

V-LINC Visualisation of Linkages in Networks and Clusters



- Listed as a Good Practice on the [Interreg Europe Policy Learning Platform](#)

Agenda

- Introduction to V-LINC
 - Analysis Tool
 - Methodology
- Application to Clustering and Regional Planning
 - BeWiser
 - Pyhäsalmi Mining Services
- Inter-clustering approach and how this is applicable to a region with smaller business base
 - BeWiser Connect
 - EuroTech Connect
 - IN4.0 Connect
- Conclusions

Visualisation of Linkages in Networked Clusters

V-LINC is an expert research group which informs and develops policy recommendations through mapping, visualising and analysing the strength of key relationships within Cluster Ecosystems.



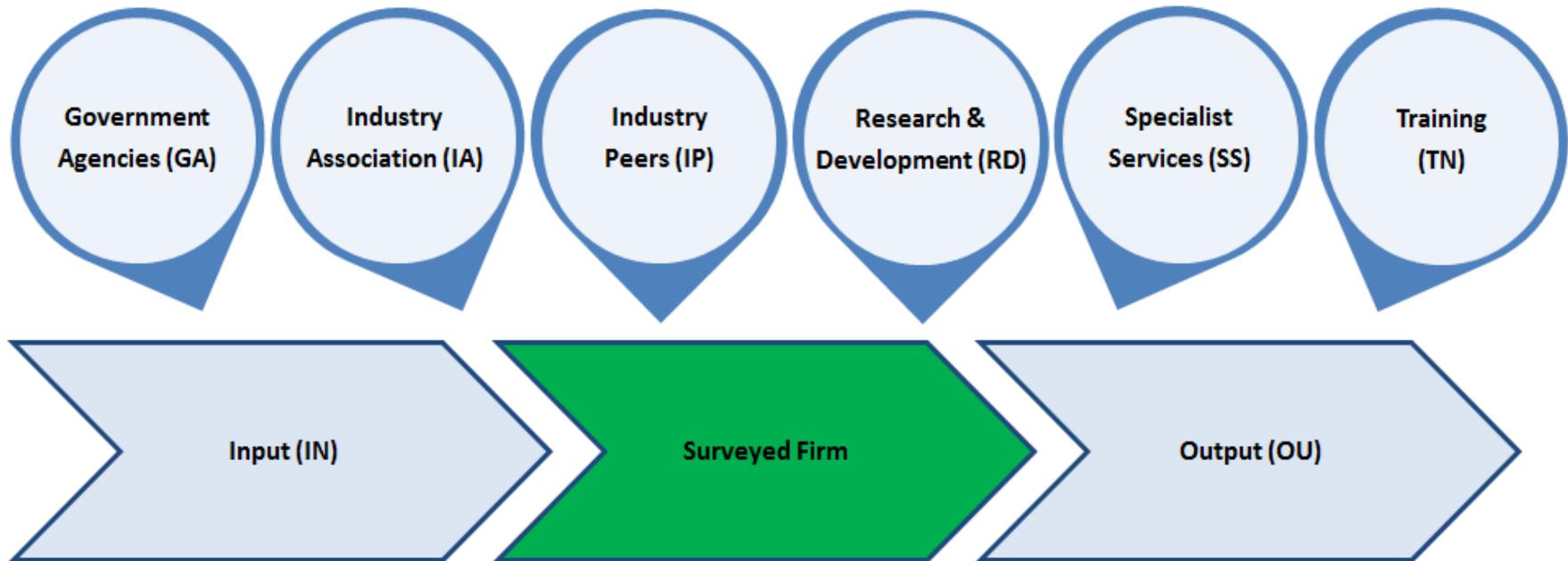
Applied across Europe and in the US via [Be Wiser](#), and [ERASMUS+](#) projects.

Visualisation of Linkages in Networked Clusters

Linkages between firms and other organisations are at the heart of how clusters function.

The key components of V-LINC data are;

1. Define the linkage category,



These linkage categories are derived from Marshall's (1890) 'Triad of External Economies of Industrial Localisation;' Porter's (1998a) 'Diamond of Local Industrial Clustering,' and Leydesdorff's (2012) 'Triple Helix Cluster configuration' each of which recognise the role of knowledge, innovation, collaboration, administrative supports and specialised inputs.

Visualisation of Linkages in Networked Clusters

- **Government Agency linkages:** includes links to International, national and local agencies e.g. city or county councils, state agencies, Environmental Protection Agency (EPA) etc.
- **Industry Association linkages:** this category includes membership of industry association groups.
- **Industry Peer linkages:** with other companies within the sector; noted to be key drivers of a cluster in regard to innovation and economic growth (Porter, 1998).
- **Input linkages:** included are links with suppliers of raw material, goods and services which have a decisive importance with respect to the final product or on the market performance of the company.
- **Output linkages:** with customers of the firm.
- **Research and Development linkages:** from the work of Porter (1985) we understand the basic rationale for innovation is to improve the long-run competitive position of a firm. These linkages include joint research projects between companies and also research relationships with academic institutes.
- **Specialist Service linkages:** with vendors who supply essential services to the organisation e.g. analytical services, automation, engineering, I.T., legal services, out-sourcing of particular processes and validation etc.
- **Training linkages:** with third parties who provide specific training for employees. The training may take the form of safety courses, training on machinery or software, diploma or degree courses.

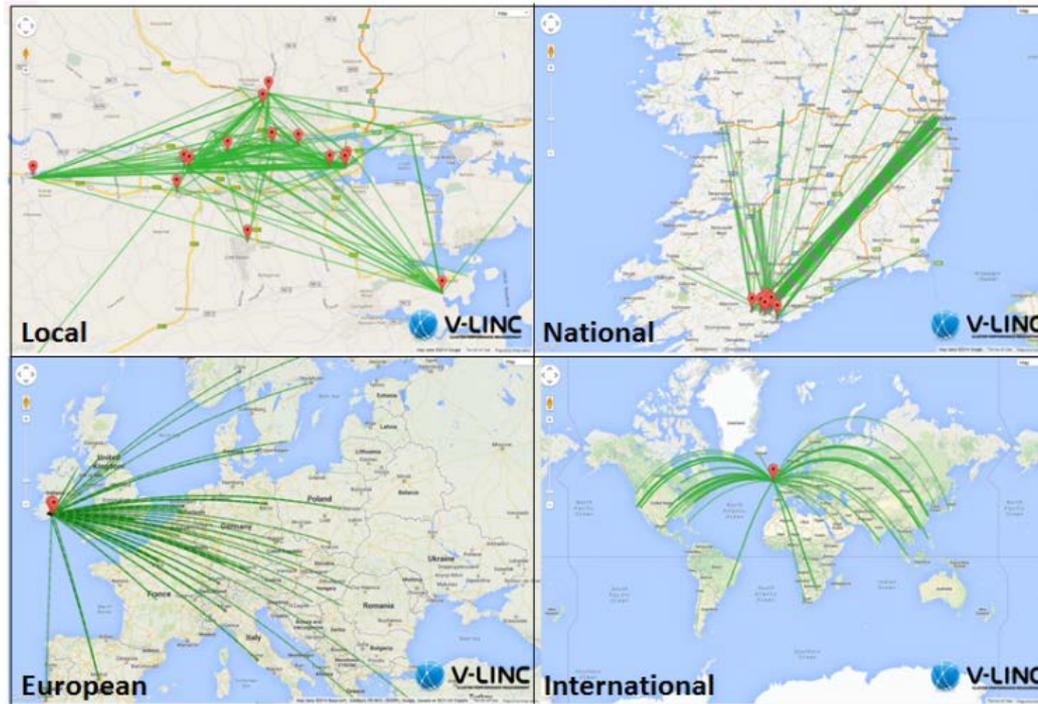
Visualisation of Linkages in Networked Clusters

Linkages between firms and other organisations are at the heart of how clusters function.

The key components of V-LINC data are;

2. Define geographic scope

Markusen (1996) recommends a broader institutional approach which encompasses the degree of embeddedness across district boundaries.



The methodology distinguishes itself from Porter's (1990, 1998) work in that it recognises that clusters are dynamic and have linkages which occur with partner's external to a cluster.

Visualisation of Linkages in Networked Clusters

Linkages between firms and other organisations are at the heart of how clusters function.

The key components of V-LINC data are;

3. Assess the business impact of each linkage as perceived by a respondent firm.

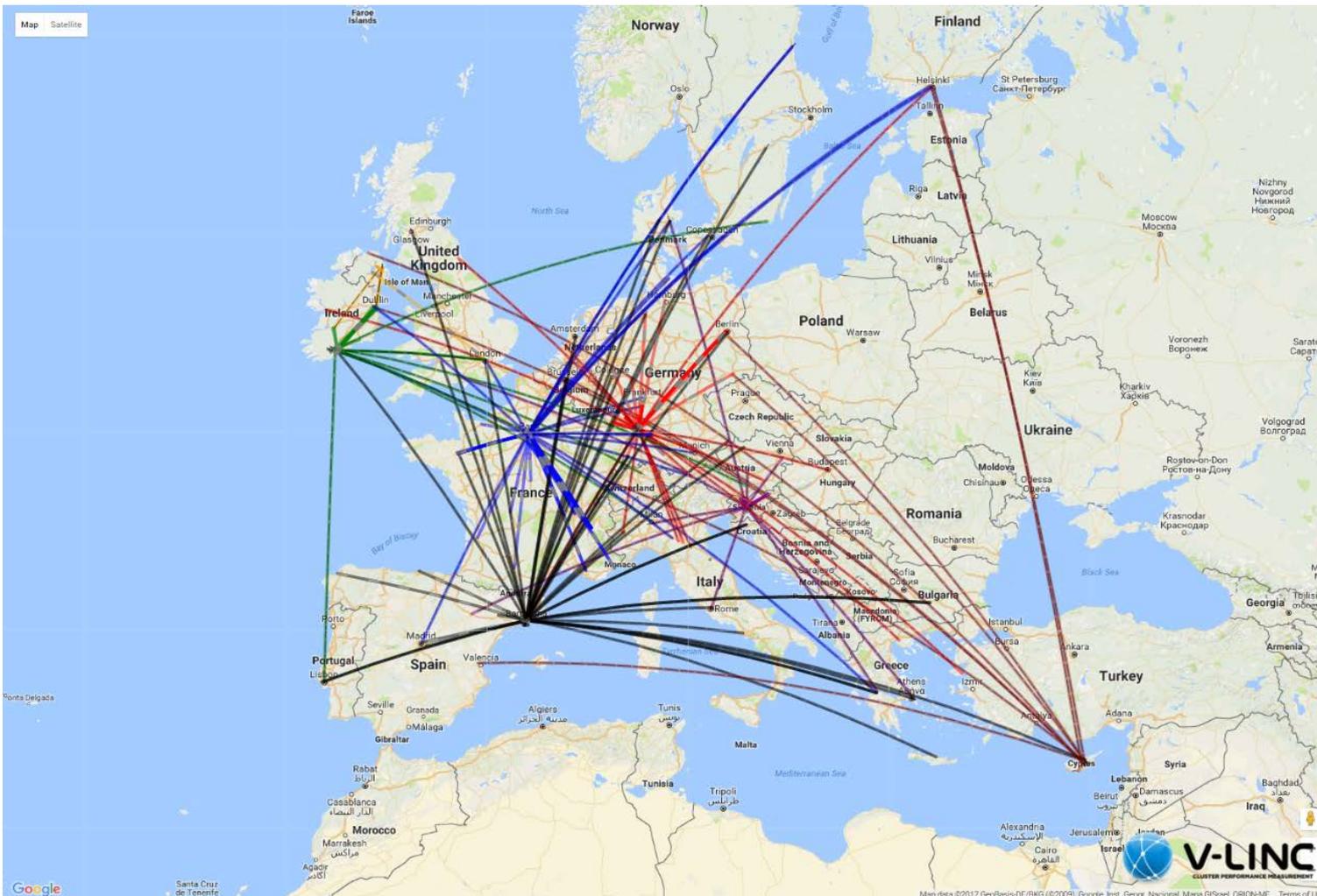
V-LINC provides a consistent method to reveal the significance of business linkages as perceived by company personnel involved in those linkages in a structured and replicable format. The importance of the linkages is collected through a series of Likert scale questions during structured interviews. The Likert scale used converts qualitative judgements into quantitative data which can be compared and subject to further analysis. V-LINC measures the perceived significance of linkages.

Each individual linkage is analysed across four dimensions; Intensity, Importance, Involvement and Investment. As each dimension is scored from 1 - 10, the summation of results, provides the perceived significance score for a linkage, out of 40.

V-LINC Visualisation of Linkages in Networks and Clusters

- **Application to Clustering and Regional Planning**
 - BeWiser
 - Pyhäsalmi Mining Services

Country	Cyprus	France	Germany	Ireland	Slovenia	Spain	United Kingdom
Region	Nicosia	Paris	Karlsruhe	Cork	Ljubljana	Barcelona	Northern Ireland
Firms	6	10	8	16	10	11	10
Total Linkages	133	393	382	571	339	318	222
Research & Development	12.7%	1 23.9%	2 21.5%	7.2%	10.3%	3 16.4%	8.6%



Pyhäsalmi Mine V-LINC Analysis

Pyhäsalmi Mine is closing in September 2019 – with a loss of jobs for up to 2,000 people. To prepare for this closure a V-LINC analysis of the connections of the mining supply cluster were analysed in January 2018. A further analysis looked beyond the closure to a January 2021 and considered the portfolio of customers firms would see replacing lost revenues.

After identifying the ideal New Output Linkages – respondents were then asked what supplementary linkages would be needed to help them connect with these new customers



1st Phase V-LINC Results - Pyhäsalmi Mine

$$13 \times \text{Illustration of two people sitting at a table talking} = 175$$

Category	GA	IA	IP	IN	OU	RD	SS	TN	Total
Number	11	5	15	57	44	9	27	7	175

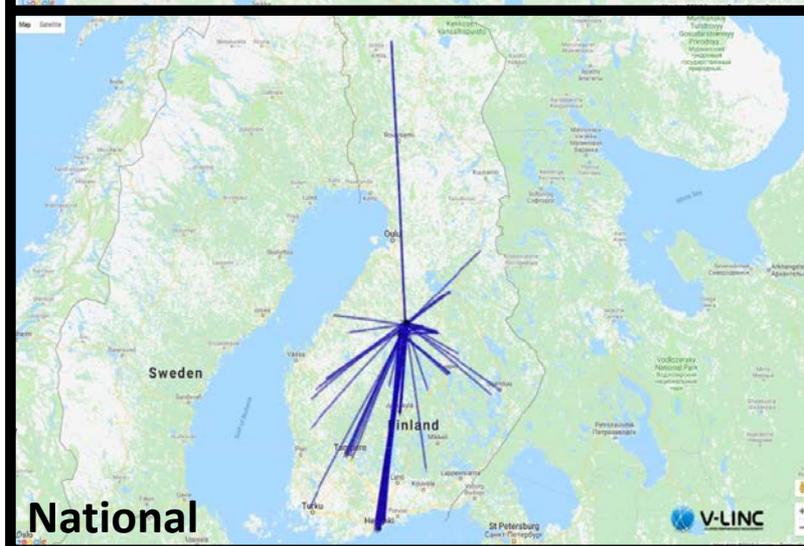
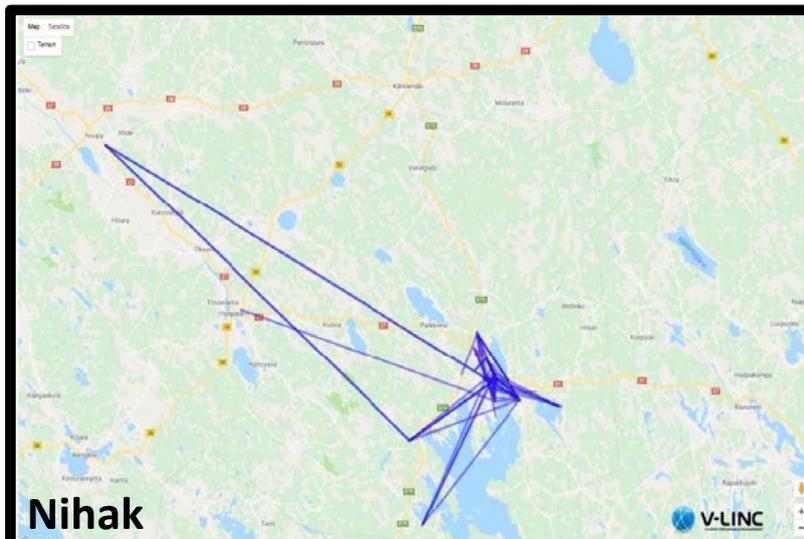
Location	Nihak	N. Ostrobothnia	Finland	International
Number	64	31	72	8

Impact	Tenuous	Low	Medium	High
Number	7	38	98	32

Note: Government Agencies (GA); Industry Associations (IA); Industry Peers (IP); Inputs (IN); Output (OU); Research & Development (RD); Specialist Services (SS) and Training (TN).



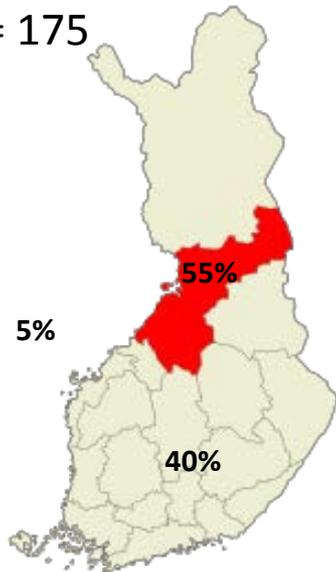
Pyhäsalmi Mining Services Sector Ecosystem



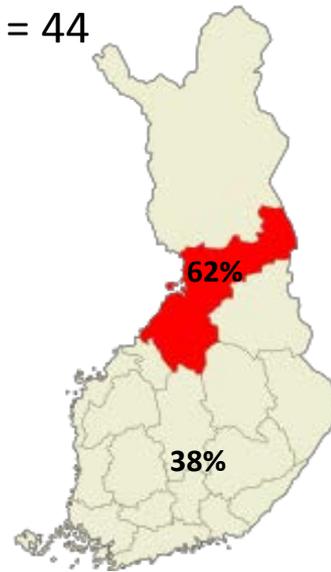
Total Linkages = 175 (Nihak= 64; Northern Ostrobothnia = 31; National = 72 and International = 8)

HIGHLIGHTS OF the 2018 RESULTS

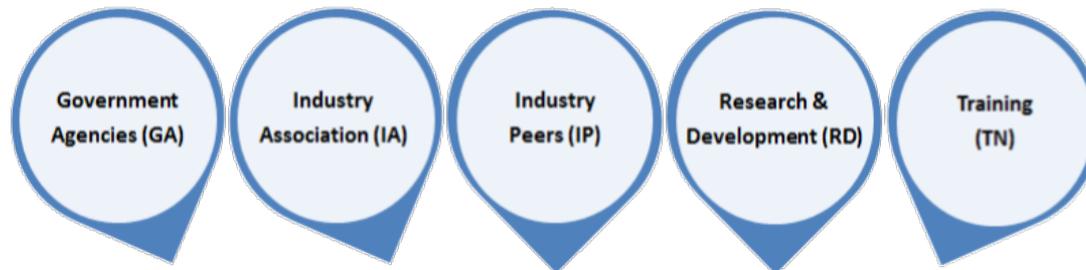
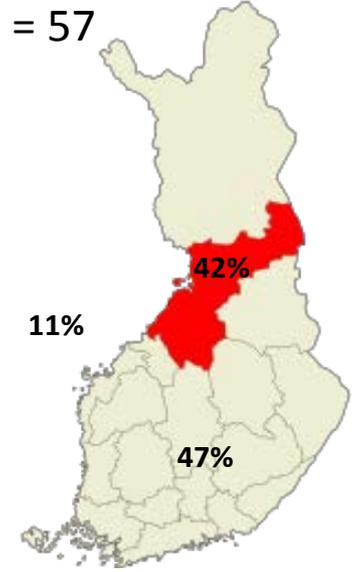
Pyhäsalmi All Links
n = 175



Pyhäsalmi Output Links
n = 44



Pyhäsalmi Input Links
n = 57



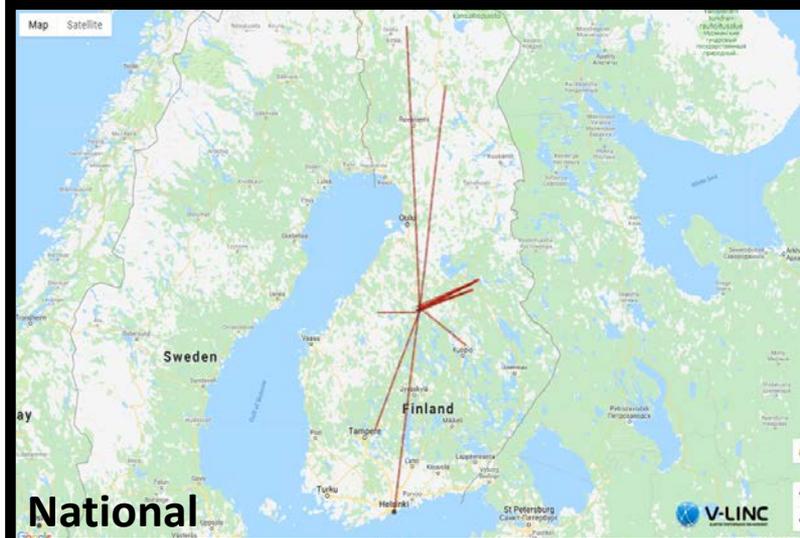
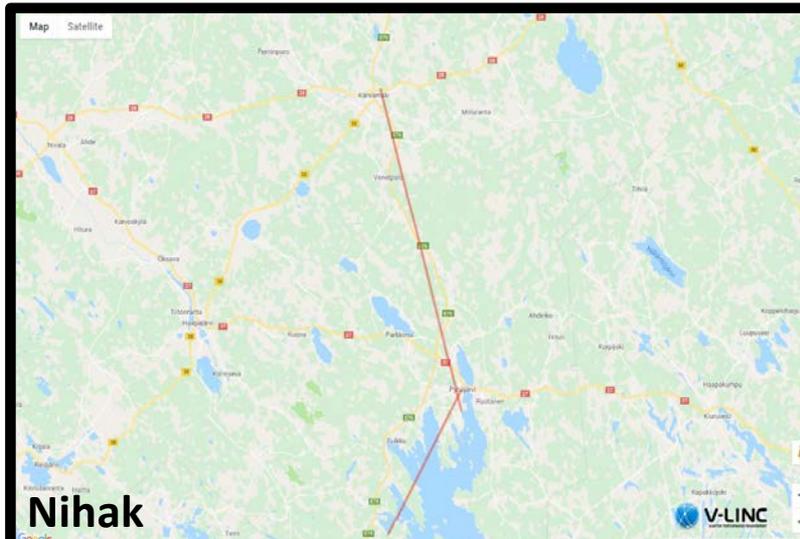
- Low number of linkages across all support categories
- Limiting factor for creation of New Links (Especially International)

2nd Phase V-LINC Results - Pyhäsalmi Mine





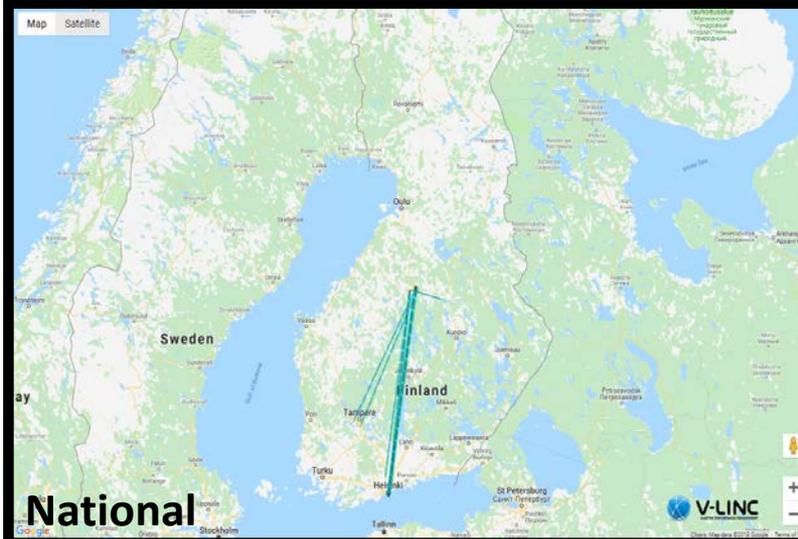
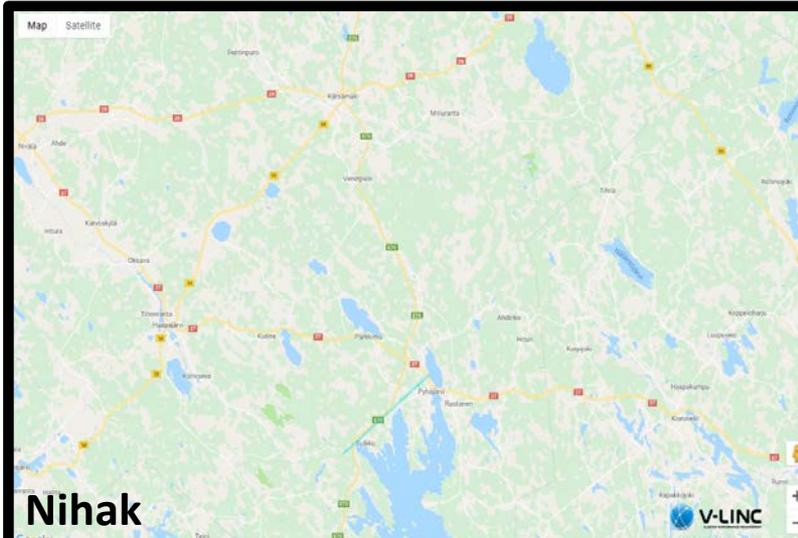
2nd Pyhäsalmi Mining New OUTPUTS 2021



Total Linkages = 23 (Nihak= 2; Northern Ostrobothnia = 1; National = 14 and International = 6)



2nd Pyhäsalmi Mining New Facilitation Links 2021



Total Linkages = 25 (Nihak= 1; Northern Ostrobothnia = 9; National = 12 and International = 3)

Recommendations

Having reviewed the Anticipated Structural Change planning in Pyhäjärvi, the following policies are suggested to support the development and re-alignment to external markets of the mining services sector in Pyhäsalmi.

1. It is evident that an opportunity exists to develop a cluster organisation (Estévez, 2015; Hobbs et al., 2015) to represent the mining services sector in Pyhäsalmi as part of the regions RIS3 strategy ([ecoRIS3](#)).
2. An opportunity exists to develop export consortia through co-operation and collaboration between Pyhäsalmi Mining firms where companies bring their product and service offering together to compete with larger suppliers (Hoegler et al., 2015) via the cluster through [Clusterize](#), [IN4.0 Connect](#) or a model similar to the Interreg Atlantic Area project [Consortex](#).

V-LINC Visualisation of Linkages in Networks and Clusters

- **Inter-clustering approach and how this is applicable to a region with smaller business base**
 - BeWiser Connect
 - EuroTech Connect
 - IN40 Connect



[Sitemap](#)

BeWiser Connect



“Be Wiser Connect is an online matchmaking tool which showcases over 80 ICT firms & 20 RTD Centres across Europe and the US who participated in a V-LINC analysis”

[find out more](#)

Connect



Connect with firms across Europe using BeWiser connect.

[find out more](#)

Mapping



Explore the V-LINC cluster mapping of the BeWiser partners.

[find out more](#)

Business Roaming



The BRA provides a soft landing platform for firms across Europe.

[find out more](#)

Linking and Connecting SMEs

Step 1:
Analyse



Step 2:
Link



Step 3:
Connect





Tangible EuroTech Connect Outputs:

- Twenty seven connections were made at the face-to-face ‘Be Wiser Connect’ event between the visiting SMEs and IT firms and Research Centres located in Cork.
- Two NDA’s have been signed between visiting and Cork based firms.
- Two research centres in Cork are being supplied with IOT sensor technology from Spain.
- One visiting firm has had formal meetings with IDA Ireland re: opening an office in Cork.
- Visiting firms and cluster managers established connections with EMC, DePuy, Janssen and Johnson Controls at a decision making CEO level.



David Marí Martínez (Eurecat), who accompanied two Spanish firms to Cork believes “EuroTech Connect has been a very good example of what clusters should be doing in Europe right now in terms of endeavouring to get companies together: fostering collaboration across regions and sharing knowledge and experience through real face to face interaction with clear institutional support. Zolertia and Sensing & Control were delighted with the opportunity to expand their connections and collaborate with Irish firms”.



[Sitemap](#)



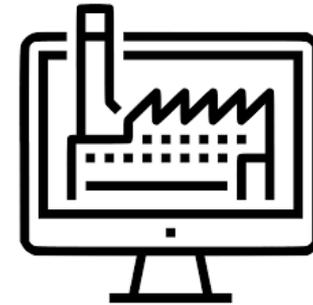
IN 4.0

ADAPTATION OF INDUSTRY 4.0 MODEL
TO THE NAVAL SECTOR

“IN 4.0 Connect is an online matchmaking tool which showcases 100 Naval firms & 100 IN 4.0 technology specialists across the Atlantic Area of Europe.”

[find out more](#) →

IN4.0 Connect



France

Please browse the participating firm's websites, search their product and service offerings and read about their R&D capabilities through the links below.

If you wish to make a facilitated connection with an individual firm, click on the Connect button, this will redirect you to our online registration form. Enter your contact details to allow the local IN 4.0 coordinator to facilitate an introduction for you.

	Small (<50)	www.ship-st.com	EST. 2000	CONNECT >>
Marine engineering & naval architecture				

	Large (250+)	www.amplexor.com	EST. 1980	CONNECT >>
Engineering, technical documentation, maintenance studies, KM documentation				

	Large (250+)	www.auxitec-ingenierie.com	EST. 1964	CONNECT >>
Industrial and proximity engineering				

United Kingdom

Please browse the participating IN 4.0 specialists websites, search their service offerings and read about their R&D capabilities through the links below.

If you wish to make a facilitated connection with an individual firm/centre, click on the **Connect** button below, this will redirect you to our online registration form. Enter your contact details to allow IN 4.0 regional co-ordinators to facilitate an introduction for you.

	Small (<50)	www.imaginationfactory.co.uk	EST. 2010	CONNECT >>
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Product design and creative engineering agency with experience in light-weight heads-up displays

Innoactive.	Small (<50)	www.innoactive.de	EST. 2013	CONNECT >>
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VR Enterprise platform for effective creation, deployment and management of VR Training apps

	Small (<50)	www.cloudsecurityconsultants.net	EST. 2018	CONNECT >>
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Specialist firm dedicated to maximising protection against cyber threats for SMEs.

Conclusions

- Useful for understanding the needs of firms within a region
- Mapping and identifying elements of:
 - Strength
 - weaknesses
 - Missing elements within value chains
- Recognising Key Connectors within a cluster/network
- Empowering firms to participate to strengthen their regional ecosystem.

Thanks for your attention!



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