

D.T1.4.2 - KNOWLEDGE TOOL FOR PILOTS/ACTION PLANS IN THE FIELD OF NODE MANAGEMENT OPTIMIZATION

Node management optimization

Final version
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1. Executive summary

Within the TalkNET project, five knowledge tools have been developed in order to make available a review of best practices and relevant knowledge in the two macro fields of action of the project, that is to say Multimodality and Eco-innovation, and the related five identified sub-topics:

1	LAST MILE CONNECTIONS OF MULTIMODAL NODES	MULTIMODALITY
2	NODE MANAGEMENT OPTIMIZATION	
3	ASSESSMENT OF MULTIMODAL SERVICES	
4	ALTERNATIVE FUELS DEPLOYMENT	ECO-INNOVATION
5	ENERGY EFFICIENCY SOLUTIONS	

The objective of the TalkNET project is to improve the coordination among freight transport stakeholders for increasing multimodal environmentally-friendly freight solutions. Within the project framework, stakeholders have been included in defined project clusters (five project clusters) that correspond to the five identified sub-topics and that allow to gathered actors with common interest for cooperation.

Within this goal TalkNET partners are involved in a continuous transnational consultation process with the stakeholders in order to define how to deal with the above mentioned fields of action. The knowledge tools delivered are the results of this process: it deals with the collection of the relevant knowledge in these fields both from inside and outside the partnership. Therefore, the knowledge tools will include both the significant experiences of the project partners and those gathered outside at EU level from other actors and operators.

More in details, the use of the knowledge tool allows to focus on a specific issue considering the following logical steps:

1. needs identified as relevant for the partner or/and the stakeholders expressing an interest for the issue;
2. problems deriving from non-satisfaction of the needs preliminary identified, hampering the optimization of a specific process or/and situation;
3. identification (if any), of past attempts to remove, mitigate or solve the problems above-mentioned, offering suitable solutions;
4. identification of the weakness affecting the past attempts;
5. mapping of feasible good practices implemented in order to give answer to the same or similar needs in a comparable context. Good practices identified can refer not only to cases implemented within the Interreg CENTRAL EUROPE Programme area but in general,



- provided that the needs and the context can be brought back and then compared to the punctual situation under analysis;
6. systematization in order to achieve a clear overview of the elements characterizing the good practices identified and their analysis in order to find out key elements or/and processes that can be adapted to the specific situation in order to provide feasible solutions.

For needs, it is meant the necessities identified internally or externally, by the stakeholders, to which it is not possible to provide a credible answer without implementing a series of actions aiming at solving weakness or/and obstacles.

A good practice can be seen as an example of someone with the same needs that was able to satisfy them. Accordingly, it is a method, model or technique that has been accepted as superior to several alternatives because it produces results that are superior to those achieved by other means or because it has become a standard way of acting.

The points mentioned above correspond to the approached adopted by the TalkNET project when dealing with knowledge management and review of best practices. This is demonstrated within the “Summary report of the inputs collected from the stakeholders and tools development” (D.T 1.4.4-2.4.4), that is strictly linked to the best practices collection as the step before to the development of the knowledge tools. In fact, stakeholders were involved in the preparation of the knowledge tools as partners took part in and/or organized meetings with relevant stakeholders to collect their inputs that are functional to the elaboration of these outputs. They allowed to investigate those best practices that can be possible answer to the stakeholder’s needs.

Therefore a review of the current/up-to-date knowledge in the sub-topics identified by the project will be delivered and the knowledge available will help project partners in the implementation of the project activities. In particular, this benchmark will be useful and necessary to develop the project action plans (A.T1.5-2.5 - planning phase of the project activities) and the pilot actions (A.T 3.2 - testing phase of the project activities).

Anyway, TalkNET thematic knowledge tools will offer knowledge and best practices review that will be available not only to project partners but also to the operators acting in the fields of multimodality and eco-innovation. In particular, this knowledge tool is focused on the best practices gathered in the second field of node management optimization.

The structure of the document is the following: in chapter 2 it is given an overview of the TalkNET project; in chapter 3 it is given an introduction to the best practices that this documents propose, focusing on the EU and then the TalkNET approach about node management optimization; chapter 4 is the most relevant part of this document giving the collection of best practices and knowledge both from inside and outside the partnership; chapter 5 gives main conclusions of this work.



2. About TalkNET project

The aim of TalkNET is to improve the coordination among freight transport stakeholders for efficient and environmentally- friendly multimodal transport solutions in central Europe.

TalkNET involves sea and river ports, inland terminals, rail operators, logistic service providers, regional authorities and development agencies:

8 CORE PORTS	3 CE REGIONS	OPERATORS/PRIVATE
Port of Venice (IT)	Veneto Region/Veneto Strade (IT) West Pomeranian Region (PL) Usti Region dev. Agency (CZ)	Lokomotion (GER)
Port of Trieste (IT)		Rail Cargo Hungaria (HU)
Port of Koper (SI)		Codognotto Poland (PL)
Port of Budapest (HU)		Italian-German Chamber of Commerce, Munich (GER)
Public ports of Slovakia (SLO)		
Port of Rijeka (HR)		
Szczecin & Swinouisce Seaports Authority (PL)		
Inland Port of Verona (IT)		

The project results will be achieved focusing on the following fields of action:

1: Last mile connections of multimodal nodes → INFRASTRUCTURES

It deals with the optimization of the links of the terminal/node with last mile connections. It is focused on the improvement of the links to the main transport networks node-to-node, in particular core and comprehensive TEN-T networks.

2: Improvement of multimodal terminals efficiency and optimization → MANAGEMENT EFFICIENCY

It deals with the optimization of the internal dimension of the terminal/node and it involves the improvement of its efficiency. It is focused on the improvement of the terminal operative and logistics management systems.

3: Market opportunities to reinforce or activate new multimodal services → SERVICES

It deals with market analyses to improve intermodal connections and existing/new logistics services and solutions. It is focused on the creation of new multimodal services to tackle bottlenecks affecting the several transport routes (rail, road, sea).

4: Alternative fuels deployment → ALTERNATIVE FUELS

It deals with the increasing use of transport means supplied by alternative fuels instead of fossil fuels. It is focused on the potential deployment of alternative fuels for ports/inland terminals and logistics operators (e.g. LNG demand analysis) to understand what is the real consumption of these type of fuels in the transport network.



5: Deployment of energy efficiency in transport operations → ENERGY EFFICIENCY

It deals with the research of the best tailor-made solutions to manage the partners' project logistics chains aiming to reduce the use of energy. It is focused on the creation of management solutions with a high level of efficiency to reduce the waste of energy during all transport/handling operations.

TalkNET project is developed in three macro Work Packages: WPT1 Multimodality, WPT2 Eco-Innovation and WPT3 Pilot Actions. Before implementing the pilot actions four main activities are implemented.

The first activity (AT1.2 - A.T2.2) includes the analysis phase focused at regional level. It aims to assess problems, needs and challenges of the identified project nodes' regions and measure the impacts of the stakeholders business activities on the five sub-topics previously defined. In this phase, the stakeholders are involved at a territorial level. The analysis will end with a further step that is the mapping of stakeholders.

The second activity (A.T1.3 - A.T 2.3) is about the identification of the clusters according to the results of the previous analysis. In this phase, the stakeholders are involved at cluster level.

The third activity (A.T1.4 - A.T2.4) develops the knowledge tools, which collect the knowledge from within and beyond the partnership on the five project sub-topics. The involvement of the stakeholders in this phase is at the transnational level. The thematic tools are developed and define the connection between the three work packages.

The fourth activity (A.T1.5 - A.T2.5) concerns the planning phase. Here the actions plans are implemented and they will be more suited to tackle problems and needs founded in the previous phases. Stakeholders are involved at node level.

The following step is to plan how to respond at problems/needs previously identified by the project: it is the testing phase, the core part of the TalkNET with the pilot actions (A.T3.2), with the cooperation of the stakeholders form the design to the evaluation of the final results of the pilot actions.

2.1 Overview of action plans and pilot actions

After the analysis phase, through the action plans project partners will implement the planning phase on the five project priorities: last mile connections, node management optimization, assessment of multimodal services, alternative fuels deployment and energy efficiency solutions. They are set up in cooperation with the relevant stakeholders.

The following partners focus their action plans on the field/cluster of node management optimization:

D.T 1.5.2 - Action plan to improve multimodal nodes efficiency and connections - VENICE (NAPA)	NORTH ADRIATIC SEA PORT AUTHORITY
D.T 1.5.3 - Action plan to improve multimodal nodes efficiency and connections - TRIESTE (NAPA)	PORT NETWORK AUTHORITY OF THE EASTERN ADRIATIC SEA



D.T 1.5.4 - Action plan to improve multimodal nodes efficiency and connections - LUKA KOPER (NAPA)	LUKA KOPER
D.T 1.5.5 - Action plan to improve multimodal nodes efficiency and connections - RIJEKA (NAPA)	PORT OF RIJEKA AUTHORITY
D.T 1.5.7 - Action plan to improve multimodal nodes efficiency and connections - BRATISLAVA	PUBLIC PORTS
D.T 1.5.8 - Action plan to improve multimodal nodes efficiency and connections - BUDAPEST	FREEPORT OF BUDAPEST
D.T 1.5.11 - Action plan to improve multimodal nodes efficiency and connections - USTI NAD LABEM	REGIONAL DEVELOPMENT AGENCY OF USTI REGION

Eleven pilot actions will test:

- the links to the main transport networks node-to-node;
- terminals' operative and logistics management systems;
- the creation of new multimodal services to tackle bottlenecks affecting the several transport routes (rail, road, sea);
- the potential deployment of alternative fuels for ports/inland terminals and logistics operators;
- the creation of management solutions with a high level of efficiency to reduce the waste of energy during all transport/handling operations.

The following partners focus carry out pilot actions in the field/cluster of node management optimization:

PILOT ACTION FOR MULTIMODAL NODES/TERMINALS EFFICIENCY AND OPTIMIZATION

D.T 3.2.2 - Innovative control shunting system	PORT OF VENICE
D.T 3.2.3 - ICT/ITS tools for rail traffic	PORT OF VENICE
D.T 3.2.4 - IT railway-linked programme to optimize the cargo schedule	PORT OF RIJEKA
D.T 3.2.5 - New warehouse management system	CODOGNOTTO POLAND



3. Introduction to best practices in the field of node management optimization

As seen in the cluster 1, the TalkNET partners operating in similar contexts have usually identified the same needs. However, in the cluster of node management optimization there are different relevant aspects to evaluate in order to improve the nodes.

The countermeasures adopted by the **ports** (Venice, Trieste, Koper, Rijeka, Bratislava, Szczecin and Swinoujscie) show that their efforts to carry out physical works are lower compared to the cluster 1 because their commitment is more focused on “soft” interventions. In fact, the critical issues affecting the daily activities inside a terminal can be often solved through some intangibles tools that are able to solve problematic situations.

The case of the Bratislava Port is a clear example of this trend. The lack of adequate education in the water transport sector causes a strong turnover of the employees. In fact, for many years this sector was underfunded because public investments were concentrated on road and rail transport. In addition, the port authorities are the owners of the land but the infrastructures are owned by private companies. It means that ports do not employ directly technical personnel to carry out port activities like handling, transshipment and surveillance. The consequence is that the number of students targeting this type of transport is decreasing and the number of retirements is raising. There is low attractive for this type of job because it is not clear which is the function of the water transport. For this reason, investments in education institutions and in new study programmes can enhance the knowledge about this sector, increasing the know-how and reducing the turnover of the employees. Last but not least, more technical employees hired means to increase the productivity of the entire port since they have the necessary knowledge to carry out more activities in a reduced lapse of time. The results of a higher level of know-how are a better management of the terminal with a reduced waste of resources.

In the case of other ports, such as the port of Venice, the interventions to improve the efficiency of the node are focused on the development of IT systems for railway shunting management. The IT system that will be in use will retrieve, process and store data during the maneuvering procedures and the wagons positioning operations inside the port area, aiming to support management and real time monitoring of the operations. The system comprehends the following functional modules: maneuvers management, maneuvers monitoring, reporting, account management, mobile and GPS infrastructure.

On the other hand, the needs of dry ports (Verona freight village, Freeport of Budapest and the Chamber of Commerce of Munich since it has described the activities of the two German freight villages Nuremberg and Hof) to improve their daily activities are more focused on ICT solutions combined with better ways to manage the terminal facilities.

The best example of this trend can be given by the Freeport of Budapest. The main improvements to enhance the terminal efficiency of the node regard a new identification system of the license plates to recognize them automatically. This device must be built according the last technologies available in the market to exploit all the potential that an OCR system can offer. In this way, it is possible to avoid or to reduce drastically the queues



outside the terminal gates and in the surrounding roads, increasing considerably the punctuality of the deliveries and reducing the environmental impact caused by the waiting trucks. However, it is important to point out that the Automated Licence Plate Recognition must be coupled both with the terminal manager software and with the warehouse TMS otherwise this innovative tool will be useless. It is clear that with a little investment (compared to the money necessary for a new terminal or for new roads) it is possible to create a synchronized supply chain able to:

- reduce the congestions inside and outside the terminal;
- deliver the goods on time;
- reduce the environmental impact;
- create a paperless system;
- decrease the useless employ of resources.

In the example above are shown the benefits given by the combination of innovative IT devices and a better arrangement of the assets. It is the demonstration that sometimes only few focused improvements can produce more advantages than huge works.

Lastly, from the **operators'** side (Lokomotion, Rail Cargo Hungary, Codognotto Poland and Veneto Strade that analyzed the behaviour of the enterprises operating in the Central Europe area) there are needs quite similar to the dry ports ones. In fact, the improvements to enhance the efficiency of the nodes are concentrated of three key aspects:

- Administrative;
- Technical;
- Organizational.

The issues identified by Rail Cargo Hungary give an overview of the lacks detected by the operators that are slowing the connections among the nodes. One of the biggest problem is represented by the border crossing points. These zones are the first cause of train' delays. The administrative procedures take a lot of time so it would be important to simplify the steps to get the customs declarations but keeping in mind that the procedure must comply with the national and EU rules. Nevertheless, the biggest problem is caused by the technical aspects. In fact, each country has a different voltage and a different signalling system. It is easy to understand that to overcome these problems are necessary both important investments in new generation locomotives (able to work with different tensions) and an EU unique signalling system. The latter point could seem the simpler but it is the hardest aspect since the common language must be decided among all the European countries. Finally, there is the organizational aspect. As can be seen in the previous point, it could be very difficult to foster the cooperation though the use of share rules when there are many players coming from different countries. All these aspects could increase significantly the efficiency because the trains will arrive on time and both the terminal manager and the road operators would be able to organize better their assets (personnel and machinery).

The cases described above give a concrete idea about what is necessary to make the nodes more efficient. There is a substantial difference between the macro needs of the first and the second cluster. In the latter, they are more focused on intangible aspects and merging



them to some little investments it is possible to produce important results. Therefore, the macro needs can be classified in three groups:

- **Technical** because without an investment in ICT devices is not possible to make the exchange of information and goods faster;
- **Organizational** because all the players operating in the same supply chain must work together in order to reduce the inefficiencies and to speed up the handling of the goods;
- **Social** because it is necessary to invest more on the people since there is a scarcity of professional workers to employ in the multimodal chain.

4. Best practices collected in the field of node management optimization

The best practices presented in this document would like to offer good solutions tested and experienced in the field of node management optimization.

These good practices have been collected following the criteria of the project field of action and, when possible, of the pilot action foreseen in the related field (2.1 Overview of pilot actions).

Specifically, it deals with solutions tested and proposed by TalkNET project partners and other selected from external operators and actors that partners have deemed to be significant for their activities and business.

Nevertheless, not only good solutions are proposed, but in some cases also the relevant up-to-date knowledge in the thematic field of node management optimization, as guidelines to support activities in this specific field.

The selection of the best practices has been strictly influenced by the needs of partners' stakeholders that have been detected from the project activities and the various contacts that the partners had working with them.

Moreover, the variety of the TalkNET project partners has represented an added value for the knowledge management of the project, allowing to gather in turn different stakeholders good solutions adopted.



Title
Wagon sharing - Interterminal Verona Freight Village
Contacts if available / Players included
<ul style="list-style-type: none"> ▪ LKW WALTER as forwarder ▪ TERMINALI ITALIA as terminal manager ▪ QUADRANTE SERVIZI as service provider (especially for handling and shunting operations) ▪ RFI as Italian railway infrastructure manager ▪ REGIONE VENETO as regional institution ▪ RAILWAY UNDERTAKINGS with a particular interest on the intermodal chain
Location
Verona, Italy http://www.quadranteeuropa.it/
Summary
<p>a. In the Central Europe area, Verona represents a good example of efficient handling of freight trains</p> <p>b. From 2014 to 2018, the intermodal trains managed in the Verona freight village increased from 12,982.00 to 13,536.00</p>
Overview
<p>In the smaller terminal of the Verona freight village, a particular handling technique was implemented some years ago in order to reduce the delay of the departing trains. This way to operate is necessary since the frequent disruptions on the Brenner axis. Therefore, there was the will to change this negative trend, increasing the departures on time. Unfortunately, if there are problems on the railway line, the passengers trains have the priority (firstly the express trains and then the regional ones) on the freight trains, so there are some forwarders that decide to re-route their trips, erasing the slots booked on the trains. For this reason, the adoption of a better handling technique like the wagon sharing used in Interterminal (the abovementioned smaller terminal of the Verona freight village) is essential. This operative procedure gives the priority to the first train arriving inside the terminal, despite the daily scheduling foreseen. In this way, if a train is stopped for a long time on the railway line, the terminal has the opportunity to handle the other ones already arrived in order to avoid waiting for hours the train blocked, preventing to keep a track occupied uselessly for many hours. With this practice, it is possible to improve the management of the assets, to reduce the waste and to enhance the overall productivity. The deployment of this procedure is possible in the terminals where only one MTO operates otherwise there could be some problems in the management of the wagons. In fact, in a roundtrip are usually used the same wagons. This is due to prevent the risk to lose the wagons since they are not equipped with track and trace devices. However, a unique MTO (Multimodal Transport Operator) allows to have the same daily trains managed so it is possible to implement the wagon sharing technique.</p>
Results and experience collected



- In the last five years, the number of intermodal trains managed in the freight village of Verona raised from 12,982.00 to 13,536.00 and the wagon sharing was one the key factors to achieve this result
- The good outcomes and the high level of efficiency reached drove other terminals to study this method with the aim to implement it
- The MTO accepted to change its policy because wagon sharing permits to increase its number of trains managed and the overall efficiency

Added value for the TalkNET project / Link to Pilot actions

The way to operate of Interterminal can be studied by the project partners that have the opportunity to improve their business implementing this practice. Currently, there are not information about the adoption of this technique in other terminals. However, the results of Verona freight village can led other nodes to adopt this method in order to build a more efficient multimodal chain.

Title
Shunting service - MÁV Zrt. Hungary
Players included and contacts (if available)
<ul style="list-style-type: none"> ▪ MÁV Zrt. (Hungarian State Railways - infrastructure manager) ▪ Hungarian railway undertakings
Location
Hungary
Summary
<p>Railway undertakings in most of the Central and Eastern European countries have to face with the problem that the number of rail professionals is decreasing. The lack of skilled personnel is based on economic and social factors which can be solved only on mid or long term. They have an important effect on ensuring smooth operation of railway companies and the current system and conditions of their training and remuneration must be changed in order to ensure enough skilled employees for these professions.</p> <p>The lack of rail professionals can also reduce the competitiveness of rail freight transport.</p>
Overview
<p>Although middle and senior management with significant professional background is available, railway companies face with huge human capacity problems.</p> <p>The number of train-drivers is decreasing. It caused mostly by two factors:</p> <ol style="list-style-type: none"> 1. the attractiveness of this profession has decreased in general in the last 2-3 decade among the younger generations thus the number of train-drivers has fallen: the mean age of a train-driver is around 50 years. This trend already results the lack of train-drivers and it will be even more enhanced by the retiring of existing employees. 2. the skilled train-drivers are more and more being hired by Western European railway companies, especially by German ones, which offer higher remuneration and better working conditions. Due to the freedom of the movement of workforce within the EU,



this process cannot be stopped by administrative measures.

However, the lack of train-drivers is not the only problem affecting the workforce of freight transport companies. Also, the job of technical inspectors of wagon is an extremely important and highly responsible job, their work is also essential because they are responsible to state the technical readiness of every single train before departure.

Results and experience collected

There is a practice that is allowed by the EU, however - according to our knowledge - only the MÁV uses it: in a number of priority hubs, the infrastructure manager provides shunting service with its own shunter and staff which every rail freight company can use on equal terms. This means they do not have to put and maintain their own crew and machines in every relevant station.

<https://www2.vpe.hu/halozati-uzletszabalyzat-husz/hatalyos-husz-2018-2019>

Added value for TalkNET project / Link to Pilot actions

The railway is an environment-friendly connection between the multimodal nodes and ports. The lack of human capacity in the rail sector can be eased and the competitiveness of the sector can be enhanced by introducing new services (shunting services in relevant stations) by the infrastructure managers.

Title

Access control and traffic management system - Amazon's Logistics Center Martorelles (Barcelona)

Players included and contacts (if available)

Amazon Spain, implemented by Innova Systems Group

<http://innovagroupbcn.com/en/project/access-control-amazon/>

Location

Municipality of Barcelona (Martorelles), Spain

Summary

In general, digitalization of logistic services can improve efficiency and ultimately increase sustainability and profitability of a port when organised well.

Overview

Among the good practices revealed, Amazon's logistics center in Martorelles (Barcelona) was identified having similar needs to FBL. The complexity of their entrance and exit of trucks, the difficult reading and recognition of license plates made it necessary for them to find an Automated Licence Plate Recognition (ALPR) solution that allows to operate in a lane with a width greater than 5 meters and with vehicles whose access point is made from different places, being able to offer an accurate reading of license plates even if they have different inclinations and positions.



Amazon has implemented SIRAM, a vehicle access control system from Innova Systems Group based on ALPR. With this technology, all the license plate recognition cameras have been installed at the entrance and exit lanes of trucks, as well as the automated access control of vehicles to control the transit of trucks and other vehicles.

To control the access of vehicles and to guarantee maximum security of Amazon's center and surroundings, their system provider have designed a solution that combines their SIRAM Suite technology and SIRAM Totem capture units.

Taking into account the location and size of lanes, this capture unit has the largest number of LEDs, guaranteeing a 100% effective license plate reading and recognition. An important feature of this installation is the versatility and reliability of the license plate recognition system.

SIRAM OCR is an advanced technology that allows the automatic recognition of license plates in an efficient and unambiguous way through the installation of capture units or LPR cameras.

The technology is linked to the operation process of the logistics center, being a tool that adds efficiency and security to the vehicles and trucks access control management.

The features of SIRAM:

- Automatic access of all authorized vehicles, whether trucks, vans or cars.
- Registration of vehicles with temporary access authorization.
- Total control and management of the stay periods inside the logistics center
- Information of all vehicles inside the center at all times.

An important factor in this installation is the speed and reliability of the license plate recognition system using SIRAM OCR, as the entry and exit of vehicles is concentrated in very small time slots, demanding a license plate recognition solution to operate without interruptions in moments of maximum affluence. Besides others, FedEx also choose SIRAM Suite as a perfect solution for their workflow.

State-of-the-art digital intelligence guarantees a smooth, efficient operation. The control systems of Innova Systems Group are world-leading, while the interaction between sensor technology and analysis, forecasting and information systems delivers huge efficiency improvements. This is not only good for business but also protects the environment, hence a highly recommended good example of systems for FBL.

Results and experience collected

The access control and traffic management system upgrade at FBL in Phase 1 is scheduled at all 3 gates and would need to not only be able to recognise data based on licence plate reading but be able to connect and store data that can be integrated through a modular system later on in Phase 2.

Possible further development of the traffic management system in Phase 2 will include besides the automatic access control a navigation system within the port area, and aims to efficiently manage flows of goods, improve truck throughput, eliminate congestion, and gain a bird's eye-view of operations, and to deliver, access and integrate all relevant data in real time. As a result, all stakeholders - from port and fleet managers, to freight carriers, drivers



- enjoy role-specific, up-to-the-minute visibility. The system will contribute to the optimization both traffic and logistics operations in order to allow larger quantities of goods to be transhipped in the port area.

Added value for TalkNET project / Link to Pilot actions (D.T 3.2.8)

It is highly advisable to deal with the question what kind of modern technical tools should be utilized to modernize freight transport logistic and information sharing on freight and transport.

During the development, the most up-to-date IT solutions shall be applied.

The planned development has a clearly positive environmental effect contributing to the reduction of carbon dioxide emissions of the trucks entering into the port area.

The main stakeholders are:

- Ministry of Innovation and Technology
- MAHART Freeport Plc.
- Freeport of Budapest Logistics Ltd. (FBL)
- ArcelorMittal Distribution Hungary Ltd.
- Ekol Logistics Szolgáltató Ltd.
- Ferroport Ltd.
- Ghibli Ltd.
- Kelet-Trans 2000 Ltd.
- Lagermax Autótranszport Ltd.
- MAHART Container Center Ltd.
- MAHART Gabonatórház Ltd.
- MASPED Logisztika Ltd.
- RSR Cargo Ltd.
- Dunatár Ltd.
- Royal Sped Zrt. (Royal Sped Ltd.)
- More than 60 different type of service providers in the Freeport
- Potential E-commerce companies, web shops
- Centre for Budapest Transport
- MLSZKSZ (Hungarian Association of Logistic Service Centers)
- RSOE (National Association of Radio Distress-Signalling and Infocommunications)

5. Conclusions

Best practices collected in the field of node management optimization can be different in relation to the different partners/actors involved. This shows the variety of interventions needed to cope with node management optimization issues. In general, less physical interventions are foreseen in this field of action with respect to the other two fields of multimodality (last mile connections and multimodal services). In fact, the improvements to be deployed regard mainly organizational aspects.



The good practices detected show that there is no need of e.g. new rules, but the adoption of a different way to operate. Moreover, they show a different approach to be adopted in the daily activities that partners/actors carry out in their business.

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6.1 Collection of best practices

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