WP 5

Activity 5.2

Case Study
Parking Space Management for Trucks in the Port of Hamburg

Hafen Hamburg Marketing e.V.

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TEU	Twenty food equivalent unit container
HPA	Hamburg Port Authority AöR
CEF	Connecting Europe Facility
DIVA	Dynamic traffic volume information system
EC	European Commission
EU	European Union
FO	Funding Objective
ITS	Intelligent Transport Services for Road
TEN-T	Trans-European transport networks

1. Abstract

The globalisation is considerable increasing the global cargo flow which needs to be handled, amongst others, by gateway ports. Often, to be able to handle the future cargo flows, the main focus of port capacity enlargement lies on an increase of the terminal efficiency, but investments in important further port infrastructure are just as crucial. Bottlenecks in ports can only be avoided when fast and smooth transportation of the cargo to and from the hinterland is guaranteed.

In the Port of Hamburg, the highest share of the hinterland modal split is currently taken by the truck.

Furthermore, the throughput of TEU has been forecasted to strongly increase within the next ten years. Local authorities hence need to increase the efficiency of existing infrastructure to avoid related traffic congestions within the port area. An essential part of the necessary infrastructure is the availability of sufficient parking slots for trucks.

To address these challenges the Hamburg Port Authority has implemented the project “Parking Space Management”. The main objective is to improve the efficiency of different parking grounds within the port area by using telematic support. The hereby generated increased transparency of available parking spots and the implementation of a pilot PreGate parking project will improve the traffic flow and cargo handling, reduce traffic-related pollution and will increase road safety in the future. The following case study exemplarily demonstrates the approach, planning and implementation of this project. Additionally, it describes funding possibilities, applicable legislation and further similar projects.

2. Introduction

Europe’s ports are vital gateways linking European industrial clusters via transport corridors to the rest of the world. Round about 74% of goods entering or leaving Europe goes by sea, and Europe boasts some of the finest port facilities in the world. Next to the economic benefit the increasing importance of the ports infrastructure is facing challenges with regard to hinterland congestion, traffic growth and investment (EC, 2014a). Therefore, in the EU 2020 strategy the European Commission plans to foster smart and sustainable growth of the economy and related infrastructure. Here, the elimination of bottlenecks within the infrastructure and especially within TEN-T corridors is one main concern. Additionally, the importance of ports and the related crucial hinterland connection is emphasised in the White Paper on Transport which shows that not only cargo handling is in the focus but also related infrastructures.

The Port of Hamburg has been called by 9,700 ocean going vessels in 2013 carrying to a large extent containerised cargo. These vessels have brought a throughput of 9.3 million TEU to the port. 59 percent of these, which summed up to 5.4 million, were designated for the hinterland of the Port of Hamburg (Port of Hamburg Marketing, 2014a). A future TEU throughput of 16 million in the year 2030 has been evaluated in a study based on 2013 (ISL, 2013).

The modal split to and from the hinterland is tripartite whereas the most frequent used transport mode is the truck with 59 percent or 3.2 million TEU (Port of Hamburg Marketing, 2014a). For the total throughput of the port the share of trucks within the hinterland traffic is 48 percent (Port of Hamburg Marketing, 2013). Even though the share of hinterland connections by truck is forecasted to slightly decrease to 57 percent in 2025 the cargo volume on the road will increase (HPA, 2012a). As a result, the challenges of the truck traffic in the port area in the upcoming years are significant for the port

environment. The road infrastructure, which is around 137 km within the port area, is heavily burdened (HPA, 2014a). Therefore, it is essential for the Port of Hamburg to maintain an adequate road infrastructure including resting areas for trucks.

There are six parking grounds with truck parking slots within or close to the port area of Hamburg. In a broader view there are additional parking grounds outside of the port area but still within the metropolitan area of Hamburg (among others the “Autohof Moorfleet”). The location of the parking grounds is illustrated in figure 1, while table 1 gives an overview of the available parking lots on the grounds.

Figure 1: Available parking grounds within port area (HPA, 2014b)

Table 1: Parking grounds related to the Port of Hamburg (HPA, 2014b)

	Hamburg-Georgs-werder	Autohof Alten-werder	Altenwerder Ost*	Dradenauer Hauptdeich*	Dessauer Straße*	Zoll Tunnel-straße
Available lots (trucks)	130	50	75	64	40	20
○ Gas station ○ Restaurant ○ Cleaning facilities ○ Dangerous goods	X	X	-	-	-	-

** Parking grounds within the focus of the project (+ Autohof Moorfleet which is not directly in port area)*

The table above shows that a certain number of parking grounds, which are located within or alternatively close to the port, are available whereas the capacity of lots is limited. It is questionable, however, how many of the lots are available in practice due to the fact that an optimal utilisation is difficult to achieve caused by a lack of truck coordination within the parking grounds. Considering also the expected increase of a parking lot demand, it becomes obvious that this situation is posing challenges. In consideration of future demands, a capacity deficit of parking lots for trucks within the port area has been evaluated. Based on the limited space within the port environment a higher efficiency in the utilisation of parking grounds hence is crucial (HPA, 2012b).

As a solution, the Hamburg Port Authority launched the “Parking Space Management” project, which implements a parking ground management system for trucks (HPA, 2014c). Not all of the existing parking grounds are included in the specific project as table 1 clarifies. The project consolidates available parking space by using telematic support. Additionally, on the parking ground “Autohof Moorfleet”, which is not located within the port, a pilot PreGate-Parking project will be implemented. In consequence, the project ensures that parking facilities for trucks related to the port will be optimal used and hence reduces the parking search traffic, congestion in the port area and the number of trucks parking in residential areas close to the port.

3. Description

In the following paragraphs the project of the Parking Space Management in the Port of Hamburg will be described in detail. If other sources are not named explicitly, statements, facts and figures were taken from the application form for TEN-T funding, by the HPA (HPA, 2012b).

1.1 The Parking Space Management Concept

Due to the limitation in parking space and the challenging future amount of TEU arriving at or leaving the Port of Hamburg, a comprehensive Parking Space Management concept has been planned by the HPA. Figure two illustrates the two pillars of the concept:

1) Consolidation of existing parking space and

2) Pilot project: PreGate-Parking.

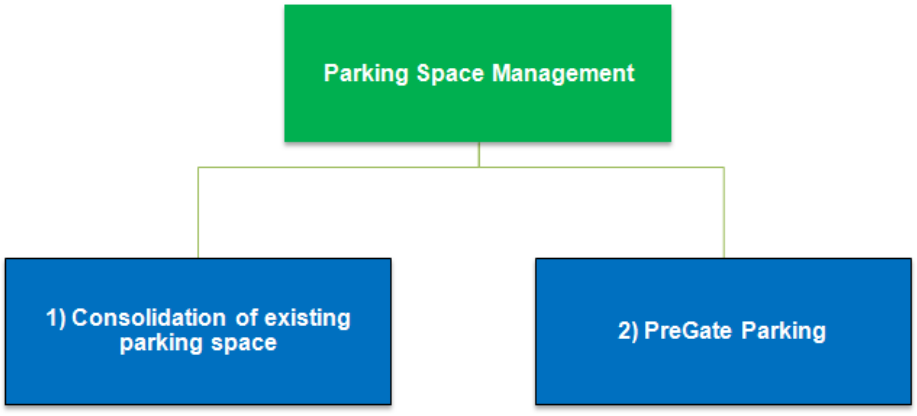

Figure 2: Parking Space Management Concept by the HPA (own illustration based on: HPA, 2012b)

The consolidation of existing parking space takes place on the parking grounds “Dessauer Straße”, “Altenwerder Ost” and “Dradenauer Hauptdeich”. On these parking grounds the existing parking space is planned to be optimised with help of telematic support. The higher level of data transparency achieved by the implemented telematic applications will increase the degree of capacity utilisation due to the higher level of information about available parking spots.

Furthermore, the project aims to implement the innovative parking concept “PreGate-Parking” on the pilot parking ground “Autohof Moorfleet”, which is located outside of the port area. PreGate-Parking aims to mitigate traffic congestions on the port roads by approaching and optimising the traffic which has not yet entered the port area. All cargo traffic which is aiming for a port terminal will be led to these parking grounds (if necessary). The corresponding truck drivers will communicate their time window for their cargo delivery or collection. With this time window as a base, the truck driver receives a defined parking spot. This procedure allows an allocation in line with other trucks of the same time window and the same destination which will start simultaneously. Furthermore, in case of unforeseen traffic complications on route to the port terminal, departure times can be recalculated and alternative routes suggested. The main benefit of the concept is the organisation of traffic before entering the port area. Essential for the project is here the connection of the parking ground “Autohof Moorfleet” to the important motorway A1 (E22) which also represents an important link to Eastern Europe.

The Parking Space Management project itself is constructed out of three main components which aim to build up an adequate framework to achieve data transparency within the parking management.

1. **Parking ground data acquisition**
   Parking ground data acquisition is necessary in order to implement a comprehensive data information management. The main focus is put on the detection of vehicles within the parking grounds. Next to information support measurements on the technical side in form of detectors, additional improvements in form of parking space adjustments are implemented. The important part of information availability for an efficient parking allocation is secured by the implementation of induction loops within the asphalt. These loops help to visualise and organise the available parking space and improves the traffic transparency for an efficient traffic management.

2. **Efficient usage of parking space**
   Another essential part of the parking space management is the efficient usage of parking space with the help of telematics column parking for PreGate-Parking. The trucks are led by dynamic electronic signs to their designated parking spot. The particular spot is assigned based on the information provided about the desired arrival at the terminal. Together with the current traffic situation this information is used as a time base to determine the optimal departure time. Trucks are sorted based on the departure time which abolishes unnecessary truck movements within the parking space.

3. **Information processing and provision of data**
   The third pillar of the project is a consolidation of information and the provision of data for end users such as truck drivers and route planners of freight forwarding companies. Using internet connected media, truck drivers and route planners will be able to receive live information about the parking space situation and to react adequately. Furthermore, the data of available parking grounds will be implemented within the overall Port Road Management system, which will be described further below.

1.2 Technical infrastructure

In order to realise the concept as described above, it is necessary to implement the following infrastructure:

1. **Adjustment of the traffic infrastructure belonging to the parking ground:** ground marking for the column parking on the PreGate-Parking ground “Autohof Moorfleet”, adjustments of the entry and exit applications, installation of sign-postings.
2. **Equipment of the truck parking spots with technical infrastructure:** detection including induction loops, digital displays, terminal pre-announcement on the PreGate-Parking ground, network access, miscellaneous wiring.
3. **Integration of the parking ground information into an overhead information management system:** import and process of detection data, connection of parking information and traffic/terminal data for the PreGate-Parking ground, provision of evaluated data through different media and mobile applications.

The different infrastructure implications are visualised in the following figure.

Figure 3: Infrastructure applications (own illustration, based on: HPA, 2014d)

1.3 Intersections to Port Road Management

The project “Parking Space Management” is part of a superior port initiative named “smartPORT” which is aiming towards a comprehensive port information system on the one side and the promotion of eco-friendly energy consumption within the port on the other side.

This initiative is set up by the Hamburg Port Authority to lead the Port of Hamburg towards an intelligent port which provides sustainable economic growth and increases the benefit for the costumers while minimising environmental impacts (HPA, 2014e). The initiative consists of two pillars, namely “smartPORT logistics” and “smartPORT energy”. The energy initiative aims for a lesser dependency of conventionally generated electricity by switching to renewables. Within the field of “smartPORT logistics”, traffic solutions and trade flows are improved.

One important measure of “smartPORT logistics” is the Port Road Management information system. This system gathers real-time traffic information from the roads in the port area which is collected from 300 recording points (Port of Hamburg Marketing, 2014b). This information are then processed and

bundled in a central computing centre from the HPA. Subsequent, this information are visualised via the dynamic DIVA digital signs within the port road network (DIVA stands for “dynamic traffic volume information system”). Traffic participants hereby receive real-time traffic flow information which allow individual route adjustments. The system allows the HPA to manage the traffic flow within the port roads and to react to unforeseen situations adequately (HPA, 2014f).

The collected data of the Parking Space Management system will be processed, verified and then provided to the Port Road Management and DIVA signposts. Furthermore, the Parking Space Management concept uses the real-time traffic information from the overall Port Road Management information centre in order to calculate the optimal departure time from the parking ground. Information about potential trucks on the road, waiting in the parking ground, also feed the Port Road Management information centre. Additionally, the information will be provided to the end user who can receive the information via mobile devices such as tablets or smartphones. The connection of the named concepts and systems can be illustrated graphically as in the following figure.

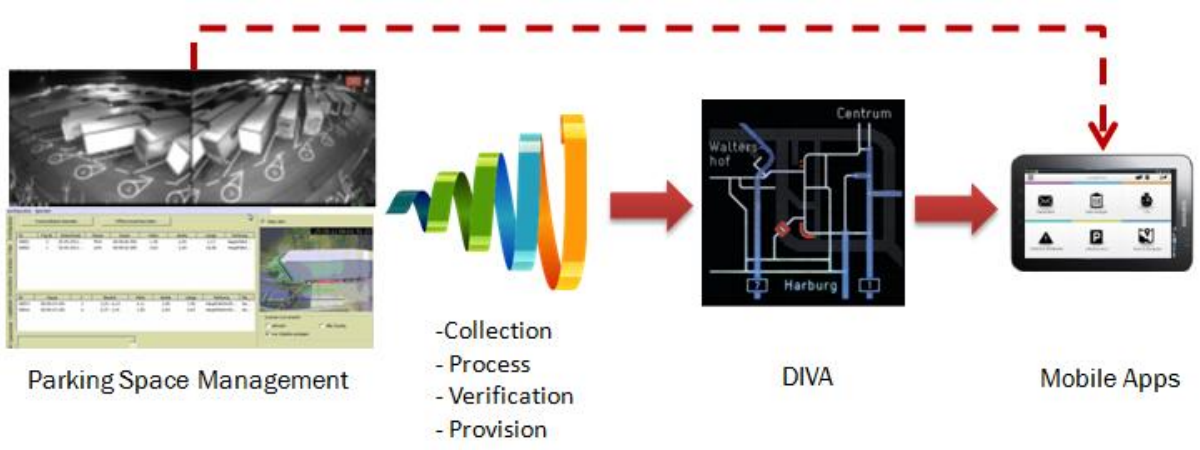

Figure 4: Intersections to smartPORT Logistics (own illustration, based on: HPA, 2014d)

1.4 Project activities and timeline

The project is divided into six main activities and a final one which are managed by the HPA. External parties for technical support are also involved in specific activities. The overall time framework of the project is planned for 16 months, starting in the first quarter of 2014 and ending mid-June of 2015:

The first activity lasts one month and includes a summary and analysis of existing studies. Those were partly generated during the Interreg IVB Baltic Sea Region funded project “TransBaltic” (see also Section 6). Additionally, a review of the current infrastructure situation within the Port of Hamburg is completed.

In the second step the concept for the detection infrastructure is planned and adjusted to the particular characteristics of the parking grounds “Dessauer Straße”, “Autohof Altenwerder” and “Dradenauer Hauptdeich”. Here, the concept includes the planning of hardware implementation and the related software connections in order to consolidate available space and hence to increase the used capacity.

After completing the planning, the detection system is implemented on the particular grounds. This activity lasts from April 2014 to January 2015.

The parking ground “Autohof Moorfleet” layout is planned towards a PreGate-parking system in the third activity. This includes the creation of the general concept, like the implementation of dynamic displays, a notification desk, at which the truck driver register and construction adjustments of the parking ground. The activity lasts from April 2014 to March 2015.

The data collection of the involved parking grounds equipped with telematic applications is part of the fourth activity (January 2015 to May 2015). Furthermore, the connection to the Port Road Management is included.

Activity 5 is an overhead activity, carried out as a case study, which is supervising all activities contributing to the PreGate-Parking system on the parking ground “Autohof Moorfleet”. It started in April 2014 and is planned to be finished in June 2015. The case study[1] will run longer than the parking space management project itself. In the extension, the success of the system shall be monitored.

The final activity is the presentation of the project on the IAPH World Port Conference in June 2015 in Hamburg and represents the last milestone of the project. This important dissemination event will be used to exemplary describe the benefit of the innovative system as best practice example in front of an international audience.

Project management and dissemination measures run parallel throughout the other activities.

1.5 Main objectives and benefits

The main aim of the Parking Space Management system is to increase the efficiency of the existing parking grounds due to a higher consolidation as well as controlling the traffic flows to the port due to the innovative PreGate-Parking system. In the following the benefits of the project are enlisted:

- **Increase of capacity usage degree:**
  Based on the detection system in connection to the information provision to truck drivers the availability of parking space is transparent. The objective is to prevent the disuse of parking spots and hence to enlarge the overall parking capacity without the construction of new parking space or other costly investments.
- **Reduction of traffic and environmental impacts**:
  The availability of data information will create the advantageous situation that truck drivers will approach the parking ground, knowing that space is available. This will decrease the number of traffics which are searching available spots within the port area. Therefore, emissions are reduced and the traffic density is lowered. Furthermore, the nearby residents are less infected by truck emissions and parking trucks.
- **Increase of speed and efficiency of cargo handling and transport processes:**
  The PreGate-Parking based on the departure time of the trucks is helping to improve the transport processes. Bottlenecks within the traffic and the terminals will be communicated in advance so affected actors can react adequately and delays can be prevented which is also an important topic within the “White Paper on Transport”.

[1] The full name of the case study is “Intensified use of parking space by way of a telematics-controlled trucks-parked-in-columns system at the Autobahn A1 *Autohof Moorfleet*”.

- **Increased reliability of transport processes:**
  The project will produce and provide data which support decision makers within the port. Driving and resting periods can be scheduled in an efficient way.
- **Increased traffic safety und improvement of services for the truck driver:**
  "Wild Parking" in residential areas causes an essential traffic risk. The availability of more parking space and thus, decrease of wild parking hence increases the traffic safety within the port area. Furthermore, the available parking space on parking grounds offers service facilities for truck drivers.
- **Transferability of project outcomes:**
  The project is exemplary and the concept can be transferred to other ports and locations with high industrial and non-industrial activity.

2 Involved Actors

The stakeholders of the project are diversified, which are either actively involved into the construction or implementation process or are passive beneficiaries.

Hamburg Port Authority
The project is led by the Hamburg Port Authority (HPA) which acts as coordinator and main financer of the infrastructure and project itself. The project management is organised by the HPA. The HPA is the regional authority responsible for infrastructure in the port. Responsibilities for the development and maintenance of the port are founded in the state law of the Free and Hanseatic City of Hamburg, (Gesetz über die Hamburg Port Authority (HPAG), § 2 ff.). Based on the fact that the project activities are also including external services, the HPA is to some extent acting as an awarding authority.

Tenant of parking grounds
The parking ground tenant companies profit from the optimal use of the available parking space and of the better organisation of parking activities. Additionally, the companies are involved into the planning and construction process based on the ownership of the suprastructure of the parking ground. Their involvement in the specific implementation activities is necessary and adds input to the overall system. Furthermore, the parking ground tenant shall maintain the infrastructure in future after the end of the project itself.

Forwarding companies
Forwarding companies and truck drivers are another involved main actor. The project aims to collect data and to provide it to the end users who are the forwarding companies, truck drivers and route planners. The availability of comprehensive data allows the users to gather information in advance and thus, gives security about the availability of parking spaces. Hereby, the use of petrol and vehicles is decreased. Furthermore, mandatory resting times for truck drivers can be kept in an organised way.

External companies
The parking ground management system is demanding a high level of expertise in the field of data processing, economic feasibility studies and the building of hardware intersections. Therefore, external private companies are awarded during the project and will provide these services within the project. Additionally, construction works might demand further external services.

Residents

Next to the active involved actors, close living residents and other traffic participants are indirectly involved. “Wild parking” in residential areas, located close to the port area, will decrease. Due to the coordinated departure of the trucks from the PreGate Parking ground, the traffic volume will decline and thus, other traffic participants will also benefit from the lower truck density on the street.

3 EU and national legislation

Next to the TEN-T Guidelines[2], whose relevant articles will be listed in the following section, different EU, national and regional legislation apply when implementing a Parking Space Management. Furthermore, different legislation is basis for the need of improving existing infrastructure. The following table gives an overview of some of laws and directives.

[2] TEN-T Guidelines is the common short form for the official legal European Union document “Regulation (EU) No. 1315/2013 of the European Parliament and of the Council of 11 December 2013 on Union guidelines for the development of the trans-European transport network and repealing Decision No. 661/2010/EU, OLJ 348, 20.12.2013”.

Table 2: EU & National laws to consider for the project

Name of the Law / Abbreviation	Description
European legislation	
Treaty on the Functioning of the European Union (TFEU)	Regulations about financial aid and competition regulations
Directive 2010/40/EU (ITS Directive)	The directive establishes a framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other modes of transports within the Union, in particular across the borders between the Member States. Furthermore, the directive sets out the general conditions necessary for that purpose.
Name of the Law / Abbreviation	**Description**
European legislation	
Commission Delegated Regulation (EU) No 885/2013	The regulation supplements the ITS Directive with regard to the provision of information services for safe and secure parking places for trucks and commercial vehicles.
Directive 2008/96/EC	Directive regarding the establishment and implementation of procedures relating to road safety impact assessments, road safety audits, the management of road network safety and safety inspections by the Member States.
German national legislation	
Federal highways act (FStrG)	This act includes regulations about parking areas at motorways. Due to the fact that certain parking grounds of the project are related to German highways this law might be considered. German full title: Bundesfernstraßengesetz
Legislation of the Free and Hanseatic City of Hamburg	
Hamburg Port Authority Gesetz (HPAG)	The HPA is in charge all processes related to planning, the development, administration and maintenance of the port infrastructure.
Hamburg's law on paths	State law about the public roads in the area of the Free and Hanseatic City of Hamburg German full title: Hamburgisches Wegegesetz
Odinance for the implementation of Hamburg's law on paths	Ordinance about the responsible authorities for the public roads and paths in the Free and Hanseatic City of Hamburg. German full title: Anordnung zur Durchführung des Hamburgischen Wegegesetzes
Hamburgische Bauordung / HBauO	It is to expect that the infrastructural construction work will have a minor extend and thus, there will be no building permission necessary. However, in case of bigger constructions works this law contains diverse guidelines and requirements for construction works.

4 TEN-T guidelines

Several articles of the TEN-T Guidelines are related to and/or include requirements for the infrastructure of roads, for the use of telematic applications and for the efficient logistics management.

The following table gives an overview of specific relevant TEN-T Guidelines articles for the described Parking Space Management and PreGate-Parking project:

Table 3: Parking Space Management compliance with TEN-T Guidelines

Article	Covered Area
Chapter I: General Principles	
5 (a), (b), (c), (f)	The trans-European transport network shall be planned, developed and operated in a resource-efficient way, through: (a) development, improvement and maintenance of existing transport infrastructure; (b) optimisation of infrastructure integration and interconnection; (c) the deployment of new technologies and telematic applications, where such deployment is economically justified; (f) measures to plan and expand infrastructure capacity where necessary
Chapter II: The comprehensive network Section 3: Road transport infrastructure	
17 (1b), (1c)	Road transport infrastructure shall comprise, in particular: (1b) parking and rest areas; (1c) associated equipment
18 (e)	Member States shall ensure that (e) any intelligent transport system deployed by a public authority on road transport infrastructure complies with Directive 2010/40/EU and is deployed in a manner consistent with delegated acts adopted under that Directive.
19 (a), (b), (d), (e)	In the promotion of projects of common interest related to road infrastructure, and in addition to the general priorities set out in Article 10, priority shall be given to the following: (a) improvement and promotion of road safety; (b) use of ITS, in particular multimodal information and traffic management systems, and integrated communication and payment systems; (d) provision of appropriate parking space for commercial users offering an appropriate level of safety and security; (e) the mitigation of congestion on existing roads.

Article	Covered Area
Chapter II: The comprehensive network Section 6: Infrastructure for multimodal transport	
28 (1b)	Member States shall ensure, in a fair and non-discriminatory way, that (1b) without prejudice to the applicable Union and national law, freight terminals and logistic platforms, inland and maritime ports and airports handling cargo are equipped for the provision of information flows within this infrastructure and between the transport modes along the logistic chain. Such systems are in particular to enable real-time information to be provided on available infrastructure capacity, traffic flows and positioning, tracking and tracing, and ensure safety and security throughout multimodal journeys.
31 (1), (3”’)	(1) Telematic applications shall be such as to enable traffic management and the exchange of information within and between transport modes for multimodal transport operations and value-added transport-related services, improvements in safety, security and environmental performance, and simplified administrative procedures. Telematic applications shall facilitate seamless connection between the infrastructure of the comprehensive network and the infrastructure for regional and local transport. (2) Telematic applications shall be deployed where feasible across the Union, in order to enable a set of interoperable basic capabilities to exist in all Member States. (3) The Telematic applications referred to in this Article shall, for the respective transport modes, include in particular (3”’) for road transport: ITS.
32 (a), (b), (c), (e)	Member States shall pay particular attention to projects of common interest which both provide efficient freight transport services that use the infrastructure of the comprehensive network as well as contribute to reducing carbon dioxide emissions and other negative environmental impacts which aim to (a) improve sustainable use of transport infrastructure, including its efficient management; (b) promote the deployment of innovative transport services, including through motorways of the sea, telematic applications and the development of the ancillary infrastructure necessary to achieve mainly environmental and safety- related goals of those services, as well as the establishment of relevant governance structures; (c) facilitate multimodal transport service operations, including the necessary accompanying information flows, and improve cooperation between transport service providers; (e) analyse and provide information on fleet characteristics and performance, administrative requirements and human resources.

Article	Covered Area
Chapter II: The comprehensive network Section 6: Infrastructure for multimodal transport	
33 (c), (f), (i)	In order for the comprehensive network to keep up with innovative technological developments and deployments, the aim shall be in particular to: (c) improve the safety and sustainability of the transport of goods and the movement of persons; (f) promote measures to reduce external costs, such as congestion, damage to health and pollution of any kind including noise and emissions; (i) further advance the development and deployment of telematic applications within and between modes of transport.
Chapter III: The core network	
39 (2c'')	The infrastructure of the core network shall meet all the requirements set out in Chapter II. In addition, the following requirements shall also be met by the infrastructure of the core network, without prejudice to paragraph 3 for road transport infrastructure the development of rest areas on motorways approximately every 100 kilometres in line with the needs of society, market and environment, in order inter alia to provide appropriate parking space for commercial road users with an appropriate level of safety and security.

5 Funding possibilities

HPA successfully applied for co-funding by the European Union for the described project "Parking Space Management in the Port of Hamburg" (project number 2013-DE-92024-S). The studies of the projects are subsidized with 50 % of the total costs of 1.1 million Euro by the TEN-T programme 2007-2013 under the priority "ITS for road". The TEN-T programme was the funding programme of the European Commission for projects which supported the construction and upgrade of transport infrastructure in Europe in 2007 to 2013.

In general, projects which fall under the TEN-T guidelines are supported by the EU. Under the related Connecting Europe Facility (CEF) Regulation,[3] a total budget of 26.2 billion Euro are disposed for co-funding TEN-T projects in the Member States during the funding period 2014-2020. The CEF Regulation is the legal basic document for the CEF Transport funding programme, which was established by the European Commission in 2014 as successor of the TEN-T Programme. Funding investments of the CEF Transport are programmed in Annual and Multi-Annual Work Programmes, which clarify the different funding priorities and determine the amount of financial investment for each priority in the year of the specific calls. The **CEF Transport Work Programmes** has started with their first calls in 2014 (EC, 2014b; INEA, 2014a).

[3] Connection Europe Facility or CEF is the short form for the legal European Union document "Regulation (EU) No. 1316/2013 of the European Parliament and of the Council of 11 December 2013 establishing the Connecting Europe Facility, amending Regulation (EU) No. 913/2010 and repealing Regulations (EC) No. 680/2007 and (EC) No. 67/2010, OJ L 348, 20.12.2013". The CEF is divided into the three sectors of the overall TEN networks: Transport, Energy and Telecom.

The 2014 Annual and Multi-Annual Calls are divided into different “Funding Objectives (FO)” and their related priorities. Applications have to be submitted by 26 February 2015. Table four shows an overview of the calls.

Table 4: Overview of the 2014 annual and multi-annual CEF Transport Calls (INEA, 2014a)

2014 Annual Work Programme			
	Funding Objectives	Priorities	Max. available budget
Annual Call	#1: Removing bottlenecks and bridging missing links, enhancing rail interoperability and, in particular, improving cross-border sections #2: Ensuring sustainable and efficient transport systems in the long run, with a view to preparing for expected future transport flows, as well as enabling all modes of transport to be decarbonised through transition to innovative low-carbon and energy-efficient transport technologies, while optimising safety #3: Optimising the integration and interconnection of transport modes and enhancing the interoperability of transport services, while ensuring the accessibility of transport infrastructures	○ Projects on the Core Network ○ Projects on the Comprehensive Network ○ Projects to connect with neighbouring countries ○ Innovation ○ Freight transport services ○ Rail freight noise ○ Telematic applications ○ Accessibility ○ Core Network Nodes ○ Multimodal logistics platform	EUR 930 million
2014 Multi-Annual Work Programme			
FO 1	Removing bottlenecks and bridging missing links, enhancing rail interoperability, and, in particular, improving cross-border sections	○ Core Network Corridors ○ Other sections of the Core Network ○ Rail Interoperability ○ ERTMS	EUR 6 billion
FO 2	Ensuring sustainable and efficient transport systems in the long run, with a view to preparing for expected future transport flows, as well as enabling all modes of transport to be decarbonised through transition to innovative low-carbon and energy-efficient transport technologies, while optimizing safety	○ Innovation ○ Safe and secure infrastructure	EUR 250 million
FO 3	Optimising the integration and interconnection of transport modes and enhancing the interoperability of transport services, while ensuring the accessibility of transport infrastructures	○ SESAR ○ RIS ○ ITS for road ○ Motorways of the Sea ○ Core Network Nodes ○ Multimodal logistics platform	EUR 750 million
2014 Multi-Annual Work Programme			
	Funding Objectives	Priorities	Max.

			available budget
Specific Call for Cohesion Funds	Cohesion Fund allocation	○ Core Network Corridors ○ Other sections of the Core Network ○ ERTMS ○ Innovation ○ Safe and secure infrastructure ○ Motorways of the Sea	EUR 4 billion

A similar future project on parking space management which also include the implementation of telematic applications or similar could apply for co-funding by the European Union via the 2014 Multi-Annual Call in FO 3, priority “Intelligent Transport Services for Road (ITS)”. The ITS priority offers a maximum available funding of 70 million Euro. Actions that include works for the deployment of ITS for road as well as studies are supported. Real time traffic information is one of the named requirements of the actions with a clear focus on infrastructure management enhancement. Submitted proposals in the FO 3 of the 2014 CEF Multi-Annual Call must engage a minimum of three Member States. (INEA, 2014b)

If a future parking space management project involves safe and secure parking areas for trucks and commercial vehicles, the 2014 Multi-Annual Call, FO 2, priority “Safe and Secure infrastructure” could be another option for funding application. A maximum of 90 million Euro is available under this specific objective which will be used for actions related to safe and secure infrastructure on the road in the Core Network. Amongst others, priority will be given to projects addressing the use optimisation of existing parking areas via the utilisation of dynamic information (collection, processing and dissemination of parking information is included). (INEA, 2014c)

Projects including ITS which are not covered by the Multi-Annual Work-Programme might receive financial support via the 2014 Annual Call, Priority “Telematic Application”. The specific objective of this ITS priority is the promotion of cross-border actions on the TEN-T as a whole. A maximum of 55 million Euro of financial assistance is available under this objective. (EC, 2014c)

Furthermore, a parking space management system including PreGate-Parking in network nodes as described for the Port of Hamburg supports the reduction of bottlenecks. Those actions might be eligible under the priority “Comprehensive Network” of the first objective of the 2014 Annual Call if they also contribute to the Core Network development. The objective offers a maximum of 250 million Euro of funding. (EC, 2014c)

The described parking space management system reduces the external costs of transport through less congestion and emissions as described. In addition, the project advances the development and deployment of telematic applications in the transport mode road. Another possibility to apply for European funding for projects on the Core or Comprehensive Networks fulfilling one of these named objectives could therefore be the 2014 Annual Call, second objective, priority “New Technologies and Innovation”. To be eligible under this 20 million Euro objective it is necessary that the project is not covered by the Multi-Annual Call. (EC, 2014c)

All final requirements and definitions for eligibility of a specific project under the CEF Transport Annual and Multi-Annual Calls can be found in the Work Programmes legal documents of the European Commission.

Additionally, the Priority 4.1 of the **Interreg VB North Sea Region Programme 2014-2020** offers funding possibilities for initiatives, which are developing demonstrations of innovative transport and logistics solutions improving the accessibility of terminals while reducing air pollution, congestion and noise (North Sea Region Programme, 2014). Due to the fact that a comprehensive parking space management reduces traffic within the port area, this priority might be suitable to apply for funding.

Moreover, the **Horizon 2020** programme offers a maximum of 80 billion Euros for Research and Innovation action funding. This programme includes financial assistance within the field of Energy, Environment & Climate Action, Innovation and Transport (Horizon 2020, 2014). The combination of innovative telematics technologies within the transport area might be suitable to apply for funding under this comprehensive programme.

6 Existing and future projects

In the following paragraphs projects directly related to the Parking Space Management will be described as well as similar EU co-funded projects focusing on ITS or parking grounds.

Within the **Interreg IVB Baltic Sea Region** project “TransBaltic”, the implementation of an integrated transport system has been evaluated. One minor part of this project dealt with the feasibility of the implementation of a PreGate-Parking system in the Port of Hamburg. The core of the study has been a survey of market participants who are using the road infrastructure. Next to an analysis of approaches to improve the efficiency in container terminals of other ports and a status analysis of existing traffic technology components in the Port of Hamburg, the basis for the PreGate-Parking concept was established. It also included a detailed analysis of the existing process of truck handling at the container terminals in the Port of Hamburg.[4]

Furthermore, in future the Parking Space Management is planned to be connected stronger to different terminals in the Port of Hamburg. The delivery or pick-up information of the terminals will be embedded to a further extend into the Parking Space Management and Port Road Management information systems which will strengthen once more the smooth traffic flow within the port area. The intersection with the container terminals is currently in an ongoing process, whereas final decisions are not agreed yet.

The **TEN-T programme** co-funded project “Study for the acceleration of the implementation of safe and secure Parking Areas for professional drivers along the Italian TEN-T network” aims to implement preparatory and design studies featuring ITS for of a network of safe and secure parking areas in Italy (project number 2013-IT-91027-S). During the design phase, information services will be established. Details about the special services and locations of the parking areas will be available as well as the possibility of parking space pre-booking. The EU contribution accounts for 400,000 Euro.[5]

[4] Further information can be found on the project website www.transbaltic.eu. A summary of the study regarding operational requirements for PreGate-Parking in the Port of Hamburg is downloadable.
[5] Further information can be found on http://inea.ec.europa.eu/en/ten-t/ten-t_projects/ten-t_projects_by_country/italy/2013-it-91027-s.htm (accessed on 5 November 2014).

Another **TEN-T programme** project aims to increase safe parking space capacity for cars and trucks in Denmark and implements a pilot parking. In this connection, the project "Kongsted safe parking area" also includes ITS which will give information to drivers about the parking availability (project number 2012-DK-91165-P). 10% of the total project costs will be funded by the EU which adds up to 404,000 Euro.[6]

The 2007-2013 **TEN-T programme** co-funded further projects including ITS. The objectives of the projects vary:[7] "MedTIS_Mediterranean Corridor deploying Traveller Information Services" (2013-EU-50005-P) aims on the implementation of interoperable information services in the TEN-T Mediterranean corridor, while "NEXT-ITS – North European Cross-border ITS" (2013-EU-50004-P) focuses on delivering real-time traffic and road safety information on the Nordic section of the Scandinavian-Mediterranean corridor. The deployment of the cross-border interoperable electronic road toll services is the main objective of "Regional European Electronic Toll Service (REETS TEN) (2012-EU-50009-S). The completed project "NETLIPSE" (2008-EU-91901-S) has implemented an "Infrastructure Project Assessment Tool" (IPAT) which improves the international knowledge exchange for large infrastructure projects, and in particular TEN-T projects. Furthermore, "EASYWAY" and its successor "EasyWay, Phase 2" (2007-EU-50010-P / 2009-EU-50000-M) are main contributors to the objectives of the ITS Action Plan by the European Commission. The projects aim towards the implementation of a sustainable trans-European road network for safe, efficient and clean travel and transport. All aspects of travel are respected, from pre-trip to post-trip. The achievements of the EU EasyWay programme are used by the project "European ITS Platform (EIP)" (2012-EU-50005-S). The main objective is also to enhance the deployment of harmonised European ITS corresponding to the EU legislation by creating an adequate environment.

[6] Further information can be found on http://inea.ec.europa.eu/en/ten-t/ten-t_projects/ten-t_projects_by_country/denmark/2012-dk-91165-p.htm (accessed on 5 November 2014.
[7] All following full project descriptions can be found via the link http://inea.ec.europa.eu/en/ten-t/ten-t_projects/ten-t_projects_by_transport_mode/its_intelligent_transport_systems_for_road.htm (accessed on 5 November 2014).

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