Cluster-flavoured innovation approach in brief
Cluster

A group of similar functions, things or people positioned or occurring closely together (Webster’s dictionary)

• A concentration of companies, research institutions, public development agencies, and other organizations supporting either directly or indirectly the development of each others and the entire cluster (Porter 1990; 2000)

The Michael Porter’s Diamond model
Barossa Valley, Australia
• The UK is the world leader in global motorsport
  o 7 out 10 F1 teams are based in the UK
  o Over £9bn sales turnover worldwide
  o 41,000 staff
  o 6 universities

• Solutions also to pharmaceuticals, marine and aerospace, for example
  o Integrated systems, telemetry, telematics, etc.

Motor Sport Valley some years ago
(Source: Henry & Pinch; also Martinez-Vela)

Of primary importance
• rapid turnover of staff
• information leakage through links with suppliers
• new firm formation by insiders
• informal collaboration
• gossip and rumour
• personal contact network
• observation in the pit lane during races
Dominant thinking (1990->) in simplification

1. Concentration of skilled labour
2. Concentration of firms and other related organisations
3. Pool of resources and knowledge
4. "Socio-cultural glue" (Beliefs, habits, norms, values and place leadership)
5. Cooperation across organisational boundaries
6. Innovation and learning
7. Economic success
8. Regional growth
9. Wealth and well-being

Each organisation exploit in its own way.
Anti-Ship Missile Development at Saab Technology Centre in Tampere

06 May 2018

Saab’s newly established development centre Saab Technology Center (STC) in Tampere, Finland, is used for development of the Swedish Armed Forces next generation RBS15 anti-ship missile system.
Local buzz and global pipelines
(Bathelt et al. 2004)
Innovation System and Cluster-flavored Innovation Policy in Finland
Cluster policy and innovation system entered Finland to boost competitiveness

- Deep recession of the early 90’s
- High-road targeted - continuing with the old path was not an option
- Cluster and innovation system as key focusing devices
R&D in Finland by sectors 1971-2018

- **Investment driven economy**
- **Recession**
- **Constructing cluster flavored innovation policies**
- **Economic stagnation, confusion**

R&D expenditure, EUR million

- ENTERPRISE SECTOR, TOTAL
- GOVERNMENT SECTOR + PRIVATE NON-PROFIT SECTOR, TOTAL
- HIGHER EDUCATION SECTOR, TOTAL
Prime minister Juha Sipilä expressed his doubts about the long-held innovation policy logics by asking:

“…how in the world this happened? Why weren’t we better able to exploit global economic growth in spite of exceptional investments in expertise and R&D”

(free translation from Finnish by MS)
Ingredients of economic growth

- Human capital
- Innovation – research and development
- Distance from markets
- Infrastructure
- Spatial effects

(OECD 2009)
Gross domestic spending on R&D Total, % of GDP, 2000 – 2018

Source: Main Science and Technology Indicators

https://data.oecd.org/rd/gross-domestic-spending-on-r-d.htm
To put it simply

- **Innovation** = something new + implemented + value added
  - Classical take on innovation process: Invention – innovation – diffusion of innovation

- **Innovation policy** is actions by public organisations that influence innovation processes (Edquist 2008)

- **Innovation system** consists of interacting private and public firms, universities, and government agencies aiming at the production of new knowledge and exploitation of it.
The promise

• The systems of innovation literature are careful in its promises
  
  o Most associate innovation systems with economic growth
  
  o Some explicitly argue that a successful innovation system generates economic growth (Carlsson 2006; Ernst 2002)
  
  o Today focus more and more on climate change related issues

• For policy making, a generic model to see beyond...
  
  o individual organisations, and
  
  o the siloes of public policy making
  
  o Comprehensive policy -> innovation -> economic growth and employment
BUT!

Innovation is **not** usually linear process like this

- Basic research
- Applied research
- Product development
- Delivery to markets

Innovation is a complex non-linear process
Innovation sources

STI (Science, Technology, Innovation)
• high-tech / science push / supply driven

DUI (Doing, Using, Interacting)
• competence building / organisational innovations / social innovations / market - demand - user driven

(Lorenz & Lundvall 2006)
In 2008, for the first time in the world, a patient’s upper jaw was replaced with a bone transplant cultivated from stem cells isolated from the patient’s own fatty tissue.
Why Finnish babies sleep in cardboard boxes

By Helena Lee
BBC News

For 75 years, Finland’s expectant mothers have been given a cardboard box by the state. It’s like a starter kit of clothes, sheets, and bottles, and can even be used as a bed. And some say it helps achieve one of the world’s lowest infant mortality rates.
Innovation, an analytical tool, has become a political symbol.

But...

new products and services that benefit societies are needed also in the future.
All the relevant economic, social and political institutions

Knowledge-creating sub-system

Knowledge-utilising sub-system

Innovation system

development, diffusion, and use of new knowledge

individuals’ and organisations’ learning capacity

ability to innovate

Innovation = Something new (invention) + implementation + value added

Relationships

Innovation policy as actions by public organizations

(implicit measures)
An example cluster-flavoured innovation policy
The Finnish Strategic Centres for Science, Technology and Innovation (SHOK) [2006-201X]

- Non-profit limited-companies with research programmes
- Concentrated funding scheme
  - In the Finnish Metals and Engineering Competence Cluster (Fimecc ltd.) the size of research programmes varied between MEUR 20 and MEUR 51
- Dialogue between companies and research institutions
- Established and run by leading firms, universities and other stakeholders

Expectations:
(a) Industry will become more committed into 5-10 year R&D programs, (b) increased co-operation between major partners, (c) new more efficient way of funding R&D, and (d) renewal of existing strongholds of the Finnish economy
Strategic Centres for Science, Technology and Innovation (2006 → 1X?)

A cluster-flavored innovation policy

- The Forest Sector’s Strategic Centre (Forestcluster Ltd)
- Finnish Metal and Engineering Competence Cluster (FIMECC Ltd)
- ICT cluster (Tivit Ltd)
- Cluster for Energy and Environment (CLEEN Ltd)
- Strategic Centre for Health and Wellbeing (SalWe Ltd)
- Built Environment Innovations (RYM Ltd)
Criticism

- backward looking, based on the 90’s
- large company dominated
- focus too much on process innovation
- no new and revolutionary changes and
- play a conserving role in the economic structure
At best innovation policy creates interpretive spaces

- Sheltered spaces for collective search, experimentation and interpretation
  - where fears of the risk of private appropriation of information do not disrupt the open-ended futures oriented conversations (Lester & Piore 2004)
  - where collective sense-making is possible (learning new vocabulary, thinking, partners, etc.)
  - where one is not only learning to innovate or detecting system failures but is enabled to seek futures with relevant partners (and to find relevant partners)