Background Report of Bothnian Arc

Martti Launonen
Hubconcepts Inc.
19. February 2013
Background of Hubconcepts
20-years Hands-on Experience in Developing the Innovation Framework and Tools

1. Analyses and feasibility studies of over 300 science & technology parks

2. Benchmark studies of over 100 incubators, innovation centers and clusters

   Countries and sites include:
   USA, China, Russia, Japan, South Korea, Canada, UK, France, Poland, Croatia,
   Estonia, Norway, Sweden, Denmark, Australia, New Zealand, Thailand,
   Kazakhstan, South-Africa, Mozambique, Botswana, Namibia

3. Advisory work for foreign governments and science and technology parks of about 100 cases

4. Hands-on management of parks, regional programs, clusters & centers

5. Frameworks and tools tested in local cities & regions as well as on national level

   -> Clients testify for improved results and usability for practical development work
Book published in March 2011

- Hubconcepts -
The Global Best-Practice for Managing the
Innovation Ecosystems and Hubs
Basic Data of Bothnian Arc
Bothnian Arc in Regional Context
## Size, Population and Unemployment of Bothnian Arc

<table>
<thead>
<tr>
<th>Variable</th>
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<td></td>
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<tr>
<td>Population</td>
<td>2011</td>
<td>710000</td>
<td>Bothnian Arc</td>
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Table 1. Members of Bothnian Arc (Source: Action plan 2012-2013)

<table>
<thead>
<tr>
<th>Members</th>
<th>Population</th>
<th>Share</th>
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<tbody>
<tr>
<td>Kemi – Tornio region</td>
<td>60,344</td>
<td>8.50%</td>
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<tr>
<td>Oulu Arc region</td>
<td>23,333</td>
<td>3.29%</td>
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<tr>
<td>Oulu region</td>
<td>229,684</td>
<td>32.35%</td>
</tr>
<tr>
<td>Raahe region</td>
<td>34,652</td>
<td>4.88%</td>
</tr>
<tr>
<td>Ylivieska region</td>
<td>44,032</td>
<td>6.20%</td>
</tr>
<tr>
<td>Regional Council of Central Ostrobothnia</td>
<td>68,484</td>
<td>9.65%</td>
</tr>
<tr>
<td><strong>FINLAND</strong></td>
<td><strong>460,529</strong></td>
<td><strong>64.87%</strong></td>
</tr>
<tr>
<td>Haparanda municipality</td>
<td>10,041</td>
<td>1.41%</td>
</tr>
<tr>
<td>Kalix municipality</td>
<td>16,591</td>
<td>2.34%</td>
</tr>
<tr>
<td>Boden municipality</td>
<td>27,643</td>
<td>3.89%</td>
</tr>
<tr>
<td>Luleå municipality</td>
<td>74,426</td>
<td>10.48%</td>
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<tr>
<td>Piteå municipality</td>
<td>40,942</td>
<td>5.77%</td>
</tr>
<tr>
<td>Älvsbyn municipality</td>
<td>8,258</td>
<td>1.16%</td>
</tr>
<tr>
<td>Skellefteå municipality</td>
<td>71,540</td>
<td>10.08%</td>
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<tr>
<td><strong>SWEDEN</strong></td>
<td><strong>249,441</strong></td>
<td><strong>35.13%</strong></td>
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<tr>
<td><strong>IN TOTAL</strong></td>
<td><strong>709,970</strong></td>
<td><strong>100.00%</strong></td>
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Kemi-Tornio

Kemi-Tornio Region comprised of the municipalities of Kemi, Keminmaa, Simo, Tervola and Tornio. The region has 60,500 residents. The Kemi-Tornio region is home of metal and forest industry.

City of Kemi is the centre of trade and services in Sea Lapland. It houses the paper mills of Stora Enso and Metsä-Botnia and Outokumpu's Kemi mine. Digipolis - Kemi Technology Park offers top-flight expertise for use by the industrial sector.

City of Tornio is known for its of metal industry, wood products industry, food and textile industry as well as trade and tourism. The biggest employers include Outokumpu, the Nanso Group and IKEA. Nearly 3 million visitors pay a visit to the trading centre in the border region annually. Thanks to the excellent geographic location, the city offers natural prerequisites for new transport and logistic services. Approximately 14 million people travel through the border crossing points of TornioHaparanda every year.
Oulu Arc

Oulu Arc subregion is one of the Finnish sub-regions. It is located in Northern Ostrobothnia. It consists of four municipalities (Ii, Pudasjärvi, Utajärvi and Yli-Ii), the number of inhabitants of sub-region was 23 500 inhabitants. Construction, tourism and agriculture are the main business activities of the region. Wood processing including manufactures of housing, door, window, rubber and plastics are the main industries. The main challenge of the region is to increase innovations in construction industry.
The Oulu Region has over 200,000 inhabitants and it is the fastest growing region in Finland. The City of Oulu itself has over 137,000 inhabitants. There are good opportunities for studying, working and research and development, especially in the hi-tech sector, focus on six main clusters: life sciences, clean-tech, ICT, creative industry, trade and services and industry.

The Oulu Innovation Alliance is a strategic alliance formed between the City of Oulu, University of Oulu, Oulu University of Applied Sciences, VTT Technical Research Centre of Finland and Technopolis in 2009. The purpose of the alliance is to carry on Oulu's long tradition in co-operation between education and research institutes, companies and the public sector. Oulu’s high-tech image was built on this co-operation in the 1980s. The agreed focus areas are Internet research, printed electronics (PrintoCent), and international business.
**Raahe**

**Raahe Region** comprised of the municipalities of Pyhäjoki, Raahe, Siikajoki and Vihanti, the region is a vital region of 35,000 residents. The Raahe region is renowned for its dynamic present as well as for steel, gold and energy.

Raahe Region has a new Strategy of Economic Life in which metal industry and ICT of metal industry are the most important subjects of development. Steelpolis and Softpolis offer companies an innovative development environment consisting of: promotion of R&D, technology transfer, educational services and networking of co-operators.
The Ylivieska region consists of six municipalities Yliveska, Alavieska, Kalajoki, Sievi, Oulainen and Merijärvi that are located on the west coast of Finland in Northern Ostrobothnia (Pohjois-Pohjanmaa). The area has 44 000 inhabitants and the largest town in the region is Ylivieska, with 14 000 inhabitants. Manufacturing and agriculture are the main business activities of the region.

Ylivieska region is one of the biggest meat and milk producers in Finland. In addition to basic manufacturing and agriculture, forestry, wood processing and bioenergy is seen as a new opportunity in the development of further rural commercial activities.

Ylivieska has excellent facilities to maximise the production of renewable energy. The strong agricultural sector provides a sound base for the production of biogas and several local enterprises are actively involved in this development process. The region develops and produces wind power on the shores of the Gulf of Bothnia.
Central Ostrobothnia

Central Ostrobothnia consists of 8 municipalities (Kokkola, Kannus, Kaustinen, Halsua, Lestijärvi, Perho, Toholampi, Veteli) including 68,500 inhabitants. Manufacturing and agriculture are the main business activities of the region. The main challenge of the region is to increase industrial innovation and to develop the service business sector. Agriculture is an important source of income.

The largest locus of chemical industry in the Nordic countries is located in Kokkola. The sector for large-scale industry possesses great expertise in e.g. manufacturing battery chemicals. International large companies operating there include OMG, Boliden and Kemfine.

The growing importance of lithium as a global chemical for the battery industry has been noted in the region. The Regional Council of Central Ostrobothnia has started developing the lithium cluster based on the lithium value chain together with institutions of higher learning, research institutes, mining and chemical companies, and business parties.
Haparanda municipality: Population of 10,041 inhabitants 2011 and showing up a minor growth in population since 1986. The population is slightly older than Swedish average. A majority of the labor force is working in businesses classified as farming and food production despite the fact that a lot of investments have been done within the trade business and IKEA have their only department store in the Bothnian Arc region located in Haparanda. Almost 11% of the labor force is working in trade which is close to Swedish average.
**Kalix municipality**: Population of 16,591 inhabitants in 2011 and showing a trend of many years of declining population. Kalix is located at the coast and farming together with forestry, fishing, and food production is the major business in the Municipality. Almost 50% of the labor force is working in this field. Biggest private company and employer is the Paper and Pulp industry Billerud. The population is older than Swedish average.
Boden and Älvsbyn

**Boden municipality:** Population of 28,981 inhabitants 2011 and showing a declining population since 1986. The population is slightly older than the Swedish average. Boden is located on commuting distance to Luleå which is the regional center and not only depending on local employers. Boden is also a city that has undergone a big change from being heavily depending on public sector such as the military units located to Boden and has today undergone major structural changes.

**Älvsbyn municipality:** Population of 8,253 inhabitants 2011 and showing up a minor growth in population since 1986. The population is older than Swedish average. A big share of the labor force is working in farming and food production. Biggest private company is the bakery Polarbröd who export bread all over Sweden and to some European markets as well.
Luleå municipality: Is the regional center and hosts most of the important regional authorities and have a population of 74,426 inhabitants in 2011. Since 1986 the population has increased with 12%. The population is slightly older than Swedish average. The economy is well diversified and thanks to the University not depending only on the process industry.

University of Technology is one of the biggest employers and together with the regional administration services also an important factor that the level of population in Luleå with university and research studies is higher than the National average. Applied research dominates at the University.

The background of the establishment of an University in Luleå was to increase collaboration between industry and research. In Luleå is also metallurgical research at Swerea MEFOS is conducted and the mining company LKAB operates an experimental blast furnace close to the steel industry and MEFOS. Biggest private company is SSAB (steel industry).
**Piteå**

**Piteå municipality:** With a population of 40,942 inhabitants in 2011, Piteå is the second city in size in the County of Norrbotten and at third position in size among the Swedish members of the Bothnian Arc. Since 1986, the population in Piteå has increased with 6% and is together with Luleå the only two cities showing growth in the region. The population is slightly older than Swedish average.

The main industries are forest industry including paper and pulp industries. Luleå University of Technology has one of its campuses in Piteå.

The Energy Technology Centre in Piteå (ETC) and the Solander Science Park are home for some innovative and research-oriented companies in the fields of biorefinery and combustion.

Swerea SICOMP conducts research in the field of polymer fibre composites and have an applied composite research approach. Smurfit Kappa is the biggest private company.
**Skellefteå**

*Skellefteå municipality:* Is the second biggest municipality in the Swedish Bothnian Arc region with a population of 71,580 inhabitants in 2011. Skellefteå is showing up a very stable population since 1986, the population is slightly older than the Swedish average.

A big share of the labor force is working in manufacturing. Biggest private company is the mining industry Boliden who are active in mining as well as production and enrichment of valuable minerals like gold and copper.

Luleå University of Technology has one of its Campuses in Skellefteå and research is being conducted especially in wood technology. The educational level is below the National average.
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Anchors of Bothnian Arc

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Higher Education of Bothnian Arc

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Oulu University of Applied Sciences
Kemi-Tornio University of Applied Sciences
Lapland University
Kokkola University Consortium Chydenius
Luleå University with Piteå and Skellefteå Campuses

All together 46400 students and 5200 employees
Innovation policies and programs - Finland

National, regional and rural innovation policy
Centre of expertise program until end of 2013
Growth agreement and Innovation cities starts 2014

Innovation policy focus areas of government

- Environmental
- Mining
- Forest and bio-economy
- Services

Main actors under Ministry of Employment and Economy

Tekes, Finpro, VTT
Innovation policies and programs - Sweden

National, regional and rural innovation policy

Regional growth program for Norrbotten 2007-2013

Regional development strategy

National innovation policy focus areas

Automotive industry
Forest and wood industry
Pharmaceutical industry
ICT
Metallurgy industry
Aerospace and space industry
Instruments and activities of the Bothnian Arc 2008-2014:

- Nordic Business Link; project period 2008–2010
- Nordic Business Link 2.0; project period 2011-2013, www.nordicbusinesslink.eu
- Music on Top; project period 2008–2011
- Music on Top 2; project period 2011-2014, www.musicontop.org
- ICT-arc; project period 2009–2010
- Cross-Biz; project period 2011-2013, www.internetbay.com/project-cross-biz
- Bothnian Green Logistic Corridor; project period 2011-2014, www.bothniangreen.se
- Boundless Bothnian Bay; project period 2011-2014, www.metsa.fi/bbb
- Bothnian Arc Steel & Metal Industry; project period 2011-2014
- Barents Logistics 2; project period 2011-2014, www.barents-transport.fi
- Business development services in HaparandaTornio; project period 2012-2014
- Cross-Border Regional Innovation Policies; project period 2012-2014
- Development of cooperation within the Baltic Sea and Barents region
- The Bothnian Arc is a member of the AEBR (Association of European Border Regions)
- NSPA (Northern Sparsely Populated Areas Foresight)
- A series of energy and bio energy workshops to increase cross-border networks and cooperation; period 2008-2010
- Euregio Arctica platform to increase cooperation in the Swedish, Finnish and Norwegian border region
- Organizing seminars with the business organizations in the Bothnian Arc

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Staircase of cross-border innovation policies

Figure 3. The staircase of cross-border regional innovation policies

- **Information**
  - Mutual exchange of policy information

- **Alignment**
  - Ad hoc and temporary common initiatives without joint funding
  - Mutual opening of programmes or structures across borders – joint funding by actors from several regions

- **Joint Actions**
  - Cross-border measures, structures and actions - joint funding by actors from several regions

- **Joint Strategy**
  - Joint policies or policy instruments co-funded by all constituting regions
  - Joint common strategy adopted at the level of the cross-border area, translated into common policy mix co-funded by all constituting regions
The Global Best-Practice for Managing the Innovation Ecosystems and Hubs
The Global Innovation Hubs

The key criteria and development targets:

1. A cross-sectorial network of regional/global innovation actors, bringing together knowledge creators and business developers

2. Supports directly business and product development on shared technology platforms

3. Smart-eco infrastructures, first-class research environments and advanced education system linked to the regional/global innovation processes

4. International actors (media, opinion leaders, regional authorities, R&D professionals, top business management) recognize and profile the hub as a globally leading innovation platform

5. Direct links to other frontrunner innovation environments around the world

-> Attractive for leading companies and talented professionals
-> Good platform for fast-growing high-tech SMEs
-> Increasing number of jobs and tax revenues
Development path of the regional innovation eco-system

Regional pre-conditions:
1 – potential of existing innovation system (=audits)
2 – willingness to utilise this potential (=active participation)

3-6 years

2-4 years

on-going

Public support

National or Regional Innovation System

R&D
Innovation capacity
Commercialization
Platforms

Regional or cluster development programs
Support for growth companies
Parks & business incubators
# The 3-in-1 Future Regions and Cities

<table>
<thead>
<tr>
<th>Smart Region and City</th>
<th>Eco Region and City</th>
<th>Innovation Region and City</th>
</tr>
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<tr>
<td>Integrated Operating Center</td>
<td>District cooling/heating</td>
<td>Innovation/R&amp;D Clusters</td>
</tr>
<tr>
<td>Smart Homes</td>
<td>Distributed Energy Systems</td>
<td>Eco-Technologies R&amp;D</td>
</tr>
<tr>
<td>E-Health</td>
<td>Water management</td>
<td>3-in-1 City Related R&amp;D</td>
</tr>
<tr>
<td>IC Card</td>
<td>Waste management</td>
<td>Programs and Projects</td>
</tr>
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<td>Security Systems</td>
<td>Electric Vehicle (EV) Systems</td>
<td>Virtual learning / classrooms</td>
</tr>
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<td>Renewable energy Systems</td>
<td>Vocational Education Centers</td>
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**Smart Grid / Micro Grid + Common IT Platform + Cloud Computing Strategy**

**Intelligent Transportation and Mobility**

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Matching the Triple Helix interests

- National / Regional Innovation Policy
- Physical Infrastructure and Service Structures
- Education (elementary to university)
- Research & Development Activities
- Cluster Policies & Programs
- Living Labs / Test-Beds
- Incubation Environments
- Start-ups
- Growth SMEs
- Anchors

Company and forum driven activities
Public-private partnerships
Public policy driven activities

“Smart Handover”
Visual Ecosystems Profiles to Analyze and Plan for Real Impact

Sophia Antipolis, Ranska

Cambridge, UK

Oulu
Anchors of Bothnian Arc

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Luleå University with Piteå and Skellefteå Campuses

All together 46400 students and 5200 employees
The Hubconcepts™ - Innovation Hub Framework

Resulting in Quality Combinations of First-class master plans & Innovation Hub concepts

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The Hubconcepts™ - Innovation Ecosystem
Jeju, South-Korea

Developers and Investors:
- Shanghai Greenland Group 4-6 billion €
- Seowoo Group, Seoul: 1-2 billion €
- JDC Korea: infrastructure development

Concept and development programs:
- Hubconcepts Inc
Challenges of Bothnian Arc
Barriers to Cross-border Cooperation

National/regional authorities are not working for Bothnian Arcs' innovation programmes and platforms

Innovation actors don't have enough skills to utilise international, national and regional innovation systems and processes

Cultural and language barrier

Basic knowledge low from cooperation possibilities
Future actions of Bothnian Arc

Joint innovation program of Triple helix actors connected to investments
- anchor driven programs
- growth program for SMEs
- product/service development
- support for Start-ups
- structures for business incubation
- setting up next generation Living labs

Joint national and regional innovation policy supporting innovation programs

Joint allocated funding for cross-border cooperation and programs

International training program for innovation actors
3 Cases
Case 1: Successful Nordic Business Link 2.0

The project focuses on a number of different industries.
- Subcontracting operations in the fields of metal, mining and construction
- Experience sector and creative sector
- IT services and telecom technology
- Renewable energy and environmental engineering
- Oil and gas industry

Nordic Business Link offers the following services for participating companies:
- Business support
- Business delegations
- Information packages
- Seminars business arenas

**Lessons learnt are that companies need matchmaking events and information regarding the opportunities of businesses in the region.**
Case 2: Bothnian Academy

No success with funding

The main targets of the Bothnian Academy were 1) To build a cooperative forum that brings together all research and innovation actors; universities and research organisations, business life, regional authorities and other interest groups of the Bothnian Bay, and wider, in northern Scandinavia, for the purpose of pursuing joint research and development activities that support the needs of industry, business life and regional development. 2) To investigate the research needs of business life and link academic knowledge and business research and development problems. 3) To promote networking and create new ways for systematic cooperation. 4) To increase Swedish-Finnish-Norwegian knowledge in northern issues. 5) To develop a critical mass in northern research and build stronger consortiums. 6) To promote cross-border and transnational R&D activities between Sweden, Finland and Norway. 7) To disseminate information, share R&D results, experiences and knowledge. 8) To create ideas and develop multidisciplinary research and innovation projects, and seek EU funding for the implementation of work. 9) To develop deeper business-academy-public sector links in the field of R&D&I.

**Lesson learnt is to secure long-term commitment and be prepared to continue the process and looking for alternative funding source even if the funding is not provided at the first attempt.**
Case 3: Management Initiative for Bothnian Arc
Innovation programs

Lessons learnt from Best Practices Management of Innovation Hubs

Resulting in Quality Combinations of
First-class master plans & Innovation Hub concepts
Your Partner in
Transferring the Global Best Practices
for the Future Innovation Regions and Cities

Our Services include:
Tailor-made Training Programs
Innovation Hub Evaluations and Analyzes
Development of Strategies and Business Plans
Implementation Support for Development Projects

Contact: Martti Launonen
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+358-40-5188528