



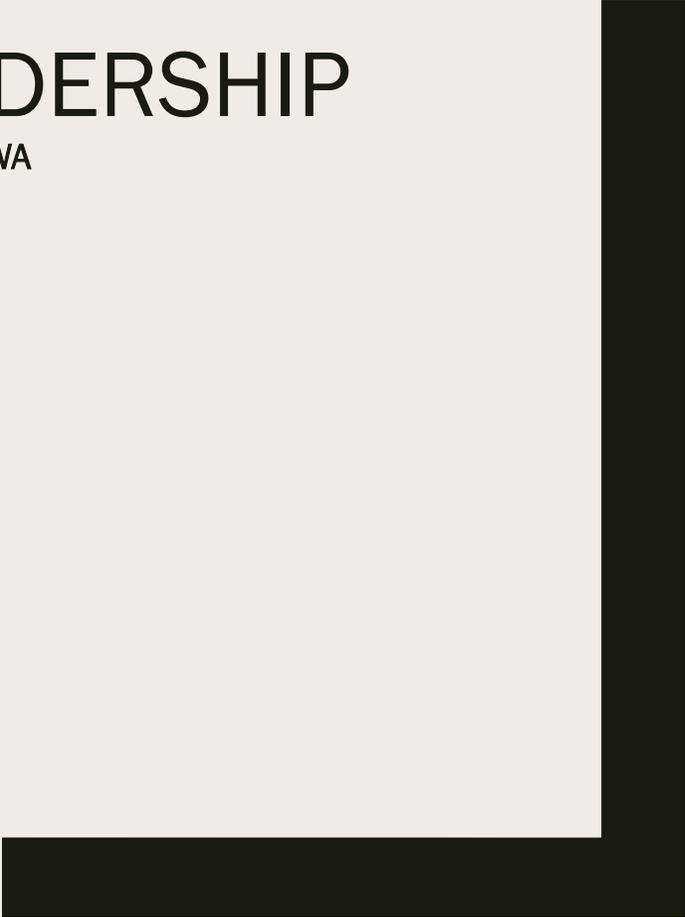
LEGACY, LUCK AND LOCAL LEADERSHIP

TRANSITIONING TO NEW DIGITAL OPPORTUNITIES IN OTTAWA

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Context and research questions

- Ottawa has maintained its position as an important region in the global geography of digital innovation despite having experienced several major external shocks that have had direct negative impact on ICT sector and employment
- Research Questions:
 - *What are the main external and internal factors that have allowed Ottawa's digital industry to adapt amidst major market shifts, and how do they shape the region's potential to take advantage of global economic development opportunities associated with digital trends?*
 - To what extent do Ottawa's core digital capabilities correspond with emerging digital trends including IOE and big data analytics?
 - How important have links to global production networks been in the sector's resiliency and what is the nature of these networks?
 - What has been the role of company exits, such as that of Nortel, in strengthening or weakening the adaptive capacity of Ottawa's digital sector?
 - To what extent has regional governance, public policy, innovation support or local training been factors?

Ottawa is an example of a Canadian region successfully capitalizing on digital opportunity amidst major change

- A global technological paradigm shift is underway in digital networking
 - *New network architecture (Software Defined Networking) is being developed to support massive global increase in data flows and 5G wireless / IoE*
 - *Convergence of platform technologies driving new digital opportunities:*
 - *SDN services & hardware, cloud based SaaS, 5G converging to new platform for AV networking, IoE*
- Ottawa has transitioned as an important node in a Global Innovation Network that is shaping the technological trajectory of 5G SDN
 - *MNC R&D in Ottawa: Huawei, Ericsson, Nokia, Ciena, Cisco, ZTE, Juniper*
 - *Local firms: Mitel, Corsa, klipfolio, Ranovus, QNX*
 - *Related local economic development in automotive vehicles and cloud based SaaS*
- Transition also evident in sector dynamics
 - *Evidence of increased collaboration among MNCs, local firms and local universities*
 - *Less dependent on traditional anchors as a result of shift to software and away from manufacturing*
 - *New firms globally focused from the start*

What explains the transition?

- Path dependency and the reconfiguration of Nortel talent
 - *Transitioning to new network architecture evident in Nortel R&D, continuing long standing pioneering role in network development*
 - *Collapse of Nortel made available capabilities and experience at:*
 - i) the nexus of network hardware and software
 - *Talent pool recognized as the single most important factor in Ottawa with high retention rates, positive collaborative culture and unique mix of hardware and software skills*
 - ii) a pivotal time in transition to 5G SDN
 - *Major inward investment began in 2009, the year of Nortel's bankruptcy & sell-off: Nokia (2009), Eriksson (2009/2013/2018), Ciena (2010), Huawei (2010), Cisco systems (2013), ZTE (2014)*
- Enabled by:
 - *The growing role of software as a service (Saas)*
 - *Government support*
 - Provincial FDI subsidies (Huawei, Ericsson, Cisco)
 - Federal innovation and research programs (SRED, IRAP, NCE CECR)
 - *Local strategic initiatives*
 - Shared technology test beds (CENGN / AVIN Regional Technology Development Site, ENCQOR)
 - Training (including CENGN, Algonquin College)
 - Firm creation and development (CENGN, Wesley Clover, L-Spark and Alacrity, Invest Ottawa)

Policy implications

- Government programs have bolstered Ottawa's position in the global innovation network by helping
 - *Secure R&D mandates from multinationals in Ottawa*
 - *Embed MNCs in local research activity and competence building*
- Local associative governance has been important in instigating strategic initiatives aimed at strengthening innovation system and embedding MNCs
 - *Invest Ottawa a facilitator in CENGN, L-Spark, AVIN*
 - *Wesley Clover (Ottawa HQ of global network of 'Alacrity' incubators & accelerators, and affiliated companies)*
 - *Evolution of associative system from OCRI to Invest Ottawa / KNBIA has improved responsiveness*
- Strategic initiatives highlight role of local actors in accessing federal and provincial funding programs, shaping how government policies are implemented

Policy implications

- Ottawa's transition has come with an increased dependence on MNCs, giving rise to concerns about vulnerability and value capture
 - *Shift away from a dominant indigenous anchor model (e.g. Nortel) to a predominantly MNC led R&D branch plant model*
 - Trend has continued with MNC local acquisitions: Searchlight Capital Partners (Mitel 2018), Ericsson (CENX 2018), Juniper (BTI 2016) Amdocs (Bridgewater Systems 2012)
 - *Ottawa now highly specialized in R&D led by MNCs*
 - Limited sales marketing capabilities
 - Concern about capturing value of research capabilities
- Transferability of Ottawa's success likely limited
 - *Region continues to benefit from historical development of telecom capabilities which is not easily replicated*
 - *Timing of Nortel's sell-off coincided with shift in network architecture and 5G, opening an investment window for MNC FDI in Ottawa*
 - *Evolution will be influenced by success in building opportunities from convergence of platform technology – cloud, SaaS, SDN 5G, cybersecurity and AI.*