



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:

- **Genealogy**
- **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

Mapping Series

Figure 1.1 cont...

- “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

Mapping Series

Figure 1.3

- 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

Mapping Series

Figure 1.3 cont....

- 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.

Mapping Series

Figure 1.3 cont....

- 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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