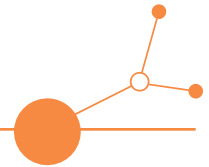# Strategy for improving the last mile accessibility of rural and peripheral areas to TEN-Ts through ICT

Deliverable no. D.1.1.2

ACCESSMILE

Final version
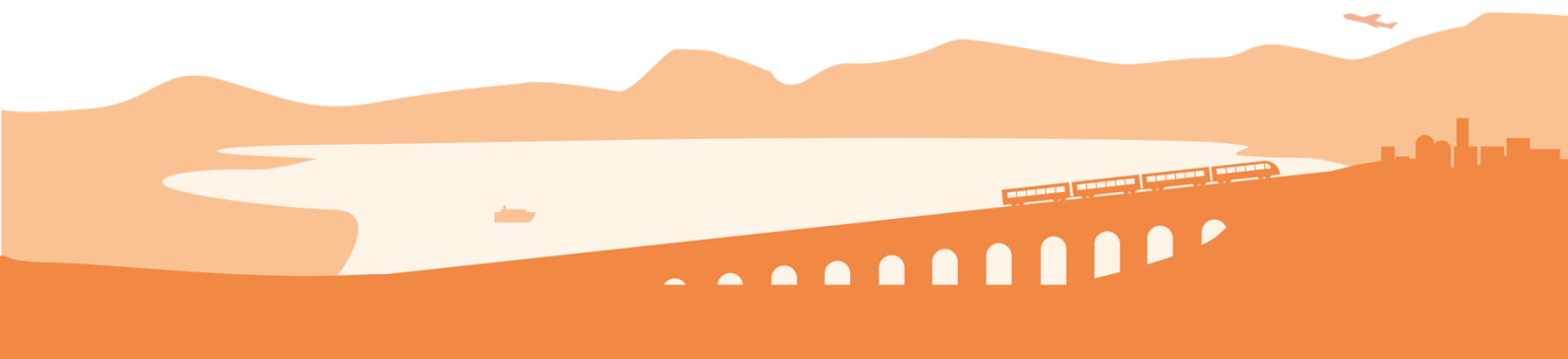
12 2023

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1. Introduction

1.1. Methodology, aim of document

Activity 1.1 is devoted to jointly assessing the current situation on last mile accessibility of rural and peripheral area in CE to the main freight nodes of TEN-T networks and elaborating a transnational strategy to improve it.

As a first step, PPs analyse the status quo in this domain by assessing bottlenecks and market potential, including currently applied ICT tools.

PP8-RSOE investigates good practices in the European and international context and carries out a comparative benchmarking study, assessing regions against each other, identifying which best practice could feed further project activities in a work paper.

Following that, PPs jointly draft a strategy setting a vision, objectives and priorities aimed at the optimisation of transport flows and reduction of environmental externalities through IT tools, covering the three domains of:

1. Vehicle Booking Systems/pre-arrival or pre-exit notification, port/terminal gates;
2. Port/terminal gates and interoperability among public/private IT systems;
3. Cargo bundling

Aim of this document is to provide PPs with a common template as to co-design Deliverable D.1.1.2 "Strategy for improving the last mile accessibility of rural/peripheral areas to TEN-Ts through ICT".

1.2. Background of strategy

In the last decade, the maritime freight flows represent the most important segment of international trade in the world, being the engine of the economies and of the multimodal transport in logistics. At this regard, ports represent an essential link between the connection of industrial, transport and commercial hubs. Ports are strategic points, as they play an important role in relations between countries. In recent years, ports in the southern part of the Central European region have greatly intensified connections with the Far East, as they represent an important window in the centre of Europe for both export and import of all kinds of goods.

European countries are keeping relations with countries from other continents through a variety of common cooperation platforms, backed also by strong bilateral cooperation. The OECD predicts balanced growth by 2025, with just under 1.5 percent of annual GDP growth per capita, and a slow increase in growth to just over 1.5 percent annually in 2030. Many of major international advisory and audit networks predict that China and India are expected to take over the global economy. Added to this analysis is HSBC's forecast that China will economically be the fastest in growth by 2030.

With such assumptions, we can concretely take the potential of the Central European region as being in growth and with a very good starting point in the face of new infrastructural and operational challenges for all countries in the region, extending their relationships and improving infrastructures to keep up with the times and the growing volumes of freights, both for import and export purposes.

Inevitably, from an economic and geopolitical point of view, the southern CENTRAL EUROPEAN ports are increasingly representing an alternative to the ports of Northern Europe, for reaching the markets of central and southeast Europe. In line with the increase in the volumes of goods coming by sea, even the technologies for faster and operationally lean handling require an update of existing technologies.

The digitization of the operations accompanying the goods, constantly available databases, the real-time updates on the status of the goods, the information obtained before the goods reach their destination, are just some of the interventions that modern Logistics requires to keep ports in step with the times and at the forefront worldwide.

Furthermore, the CENTRAL EUROPE region is crossed by several corridors that are part of the TEN-T network of the European Union and, even more so, they must be considered of primary importance, when it comes to the development of the transport network, both at the level of infrastructure and at the technological / digital level.

For what regards the ACCESSMILE project, it is going to take advantage from the analysis, elaborations, studies, and pilot actions that are going to be developed by the end of 2025, with contributions related to activities in T1 and T2, especially when considering the pilot actions. They will serve as starting point for the definition of strategies at national and regional level, as well as for future development plans in the Central European region.

The research and solutions that are going to be made at local level will allow the development of tools that will serve for solutions at larger scale, at regional level, to demonstrate how operative improvements and processes' digitization can speed up the operation also on the whole logistic chain.

Infrastructural lacks or shortages due to geomorphological constraints cannot be resolved through solutions developed for single/ specific/ local areas and with small financial contributions. That's why the different types of contributions are going to be provided by all the partners in different forms (studies, questionnaires, pilots etc.), to follow the global aim of the project, which is the development of digitalized solutions for data sharing on the logistic chain, which will contribute to better link the ports and the hinterland as well as to improve multimodal transport and intermodal connections between countries in the Central European region.

2. Strategy

2.1. Setting vision, mission, key values

The definition of vision statement, mission statement and key values provides a strategic framework for improving the last mile accessibility of rural/peripheral areas to TEN-Ts through IT tools.

2.1.1. Port of Trieste and Monfalcone

VISION
(Vision statement focuses on tomorrow and set the target aims to be achieved)
To steer the development of the port community by promoting technological innovation and boosting digital growth for a seamless supply chain, better integrating rural and peripheral areas.
MISSION
(Mission statement focuses on today, what challenges shall we face towards the vision today)
To reach a strong coordination and information exchange in the port-hinterland interface, overcoming all problems in coordination, connectivity, interoperability especially with operators located in rural and peripheral areas. These objectives will allow a better coordination between all stakeholders and public authorities in order to reach a further increased modal shift.
KEY VALUES
(The principles and values that are the basis of the vision of the strategy)
The neutrality guaranteed by the port's IT systems improves trust among logistic operators.
The use of open-source software ensures competitive development and maintenance costs.
Interoperability among public and private IT platforms avoids the need for developing a completely new IT system
Use of common standards allows a smooth interaction among different IT systems.

2.1.2. Zailog Verona

VISION
(Vision statement focuses on tomorrow and set the target aims to be achieved)
Zailog is focused on the several targets to improve the accessibility to the Verona freight village that can be summarized in these topics. Terminal gate access: foster the cooperation among the intermodal chain players to ease the access to the terminal area using ICT platforms. The scope is to enhance the data exchange to create a real-time communication focused on the reduction of the inefficiencies (e.g. queues of heavy vehicles outside the terminal gates). Data sharing: increase the collaboration between road and rail operators to put in communication the different IT platforms. The objective is the definition of sharing policies through an articulated set of agreements among the different players of the intermodal chain.

The aim is to prevent data leakages since the information exchanged could be sensitive. There is also the opportunity to create an unique platform for the terminal actors with the scope to provide a complete overview as well as to increase the efficiency of the entire node.

MISSION
(Mission statement focuses on today, what challenges shall we face towards the vision today)

Zailog is facing different challenges during the upgrading process of the terminal accessibility. The first objective (ease the terminal gate access) can be achieved using an app able to receive information from all the players involved in the intermodal chain. The app will permit to communicate the actual time of arrival both of the freight trains and trucks, optimizing all daily operations (e.g. loading, unloading of the trailers) as well as reducing the dwell time and the pollution (i.e. CO_2 emissions). Another main goal (data sharing) can be reached through the definition of several agreements among the different players operating in the intermodal chain. These deals are necessary to guarantee the security of data exchange since much information are confidential. Therefore, it is essential to draft a detailed regulation with strict constraints, creating a sort of restricted group of players where the information can be shared without risks. Last goal is the creation of a sort of Port Community System on which the actors operating in the terminal area can share information to coordinate all the daily activities.

KEY VALUES
(The principles and values that are the basis of the vision of the strategy)

The vision of the Zailog's strategy will be based on two key values. The first is the sustainability since the optimization of the gate access as well as of the daily activities will allow a relevant decrease of the congestions, producing benefits for the operators, the citizens and the environment. The other key value is the data security because a set of stringent rules will prevent data leakages, increasing propensity to data sharing for other potential players.

2.1.3. Port of La Spezia and Marina di Carrara

VISION
(Vision statement focuses on tomorrow and set the target aims to be achieved)

The goal of digitalisation is to foster growth, competitiveness, jobs and the internal market, through making better use of the opportunities offered by digital technologies. Specifically, in the transport sector, such tools could improve the use of existing resources.

Digitalisation and new ICT tools have the potential to change the way cargo and traffic flows are organised and managed, they generate business opportunities and pave the way for innovation, new services and business models. They enable cooperation between supply chain actors, better supply chain visibility, real-time management of traffic and cargo flows, simplification and the reduction of administrative burden, and allows for a better use of infrastructures and resources, thereby increases efficiency and lowers costs.

To reap those benefits transport should become digital by default. Electronic data should flow seamlessly through supply chains including the exchange of data with public authorities and between businesses. Data should be used data to generate added value for business.

The Port Authority of the Eastern Ligurian Sea is working on this direction following the main national and European strategies. Among them, the National Strategic Plan for Ports and Logistics (Piano Strategico Nazionale della Portualità e della Logistica) and the Digital Single Market strategy are two pillars. In view

of supporting this process and improving interoperability in logistics and freight transport across modes and sectors, the Port Authority is member of the Digital Transport and Logistics Forum (DTLF).

MISSION
(Mission statement focuses on today, what challenges shall we face towards the vision today)

The creation of seamless IT tools for digitalizing the supply chain and the port procedures will provide several benefits for the stakeholders such as:

- possibility of accessing to shared dashboards that allow in real time the monitoring of the vehicle at the gates;

- possibility of displaying the status of the network and services in real time;

- possibility of communication and sharing of information with operators of rural and peripheral areas;

- data exchange, through the platform, between the ICT management system of each operator and that of the other operators involved in the gate procedures;

- interoperability of Port Community System;

- limitation of inefficiencies caused to the lack of communication between operators;

- limitation of errors in the transmission of data related to the goods;

- prevention of consequent damages, through specific alerts;

- reduce dwell time of goods in port;

- possible extensions of the use of the Platform also in the Customs field (for instance, to facilitate customs clearance in the place where this is most appropriate);

- possibility for the Public Administration to obtain statistical data on road traffic, in order to create a Decision Support System.

KEY VALUES
(The principles and values that are the basis of the vision of the strategy)

The pillar of this strategy is the digitalization of procedures, which is represented by APNet within the port of La Spezia.

This strategy is important for the achievement of the given objectives:

- To reduce waiting time at the port gate and along the road network;

- To improve the level of service offered to the customers;

- To improve the transfer of information through the stakeholders of the logistic chain and the rural areas;

- To improve the level of safety and security outside and inside the port.

2.1.4. Port of Koper

The port of Koper is a multipurpose port. It operates through 12 different terminals, which are all linked through the PCS provided and maintained by external experts. The analysis made in last decade shows how the cargo groups leading port's development are cars and containers. The strong link with neighbouring countries in Central Europe, allows the port to have quick responses and deliveries for all the types of goods but the accent is put on cars and containers, which are constantly increasing their volumes in the port. The experience obtained through the COMODALCE project in years 2020-2021 and its installation of an OCR system at the railway gate of the Container Terminal, contributed to study and develop proper measures in terms of digitization and optimization of processes for the containers' handling in port's area. The further development of such solutions in the Port of Koper through the ACCESSMILE project, will move the attention on the containers' transport on road, which goes in line with the trends in last two years, where the transport by road gained concrete percentages of volumes, when compared to railway transport. These investments must be accompanied by proper systems, counting on the co-financing offered by the ACCESSMILE project.

The Port of Koper has prepared through the last decade many analyses of existing IT equipment in the port and worked on the development of ICT tools for the upgrade of operative systems and for the streamlining of the administrative procedures at gates and at the terminals, mainly to serve the container and the car terminal, which are increasing the volumes more than other terminals.

In the specific, with the ACCESSMILE Luka Koper is going to upgrade the scanning process through OCR systems by introducing the OCR for trucks transporting containers. Containerization around the world increased the percentage of goods transported in containers, increasing the trust in such a storage methodology. The impact of this was also felt by Luka Koper, which in the last 5 years increased the number of transhipped TEUs by 65%. Increased number of basic operations requires a growing standardization of business processes and an unambiguous delimitation of responsibilities for some stakeholders. The logistic chain itself is based on a fast and accurate data exchange, which enables the company to manage operational processes more efficiently, which consequently means faster transit of goods through the port area. In this respect, the inclusion of an OCR system at container terminal's gate would help speeding up operational procedures, would feed a digital database for the registration of incoming and outgoing containers at container terminal, which will help also the disputes related to containers' damages, weights and loading on trucks.

The implementation of some functionalities, developed for the port, but not co-financed by ACCESSMILE, will provide upgrades for the following systems:

- TINO - Marketing and Operations: it is the key operating system of Luka Koper d.d., linked with the EDIFACT International standard. It includes planning of works, planning of berthing, calculating costs, orders' viewing etc.

- DEPO: it's an entry point module for the container terminal that enables direct communication of shipowners with TOS - Terminal operating system - at the Container Terminal using the EDIFACT international standard. The system is connected both to the TINO system and to the TOS system Tideworks.

- TOS Tideworks: is a specialized container terminal management system that is connected both to the TINO system and to the EDIFACT Center system. It allows to plan the containers' positioning at the yards, to define cargo plans, to check the availability of containers, machinery, and equipment for the fastest operational solutions at the container terminal etc.

The experience and know-how obtained through the ACCESSMILE project and the installation of the OCR scanning system at the truck gate, will help the port to optimize such an equipment for next installations at other truck port's gates. Initially it will be dedicated to the container transport, but in the future also for the transport of goods through different types of storage.

The activities described in ACCESSMILE also match the needs at regional level considering that, with these upgrades, the port's system will allow quicker detection of vehicles and containers with their serial numbers and license plates. In addition to this, also loading lists of goods transported will be immediately available, which will reduce administrative timeframes per truck both at the gates and at the container terminal. It will also meet some demands of the stakeholders working with Luka Koper on a daily basis like Customs Administration and inspection entities, considering that the operations are being performed in the port as a free zone.

After the end of the project, the solutions will be used for further implementations at regional level for other users, and of course, verifying the possibility to be integrated with other equipment like cameras and detectors on cranes at the terminal, which will allow better control on goods transport as well as at security level, for a double check while goods are within port's area.

The adopted methodology foreseen in ACCESSMILE, will open the possibilities to different scenarios for short or medium-term and for long-term periods. The possible developments in this sense can be described as follows:

- In the **short-medium period**: the assessment design should address solutions and consultations between internal operators and with stakeholders directly involved in the process of containers' truck transport, regarding the selection of equipment to be adopted at ACCESSMILE level, including: type of stakeholder involvement, selection of indicators, data collection requirements and the elaboration of the financial consequences with eventual socio-economic and environmental impact assessment, which should lead to the preparation of a SWOT analysis. In this respect, the technical identification of equipment to be provided, results to be fundamental. In parallel, operative issues to be solved and financial implications for the port will be analysed, for a successful execution of the pilot activity.

  The solutions provided at project level will be tested in a limited area (port's gate near the new truck parking) and for specific types of transports (containers on trucks). The introduction of new tools for users requires more time to be implemented at regional or national level because all the solutions must be tested through a certain period and some lacks should be encountered. What can be useful at this step, in a short-medium period, is the planning of possible scenarios and the foreseen issues and mitigation activities in order to reduce the loss of time while facing potential problems.

- In the **long period**: the current operational situation, will be developed based on the concrete activities implemented through the framework of the ACCESSMILE project and its pilot in the port of Koper. It aims at identifying clear steps for supporting the long-term impacts of ICT applications in Central Europe even beyond the project closure.

  Nevertheless, the strategy's concrete implementation and monitoring depends on the uptake of the ACCESSMILE results and recommendations not only within the project, but also by the EU, the national ministries of transport and from the Central European region.

In particular, considering the key role played by the governance of the transport policies in the CE area, an active consideration of the planned solutions in the process of monitoring and implementing the ACCESSMILE results would be recommendable.

The following table includes the so-called definition of vision statement, which is focused on the statement expected in the future and sets some targets that Luka Koper is going to achieve in the near future. The vision is followed by the "mission" statement which focuses on today's activities and expected challenges to be faced in order to achieve the results targeted in the future. In the end, there are the key values providing the vision of the strategic framework for the planned measures, following the definition of vision

statement, mission statement and key values in the strategic framework for improving the last mile accessibility of rural/peripheral areas to TEN-Ts through IT tools.

VISION
(Vision statement focuses on tomorrow and set the target aims to be achieved)

The work that is expected in next years will be more and more oriented on the IT businesses and paperless data transfer in real time. The logistics will not differ from other businesses in the world and if any logistic operator aims to become successful in its job, the investments in IT cannot be avoided. Digitization of procedures, automatic scanning and recognition of registration numbers or faces, enormous quantities of data and security firewalls for the business information are only few of the interventions that are going to be operated in logistic hubs, in order to increase the business flows.

The unification of operating systems and communication tools for the just-in-time sharing of information related to the transported freights, between the operators is something that is becoming real in bigger centres and that needs to be realized all over Europe.

One of the solutions chosen by the port of Koper to speed up administrative and operative activities is the installation of OCR systems for the container terminal. Being the transport of containers one of the fields with the highest rate of growth in the last decade, the implementation at ICT level has been focused on this type of transport.

The target for the port of Koper was already defined in the Port's Development Plans until 2025, when the completion of the second railway track to the port of Koper is planned to be completed. In that case, the target in terms of volumes is about 2mio of TEUs, to be handled through the port of Koper. With the introduction of OCR systems, the operations will become faster and the digitization of data stored and transferred will help to speed up the transport procedures for containers. The pilot activities will help in achieving the target, which will be focused also on the reduction of traffic jams in port's area, by unifying the communication systems for vehicles' recognition and the system for traceability of cargo in the port.

MISSION
(Mission statement focuses on today, what challenges shall we face towards the vision today)

Actual challenges are represented mostly by the digitization of operations and information. By scanning the containers and trucks through the OCR system, the port of Koper will save time on operational processes, will improve data accuracy, will have immediate overview of the status of the freight, will have a big database for analytics, will have ad-hoc solutions but with the aim to introduce or develop the existing system, which should be compatible with interfaces and tools between countries all over EU.

Challenges that the Port of Koper must face are not only operational or limited to the port's area, but they depend also on national strategies and spatial plans. The port's development plan foresees, as said above, that in the next few years the container terminal will reach the impressive capacity of 2mio TEUs. The infrastructure linking the port with the hinterland is also fundamental for the development of the port and considering actual logistic limitations, what can be done by the port is to improve its operative processes and ICT tools.

The most important operative challenges are strictly linked with the digitization of documentation and of procedures accompanying the freights coming/leaving the port. By upgrading ICT tools and introducing a scanning system for the automatic recognition of registration numbers or damages on containers, it would speed up the gate's procedures: considering that from 2021 the port of Koper has opened two new gates, it is fundamental to align all the information from three gates to a unique database not only for

port's employees but for all the other stakeholders on the logistic chain (forwarders, inspectors, customs, transporters, shipping companies etc.).

KEY VALUES
(The principles and values that are the basis of the vision of the strategy)

The basic principles defined to reach the vision strategy are all dictated by the development plans of the port in the next decade and more. What is fundamental at this regard, is the reduction of waiting times and improvement of digitization of processes. They're very few but they're crucial for the achievement of the given objectives:

- To improve the level of services offered to the customers;

- To improve digitization and the transfer of information through the whole logistic chain;

- To improve the level of safety and security in the port and especially at container terminal, where the volumes are constantly growing. The aim is to keep main traffic arteries safe and to avoid traffic jams;

- To specialize some types of employees in order to offer a better service;

- To limit the damages of cargo and containers or to reduce the disputes about the status of containers arriving/leaving the port (potential damages will be detected by scanners and not left to human checks in all weather conditions.

2.1.5. Port Authority of Rijeka

VISION
(Vision statement focuses on tomorrow and set the target aims to be achieved)
To reach the higher level of multimodality, based on improved infrastructure, improved ICT solutions and high level of cooperation in multimodal chain.
MISSION
(Mission statement focuses on today, what challenges shall we face towards the vision today)
To reach a stable, sustainable multimodality in the Port of Rijeka, by improving a set of measures such as stakeholder's involvement, carbon and waste management, regional innovation chains together with joint planning and increasing the port technology and infrastructure.
KEY VALUES
(The principles and values that are the basis of the vision of the strategy)

Multimodality is the key for a sustainable freight transport

Modernization of processes and procedures, through ICT, is pivotal as to ensure sustainability.

Energy efficiency must be reached in all port processes.

2.1.6. Logistik Center Austria Süd GmbH

VISION
(Vision statement focuses on tomorrow and set the target aims to be achieved)

The basic idea behind the digitization of "regional freight transport" is that small and medium-sized customers in the area (shippers themselves or their service providers) should have the lowest possible and, above all, provider-neutral access to the transport system for the last mile -Operation on the rail is created. The aim must be to organize the delivery and collection of wagons from/to the junction as efficiently and thus inexpensively as possible. This can only be done by bundling the foreseeable smaller quantities across all providers, simple and digital organizational structures, and a neutral offer.

The advantage lies both with the regional customers, who have more opportunities to organize their logistics chain cost-effectively and flexibly on the rails. On the other hand, the advantages also lie with the various RUs, who do not have to reserve their own resources for the region and can generate more volume on their main routes overall. However, it is also important that this new concept does not interrupt and/or change the existing structures and partnerships on the market, since resistance is then to be expected automatically.

MISSION
(Mission statement focuses on today, what challenges shall we face towards the vision today)

The IT support must therefore cover two sides, on the one hand the operational level and on the other hand the customer and information level.

In the operational process, the system must first be able to provide interfaces to all EVU systems and thus integrate as smoothly as possible into the system environment of the EVUs. Because the primary customers for last-mile service will be the various RUs that outsource the forwarding of their shipments from the hub to the area and vice versa. What is essential is the neutral access for the customers in the area to eliminate the current provider compulsion.

In addition, offers for regional customers as well as the EVUs can also be integrated, for example to announce the exact arrival time for the provision or collection in the area and in the node or to facilitate operational data collection. The system is also intended to completely digitize the entire process of regional service from booking, order processing, operational processing, billing to tracking.

In order to additionally support the regional effect, the system should be able or offer the possibility at the customer and information level to offer regional customers information and support for the planning, implementation and control of their logistics processes. This can be, for example, simple booking options, tracking and tracing information or the transparent provision of market information. In this area, there are also partnerships with other regions that are pursuing similar approaches and/or could be potential source/destination regions.

KEY VALUES
(The principles and values that are the basis of the vision of the strategy)

1. Accessibility: A key value would be to ensure that the IT tools used are accessible to all users, regardless of their location or technical expertise.
2. Reliability: The IT tools used must be reliable and able to work consistently, even in remote or rural areas.
3. Efficiency: The tools must be efficient and able to handle large amounts of data, as well as provide quick response times.
4. User-Friendliness: The IT tols must be easy to use and understand, even for users who are not tech-savvy.
5. Scalability: Scalability is also important as the IT tools used must be able to scale up or down as needed to accommodate changes in demand.
6. Flexibility: The IT tools must be flexible to meet the unique needs of each rural or peripheral area, as well as adapt to changes in technology and infrastructure.
7. Sustainability: Lastly, sustainability is a critical value to consider.

2.1.7. MAHART Container Center

VISION
(Vision statement focuses on tomorrow and set the target aims to be achieved)

Mahart Container Center will work with paperless administration, automated data transfer, involving as low manual work as possible, optimizing capacities with helping hand of digitalization and data transfer asset tools, software. The manual intervention into the ICT will be necessary when there is a mismatch between data compared. Mahart Container Center will provide smooth loading processes for the trucks with a turn time of less than one hour.

MISSION
(Mission statement focuses on today, what challenges shall we face towards the vision today)

Mahart Container Center will improve in automation of administration and data input. MCC will communicate between with the main stakeholders (customers, operators, railways, other terminals and trucking companies) with the help of ICT (Terminal Operating System – TOS). The communication will be standardized with all parties and must be capable of data transfer without manual intervention, without data error.

Mahart Container Center will improve time of truck turn and data punctuality with introduction of a handheld OCR system, vehicle calling system supported by a barrier and displays. MCC will focus to improve the accessibility of the rural and peripheral areas, with reducing a truck turn time to an average one hour.

KEY VALUES
(The principles and values that are the basis of the vision of the strategy)

Key values are:

- Customers' satisfaction

- Data availability and punctuality

-     Environment protection with paperless work

-     Capacity utilisation with reducing trucks' turn time and fastening trucks' entry

-     Using ICT and automatic data transfer wherever possible

-     Supporting rural and peripheral areas

2.1.8. Hungarian Danube ports by RSOE

VISION
(Vision statement focuses on tomorrow and set the target aims to be achieved)

The Hungarian Danube ports shall become significant and effective multimodal hubs until 2030 in their region's transport system capable to transport the 10% of the domestic freight traffic on the environmental friendly inland waterways.

MISSION
(Mission statement focuses on today, what challenges shall we face towards the vision today)

1. Supporting modal shift
2. Generation of additional demand
3. Establishing financing system
4. Development of human resources
5. Establishing sustainable regulation environment

KEY VALUES
(The principles and values that are the basis of the vision of the strategy)

Modernisation, innovation and digitalisation are key components as to support modal shift

Environmental friendliness is a key principle that needs to be ensured throughout the supply chain

Investing in human resources is essential as to embed digitalisation and environmental protection in daily activities

Improving the competitiveness of multimodal transport is key to greening the last mile

2.1.9. Baltic Container Terminal Gdynia

VISION
(Vision statement focuses on tomorrow and set the target aims to be achieved)
To make ports drivers of positive change and sustainable growth for community and all transport chain stakeholders by offering the same connectivity and accessibility for rural/peripheral areas as for the corridor areas

MISSION
(Mission statement focuses on today, what challenges shall we face towards the vision today)
To build efficient, innovative and sustainable gate operations which responds to market needs facilitating smooth and fast ports/terminal entrance & exit for all.

KEY VALUES
(The principles and values that are the basis of the vision of the strategy)
Respect - We strive to have the highest standards in place to ensure our people and stakeholders are safe, respected and treated fairly.
Trust - We take great pride in working responsibly to earn trust and to keep it.
Collaboration – We present an inclusive approach working together and exploring new ways of doing things to deliver the best possible outcome for all our stakeholders.
Tenacity – We work tirelessly with the utmost determination to achieve our goals and deliver on commitments to partners, stockholders, host communities and the environment.
Passion – We pick up the challenge of exploring new opportunities, creating sustainable benefits for our host communities and protecting the environment, while also delivering returns to our stockholders.

2.1.10. Gruber Logistics

VISION
(Vision statement focuses on tomorrow and set the target aims to be achieved)
Target aims to be achieved by Gruber Logistics are several, but they can be summarized in those topics. Fully paperless transport: try to reduce the use of paper as much as possible for document exchange with suppliers and customers. Horizontal cooperation: carry out cooperation between competing players in the logistics and transport sector for the purpose of optimization and cargo bundling. Digital cooperation: concerning IT systems, implement sharing policies through an articulated system of relationships between the various players in the logistics chain; the topic is by no means trivial, as it involves sharing potential sensitive data within the chain for the ultimate goal of carrying out the complete digitization of operations.

MISSION
(Mission statement focuses on today, what challenges shall we face towards the vision today)

The challenges today faced by Gruber Logistics are several. For the goal of achieving fully paperless transport, transport documents are also exchanged in digital format (for example the CMR document, which becomes eCMR). Furthermore, digital data exchange platforms between suppliers and customers are used by the company. For the objective of horizontal cooperation, IT platforms are constantly used for load sharing and cargo bundling. For digital cooperation, in Gruber Logistics, the first tool to be affected by this dynamic is the company's TMS Transport Management System. Through digital cooperation, that puts this system in contact with that of customers/partner operators/suppliers, it is possible to obtain the direct passage of data from one subject to another, contributing to the objective of creating the so-called platform federations.

KEY VALUES
(The principles and values that are the basis of the vision of the strategy)

The key values on which the vision of the strategy implemented by Gruber Logistics is based can be summarized in two terms. Sustainability, for the environment, for the people who work, for customers and suppliers. Digitalization, to implement the digital transition as much as possible also in the logistics and transport sector.

2.1.11. Port of Rostock

VISION
(Vision statement focuses on tomorrow and set the target aims to be achieved)

Our vision is to attract as much cargo as possible in the near hinterland of Rostock in the federal state Mecklenburg-Vorpommern (rural/peripheral region) and to shift the good flows from road to rail, esp. intermodal rail services. Improving last mile accessibilities by using an ICT tool on the web portal intermodal-rostock.de is put into focus. The customer, especially local forwarder and transport industry will get an easier access to intermodal bookings with this instrument, inclusive the first and last mile transport service.

MISSION
(Mission statement focuses on today, what challenges shall we face towards the vision today)

Identification of transport flows and cargo volumes in the rural/peripheral region "Mecklenburg-Vorpommern" by an external market analysis. A market analysis should find out the customer needs, demands and bottlenecks for choosing intermodal transport solutions and shifting freight from road to rail. Especially intermodal links from the Port of Rostock to destinations in West-, Central-, East- and South-eastern Europe will be considered. The local transport industry will receive more information of intermodal transport flows and get easier access to intermodal services via Rostock by the implementation of an ICT tool on the web portal intermodal-rostock.de

KEY VALUES
(The principles and values that are the basis of the vision of the strategy)

The in-depth view into the transport and logistic industry in Mecklenburg-Vorpommern will provide additional knowledge about requirements and barriers for fostering intermodal transport. Following environmental protection and climate goals new environmentally friendly intermodal transport options will be promoted/fostered to the local transport industry.

2.2. Setting strategic objectives and priorities

Definition of the strategic goals of the project partners to achieve in the domain of improving the last mile accessibility of rural/peripheral areas to TEN-Ts through IT tools in the three domains (if applicable) in a medium (5 years) and long term (10 years).

2.2.1. Port of Trieste and Monfalcone

Medium term (5 years):

- topic no. 1 (VBS)

    Goal no. 1 - Pre-exit notification

    Goal no. 2 - Slot management system

- topic no. 2 (gates)

    Goal no. 3 - PCS integration with gates

Long term (10 years):

- topic no. 1 (VBS)

    Goal no. 4 - e-CMR

Perspectives	Goal #1 – Pre-exit notification	Measurement
1. Environmental and safety perspective	A new PCS procedure allowing to track the exit of vehicles (from disembarkation to gate-out); also integrate the exit direction in the port's procedures; simplify the operation at the gate (and standardise with respect to port tracking at entry); simplify associated customs procedures. This will reduce the time spent at terminals' gates and reduce the related environmental impact	All port systems by law must prepare yearly a comprehensive document (Environmental Energy Planning Documents of the Port Systems DEASP) measuring in detail the carbon footprint of all port activities.
2. Internal processes perspectives	The processes and procedures of the port authority and terminal operators will be harmonized to become a common set of rules	Reduction of number of rules and procedures managed in different ways in the two ports.
3. Innovation and growth perspective	Increased efficiency should lead to a better growth for the port community	Statistics for the two ports.
4. Customer / Partner perspective	Transparency portals on website communicate promptly any change in procedures to stakeholders.	Yearly satisfaction survey is distributed to stakeholders.
5. Financial perspective	Funds from European Projects can help Port System Authority in financing activities toward this goal.	Number of EU projects focused on this goal.

VISION:

To steer the development of the port community by promoting technological innovation and boosting digital growth for a seamless supply chain, better integrating rural and peripheral areas.

Perspectives	Goal #2 – Slot management system	Measurement
1. Environmental and safety perspective	A new PCS procedure to allow the carrier to present himself at the relevant unloading terminal to collect the container, within a previously defined time window. The container to be collected must therefore be unrestricted and the module must interface with the other modules used to control the goods in the container and, in particular, with the "unloading fees" module. This will reduce the time spent at terminals' gates and reduce the related environmental impact	All port systems by law must prepare yearly a comprehensive document (Environmental Energy Planning Documents of the Port Systems DEASP) measuring in detail the carbon footprint of all port activities.
2. Internal processes perspectives	The processes and procedures of the port authority and terminal operators will be harmonized to become a common set of rules	Reduction of number of rules and procedures managed in different ways in the two ports.
3. Innovation and growth perspective	Increased efficiency should lead to a better growth for the port community	Statistics for the two ports.
4. Customer / Partner perspective	Transparency portals on website communicate promptly any change in procedures to stakeholders.	Yearly satisfaction survey is distributed to stakeholders.
5. Financial perspective	Funds from European Projects can help Port System Authority in financing activities toward this goal.	Number of EU projects focused on this goal.

VISION:

To steer the development of the port community by promoting technological innovation and boosting digital growth for a seamless supply chain, better integrating rural and peripheral areas.

Perspectives	Goal #3 – PCS integration with gates	Measurement
1. Environmental and safety perspective	Integrate the data declared in Sinfomar (logistics data) with the data collected at the roadside checkpoints. This will reduce the time spent at terminals' gates and reduce the related environmental impact	All port systems by law must prepare yearly a comprehensive document (Environmental Energy Planning Documents of the Port Systems DEASP) measuring in detail the carbon footprint of all port activities.
2. Internal processes perspectives	The processes and procedures of the port authority, terminal operators, Customs Agency, Finance police and police will be harmonized to become a common set of rules	Reduction of number of rules and procedures managed in different ways in the two ports.
3. Innovation and growth perspective	Increased efficiency should lead to a better growth for the port community	Statistics for the two ports.
4. Customer / Partner perspective	Transparency portals on website communicate promptly any change in procedures to stakeholders.	Yearly satisfaction survey is distributed to stakeholders.
5. Financial perspective	Funds from European Projects can help Port System Authority in financing activities toward this goal.	Number of EU projects focused on this goal.

VISION:

To steer the development of the port community by promoting technological innovation and boosting digital growth for a seamless supply chain, better integrating rural and peripheral areas.

Perspectives	Goal #4 – e-CMR	Measurement
1. Environmental and safety perspective	A new PCS procedure capable of managing the data contained in the electronic CMR and associating them with the data already present in the other Sinfomar modules, with the possibility of exchanging them with Custom Agency and Finance Police through interoperability. This will reduce the time spent at terminals' gates and reduce the related environmental impact	All port systems by law must prepare yearly a comprehensive document (Environmental Energy Planning Documents of the Port Systems DEASP) measuring in detail the carbon footprint of all port activities.
2. Internal processes perspectives	The processes and procedures of the port authority, terminal operators, Customs Agency, Finance police and police will be harmonized to become a common set of rules	Reduction of number of rules and procedures managed in different ways in the two ports.
3. Innovation and growth perspective	Increased efficiency should lead to a better growth for the port community	Statistics for the two ports.
4. Customer / Partner perspective	Transparency portals on website communicate promptly any change in procedures to stakeholders.	Yearly satisfaction survey is distributed to stakeholders.
5. Financial perspective	Funds from European Projects can help Port System Authority in financing activities toward this goal.	Number of EU projects focused on this goal.

VISION:

To steer the development of the port community by promoting technological innovation and boosting digital growth for a seamless supply chain, better integrating rural and peripheral areas.

2.2.2. Zailog Verona

Medium term (5 years):

Topic no. 2 (gates)

- Goal no. 1 - Improvement of an app to put in communication the different operators of the intermodal chain.

- Goal no. 2 - Definition of a set of rules to guarantee the security of data exchanged.

Long term (10 years):

Topic no. 2 (gates)

- Goal no. 3 - Activation of a Freight Village Community System (FVCS) similar to the PCS in the ports

Goal no. 1 - IMPROVEMENT OF AN APP TO PUT IN COMMUNICATION THE DIFFERENT OPERATORS OF THE INTERMODAL CHAIN

Perspectives	Goal	Measurement
1. Environmental and safety perspective	Reduction of the queues outside the terminal gates thanks to the pre-booking procedure that allows a direct access to the terminal using a fast lane.	Daily number of vehicles accessing the terminal through the fast lane.
2. Internal processes perspectives	It is important to define a dedicated access procedure for the vehicles that use only the booking app to enter in the terminal area. In this way, the entire access procedure will be managed automatically by the app, permitting to re-allocate some workers previously involved in the access process and consequently moving them to more productive activities (e.g. train handling).	Number of vehicles using the booking app. This parameter will permit to make a precise estimation of the emissions saved as a consequence of the reduction of queues outside the terminal gates.
3. Innovation and growth perspective	Increasing the space available in the buffer areas thanks to a better arrangement that will permit to accept more trucks (and their loading units) in the terminal, enhancing the overall potential capacity.	Daily number of loading units handled after the implementation of the booking system.
4. Customer / Partner perspective	The MTO (Multimodal Transport Operator) should foster the use of the booking app among the players of the intermodal chain.	Number of operators using the booking app.
5. Financial perspective	The funds can come from European projects like ACCESSMILE which aim is to reduce the inefficiencies in the transport field. In addition, the local authorities (e.g. Municipality) could allocate some incentives in order to	Comparison between the percentage of the IT platform financed by European funds and by the terminal resources.

	decrease the traffic jams in congested areas like the terminal gates.	

VISION:

Zailog is focused on the several targets to improve the accessibility to the Verona freight village that can be summarized in these topics. Terminal gate access: foster the cooperation among the intermodal chain players to ease the access to the terminal area using ICT platforms. The scope is to enhance the data exchange to create a real-time communication focused on the reduction of the inefficiencies (e.g. queues of heavy vehicles outside the terminal gates). Data sharing: increase the collaboration between road and rail operators to put in communication the different IT platforms. The objective is the definition of sharing policies through an articulated set of agreements among the different players of the intermodal chain. The aim is to prevent data leakages since the information exchanged could be sensitive. There is also the opportunity to create an unique platform for the terminal actors with the scope to provide a complete overview as well as to increase the efficiency of the entire node.

Goal no. 2 - DEFINITION OF A SET OF RULES TO GUARANTEE THE SECURITY OF DATA EXCHANGED

Perspectives	Goal	Measurement
1. Environmental and safety perspective	A steady exchange of information will allow a reduction of useless operations as well as a decrease of the pollution.	Daily level of CO_2 emissions after the definition of a set of rules focused on the data security.
2. Internal processes perspectives	The cooperation of all the players involved in the intermodal chain can be enhanced thanks to the data sharing. The result will be an increased coordination of the terminal activities with a consequent optimization of the internal processes.	Reduction of the timing to perform the daily activities.
3. Innovation and growth perspective	The time saved to carry out the daily terminal activities can be used to handle other freight trains, increasing the overall traffic of the node.	Daily number of terminal operations (number of loading units loaded and unloaded, number of gantry cranes movements and number of trains handled every day) after the definition and application of the set of rules.
4. Customer / Partner perspective	A direct communication to each player of the intermodal chain is necessary to describe the advantages of the application of data sharing rules.	Number of partners signing the data sharing agreement.
5. Financial perspective	The funds can come from European projects like ACCESSMILE which aim is to reduce the inefficiencies in the transport field. In addition, the local authorities (e.g. Municipality) could allocate some incentives in order to decrease the traffic jams in congested areas like the terminal gates.	Comparison between the percentage of the expenses necessary to define and implement the data sharing rules financed by European funds and by the Verona freight village resources.

VISION:

Zailog is focused on the several targets to improve the accessibility to the Verona freight village that can be summarized in these topics. Terminal gate access: foster the cooperation among the intermodal chain players to ease the access to the terminal area using ICT platforms. The scope is to enhance the data exchange to create a real-time communication focused on the reduction of the inefficiencies (e.g. queues of heavy vehicles outside the terminal gates). Data sharing: increase the collaboration between road and rail operators to put in communication the different IT platforms. The objective is the definition of sharing policies through an articulated set of agreements among the different players of the intermodal chain. The aim is to prevent data leakages since the information exchanged could be sensitive. There is also the opportunity to create an unique platform for the terminal actors with the scope to provide a complete overview as well as to increase the efficiency of the entire node.

Goal no. 3 - FREIGHT VILLAGE COMMUNITY SYSTEM

Perspectives	Goal	Measurement
1. Environmental and safety perspective	The design and activation of a Freight Village Community System (FVCS) following the existing PCS deployed in some ports will allow a reduction of the overall environment impact. This result will be achieved thanks to the cooperation of the players using this portal that will permit to coordinate their actions, avoiding waste and useless operations.	Comparison of the % of CO_2 emissions before and after the implementation of the FVCS.
2. Internal processes perspectives	Identification of an impartial subject to manage all the information provided by the partners and able to give the priority to the urgent operations.	Identification of the number of processes improved after the deployment of the FVCS.
3. Innovation and growth perspective	The increase of the communications and of data exchanged will permit to raise the traffic volumes, exploiting the savings of time produced by the system.	Number of new connections that will be activated among the nodes involved.
4. Customer / Partner perspective	The communication to the partners to involve must be carried out through B2B meetings in order to reach an agreement about the data to share and of the actions to perform.	Number of the partners involved in the FVCS compared to the B2B meetings carried out.
5. Financial perspective	The funds can come from European projects like COMODALCE which aim is to reduce the inefficiencies in the transport field. In addition, the infrastructure manager of the freight village could invest a part of its own resources after the elaboration of a detailed analysis of the FVCS impacts based on specific forecasts.	% of the FVCS financed by European funds and % financed by freight village resources.

VISION:

Zailog is focused on the several targets to improve the accessibility to the Verona freight village that can be summarized in these topics. Terminal gate access: foster the cooperation among the intermodal chain players to ease the access to the terminal area using ICT platforms. The scope is to enhance the data exchange to create a real-time communication focused on the reduction of the inefficiencies (e.g. queues of heavy vehicles outside the terminal gates). Data sharing: increase the collaboration between road and rail operators to put in communication the different IT platforms. The objective is the definition of sharing policies through an articulated set of agreements among the different players of the intermodal chain. The aim is to prevent data leakages since the information exchanged could be sensitive. There is also the opportunity to create an unique platform for the terminal actors with the scope to provide a complete overview as well as to increase the efficiency of the entire node.

2.2.3. Port of La Spezia and Marina di Carrara

Medium term (5 years):

- topic no. 1 (VBS)

    Goal no. 1 – Heavy Goods Vehicle flow detection system

- topic no. 2 (gates)

    Goal no. 2 - Advance notice of arrival at the port gate

    Goal no. 3 - PCS integration with gates

Long term (10 years):

- topic no. 1 (VBS)

    Goal no. 4 – Digital twin for road infrastructure

Perspectives	Goal #1 – Heavy Goods Vehicle flow detection system	Measurement
1. Environmental and safety perspective	Constant updates (every 10') of the vehicles heading to the port of La Spezia given both to the individual road haulage companies for their vehicles and to the Port System, in order to estimate the time of arrival, and calculate any delays related to traffic/accidents on the way to the Port. This will reduce the travel time and reduce the related environmental impact	Level of Service of the Arrival at the port.
2. Internal processes perspectives	The processes and procedures of the port authority and road haulage companies will be harmonized to become a common set of rules	Reduction of number of rules and procedures managed in different ways.
3. Innovation and growth perspective	Increased efficiency should lead to a better growth for the port community	Statistics for the Arrival at the port.
4. Customer / Partner perspective	Constant meetings communicate promptly any change in procedures to stakeholders.	Satisfaction survey is distributed to stakeholders.
5. Financial perspective	Funds from European Projects can help Port System Authority in financing activities toward this goal.	Number of EU projects focused on this goal.

VISION:

To steer the development of the port community by promoting technological innovation and boosting digital growth for a seamless supply chain, better integrating rural and peripheral areas.

ACCESSMILE

Perspectives	Goal #2 – Advance notice of arrival at the port gate	Measurement
1. Environmental and safety perspective	Share in advance and in an automated way with the Port Authority IT systems some information related to the truck missions in order to anticipate the checks in terms of security and authorizations, anticipating the «Arrival Notice» and with the passage of the vehicles through the so-called «Virtual Temporal Gates», the supply of a configurable ETA. This will reduce the time spent at terminals' gates and reduce the related environmental impact	Level of Service of the Arrival at the port.
2. Internal processes perspectives	The processes and procedures of the port authority and road haulage companies will be harmonized to become a common set of rules	Reduction of number of rules and procedures managed in different ways.
3. Innovation and growth perspective	Increased efficiency should lead to a better growth for the port community	Statistics for the Arrival at the port.
4. Customer / Partner perspective	Constant meetings communicate promptly any change in procedures to stakeholders.	Satisfaction survey is distributed to stakeholders.
5. Financial perspective	Funds from European Projects can help Port System Authority in financing activities toward this goal.	Number of EU projects focused on this goal.

VISION:

To steer the development of the port community by promoting technological innovation and boosting digital growth for a seamless supply chain, better integrating rural and peripheral areas.

Perspectives	Goal #3 – PCS integration with gates	Measurement
1. Environmental and safety perspective	Integrate the data declared in the Port Community System APnet with the data collected at the virtual gates. This will reduce the time spent at terminals' gates and reduce the related environmental impact	Level of Service of the Arrival at the port.
2. Internal processes perspectives	The processes and procedures of the port authority and road haulage companies will be harmonized to become a common set of rules	Reduction of number of rules and procedures managed in different ways.
3. Innovation and growth perspective	Increased efficiency should lead to a better growth for the port community	Statistics for the Arrival at the port.
4. Customer / Partner perspective	Constant meetings communicate promptly any change in procedures to stakeholders.	Satisfaction survey is distributed to stakeholders.
5. Financial perspective	Funds from European Projects can help Port System Authority in financing activities toward this goal.	Number of EU projects focused on this goal.

VISION:

To steer the development of the port community by promoting technological innovation and boosting digital growth for a seamless supply chain, better integrating rural and peripheral areas.

Perspectives	Goal #4 – Digital twin for road infrastructure	Measurement
1. Environmental and safety perspective	A new tool (digital twin) will be capable of managing the so-called "Virtual Gates" using an "Expected Time of Arrival at the port" approach, on all road connections (roads/motorways) to the port, defining in the testing phase and depending on the case, a time of interest (example: 30 minutes, 1 hour, 2 hours) to allow in advance verification of the necessary data present and to recover them, in case they are missing. This will reduce the time spent at terminals' gates and reduce the related environmental impact	Level of Service of the Arrival at the port.
2. Internal processes perspectives	The processes and procedures of the port authority and road haulage companies will be harmonized to become a common set of rules	Reduction of number of rules and procedures managed in different ways.
3. Innovation and growth perspective	Increased efficiency should lead to a better growth for the port community	Statistics for the Arrival at the port.
4. Customer / Partner perspective	Constant meetings communicate promptly any change in procedures to stakeholders.	Satisfaction survey is distributed to stakeholders.
5. Financial perspective	Funds from European Projects can help Port System Authority in financing activities toward this goal.	Number of EU projects focused on this goal.

VISION:

To steer the development of the port community by promoting technological innovation and boosting digital growth for a seamless supply chain, better integrating rural and peripheral areas.

2.2.4. Port of Koper

Medium term (5 years):

    - topic no. 2 (gates) – Goal no. 1: Equip all port's gates with OCR systems.

Long term (10 years):

    - topic no. 2 (gates) – Goal no. 2: Automation of processes at container terminal and port's gates.

For each goal, the following tables are prepared:

Goal no. 1: Equip all port's gates with OCR systems

Perspectives	Goal	Measurement
1. Environmental and safety perspective	From the environmental point of view, what can be done now is the unification of clearance procedures to reduce the waiting times and the pollution caused by waiting vehicles outside and inside the port.	The progress can be measured through the sensors for pollution installed all around the port, by the analysis of waiting times and reasons for waiting.
2. Internal processes perspectives	With the installation of an OCR system for trucks, the procedures can be speeded up just by recording the videos of the arrival/departure of vehicles and containers. It will be recorded and will clearly show the status of the incoming/leaving container.	The efficiency can be measured through the number of trucks handled per day or per month, which can be considerable higher, after the installation of the OCR system, which offers also an accurate view of the incoming vehicles and containers.
3. Innovation and growth perspective	One of the expected improvements in the port of Koper is the progressive digitization of all the administrative procedures in the port. By installing the OCR system, it will be a further step towards the digital data transfer and their collection, for a future automation of processes in the port.	The progress is measurable again through the number of handled trucks per day or per month, while comparing it before and after the installation of the OCR system.
4. Customer / Partner perspective	The customers should be constantly informed about the progresses and the innovations provided in the port operations. If a new tool is available, it should be presented to the partners during a specifically dedicated meeting or through workshops for users, with instructions provided for the new tools or by offering the	The progress can be measured simply by recording the number of customers using the new tools and being linked with the new service offered by the port.

	support of experts, which will guide the customers through the use of new technologies.	
5. Financial perspective	The innovations and new tools adopted for the achievements of the defined objectives can represent a revenue in terms of time gained, faster operational procedures, reduction of the number of employees working on the field, safer work and less damages and accidents etc.	The progress is measurable through the financial achievements in terms of saved money or better, through the profits made after the installation of the new tools and the introduction of the new system.

VISION:

The work that is expected in next years will be more and more oriented on the IT businesses and data transfer in real time. The logistics will not differ from other businesses in the world and if any logistic operator aims to become successful in its job, the investments in IT cannot be avoided. Digitization of procedures, automatic scanning and recognition of vehicles' plate numbers, face recognitions, enormous quantities of saved data, stronger security firewalls for the business information, are only few of the interventions that are going to be operated in logistic hubs, to keep the business flows alive.

The unification of operating systems and communication tools for the just-in-time sharing of information related to the transported freights between the operators, is something that is becoming real in bigger centres and that needs to be realized as soon as possible.

One of the solutions chosen by the port of Koper to speed up administrative and operative activities is the installation of an OCR system for trucks at one of the gates of the port. Being the transport of containers one of the fields with the highest rate of growth in the last decade, the implementation at ICT level has been focused on this type of transport.

The target for the port of Koper was already defined in the Port's Development Plans until 2025, when the completion of the second railway track to the port of Koper is planned to be completed. In that case, the target in terms of capacities / volumes is of about 2mio of TEUs to be handled through the port of Koper. With the OCR system, the operations will become faster, and the digitization of data stored and transferred will help the automation of procedures for the transport by trucks. The pilot activities will help in achieving the target, by unifying the communication systems and using digital data for the administration as well as for the traceability of containers in port's area.

For what regards the long-term topic, the following table is available for discussion:

Goal no. 2: Automation of processes at container terminal and port's gates

Perspectives	Goal	Measurement
1. Environmental and safety perspective	From the environmental point of view, the automation of processes will speed up procedures and will make them more reliable, not being subject to human intervention. It will have a positive effect on traffic, especially in terms of reduction of pollution, which is caused by waiting vehicles in port's area.	The progress can be measured through the long-term registration of data produced by sensors for pollution installed in the port, by the analysis of emissions and by defining additional measures in case further interventions are possible from an environmental point of view.
2. Internal processes perspectives	With the extension of the installation of OCR system for trucks to all the gates, the procedures will be speeded up and it will allow all the stakeholders involved to be informed about the cargo and status of operations at any time. Each passage through the gates will be recorded and will also clearly show the status of the incoming/leaving container (passage time, damages, data about vehicle transporting the cargo etc.).	The efficiency can be measured through the number of trucks handled per day or per month, which can be considerable higher, after the installation of the OCR system at each gate, which would offer also an accurate view of the incoming vehicles and containers.
3. Innovation and growth perspective	The progressive digitization of all the administrative procedures in the port will also offer the possibility to integrate the new system with the equipment already used at terminals, like cameras on cranes, traffic video control system, radars etc. The installation of an OCR system at each gate, will be a further step towards the digitalization of the port, which will lead to a future automation of processes in the port's area.	The progress is measurable again through the number of handled trucks per day or per month, while comparing it before and after the installation of the OCR system. Also the statistics related to the number of accidents and errors will help understanding the contribution provided by the OCR system in port's area.
4. Customer / Partner perspective	The customers should be constantly informed about the progresses and the innovations provided in the port operations. The availability of new tools, should be presented to the stakeholders during a specifically dedicated meeting or through workshops for users, with instructions	The progress can be measured simply by recording the number of customers using the new tools and being linked with the new service offered by the port.

	provided for the new solutions introduced or by offering the support from experts, which will guide the users through the new solutions.	
5. Financial perspective	The innovations and new tools adopted for the achievements of the defined objectives can represent a revenue in terms of time gained not only for the operational procedures but also for the forwarders and shipping companies which can be more reliable and successful on the logistic chain. Faster operational procedures can also be accompanied by a reduction of the number of employees working on the field, which would lead to safer working conditions and less damages or accidents etc.	The progress is measurable through the financial achievements in terms of saved money or better, through the profits made after the installation of the new tools and the introduction of the new system. The statistics about accidents and damages can also accompany the analysis, which would allow to have a better view on the results related to the digitization of processes in port's area.

VISION:

The work that is expected in next years will be more and more oriented on the IT businesses and data transfer in real time. The logistics will not differ from other businesses in the world and if any logistic operator aims to become successful in its job, the investments in IT cannot be avoided. Digitization of procedures, automatic scanning and recognition of vehicles' plate numbers, face recognitions, enormous quantities of saved data, stronger security firewalls for the business information, are only few of the interventions that are going to be operated in logistic hubs, to keep the business flows alive.

The unification of operating systems and communication tools for the just-in-time sharing of information related to the transported freights between the operators, is something that is becoming real in bigger centres and that needs to be realized as soon as possible.

One of the solutions chosen by the port of Koper to speed up administrative and operative activities is the installation of an OCR system for trucks at one of the gates of the port. Being the transport of containers one of the fields with the highest rate of growth in the last decade, the implementation at ICT level has been focused on this type of transport.

The target for the port of Koper was already defined in the Port's Development Plans until 2025, when the completion of the second railway track to the port of Koper is planned to be completed. In that case, the target in terms of capacities / volumes is of about 2mio of TEUs to be handled through the port of Koper. With the OCR system, the operations will become faster, and the digitization of data stored and transferred will help the automation of procedures for the transport by trucks. The pilot activities will help in achieving the target, by unifying the communication systems and using digital data for the administration as well as for the traceability of containers in port's area.

2.2.5. Port Authority of Rijeka

Medium term (5 years):

1. topic no. 1 Digital identity card
2. topic no. 2 Time Slot management system

Long term (10 years):

1. topic no. 1– Goal no. 3 Integration with future PCS system

Perspectives	Goal 1 Digital identity card	Measurement
1. Environmental and safety perspective	. The new system will endow port users with an easier and more practical way of obtaining permits with efficient use of time and material resources, optimising transport flows in/out of the Port of Rijeka, reducing congestion at the port entrance and on the city streets leading to the port terminals.	1 Monitoring the state of environment 2. Setting up the environmental (carbon) management 3. Preparation of Ship Waste Management Plan and its harmonization with Energy Development Strategy of the Republic of Croatia until 2030 with a view to 2050
2. Internal processes perspectives	Speeding up internal administrative procedures	Improvement of access control system
3. Innovation and growth perspective	1. Enhancing the cross-sectoral cooperation 2. Integration of transport sector into the social and economic development of the region 3. Improvement of rail freight connections 4. Improvement the safety of a road system 5. Improve the development and competitiveness of the Port of Rijeka as the main maritime port	Increasing the road accessibility of areas, where the existing infrastructure reached the capacity limits and alternative modes (rail, maritime PT) are not economically justifiable (touristic centres in Adriatic Dalmatia) including the introduction of a sustainable traffic concept in favour of PT and zero emission modes
4. Customer / Partner perspective	Changes in procedures to stakeholders, in all areas, must be announced in a timely manner and made available to everyone, through web portals and mobile applications.	half-yearly reports on the effectiveness of the system
5. Financial perspective	The approval of EU funds enables the rapid realization of goals	Participation in the EU projects

VISION:

To reach the higher level of multimodality, based on improved infrastructure, improved ICT solutions and high level of cooperation in multimodal chain.

Perspectives	Goal 2 Time slot management system	Measurement
1. Environmental and safety perspective	The new system will endow port users with an easier and more practical way of obtaining permits with efficient use of time and material resources, optimising transport flows in/out of the Port of Rijeka, reducing congestion at the port entrance and on the city streets leading to the port terminals.	1 Monitoring the state of environment 2. Setting up the environmental (carbon) management 3. Preparation of Ship Waste Management Plan and its harmonization with Energy Development Strategy of the Republic of Croatia until 2030 with a view to 2050
2. Internal processes perspectives	Speeding up internal administrative procedures	Improvement of access control system
3. Innovation and growth perspective	1. Enhancing the cross-sectoral cooperation 2. Integration of transport sector into the social and economic development of the region 3. Improvement of rail freight connections 4. Improvement the safety of a road system 5. Improve the development and competitiveness of the Port of Rijeka as the main maritime port	Increasing the road accessibility of areas, where the existing infrastructure reached the capacity limits and alternative modes (rail, maritime PT) are not economically justifiable (touristic centres in Adriatic Dalmatia) including the introduction of a sustainable traffic concept in favour of PT and zero emission modes
4. Customer / Partner perspective	Changes in procedures to stakeholders, in all areas, must be announced in a timely manner and made available to everyone, through web portals and mobile applications.	half-yearly reports on the effectiveness of the system
5. Financial perspective	The approval of EU funds enables the rapid realization of goals	Participation in the EU projects

VISION:

To reach the higher level of multimodality, based on improved infrastructure, improved ICT solutions and high level of cooperation in multimodal chain.

Perspectives	Goal 3. Integration with future PCS system	Measurement
1. Environmental and safety perspective	Integration of all data with the new psc system will enable even better efficiency of passage and records through port terminals	1 Monitoring the state of environment 2. Setting up the environmental (carbon) management 3. Preparation of Ship Waste Management Plan and its

		harmonization with Energy Development Strategy of the Republic of Croatia until 2030 with a view to 2050
2. Internal processes perspectives	Speeding up internal administrative procedures and better record off data including sharing with police, harbour master and Custom	Improvement of access control system
3. Innovation and growth perspective	1. Enhancing the cross-sectoral cooperation 2. Integration of transport sector into the social and economic development of the region 3. Improvement of rail freight connections 4. Improvement the safety of a road system 5. Improve the development and competitiveness of the Port of Rijeka as the main maritime port	Increasing the road accessibility of areas, where the existing infrastructure reached the capacity limits and alternative modes (rail, maritime PT) are not economically justifiable (touristic centres in Adriatic Dalmatia) including the introduction of a sustainable traffic concept in favour of PT and zero emission modes
4. Customer / Partner perspective	Changes in procedures to stakeholders, in all areas, must be announced in a timely manner and made available to everyone, through web portals and mobile applications.	half-yearly reports on the effectiveness of the system
5. Financial perspective	The approval of EU funds enables the rapid realization of goals	Participation in the EU projects

VISION:

To reach the higher level of multimodality, based on improved infrastructure, improved ICT solutions and high level of cooperation in multimodal chain.

2.2.6. Logistik Center Austria Süd GmbH

Medium term (5 years):

topic no. 1 (VBS) – Goal no. 1

topic no. 2 (gates) - Goal no. 2:

topic no. 3 (cargo bundling) – Goal no. 3

Goal No. 1: Identification of cargo volume in the peripheral regions of Carinthia which can be bundled for intermodal transport via the Cargo Terminal Fürnitz

Goal No. 2: Reducing barriers for the local industry in setting up transparent software platform for intermodal transport via the terminal Fürnitz

Long term (10 years):

topic no. 1 (VBS) – Goal no. 4

topic no. 2 (gates) - Goal no. 5:

topic no. 3 (cargo bundling) – Goal no. 6

Goal No. 3: Integration of all stakeholders in the supply chain using the ICT platform as an information base for intermodal transport.

Perspectives	Goal 1	Measurement
1. Environmental and safety perspective	Reduction of CO_2 emissions by avoidance of empty or half-empty load transportation	Tons of CO_2 equivalent per ton transported
2. Internal processes perspectives	Optimization of routing by efficient planning to save time and travel distance	Saving of time and distance
3. Innovation and growth perspective	For the first time, a model will be developed for the peripheral regions in Carinthia that brings together the various stakeholders of the supply chain and these can also benefit from that model	Number of companies and number of volume
4. Customer / Partner perspective	Involvement of all stakeholders in a transparent communication process right from the start	Number of existent and new stakeholders

5. Financial perspective	If a correspondingly high level of commitment can be achieved from various companies in the supply chain, then financing options will be explored in order to ensure implementation	Number of submitted and approved applications for funding

VISION:

Providing last mile accessibility to rural and peripheral areas is essential for connecting them to the TEN-Ts infrastructure. To create a strategic framework for improving last mile accessibility, we need to consider various factors such as the local terrain, existing transport infrastructure, population density, and accessibility requirements.

One approach is to leverage an IT platform to identify the most efficient routes and modes of transportation. For instance, we can use data analytics to determine the most commonly used routes in the area and identify any bottlenecks or areas of congestion.

Ultimately, the key to success is collaboration between stakeholders, including local governments, transportation operators, and technology providers. By working together and leveraging the latest IT tools and strategies, we can improve last mile accessibility and create a more connected, sustainable transportation system for everyone.

Perspectives	Goal 2	Measurement
1. Environmental and safety perspective	Reduction of CO_2 emissions by avoidance of empty or half-empty load transportation	Tons of CO_2 equivalent per ton transported
2. Internal processes perspectives	Using a newly developed IT information platform, local industry is shown how their current processes compare to optimized processes	Number of potential users
3. Innovation and growth perspective	Optimization of routing by efficient planning to save time and travel distance	Saving of time and distance
4. Customer / Partner perspective	Involvement of all stakeholders in a transparent communication process right from the start	Number of existent and new stakeholders
5. Financial perspective	If a correspondingly high level of commitment can be achieved from various companies in the supply chain, then financing options will be explored in order to ensure implementation	Number of submitted and approved applications for funding

VISION:

Providing last mile accessibility to rural and peripheral areas is essential for connecting them to the TEN-Ts infrastructure. To create a strategic framework for improving last mile accessibility, we need to consider various factors such as the local terrain, existing transport infrastructure, population density, and accessibility requirements.

One approach is to leverage an IT platform to identify the most efficient routes and modes of transportation. For instance, we can use data analytics to determine the most commonly used routes in the area and identify any bottlenecks or areas of congestion.

Ultimately, the key to success is collaboration between stakeholders, including local governments, transportation operators, and technology providers. By working together and leveraging the latest IT tools and strategies, we can improve last mile accessibility and create a more connected, sustainable transportation system for everyone.

Perspectives	Goal 3	Measurement
1. Environmental and safety perspective	Reduction of CO_2 emissions by avoiding empty or half-empty load transportation, shift from road to rail to the bundling hub	Tons of CO_2 equivalent per ton transported, number of generated intermodal transportations
2. Internal processes perspectives	Better definition and overview of the transport process by making the flows transparent	Number of users of the platform
3. Innovation and growth perspective	Innovation by a new and yet not existing IT system mirroring the whole regional transport system used by as much as possible stakeholders within the supply chain	Number of users of the platform
4. Customer / Partner perspective	Integrate as much partners as possible within the region, not just in the pilot phase but also when product is available on market	Number of partners and users

VISION:

Providing last mile accessibility to rural and peripheral areas is essential for connecting them to the TEN-Ts infrastructure. To create a strategic framework for improving last mile accessibility, we need to consider various factors such as the local terrain, existing transport infrastructure, population density, and accessibility requirements.

One approach is to leverage an IT platform to identify the most efficient routes and modes of transportation. For instance, we can use data analytics to determine the most commonly used routes in the area and identify any bottlenecks or areas of congestion.

Ultimately, the key to success is collaboration between stakeholders, including local governments, transportation operators, and technology providers. By working together and leveraging the latest IT tools and strategies, we can improve last mile accessibility and create a more connected, sustainable transportation system for everyone.

2.2.7. MAHART Container Center

Medium term (5 years):

- topic no. 1 (VBS) – Goal no. 1
- topic no. 2 (gates) - Goal no. 2:
- topic no. 3 (cargo bundling) – Goal no. 3

Long term (10 years):

- topic no. 1 (VBS) – Goal no. 4
- topic no. 2 (gates) - Goal no. 5:
- topic no. 3 (cargo bundling) – Goal no. 6

Goal no.1. – Medium term

Vehicle Booking Systems/pre-arrival or pre-exit notification, port/terminal gates

Perspectives	Goal	Measurement
1. Environmental and safety perspective	Terminal should make sure that the trucks are waiting at a designated, safe area and not in a queue. The trucks will be called in when there is a slot for handling the particular truck, avoiding congestion in front of the terminal.	- average waiting and turn time of a truck - saved fuel during waiting at a parking place with stopped motor vs. standing in a queue with operating motor - accident rate
2. Internal processes perspectives	All trucks can enter under the handheld OCR solution, data and conditions of all tucks will be automatically uploaded into the system. Less manual input needed, with less data error.	- number of arriving trucks per container inspector personnel - number of manual correction needed on data read by OCR solution
3. Innovation and growth perspective	We can use the vehicle booking system selected by a benchmark study, carried out together with other PPs, with sharing best practices. With use of OCR solution and data identification the available capacity can be better utilised, providing further capacities for growth.	- number of trucks entering terminal - Number of trucks and containers handled by the terminal annually
4. Customer / Partner perspective	Customers / Partners will get faster service, farther areas can be reached within one day by a truck. Customers will prefer MCC service compared with others	- customer satisfaction - average truck turn time at the terminal
5. Financial perspective	ICT developments will be financed partly through Accessmile funds, while other improvements (e.g. increase entry lanes) will be financed by MCC	- financing ratio (Accessmile vs own financing) - finance need after finishing Accessmile project (between years 2-5)

VISION:

Mahart Container Center will work with paperless administration, automated data transfer, involving as low manual work as possible, optimizing capacities with helping hand of digitalization and data transfer asset tools, software. The manual intervention into the ICT will be necessary when there is a mismatch between data compared. Mahart Container Center will provide smooth loading processes for the trucks with a turn time of less than one hour.

Goal no.2. – Medium Term

Port/terminal gates and interoperability among public/private IT systems;

Perspectives	Goal	Measurement
1. Environmental and safety perspective	Terminal's ICT system should be developed that truck drivers/companies can pre-book time slot at the terminal via their public/ private IT systems, in order to reduce waiting time at the terminal.	- average waiting and turn time of a truck - saved fuel during waiting by avoiding standing in a queue with operating motor - accident rate
2. Internal processes perspectives	All trucks can pre-book a time slot and pre-announce truck's expected arrival time. When truck enters the terminal, the system already knows if truck is expected and can be directed to the right loading / unloading place	- number of arriving trucks per administration personnel - number of arriving trucks that pre-booked time slot
3. Innovation and growth perspective	We can check whether there is a best practice which we can use for these purposes, through a benchmark study. The available throughput capacity can be better utilised, providing further capacities for growth.	- number of trucks entering terminal - Number of trucks and containers handled by the terminal annually
4. Customer / Partner perspective	Trucks should wait less for loading/unloading at the terminal, so Customers / Partners will get faster service, farther areas can be reached within one day by a truck. Customers will prefer MCC service compared with others	- customer satisfaction - average truck turn time at the terminal
5. Financial perspective	ICT developments will be financed partly through Accessmile funds, while other improvements (e.g. increase entry lanes) will be financed by MCC	- financing ratio (Accessmile vs own financing) - finance need after finishing Accessmile project (between years 2-5)

VISION:

Mahart Container Center will work with paperless administration, automated data transfer, involving as low manual work as possible, optimizing capacities with helping hand of digitalization and data transfer asset tools, software. The manual intervention into the ICT will be necessary when there is a mismatch between data compared. Mahart Container Center will provide smooth loading processes for the trucks with a turn time of less than one hour.

Goal no.3. – Long Term

Vehicle Booking Systems/pre-arrival or pre-exit notification, port/terminal gates

Perspectives	Goal	Measurement
1. Environmental and safety perspective	Much less fuel consumed, consequently less CO_2 released to the air, that will protect environment	- CO footprint - saved fuel
2. Internal processes perspectives	New entry / exit system of the terminal, more lanes for entry. Truck checking with handheld OCR supports the work of the staff, improved processes	- number of trucks handled annually vs number of container inspector staff
3. Innovation and growth perspective	With more reliable data, more and more partners/trucks will be involved in automated data process, ending with all partners involved and no papers used.	- number of partners, customers using VBS and pre-arrival notification
4. Customer / Partner perspective	Partners, customers also need to automate processes, that means more efficient administration at their side too.	- trucks turn time - data punctuality improvement: number of customers' complaints
5. Financial perspective	Roll-out of the pilot project will be financed by MCC	- amount of financing needed by partner roll-out

VISION:

Mahart Container Center will work with paperless administration, automated data transfer, involving as low manual work as possible, optimizing capacities with helping hand of digitalization and data transfer asset tools, software. The manual intervention into the ICT will be necessary when there is a mismatch between data compared. Mahart Container Center will provide smooth loading processes for the trucks with a turn time of less than one hour.

Goal no.4. – Long Term

Port/terminal gates and interoperability among public/private IT systems;

Perspectives	Goal	Measurement
1. Environmental and safety perspective	Both at trucking companies and MCC , automated processes, paperless, more efficient loading	- truck turn time - truck average waiting time
2. Internal processes perspectives	Administrative staff can easily check if truck was expected or not and direct the diver to the loading place	- number of trucks handled annually vs number of administrative staff
3. Innovation and growth perspective	MCC will be the most innovative terminal in Budapest and can jointly grow with the customers, handling more trains and containers at MCC	- number of customers at the terminal - number of tucks and containers handled annually
4. Customer / Partner perspective	Partners, customers also need to automate processes, that means more efficient administration at their side too.	- number of partners using time slot booking - data punctuality improvement: number of customers' complaints
5. Financial perspective	Roll-out of the pilot project will be financed by MCC	- amount of financing needed by partner roll-out
VISION: Mahart Container Center will work with paperless administration, automated data transfer, involving as low manual work as possible, optimizing capacities with helping hand of digitalization and data transfer asset tools, software. The manual intervention into the ICT will be necessary when there is a mismatch between data compared. Mahart Container Center will provide smooth loading processes for the trucks with a turn time of less than one hour.		

2.2.8. Hungarian Danube ports by RSOE

Medium term (5 years):

- topic no. 2 (gates) - Goal no. 1: Improvement of port entry/exit efficiency in some Hungarian ports by using IT tool

Long term (10 years):

- topic no. 2 (gates) - Goal no. 2: Improvement of port entry/exit efficiency in all Hungarian ports by using IT tool

Goals no. 1 and 2: Improvement of port entry/exit efficiency in Hungarian ports by using IT tool

Perspectives	Goal	Measurement
1. Environmental and safety perspective	Improved port entry/exit information system will also enhance the environmental and safety aspects of the ports.	Environmental: less pollution because of modernised port entry/exit Safety: Enhanced and more effective port entry/exit will conclude less accidents (e.g. better organised truck traffic)
2. Internal processes perspectives	Improvement of internal processes will be necessary because introduction of new system.	More effective and modernised processes can be measured by reduced time and efforts of port processes.
3. Innovation and growth perspective	Digitalisation will bring innovation and growth possiblities.	Number of partner users (e.g. truck drivers) growth will measure effectivity of the system and innovation level.
4. Customer / Partner perspective	Improved and more comfortable modern services will raise customer satisfaction.	Customer acceptance of the system and satisfaction can be measured by surveys or feedbacks.
5. Financial perspective	Effectivity and satisfaction growth will lead to financial increase as well.	Financial income or port traffic volumes can be measured.

VISION:

The Hungarian Danube ports shall become significant and effective multimodal hubs until 2030 in their region's transport system capable to transport the 10% of the domestic freight traffic on the environmental friendly inland waterways.

2.2.9. Baltic Container Terminal Gdynia

Medium term (5 years):

- topic no. 2 (gates) - Goal no. 1: Reduce to zero the danger of the overweight trucks leaving terminal by protecting the interest of all stakeholders, community and environment

Long term (10 years):

- topic no. 2 (gates) - Goal no. 2: Secure the best and the most innovating gate operations to eliminate all obstacles and inefficiencies and facilitate the growth for all our stakeholders and port community

Goal no. 1 - Reduce to zero the danger of the overweight trucks leaving terminal by protecting the interest of all stakeholders, community and environment

Perspectives	Goal	Measurement
1. Environmental and safety perspective	Reducing CO_2 emissions from overloaded road trucks which have a larger carbon footprint. Protecting major roads from damage by overloaded trucks.	CO_2 emission measurements Monitoring of roads conditions
2. Internal processes perspectives	We should to include scale procedure into our general gate operations defining steps to follow when truck present overweight	The new gate procedure and evidence of irregular incidents
3. Innovation and growth perspective	Application of the newest and the most innovating technology	The number of the new innovating technology applied
4. Customer / Partner perspective	We should consult the pilot solution when designing and invite partners in testing phase	The number of consultations and partners involved in the process
5. Financial perspective	Reduction of expenses caused by letting overweight truck leaving the terminal by application exit scale solution	The number of the overweight fines received

VISION:

To make ports drivers of positive change and sustainable growth for community and all transport chain stakeholders by offering the same connectivity and accessibility for rural/peripheral areas as for the corridor areas

Goal no. 2: Secure the best and the most innovating gate operations to eliminate all obstacles and inefficiencies and facilitate the growth for all our stakeholders and port community

Perspectives	Goal	Measurement
1. Environmental and safety perspective	Further reducing CO2 emissions from all of our activities – e.g. powering the entire scales system from alternative low-carbon energy sources, solar panels/wind energy	CO2 emissions measurements Percentage of consumed energy provided by green-energy solutions in BCT
2. Internal processes perspectives	Constant monitoring and improving gate operations	The new gate procedure updates and evidence of any irregular incidents
3. Innovation and growth perspective	Application of the newest and the most innovating technology to facilitate gate operations	> The number of the new innovating technology applied
4. Customer / Partner perspective	Involvement of partners, customers, and community in the innovating process	The number of consultations and partners involved
5. Financial perspective	Reduction of cost caused by gate operations	Monitoring the costs

VISION:

To make ports drivers of positive change and sustainable growth for community and all transport chain stakeholders by offering the same connectivity and accessibility for rural/peripheral areas as for the corridor areas

2.2.10. Gruber Logistics

Medium term (5 years):

topic no. 3 (cargo bundling)

Goal no. 1 - Development of an app for management of carriers in Poland

Long term (10 years):

topic no. 3 (cargo bundling)

Goal no. 2: Integration of the company TMS in a federation of platforms

For each of the aforementioned goals, the following table is provided.

Goal no. 1 - Development of an app for management of carriers in Poland

Perspectives	Goal	Measurement
1. Environmental and safety perspective	Reduce the CO2 emissions per units carried by cargo bundling	Tons of CO2 equivalent per ton transported
2. Internal processes perspectives	Better definition of the process of acquisition of new carriers	Number of suppliers provided by the app
3. Innovation and growth perspective	Innovation in digital cooperation between the transport operators	Number of new cooperation relations implemented
4. Customer / Partner perspective	Communication that the ethical code is extended also to carriers	Number of new communication campaigns implemented
5. Financial perspective	Public financing of R&D projects	Number of projects financed

VISION:
Target aims to be achieved by Gruber Logistics are several, but they can be summarized in those topics. Fully paperless transport; horizontal cooperation; digital cooperation.

Goal no. 2 - Integration of the company TMS in a federation of platforms

Perspectives	Goal	Measurement
1. Environmental and safety perspective	CO2 savings possible by synchronizing transport movements	Tons of CO2 equivalent per ton transported
2. Internal processes perspectives	Adapting of TMS processes to the standards of the federation	Number of TMS function integrated
3. Innovation and growth perspective	Changing of perspective in data entry	Number of new transport procedures implemented
4. Customer / Partner perspective	Communication of the digital cooperation initiatives carried out	Number of new communication campaigns implemented
5. Financial perspective	Private and public funding of R&D projects	Number of projects financed

VISION:
Target aims to be achieved by Gruber Logistics are several, but they can be summarized in those topics. Fully paperless transport; horizontal cooperation; digital cooperation.

2.2.11. Port of Rostock

Medium term (5 years):

- topic no. 1 (VBS):

- topic no. 2 (gates):

- topic no. 3 (cargo bundling):

  Goal No. 1: Identification of cargo volumes in the rural/peripheral region "MecklenburgVorpommern" for intermodal transport solutions via Rostock Port

  Goal No. 2: Reducing barriers and bottlenecks for the local transport industry in using intermodal transport solutions via Rostock Port

  Goal No. 3: Providing transparent information about intermodal transport solutions/alternatives via Rostock Port and allow their booking with the development of an adequate ICT software tool.

Long term (10 years):

- topic no. 1 (VBS)

- topic no. 2 (gates):

  Goal No. 4: development of interfaces between the gates (OCR/SKSS) and the ICT software tool

- topic no. 3 (cargo bundling)

  Goal No. 5: expansion of the ICT software tool (to ports on the Northern Europe site (SE, FI, NO, …); with booking systems of the shipping companies to offer the hole transport chain;)

For all goals:

Perspectives	Goal	Measurement
1. Environmental and safety perspective	Reduction of CO2 trough shift freight transports from road to rail	Attract the intermodal services and develop new intermodal links under the use of an ICT tool
2. Internal processes perspectives	customer research of the transport industry of good flows	Survey by external consultant with specific needs assessment
3. Innovation and growth perspective	Customizable access for intermodal transport bookings	Development of an ICT tool and Interface to the intermodal platform
4. Customer / Partner perspective	Discussion with stakeholders and partner how to implement new IT-components; Cooperation with them in implementing components and interfaces	Evaluation of queried booking inquiries and actually used transport offers by the new ICT tool
5. Financial perspective	Funds from the European Union based on their goal to foster cooperation as well as better connect regions; own	Numbers of IT-software components and interfaces fully implemented and financed

	financial resources in addition to funds as bank loans or from the cash flow	

VISION:

Our vision is to attract as much cargo as possible in the near hinterland of Rostock in the federal state Mecklenburg-Vorpommern (rural/peripheral region) and to shift the good flows from road to rail, esp. intermodal rail services. Improving last mile accessibilities by using an ICT tool on the web portal intermodal-rostock.de is put into focus. The customer, especially local forwarder and transport industry will get an easier access to intermodal bookings with this instrument, inclusive the first and last mile transport service.

2.3. Contributions to environmental sustainability and accessibility of peripheral regions in the hinterland

This chapter aims to answer the following questions:

- How does this strategy contribute to environmental sustainability requirements and the related reduction of road transport related emissions?
- How do the goals of the strategy foreseen in each node contribute to improving the accessibility of peripheral regions in the hinterland?

2.3.1. Port of Trieste and Monfalcone

This strategy entails several medium and long-term goals, in all the three topics:

• VBS

• Gates

• Cargo bundling

All identified goals contribute to the goals of environmental protection and improvement of accessibility of peripheral areas in the hinterland. Indeed, they are closely intertwined.

The maritime industry is a major carbon emission contributor. Therefore, the global maritime industry puts every effort into reducing carbon emissions in the shipping chain, which includes vessel fleets, ports, terminals, and hinterland transportation. A representative example is the carbon emission reduction standard mandated by the International Maritime Organisation for international sailing ships to reduce carbon emissions this year. Among the decarbonisation tools, the most immediate solution for reducing carbon emissions is to reduce vessel waiting time near ports and increase operational efficiency.

On the port and hinterland side, the operation efficiency improvement in maritime stakeholders' port operations can be achieved using data. This data collection and operational efficiency improvement can be realised using several types of digital innovation tools.

Digitalisation of current paper-based procedures, jointly defining common IT standards, increase of data visibility and data exchange, interoperability between IT systems of public entities and private operators are all common features and the basis for the four goals identified in the LP's strategy.

In order to achieve these targets and ensure decoupling of carbon emissions from economic growth, policy makers have begun to focus, encourage, and foster the five Ds, namely, democratization, decarbonisation, deregulation, decentralization, and digitalisation.

Since digital technologies are transforming every aspect of our daily life, and with the next Industrial Revolution evolving around "digital technology," it is appreciated that digitalisation could possibly help address this dilemma of emission control and reduction. Hence, the concept of "Ds" that is based on five foundational pillars is being encouraged. These include development of transition architecture from the existing system to low carbon system; increasing use of alternate fuels and renewable energy; encouraging energy storage devices; extensive use of data and analytics to empower users; and creation of individual users as power generating systems. While the concept exists, one realises that it is difficult to implement due to non-existent systems and hence requires some serious efforts to achieve the desired low-carbon economy. In this regard, an increased use of technology for a more decentralised and digitalised scenario is considered a good opportunity to create the required transition architecture for the energy system.

Hence, from and environmental point of view, through the four goals to be later detailed in the action plan - the LP aims to speed up the entry and exit of trucks in the ports, reducing congestion at gates thereby decreasing the ensuing air pollution and carbon emissions generated by truck engines.

Digitalisation has also a relevant impact on the accessibility of regional peripheral areas to the port of Trieste, being a TEN-T core network port.

Indeed, Modal shift from road to rail of freight is economically convenient only for long distances. For short distances, road transport is the only option. Yet, road first/last mile connections between the hinterland and the main nodes of the transport network are the most inefficient processes in the entire supply chain, with negative impacts air pollution and CO_2 emissions.

Therefore, the goals of digitalization identified by the LP – as it is certainly the case of all the other PPs – for improving the entry and exit of trucks in the ports will benefit mostly those shippers, logistic operators, road haulers located in the peripheral areas around the region of the main nodes, since they have no alternative for accessing the port of Trieste other than the inefficient last mile road transport.

2.3.2. Zailog Verona

Currently, at the Verona terminal there are frequent queues of heavy vehicles outside the terminal gates, especially during the rush hours (early in the morning and in the late afternoon). The terminal manager is facing this situation through a reorganization of the entire handling process. In this way, there will be a relevant decrease of the congestions on the road network as well as of the CO_2 emissions with an enhance of the life quality for all the people living in the Central Europe area. These results can be reached mainly through the improvement of the ICT platform. In fact, the terminal manager is not able to handle properly such traffic volumes with his personnel so the use of IT tools can speed up the terminal operations, making smoother the exchange of information among the players involved. Therefore, the ICT platform permits a better use of the resources available (e.g. personnel, facilities, gantry cranes, etc.) with a consequent reduction of the costs and of the CO emissions.

A better management of the daily activities will allow a relevant decrease of the congestions, producing benefits for the operators, the citizens and the environment. Specifically, the increase of efficiency in the node will result in huge time savings that can be spent for new daily trips or to extend the existing ones. Therefore, the companies settled in the rural/peripheral areas will be incentivized to reach the terminal and use the intermodal transport and at the same time reducing the use of the full road transport to cover long hauls. The increase of the efficiency can be reached through the improvement of the ICT infrastructure. In this way, the operators will receive in advance the information related both to the truck drivers and to the loading units arriving at the terminal so the checks can be carried out faster and with a reduced number of mistakes. The result will be a significant decrease of the queues and of the time to pick up and drop off the goods at the terminal, permitting an increase of the traffic volumes. With the use of this IT tools, it is clear that the companies established in the rural/peripheral areas can easily reach the terminal and have a real time overview of the terminal conditions before the departure of their trucks (e.g., the terminal can warn the companies when relevant train delays occur).

2.3.3. Port of La Spezia and Marina di Carrara

The impact of COVID-19 pandemic, combined with the green and digital transition and the changing global political environment, has increased the awareness about the role of Port Authorities in the future challenges building smart and sustainable ports. In the last years the Eastern Ligurian Sea Port Authority has invested in the digitalization of logistics processes, exploiting the opportunities of European CEF projects like WiderMos, Ursa Major neo, Meridian, or Interreg Central Europe like COMODALCE. Now the Port Authority has to combine together digitalization and sustainability in order to build a resilient port and

logistics hub able to face the new challenges in this sector. For this reason, the Eastern Ligurian Sea Port Authority needs to improve the digital collaboration with all the port and logistics actors, strengthening the interoperability between the own IT systems and those of the others public and private administrations. In the last years the Port Authority of the Eastern Ligurian Sea has invested on the implementation of new monitoring systems and infrastructures for reducing the impact of port activities on the city of La Spezia, but without having an IT provisional system for managing the future development and related road traffic flows in the context of Green Deal objectives.

As concerns accessibility of rural and peripheral areas, the strategy will be a supportive tool to achieve a better port management compliant with the EU strategies, such as the Smart & Sustainable Mobility Strategy, the European Green Deal, the NextGenerationEU plan and the Piano Nazionale di Ripresa e Resilienza (Next Generation Italy). The completion of the different tasks involves practically the entire community of the port of La Spezia, namely Port Operators, Logistics Multimodal Transport Operators, private companies under the rural and peripheral areas, especially the Simplified Logistics Zone domain. The port operators and all the local stakeholders will be involved by the Port Authority during the ACCESSMILE implementation and the results will be shared with them. The implementation of IT systems will combine digital transition and energy transition to support a better and effective port-peripheral regions integration.

2.3.4. Port of Koper

In the last decade Luka Koper has decided to address the global goals of sustainable development as part of comprehensive sustainability reporting, as it is aware that the port is an important stakeholder in sustainable development, whose impact on environment and society can be both positive and negative. Goals of the sustainable development, i.e. "Sustainable Development Goals (SDG)", were adopted by all member states of the United Nations. Their purpose is to strive for the development of society as a whole, economy, science and civil society, which will play an important role in achieving the key goals of the entire society by 2030. The Republic of Slovenia defined the United Nations goals for sustainable development and strategic directions in the Development Strategy of Slovenia 2030.

In this sense, Luka Koper also addressed 14 sustainable development goals with its efforts:

At the beginning of 2021, the Port of Koper adopted the Strategy of Social Responsibility and Sustainable Development. The sustainability policies of the Luka Koper Group are derived from the United Nations' goals for sustainable development and the development policies of the Republic of Slovenia until 2030. The company has appointed a working group that pursues the achievement of strategic and operational goals in the field of social responsibility and sustainable development.

In this context, one of the goals is also represented by the reduction of all type of emissions and pollution: noise reduction, CO_2 emissions as well as micro-particles reductions. Regarding air pollution, as part of the "Port Noise Emissions" project study, Luka Koper measures the dust level at three points inside the port of Koper, Ankaran and Bertoki. The average annual measured concentration of PM10 in Luka Koper has never exceeded the legally prescribed limit value (40 μg/m3). Company's goal is to keep the emissions of particles up to 10 μm in the entire port area below 30 μg/m3.

Comparing port's results with the results of measurements in other Slovenian cities shows that the measured values in the port area are lower than in many other cities. Measurements of average annual concentrations of PM10 across Slovenia (Ljubljana, Maribor, Celje, Trbovlje) showed that they range between 23 μg/m3 and 46 μg/m3 (Source: RS Environment Agency). In this respect, the introduction of the OCR system at container terminal's road gate helps in speeding up procedures at the gate and allows to quickly share the information with all the stakeholders involved. It has as main consequence the fact that trucks are reducing the waiting time, which results in a reduction of emissions of micro-particles in the air. At the same time, the automation of processes allows to quickly link the port with its hinterland and peripheral areas,

considering that all the parties involved (also those in the peripheral areas) are immediately informed about the location and status of the freights, after being scanned through the OCR system for trucks (for example ETA, ETD and other info immediately available).

For what regards noise reduction, Luka Koper has identified the main sources of noise inside the port in the activities of transhipment of goods, the use of port machinery and during construction works. Trucks are causing main noise in the areas of port's gates, and ships are also a perceptible source of noise, while being berthed in Basin I.

The evaluation of the results of noise measurements is carried out by an authorized organization based on the Regulation on limit values of noise indicators in the environment (Official Gazette of the Republic of Slovenia, No. 43/18). The displayed noise values show basic info about the noise situation in front of the first residential buildings of Ankaran, Koper or Bertoki, since the measuring devices are installed in the port. They measure all the noise in the surroundings of the measuring device (noise resulting from the operation of the port, as well as other noise - road noise, people's activities, sounds of nature, etc.). The installation of the OCR system will help reducing also these values measured, considering that the automation of processes will allow to reduce the waiting times and will help reducing noise through the whole logistic area, from the port to the hinterland and rural areas.

In recent years, Luka Koper has implemented the following measures to reduce noise levels:

- noisier activities have been moved and are carried out inside the port;

- Luka Koper produces annual noise maps, through which are systematically monitored the improvements in specific areas;

- Luka Koper removed part of the port activity from the city centre and replaced it with a passenger terminal in accordance with the interests of the local community;

- Luka Koper is introducing infrastructure electrification on port shores;

- Digitalisation of processes is linking the administrative tasks from port's area to the hinterland and rural areas, which includes also the foreseen ACCESSMILE activities;

- Two years ago, Luka Koper signed a "Letter of Intent" on the implementation of mitigating measures to reduce the impact of port activities on the environment, which includes the establishment of a special fund, through which the Port of Koper will provide €200,000 annually in a Municipality's fund, to help the residents of the old town, who are most exposed to the impacts of the port (for example, to replace windows, facades etc.). The agreement includes also the commitment of Luka Koper to gradually release the area next to the first and second berths when it acquires additional capacities or moorings at other locations in the port, favouring the extension of the passenger terminal for social useful activities.

For what regards the goals included in the strategy:

- Environmental perspective: the introduction of the OCR system, will speed up procedures and will reduce the pollution levels, if we consider that vehicles are going to be automatically recognized (as well as their transported containers). The scanning of vehicles and containers will help to quickly connect the port with its rural/peripheral areas, where the reduction of pollution will be significant too.

- Internal processes: the installation of an OCR system for trucks at the container terminal in the port of Koper, will have benefits also from the internal operative perspective. The efficiency will be measured through the number of trucks handled per day or per month, which is foreseen to be considerable higher. The development of internal processes in such a digital way will automatically allow to have instant communications about the status and location of the freight to all the parties involved in the logistic process.

In this respect, positive effects on processes and data transmission are expected also in port's hinterland and peripheral/rural areas.

- Innovation and growth: it goes by itself that introducing an OCR system for the recognition of trucks and containers while travelling through container terminal's gate is something which represents an innovation as well. Such a digitalization of processes will allow to better link the informatization procedures and to streamline the data exchange between the stakeholders, which represents a digital growth not only of the port of Koper, but also of the whole logistic chain linked with the port (hinterland and port's peripheral/rural areas).

- Customer/partner perspective: as mentioned in previous paragraphs, the introduction of a digital innovation such an OCR system for trucks at the container terminal represents a milestone for the development of digitalization processes in the port and the whole adjacent area. It means that by introducing the automatic scanning of containers and trucks, the information/logistic data will instantly reach all the customers involved in the process, which represents a big increase of the optimization of logistic processes.

- Financial perspective: as mentioned above, the new technology adopted for the achievements of the defined objectives can represent a revenue in terms of time gained, faster operational procedures, reduction of the number of employees working on the field, safer work and less damages and accidents etc., not only in port's area, but absolutely also in rural and peripheral areas. From a parallel point of view, all these results and new characteristics of the communication processes will be measurable through the financial achievements in terms of saved money, through the profits made after the installation of the new equipment foreseen in ACCESSMILE's pilot activity.

2.3.5. Port Authority of Rijeka

This strategy entails several medium and long-term goals, in all the three topics:

- Digital Identity Card
- Time Slot management system
- Integration with future PCS system

The Port of Rijeka has developed an IT platform called Portunus, through which users of port services request access to the port operational areas. Such a system needs to be upgraded with new for it to fit the needs of the port's users located in its hinterland.

Currently, users use ID cards, which must pick up personally at the premises of Port of Rijeka Authority, with longer time needed for entry in the port. Also, in the future some users would use digital cards to enter port operational areas under jurisdiction of Port of Rijeka Authority.

Within ACCESSMILE, Port of Rijeka Authority will make it possible for users to obtain and use a complete digital identity card. Together with the new application solution, 15 new readers supporting this technology would be installed. This means that multi readers would be installed at the entrances to the port operational areas (multi-technology RFID, NFC, and Bluetooth® touch screen/keypad reader is equipped with a QR code / barcode module).

The issuing and verifying users will be 100% digital, reducing the time for entering in the Port of Rijeka. The new system will endow port users with an easier and more practical way of obtaining permits with efficient use of time and material resources, optimising transport flows in/out of the Port of Rijeka, reducing congestion at the port entrance and on the city streets leading to the port terminals.

The investment consists in the purchase of QR code readers, aiming to streamline traffic flows to /from the Port of Rijeka. This will have a positive impact on the environment, both in terms of pollution and GHG emissions, since congestion to/from the port will be reduced.

2.3.6. Logistik Center Austria Süd GmbH

Emission-free logistics in the periphery is an essential step in advancing decarbonization in freight transport and thus achieving the Paris climate goals. Freight transport that can neither be avoided nor shifted to low-emission modes of transport must be converted to emission-free and efficient drive systems with a view to achieving climate neutrality in 2040.

The present project is therefore intended to evaluate the possibilities of converting freight transport to electric trucks. What is currently making it difficult to quickly switch to electric trucks is their still very high prices, which is why we want to develop a system that makes the use of electric mobility in freight transport possible.

But it's not just about forcing a switch from diesel-powered vehicles to electric alternatives, but also about bundling goods in order to fundamentally bundle transport. It is essential to reduce empty trips or half-empty trips, because the most environmentally friendly traffic and transport is the one that can be avoided entirely, keyword: cooperative logistics. Overall, this can have a positive impact on CO_2 consumption.

By setting the course for environmentally friendly freight mobility in rural areas, we not only contribute to climate protection, but also promote the development of technologies and logistics systems that drive the change towards a sustainable future in freight transport.

Despite the large number of rail connections between the most important terminals in medium and long-distance transport, last-mile access from rural regions to the respective intermodal hubs - seaports, inland ports, railway terminals - in Carinthia is the Cargo Terminal Fürnitz, is mostly via road transport . These road connections are often inefficient and limit the accessibility and economic potential of rural areas. At the same time, they cause negative impacts such as traffic jams on the roads, which lead to air pollution and CO_2 emissions, thus contributing to climate change. Therefore, multimodal transport must stimulate increasing the efficiency and effectiveness of last-mile road connectivity. This can be done, on the one hand, by shifting freight transport from road to rail, for example by reactivating branch lines, or by converting unavoidable road transport to electric mobility.

In this context, the development and optimization of the charging and hydrogen refueling infrastructure is essential for the rapid market ramp-up of emission-free vehicles. While a solid charging network is already available for cars and light commercial vehicles, the infrastructure development for heavy vehicles is still in its early stages. Due to the more complex initial situation than with smaller vehicles, since from today's perspective more than one emission-free technology will be used in heavy vehicles, a well-coordinated timetable is required.

Key success factors for sustainable mobility in accessibility of rural areas are e.g. multimodality and integrated transport; enhanced use of intelligent communication technology and intelligent technology system; and better cooperation through transport associations.

Our project therefore aims to optimize the last mile traffic flows in freight transport in Carinthia through an ICT solution in the area of e-mobility.

2.3.7. MAHART Container Center

MCC is at the edge of the operational capacities, the demand is fluctuating (time to time and even within a day) and at the peaks it already creates difficulties of the terminals even on the rail side.

MCC has made a lot of efforts already to ease this congestion, however, the processes for receiving trucks did not improve significantly. At the peaks it is possible that over 100 trucks are waiting inside the logistic center (Budapest Free Port) to enter MCC. Almost every day in the morning and afternoon hours there is a congestion, when average turn time of a truck (waiting, checking, handling, administration and leaving) can reach 4 hours. During noon and the night there is free capacity as very few trucks arriving at the terminal for loading.

This creates problem for the trucking companies, the owner of the site, to the customers as well as the terminal itself. Every day is a period when there is a congestion at the logistics site, trucks' queue occupies the transport lanes of the Freeport. While waiting, and proceeding to the entrance truck by truck, the trucks' emission on CO_2 is huge, there is a considerable environmental effect. One hour less idling of the waiting trucks can have a significant environment protection effect.

MCC has a strategy, with the help of ICT development and VBS system will avoid queues, so less fuel will be consumed by the trucks, consequently less CO_2 will be released to the air, which will protect environment.

Terminal will make sure that the trucks are not queuing after each other, but are waiting at a designated, safe area, during parking the engine can be switched off, without releasing CO to the air. The trucks will be called in when there is a slot for handling the particular truck, avoiding congestion and CO pollution in front of the terminal. Reducing trucks' waiting in a queue will save use of fossil energy.

On top of that there is another factor that contributes to environmental protection and reduction of pollution, this is that fewer trucks can serve the same volume. If trucks don't spend their time with idling and waiting to be loaded, but they arrive at their pre-booked slots, with good truck management the trucking companies can fulfil the same amount of the tacks with less trucks. Less trucks also mean less pollution and energy consumption.

The problem with supplying the rural and peripheral areas are mainly with the allowed driving time of the truck drivers. According to the present rules, the driving time cannot exceed daily 9 hours (weekly twice can be extended to 10 hours) and after 4 and a half hour drive a minimum of 45 minutes break must be taken. Usual rest time should be minimum 11 hours a day (can be reduced to 9 hours 3 times a week).

With 4 hours turn time at the terminal plus 2 x 3-4 hours driving time + 2 hours for container unloading a truck cannot serve the rural and peripheral areas in case of one driver, as one driver can work 9 (max 10) hours daily. So there is a need to reduce the truck turn time to (or below) one hour, in order to make it possible that the truck can return the container in the same day from the rural and peripheral area.

Currently, if a container should be delivered to the area over 150-200 kms from the terminal, the trucks that are collecting the empty containers from the terminal, can go to the destination and load the container, however, the driver must take the compulsory rest time and return the loaded container for loading of the train during the next day. This gives additional costs, longer transit time and consequently competitive disadvantage to those areas.

Currently there are peaks when there are upto 100 trucks are waiting for handling at MCC terminal, with an average 4-5 hours waiting time, in order to make it possible that farther destinations can be also served within a day, the trucks turn time must be reduced to an average 1 hour.

MCC has several plans to fasten the turn time, including change (increase) of entry / exit lanes to the terminal, improve control of truck flow with an IT tool for Vehicle Booking Systems/pre-arrival or pre-exit notification, as well as terminal gates and interoperability with IT systems (calling in process and system).
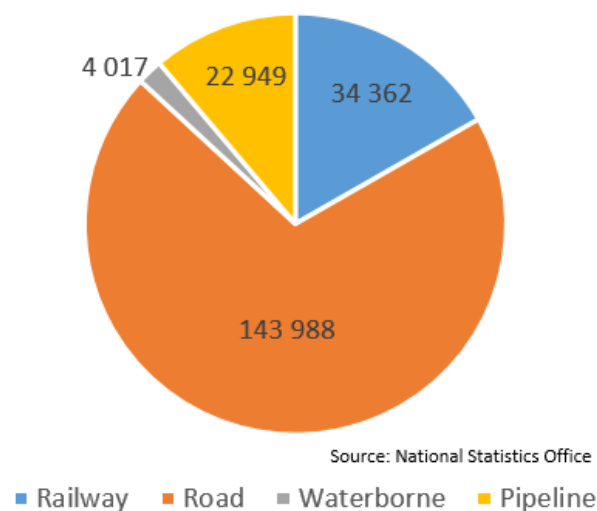
With finalization of above projects, the transport flow can be optimized, therefore the waiting time can be reduced, resulting in less environmental pollution and avoiding the competitive disadvantage of the rural and peripheral areas.

2.3.8. Hungarian Danube ports by RSOE

In Hungary road transport has a dominant role (70%), railway and inland waterway freight transport has less than 20% only. The redundantly waiting trucks and trucks without proper information on entry/exit procedure cause congestion and increased GHG emissions.

Hence therefore it is important also for inland port hubs to optimise their road transport traffic. Digitalisation of port's truck traffic will lead to less congestion and less redundant trucks waiting for entry. More efficient pre-registration and truck entry and exit process at ports contributes to more environmental-friendly and sustainable freight transport.

Comparison of transport modes in Hungary (thousand tonnes) Q1-Q3 2023

4 017 22 949 34 362

143 988

Source: National Statistics Office

■ Railway ■ Road ■ Waterborne ■ Pipeline

In Hungarian ports it is important to provide flexible and efficient process to shift between inland navigation and road transport and to reach rural and peripheric areas as well. The Hungarian Danube is almost 400 km long and there are many ports, mostly agriculture ones that can have easy access to rural and peripheric agriculture economic hinterland. Therefore it is important to modernise the truck entry/exit process for port hubs. This provides economic growth potential for these rural/peripheric areas.

2.3.9. Baltic Container Terminal Gdynia

Overweight trucks traffic affects natural environment much more negatively then regular one. It emits much more CO_2, produce more noise and pose much greater risks of traffic jams and accidents. The precise exit scale system prevents them to leave on public roads reducing this negative impact.

Rural and peripheral stakeholders often miss services and facilities which are easily available for core corridor stakeholders. One of such service is weight verification for full load trucks. Truck scales are rather

located at main nodes and hubs and usually are not available at peripheral/rural areas. BCT will install the scale system at the exit gate and will share the weight data to all stakeholders (including the rural/peripheral ones) in an easy and simple way available for everyone to receive (by mobile phone application and SMS). In result peripheral/rural customers will get the service usually unavailable in their locations.

2.3.10. Gruber Logistics

The ongoing strategic initiative is undeniably and significantly contributing in a noteworthy manner to the overarching and pivotal objectives of environmental sustainability. At its core, this concerted effort towards the advancement and integration of digitization serves not only as a facilitator but as a key enabler in the realization of a seamlessly orchestrated and entirely paperless transportation paradigm. The resultant implications of such a paradigm shift are far-reaching, encompassing a myriad of positive outcomes and ramifications.

On a primary level, the impetus behind this robust digitization drive lies in its ability to actively and efficaciously facilitate a modal transition, where the various modes of transportation seamlessly dovetail into a cohesive and interconnected network. This dynamic shift in transportation modes is particularly instrumental in steering towards and favoring more environmentally sustainable and ecologically friendly options, with a pronounced emphasis on modes such as rail and maritime transport.

The manifestation of this digitized ecosystem is further exemplified through the implementation and utilization of a sophisticated load monitoring and management platform, exemplified by the operational framework of Gruber Logistics. This state-of-the-art platform, which encompasses both the intricacies of a robust Transportation Management System (TMS) and the streamlined document exchange platforms with carriers, notably Gruber's proprietary MyDesk, plays a pivotal and substantive role in not just complementing but actively advancing the environmental objectives at hand.

In an effort to underscore the nuanced functionalities and intricacies of MyDesk, a dedicated and meticulously planned meeting with carriers is strategically poised on the horizon. This gathering is poised to provide a comprehensive elucidation of the platform's multifaceted capabilities, setting the stage for subsequent stakeholder engagements that are thoughtfully slated for forthcoming phases of the overarching project.

Beyond the realm of environmental benefits, it is crucial to acknowledge and underscore the broader socio-economic implications of digitization. It serves as a transformative and pivotal force, not merely confining its impact to the realms of environmental dividends but extending its reach into the farthest corners of interconnecting remote, peripheral, and even rural areas that have been earmarked and deemed as priority zones by the European Union.

Drawing relevance and corroboration to this assertion is the palpable and tangible example presented by the European corridors traversing the geographical expanse of Poland. Notably, the Baltic Adriatic corridor, serving as a vital linkage between the Baltic Sea and the Adriatic Sea, stands as a testament to the geographic alignment of Gruber Logistics and Universal Transport offices. Similarly, the North Sea Baltic corridor, hosting the presence of all three offices of the company, further exemplifies the intricate interplay between geographical alignment and operational bases. The third corridor, traversing the Baltic Sea – Black Sea – Aegean Sea, although devoid of physical offices, nevertheless witnesses the meticulous management and orchestration of diverse traffic flows by the company.

In essence, the strategic positioning of Gruber Logistics' offices along primary traffic arteries doesn't overshadow or undermine the intrinsic significance of secondary traffic routes and peripheral zones. This is intrinsically tied to the transformative potential of digitization, wherein transport operators or carriers can seamlessly integrate into the broader traffic network. This integration is facilitated through a symbiotic

interaction with load exchanges, MyDesk, and TMS platforms, ensuring that even secondary routes and peripheral areas are intricately woven into the fabric of the broader transportation network.

In summation, it is incontrovertibly evident that the transformative influence of digitization, galvanized and underpinned by the overarching and comprehensive ACCESSMILE project, attains a dual triumph. This triumph is manifested through the effective realization and actualization of not only environmental sustainability objectives but also through the profound and tangible mitigation of isolation in peripheral areas. The multifaceted and expansive implications of this digitization endeavor underscore its role as a catalyst for positive change and progress on both environmental and socio-economic fronts.

2.3.11. Port of Rostock

With the identification of cargo volumes for intermodal transport in the rural/peripheral region Mecklenburg-Western Pomerania as well as the barriers and bottlenecks for switching from road transport to intermodal transport solutions on the main run of the transport chain, the project activities lay the base to develop an ICT software tool as pilot action which will provide transparent information about intermodal transport solutions/offers to local actors and match intermodal transport demand in the rural/peripheral region with supply. Based on the information improvements, shippers and forwarders of cargo in the rural and peripheral region are expected to shift a huge part of the transport chain from road to rail transport. This will cause a remarkable reduction of road transport related emissions.

The knowledge about the potential intermodal cargo volumes in the rural/peripheral region Mecklenburg-Western Pomerania as well as the ICT software tool which will allow a bundling of volumes and demand in the rural/peripheral region can induce additional attractiveness to train operators to expand existing intermodal transport connections or even to launch new ones into the region. An expanded and more diversified intermodal transport offer will improve the accessibility of the region and thus push economic development in the peripheral region.

2.4. Conclusions

The vision statements (focuses on tomorrow and set the target aims to be achieved) are mainly envisioninig

- boosting digital growth,
- environmental sustainability,
- seamless supply chain,
- improving accessibility of rural/peripheral areas to TEN-T through ICT,
- technological innovation,
- high level digitized services,
- paperless administration, simplification,
- seamless electronic data flow,
- better use of infrastructure and resources,
- multimodal, efficient, sustainable logistics systems,
- real-time communication,
- data sharing between different platforms,
- unification of operating systems and communication tools,
- prevention of data leakages,
- increasing competitiveness,
- speeding up of administrative and operative activities,
- fostering the cooperation among the intermodal chain players,
- optimisation of capacities,
- automation of data transfer,
- increasing the modal shift to inland waterways in freight transport,
- horizontal cooperation.

The mission statements (what challenges shall we face towards the vision today) are mainly focusing on:

- strong interoperable and coordinated multimodal transport,
- increased modal shift,
- effective data sharing,
- reduced waiting times,
- lack of inefficient procedures,
- innovative approach,
- effective stakeholder management,
- creation of seamless IT tools,

- real time monitoring of the vehicles,
- sustainability,
- limitation of errors in the transmission of data,
- prevention of consequent damages,
- possible extension for Customs use,
- improving data accuracy,
- creation of decision support system for road transport,
- application to foster information exchange between stakeholders,
- data sharing based on agreements between intermodal chain actors,
- creation of Port Community Systems,
- digitization of documentation and of procedures,
- improving carbon and waste management,
- enhancement of truck turn time,
- generation of additional demand,
- development of humand resources,
- response to market needs,
- creating the so-called platform federations,
- execution of a market analysis.

The principles, key values that are the basis of the vision of the strategy are mostly:

- open source,
- interoperability,
- use of standards,
- connective systems and interfaces,
- sustainability,
- data security,
- modernised, multimodal and energy-efficient logistics,
- reduction of waiting times,
- improving the level of service,
- enhancement of information exchange,
- increasing port safety and security,
- limitation of the damages of cargo and containers,
- reduction of the disputes about the status of containers,
- accessibility,

- reliability,

- scalability,

- flexibility,

- customers' satisfaction,

- data availability and accuracy,

- environment protection,

- paperless administration,

- better capacity utilisation,

- investing in human resources,

- respect, trust, collaboration.

Medium term and long term strategic goals and priorities are mainly

- Pre-exit notification

- Slot management system

- PCS integration with gates

- e-CMR

- Improved application for information exchange between stakeholders

- Definition of a set of rules to guarantee the security of data exchanged

- Freight Village Community System (FVCS)

- Heavy Goods Vehicle flow detection system

- Advance notice of arrival at the port gate

- Digital twin for road infrastructure

- Equip all port's gates with OCR systems

- Automation of processes at container terminal and port's gates

- Vehicle Booking Systems/pre-arrival or pre-exit notification, port/terminal gates

- Port/terminal gates and interoperability among public/private IT systems

- Improvement of port entry/exit efficiency in some Hungarian ports by using IT tool

- Reduce to zero the danger of the overweight trucks leaving terminal by protecting the interest of all stakeholders, community and environment

- Secure the best and the most innovating gate operations to eliminate all obstacles and inefficiencies and facilitate the growth for all our stakeholders and port community

- Development of an app for management of carriers in Poland

- Integration of the company TMS in a federation of platforms

- Identification of cargo volumes in the rural/peripheral region "MecklenburgVorpommern" for intermodal transport solutions via Rostock Port

- Reducing barriers and bottlenecks for the local transport industry in using intermodal transport solutions via Rostock Port

- Providing transparent information about intermodal transport solutions/alternatives via Rostock Port and allow their booking with the development of an adequate ICT software tool

- development of interfaces between the gates (OCR/SKSS) and the ICT software tool

- expansion of the ICT software tool (to ports on the Northern Europe site (SE, FI, NO, …); with booking systems of the shipping companies to offer the hole transport chain

Port Community System (PCS) solutions are the main tools to support port procedures and to enable digital connectivity between different stakeholders. Beside PCS and **entry/exit systems Digital Twin systems** provide also innovative and powerful support for ports.

It was also a conclusion that **environmental sustainability** is a strategic priority for all project partners.

There are many common points in the strategical objectives and plans of the project partners from different countries and areas hence **great synergies** can be realised by joint work and cooperation within the project in order to **increase accessibility or rural and peripheral areas to the TEN-T corridors by ICT.**