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The Development of North-West Russia and Delphi-Method – Evaluation of the Industrial, Social and Logistical Developments in the Murmansk Oblast

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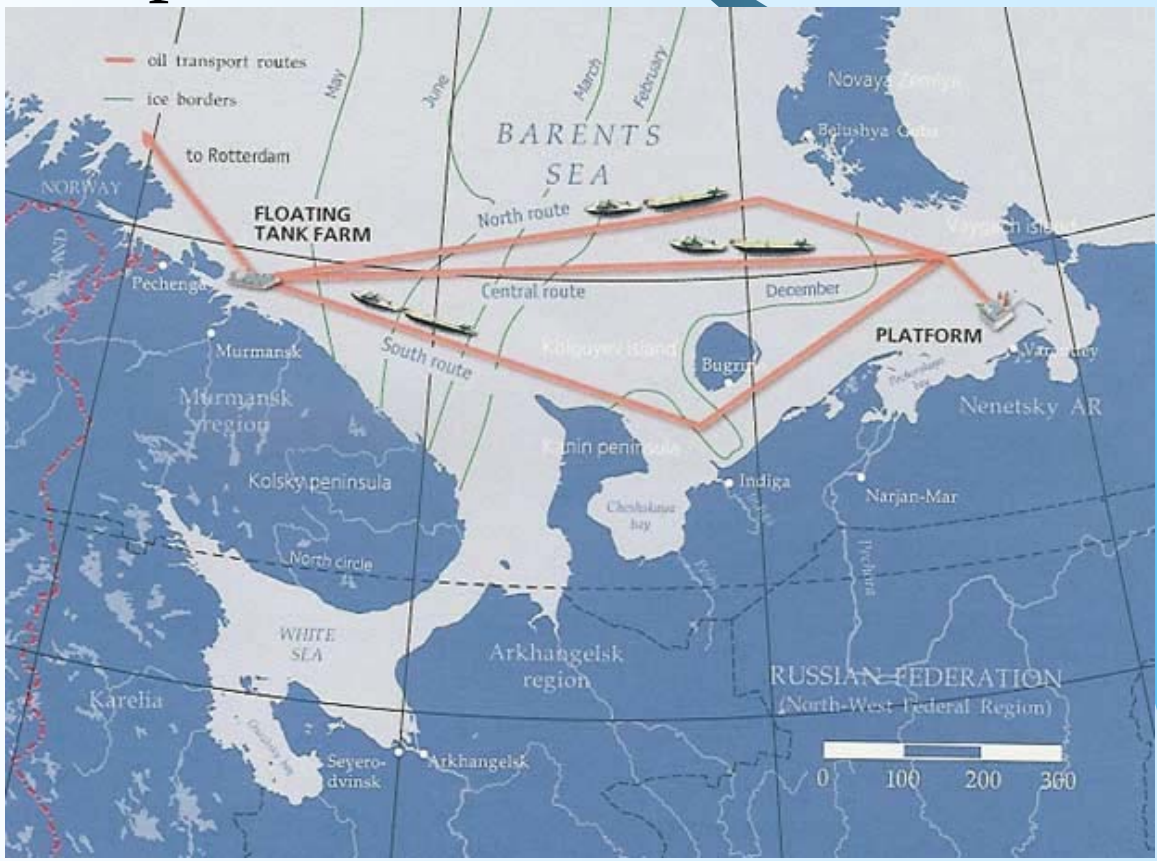
Map: http://gc.kls2.com/cgi-bin/gclookup?Q=MMK:&ERROR=Non-Airport+Code&ERROR-LOC=MMK:&MAP-CENTER=MMK:&MAP-STYLE=ortho&MARKER-STYLE=default&PATH=&PATH-COLOR=red&PATH-STYLE=&PATH-UNITS=mi&RANGE=3000km%40mmk&RANGE-COLOR=navy&RANGE-STYLE=best&SPEED-GROUND=&SPEED-UNITS=kts

Research questions

1. The economic structure of the Murmansk region 2025?
2. The socio-economic structure of the Murmansk population 2025?
3. Logistical developments items?
4. How Delphi-method works evaluating above?

Geographical area

Murmansk as a part of the Barents Euroarctic Area – Example



Map: http://www.offshore-technology.com/projects/Prirazlomnoye/Prirazlomnoye3.html

Theory framework

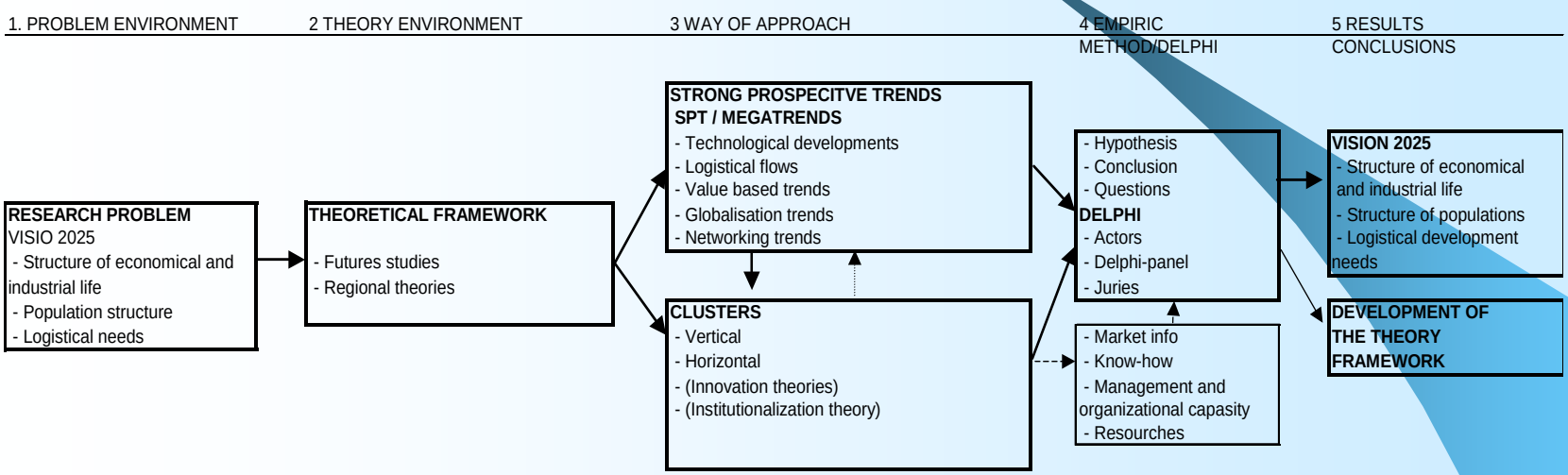
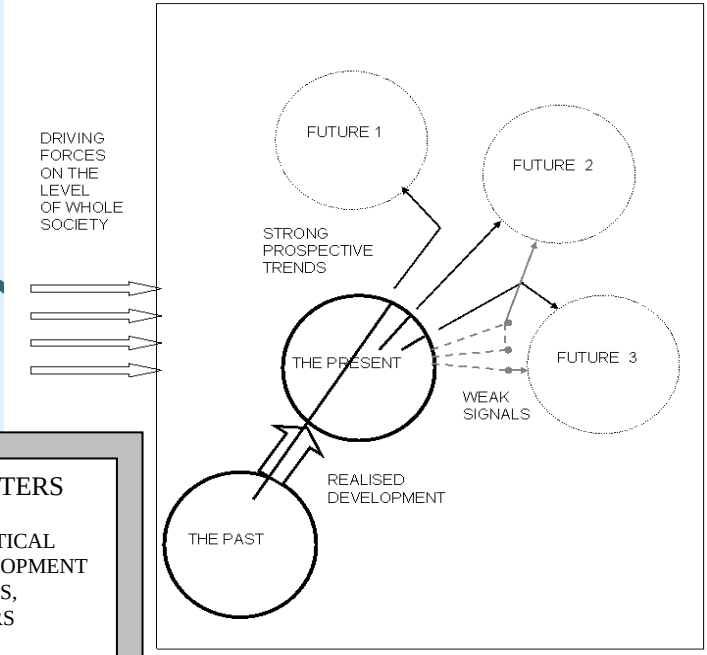


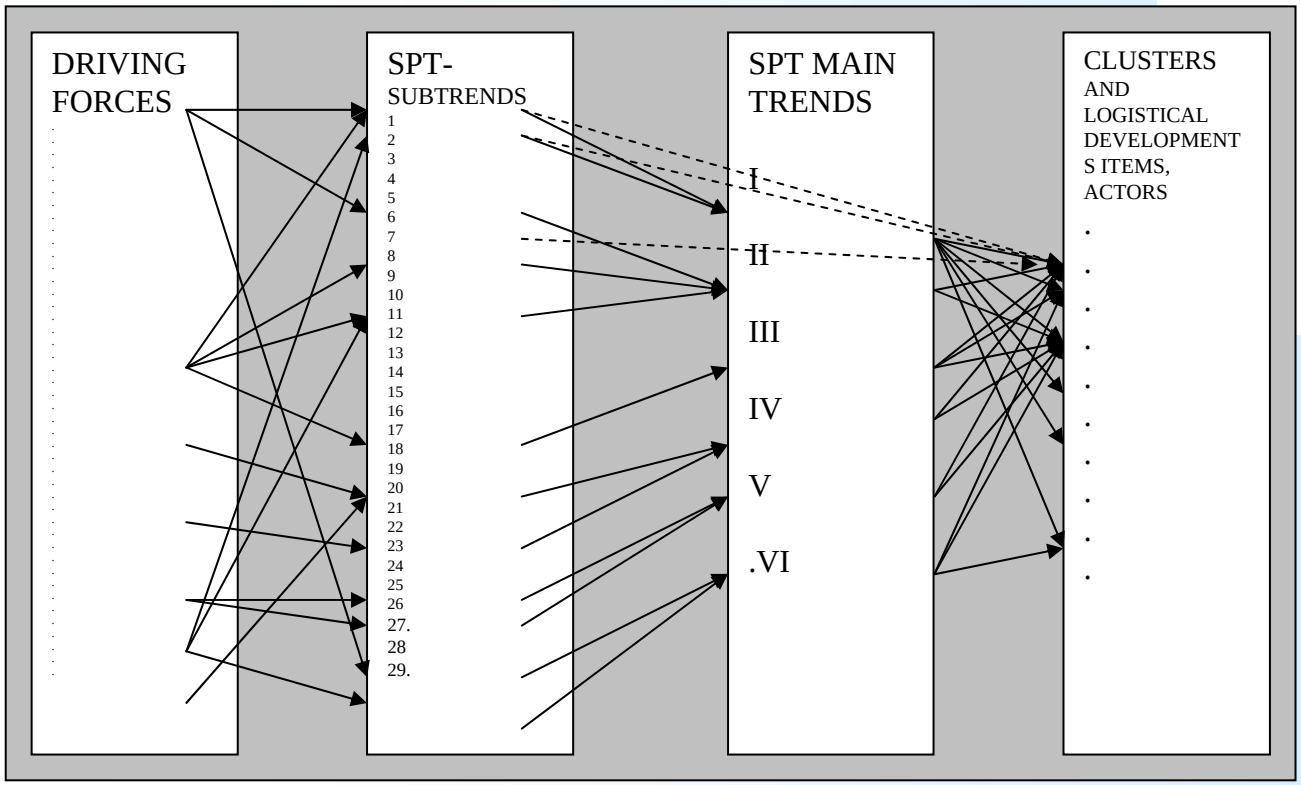
Fig 1. *Theory framework of the research. (draft)*

Yrjo Myllylä 6.12.2004

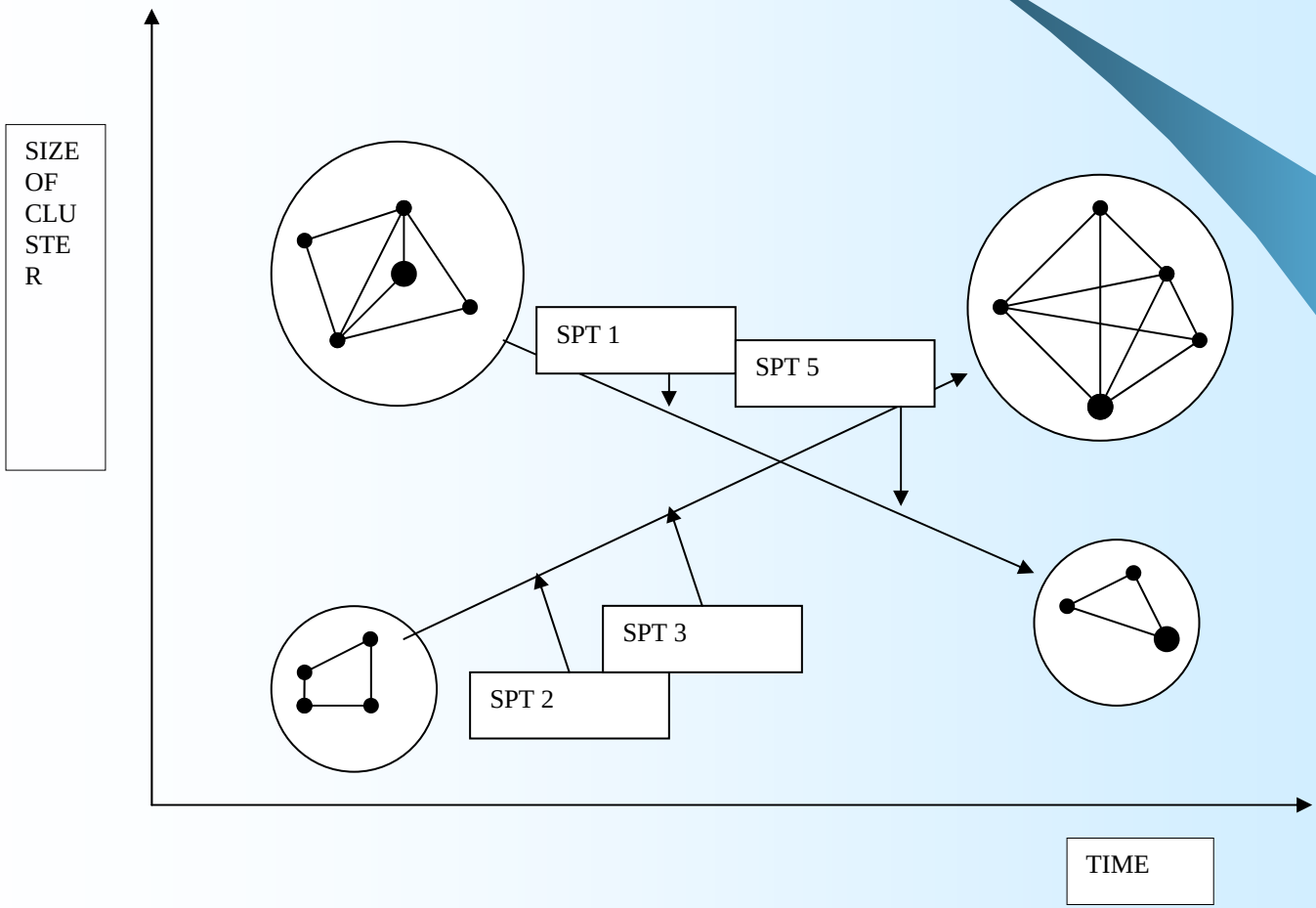
SPT-trends and causality relations



Piture above: Marja Toivonen (2004)



SPT-Trends and clusters



SPT-Trend

Strong Prospective Trend (SPT) = A Future trend or way of development which is based on the fact that there is statistical time series showing the existence of a trend and that the experts evaluating this trend agree on that the trend will continue in the future (Marja Toivonen, 2004). In practice, The SPT-concept means in practice the same as the commonly used megatrend-concept, but it is more scientific.

SPT-trends

I Technological Development –Main Trend

1 Development of transportation technology
2 Development of information and communication technology
3 Development of energy technology
4 Increase in number of small enterprises

II Logistical flows –Main Trend

5 Increase of information and communication flow
6 Increase of transportation in mining and metal industry
7 Increase of oil transit
8 Increase of gas transit
9 Increase of coal transit
10 Increase of container traffic
11 Increase of capital and financing flows

III Globalisation –Main Trend

12 The expansion of EU and deepening of the integration
13 Increase of traffic and trafficability in the North-West Passage
14 Increase of domestic electricity price (liberation of energy markets)
15 Increase of the international oil market price
16 Increase of domestic price on oil and oil products
17 Increase of Russian economy
18 Increase of political and economical co-operation

IV Value based development –Main Trend

19 Increase and westernization of individual values
20 Increase in openness
21 Strengthening of environmental values
22 Increase of personal welfare
23 Increase of risk of environmental disaster (oil, nuclear)

V Development of socio-economy of the population – Main Trend

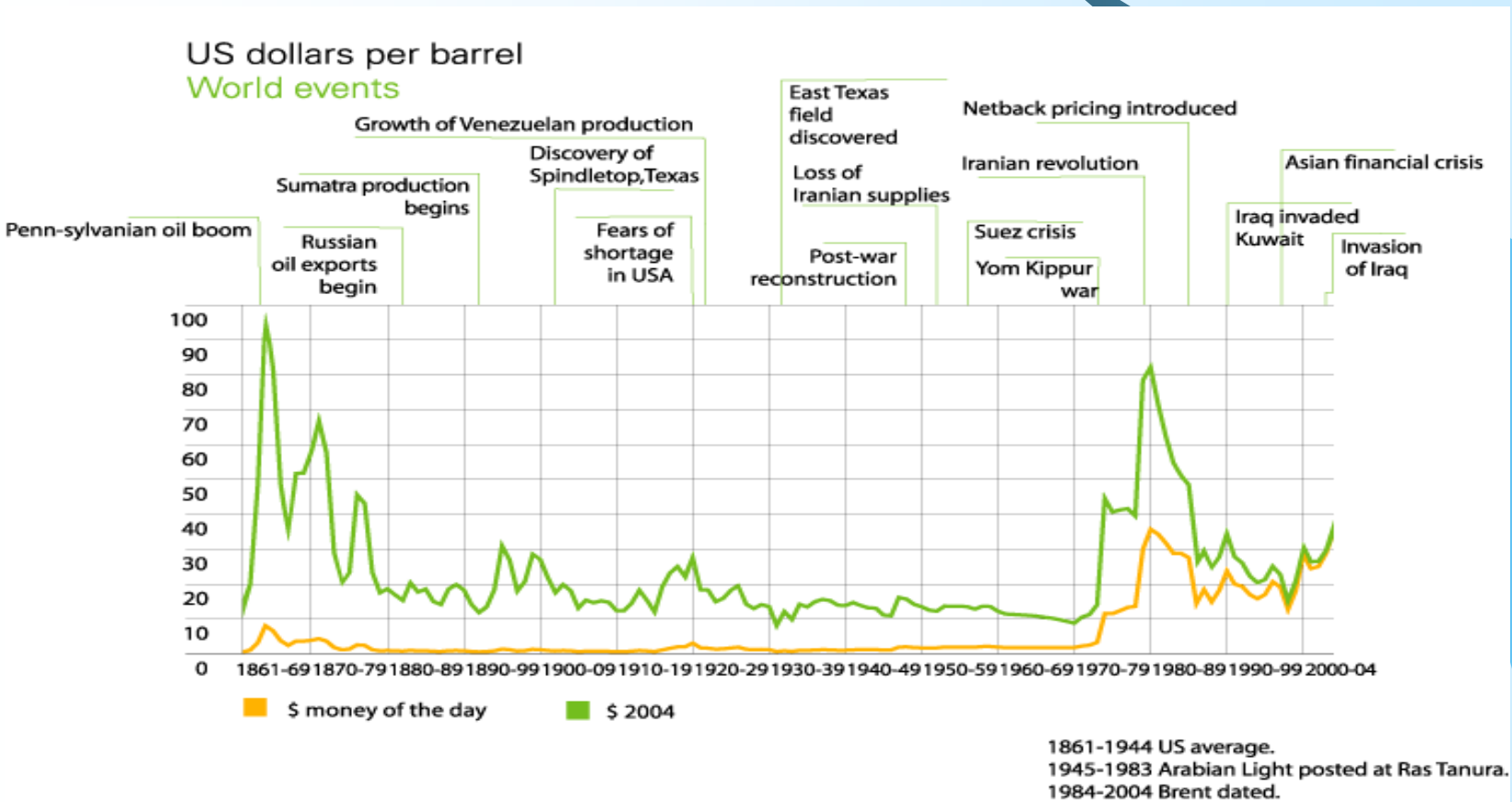
24 Decrease of the population
25 Continuation of migration to economical centres
26 Change of the structure of population (aging population)
27 Increase of income level

VI Other, what?

28 A positive development of world market price on metals and apatite
29 Increase of importance of the geopolitical position in the Murmansk area

(Delphi-panel, 2. round)

SPT, Example time series: Crude oil prices since 1861



Source: www.bp.fi

Wild cards and weak signals

Prospective trends can continue in the future along their current direction or the trend may break off and lead to a different kind of future than what it could be deduced from today's development. Weak signals whose current appearances may be the reason for the discontinuance of the trend. Weak signals may with time become stronger, turn out to be significant phenomena, and develop even into strong trends. A strong trend can also emerge when several weak signals combine with one another. (Toivonen, 2004, p. 10).

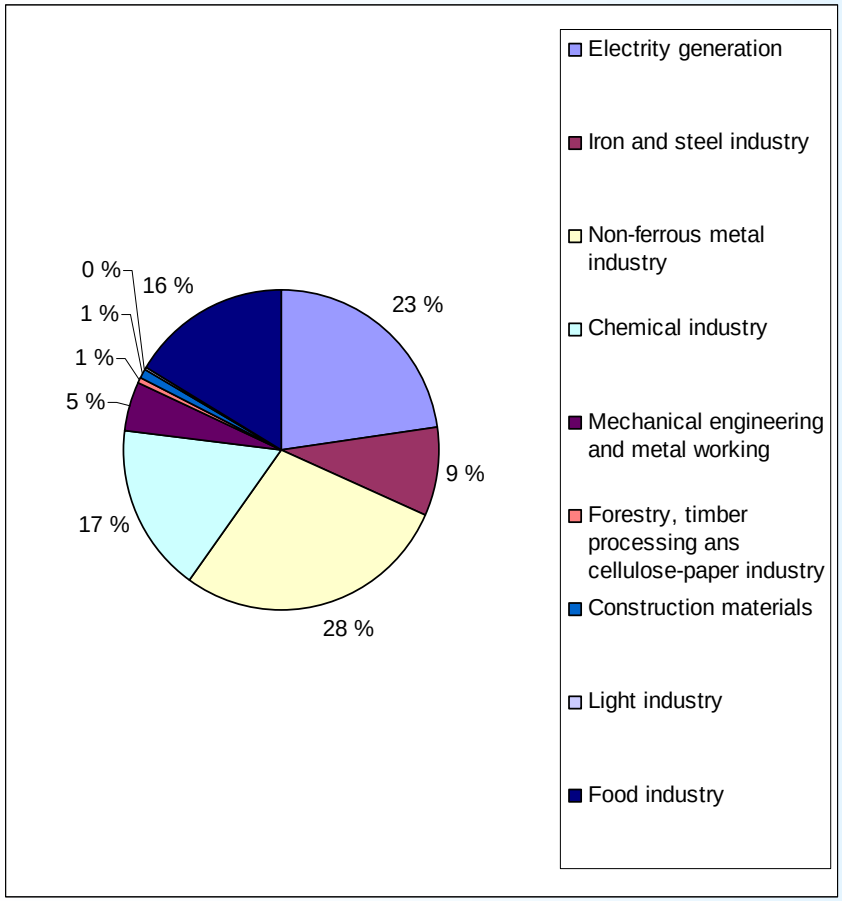
Cluster

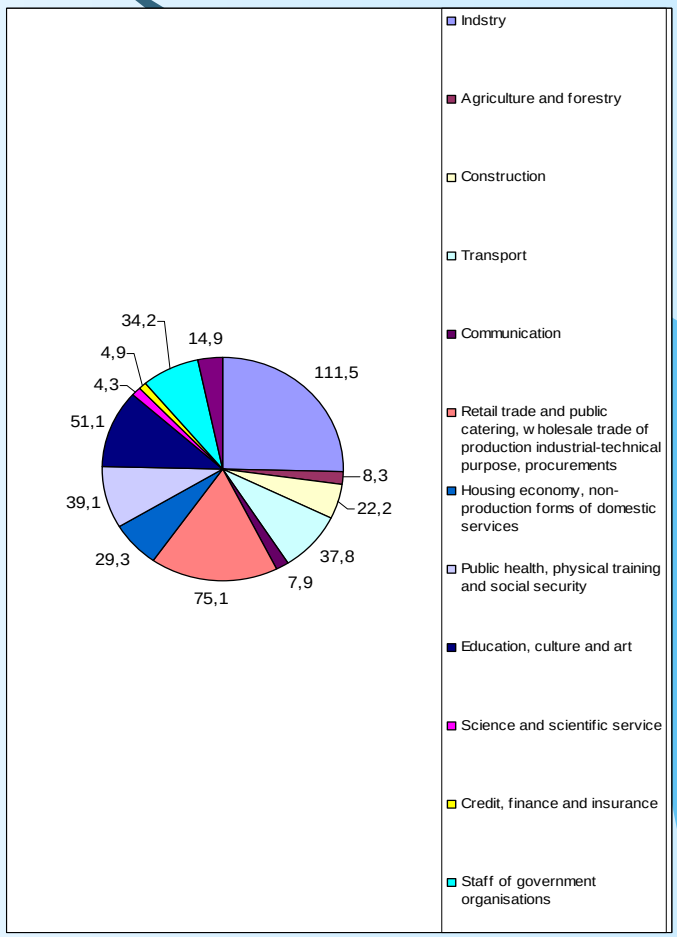
The word ‘cluster’ normally means ‘a bunch’ (e.g. of currents). In this context, it means a co-operation network where there are companies and other actors such as research institutes and schools. The definition of ‘cluster’ in this research includes the notion that there are companies in the cluster producing their products for the market (e.g. Porter, Michael M. 1990).

These “locomotive companies” commanding the market are normally big companies – but there can be significant differences between the lines of business activities. Especially the research and school sector forms an important group of actors because the success of the clusters is depending more and more on know-how. The finance sector and other support service forms are an important group of actors in the cluster.

Volume of industrial production by branches and Distribution of employed population by branches of economy, year 2003.

Source: State Committee of the Russian Federation on statistics / Murmansk Region Committee of the State Statistics





Clusters

- Energy
- Mining and metal processing
- Transportation and logistical services
- Food
- Tourism
- ICT
- Environment
- Welfare
- Safety

Delphi-method

= an expert interview method which has been developed in the USA during the last 5-6 decades for foresight of technology future. First developed in Rand Corporation. One of the first developers Theodor Gordon, now a key person in the Millennium-project. The most known method in futures studies.

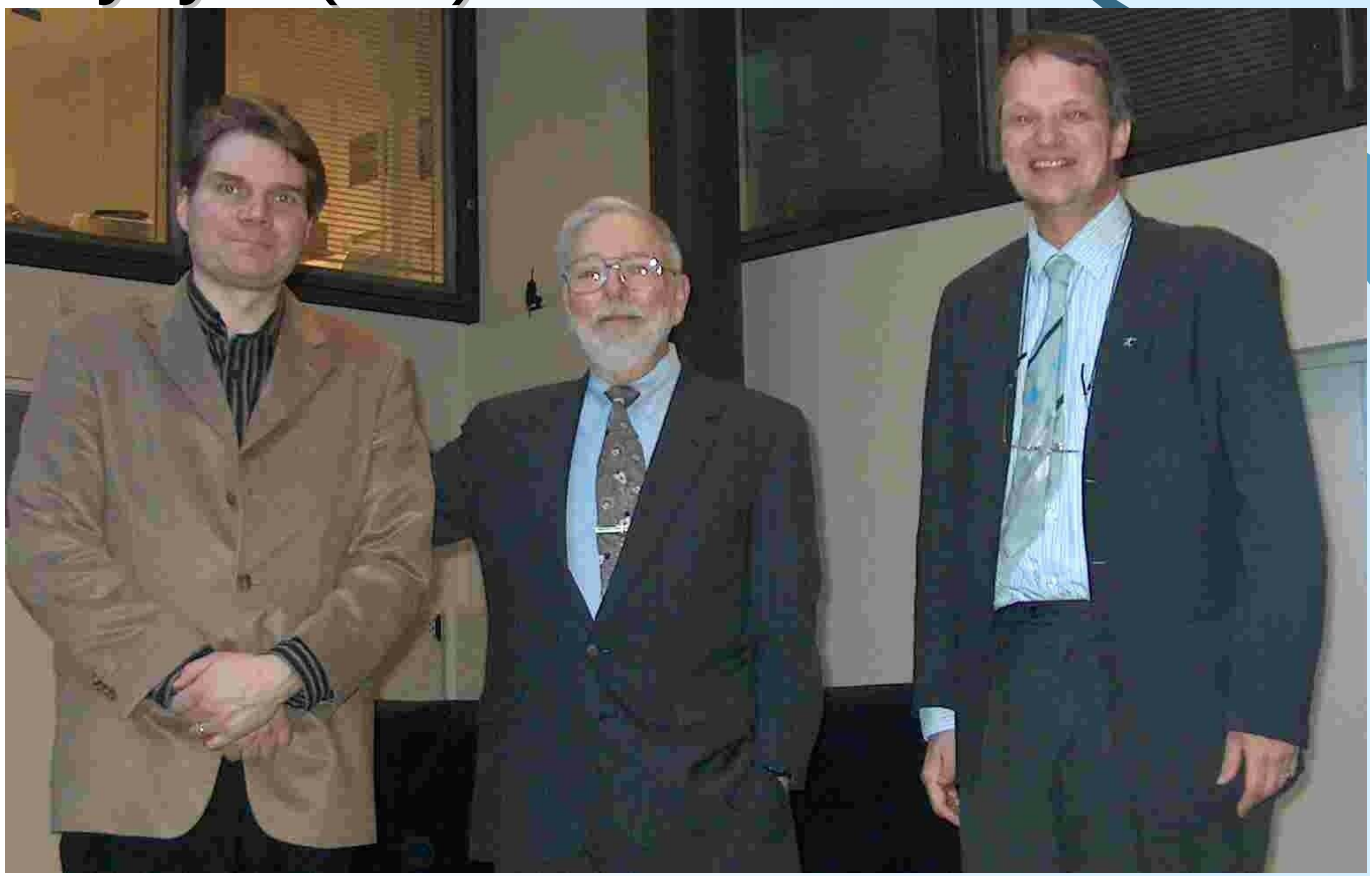
Features:

- **iterative**
- **anonymous**
- **Feedback**

Traditions:

- **Conventional**
- **Policy Delphi**

Delphi-experts: Theodor (Ted) Gordon (middle), Osmo Kuusi (right) – author Yrjö Myllylä (left)



Structure of Data

- Interest-Competence table

INTEREST /Actors in cluster	Companies			Finance and other support service			Research and training			Administration			Other / Independent			All together		
COMPETENCE /Cluster	Murmansk	Moscow	International	Murmansk	Moscow	International	Murmansk	Moscow	International	Murmansk	Moscow	International	Murmansk	Moscow	International	Murmansk	Moscow	International
Energy			1	5		1				3				2		8	2	2
Mining and metal processing	2		1	1		1	1			5						9		2
Transportation and logistical services	3					1			1	1		1		1		4	1	4
Food	4									1		1				6		1
Tourism	2		1							1		2				3		3
ICT	3		1	2		2	2									7		3
Environment	2												2	1		4	1	
Welfare	2						1		1	1			2			6		1
Safety													1			1		
Others													4	2		4	2	
All together	19		5	8		5	4		2	12		4	9	6		52	6	15
Explanations	Panels interview rounds and respondents number: Murmansk panel contents pilot interview (10 persons), Delphi-panel's 1. round (25 persons), Delphi-panel's 2. round (19 respondents); Moscow-panel contents Delphi-panel 2. round interview (6 respondents) and International panel contents Delphi-panel 2. round interview (17 respondents).																	

Structure of the data
- Interest group and scenarios

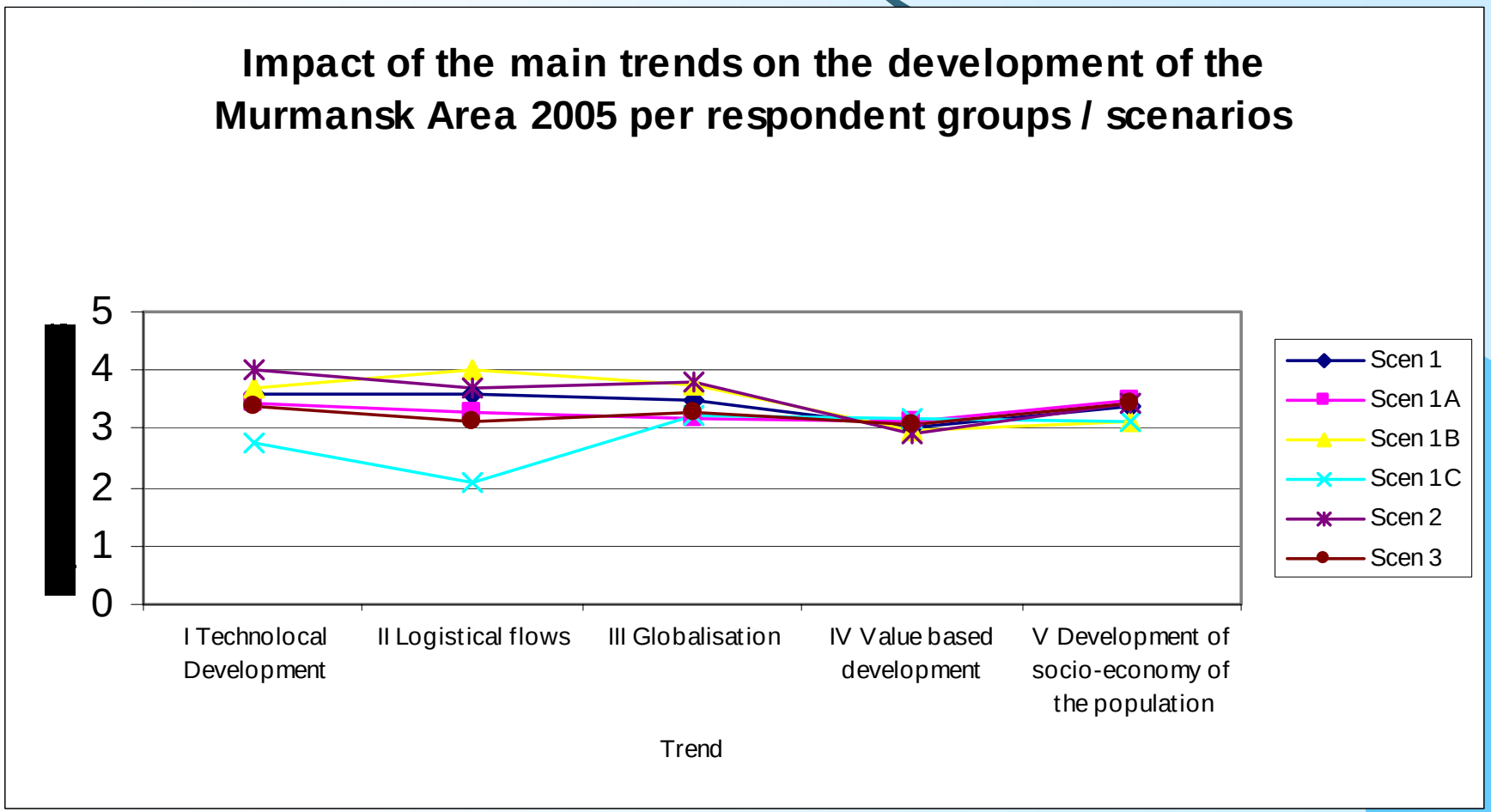
- Murmansk-panel (Scenario 1)
  - Excisting clusters (Scenario 1A)
  - Rising clusters (Scenario 1B)
  - Independent thinkers (Scenario 1C)

  ⇒ pilot interview 10, Delphi 1. round 25, 2. round 19 respondents
- Moscow panel (Scenario 2)

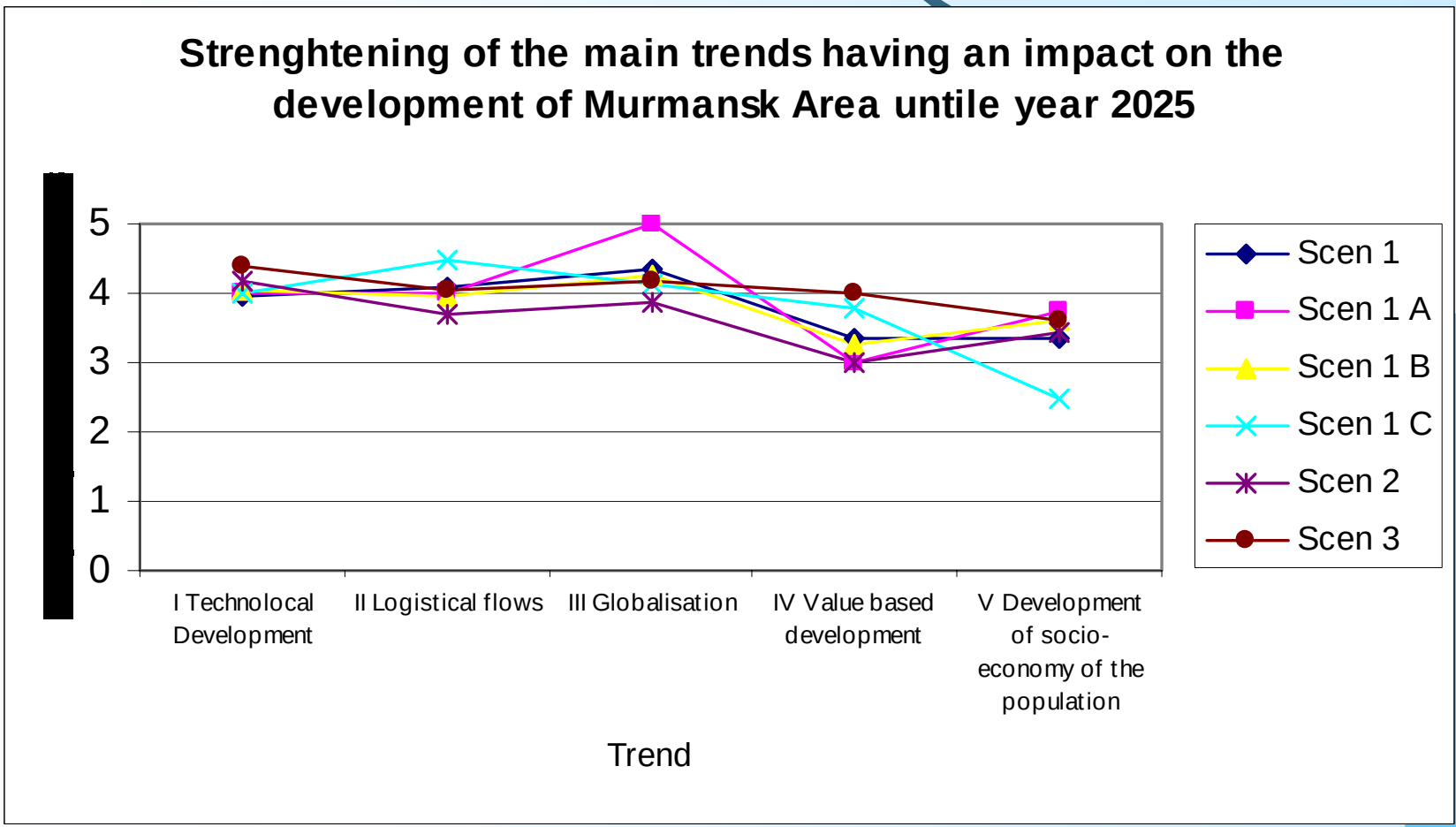
  ⇒ 6 respondents
- International panel (Scenario 3)

  ⇒ 19 respondents

Significance of the SPT 2005



SPT change until the year 2025



Significance of the SPT 2005 and change until the year 2025

2005:

- They have different opinions in respondent groups Globalisation, Logistical flows and Technological developments according to the Murmansk and Moscow panel.

2025:

- In every group **Globalisation, Logistical flows and Technological developments** there are the three most increasing trends

Clusters supported by the SPT

Question 2.4	Which cluster development in the Murmansk Oblast area supported by the SPT-trends. Choose for each trend the three most important clusters, the development of which are supported by trend.					
PANEL Council	Murmansk-panel, All answeres	Murmansk panel council1, Representatives of the existing clusters.	Murmansk panel council2, Representatives of the rising clusters.	Murmansk panel council 3, Indipendent respondents	Moscow panel	Inernational panel
MAIN TREND /Subtrends	clusters	clusters	clusters	clusters	clusters	clusters
I Technological Development	Log;En,ICT;Min.	En,Min,Log;ICT;.	Log;ICT;En.	Log;.;.	En,Log;Min;.	En;Min,Log;ICT.
II Logistical flows	Log;Min;Wel.	(Min,Log,Env;.;.)	Log;Wel;(Min,ICT.)	(En,Min,Log;.;.)	En,Min,Log;(Wel;.)	En,Log;Min;.
III Globalisation	Tou;Min;Log.	Min;(En, Log, Tou;.)	Tou;Min;.	(Log,ICT;.;.)	Tou, Log;.	En;Log;Min.
IV Value based trends	Env;Tou;ICT, WFood.	(Tou,ICT,Wel;.;.)	Env;Tou;.	(Tou,ICT,WFood,Env;.;.)	WFood, Env, Saf;.;.	ICT,WFood;Env;.
V The socio-economical development of the population	En;Log,Wel;Min,Tou,Env,Saf.	Wel;(En, Log, Saf;.)	Tou;.;.	En;(Min,Log,Env;.)	En,Min,Log,Wel,Env,Saf;.;.	Wel;Food;Min, Log.
The decision-making in the clusters	Federal, Regional and Internernational.	Regional and Federal	Federal, Regional, Loca.	Regional, Local, Federal.	Federal, Regional, Local, International.	
Explanations	En=Energy, Min=Mining and metal processing, Log=Transportation and logistical services, Food=Food, Tou=Tourism, ICT=Information and communication technology, Wel=Wefare, Env=Environment, Saf=Safety.					

Clusters supported by the SPT

- Transport and logistics
- Mining and metal processing
- Energy

Picture: https://www.akerfinnyards.com/image.cfm?i=1638&s=h

Logistical developments items

Question 4.1	Which are the most important logistical development items in developing the clusters? Choose from each cluster the two most important logistical development items in order to create the cluster in such a way that you would prefer and consider possible.					
PANEL /council	**Murmansk-panel, All answeres**	**Murmansk panel council1, Reoresentants of the existing clusters.**	**Murmansk panel council2, Reoresentants of the rising clusters.**	**Murmansk paneFoodin counsil 3, Indipendent respondents**	Moscow panel	International panel
CLUSTER	Development clusters	Development clusters.	Development clusters	Development clusters	Development clusters	Development clusters
1 Energy	Electr.;Oil pipe;Railway,Ports,Gas pipe.	Oil pipe;(Roads,Electr.).	Electr.;Railway,Ports;Gas pipe.	(Oil pipe,Gas pipe,Electr.;.)	Electr.;Railway,Oil pipe.	Oil pipe;Ports,Gas pipe.
2 Mining and metal	Railway,Ports;.	Railway;(Ports,Oil pipe,Gas pipe).	Ports;Railway.	(Railway,Ports;.)	Railway;Ports,Electr.	Railway;Ports,Roads.
3 Transportation and logistical services	Railway,Ports;Roads,Pass traff..	Ports;(Railway).	Railway,Roads,Pass traff.;Ports.	(Railway,Ports;.)	Railway,ICT netw.;Ports.	Ports;Railway;Roads,ICT netw..
4 Food	(Railway,Ports,Roads,ICT netw.,Border:.)	(ICT netw.).	Railway,Ports,Roads,Border;.	-	(Pass traff.,Border;.)	Ports,Roads;Railway.
5 ICT	ICT netw.;Electr. Border.	(ICT netw.,Border;.)	ICT netw.;Ports.	(ICT netw.,Border,.)	ICT netw.;Electr..	ICT netw.;Border;Electr..
6 Tourism	Air traffic;Roads,Pass traff..	(Roads;.)	Air traffic;Pass traff.;Roads.	-	Ports,Pass traff.;Railway,Air traffic.	Pass traff.,Border;Air traffic.
7 Welfare	Oil pipe;Ports.	(Railway;.)	Oil pipe;Ports.	(Ports,Oil pipe;.)	Railway,Ports,Roads;Oil pipe,Gas pipe, Air traffic,Pass traff..	Pass traff.;ICT netw..
8 Environment	Oil pipe;Gas pipe.	(Border;.)	Oil pipe;Gas pipe.	(Oil pipe;.)	Oil pipe,Gas pipe;Railway,Ports,ICT netw..	Oil pipe;Gas pipe.
9 Safety	Roads,Oil pipe, Border;.	(Border;.)	Roads;(Oil pipe,Gas pipe,Air traffic,Pass traff.,Border)	(Oil pipe;.)	Railway;Ports,Pass traff..	Pass traff.,Oil pipe;ICT netw.;Ports,Gas pipe.
Logistical developments items	**Alternative measures (10 pcs): Railway connection and traffic, Harbours and harbours activities, Roads and road transportation, Oil pipe and maintenance services, Gas pipe and maintenance service, Electricity transfer lines, ICT networks and services, Air traffic and services, Passenger traffic on road, Border crossing services.**					

Logistical development items

- **Ports and railway** are the most often mentioned logistical items when we consider the three most mentioned clusters (Energy, Mining. Transport)
- E.g. in Transportation and logistics clusters Railway and ports are the most mentioned logistical developments items. Murmansk panel mentions also roads and passenger traffic on roads,
- E.g. in energy clusters according to **Murmansk-panel Elecricity transfer lines and Oil pipe**, then Railway and Ports are the most important. According to **Moscow panel Electricity transfer lines** then **Railway** and **Oil pipe** are the most important. International panel: **Oil pipe** then **Ports** and **Gas pipe** are the most important.

Logistical development items

Published articles in newspapers:

Helsingin Sanomat 1.5.2006 Pääkirjoitus

”Sähköä olisi saatavilla myös Murmanskin alueelta - Kiistely Suomenlahden alittavasta merikaapelista kertoo tarpeesta laatia Suomelle uusi kokonaisvaltainen energiastrategia, kirjoittaa Yrjö Myllylä.”

Talous-Sanomat 24.5.2006

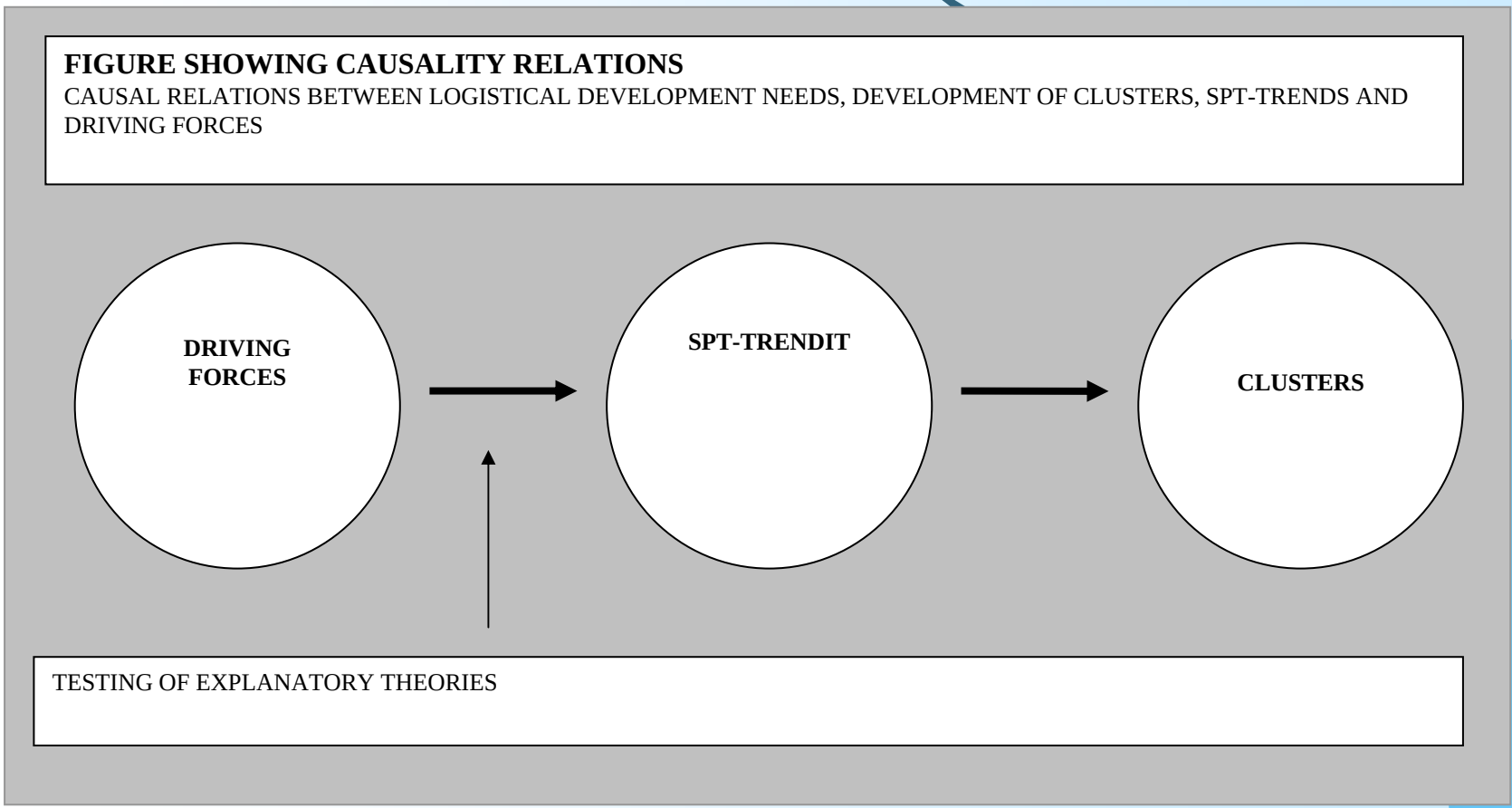
Öljy virtaa länteen Murmanskin kautta

Kauppatie 04/06: *Murmansk ja Pohjois-Venäjä – historia rankaisee niitä, jotka tulevat liian myöhään*

Conclusions

- Technological Development, Logistical flows and Globalisation are the most important Main Trends acting at this moment.
- The abovementioned SPT trends support mainly Transportation and logistical service clusters, Mining and metal processing cluster, The energy cluster.
- The federal and regional level are both important levels of decision-making for the development of the clusters and logistics.
- The analysis gives some hints how the trends were felt to be acting depends on the interest group which the respondent represents (Kuusi 1999:193).
- In my opinion the Delphi-method is rather a form of a developed theme interview than an opinion survey (see e.g. Kuusi 1999).

Conclusions



Where to Get More Information

- **Yrjö Myllylä**, researcher, University of Joensuu, Finland
- **Markku Tykkyläinen**, professor, supervisor, University of Joensuu, Finland
- **Vesa Rautio**, doctor, University of Helsinki, Aleksander Institute, Finland
- **Oleg Andreev**, doctor / professor, Barents Centre for Social Research, Murmansk, Russia.
- **Osmo Kuusi**, dosent, University of Technology, Helsinki