



Workshop urban node Turku

Summary report on outcomes and conclusions

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1 Introduction

The workshop in the urban node Turku was organized on the 20th of June 2018. It is part of the Vital Nodes project – a Coordination and Support Action (CSA) executed under the European Commission's Horizon2020 program. Vital Nodes aims at enabling efficient, sustainable freight delivery across the TEN-T urban nodes (metropolitan areas), by bringing together existing European, national and regional networks of experts and professionals. Vital Nodes will deliver evidence-based recommendations for effective and sustainable integration of the nodes into the TEN-T network corridors, addressing specifically the multi- and intermodal connection between long-distance and last-mile freight logistics. Addressing funding needs (for infrastructure and spatial developments), updating and redefining guidelines for infrastructure investments and funding instruments on European infrastructure. Improving the performance of the urban nodes throughout the entire TEN-T network, it will also support the deployment of innovations in the urban nodes, while establishing a long-lasting European expert network.

This workshop has been organized in close cooperation with the city of Turku/Northern Growth Zone and PBI.

Main goals of the workshops were:

- Addressing the key challenges for the urban node Turku and come to a common understanding of these challenges;
- Deepening the key challenges;
- Discussing possible impacts, barriers and solutions;
- Discussing the impact of the challenges and solutions on the EU TEN-T core network corridors.

1.1 Outcomes

During the workshop in the urban node Turku good discussions took place and exchange of knowledge and first good practices were shared - as were discovered to be in place in Turku and brought in by the presence of Trafikverket.

Via short pitches, perspectives from different stakeholders and geographical levels were shared after which key challenges were addressed in plenary discussions:

- Vulnerability of the network;
- Environmental impact (and ambitions);
- Challenge(s) of space and capacity restrictions.

Take-aways/lessons learned are among others:

- The need and added value of regional collaboration;
- Social-economic effects of transport developments;
- The importance of value capturing.

1.2 Follow-up

Validation

Following the outcomes of the workshop the challenges and the (impact of) solutions need to be validated by the stakeholders related to the specific urban node.

First recommendations to the European Commission

Based on the outcomes of this Vital Nodes workshop in Turku and the 8 other workshop in other urban nodes as part of the first phase of the project, First recommendations to the European Commission will be drafted this autumn.

Second phase of the Vital Nodes project

In autumn of 2018 the second phase of the Vital Nodes project will start, deepening the challenges in urban nodes and aiming for further deployment of possible solutions. This phase will be formed by thematic oriented sessions with a growing amount of nodes involved.

Expert pool

Currently an expert pool is in development by the Vital Nodes consortium. Goal of the expert pool is to bring together knowledge from different fields of expertise, related to the development of urban nodes and the combination between long distance freight and last mile delivery and stimulate knowledge exchange between different urban nodes throughout Europe

Knowledge exchange and updates

Via the Vital nodes website (vitalnodes.eu) and the Vital Nodes newsletter, outcomes and updates on the Vital Nodes project are shared regularly.

Policy dialogue

Besides a policy dialogue is being planned for autumn in which a discussion between the urban nodes and the European Commission is facilitated according to the themes of the Vital Nodes project.

2 Fingerprint Turku

From the Vital Nodes project team a presentation has been given on the Fingerprint of Turku. An analysis based on facts, policy documents and figures and developments on the three scale levels. A complete overview of this analysis can be found in the fingerprint (attachment 1).

2.1 Characteristics

Some characteristics of the urban node Turku:

- Per December 2017, the population of Turku was 189,669, making it the sixth largest city in Finland. There were 318,168 inhabitants living in the Turku sub-region, ranking it as the third largest urban area in Finland after the Greater Helsinki area and Tampere sub-region.
- Covering four modalities; Road + Rail Core Network, Turku airport as core airport and the trimodal port of Turku (and Port of Naantali west of Turku) as core port;
- Key sectors in the Turku region are: agriculture (food production), shipyards, automobile manufacturing, metal and electric industries, bio cluster and medicine development;
- The city of Turku is separated from the less densely populated rural area in the north by the Turku bypass (E18) and directly attached to the islands (archipelago) in the south which is sparsely populated and mostly used for recreational purposes/tourism. In the middle of the city of Parainen a limestone mine is located where most cement comes from;
- Important roads are: E18 to Helsinki, Highway 8 along the west coast and Highway 9 and 10 to the inland growth centers;
- The urban area of Turku includes a R&D center, technology center and test center, focusing e.g. on intelligent autonomous shipping.

A national wide questionnaire has recently been conducted on the hinterland connections including the urban node Turku and the ports of Turku and Naantali. Outcomes of this studies provide in depth information about logistics volumes on roads and rail from and to the main Finnish ports. During the Vital Nodes workshop in Turku has been worked with Functional Urban Area, defined as the area between the Finnish-Swedish boarder on the West, to Helsinki in the East and the stretch along the E8 along the West Coast to the North to Oulu.

In the context of the Northern Growth Zone, there is an analysis being prepared, focusing on improving the logistics system of the Southern Finland.

2.2 Trends

Trends in the urban node:

- Growing population and population density; growing freight/passenger flows and year round tourism;
- Transition from a traditional to a service-oriented economy;
- Switching roles of airports: bigger airports/main hubs are serving the biggest planes, while smaller planes and pilots with for example e-planes are served via smaller airports;
- Environmental ambitions on an emission free port and a declining carbon footprint of aviation;
- Required anticipation on impacts on the (regional) networks (e.g. by the Meyer Shipyard) and the (inter)national networks (e.g. the silk road development).

- Major infrastructure projects planned:
 - o Improvement of the E18 (Turku Ring Road: 1. Naantali – Raisio 2. Raisio city centre 3. Kausela – Kirismäki)
 - o Upgrade of highway 8 to be mostly finished in the next ten years.
 - o Intersection of E18 and Highway 8 in Raisio
 - o Promoting smart traffic on the E18 (pilot)

3 Pitches

To provide perspectives from different stakeholders and geographical/administrative levels short pitches are given by participants

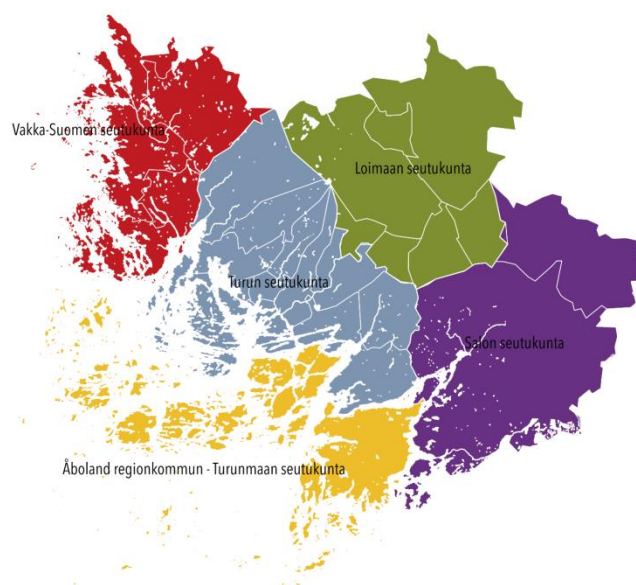
3.1 Presentation by Mrs. Marjo Uotila – Northern Growth Zone

Turku is located on the northern part of the Scandinavian-Mediterranean TEN-T Core Network Corridor and part of the Northern Growth Zone in SouthWest Finland with connections to Stockholm in the West, Tallinn in the South and St. Petersburg in the East. It brings together an economic area of 333 billion euros. The Zone exists of 5 sub-regions, 27 municipalities and is semi-polycentric.

The Northern Growth Zone covers the semi-polycentric County of southwest Finland: 5 sub-regions, 27 municipalities. (This refers to the NGZ region which belongs to the region of Southwest Finland, not to the NGZ region as a whole.)

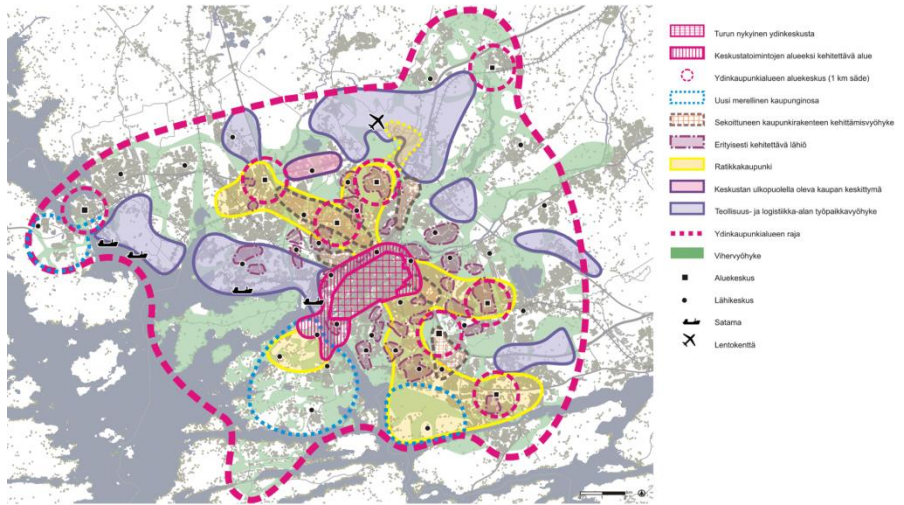
Turku has an important role within the Northern Growth Zone as network coordinator. More than half of Finnish population and jobs locate in the Growth Zone. Together with the 13 biggest cities, 6 regional councils in Southern-Finland including the Capital Region and the Mayoral level, the structural Model for 2035 has been made as an interaction between land-use, territorial/urban planning and traffic for dense and human scale cities. Based on common objectives for future growth and development to improve public transport.

Between the state and 14 municipalities a LHT (Land use Housing Transport) – agreement (the 2th) is made to implement the model. Not legally binding, but adopted by the councils. Currently the SCANDRIA alliance is signed with Turku representing the Northern Growth Zone area and corridor port.



In the inner city several big developments can be named that are currently planned, among which:

- Brownfield development LOGOMO – the transformation of a railyard to a cultural and business centre to be further developed and integrated to a multimodal travel centre;
- New master plan of the Kupittaa campus area, bringing new investments for several billion euros, +10 000 new jobs and +20 000 new apartments, withing one hour's distance from the capital region.
- Vision plan for the city centre 2050 – with developments in the old town, the riverside (from an industrial harbour and shipyard to the most attractive pedestrian and residential area) and the market square.
- the Smart and Wise strategic project of Turku combines the regional carbon neutrality plan (target year 2029) and deployment of the Smart City digitalization concepts, connected to mobility and urban development.



On the regional level, related to the Northern Growth Zone, coming from this collaboration is the TurkuHelsinki One Hour Train plan. Not just a railway but a regional development tool, connecting the whole South West Finland to the capital region. Including regional commuting trains, electrification of the track between Turku and Uusikaupunki, a modern & sustainable public transport system of Turku City Region and urban development of railway yards to multimodal travel center. Besides the railway network the E18 Turku Ring Road is planned to be improved as well with a 310 million euro improvement plan.

The port area has huge fields for imported vehicles (further, the Valmet Automotive car plant locates in the city of Uusikaupunki, and cars are among the main export products as well) and close to it locates medical industry. Big international companies are investing (for example in RollsRoyce) in the area because of the research and design components. Having a booming export industry and big effect on the hinterland and the whole of Finland.

Carbon neutrality and ambitious goals to be carbon netural in 2029, related to the 800 year existence of the city of Turku to which also the new mayor played an important rol by setting goals in order to gain them.

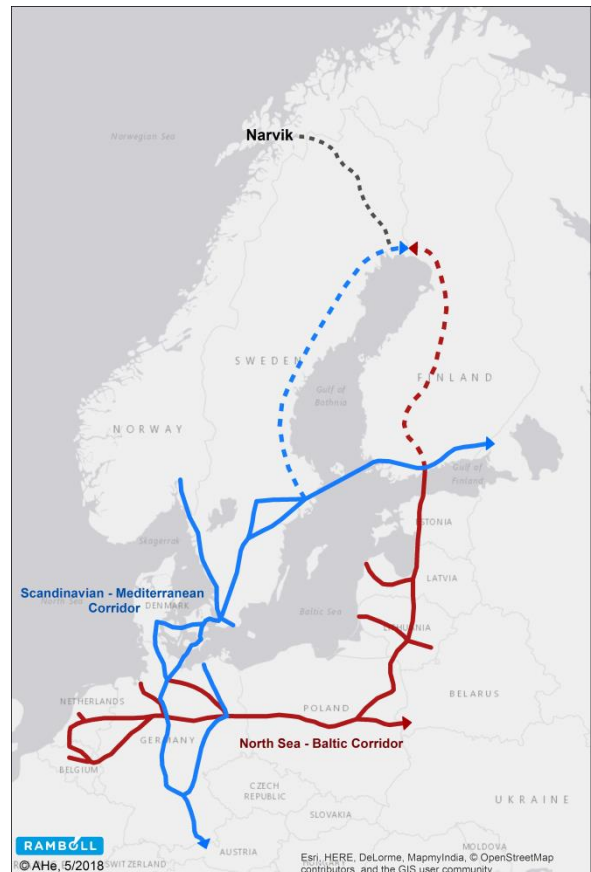
3.2 Pitch by Mr. Arto Tevajärvi – Finnish Transport Agency (Liikennevirasto)

The perspective of the Finnish Transport Agency was presented by Mr. Arto Tevajärvi in a short pitch, describing the position of the urban node **Turku** within Finland and on the Scandinavian-Mediterranean TEN-T core network corridor with its TEN-T core airport, **Turku** and **Naantali** as TEN-T core ports and Finland's gateway to the West.

Referring to the TEN-T guidelines annex II and new annex part III a future development of the North-Sea-Baltic core network corridor to the North, crossing the Finnish-Swedish border towards **Narvik** (Sweden) via **Helsinki-Jyväskylä-Oulu** and/or **Helsinki-Tampere-Vaasa-Oulu** could and will give new opportunities regarding the role of Finland, but also **Turku** on the European network corridors.

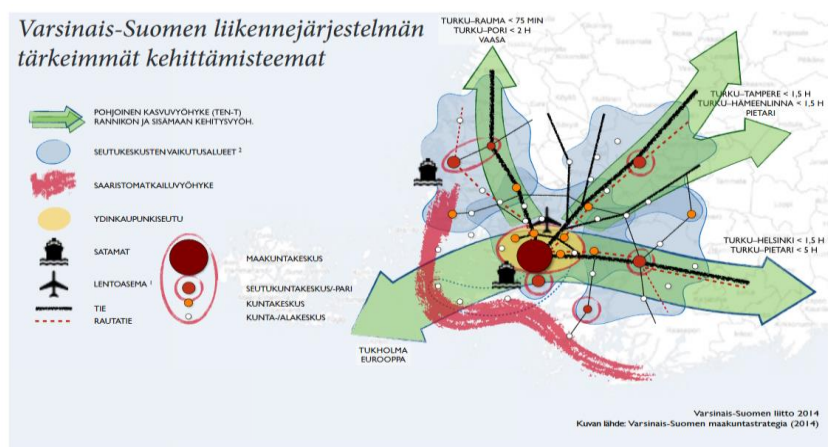
The (road) traffic system in (the surroundings of) **Turku** has its most important development themes on three axes:

- Connection Europe-Helsinki from the sea crossing via the E18 via **Turku** to Helsinki;
- Connection to **Vaasa** via the E8 and;
- Connection to **Tampere** via the E68 and adjacent railway line. (=Highway 9 between **Turku** and **Tampere**, railway **Turku-Toijala-Tampere**.)



The axe **Helsinki-Turku** is marked as the most important axe having 35% of the total population of Finland (1.9 million inhabitants) along it. The most significant traffic flows are related to the transport of the ports of **Turku** and **Naantali** and logistical operators operating in the vicinity of the ports. The ports boost **Turku's** position in the logistics of Finland's foreign trade (over seven million tons of cargo and nearly three million passengers annually).

The **Turku Ring Road (E18, KT40)** is the main connection of the logistical system. It connects the airport of **Turku** and the ports of **Turku** and **Naantali** to the Scandinavian-Mediterranean corridor, but



the road is often congested and there are traffic safety issues. Oversized and –weight transport to the port and shipyard use the ring road. The city of Turku has prohibited driving of vehicles of longer than 15 meters in the city center to improve safety and avoid noise and vibration.

Two major projects are scheduled in the upcoming years to strengthen the transport logistical system of the Turku region:

- Decision of the possible superbuss-/tramsystem in Turku Metropolitan area - cost benefit analyses are made regarding the tram line and alternatives as the 'super bus' based on which the tram alternative has been chosen;
- Highspeed railway connection between Turku and Helsinki, via Salo and Lohja. Improving the current coastal line for local rail services and the alignment Salo-Turku and adding a new shortcut Helsinki-Lohja-Salo. The final decisions for the appr. 1,5–2 mrd euros railway connection is expected to be made in the next parliamentary period. Not just a railway but a regional development tool, connecting the whole Southwest Finland to the capital region creating one sustainable housing and commuting area.

The national transport policy is traditionally based on 4-year planning periods, due to the parliamentary elections every 4 years, so there is a risk of short-term decisions and lack of consistent long-term policy initiatives. A 12 year national transport policy is being planned.



3.3 Pitch by Mr. Magnus Gustafsson – PBI

In his short pitch Mr. Magnus Gustafsson adds on the information shared by the previous speakers by stressing efficiency issues with a relation to turn-around times and filling rates with possible effects on emissions. He makes this clear by two examples.

Low utilization

Ships in the Baltic Sea spend 40% of their yearly time in the port and 40% sailing empty. Improving the turnaround time and the filling rate would reduce emissions by 20 to 30% and reduce freight costs with 25 to 35% per ton.

“Rush to wait”

Old-fashioned routines from the early 20th century force ships to rush to a port as soon as possible (e.g. the journey from Paldiski (EE) to Lübeck (DE) in 72 hours). When arriving in the port, the ship has to wait for 30 hours in the anchorage area before entering the port. This is a waste of fuel and causes unnecessary costs and emissions.

In order to facilitate this reduction in costs and emissions by improving these turnaround times, filling rates and speed distribution, the principles of ‘first, come first serve’ and ‘counting delays’ should be evaluated for the case of Turku to gain from this. As is done with winter sailing when ships call to come and then place is reserved in order to reserve/ensure a place in the port. Being said that the waiting ships are not so much recognized by the port authority.

4 Challenges

4.1 Coordination and cooperation above chain

Railway connection Turku – Helsinki

The current railway connection between the Finnish cities of Turku and Helsinki takes 2,5 hours. A new high speed train connection between Turku and Helsinki is planned which will only take 1 hour and 15 minutes, having less stops on its way, “the One Hour Train”. This new connection would not only be of help for the operating trains, but gives opportunities to separate passenger trains from freight trains as well, while they are using the same tracks at the moment. The final decisions for the appr. 1,5–2 mrd euros railway connection is expected to be made in the next parliamentary period. Not just a railway but a regional development tool, connecting the whole Southwest Finland to the capital region creating one sustainable housing and commuting area.

Supply chain management

Within the supply chain multiple trends are influencing flows of goods and transport. An important aspect is the continuation of information exchange. Currently lots of information is based on the knowledge of specific employees, while in this time of digitalization the use of information technology is an every days business.

In supply chain management in and around the urban node Turku, as e-shopping node, the use of digitalization is high but could be used even better to serve the costumers.

The amount of warehouses becomes more and more limited, processes are more focused on just in time delivery, without the necessity to store their goods any more in the future. For example block chain technology could help in order to realize full trucks delivering parcel to the costumers. Besides people are in the believe that more than necessary, goods are transport on road as a consequence of a lack of coordination in freight. “It looks like it stops as the gate between the industries and the transport companies”. Articulating a need for coordination on a higher level.



Infrastructure investments are nowadays more related to passenger transport than to freight, with door to door planning of public transport. While for freight not such a system seems to be developed or planned. Logistics oriented development is seen as a possibility for the future. Another trend which is related is the fact that more and more accommodations are built in the direct proximity of the port, causing interfering traffic flows of passengers and freight using the same infrastructure. Besides, the growth of the harbor is limited due to a challenge of space in this area.

Pilotage fee

Via rail mostly forest industry is transported, while cargo traffic (trucks) mostly transport metal industry and fertilizers from Russia. A third modality, shipping, comes in via one of the 55 ports of Finland (Turku/Naantali). All those ports are not so well specialized. 10 Of these ports are handling 80% of the traffic, but closing the smaller ports is difficult. They have been developed over the years because of the local industry and closing the ports would actually mean closing the factory and therewith the city. A Finnish saying comes from this big amount and divers ports: "If you have seen one port, you have seen one port".

The port of Turku has its own advantages with the corridor to Helsinki and the rural vessels entering the port area. Meyer shipyards as biggest shipyard of the port has a big impact on the networks and regional economy of Finland. From the port, which forms the main port for Scandinavian traffic, trucks go to Stockholm and then to Denmark, Belgium, The Netherlands and Germany. Additionally two times per week a service connects the port of Turku with Lübeck-Travelmünde, which is used by many Finnish companies to import and export their goods. A weekly call to Norway via Sweden, Poland – that might be discovered as a market in which more business could be done with bigger vessels - and other countries is being executed. Transfers to Germany and Denmark are organized only via a British company, the effect of the Brexit is not yet clear.

In the port area of Turku a maximum length of 250 meters applies to all ships. Besides the channels are not so deep which gives limitations to the size of ships that can enter. Rural vessels do not need so much depth – which is why rural goods are good business for the Turku port. Bigger ships are not really a necessity in Turku, simply because the cargo flows do not exist in order to have the big ships. The possibility to create more depth for bigger vessels is also not there due to the Archipelago, being a natural reserve, near the Turku port area.

The archipelago is nice from different points of views, for example from recreational perspective, but not so much for sea freight. In order to guide the ships from the open sea through the Archipelago to the port, they need to be piloted. This causes lots of extra costs with the current high pilotage fees the ships see themselves confronted with. Currently the pilotage fees are calculated with a basic fee and a fee per mile. The amount of miles that the ships need to be guided through the Archipelago in order to get to the port is huge which brings high costs and therefore an advantage for competing ports, which do not have such pilotage fees. In order to become more competitive as a port possibilities to change the build-up of the fee or to make it the same for all ports should be discovered (comparable with the ice braking fees).

Optimization of (inter)national transport flows

The continuation of international transport flows can be complicated. Currently an agreement on regulations is planned between Finland and Russia in order to decide who can operate on the tracks. These regulations can make it more difficult to operate and to ensure good transport flows.

To the investments in the silk road as well as the related real estate is kept a close eye in order to try to gain as much benefits from these investments as possible. At the moment this contains mostly waiting on what is going to happen.

Nationally transportation is also to a big extend a matter of regulations. Examples of which are the passenger trains running mostly during the day and the cargo trains mostly operating during the nights when the tracks are available. Another example is the length of trucks, being 34 meters and over 80 tons, which causes some problems in specific areas for trucks that try to make a turn. In average the most investments are nationally made on the main hubs per country. In the case of Finland on Helsinki. That makes it more difficult to get investments on smaller hubs, which might be as important, relating also to the functioning of (inter)national corridors.

A recent development in Finland, regarding the optimization of the freight traffic flows from and to China, is the Corridor as a Service (CaaS) initiative, which brings together public organisations (such as ministries and funding organisations), research institutes (VTT), cities (Turku, Vantaa, Kouvola, the Northern Growth Zone), ports, and companies operating in export/import business. The idea is to strengthen Finland as an international logistics hub, based on intelligent digital logistics, and connecting to the Silk Roads: air cargo hub in Helsinki-Vantaa airport, situated in the Northern Growth Zone, and railroad cargo hub in Kouvola, also situated in the Northern Growth Zone.

4.2 Modal shift freight transport

Goods arriving in the port area of Turku/Naantali via the Archipelago are naturally using the national road network in order to transport the goods to their final destination. There is no alternative mode of transport facilitated which causes all heavy traffic to use the national road network. The quality of the motorway E18 is good. The Turku Ring Road (also part of E18) – of which the largest part of trucks use has several bottlenecks with urgent need for improvement. The railway tracks are less used by cargo logistics. The flexibility of trucks is perceived as much bigger than for trains. Especially due to the carbon neutrality objectives, the need to shift larger part of cargo logistics to rails is imminent.

At this moment the roads do have sufficient capacity to accommodate the trucks, but Kaarina's western override road is facing congestion already, having the need for an alternative route from the archipelago to the Turku city Region. Expecting more roads in the surroundings to face comparable congestion issues in the near future.

Possibilities for a modal shift in order to free space on the motorways and ensure fast transport flows are seen in a shift from road to rail. Although 10 years ago tests near Helsinki have shown not to work the development of the high speed railway connection (one hour train) between Turku and Helsinki could

create new possibilities. After opening of the new rail track there will be more capacity on the former route, as passenger trains from Turku to Helsinki v.v. will no longer use the former route.

Single operator for railway and trucks

In Finland is just one national (governmental owned) operator of trains, which is also the biggest truck company, having a monopoly position, with the board making the price list and operating 80% of the goods transported.

Due to its position, the company focusses mostly on road traffic and do only operate long trains (just when the trains are completely full, 1800 tons, being 5-10 or 20 wagons). The trucks do mostly drive for a certain industry and do not allow addition goods on board. Combining freight from multiple companies could utilize the driving trucks and limit the amount of trucks/trains needed.

Over time the trucks have been made bigger, which makes the system less comparable and compatible with the rest of Europe.

Specifying the function of the airport

In aviation big changes are going on. As an example Ryanair is buying big new planes which have at least 200 seats and are more and more going to fly on bigger airports/main passenger hubs. On the other hand a future trend is the growth of planes with only 40-50 seats, having mainly destinations that are smaller.

A necessity for the airport of Turku to position itself in the right way – related to the ongoing trends and developments. Currently some companies use their own planes and small airports in order to transport goods to Germany and foresee in their own needs. Instead of flying from or via the airport of Turku. A possibility has been addressed in creating an airport with changes for e-flights and electronic airplanes. A development that is currently ongoing and looking for smaller airports to execute pilots as is for example already planned on some airports in Norway.

4.3 Environmental impact

The Turku region and port have the ambition to be carbon neutral by 2029 (emissions).

Monday 11 June 2018 the Council decided on Climate Plan that will help with reaching the objective of carbon neutrality. This requires extensive innovations in especially the energy and transport system, as well as the operation of the City, companies, and the whole civil society, which is a significant strength of Turku.

The ambition is to end the use of coal energy already by 2025 with the prerequisite that the government will take part in the investment costs. Travel related emissions are aimed to be halved from the current state by 2029. In order to reach this, the conditions for cycling and walking are being strongly developed, as well as a culture of sustainable mobility. Public transport will be turned into a completely carbon neutral service. Turku as strong location for companies that base their businesses on sustainable future solutions. And those solutions are what the world needs.

Relating to the achievement of this carbon neutrality ambition, the biggest challenge is to balance the impact of measures between livability (including energy transition and emissions), safety, accessibility and connectivity.

The use of different modalities (as shipping and aviation) deserve attention in order to balance/influence the carbon footprint of freight and logistics. Developments like (autonomous) ships on LNG and/or e-flights are amongst good practices. The latter also influencing the role of specific airports. The bigger planes usually flight on the main hubs while relative smaller airports have the opportunity to play a role in facilitating pilots of e-flights.

4.4 Experiences from Gothenburg

Lotten Herrman from the Swedish transport administration Trafikverket gave a presentation on the situation and presented some challenges of the urban node Gothenburg, where an earlier Vital Nodes workshop has taken place.

Gothenburg is located on the Scandinavian-Mediterranean Corridor on the Axis Copenhagen-Oslo and the Core network for IWW, rail and road. It has a core Sea Port and Core Rail-Road terminal. It forms a vital node for transport from Gothenburg to Stockholm and the Mälardalen region and significant freight flows between Gothenburg and the rest of Scandinavia. Gothenburg is the largest port in Scandinavia, with 6 sea rail IWT terminals, direct lines to 140 destinations worldwide and access to Norway and Sweden via rail and roads and an airport. Transport flows meet in a concentrated area around the E6 and Göta älv river in the centre of Gothenburg.

The Swedish city is facing a lot of growth in population and flows going on in and around Gothenburg, with the city moving more and more towards the port causing conflicting interest between growth and coexistence of the city.

Good practices

- Rivercity project Gothenburg: an inner city expansion by transforming an adjacent former port, industrial and logistics area located along the river Göta älv;
- The West Sweden Agreement investment package in infrastructure and other measures in and around Gothenburg incl. Wes Link train tunnel, Marieholm tunnel, Hisings bridge: primarily aimed at increasing the capacity and quality of the public transport system.
- A second example is the ElectriCity project on route 45 combining comfortable transport with spatial aspects and a parcel collection point. So, logistics can bring opportunities to combine functions on for example the last mile;
- The Swedish government uses a 12 year plan which is updated each 4 years. Currently the deepening of the waterway in the port and the decision to link the Eastlink from Borås to Gothenburg is included. The Eastlink high speed railway connection is somewhat comparable with the Finnish situation with the connection between Turku and Helsinki;

Lessons learned

A few lessons learned and outcomes of the Vital Nodes workshop in Gothenburg:

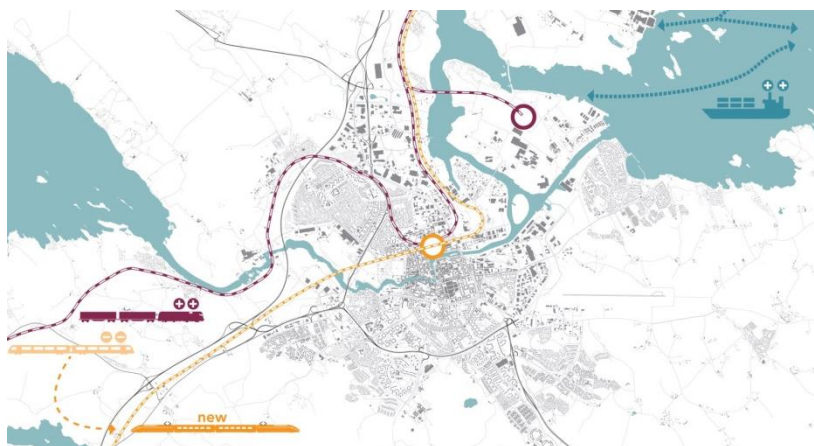
- The eye opener to sit more together and collaborate between the city of Gothenburg and the transport administration – Trafikverket and plan together, developing a clear vision and closer local-regional cooperation can help to speak with one voice to the national government. Focus on aligning the plans from the city, the region, the national level and all other partners;
- Competing and growing flows with infrastructure used for local, regional and (inter)national freight and passenger transport could cause bottlenecks for example a shortage of commuter rail lines results in an increase of road use in and around the city of Gothenburg;
- Freight and passenger flows on the local, regional and (inter)national scales are interconnected in the city center of Gothenburg, causing a bottleneck on all scales (with a lack of peak hour capacity in rail and road infra). By completing the ring road of Gothenburg the long distance flows can be separated from local flows, increasing the robustness and vulnerability of the network. Besides, this can have positive effects on livability issues in the city;
- Awareness of the role of the urban node Gothenburg in the TEN-T network;
- Logistics as added value to the quality of the city and region. Gothenburg has a few really good initiatives such as shifting the rail terminals from the city center to the port reduction the amount of heavy transports through the city center.

Follow up

As a concrete follow-up on the Vital Nodes workshop in Gothenburg a second meeting in autumn is planned with the stakeholders and the results from the 'first' workshop as a starting point. Besides Vital Nodes will be present in the Volvo Research and Educational Foundation – Urban Freight Conference in Gothenburg in October.

Other good practices from Sweden

- Norrköping is an example of a relocation of the harbor and rail activities as inspiration and example of what happened somewhere else. In this case in Norrköping with roughly 150,000 inhabitants and thus a bit comparable with the city of Turku. The railway with the cut between regional and freight transport and high speed connection might be an example of the connection that is proposed between Turku and Helsinki.



5 Good practices

The good practices described below are good practices related to the urban node Turku.

CaaS – Corridor as a Service

The aim of Corridor as a Service is to achieve more efficient and safer logistics. That may be reached through digital services and digitalization of the logistics chain, multimodal goods transport and new innovations in the vehicle or at infrastructure focusing on how to serve international logistics more effectively. These new value adding services may improve logistics especially from a Scandinavian point of view, but also international commerce in the larger scale.

Corridor as a Service is an open ecosystem towards a solution which is beneficial both for the private and public sector. Public sector is willing to enable growth to the society and at the same time it is supporting initiatives and innovations which may cause less emission. The wide target such as seamless logistics may not be reached alone. With cooperation the results may be more efficient. CaaS is driven by companies and research, enabled by public sector in the policy level and will be a success within an active ecosystem.

While CaaS development is driven by companies, the public sector enables the development. It is supported by Finnish Ministry of Transport and Communications, Finnish Transport Safety Agency Trafi, Finnish Transport Agency, Finnish custom, Finnish Communications Regulatory Authority, Finnish Meteorological Institute, Growth Corridor Finland, Regional Council of South Karelia and cities Turku, Vantaa, Tampere and Imatra, and the Northern Growth Zone.

For customers CaaS aims to provide new value adding logistics services, which will improve the efficiency and productivity of the services. These services focus on transparency and tracking of logistics chains, privilege driving in certain points such as customs and safety and security issues of logistic. It is being estimated that CaaS may bring at least 10 % productivity improvements and significant fuel savings. In the future, CaaS services will be additionally with the artificial intelligence capabilities.

Northern Growth Zone collaboration

Facilitating collaboration between the state, regional councils and municipalities, the Northern Growth Zone brings together an economic area of 333 billion euros (semi poly centric platform with 5 sub regions). Dealing with challenges on the (Northern) Scandinavian-Mediterranean TEN-T core network Corridor in Southwest Finland and connections to Stockholm in the West, Tallinn in the South and St. Petersburg in the East.

Within the Northern Growth Zone, in the Turku City Region a LHT (Land Use Housing Transport) agreement (the 2nd) is made to implement the Structural Modal for 2035 which has been an interaction between land-use, territorial/urban planning and traffic for dense and human scale cities based on common objectives for future growth and developments. This modal agreement is not legally binding, but adopted by the councils.

R&D Autonomous Shipping

In order to stimulate value capturing and attracting a growing amount of high tech companies a R&D test center has been opened by Rolls Royce on 25 January 2018 with state-of-the-art research facilities in Turku. This center aims to develop technologies required to shape the future of an increasingly more autonomous global shipping industry (R&D center for Autonomous Ships). By the opening of this R&D center to innovative focus of the Turku regions is stimulated. Examples of innovations that has been executed already are:

- Pilot area for Smart shipping
- Rotor sail technology

Viking Line's flagship cruise liner 'Grace' is the first passenger liner in the world to use the rotor sail technology developed by the Finnish firm NorsePower. Expected to reduce carbon emissions by up to 900 tons per year. Fueled with LNG (liquid natural gas). Also promoting the well-being of the Sea.

Ambition on emission neutral region/port

The Turku Region uses the ambition to have an emission neutral region and port by 2029 to stimulate innovation and developments in the area, effecting multiple disciplines and changes from different fields. Giving possibilities for integrated projects and attract a wider variety of (multi-donor) funding. By using the ambition of the region the broader development of the region is stimulated.

Integrated planning region of Raisio

The city of Raisio has just published their central vision, which links strongly to the planning of the Turku Ring Road. The central vision is an example of a plan including the perspectives of connectivity, accessibility, livability/vitality and economy. The planned tunnel (E18) will provide huge possibilities to develop the center of Raisio in an environmental friendly way affecting Varppeenaukio, Tasalanaukio and Soliniuskuja.

Raisio's construction around the junction has created good connections to the city, but it has also brought traffic noise and dust to the city center. Raisio's new central platform utilizes the city's excellent accessibility, but the center is combined with the surrounding green areas. The diversity of green spaces in the new central structure, parks and green spaces create a distinctive identity for the area. Raisio becomes the hub of the region, which promotes innovative business and modern living and outdoor activities in a comfortable environment.

The Turku regions 'wise moving group' as a part of the continuous traffic system planning process has participated the planning projects of Turku Ring Road and taken extra care of sustainable traffic issues during planning.

6 Lessons learned

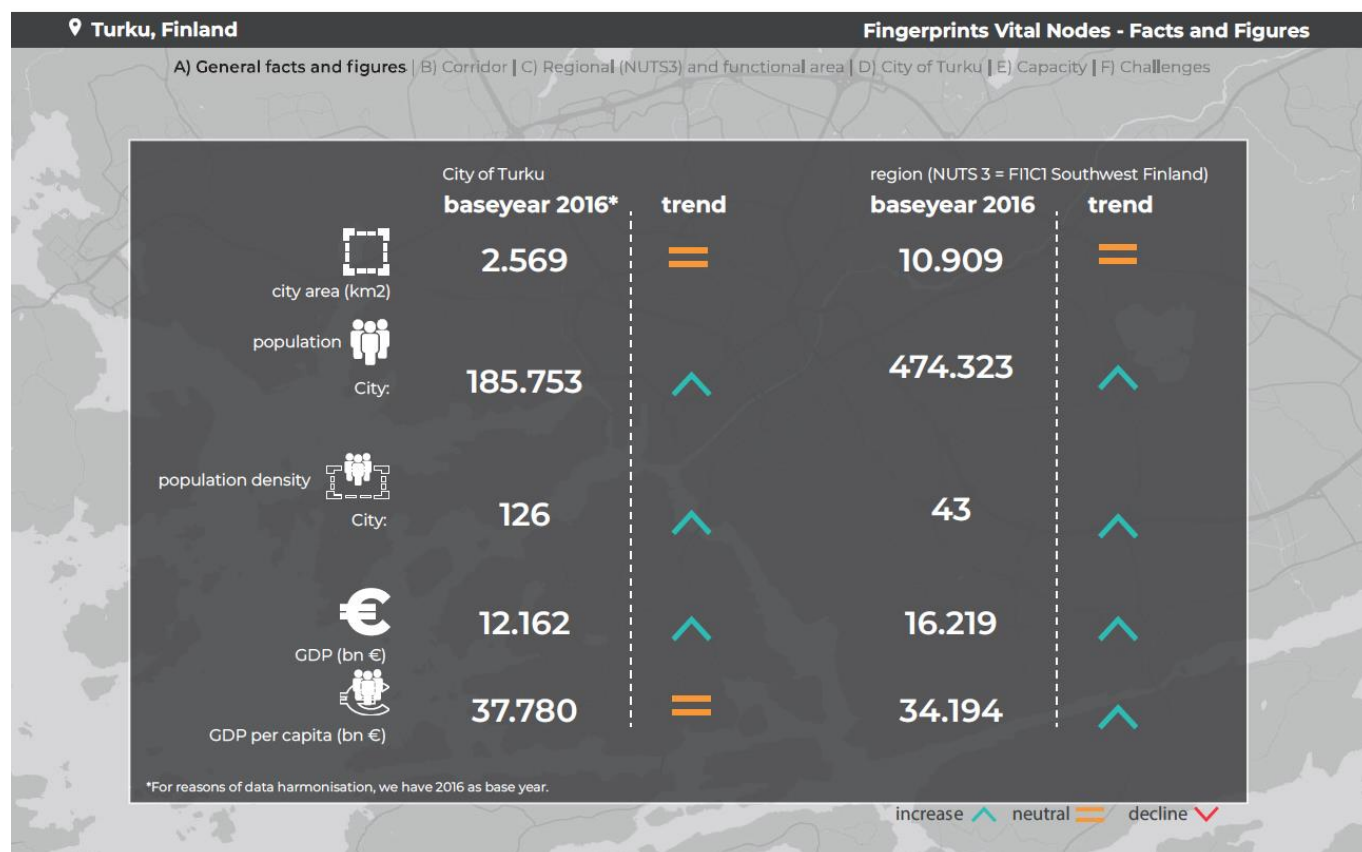
- **Hinterland studies to Functional Urban Area**
In order to be aware of and play its role as urban node on the European corridors it helps to have a clear view on the functional urban area of the urban node from a logistics perspective.
- **Knowledge exchange potential**
There is an enormous potential of knowledge (exchange) and information exchange by realizing cross-overs between different sectors, peoples, events and (testing) initiatives in order to build on collaboration and cooperation. Public-public, but also public-private.
- **Data indicators**
The comparison between different ports is made by measuring tonnes transported. In the case of the Turku port the focus is on expensive but small freight, which makes this a skewed comparison. Coordination of measures used to compare the role and function of different ports requires attention.
- **Regional collaboration**
Regional collaboration increases the integration of different geographical levels. Collaboration between major cities/urban nodes helps the area/corridor to play its role on the European network most efficiently. Being of real added value.
- **Ambition (on carbon neutrality) to create wide opportunities**
Using a regional ambition to effect multiple disciplines and changes from different fields could give possibilities for integrated projects and attract a wider variety of (multi-donor) funding.
- **Stimulating competition in transport**
In order to avoid a monopoly position of specific transport companies the stimulation of competition in transport could increase the possibilities to function as a main hub for freight and passenger transport;
- **Vitality qualities**
The qualities of the area can be used to create impact on the liveability of the urban node. Via the realisation of integrated projects with both goals related to (for example) connectivity and vitality a boost can be given to the area. An example from Turku is the use of the Archipelago as a quality of the surroundings and the possibilities this area gives for recreational purposes as well as for freight.
- **Logistic oriented development opportunities**
Developments starting from the perspective of logistics could be of added value for the urban node and its surroundings. While traditionally developments are started mostly from a passenger transport perspective, logistic oriented development gives opportunities to align transport flows.
- **Mixed financial funding**
A shift towards a mixed financial tool framework gives space for integrated projects with multiple themes represented and impact in a variety of fields. Multi-donor funding could also break the silos in the European Commission, although this is not perceived easy connection could be looked for between for example DG MOVE and DG Energy.

Attachments

1. **Fingerprint urban node Turku (info graphic)**
2. **Good practices with validation of scores**
3. **Map corridor level**
4. **Map regional / urban node level**
5. **Map city level**
6. **List of participants Turku workshop**
7. **Programme of the Turku workshop**



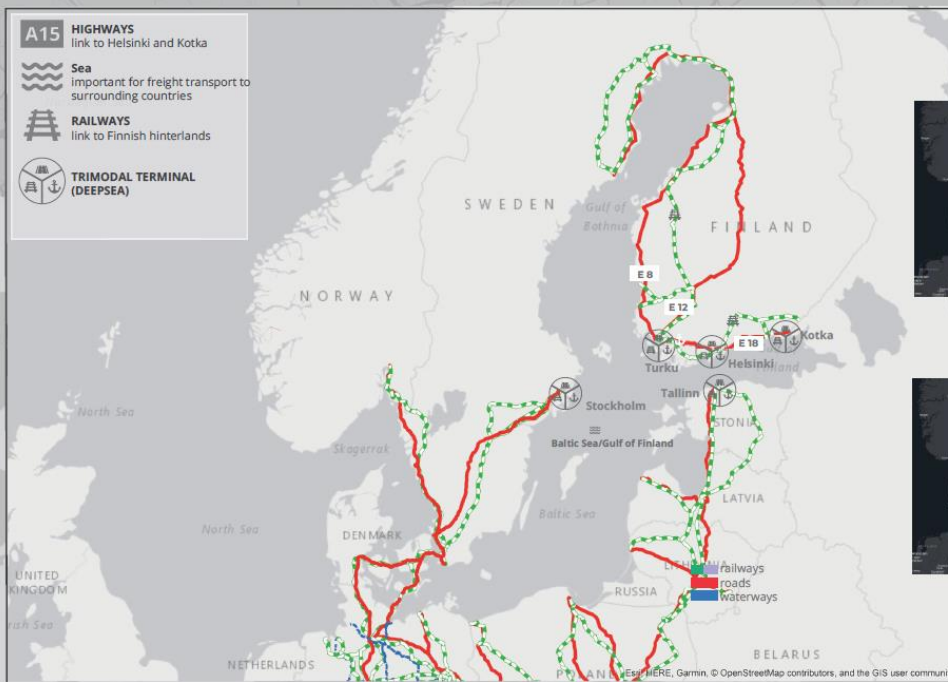
1. Fingerprint urban node Turku (info graphic)



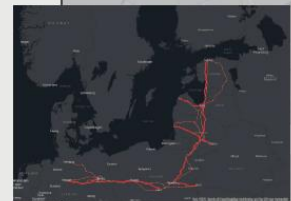
📍 **Turku, Finland**

Fingerprints Vital Nodes - Facts and Figures

A) General facts and figures | **B) Corridor** | C) Regional (NUTS3) and functional area | D) City of Turku | E) Capacity | F) Challenges



OVERVIEW OF CORRIDORS



Turku, Finland

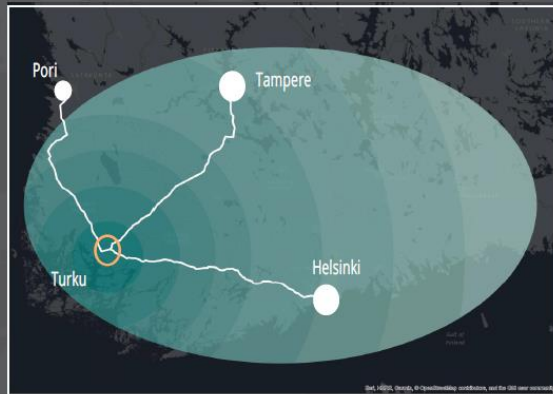
Fingerprints Vital Nodes - Facts and Figures

A) General facts and figures | B) Corridor | C) Regional (NUTS3) and functional area | D) City of Turku | E) Capacity | F) Challenges

IMPORTANT CHARACTERISTICS:

Southwest Finland (Varsinais-Suomi) is Finland's leading agricultural area and a significant food producer. Other important industries: shipyards, automobile manufacturing, metal and electric industries, bio cluster, medicine development. The region is moving from traditional to service-oriented.

INDICATIVE FUA



FREIGHT INFRASTRUCTURE baseyear 2016

	Number	ha	mton	TEU
Road-Rail terminal	1 =	na	0.18	na
Air terminal	1 =	na	0.37 ↓	na
Trimodal terminal (deepsea)	1 =	95 =	2.5 ↑	2.300 ↑

increase ↑ neutral = decline ↓

Turku, Finland

Fingerprints Vital Nodes - Facts and Figures

A) General facts and figures | B) Corridor | C) Regional (NUTS3) and functional area | D) City of Turku | E) Capacity | F) Challenges



Turku, Finland

Fingerprints Vital Nodes - Facts and Figures

A) General facts and figures | B) Corridor | C) Regional (NUTS3) and functional area | D) City of Turku | E) Capacity | F) Challenges



CAPACITY RAIL

There are no regional trains, but there is great potential



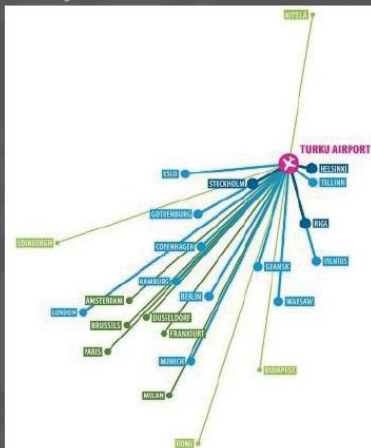
CAPACITY WATER

Pilotage fees are an issue for the competitiveness of the harbour



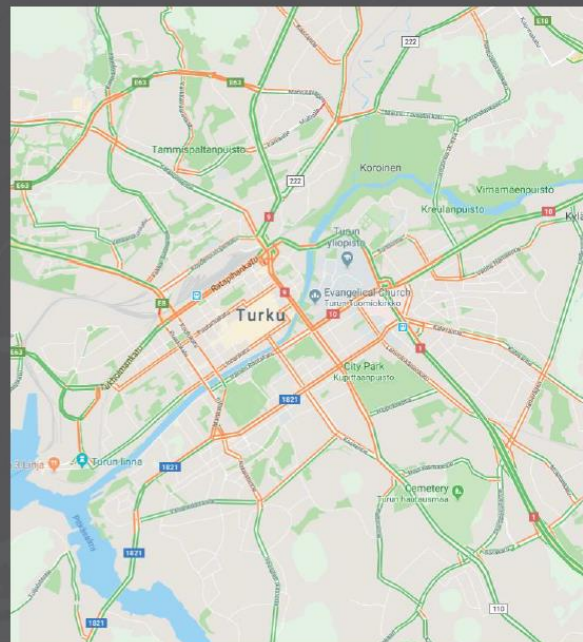
CAPACITY AVIATION

It is vital for the strong export industry in the region.



CAPACITY ROAD

Average intensity road on evening peak:



📍 **Turku, Finland**

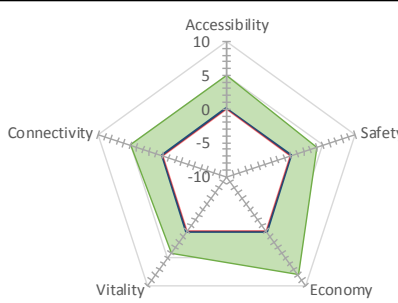
Fingerprints Vital Nodes - Facts and Figures

A) General facts and figures | B) Corridor | C) Regional (NUTS3) and functional area | D) City of Turku | E) Capacity | **F) Challenges**

CHALLENGES

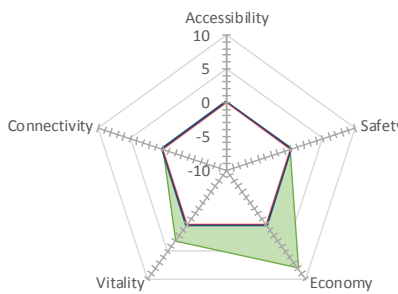
- Railway connection Turku – Helsinki
- Public transport in Turku region
- Supply chain management
- Pilotage fee
- Optimization of (inter)national transport flows
- Single operator for railway and trucks
- Challenge regarding the airport: need for taking better advantage of the position as a central regional international airport.

2. Good practices with validation of scores

Solutions name	CaaS - Corridor as a Service
Type of solution	Optimizing infrastructure
Node example	Turku
Link or contact	Marjo Uotila http://erticonetwork.com/corridor-as-a-service-is-about-smart-logistics/
Investment costs	n.a.
Description	The aim of Corridor as a Service is to achieve more efficient and safer logistics. That may be reached through digital services and digitalization of the logistics chain, multimodal goods transport and new innovations in the vehicle or at infrastructure focusing on how to serve international logistics more effectively. These new value adding services may improve logistics especially from a Scandinavian point of view, but also international commerce in the larger scale. While CaaS development is driven by companies, the public sector enables the development. For customers CaaS aims to provide new value adding logistics services, which will improve the efficiency and productivity of the services. These services focus on transparency and tracking of logistics chains, privilege driving in certain points such as customs and safety and security issues of logistic. It is being estimated that CaaS may bring at least 10 % productivity improvements and significant fuel savings. In the future, CaaS services will be additionally with the artificial intelligence capabilities.
Impact overview	

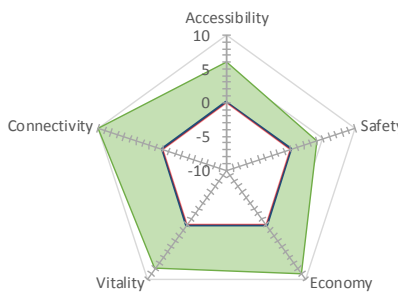
Impact criteria	Questions	Answer
A Accessibility	The solution impacts the chosen modality of the flows	1
	The solution impacts the route of the flows	1
	The solution impacts the volume of the flows	1
	The solution impacts the timing of the flows	1
	The solution impacts the available infrastructure capacity	1
B Safety	The solution impacts the number of pedestrian casualties	0
	The solution impacts the number of cyclist casualties	0
	The solution impacts the number of motorised vehicle casualties	0
	The solution impacts the external safety of dangerous goods transport	2
	The solution impacts the external safety of warehousing operations	2
C Economy	The solution impacts the attractiveness of the local scale (city) of the Node for investments (value captu	2
	The solution impacts the attractiveness of the FUA from logistics perspective of the Node for investmen	2
	The solution impacts the price of living in urban areas (socio economic)	0
	The solution impacts synergies with other sectors	2
	The solution impacts the GDP	2
D Vitality	The solution impacts the air quality	1
	The solution impacts the noise levels	1
	The solution impacts health of citizens	1
	The solution impacts the ease of moving in the city for citizens	1
	The solution impacts the quality of living	0
E Connectivity	The solution impacts the connection between the city and the functional urban area from a mobility p	0
	The solution impacts the connection between the city and the functional area from a logistics perspec	2
	The solution impacts the connection with other Nodes on the Corridor	1
	The solution impacts the connection with other TEN-T Corridors	1
	The solution impacts the connection with the comprehensive network	1

2 strong positive impact 1 Positive impact 0 No substantial impact -1 Negative impact -2 strong negative impact

Solutions name	Autonomous shipping
Type of solution	Adding a mode
Node	Turku
Link or contact	
Investment costs	
Description	<p>In order to stimulate value capturing and attracting a growing amount of high tech companies a R&D test center has been opened by Rolls Royce on 25 January 2018 with state-of-the-art research facilities in Turku. This center aims to develop technologies required to shape the future of an increasingly more autonomous global shipping industry (R&D center for Autonomous Ships). By the opening of this R&D center the innovative focus of the Turku regions is stimulated. Examples of innovations that has been executed already are the two separate cases (1) Pilot area for Smart shipping and (2) Rotor sail technology. Viking Line's flagship cruise liner 'Grace' is the first passenger liner in the world to use the rotor sail technology developed by the Finnish firm NorsePower. Expected to reduce carbon emissions by up to 900 tons per year. Fueled with LNG (liquid natural gas). Also promoting the well-begin of the Sea.</p>
Impact overview	

Impact criteria	Questions	Answer
A Accessibility	The solution impacts the chosen modality of the flows	0
	The solution impacts the route of the flows	0
	The solution impacts the volume of the flows	0
	The solution impacts the timing of the flows	0
	The solution impacts the available infrastructure capacity	0
B Safety	The solution impacts the number of pedestrian casualties	0
	The solution impacts the number of cyclist casualties	0
	The solution impacts the number of motorised vehicle casualties	0
	The solution impacts the external safety of dangerous goods transport	0
	The solution impacts the external safety of warehousing operations	0
C Economy	The solution impacts the attractiveness of the local scale (city) of the Node for investments (value captur	2
	The solution impacts the attractiveness of the FUA from logistics perspective of the Node for investmen	2
	The solution impacts the price of living in urban areas (socio economic)	1
	The solution impacts synergies with other sectors	2
	The solution impacts the GDP	1
D Vitality	The solution impacts the air quality	1
	The solution impacts the noise levels	1
	The solution impacts health of citizens	0
	The solution impacts the ease of moving in the city for citizens	0
	The solution impacts the quality of living	1
E Connectivity	The solution impacts the connection between the city and the functional urban area from a mobility p	0
	The solution impacts the connection between the city and the functional area from a logistics perspec	0
	The solution impacts the connection with other Nodes on the Corridor	0
	The solution impacts the connection with other TEN-T Corridors	0
	The solution impacts the connection with the comprehensive network	0

2 strong positive impact 1 Positive impact 0 No substantial impact -1 Negative impact -2 strong negative impact

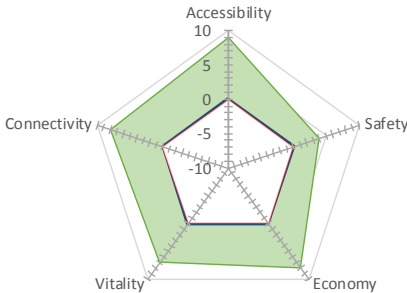
Solutions name	Turku Science Park (spearhead project, including Master Plan)
Type of solution	Spatial planning (Brownfield development, improved connectivity between nodes (rail))
Node	Turku
Link or contact	Mrs Marjo Uotila http://www.turku.fi/en/turku-science-park
Description	<p>Over a million squares of new construction, investments of several billions, over 10 000 new jobs and apartments for 20 000 new Turku residents with one hour distance away from the capital region.</p> <p>The Turku Science Park spearhead project is one of the city's three spearhead projects and an important component in developing the appeal and competitiveness of Turku. The objective is to use new networked operating models to create an internationally attractive and boldly experimental cluster of expertise with ver-satile functions and logistic appeal.</p> <p>Reaching from the university campus to the Kupittaa business cluster and further to Itäharju, this area is the city's most significant growth centre of know-how and high technology jobs. Seamlessly connected to the city centre, it is attractive because of its diverse network of operators and know-how and logistically excel-lent location. The One Hour Train initiative will connect the area also with the capital region's commuter belt in the future.</p>
Impact overview	

Impact criteria	Questions	Answer
A Accessibility	The solution impacts the chosen modality of the flows	1
	The solution impacts the route of the flows	2
	The solution impacts the volume of the flows	1
	The solution impacts the timing of the flows	1
	The solution impacts the available infrastructure capacity	1
B Safety	The solution impacts the number of pedestrian casualties	1
	The solution impacts the number of cyclist casualties	1
	The solution impacts the number of motorised vehicle casualties	1
	The solution impacts the external safety of dangerous goods transport	1
	The solution impacts the external safety of warehousing operations	0
C Economy	The solution impacts the attractiveness of the local scale (city) of the Node for investments (value captur	2
	The solution impacts the attractiveness of the FUA from logistics perspective of the Node for investmen	2
	The solution impacts the price of living in urban areas (socio economic)	1
	The solution impacts synergies with other sectors	2
	The solution impacts the GDP	2
D Vitality	The solution impacts the air quality	1
	The solution impacts the noise levels	1
	The solution impacts health of citizens	2
	The solution impacts the ease of moving in the city for citizens	2
	The solution impacts the quality of living	2
E Connectivity	The solution impacts the connection between the city and the functional urban area from a mobility p	2
	The solution impacts the connection between the city and the functional area from a logistics perspec	2
	The solution impacts the connection with other Nodes on the Corridor	2
	The solution impacts the connection with other TEN-T Corridors	2
	The solution impacts the connection with the comprehensive network	2

2 strong positive impact 1 Positive impact 0 No substantial impact -1 Negative impact -2 strong negative impact

Solutions name	Northern Growth Zone
Type of solution	Governance
Node	Turku
Link or contact	Mrs. Marjo Uotila – Northern Growth Zone

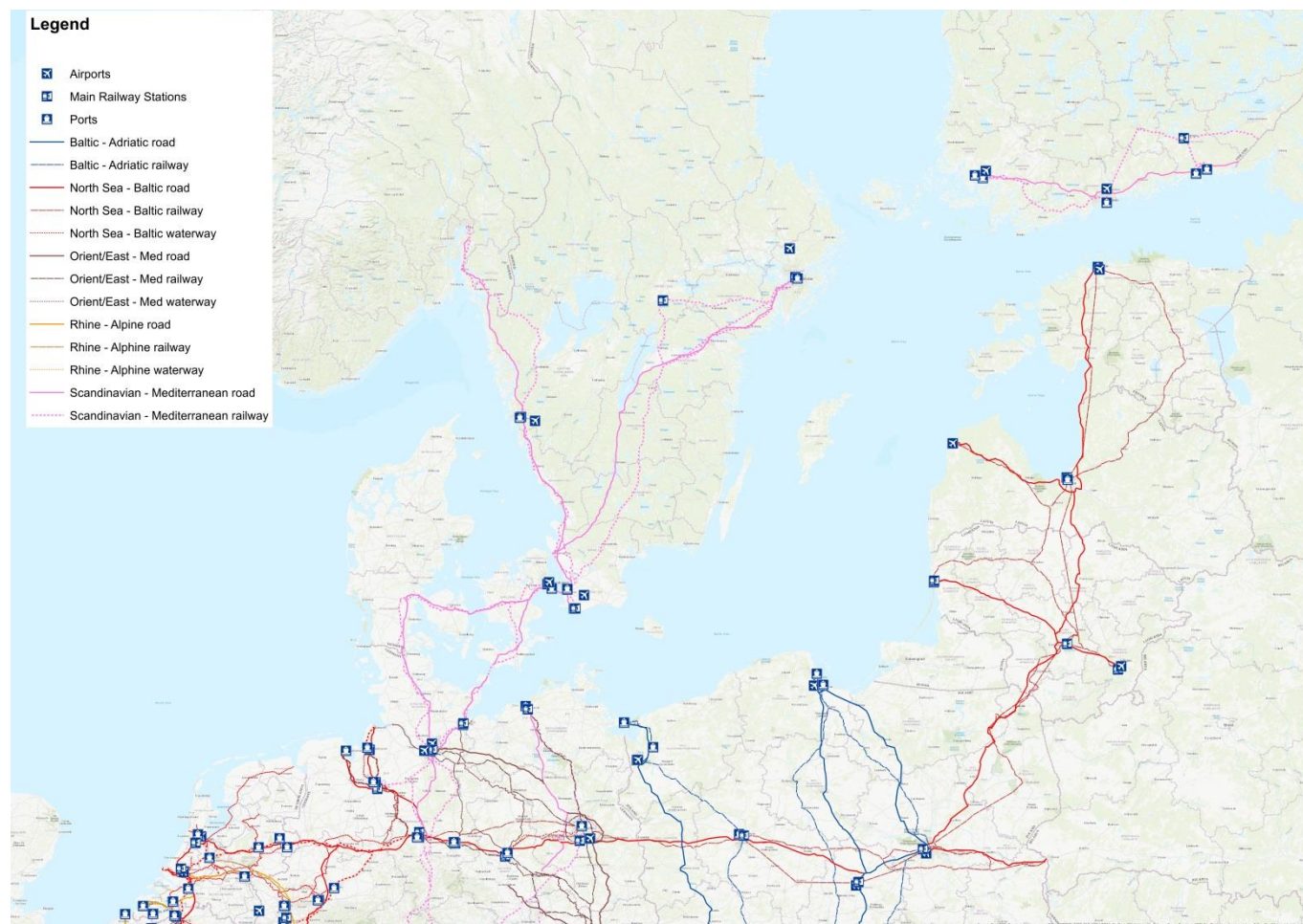
Description	<p>Northern Growth Zone collaboration</p> <p>Facilitating collaboration between the state and 14 municipalities and 6 regional councils, the Northern Growth Zone provides a semi-polycentric platform with 5 sub-regions, bringing together an economic area of 333 billion euros. Dealing with challenges on the (Northern) Scandinavian-Mediterranean TEN-T core network Corridor in South West Finland and connections to Stockholm in the West, Tallinn in the South and St. Petersburg in the East.</p> <p>Within the Northern Growth Zone a LHT (Land Use Housing Transport) agreement (the 2nd) is made to implement the Structural Modal for 2035 which has been an interaction between land-use, territorial/urban planning and traffic for dense and human scale cities based on common objectives for future growth and developments. This modal agreement is not legally binding, but adopted by the councils. The city of Turku is leading the network collaboration of the Northern Growth Zone, and as a member of the Scandria Alliance (representing the northern part of the Scandinavian-Mediterranean TEN-T core network Corridor) the city of Turku will also represent the Regional Council of Southwest Finland, as well as the other Northern Growth Zone partners.</p>
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Impact overview	
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Impact criteria	Questions	Answer
A Accessibility	The solution impacts the chosen modality of the flows	1
	The solution impacts the route of the flows	2
	The solution impacts the volume of the flows	2
	The solution impacts the timing of the flows	2
	The solution impacts the available infrastructure capacity	2
B Safety	The solution impacts the number of pedestrian casualties	1
	The solution impacts the number of cyclist casualties	1
	The solution impacts the number of motorised vehicle casualties	1
	The solution impacts the external safety of dangerous goods transport	1
	The solution impacts the external safety of warehousing operations	0
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	The solution impacts the attractiveness of the FUA from logistics perspective of the Node for investmen	2
	The solution impacts the price of living in urban areas (socio economic)	1
	The solution impacts synergies with other sectors	1
	The solution impacts the GDP	2
D Vitality	The solution impacts the air quality	2
	The solution impacts the visual quality of the environment	1
	The solution impacts the level of noise pollution	1
	The solution impacts the ease of moving in the city for citizens	2
	The solution impacts the quality of living	1
E Connectivity	The solution impacts the connection between the city and the functional urban area from a mobility p	1
	The solution impacts the connection between the city and the functional area from a logistics perspec	2
	The solution impacts the connection with other Nodes on the Corridor	2
	The solution impacts the connection with other TEN-T Corridors	2
	The solution impacts the connection with the comprehensive network	1

2 strong positive impact 1 Positive impact 0 No substantial impact -1 Negative impact -2 strong negative impact

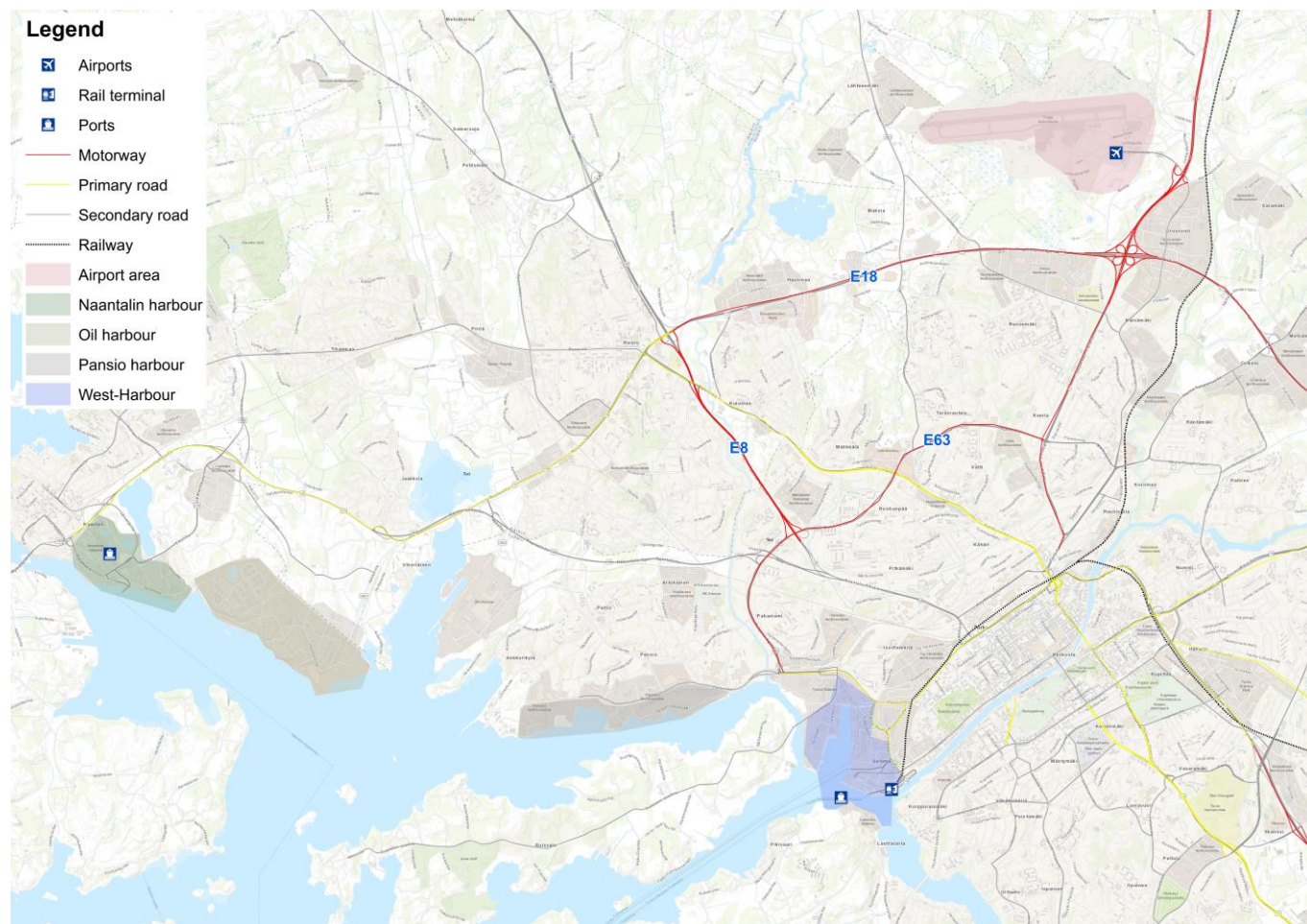
3. Map corridor level



4. Map regional / urban node level



5. Map city level



6. List of participants Turku workshop

Name	Stakeholder/organization
Juha Aaltonen	Finavia
Kirsi Ahlman	Centrum Balticum
Björn Grönholm	UBC - Union of the Baltic Cities
Magnus Gustafsson	Åbo Akademi (PBI)
Tiina Heinikainen	Silkkitie
Lotten Herrman	Trafikverket
Samu Hirvonen	Posti
Lassi Hilska	LVM
Timo Hintsanen	Urban research
Ari Hurme	Matkahuolto
Martti Husu	Silkkitie
Niko Kyyräinen	City of Turku / Science Park
Kaisa Leiwo	Turku Chamber of Commerce
Hanna Lindholm	Centre for Economic Development, Transport and the Environment in Southwest Finland
Jaakko Nirhamo	Port of Turku
Sampo Ruoppila	Urban research
Heikki Saarento	Regional Council of Southwest Finland
Seppo Serola	Finnish Transport Agency
Tero Siitonen	SKAL - Länsi-Suomen Kuljetusyrittäjät ry
Mari Sinn	Regional Council of Southwest Finland
Anna-Mari Sopenlehto-Jokinen	City of Turku - Gaika
Jonas Spohr	Åbo Akademi
Arto Tevajarvi	Finnish Transport Agency
Mira Tuominen	PBI
Marjo Uotila	Turku City and Northern Growth Zone
Risto Veivo	City development group, urban planning, city of Turku
Jussi Vira	City of Turku
Kim Wikström	Åbo Akademi (PBI)
Vital Nodes Consortium	
Britt Doornekamp	Ecorys
Kevin van der Linden	Rijkswaterstaat
Raymond Linssen	Rijkswaterstaat
Ricardo Poppeliers	Ecorys

7. Programme of the Turku workshop

09.00 – 09.30	Welcome
09.30 – 10.00	<p>Start, welcome and introduction round</p> <ul style="list-style-type: none"> - Short introduction to the Vital Nodes project, including goal of the Vital Nodes project and goal of this workshop - by Kevin van der Linden (Rijkswaterstaat) - Programme workshop – by moderator Magnus Gustafsson
10.00 – 10.45	<p>Presentation “Fingerprint Turku” - by Ricardo Poppeliers/Britt Doornekamp (Ecorys)</p> <ul style="list-style-type: none"> - Facts and Figures - Challenges / barriers <p>Presentation on earlier experiences / good practices in Vital Nodes project by Lotten Herman (Trafikverket)</p>
10.45 – 11.00	Break
11.00 – 12.00	<p>Working on Turku's Challenges (In two groups)</p> <p>Interactive discussion via maps (“spatial dimension”) on the challenges of the urban node Turku</p> <p>Sharing outcomes of the group discussions by the two groups – in plenum</p>
	<p>Pitches on perspectives /good practices</p> <ul style="list-style-type: none"> - Short pitches/presentations on perspective and good practices - Arto Tevajarvi- Finish transport agency - Marjo Uotila – Northern Growth Zone - Magnus Gustafson - PBI
12.00 – 13.00	Lunch
13.00 – 14.30	<p>Working on Turku's Challenges (in two groups)</p> <ul style="list-style-type: none"> - Continue interactive discussion on challenges to decide on ‘key’ challenges (to be discussed afterwards in more detail)
	Sharing of outcomes of the two groups – in plenum
	<p>Working on Turku's Challenges - Solutions, drivers & barriers and possible impacts (in two groups)</p> <ul style="list-style-type: none"> - Towards (directions of) solutions
14.30 – 15.00	Break
15.00 – 16.00	<p>Plenary discussion on outcomes of the discussions</p> <ul style="list-style-type: none"> - Discussing the (key) challenges and thoughts on solutions
	<p>What is the added value for Europe, what do we need and what can we recommend?</p> <ul style="list-style-type: none"> - Interactive discussion on “Integrating urban node Turku in the TEN-T network” – in plenum - Sharing / summary of outcomes of the discussions
	Wrap up and follow-up – by Magnus Gustafsson (PBI) and Vital Nodes consortium
16.00 – 17.00	Informal networking