Innovation Systems in the Calgary Wireless Cluster: Mapping as an Explanatory Model

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Regional Innovation System

• Characterization:
  – The appreciation that physical proximity among firms in a given region encourages the sharing of tacit knowledge and localized learning.
  – Exemplifies cultural norms and values of a given region
Features of a Regional System

- Skilled talent pool
- Quality of life and amenities
- Supporting government and university infrastructure
- Entrepreneurial spirit
- Strong local networks
  - Inter-firm networking
  - Knowledge flows
Calgary Wireless as a Regional System

• Critical Mass
• Strong pool of wireless expertise
• Tightly integrated informal networks
  – “NovAtel University”
• “Spirit of the West”
• High quality of life
  – Rocky Mountains, skiing, hiking, mountain biking etc.
• Connection to long range research institutions (TRLabs, U of C, iCORE)
Talent and informal networks perpetuate the cluster

- Talent pool as the primary factor for innovation.
- Mobile force that encourages innovation through the exploitation of informal networks.
Mapping Series

- Mapping series
  - Attempts to illustrate the genealogical and strategic relationships that exist in the Calgary wireless cluster.
  - Represents some of the key firms and players and is a general examination of the cluster relationships.
Mapping Series

Four Maps Figures 1.0 – Figure 1.3:

– Genealology

– Impact of knowledge flow and talent flow

– analysis of strategic relationships

– Impact of university and government infrastructure
Mapping Series
Figure 1.0

• Representation of historical genealogy
  – Nova/AGT joint venture
  – NovAtel divestiture

• Core drivers (G1) and the subsequent spin offs (G2 – G5).
  – Direct and indirect relations to NovAtel
  – Training new recruits
Mapping Series
Figure 1.1

- Impact of informal knowledge flows in the creation of a cluster.
- Dashed purple lines indicate transfer of knowledge or key personnel.
- 37.5% of total firms interviewed now find linkages on the map.
- Wireless staff in Calgary is “shared” among firms
  - Contract work, Nortel/Sanmina, NovAtel Inc./Point/GDC
• “Friendly networks” encourage communication but do not jeopardize proprietary information, status, or position.

• Overlapping boundaries
  – “co-opetition” = cooperation and knowledge transfer occurs among competitors.
Mapping Series
Figure 1.2

• Strategic relationships
• Institutionalization of informal relationships (Saxenian)
  – collective learning
  – Nortel/Sanmina (Fig. 1.1), Wi-Lan/Solectron, CSI/Point Inc. etc.
• Board of Director Overlaps
  – mentorship for newer generations
Mapping Series
Figure 1.2 cont....

• Historical roots and the persistence of the informal
  – collaboration and deal flow
  – numbers by memory
Research Institutions and government infrastructure
- new level of integration
- university role significant with firms
  - provides education, training, liaisons to industry
Three types of relationships
- 1. Spin off’s, 2. SME’s system integrators, 3. Major players
• TRLabs
  – strong presence in all levels of industry
    • associate memberships (current and former)
• Reactionary role of research institutions and public infrastructure
  – TRLabs est. wireless communications research program in response to presence of key players in city.
– Goal to double ICT enrollments at U of C in 1996
  • physical infrastructure to accommodate enrollments completed Fall 2002.
– Discussions underway at SAIT for the creation of a specialized program for wireless this year (2002).
Mapping Series
Figure 1.3 cont....

• Reactionary role defined
  – playing catch up
  • early nature of industry was characterized by a lack of professional services capable of supporting a wireless industry.
Final Metaphor
Final Metaphor

• Path dependant nature of the Calgary wireless cluster
  – historical perspective
  – relative proximity of research institutions and government infrastructure
  – classic “clustering” of firms enable easy communication.
Final Metaphor

• Footpaths of knowledge represent that nuclear body of knowledge and the patterns of tacit knowledge flow in a regional system of innovation.
Conclusions

• Analysis based on 48 interviews
  – 32 company
  – 18 gov’t and university
• Cluster identifies talent and informal knowledge flows as crucial elements in the Calgary wireless regional innovation system.
• Talent is the mobilizing force for knowledge creation, flow and dissemination.
Conclusions

- The Mapping Series is a visual representation of how communication linkages penetrate cluster structures.
- Calgary wireless agglomeration is driven by the talent pool and reinforced by the high quality of life in the region.
- A world-wide knowledge base combined with regional socio-cultural norms and values stimulate knowledge production which is disseminated through a mobile unit of expertise.
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