

6° CLAC

Sexto Congreso Latinoamericano de Clusters



Clusters as Innovation Systems

Madeline Smith

Head of Innovation, EKOS

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Clusters as Innovation Systems



Madeline Smith
Head of Innovation, EKOS

Proud history - 18th century

Ouro Preto

- Gold wealth
- attracted the intelligentsia of Europe
- Philosophy and art flourished
- birthplace of the Inconfidência Mineira

Scotland

- Scottish enlightenment
- Literacy 75% - highest in Europe
- Fresh Thinking
- Adam Smith – father of economics
- Things could be better
- Improvement for individual and society

Revolution in thinking

Common understanding

- Clusters
 - Different sectors
 - Research or not
 - Physical location or widely dispersed
 - High tech, low tech, service
- Innovation
 - Successful exploitation of new Ideas
- Innovation system
 - More than individual
 - Network of organisations
 - Linkages

Complex question



Inspiration

“Questioning what is possible is a key to success in every walk of life”

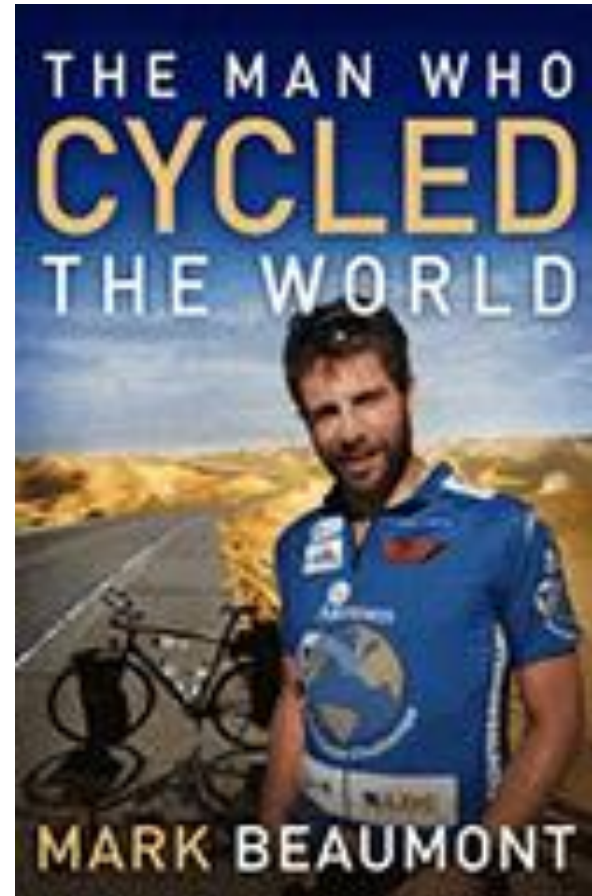
Mark Beaumont

“Man who cycled the world”

Previous time = 275 days

New time = 194 days

81 days less



Revolution in thinking

Mark Beaumont

- **Review**

- Gather evidence
- Understand the challenge
- Plan best approach

- **Relinquish**

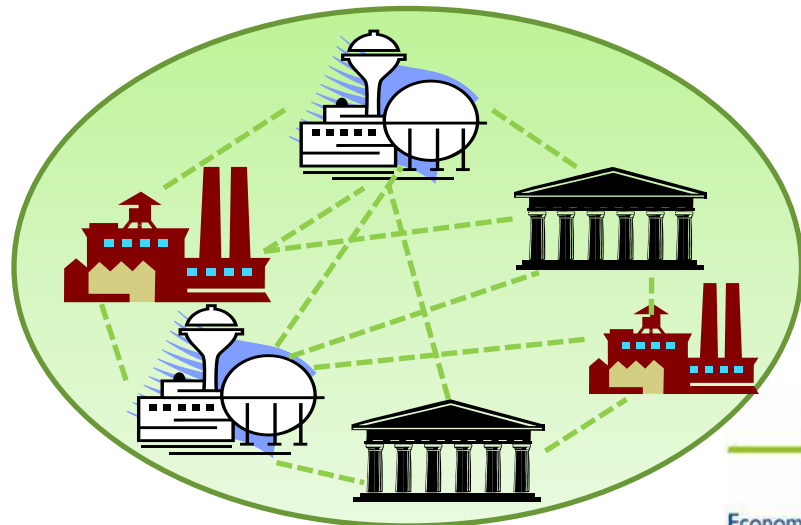
- What is the real goal?
- What am I willing to give up?

- **Reinvent**

- Put the plan into action
- Not just incremental but step change

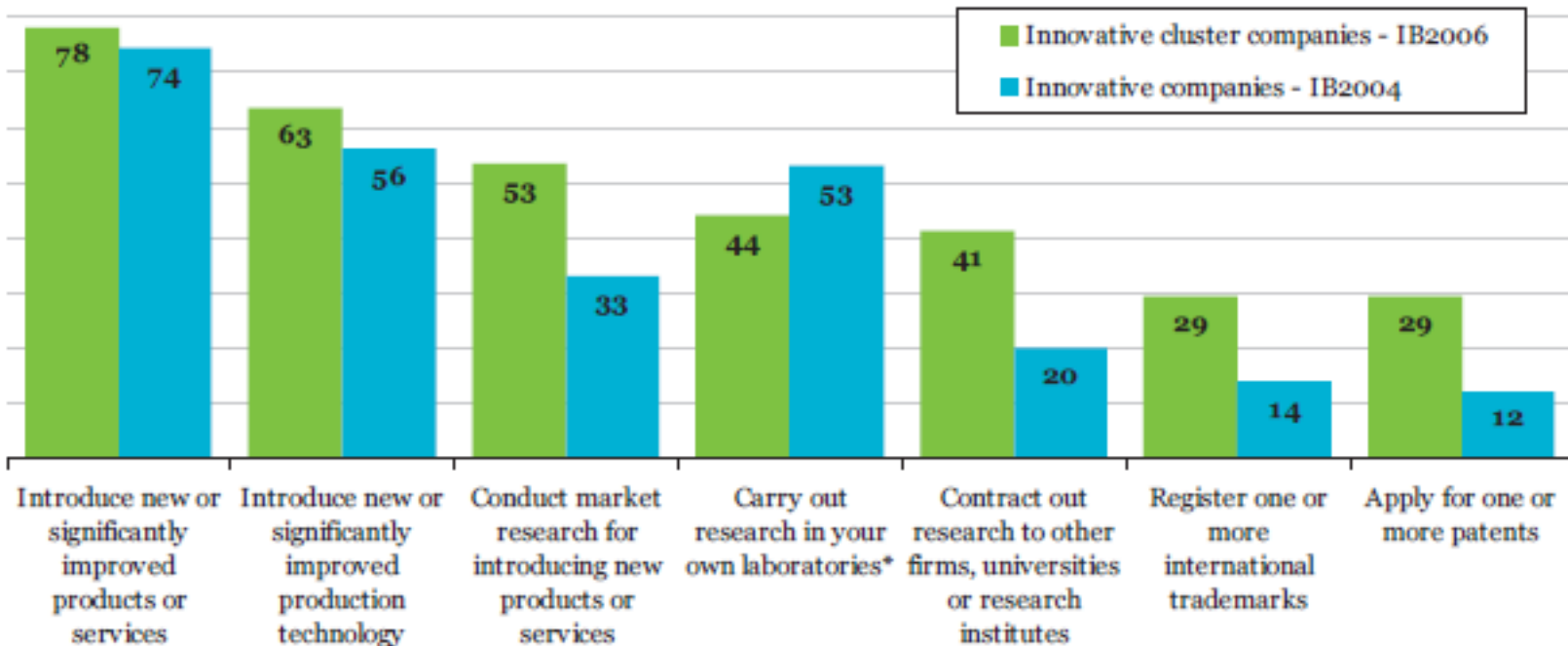
Cluster roots

- Clusters – Porter observations in Italy
- Building the “Triple Helix”
- Groups of likeminded organisations with common issues
- Network of integrated organisations, including companies, universities and research institutes, and government organisations within a geographic region
 - Efficiencies
 - Effectiveness
 - Synergies
 - Attractiveness
 - Self-reinforcing



Innovation performance in clusters

Innovation is higher in clusters than elsewhere (a comparison with IB 2004)



Source: European Commission (2006d) 2006 Innobarometer on cluster's role in facilitating innovation in Europe

Triple Helix Approaches

- Importance of all actors in Innovation system
 - Industry
 - Research / universities
 - Public sector / government
- Corralling around a common agenda
- Maximising assets in a region
 - Company strengths
 - Creating new / building on knowledge and research
 - Facilitating access to markets and highlighting regional strengths
 - Support for market failures in the innovation system
 - Overcoming barriers and quicker company growth

One size fits all?

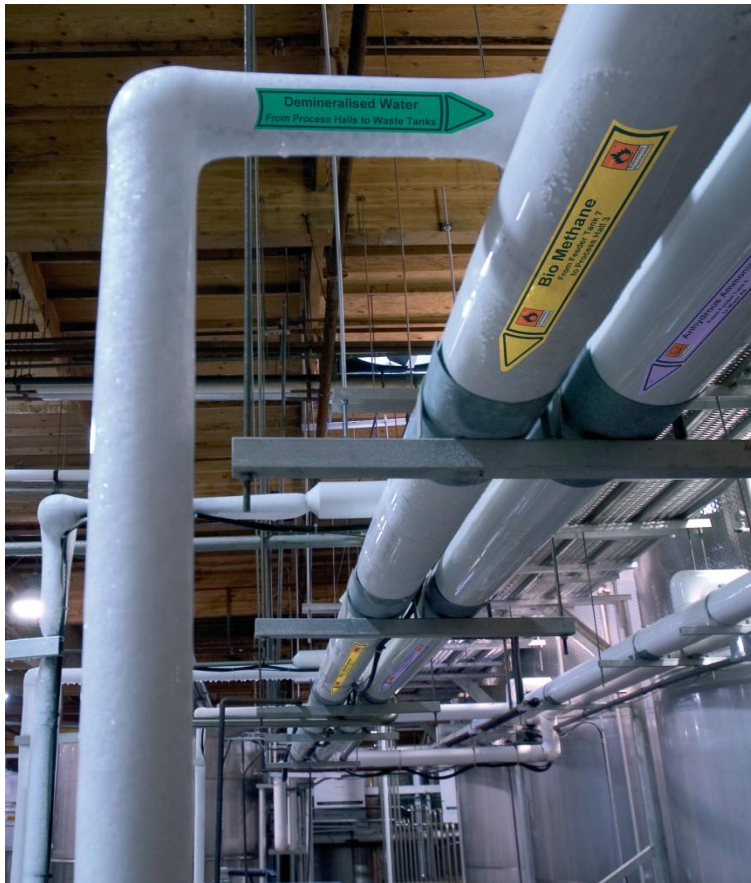
- One TCI National dish?
- Haggis?
 - Sheep and barley – natural asset
 - Filling and nutritious – good for outdoors
 - Warming – damp and cold weather
- Regional Cluster and Innovation approach
 - Build on local assets/capabilities
 - Understand the context
 - Address local needs



Cluster Building Challenges

- Focus on strengths – clusters must be built on reality
- Strong evidence to build strategy – do the right things
- Importance of measuring impact – showing benefits, including wider analysis
- Understanding how clusters grow:
 - Collection → Cooperation → Collaboration → Cluster
- **REVIEW** – gather the evidence

Cluster's Environment



Is it a good environment for growth?

- Money – Financial Capital
- Skills – Human Capital
- Knowledge – Intellectual capital
- Access to Markets – Market Capital
- Things – Physical Capital
- Networks – Social Capital

From Scottish Case study in "Red Book", M Smith

Understanding your Innovation system

- What are your regions key strengths / assets?
- What are the gaps in your Innovation system?
- Strategy to address and exploit.
- Develop programmes to help do this?
 - Learning from other regions
 - Targeting investment
 - Synergies / supplement to regional / national support
 - More in / more out
- Long term investment
 - Takes effort

Understanding Strengths (and weaknesses)

e.g. Scotland

- Strong research base
- Lack of large companies
- Low entrepreneurship
- Strong sectors
 - Energy (including low energy technologies)
 - Food and Drink
 - Creative Industries
 - Lifesciences
 - Financial services
 - Tourism
- Issues with Business environment
 - Finance, access to markets

Business Environment Mapping

	Pre start	Start Up (Inc HG)	Bus Base	Growth/BOS	Corporate Elite
Funding (Financial Capital)	Yellow	Red	Red	Red	Green
Skills and Recruitment (Human Capital)	Green	Yellow	Red	Yellow	Green
Assets and Infrastructure (Physical Capital)	Red	Green	Red	Green	Red
Intellectual assets (Knowledge Capital)	Yellow	Red	Yellow	Yellow	Yellow
Global market Position (Market Capital)	Green	Yellow	Green	Yellow	Green
Networks (Social Capital)	Green	Red	Red	Green	Yellow

Example

Market Weakness



Lifescience

	Pre start	Start Up (Inc HG)	Bus Base	Growth/BO S	Corporate Elite
Funding (Financial Capital)	2	3	2	3	2
Skills and Recruitment (Human Capital)	2	3	2	3	2
Assets and Infrastructure (Physical Capital)	1	2	2	3	1.5
Intellectual assets (Knowledge Capital)	1	1	1	2	1
Global market Position (Market Capital)	1	2	2	3	2.5
Networks (Social Capital)	1	2	1	2	2

12

12

9.5

6

10.5

8

8

13

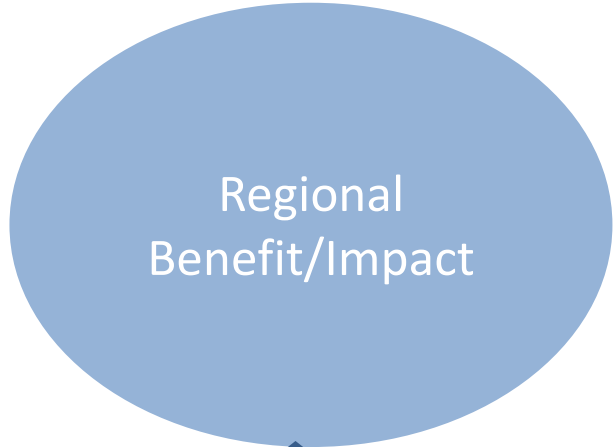
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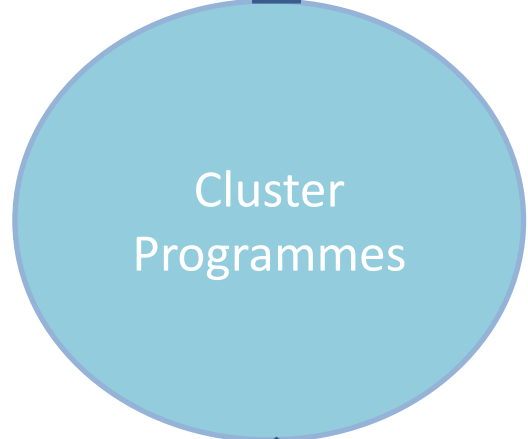
REVIEW – gather the evidence

Why?



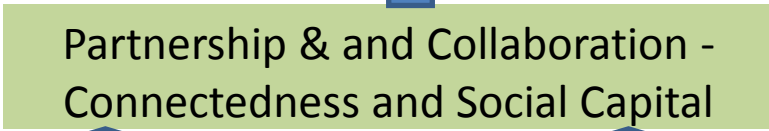
- Indicators and Themes**
- Jobs
 - GVA
 - Industrial Structure
 - Transnational opportunities

What?



- Business Environment, i.e.
 - Innovation performance
 - Physical assets
 - Finance and Funding
 - Skills
 - Talent attraction/retention
 - Internationalisation

How?



Strategic/policy

Operational

- Who involved
- Type of partnership
- Depth of partnership
- Behavioural changes

Skane region Innovation system review

- Led by regional government in S Sweden
- All actors involved
 - Gov, Industry, universities, cluster bodies etc.
- Successes and issues of current innovation system
 - Strong universities
 - Good clusters
 - Bridge to Copenhagen
 - Uni – bus linkages
 - Focus on Stockholm
 - Fragmented support
- Overall strategy, approved and funded

Innovation Connectors in NE England

- Seven investments across the region
- Focused on key assets (Energy test Centre) / growth sectors (Software, Digital)
- Involving all triple helix partners – partnership and connectivity
- Build an innovation system around key strength
 - Infrastructure, skills, enterprise etc.
- Impact on local regional economy (community engagement)
- Levered in European funding

Clusters are ...

- Subject to changes in external environment
- Affected by changing customer expectations
- Must learn to adapt and evolve

- Learning organisations
- By nature open and collaborative
- Share knowledge
- Learn from each other
- Work in different way

Collaborate to Innovate

“. . . innovation is no longer individuals toiling in a laboratory, coming up with some great invention. It's not an individual ...

- ... It's **individuals**
- ... It's **multidisciplinary**
- ... It's **global**
- ... It's **collaborative.**"



Sam Palmisano, Chairman and CEO, IBM

Collaborate to Innovate . . . why?

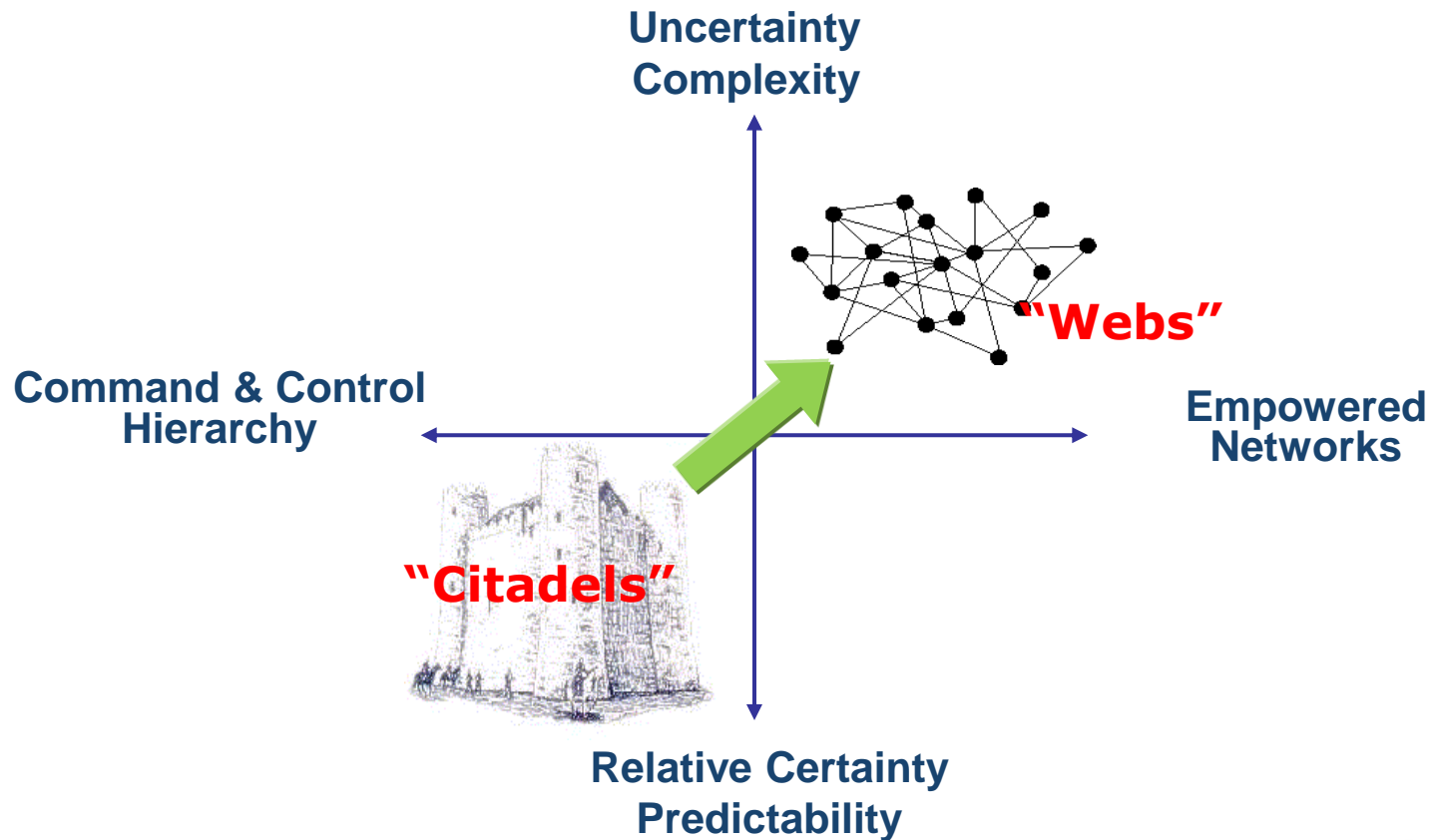
- Most of the smart people don't work for you
- Gain access people you couldn't . . . or wouldn't employ
- Diversity is as important as ability*
- Nobody is as smart as everybody (Wisdom of crowds)
- Metcalf's law - $Vn \propto N^2$
- Leverages the law of 'requisite variety'

'Most Innovation happens elsewhere'

Bill Joy – Sun Microsystems, Inc.

Evolving Organisations

Clusters fit this new model



Collaboration

Relinquish

- What is the real goal?
- What am I willing to relinquish to achieve that goal?

judge the risk of releasing information

... against the return of gaining understanding

- Be willing to give things up to achieve the strategy
 - Understand how trust develops and how clusters grow
 - Collection → Cooperation → Collaboration → Cluster

Rethinking Cluster Approaches

- Cluster measurement techniques limited use for policy makers
- Previous studies tend to be:
 - Quantitative
 - Based on historical data
 - Snapshot
 - Relatively static
- Reality is that:
 - Clusters are complex tricky to measure
 - Complex issues such as social capital are important
 - How organisations work together is important

Systems Thinking and Cluster Analysis

- Systems thinkingcomponent parts of a systemrelationships with each other rather than in isolation (Checkland, 1985)
- Whole..... ‘greater than the sum of parts’
- More holistic approach to cluster analysis
- Enables us to explore dynamic nature of clusters
- Illustrates behaviours and company interaction

- Model developed to help describe how cluster develops

Building up the Dynamic System of a Cluster

LEVEL OF CULTURE

LEVEL OF CLUSTER

LEVEL OF INTERVENTION

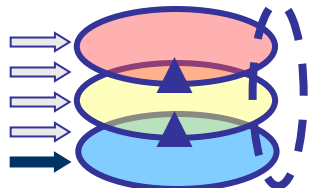
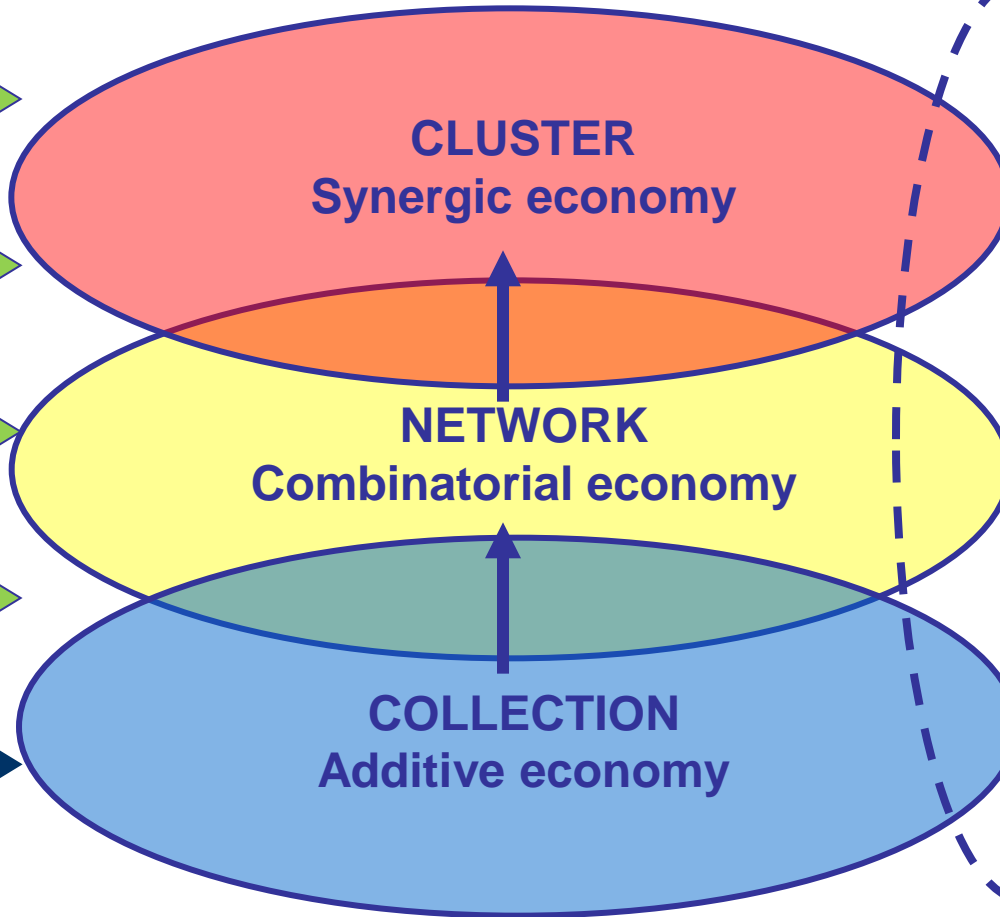
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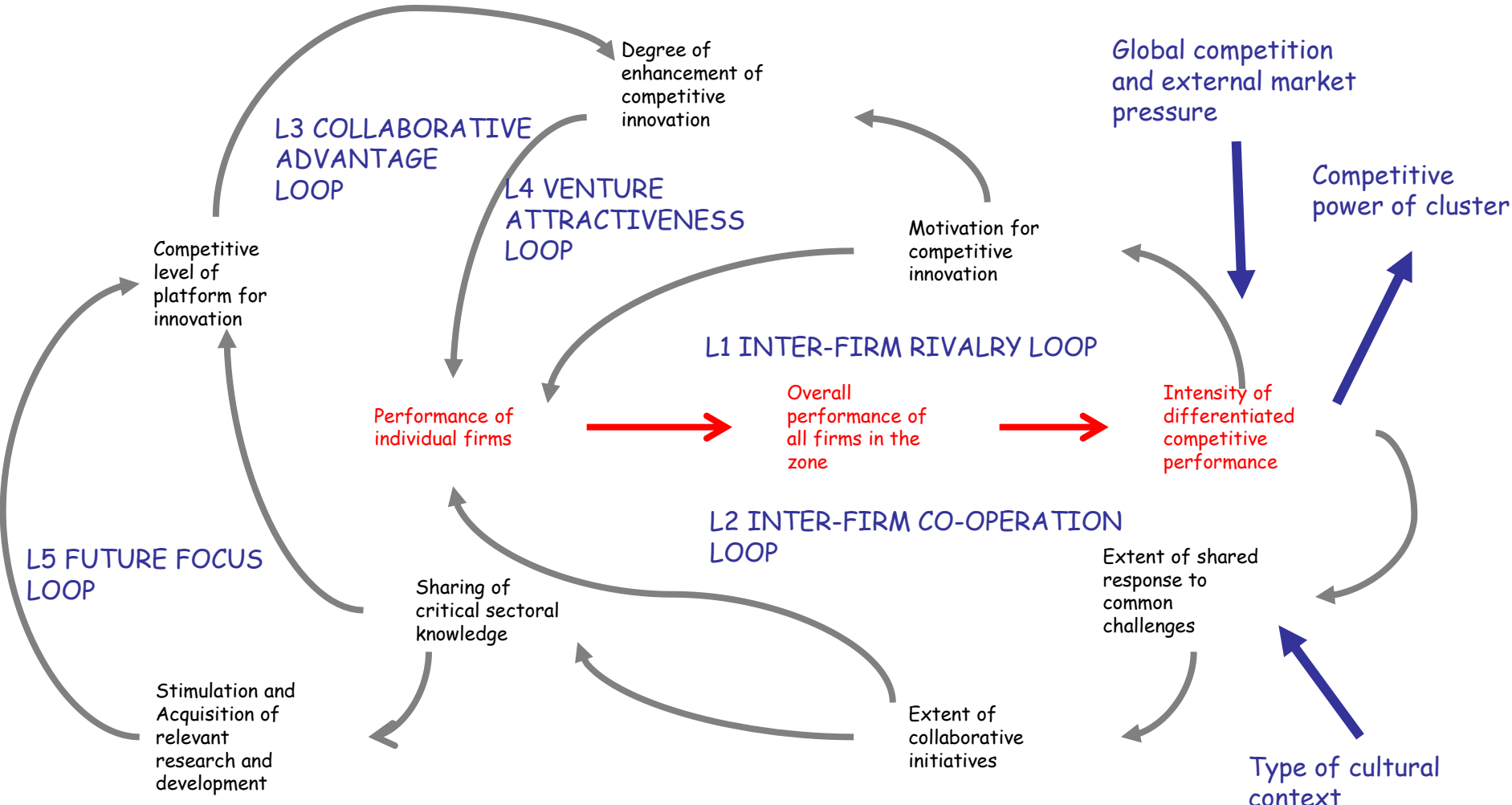
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Collection – Cooperation -Collaboration



The Cluster Dynamic Loops

Smith and Brown, Local Economy, June 2009

International Study

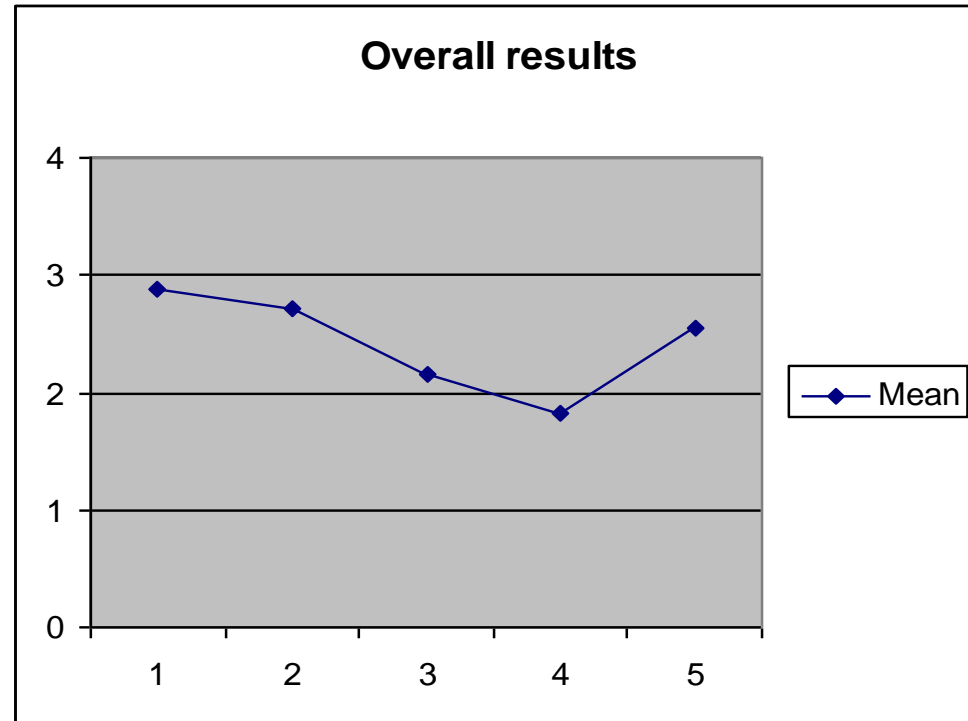
- Initially developed in Scotland
- International study – 10 studies to test beyond Scotland
 - Denmark - Mechatronics and ICT
 - California - Water Flow Technology Cluster
 - Sweden - Steel, Paper and pulp
 - Switzerland - ICT Cluster Bern
 - Finland - ICT sector :Ubiquitous Computing, Open Source, Sustainable Energy and Intelligent Machines
- Now developed into International Network
 - Open Innovation in action!
 - Testing in different circumstances
 - Part of Baltic Sea Region Cluster study

How can this be used?

- Understand current stage of development (through question set and workshops)
- Feed into strategy – how should we develop?
- Plot current interventions – highlight gaps/mismatches
- Strategic Discussions with cluster members - Setting future aspirations
- Help tell the story of cluster development – communication with stakeholders/funders
- Use in evaluation – show progress towards goals

Lifesciences Scotland – plan projects

- Cluster dynamics analysis
- What elements are missing?
- Where put resources?
- Good competition and cooperation
- Strong research
- Not linked to cluster companies
- Pre competitive project



Scotland Food & Drink - evaluation

- Scotland strong food and drink sector
 - Salmon, soft fruit production, red meat and whisky
 - reputation for quality
 - Sector fragmented
- Scotland Food & Drink established 2007
 - Cluster strategy – grow sector (t/o £12.5 billion by 2020)
 - Evaluated 2010
- tangible benefit for members
 - 91% increase in t/o
 - 68% employment
- Progress on Partnership
 - Move from collection to cooperation
 - Still little evidence of deeper collaboration
 - Key part of action plan



Companies Collaborate for a Reason

A purposeful, strategic way of working that leverages the resources of each party for the benefit of all by coordinating activities and communicating information within an environment of trust and transparency

$$\text{Benefit of Collaboration} = \frac{\text{Value of Resources Leveraged}}{\text{Time and Effort to Collaborate}}$$

Focus on the main common benefit
Relinquish if not important

Building Trust

- Very important
- Very difficult
- Trust is necessary – in practice the suspicion is the starting point.
- Difficulties in collaboration
*“seriously resource-consuming....**don’t do it unless you have to**”*
(Huxham and Vangen, 2005)



We need to **Reinvent**

Scotland.....

1940's

- 25 Shipyards
- 113 Coal mines
- 6 Steel works
- 3% GDP financial services.
- 0% world's oil

2004

- 3 Shipyards
- 2 Coal mines
- 0 Steel works
- 9% Financial Serv.
- 6% of world's oil
- Large PC producer

We need to **Reinvent** – and faster

Scotland.....

1940's

- 25 Shipyards
- 113 Coal mines
- 6 Steel works
- 3% GDP financial services.
- 0% world's oil

2010

- 1 Shipyards
- 0 Coal mines
- 0 Steel works
- ?% Financial Serv.
- 6% of world's oil –
- **Renewables**
- ~~Large PC producer~~
- **Biotech / Digital Media**

- Rate of change
- Impact of globalisation

We need to **Reinvent** – and faster

- Scotland's new revolution?



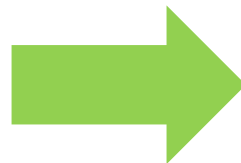
Reinvent



- Mark Beaumont
 - Cycled the world in 2007/8
 - Held record for 2 ½ years – (new record 161 days – showed a new approach)
 - Cycled Alaska to Tierra del Fuego (cycle Rockies and Andes)
 - “Not much of a cyclist”
 - Row to the Pole
- Not what we currently do.....
 -it’s what we COULD do that matters
- Skills and capabilities
- Opportunities

Trading capabilities

- West Midlands Collaborative Commerce Marketplace (WMCCM)
 - On line market place for SMEs
 - What skills do I have – not what can I make
 - Partnering to meet customer needs
 - Secured over 1000 new tenders
 - Technology as a tool not the answer



Reinvent

- Effect of globalisation
- Need to look wider to find partners
- Transnational collaboration
- Baltic Sea Region
 - BSR StarDust Project
 - To link strong research environments, clusters and SME-networks



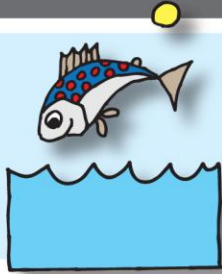

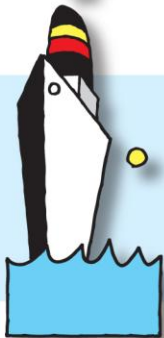


Transnational - why



- Countries grow with neighbors that grow
- Larger Home Market for products, services and knowledge, 110 million people in 10 countries. (especially important for SMEs)
- There is potential that BSR can be a global recognized strong environment in a number of areas
- Leading companies/universities/ clusters
 1. A stronger value chain can be offered within the macro region
 2. A larger critical mass in research and innovation
 3. Complementary competences creates renewal

Reaching for global excellence

StarDust Projects

Theme	Project description	Partners
Cleantech & Future Energy	 Clean Water	Lahti Cleantech Cluster, FIN SWE, POL, FIN, Russia
Wellbeing & Health	 Active for Life	Cumulatum, FIN FIN, DEN, GER, LIT, SWE
Future Transport	 Marchain	Claipedia Science & Technology Park, LIT LIT, FIN, LAT, EST, POL, DEN, SWE, ICE, NOR
Digital business and Services	 Mobile Vikings	Mobile Heights, SWE LIT, FIN, LAT, EST, POL, DEN, SWE, NOR
Other	 Comfort in Living Concepts	Furniture of Kingdom, SWE LIT, LAT, POL, SWE, DEN, NOR, FIN

Stardust study

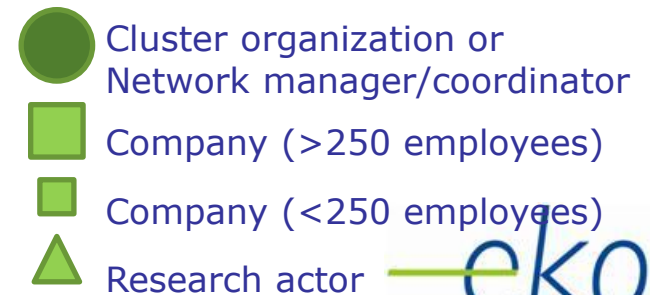
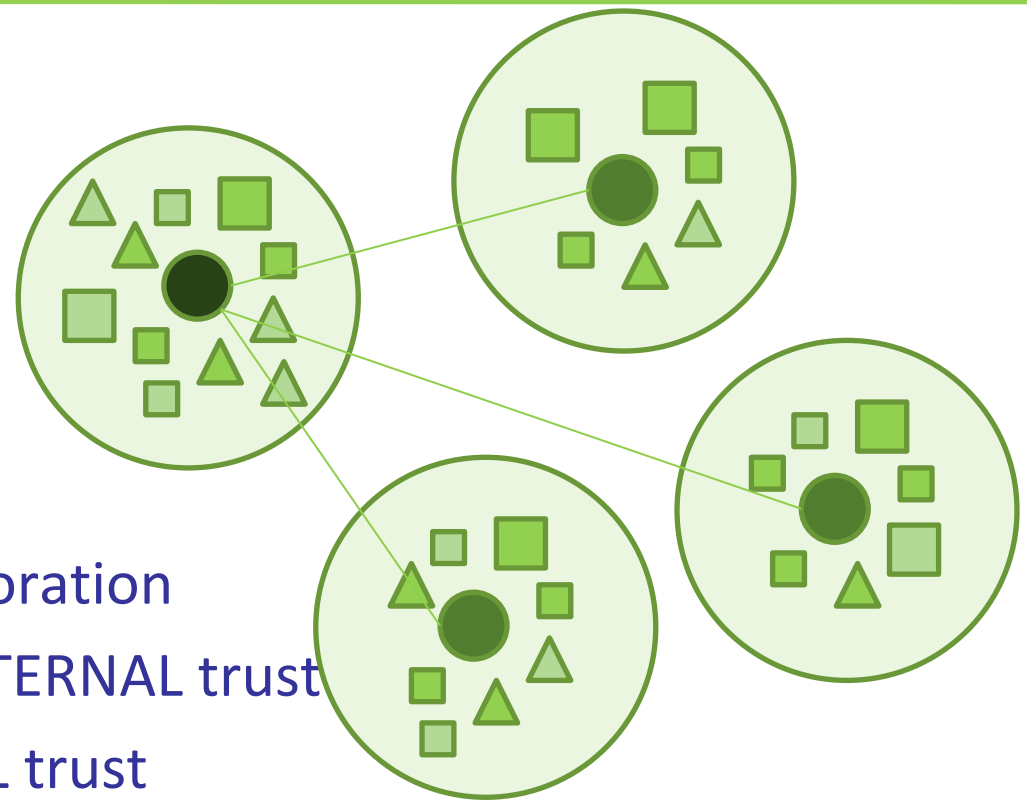
- Internationalisation

- Importance
- Barriers

- Social capital

- Cluster dynamics
- Building trust and collaboration
- Clusters already have INTERNAL trust
- Can they build EXTERNAL trust

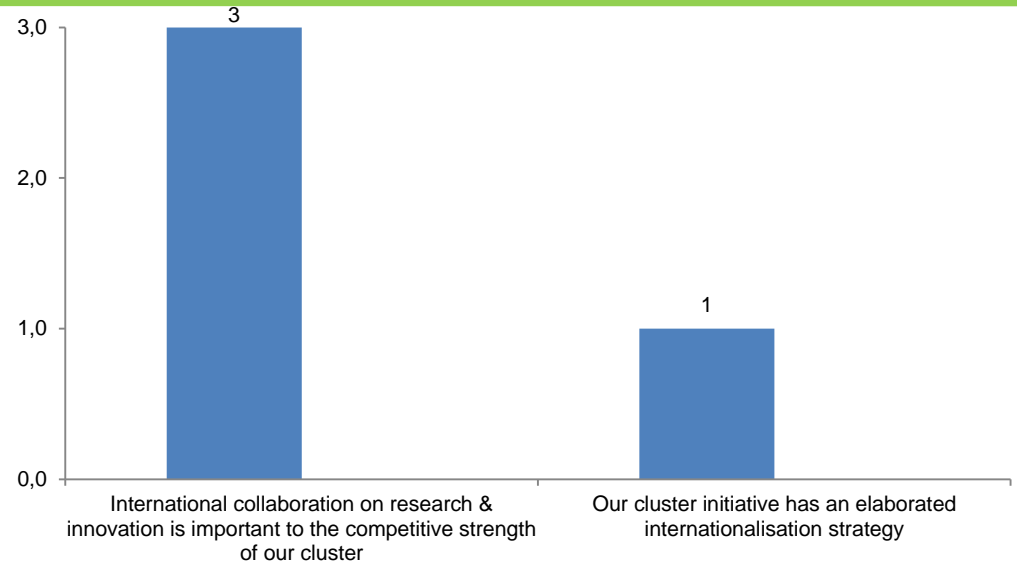
- Baseline, action plan and show progress



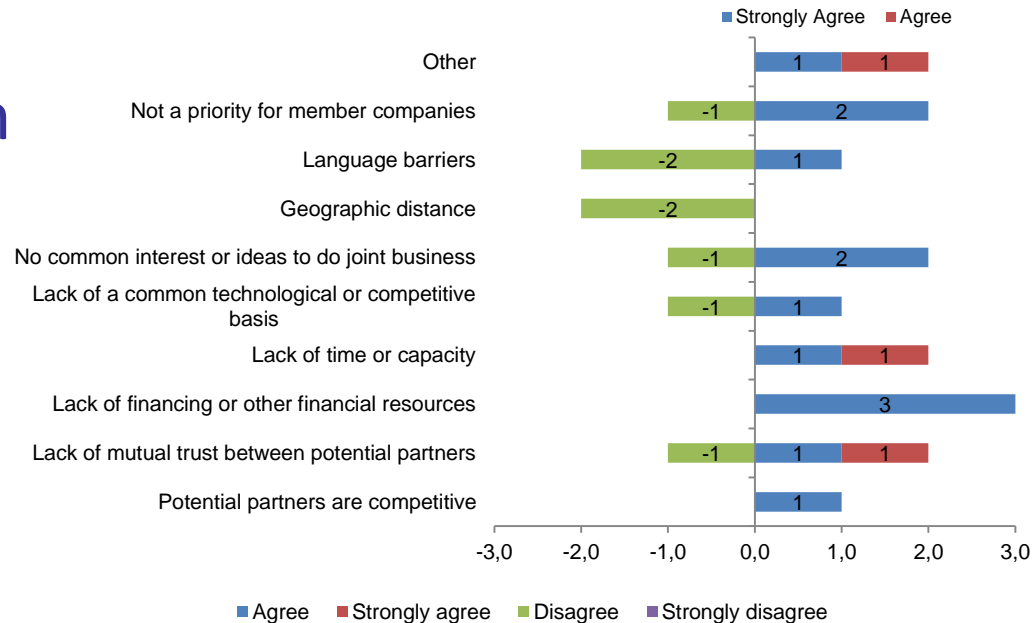
Initial findings

- Internationalisation

- Importance
- Strategy



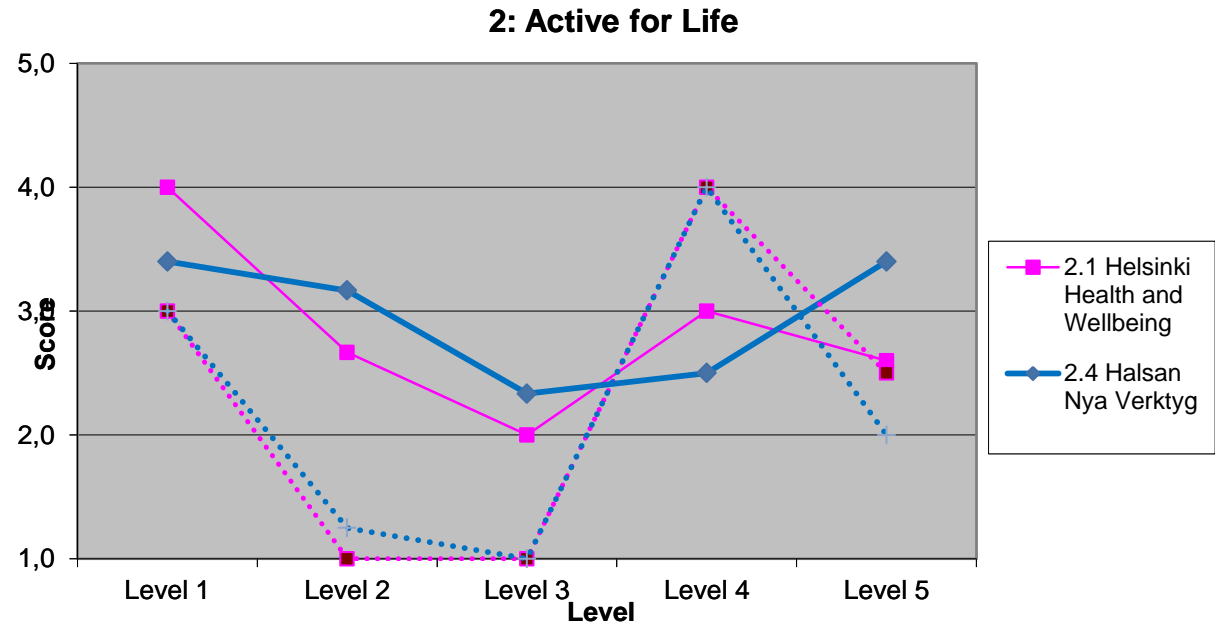
- Barriers to collaboration



Initial Findings

- Cluster Dynamics study

- Trust internally
- Less between clusters



Next steps for BSR

- Pilots meeting
- Identifying areas
- Forming strategies / action plans

- Repeat analysis in end 2012
 - Better strategies
 - Increase in trust

- Lessons for CLA?
- Feedback to TCI
- Other regional pilots?



BSR STARS

Innovation in the Baltic Sea Region

Future of Clusters

- Powerful tool for Economic Development
 - Innovation system, Triple Helix, sector initiative, cluster....
 - Building on strengths where whole > sum of parts
 - Fit with Open/collaborative innovation
- Geographies are less important
 - Porous boundaries
 - Key parts of a clusters in one location – well connected elsewhere
 - EU programmes supporting transnational cooperation
- Improved evaluation and analysis
 - Show impact and benefit
 - Why, what and how

Clusters as innovation systems

- **Review**

- Gather evidence
- Understand the challenge
- Plan best approach

- **Relinquish**

- What is the real goal
- What am I willing to give up

- **Reinvent**

- Put the plan into action
- Not just incremental but step change

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Revolution in Action

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