Insights into ICT hardware networks in Quebec: A focus on university-industry networks and their location

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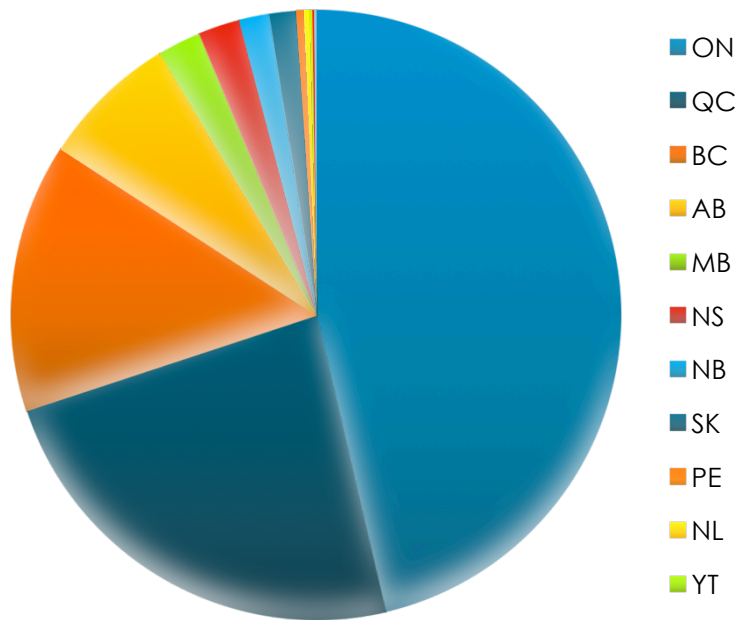CDO Conference April 30th 2015

Agenda

- Overview of the Canadian ICT sector

- NSERC Networks regarding Hardware Projects

- Intermediaries

- Geographical Proximity in Quebec clusters

- Research Objectives for CDO Project
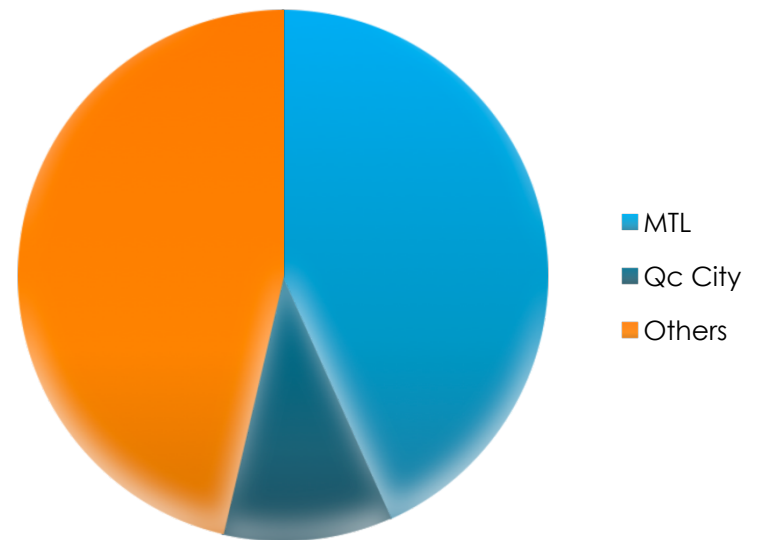
- Methodology

- Conclusion

ICT in Canada

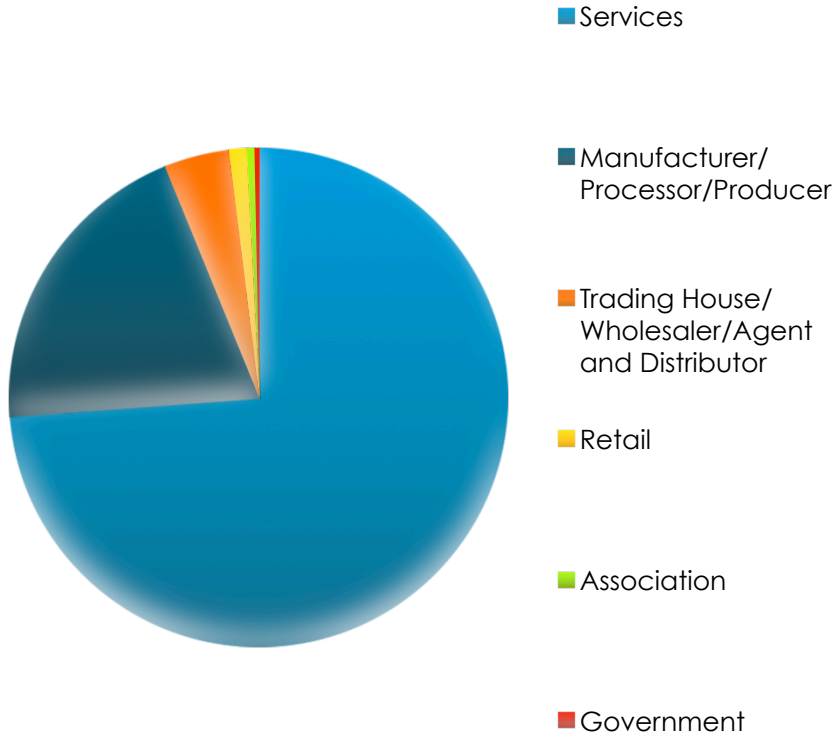**Geographical distribution of ICT firms in Canada**

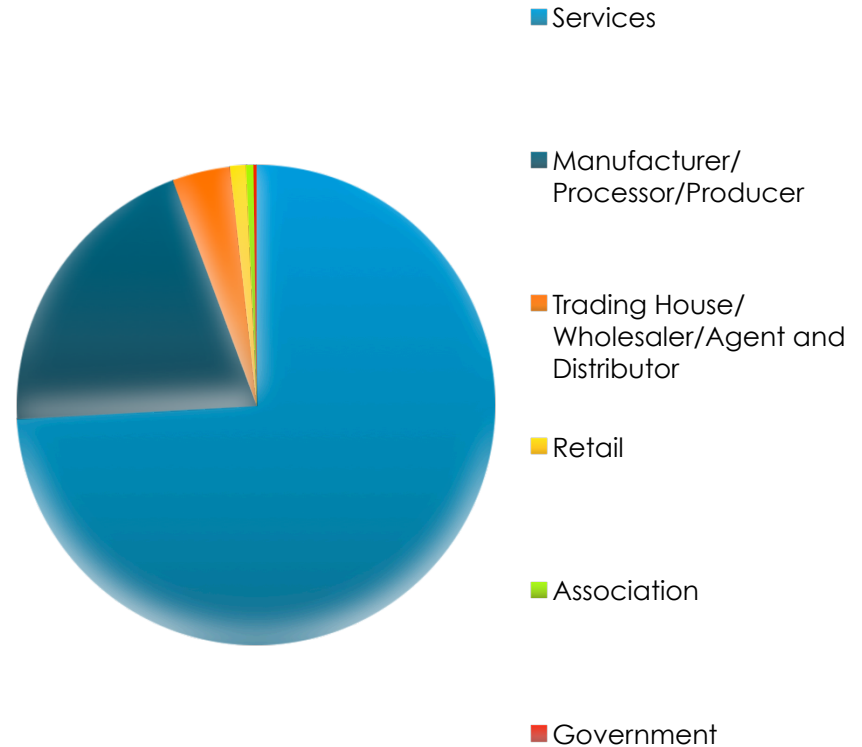**Geographical distribution of ICT firms in Quebec**

Legend (Canada): ON, QC, BC, AB, MB, NS, NB, SK, PE, NL, YT

Legend (Quebec): MTL, Qc City, Others

Source: Industry Canada, Canadian Company Capabilities

# ICT in Canada

ICT firms distribution, by sector, in Canada

ICT firms distribution, by sector, in Quebec

- Services
- Manufacturer/Processor/Producer
- Trading House/Wholesaler/Agent and Distributor
- Retail
- Association
- Government

Source: Industry Canada, Canadian Company Capabilities

Hardware firms in Quebec

Percentage of firms by sales

Legend:
- Qc (495 firms)
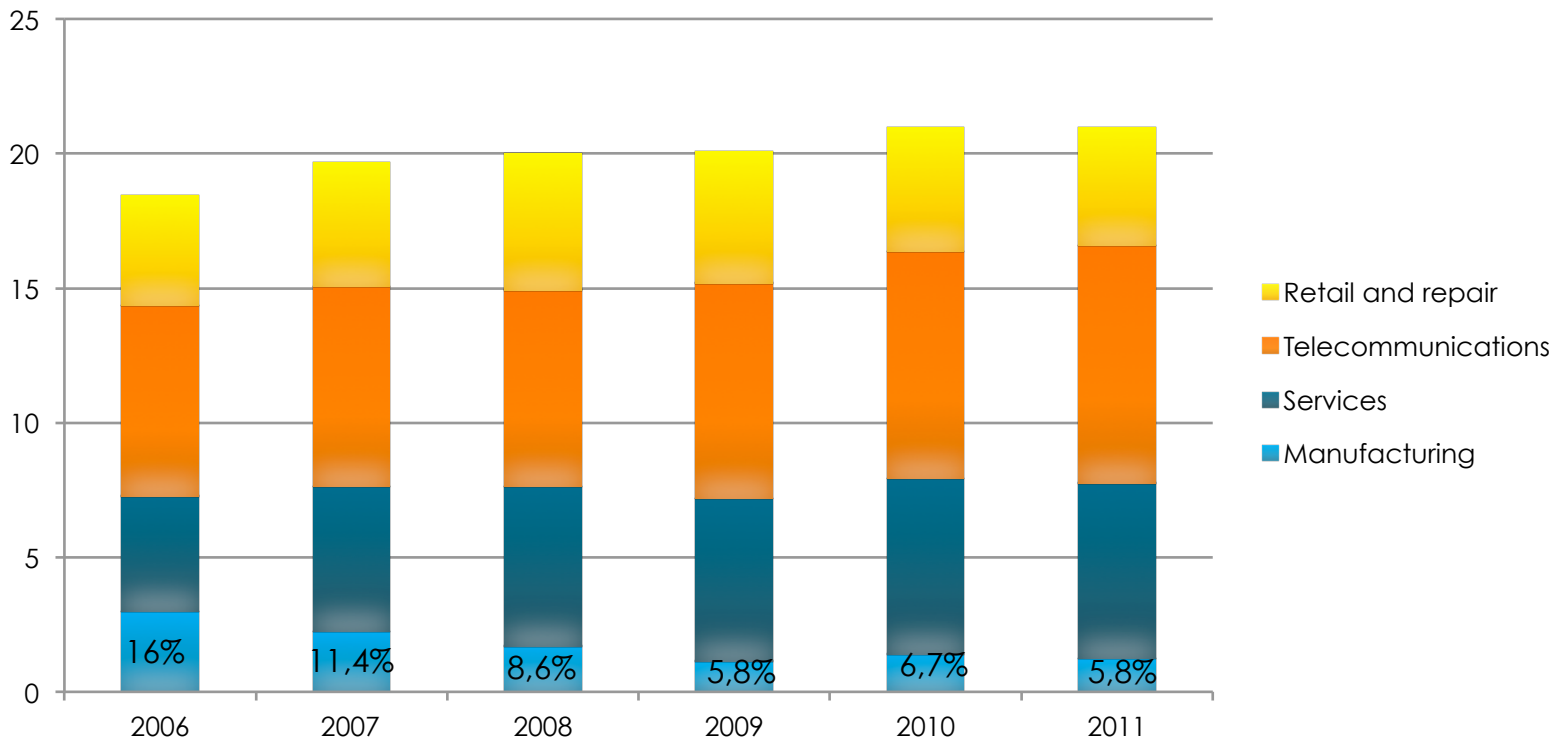- Qc - Manuf (152 firms)
- Qc- Non Manuf (343 firms)
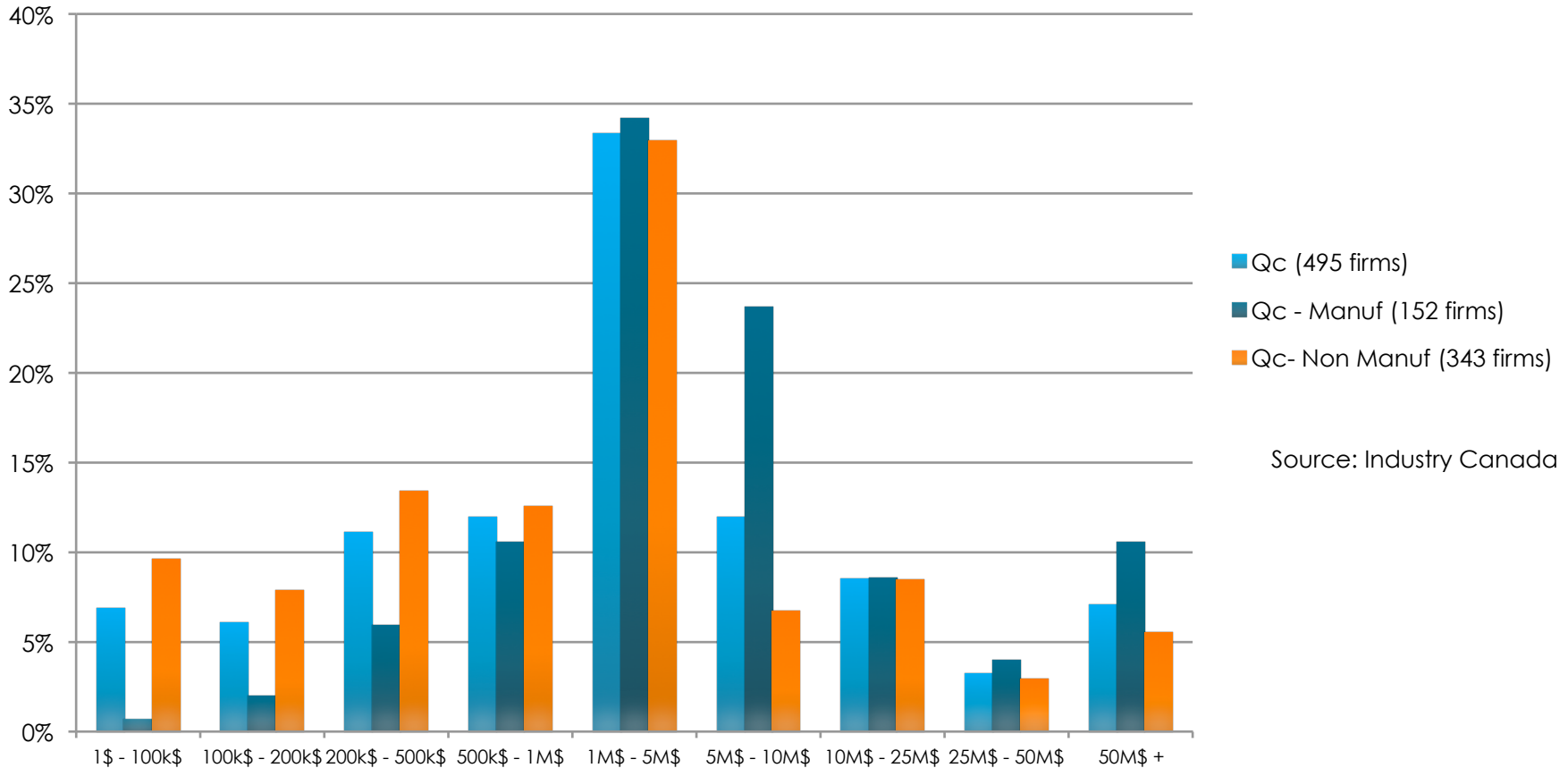
Source: Industry Canada

Manufacturing firms generate higher sales

Hardware firms in Montreal

Revenues by sector (G$) in Greater Montreal region

Legend:
- Retail and repair
- Telecommunications
- Services
- Manufacturing

Manufacturing percentages by year:
- 2006: 16%
- 2007: 11,4%
- 2008: 8,6%
- 2009: 5,8%
- 2010: 6,7%
- 2011: 5,8%

Source: Montreal International and TechnoMontreal

Manufacturing firms were showing declining revenues in Montreal from 2006 to 2011
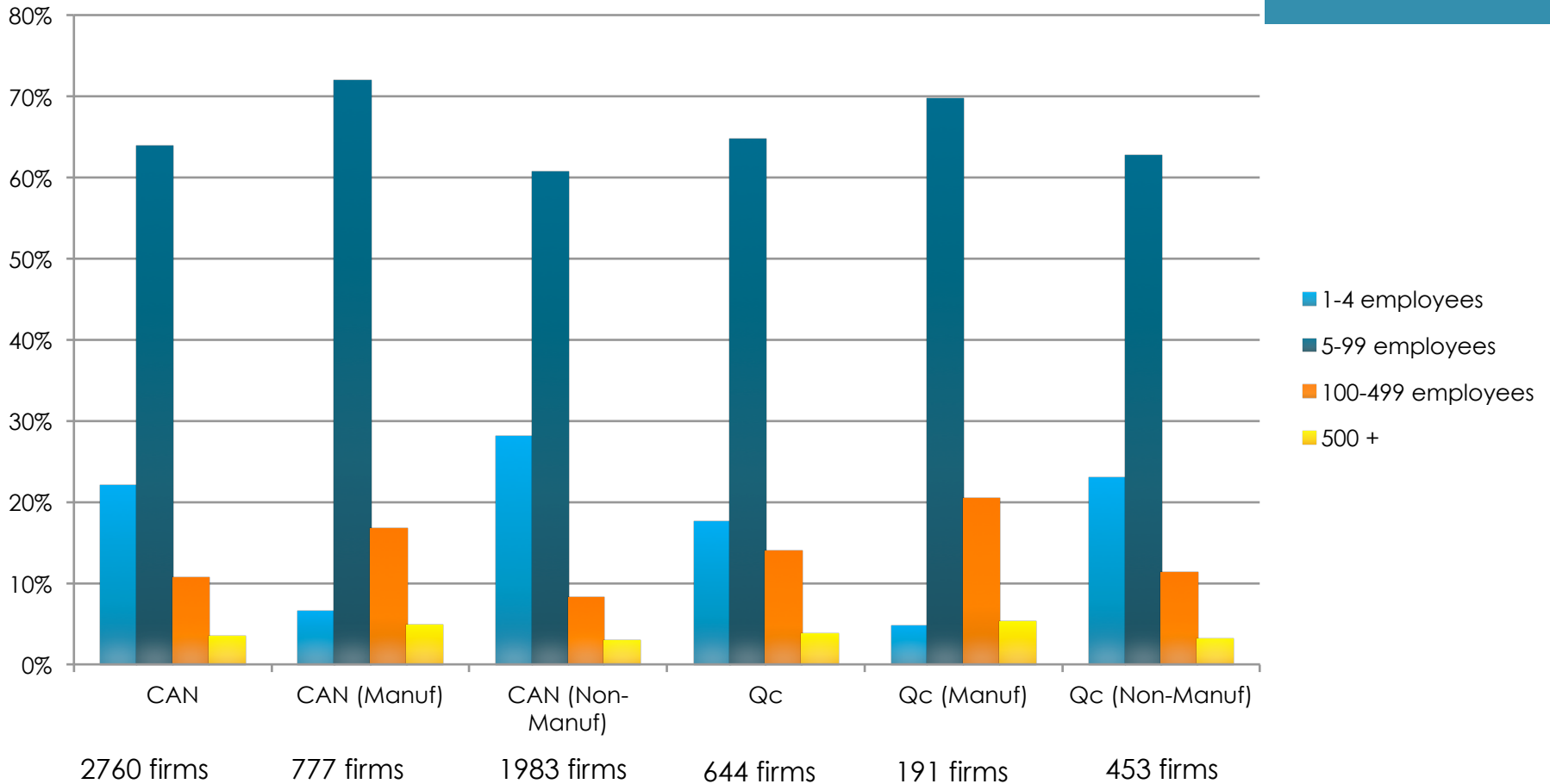
Firms Ownership

	Qc	Qc - Manuf	Canada	Canada - Manuf
Canadian	98,23%	95,32%	97,12%	93,45%
Foreign	1,77%	4,68%	2,88%	6,55%

Manufacturing firms show a higher rate of foreign ownership

ICT firms size

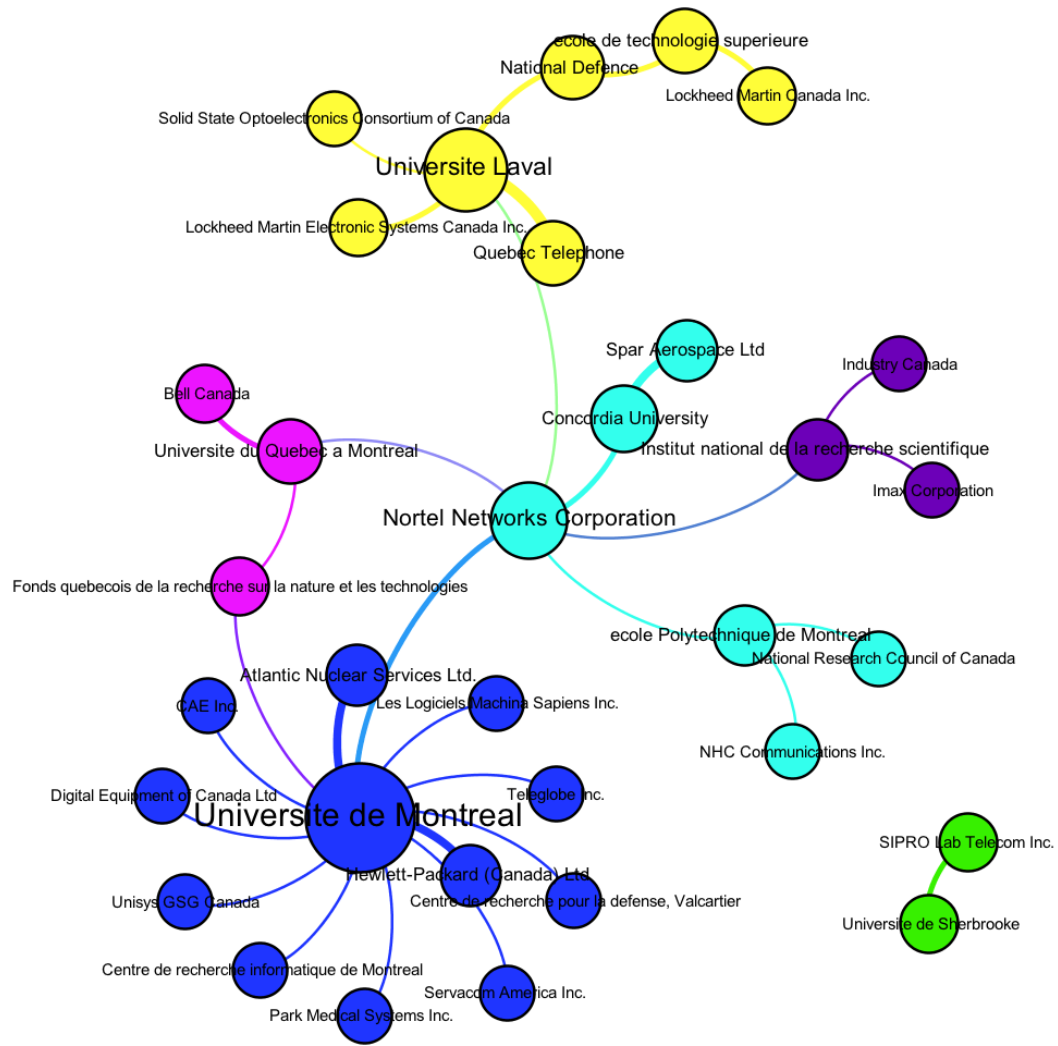**Firm size distribution**

Manufacturing firms are mainly SMEs
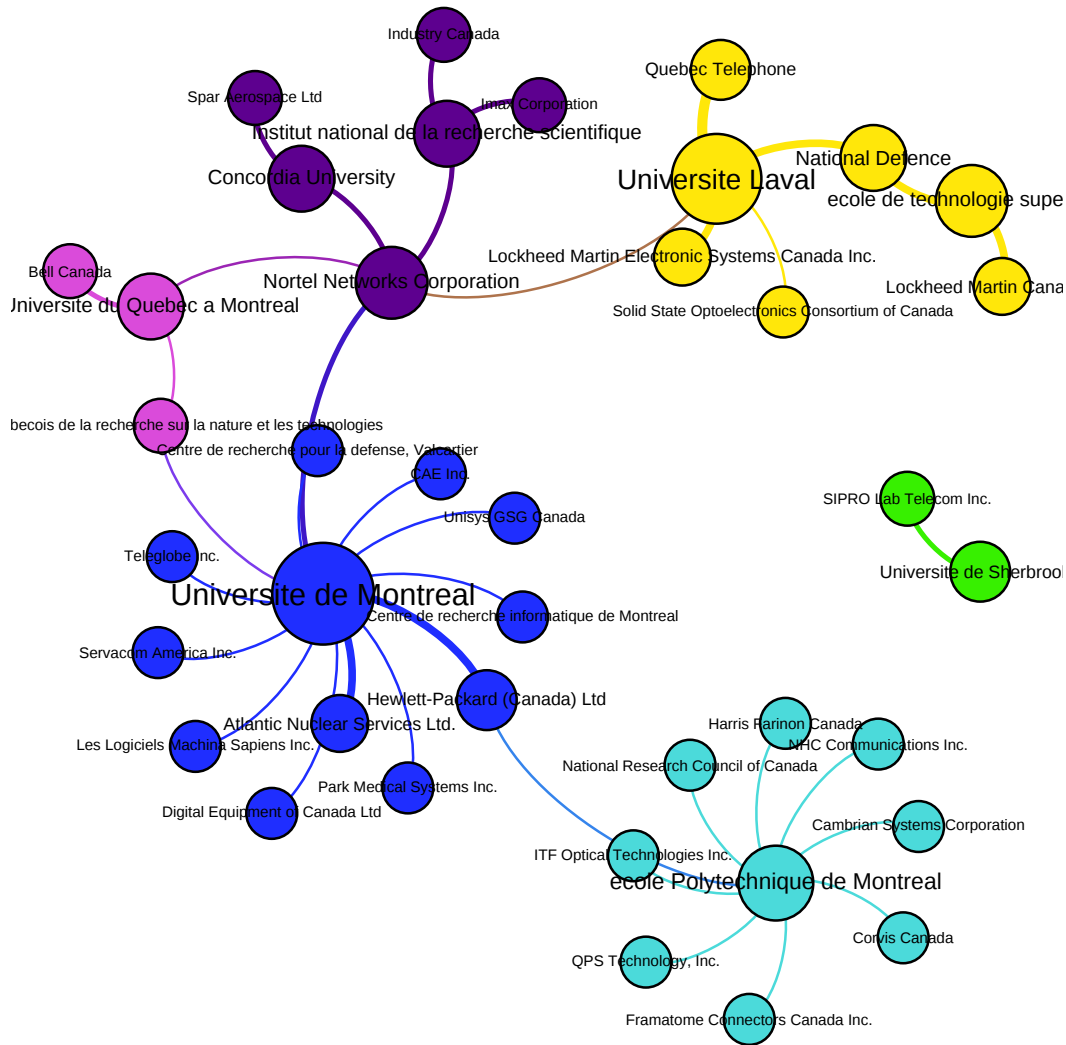
NSERC Networks

Hardware related projects

1993-1997

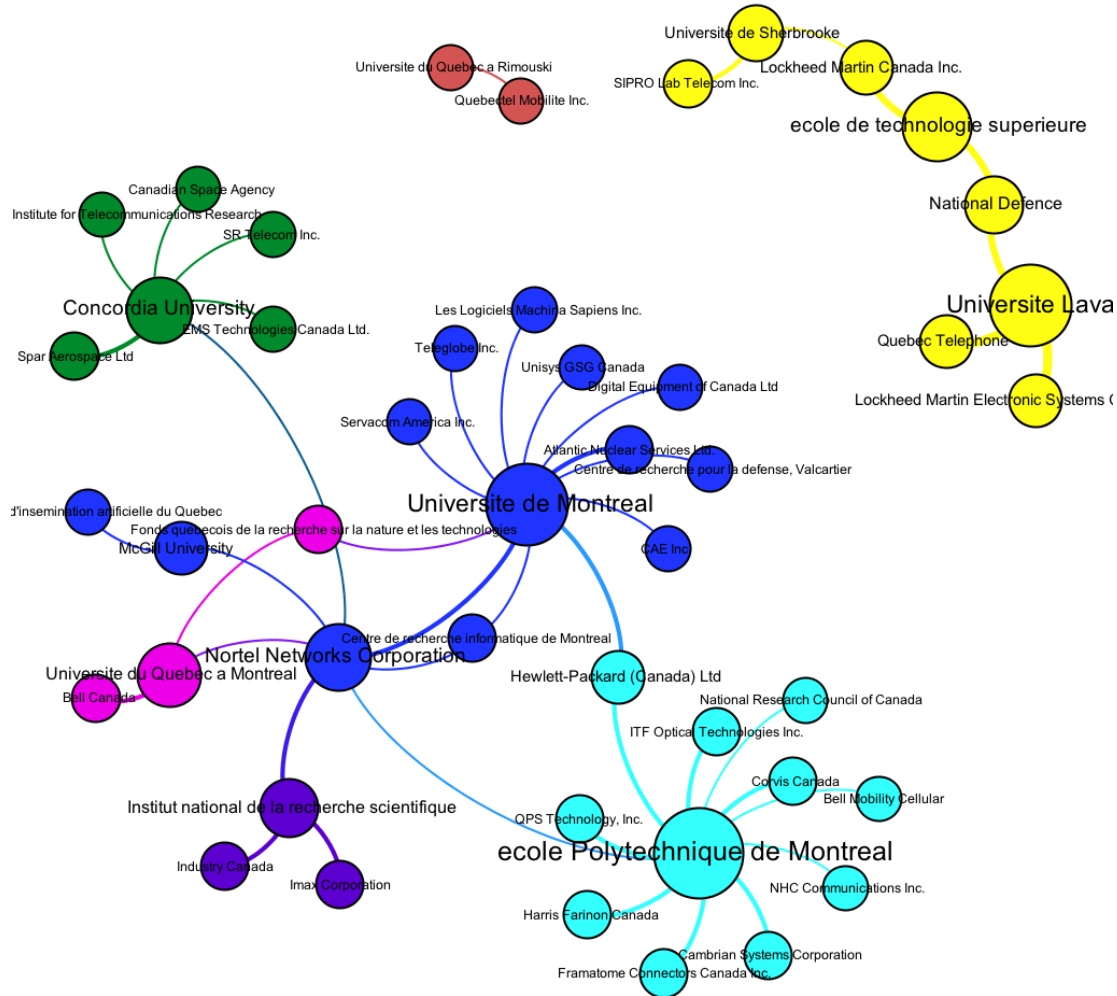Few collabarations, Nortel has a central position amongst the industrial actors

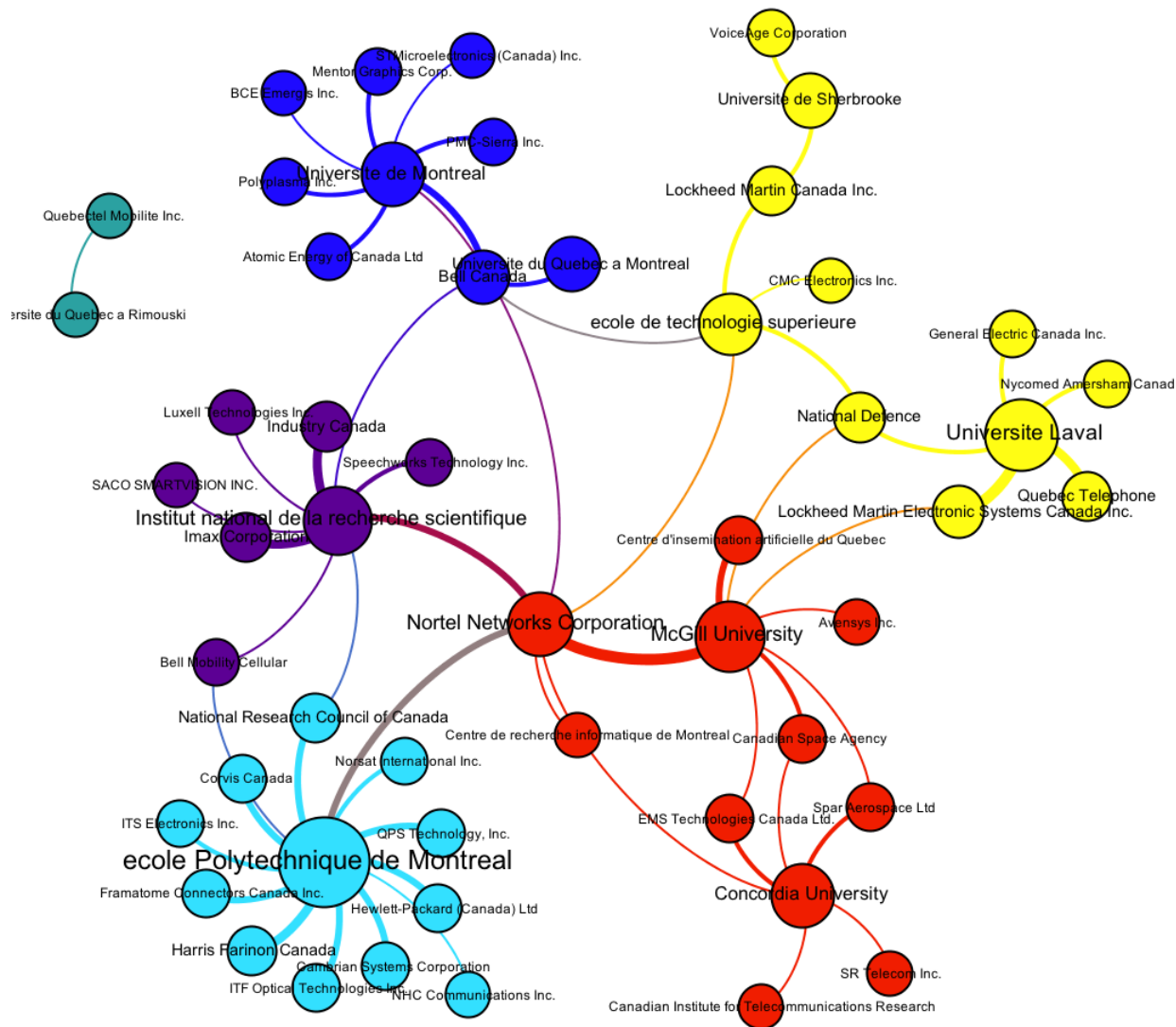# 1994-1998

NSERC funded research

1995-1999

1996-2000
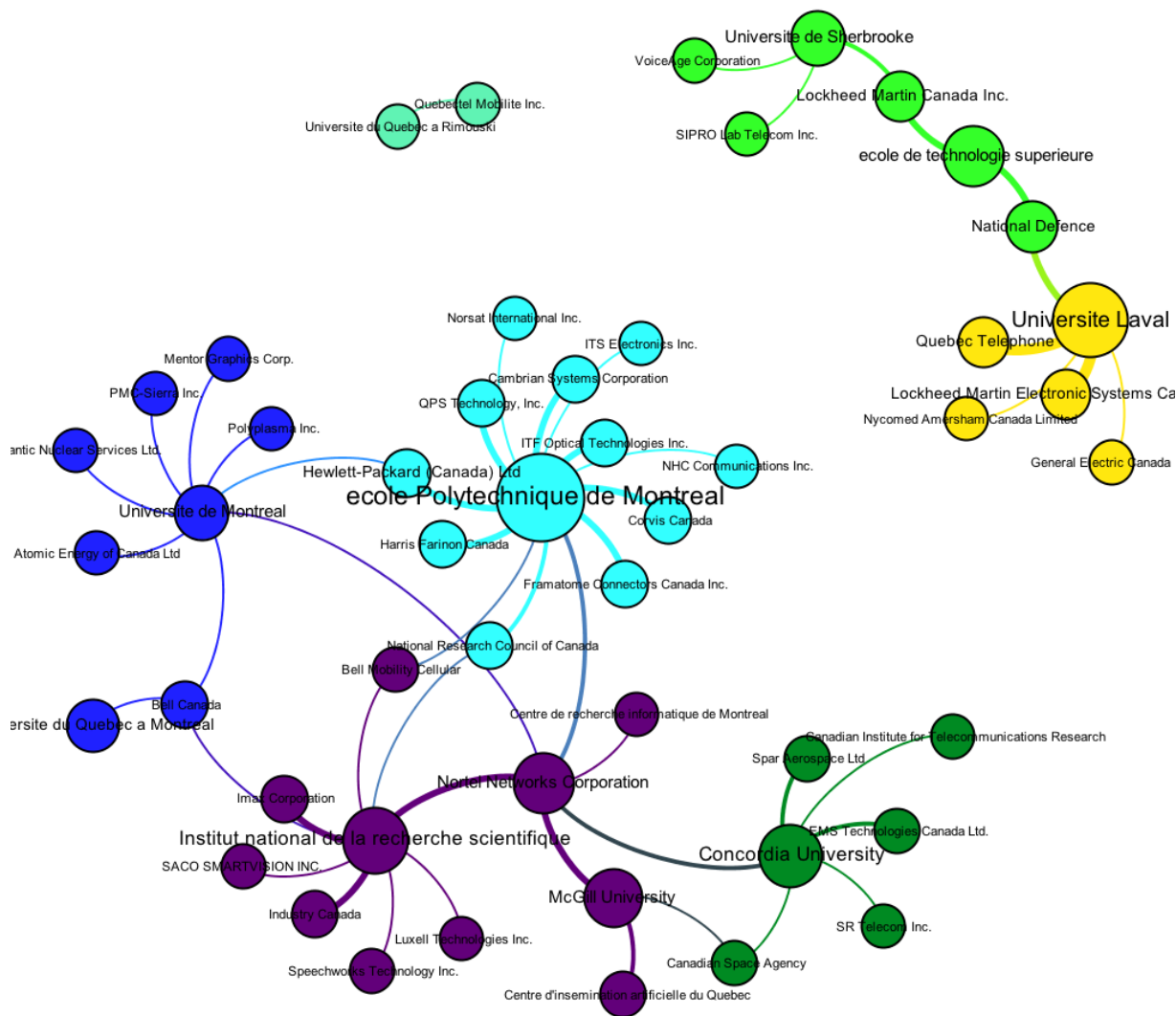
The network is mainly represented by french universities

1997-2001

Nortel is central in the network

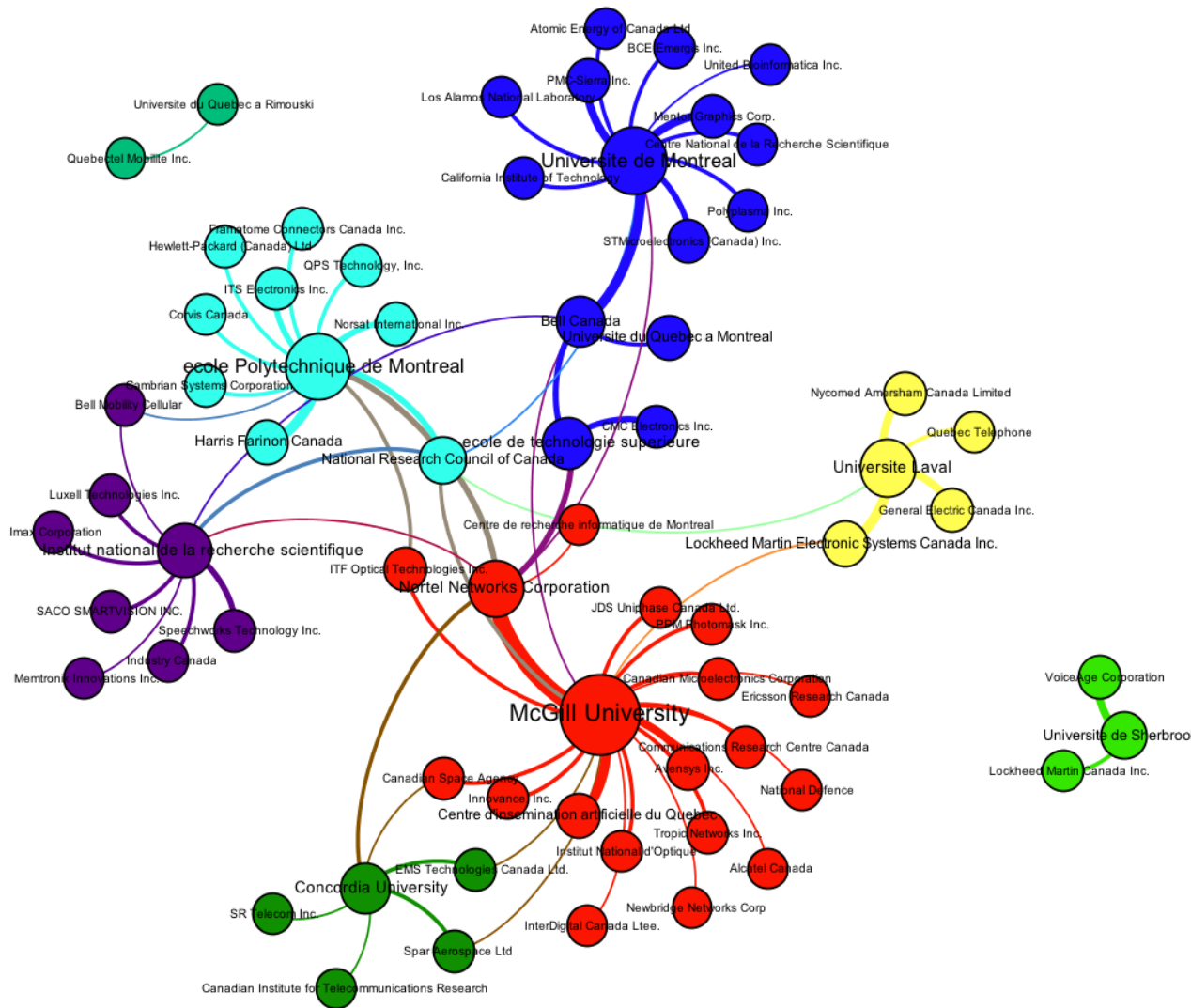# 1998-2002
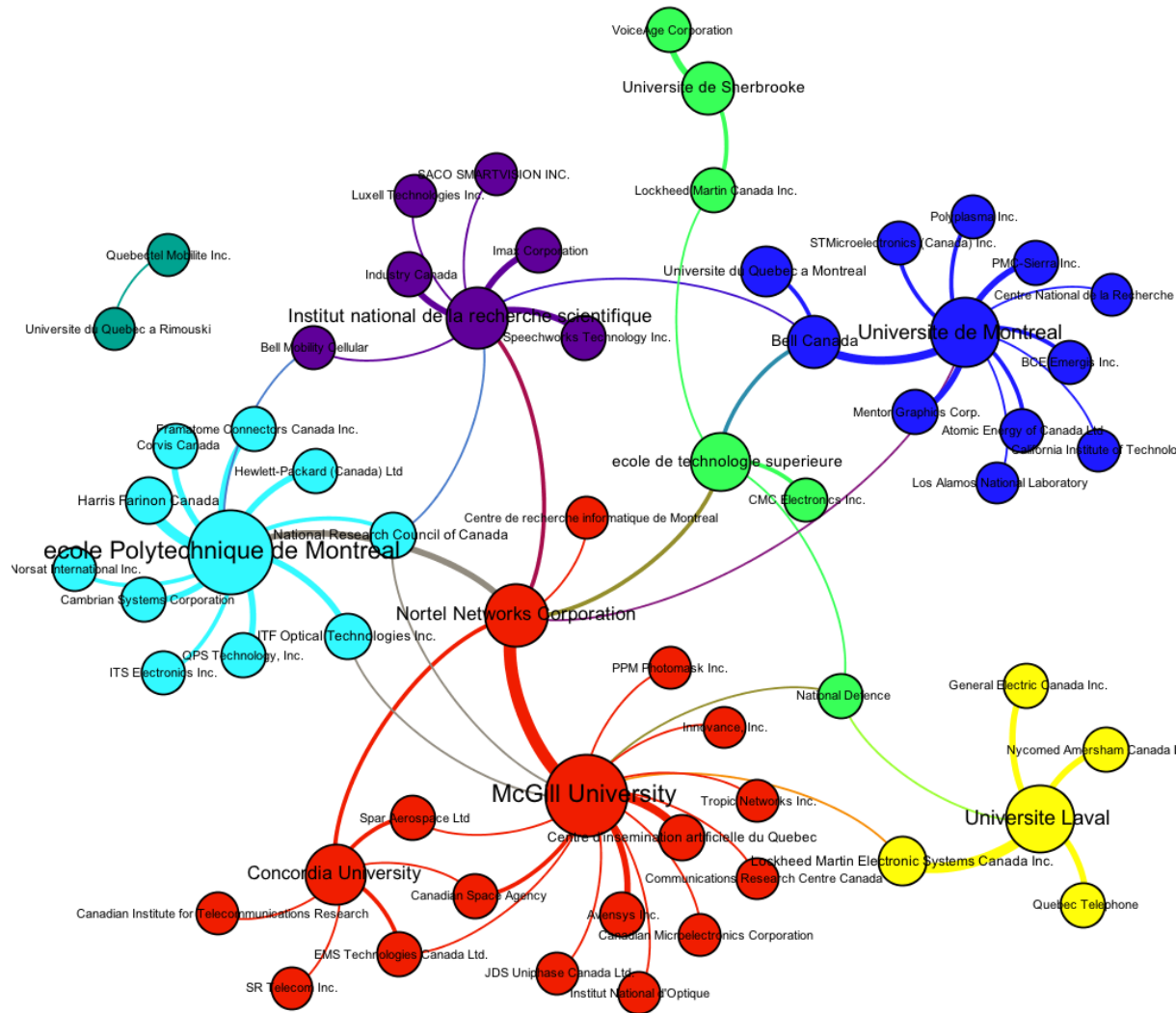
McGill University starts to appear

1999-2003

2000-2004
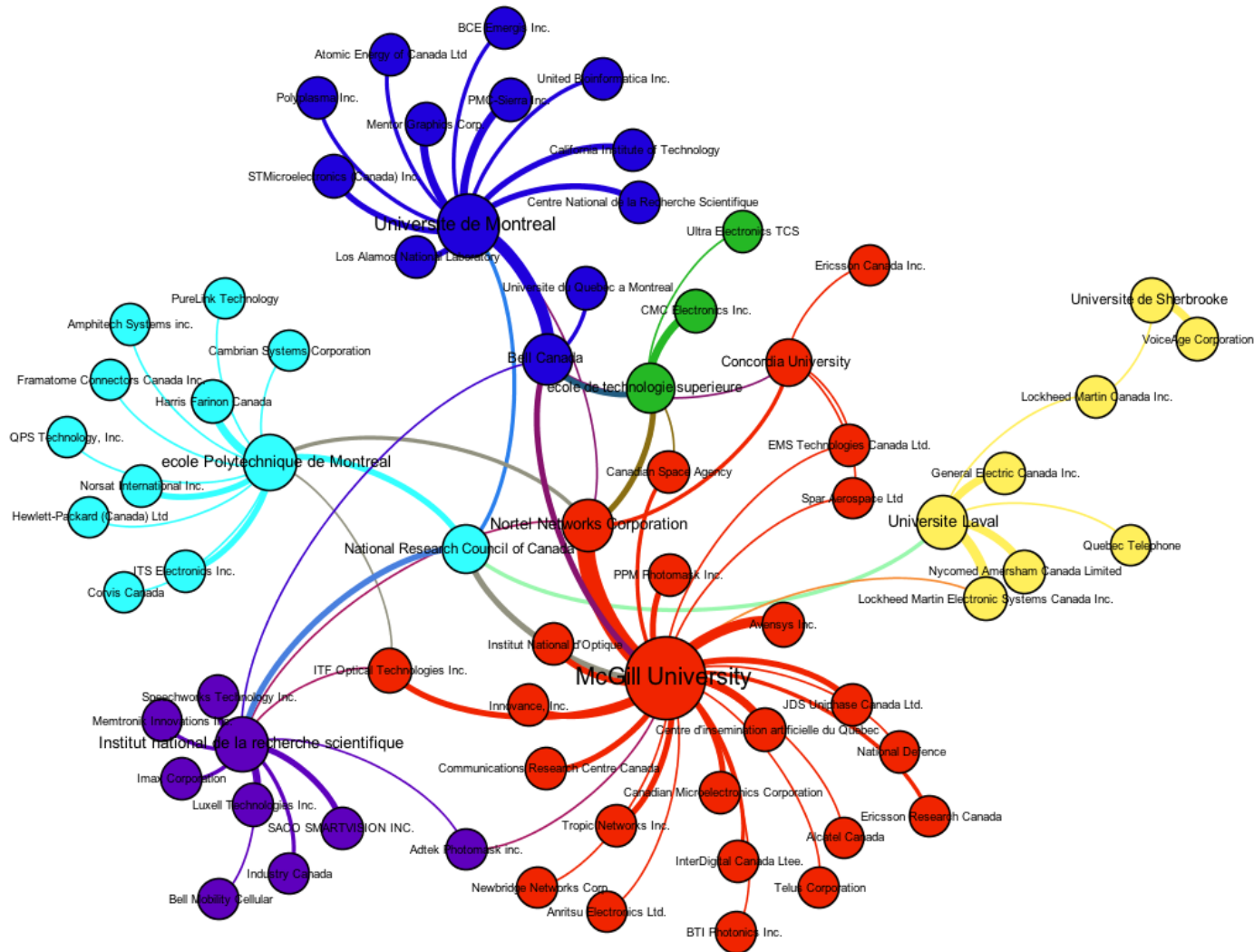
The network density is increasing

2001-2005
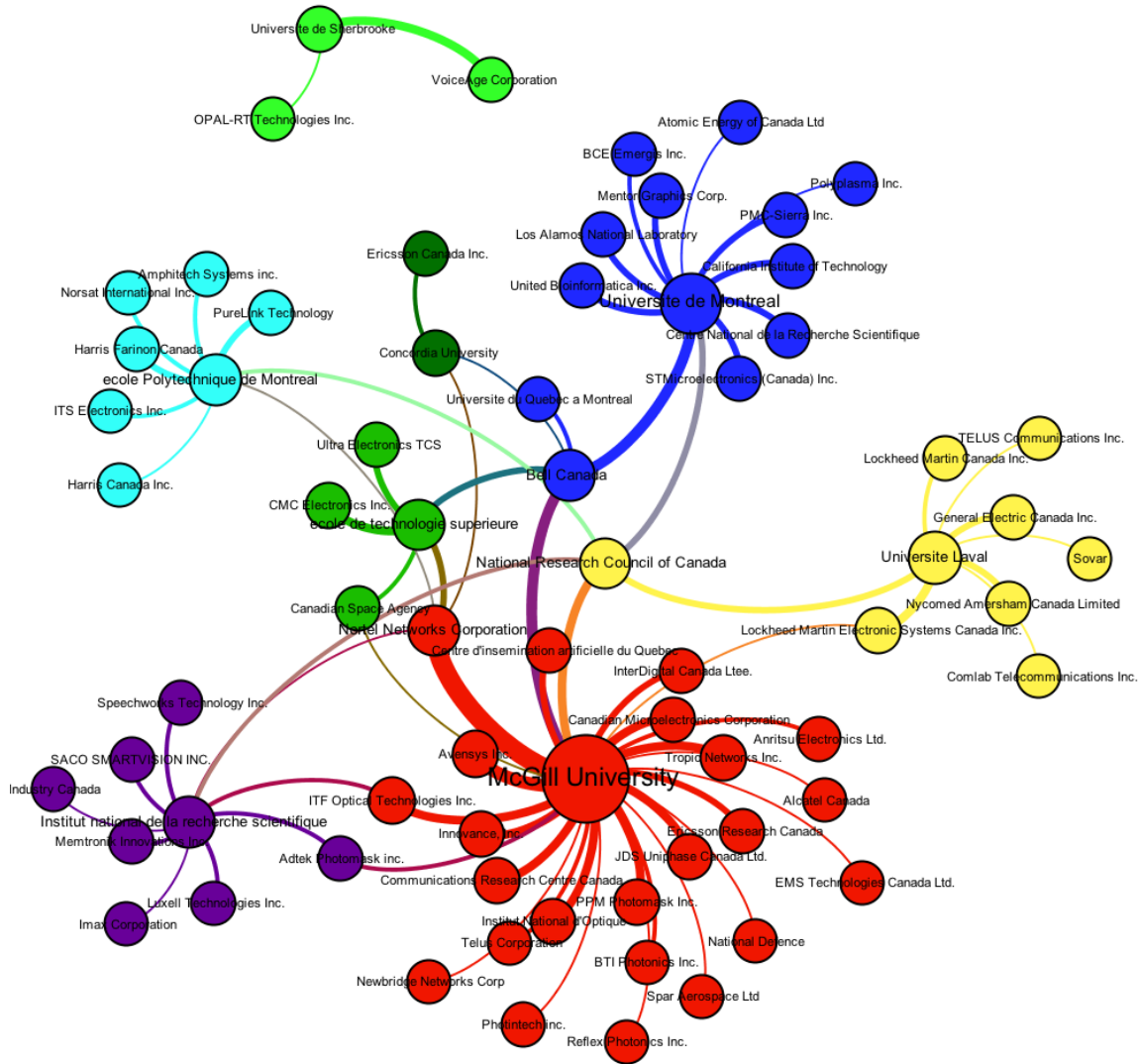
2002-2006
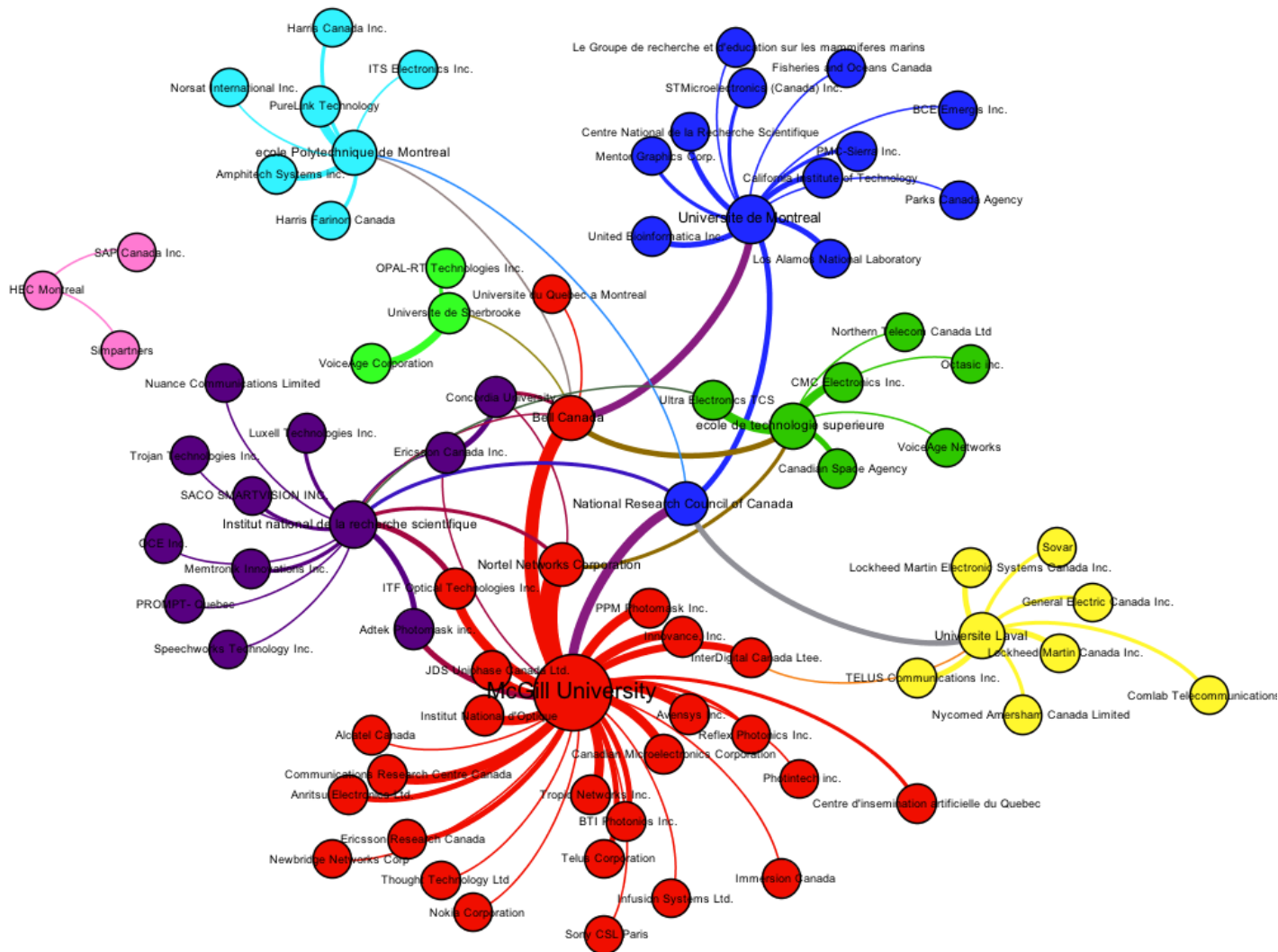
Bell is increasingly central

2003-2007
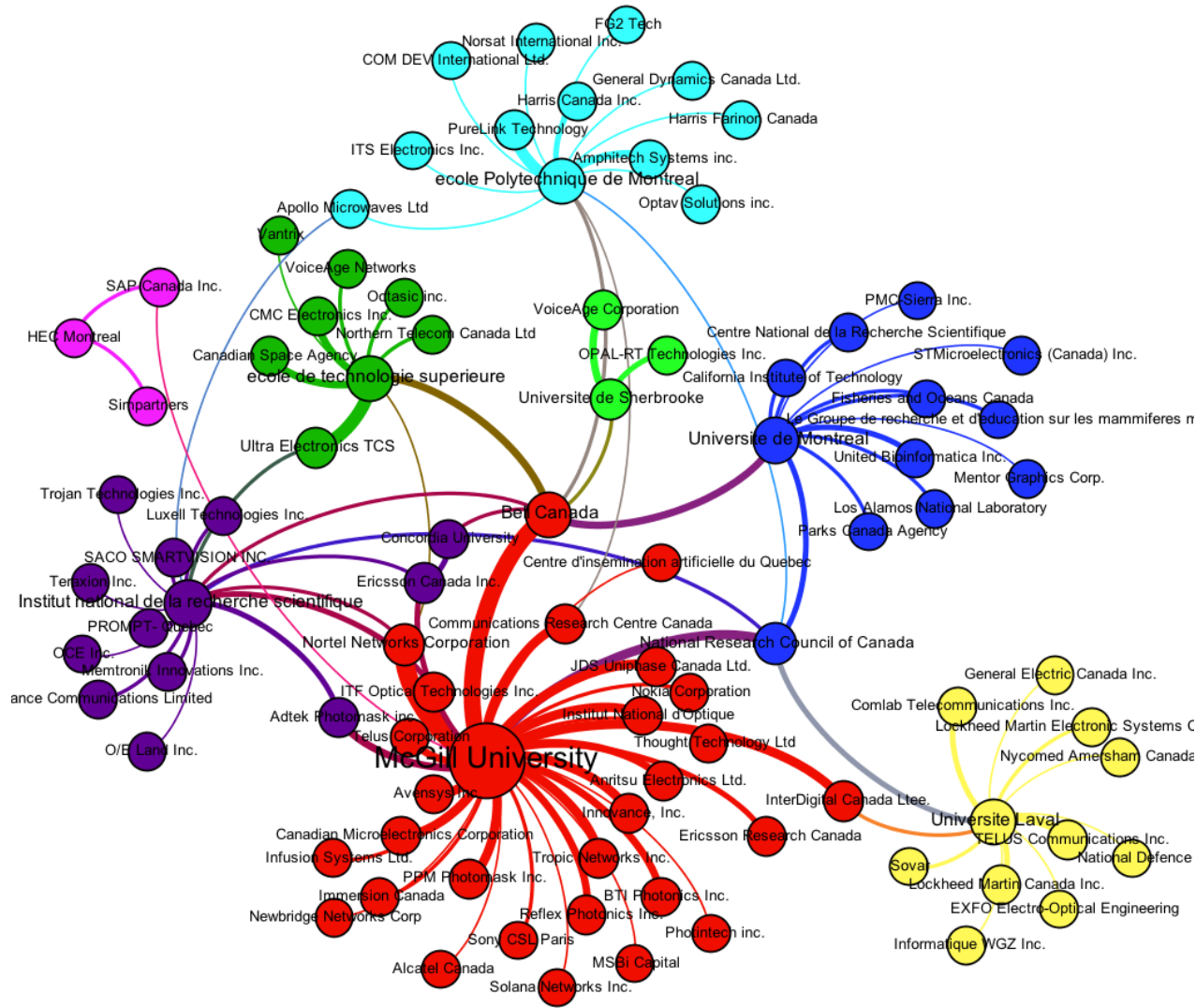
McGill is the most important player amongst the Universities
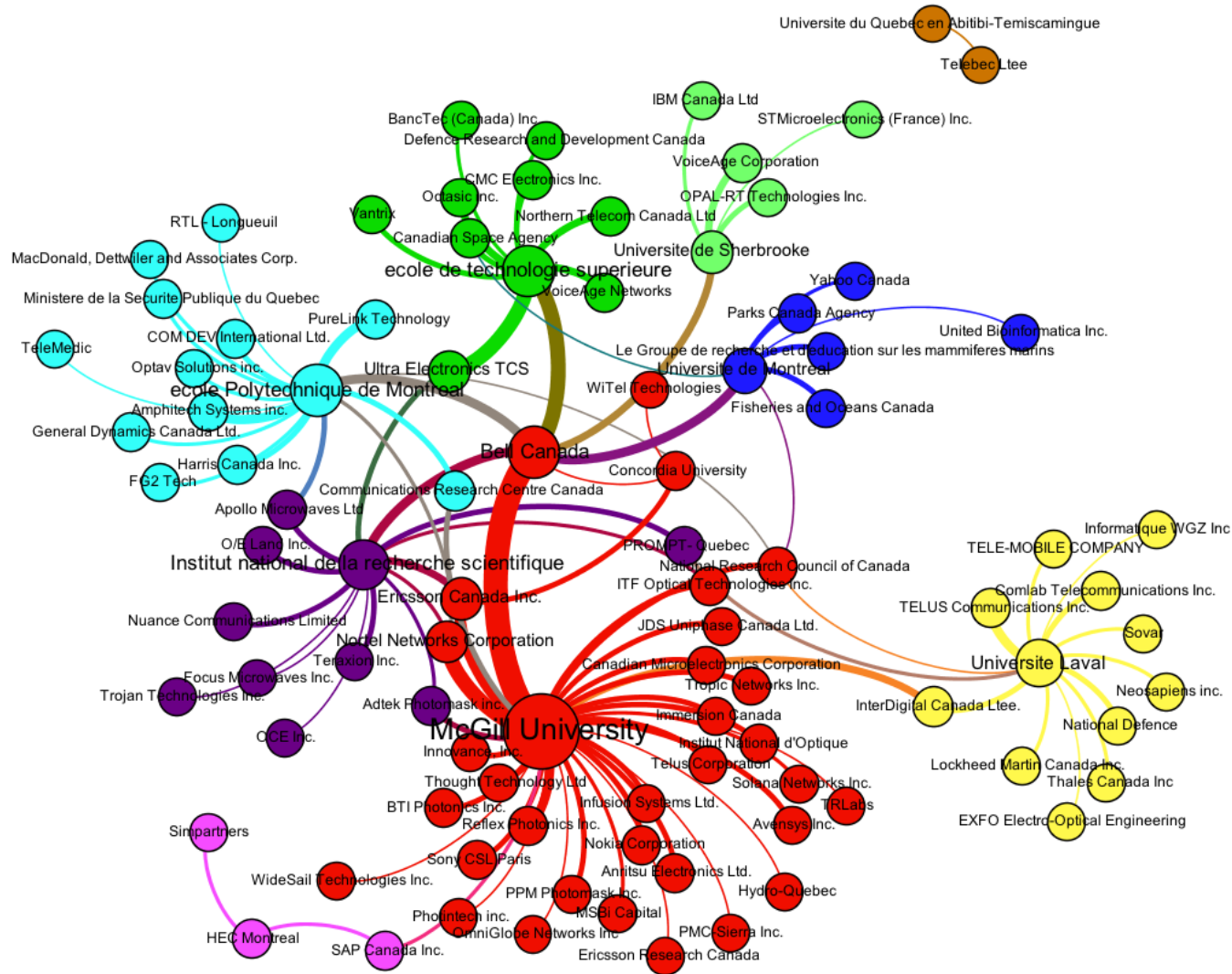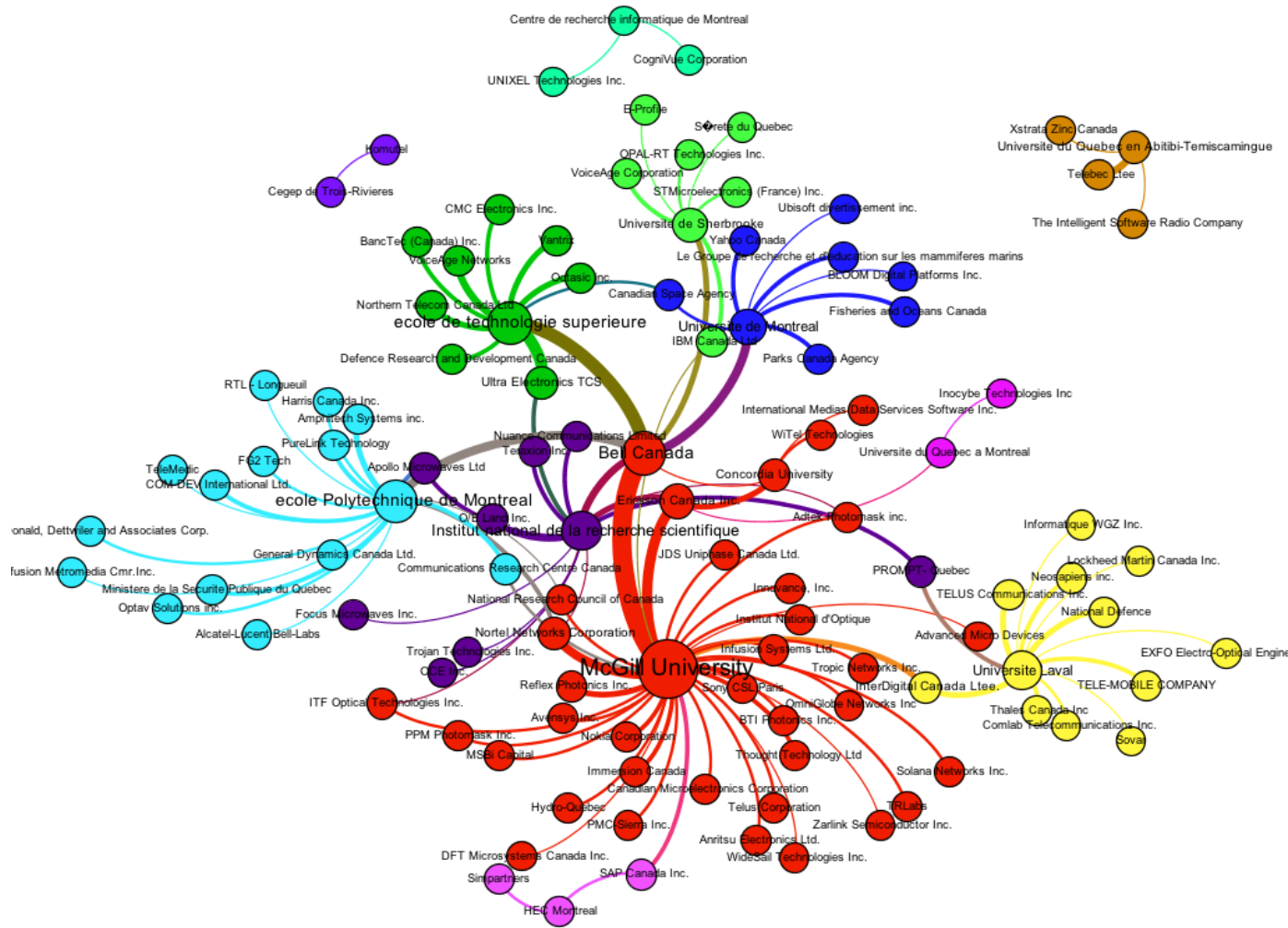
2004-2008

NSERC funded research
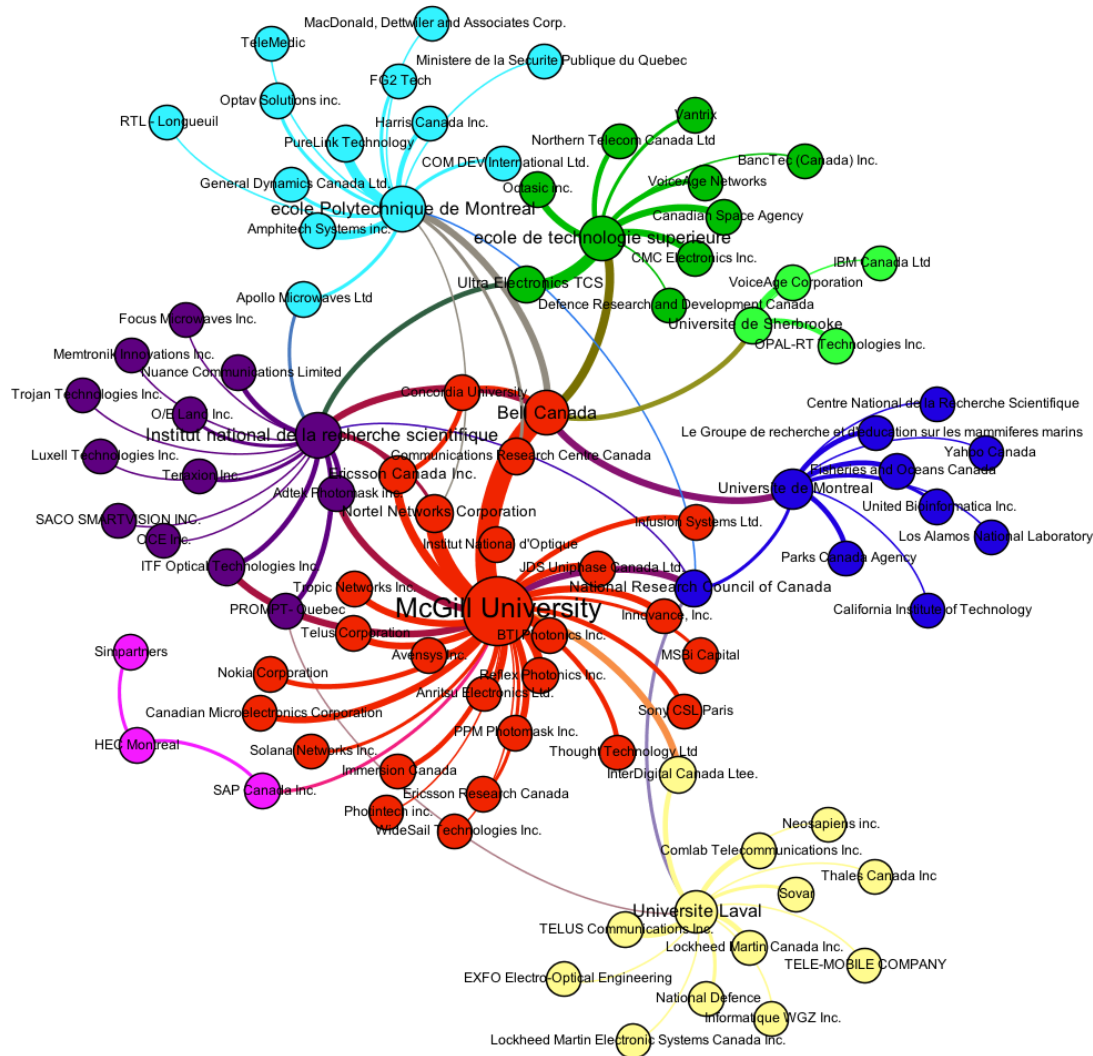
2005-2009

Nortel is moving away from the center
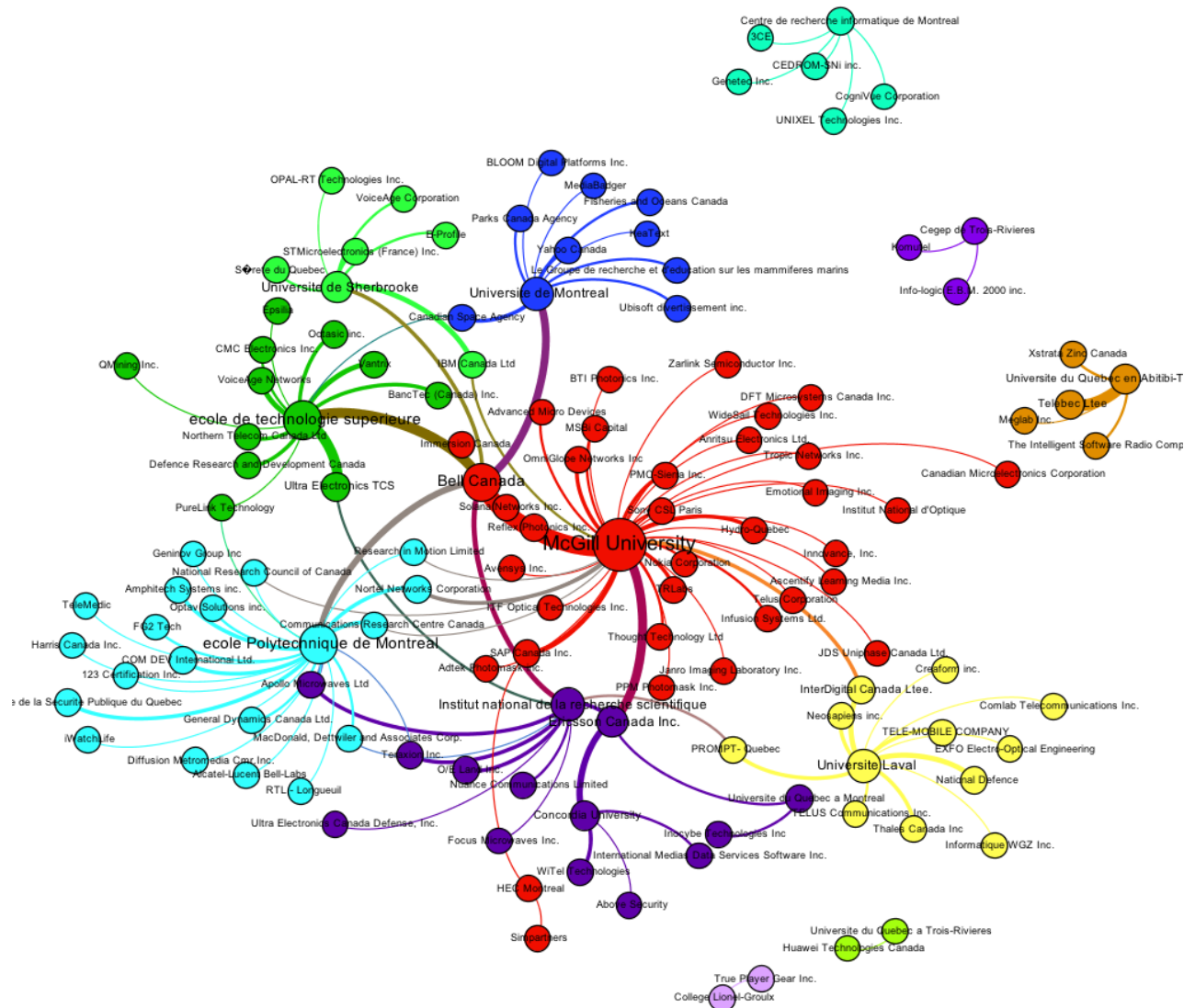
2006-2010
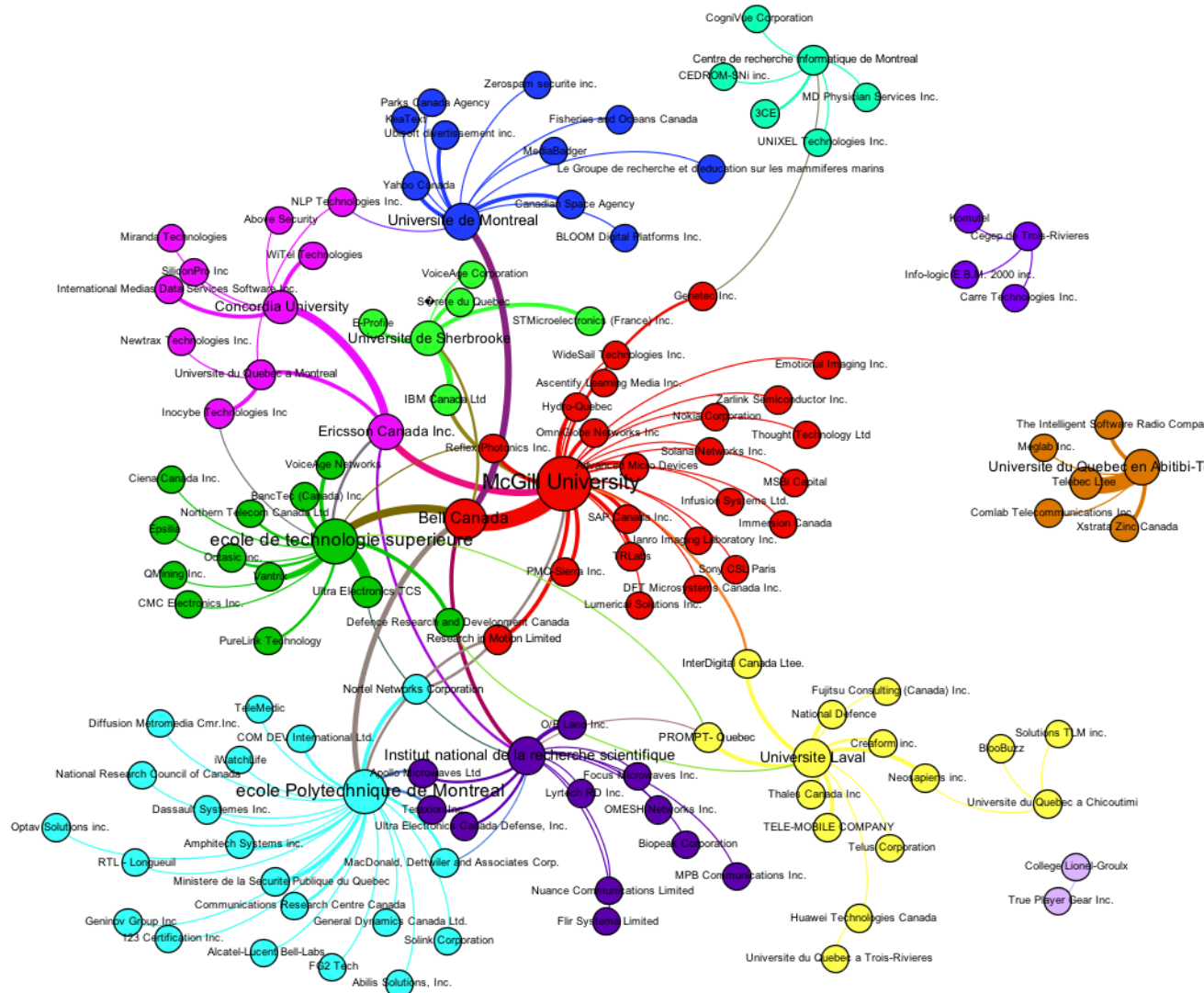

NSERC funded research

2007-2011

Smaller clusters appear, e.g, College Lionel-Groulx

2008-2012

NSERC funded research

2009-2013
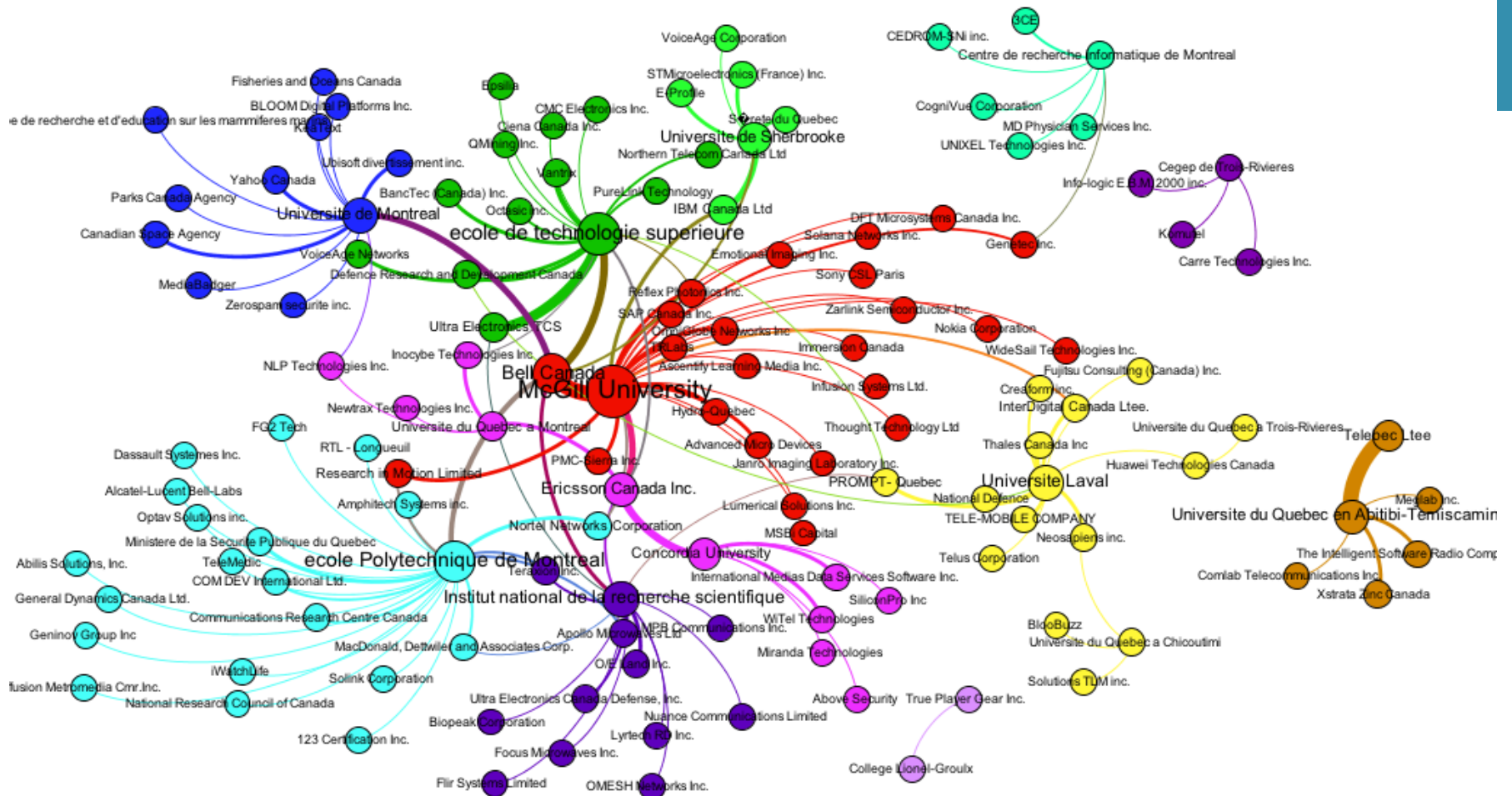
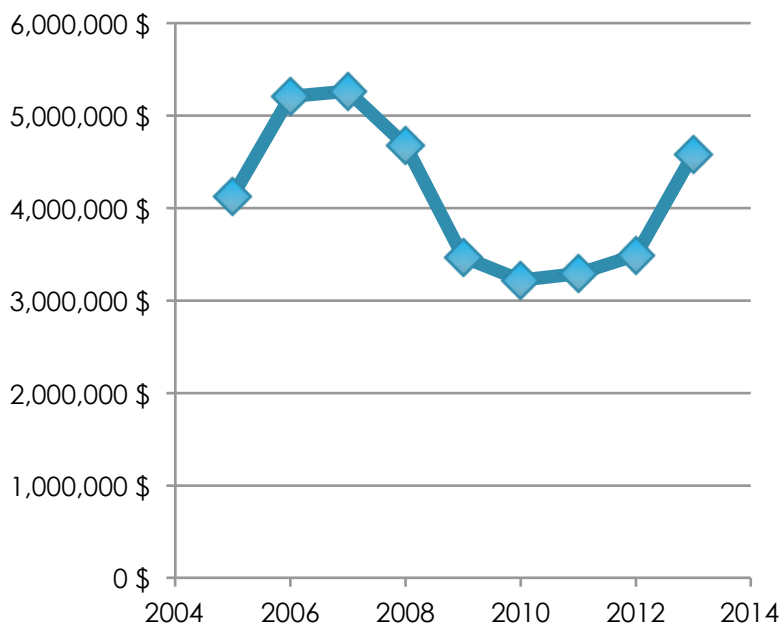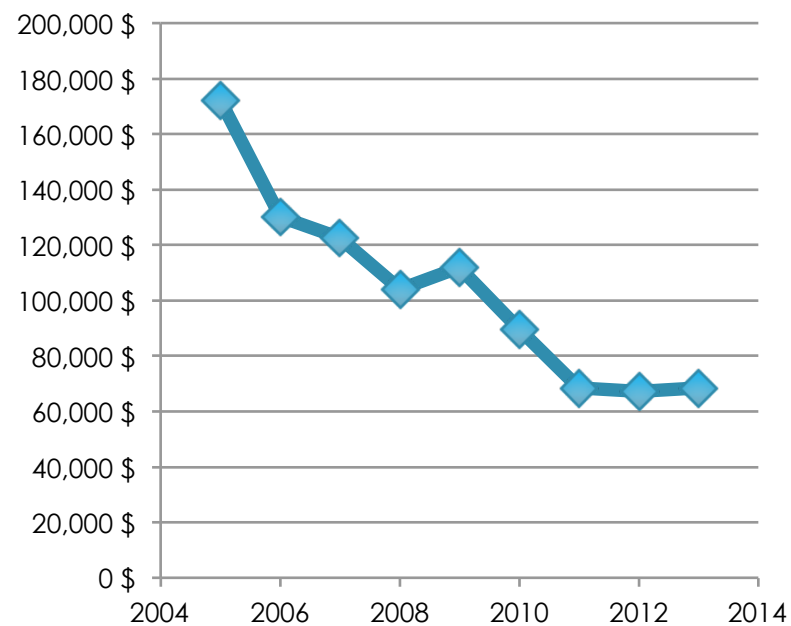Government achieving its goal of university-industry partnership?

NSERC funding 2005-2013

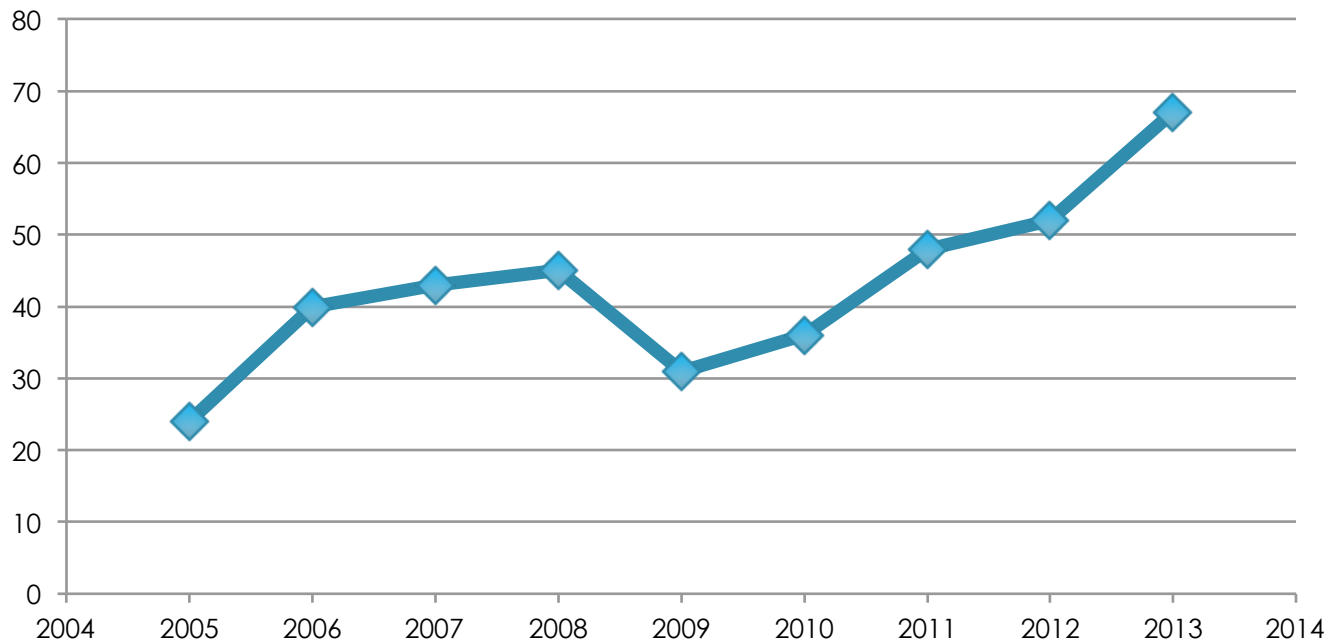**NSERC: Total Amount on Hardware Related Projects with Industrial Partners**

Average Amount per NSERC Hardware Related Project with Industrial Partners

Number of NSERC grants involving partners 2005-2013

Number of NSERC Hardware Related Projects with Industrial Partners

Role of Intermediaries

Intermediaries Identification

- C2Mi: MiQro Innovation Collaborative Centre in Bromont

- ReSMIQ: Regroupement stratégique en microsystèmes du Québec in Montreal

- CRIM: Centre de recherche appliquée en technologies de l'information in Montreal

- CIMEQ: Centre d'innovation en microélectronique du Québec in Montreal

- INO: National Optics Institute in Quebec city

- And many more
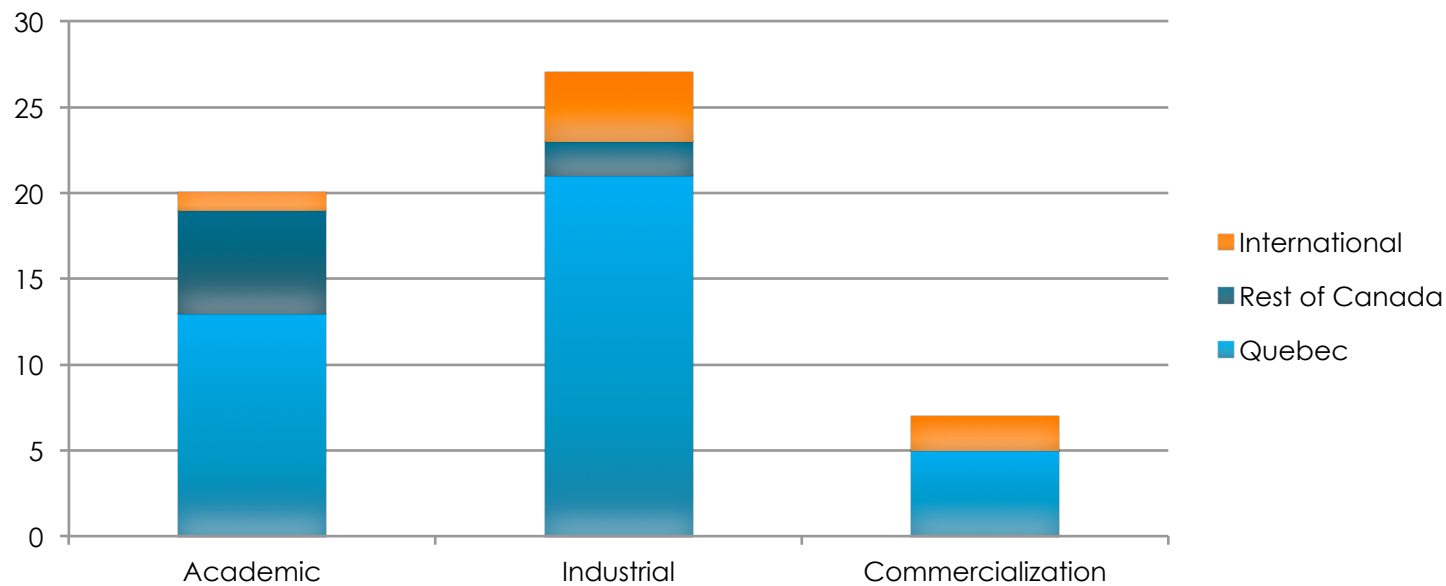
We are actually constructing the data base

C2Mi (CECR)

- C2Mi is an innovation center specialized in microelectronics

C2Mi Partnerships

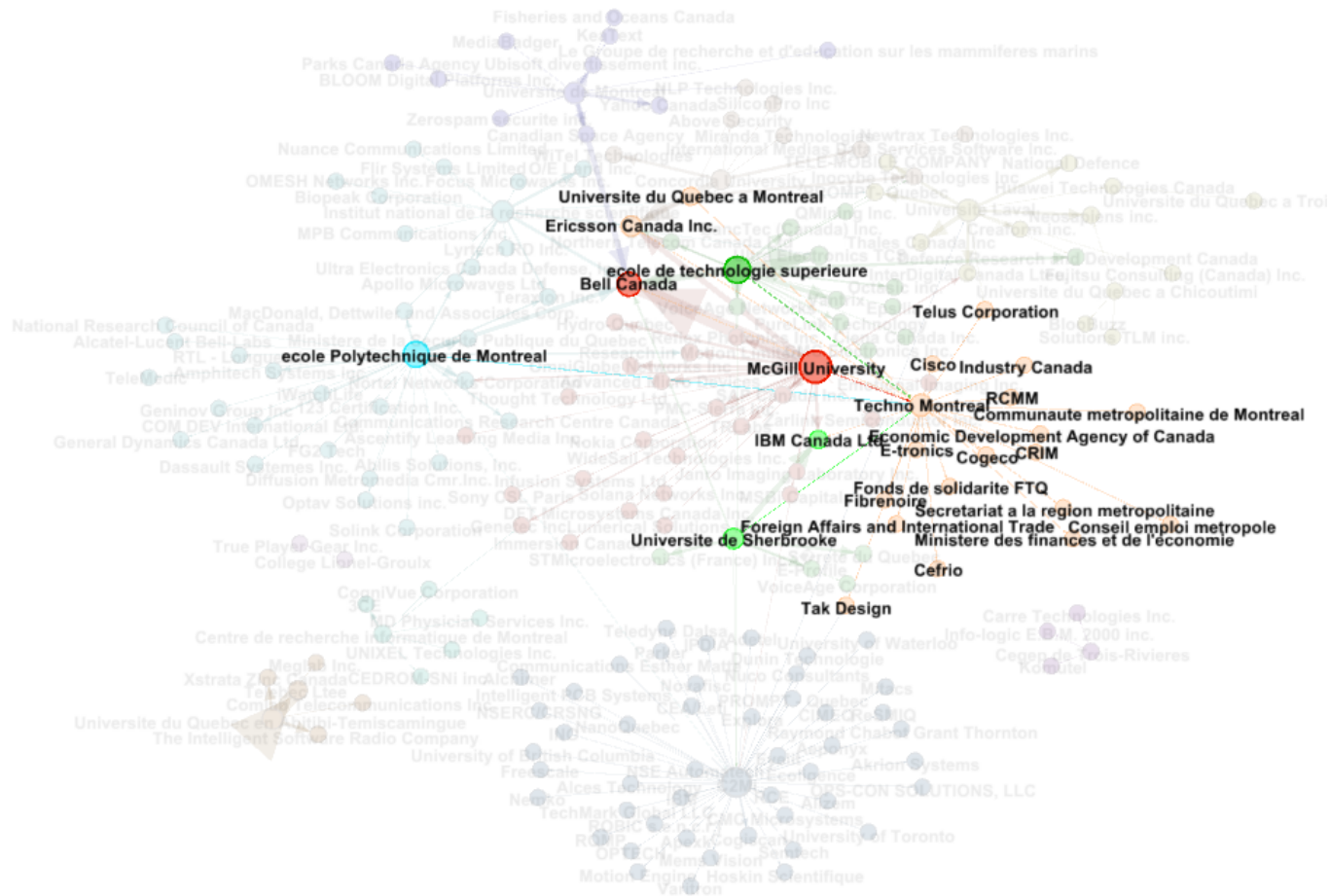Legend:
- International
- Rest of Canada
- Quebec

C2Mi Network
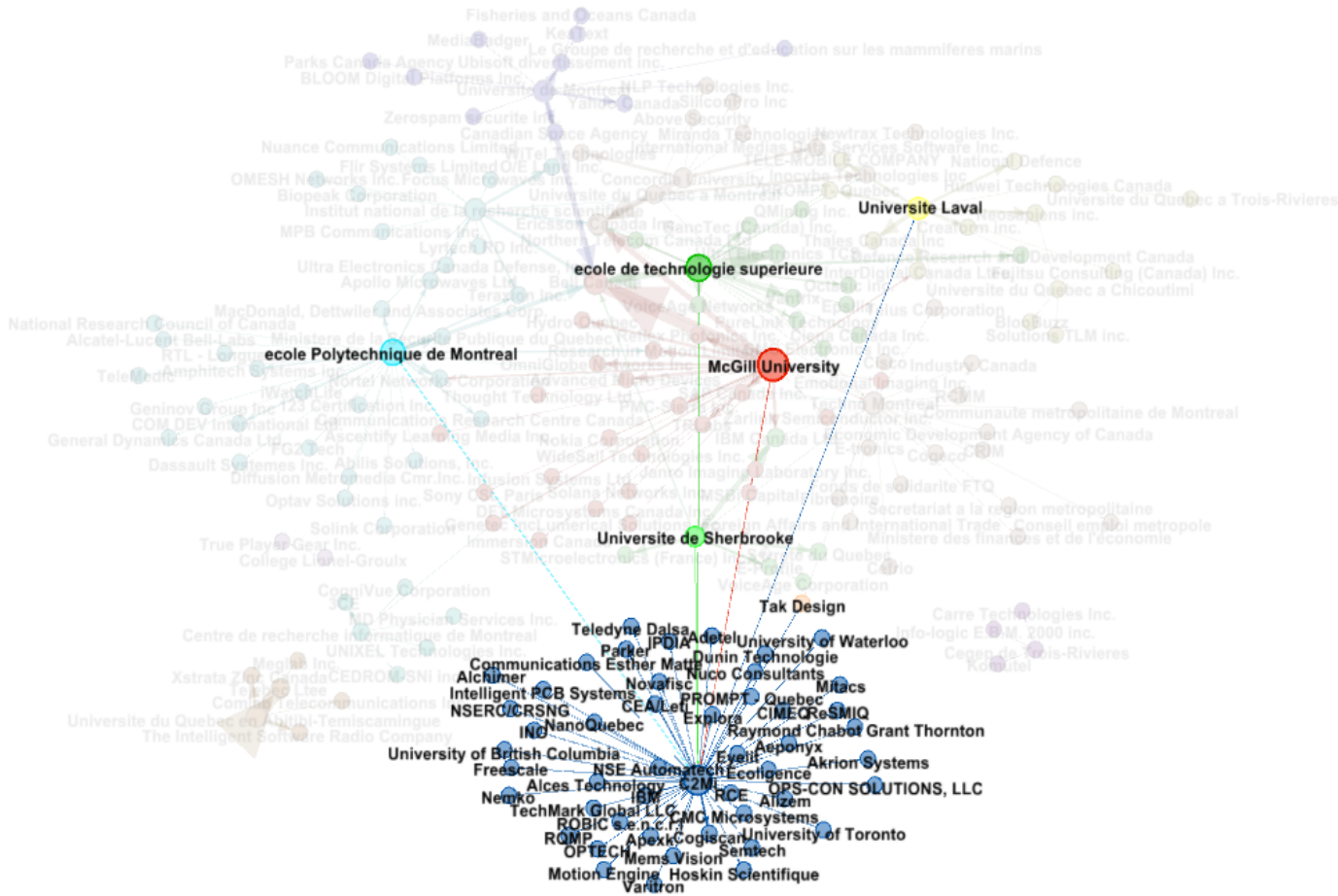
TechnoMontreal

■ The ICT cluster of the Greater Montreal Region

Geographical Proximity

Hardware Clusters in Quebec

- Montreal

- Quebec city

- Bromont

Quebec city
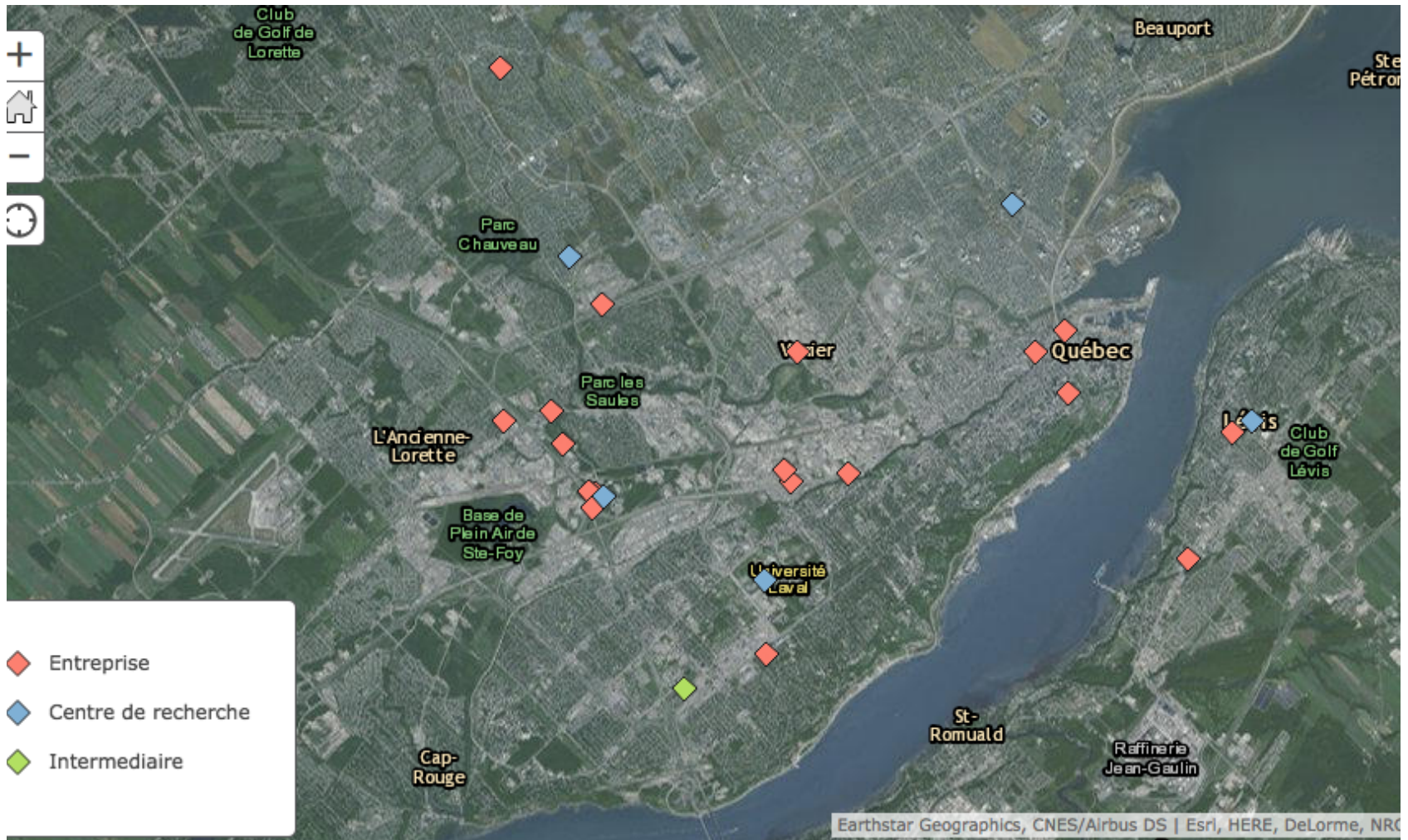
Bromont town
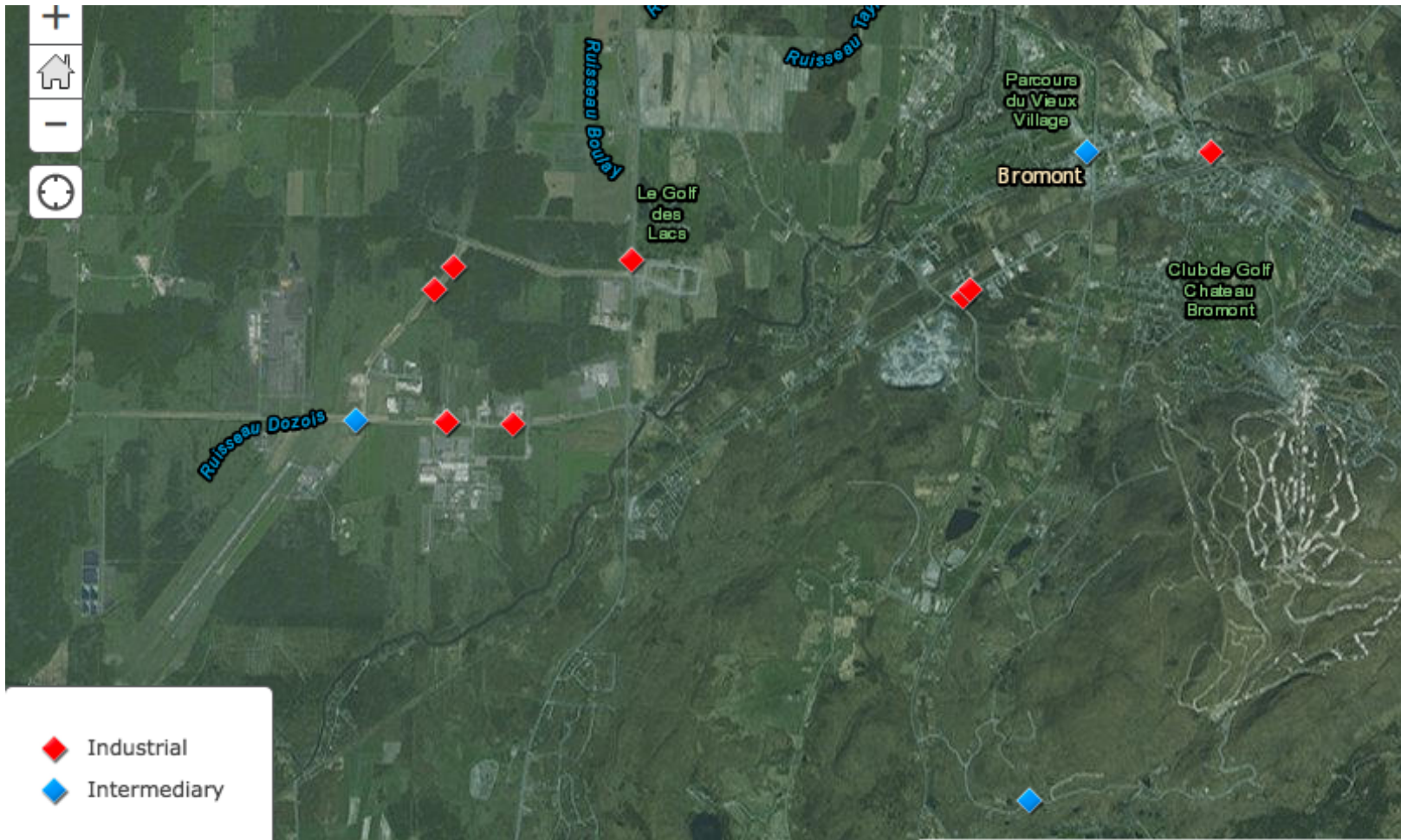
Montreal

- Page under construction…

Research Objectives for CDO Project

Objectives

- Identify the role of intermediaries such as the C2MI in the development and commercialisation of innovation in the ICT cluster in Bromont

- Measure the importance of the ICT hardware cluster in Montreal

- Determine the role of the university within these clusters

- Compare the importance of local and international links in the ICT hardware innovation network

Data in our hands

- NSERC: add co-applicants to the network

- Industry Canada: geo-referencing and complementary data

- Système d'information sur la recherche universitaire (SIRU): other sources of funding

- To be added: Patents and Publications

Methodology

- Build the database of hardware ICT firms in Quebec
  - Characterize the different types of links between firms and other organizations (Network)
  - Superpose the links within a single network
- Interview network actors (firms and intermediary organizations) in order to determine the extent and the nature of collaboration
  - Add the inter-firms links that we cannot measure otherwise
  - And assess their relative importance

Thank you