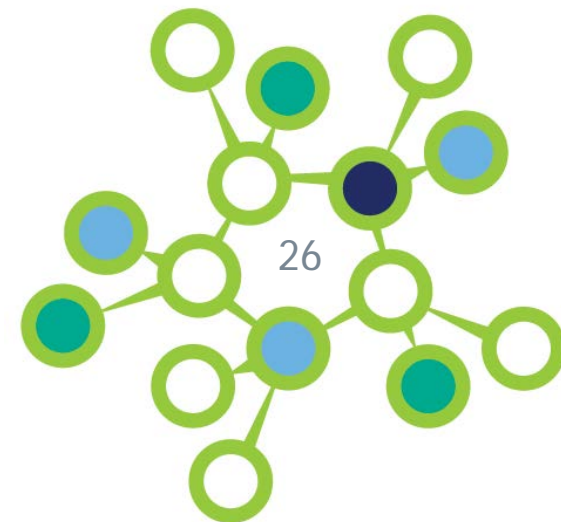
# Future of ICT

- Int-A explains that firms that provide collaborative platforms combine hardware and software
  - It is increasingly difficult to separate the two
- Int-E believes that it is still possible to develop hardware expertise in Quebec
  - Although hardware is hidden in software applications but it will always exist



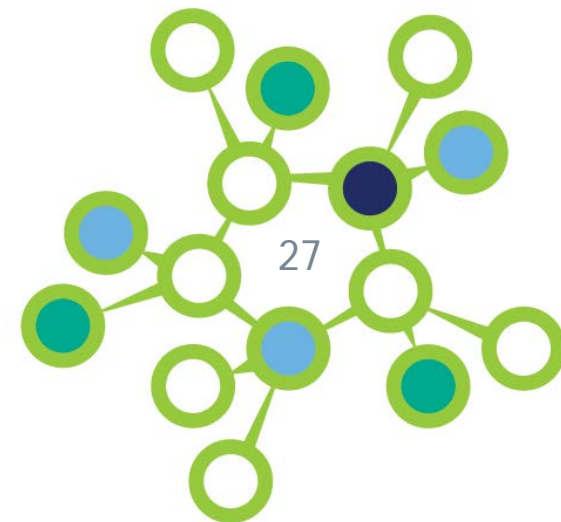
# Future of ITC

- What did firm had to say about the future of the ITC hardware industry in Canada?
  - First of all: Canadian firms need to combine hardware and software if they want to be competitive ...
  - Firms have to focus on high-end products
  - Important pool of young entrepreneurs and labor force
  - Good universities, with some world renowned academics
  - So, overall, yes, Canada can have a strong ITC hardware/software industry



# Future of ICT

- It seems that the gaming industry receives all the attention and money (Québec) - now it is an AI buzz...
- Int-B affirms that Mtl's strength in data analytics, Big Data and quantum computing is a major asset
- ITC sector includes many more application sectors!
- Is the future in sectoral applications?



# Thank you

Questions? Suggestions?

