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# ITS ACTION PLAN

FRAMEWORK SERVICE CONTRACT TREN/G4/FV-2008/475/01

**Study on Priority Action F:**

**Study regarding Reservation Services for Safe and Secure  
Parking Places for Trucks and Commercial Vehicles**

**D5 - FINAL REPORT**

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# VERSIONING AND CONTENT REVIEW INFORMATION TABLE

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# E X E C U T I V E S U M M A R Y

## 1. Introduction

The European Commission has commissioned a study intended to support the definition of the specifications and the impact assessment on action f. The present document provides a summary of the results of the work undertaken.

## 2. Review of truck parking reservation services

There are only few truck parking reservation services in Europe at present. Table 1 summarises the main truck parking reservation services identified. In addition, some service providers furnish information on truck parking on a wide scale but do not offer reservation services (e.g. TransPark).

Name	Type of initiator	Scope	How to book	Reservation fee
Truckinform	Private company European Commission	Europe (ca. 2800 TPAs, only few for reservation)	Internet	No
All4Trucks	Consortium of private companies related to transport/logistics and fuel sales	France (1 TPA, intention 20 TPAs)	Internet	No
SystemParken	TPA Operator	Germany (45 TPAs)	Internet	Yes, 12,50 EUR (reservation and parking)
Autohof Parken	TPA Operator	Germany (1 TPA)	Internet Fax Mail Telephone	Yes, 15 EUR (reservation and surveillance, incl. 10 EUR restaurant voucher)
Truck Etape	TPA Operator / motorway company	France (3 TPAs of which 2 for reservation)	Internet	No
SecuriTpark	TPA Operator	France (1 TPA)	Internet	No
Truckparking Rotterdam	Dutch group of private companies related to construction	Netherlands (3 TPAs)	Internet	No
UTA Parking Reservation Service	Fuel Card Issuer	Germany, France, Spain, Netherlands (only 2 TPAs with reservation info)	Mail Telephone	No
Highway Park	Private IT company	Germany (19 TPAs)	Internet Telephone	Yes, 3 EUR

**Table 1 : Existing truck parking reservation services in Europe (TPA = Truck Parking Area)**

The existing truck parking reservation services differ with regard to the function they fulfil in the reservation chain.

- Truckinform and Highway Park can be regarded as service provider systems. They act as mediators between users and TPA operators for parking reservation requests.

- All4Trucks, Autohof Parken, Truck Etape and SecuriTpark can be regarded as TPA operator systems. They manage their own parking capacity and process incoming reservation requests themselves.
- Pure booking systems do not seem to exist yet, although all current systems could potentially evolve to include this function. The core of a booking system is to provide a single database for managing reservations within a network of B2B partners, which are TPA operators on the supply side, and service providers on the demand side. The characterisation depends on who has the capability to confirm a reservation - if it is the database operator, then it is a booking system; if it is the TPA operator, then it more closely resembles a service provider system.

All existing truck parking reservation services have a private business model. Truckinform started as a PPP, but has currently shifted to a full private business model.

Existing truck parking reservation systems have demonstrated that the required technology is available. However at the moment, truck parking reservation services do not seem to be a very attractive business, in terms of volumes and profit margins. Nevertheless, there seems to be a number of potential new entrants to this market, such as Toll Motorway Operators, Fuel Card Issuers and Fleet Management Solution Suppliers.

At present only an estimated **2%** of truck parking areas is interested in offering a reservation service.

There appear to be two conditions that would make reservation interesting for a TPA operator:

- being able to control access to the parking places without significant additional costs (i.e. infrastructure and/or on-site staff).
- If the reservation service contributed to increased occupancy, by attracting customers that specifically want to reserve spaces.

These conditions are typically met by TPAs that target the segment of high-value goods, such as those represented by ESPORG. Also, the high-value goods segment is the only segment of the haulage sector to express a clear demand for reservation services at present.

Most publicly owned free-of-charge TPAs will be unable to accept reservations without incurring significant additional costs, nor will they be able to prove that this would significantly raise their occupancy.

**The estimate of 2% of TPAs interested in offering reservations is based on:**

- The total number of TPAs in the EU is estimated to 5,0001.
- The ESPORG association which represents TPAs counts 36 TPAs that specifically target high-value goods at present, and aims to certify 50 more in 20142.
- Considering that there will be some further TPAs with similar characteristics outside of ESPORG, we assume that there will be 100 TPAs offering reservation services in the near term.

### 3. Inquiry into Reservation Schemes in Other Sectors

An inquiry on processes and systems for reservation services used in other sectors of transportation has been conducted. It aimed to identify best practice, and the development of reservation schemes over time.

Contributions from Brittany Ferries, Neopark (parking reservation for light vehicles), Carlson Wagonlit Travel (global business travel and assistance), and Voyages-sncf.com (hotel reservation) were gratefully acknowledged.

The inquiry distinguished between supply-oriented booking systems (termed “reservation service operator” below) and end-client-oriented service providers (termed “reservation brokers” below). Booking system operators and service providers interact and complement each other according to patterns that are different in each sector, and that evolve over time. The organisation that deals with the end client is generally the reservation broker.

The wide geographic coverage and the seamless service to the end user result from the complementarity between different agents in the reservation service value chain. Sometimes, two commercial agents are competitors as well as partners at the same time. Indeed, even while cooperating with each other, every actor in the reservation service value chain has an interest in having its own supply base and/or a direct service channel for end users (vertical integration).

It seems improbable that the reservation service value chain for truck parking will take exactly the same structure as one of these other sectors. But it is plausible to expect that a network of commercial relations between the private actors involved in truck parking reservation will gradually emerge, with some focussing on the supply-oriented reservation database function, while others develop strong positions in demand-oriented service provision.

<sup>1</sup> Final Report of the Study on Priority Actions E and F (2012), Appendix K.

<sup>2</sup> [www.esporg.eu](http://www.esporg.eu), October 2013.

#### 4. Roles of the various players

Roles and responsibilities of the parties involved can be described as follows:

- Customer/user: submits his request, pre trip or on trip: location, time and date of arrival, parking duration.
- TPA operators: first of all they offer secured parking areas for trucks. They can operate one or more parking spaces. For booking purposes they maintain the list of their available places and provide it to the TPA reservation broker, either directly or through the TPA reservation service. They retain a place for the customer throughout the booking process. If the customer gives up the reservation and informs the TPA reservation broker before the booked time, commercial conditions previously agreed with the reservation broker apply. If the parking area operator does not have space for a customer who has booked, the parking area operator must find an alternative solution, perhaps through the TPA reservation broker.
- TPA reservation service operator: TPAs belonging to the same operator may or may not choose to share their data and parking offers. The TPA reservation service operators can act on a regional basis or more widely (e.g. a country or beyond). They are not currently in the position to offer interfaces in all Member State languages. Nothing forbids them from becoming brokers for their domestic customers or anybody else.
- TPA Reservation broker: is a facilitator that acts as an interface between the truck community and the TPA operators. The TPA Reservation broker provides services in the native language of the user. He provides a list of truck parking areas corresponding to customer requirements and performs pre-booking. The parking space is reserved for only one entrance/exit. The cost of the booking procedure is owed by the customer, possibly as part of a larger contract of assistance services for the driver during his trip. There will be many ways of accessing the services of TPA reservation brokers. Brokerage services might be used by a dispatcher in the back-office, or by a driver through on-board, nomadic or road-side devices. Many different channels may arise: website, smartphone application, embedded device application, call centre, etc. The TPA Broker can be anyone who is able to conclude a contract with TPA operators. Thus, even a TPA operator can become a TPA Broker.

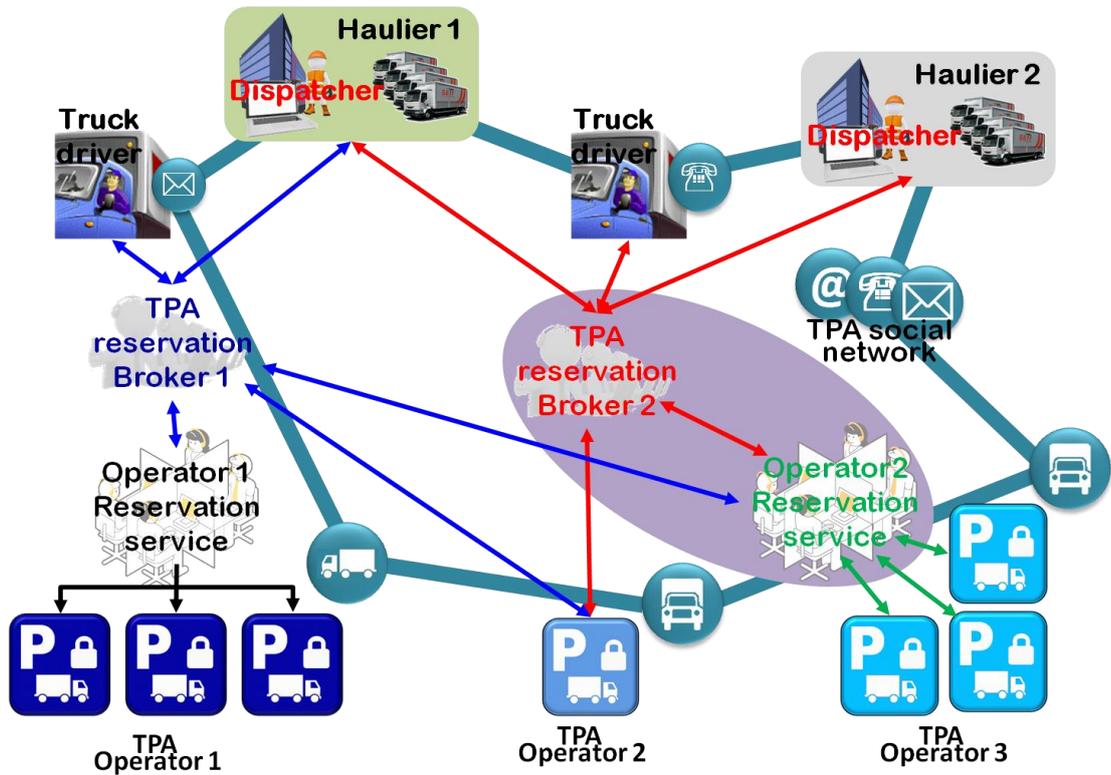


Figure 1 : Roles and interactions in the proposed scenario

- Drivers' social network: accustomed to talking and sharing information with each other with via CB radio in the past, it is obvious that drivers will completely renew this social network via new technologies. They could act in several ways by broadcasting quality posts on a TPA's service quality, availability, events, etc. This will not be an official way to certify a TPA's offer but it is certainly a good way to ensure the maintenance of service quality.

All players will be able to build services on the truck parking information deployed under action E. In particular, they will be able to use the static data accessible through national or international access points.

## 5. Overview of the implementation scenarios

The table below shows the main features of each deployment scenario for TPA reservation services.

Id	Description
I.	<ul style="list-style-type: none"> <li>• Baseline scenario, there is no EU intervention.</li> <li>• Action E specifications are effective</li> </ul>
II.	<ul style="list-style-type: none"> <li>• Specifications for voluntary deployment of s+sTPA reservation services.</li> <li>• Definition of a standardised procedure for the booking service in a user friendly and safe manner.</li> <li>• When reservation services are implemented, Member States shall designate a controlling body, to head the deployment of specifications and the subsequent evaluation process.</li> </ul>
III.	<ul style="list-style-type: none"> <li>• Specifications for mandatory deployment of s+sTPA reservation services outside of the priority zones.</li> <li>• Same functional guidance as in Option II.</li> <li>• The responsibility for implementation is allocated to the Member States.</li> <li>• The Member States are responsible for ensuring the financing, the creation and the operation of the s+sTPA booking services by allocating funds to the service providers.</li> </ul>

## 6. Quantitative estimate of benefits and costs

A provisional quantitative estimate of benefits and costs has been made, **under the assumption that the introduction and use of reservation services will remain optional**. The assumption is that as the mere introduction of specifications under action F will raise the interest of this business and encourage additional reservation services and users constituting a small but positively interested segment of the market (estimated 2% - see above); while without specifications under action F, reservation services would continue, as presently, to exist on a very low level without practical significance.

It should be noted that the benefits and costs of the reservation service (action F) need to be added to those of the information services (action E), which were estimated in earlier work.

The main benefits resulting from action E are the productivity gains made by hauliers through reducing driving time and distance travelled in search of a parking space, the concurrent reduction of external cost, and the reduction of external costs of fatalities and injuries through the partial elimination of dangerous offsite parking. The main factors of cost considered for action E were the costs incurred by TPA operators and public authorities for providing static data and for implementing and managing a static database, those for equipping priority zones with dynamic ITS, and the expenditure by hauliers for products and services that provide dynamic information.

The additional benefits considered for action F are the reduction of economic loss caused by theft and robbery from parked trucks, and a further reduction of driving time and distance travelled in search of a parking space. The additional cost is the expenditure of hauliers for using reservation services. Deployment being voluntary, hence market-driven, this expenditure will cover the costs incurred by TPA operators and service providers and yield a reasonable profit.

On the basis of these considerations, appropriate assumptions have been made, using the factual elements collected in the course of the study.

The resulting figures provided in the below table must therefore be considered as rough estimates, providing the orders of magnitude:

	Estimate of benefit [M€/year]	Estimate of cost [M€/year]
<b>Baseline (deployment of information services under action E)</b>	<b>160</b>	<b>25</b>
<b>Voluntary deployment of reservation services</b>		
Reduction of stolen goods	16	
Indirect costs of theft and robbery	Not estimated	
Reduction of external costs related to circling traffic and offsite parking	3	
Expenditure of hauliers for reservation service and highly secure parking		9
<b>Total Action F (rounded)</b>	<b>20</b>	<b>10</b>
Sum of actions E and F (rounded)	180	35

This assumes that the market for truck parking reservation interests primarily the segment of long-distance transport of high-value goods, which indeed is the core target market for highly secure TPAs at present. In reality, the demand for truck parking reservation might spread to other segments of the haulage market in near future. This would raise the benefits.

Furthermore, it has to be underlined that only direct costs of theft and robbery could be estimated, due to lack of tangible data on possible indirect costs (e.g. as result of loss of customers). It seems, however, probable that the reduction of indirect costs could significantly raise the benefits of reservations.

## 7. Impact Assessment conclusions

On the basis of the results of the Impact Assessment, the voluntary scenario appears to be the best option for implementation.

The main conclusions of the analysis are:

- Without specifications under action F, reservation services would continue, as presently, to exist on a low level of business activity.
- Impacts are rarely negative in the voluntary implementation scenario (VIS), while they are frequent in the mandatory implementation scenario (MIS).
- The VIS produces more positive impacts in the economic field.
- The MIS leads to more positive impacts in the social/safety field.
- From stakeholders' perspective, the VIS enables them to implement reservation services according to their own business cases.
- The most positive impacts related to efficiency of the implementation and cost-effectiveness appear in the VIS. Since reservation services address the HGV niche market, which is where the business case is strongest, the best way of deploying those services is to let the market expand at its own speed, adjusting the offer and demand in a natural way.
- The VIS also enables a better interoperability of reservation service systems. Since stakeholders are driven by their own business cases, they have a vital interest in exchanging data with the largest possible number of partners. Because wide coverage is not imposed, it becomes an element of competitive advantage, making stakeholders endeavour to reach it.
- The VIS is also more respectful towards existing road network and infrastructures.

## 1. Context, objectives, scope and methodology of the study

### 1.1. Policy Context

Directive 2010/40/EU (ITS Directive) of 7 July 2010 on the framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other modes of transport includes six priority actions for which binding specifications will be elaborated (Article 6). One of these actions is on:

- Provision of reservation services for safe and secure parking places for trucks and commercial vehicles (Art. 3, item f).

The ITS Directive foresees EU-wide specifications for reservation on safe and secure truck parking to be adopted by the European Commission. These binding specifications should ensure information for safe and secure parking places for trucks and commercial vehicles services based on existing standards and technology. In the medium term they will contribute to optimise fleet management.

The requirements of the ITS Directive for specifications' content elaboration on TPA reservation services are presented in Annex A.

### 1.2. Problem Definition

The existing capacity of truck parking areas along the main European transport corridors is not utilised efficiently everywhere in the Member States and there is hardly any possibility to make a reservation. This utilisation is not optimal because truck drivers or Transport companies do not have access to real time information about availability in order to make the optimal decisions where to park and comply with driving time rules. Periodically some truck parking areas are fully occupied while other areas nearby which could be reached within the drivers' time limit can have empty places. This situation is foreseen, all other things equal, to occur more often in the future due to the expected growth in road freight transport.

For all truck drivers, who need to comply with rules on working time (Regulation (EC) 561/2006), this means that they cannot be sure to find an adequate (i.e. safe and secure) parking place and they cannot secure a parking place by booking it. This can lead to unauthorised parking (e.g. offsite parking) and/or working longer hours than allowed with

consequences in terms of deterioration of their working conditions and affecting road safety. This can lead also to thefts and attacks on cargo and driver.

Duly informing the truck drivers of the availability of (safe and secure) parking places and allowing them to book a parking place would help them to take the appropriate decisions for their parking obligations, taking into account the security concerns and the welfare of drivers.

Further details on the problem definitions can be found in Annex B.

### 1.3. General Objectives

The general objective of the initiative is to provide reservation services in real time to the drivers of trucks and commercial vehicles and to their transport companies. This service should obey to certain rules in order to facilitate its use and implementation based on minimum harmonised and interoperable definitions.

The specific objectives are:

- a) To define the relevant **rules and procedures** for reservation services in terms of content, format, display and quality,
- b) To provide, on the basis of existing **standards and technologies**, guidance for the drafting of the technical specifications for Member States to adopt.

### 1.4. Previous Results

A preliminary study for the Commission by Algoé/Rapp Trans on the provision of information services for safe and secure parking places for trucks and commercial vehicles delivered its final report in 2011. It raised a number of important issues to be addressed for the development of the specifications for priority actions e and f of the ITS Directive (e.g. data availability and quality, dissemination channels, required standards and technologies...).

A second study has been published as a support to carrying out the impact assessment of the priority actions e and f of the ITS Directive.

This study provided quantitative and qualitative research and analysis to support and demonstrate the problem definition. The potential economic, social and environmental consequences of the various policy options were

estimated. The provision of static information on the location and facilities deployed in all Member States, combined with dynamic information providing availability of parking places, defined and deployed by Member States on specific "priority zones"<sup>3</sup>, was assessed as a cost-effective solution.

Meetings with Member States experts and stakeholders about priority action e of the ITS Directive demonstrated broad support for the envisioned provision of information services for safe and secure parking places for trucks and commercial vehicles. Specifications under priority action e have been adopted in September 2013<sup>4</sup>.

Concerning reservation services, the main conclusions and recommendations of the previous study are presented in Annex C.

### 1.5. Terminology

The following abbreviations have been used in the present report;

Abbreviations	Definition
TPA	Truck Parking Area
s+sTPA	safe and secure Truck Parking Area
RS	Reservation Services
TPA-RS	Reservations services for TPA
VIS	Voluntary Implementation Scenario
MIS	Mandatory Implementation Scenario
HVG	High Value Goods

<sup>3</sup> 'priority zone' means a section, as defined by the national authorities, where there is a shortage of spaces at one or several safe and secure parking places, which can be alleviated by providing information on other unused parking capacities in the same zone.

<sup>4</sup> COMMISSION DELEGATED REGULATION (EU) No 885/2013 of 15 May 2013 supplementing ITS Directive 2010/40/EU of the European Parliament and of the Council with regard to the provision of information services for safe and secure parking places for trucks and commercial vehicles.

## 1.6. Aims of the support study

The present document is the result of a support study mandated by the Commission in view of carrying out the impact assessment of the priority action f of the ITS Directive on the provision of reservation services for truck and commercial vehicles.

The study aimed at:

- Providing additional quantitative and qualitative research and analysis in order to complement the previous support study on information services. This shall include a short overview of similar services such as hotel booking in order to see if existing standardised procedures and tools for reservation optimisation can be adopted.
- Measuring complementary synergies of the various policy options described below.
- Consulting the various stakeholders for reservation services. Meetings shall be planned with the European Commission, private stakeholders and Member States experts.
- Support the definition of technical specifications for reservation services.
- Proposing operational objectives supporting the implementation of the preferred policy options and their long term impact evaluation.

In doing so, the study shall enable the Commission to make a decision on the scope, content and impact of the specifications for the provision of reservation services for safe and secure parking, in compliance with the obligations of the ITS Directive.

### 1.7. Methodological approach

The study has been structured as shown below.

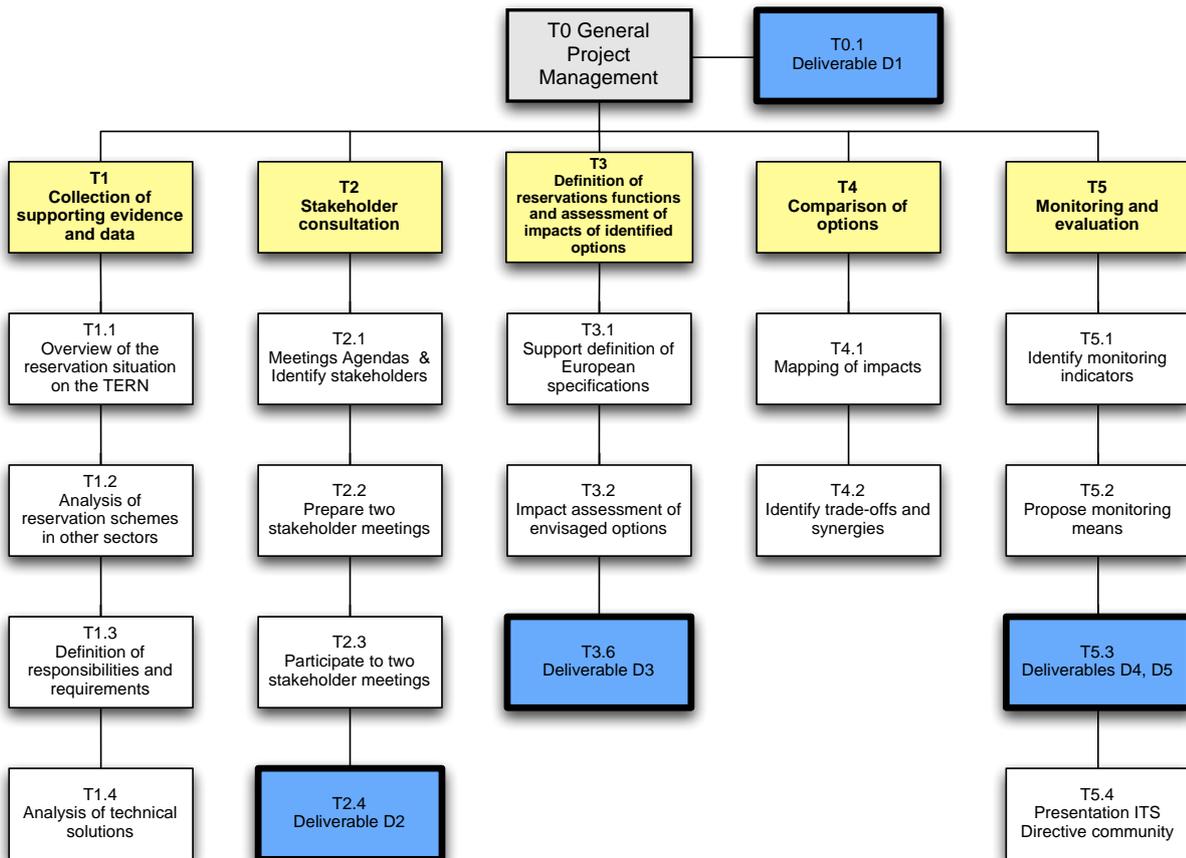


Figure 2 : Work breakdown structure

## 2. New findings on the current situation of reservation services

### 2.1. Overview of the reservation situation on the TERN

#### 2.1.1. REVIEW OF TRUCK PARKING RESERVATION SERVICES

There are only few truck parking reservation services in Europe at present. [Table 2](#) summarises the most well-known truck parking reservation services. More information can be found in Annex D.

Name	Type of initiator	Scope	How to book	Reservation fee
Truckinform	Private company European Commission	Europe (ca. 2800 TPAs, only few for reservation)	Internet	No
All4Trucks	Consortium of private companies related to transport/logistics and fuel sales	France (1 TPA, intention 20 TPAs)	Internet	No
SystemParken	TPA Operator	Germany (45 TPAs)	Internet	Yes, 12,50 EUR (reservation and parking)
Autohof Parken	TPA Operator	Germany (1 TPA)	Internet Fax Mail Telephone	Yes, 15 EUR (reservation and surveillance, incl. 10 EUR restaurant voucher)
Truck Etape	TPA Operator / motorway company	France (3 TPAs of which 2 for reservation)	Internet	No
SecuriTpark	TPA Operator	France (1 TPA)	Internet	No
Truckparking Rotterdam	Dutch group of private companies related to construction	Netherlands (3 TPAs)	Internet	No
UTA Parking Reservation Service	Fuel Card Issuer	Germany, France, Spain, Netherlands (only 2 TPAs with reservation info)	Mail Telephone	No
Highway Park	Private IT company	Germany (19 TPAs)	Internet Telephone	Yes, 3 EUR

**Table 2 : Existing truck parking reservation services in Europe**

#### Functional aspects

Truck parking reservation requests can be made pre-trip (e.g. by the dispatcher) or on-trip (e.g. by the driver). Most existing truck parking reservation services offer an online reservation form on their website, which can be filled in either by the dispatcher or the driver.

All4Trucks wants to receive the reservation request at least 48 hours in advance, supporting only pre-trip bookings. Some websites require a registration, so that only logged in truck drivers and dispatchers can make reservations (e.g. Truckinform, Autohof Parken), which is a barrier for first-time on-trip reservation requests. Only few existing truck parking reservation services offer other means for booking a parking place, such as telephone (e.g. Autohof Parken).

Ideally, on-trip reservation requests are offered by a personalised and simple application integrated in the existing IT equipment in the truck, such

as an OBU or fleet management system, which is foreseen in the future (e.g. Truckinform, Highway Park).

#### 2.1.2. POTENTIAL TRUCK PARKING RESERVATION SERVICES

According to TAPA<sup>5</sup> theft from the vehicle on unsecured parking and truck stops remained in 2012 the most popular Modus Operandi employed by thieves throughout the EMEA region. Theft on secure parking areas is fairly limited.

So especially for long-distance trucking of goods with relatively high risk of theft, ensuring a parking space at a secure parking area by means of a truck parking reservation service seems very useful. It is expected, that in future more parking spaces for this segment will be pre-booked, at least by trucks carrying high-value cargo in order to secure their logistic chain.

While the willingness of road operators to contribute to setting up and operating truck parking information services is rather high, this willingness is much lower with respect to truck parking reservation services because of the current lack of business cases for the market. Also insurance companies show rather low interest in such reservation services, although they are involved in the discussions to see how it may help their business.

#### 2.1.3. OTHER RELEVANT TRUCK PARKING RESERVATION SERVICES

This section elaborates on two truck parking initiatives that include a reservation service: Smart Truck Parking in the USA and GoSwift in the Baltic States. The services are shortly described below. More information can be found in Annex F.

##### **Smart Truck Parking in the USA**

Smart Truck Parking is a federally funded project. It is designed to assist truck drivers, fleet and logistics companies in obtaining information about participating Truck Stops, availability of parking spaces, mapping and routing information, and the ability to make reservations.

Several pilots are planned or already taking place in the states of California (along the interstate highway I-5) and Michigan (along the interstate highways I-94 and I-95).

The main communication channels will be the Internet ([www.smarttruckparking.com](http://www.smarttruckparking.com)) and Mobile Apps. The I-94 pilot also includes 10 trucks with a 5.9 GHz Dedicated Short Range

<sup>5</sup> Transported Asset Protection Association (TAPA), [www.tapaemea.com](http://www.tapaemea.com).

Communications (DSRC) in-vehicle unit and corresponding roadside equipment<sup>6</sup>.

Figure 3 shows the Smart Truck Parking architecture.

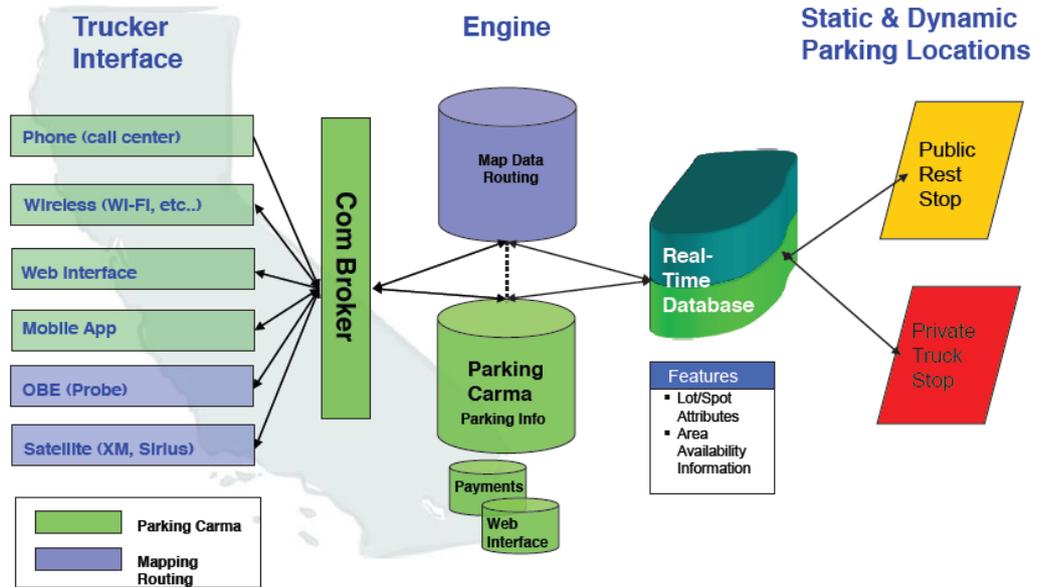


Figure 3 : Smart Truck Parking architecture

A Public-Private-Academic partnership is pursued with the broader objective to demonstrate a system that can address the public needs of the project, while building a self-sustaining business model that can be scaled across the country and succeed without federal support.

### GoSwift in the Baltic States<sup>7</sup>

GoSwift is a border queue management service designed to operate an electronic border queue system<sup>8</sup>. Since August 2011 the GoSwift service has been implemented in all border checkpoints between Estonia and Russia. Lithuania started using the GoSwift service in July 2013 at the Lithuanian-Russian and Lithuanian-Belarusian road border checkpoints.

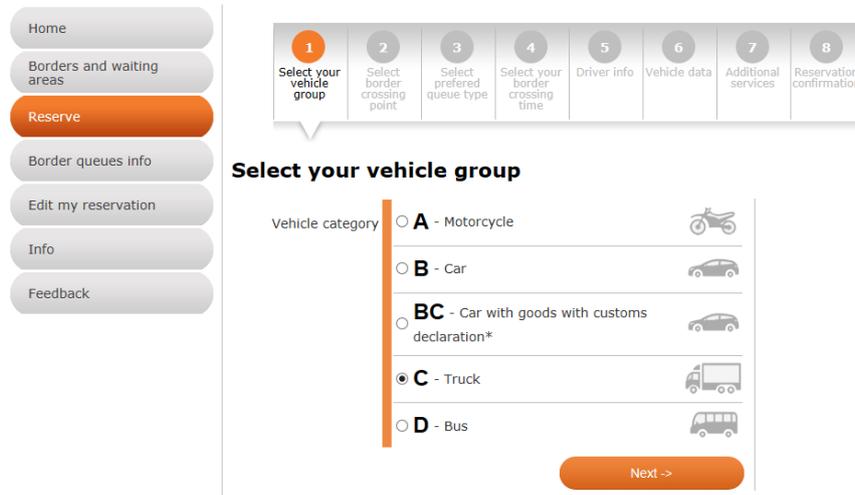
The GoSwift service turns the long queues at the border checkpoints into virtual queues. A reservation can be made on the Internet (www.eestipiir.ee or www.estonianborder.eu), by phone or in the official waiting area near the border at self-service stands or with the help of an attendant.

The online reservation consists of 8 steps, as can be seen in Figure 4.

<sup>6</sup> Source : Press release and congress presentation by Kapsch, 2013.

<sup>7</sup> The Baltic States and Russia are IRU Member Countries

<sup>8</sup> Sources : « Online reservation system for border crossing queue », presentation by Hannes Plinte (GoSwift) at the ITS in Europe congress, June 2013 ; GoSwift brochure, 2012.



**Figure 4 : Online reservation ([www.estonianborder.eu](http://www.estonianborder.eu))**

In order to make the reservation, the data of the driver's travel document and vehicle crossing the border need to be sent to the system and the period of time and border crossing point when and where you wish to cross the border need to be given to the system.

The current reservation fee is 1,30 EUR for each vehicle category and is non-refundable. After a successful reservation, a one-time free notification is sent by e-mail, SMS or phone in accordance with the means selected by the client.

All the vehicles need to pass through the waiting area before being sent to the border checkpoint. Trucks with a reservation need to arrive in the waiting area 3 hours before the reservation time.

#### 2.1.4. NATIONAL ITS PLANS OF EU MEMBER STATES

According to Directive 2010/40/EU Member States should have submitted to the Commission by August 2011 a report on their national ITS activities and projects regarding the priority areas. They also should have provided the Commission by then with information on national ITS actions envisaged over the following five year period.

An assessment of all available reports and information has been performed. In general, only few studies explicitly mention activities related to (future) truck parking reservation services. The main findings are presented in Annex G.

## 2.2. Organisational setup of truck parking reservation services

Although the current truck parking reservation services are not really a “booming business” nowadays, there seems to be a real interest in the topic, for example from Toll Motorway Operators, Fuel Card Issuers and Fleet Management Solution Suppliers. Further information on the potential new entrants to the business is presented in Annex E.

Existing truck parking reservation systems have proven that technology is not the issue. Rather business restrictions have hindered systems from developing rapidly. Most of the existing trucks parking reservation services seem to have a private business model and follow a reservation structure based on a TPAO or SP System.

A detailed assessment on the existing truck parking reservation structures can be found in Annex H.

## 2.3. Reservation Schemes in Other Sectors

An inquiry into reservation schemes in other sectors of transportation has been conducted with them aim of identifying good practices, and how the reservation schemes are evolving over time. The analysis is expected to provide insight into customer behaviours, e.g. no show, and operators’ answers in front of these behaviours. The detailed analysis is presented in Annex I.

The inquiry was conducted through telephone interviews structured according to four aspects of reservation mechanisms: principles of booking, booking means, effective use of the slot, payment.

The contacts of the interviewees are given in Annex I bis.

### 2.3.1. BRITTANY FERRIES

We are in the case of a relatively closed market. Reservation is mandatory, so the hauliers apply the procedure methodically. As the cost of the ferry trip is high, there is little case of no show. Anyway, they are quickly offset by the waiting list.

The payment method adopted for the occasional users is: pre-payment.

### 2.3.2. NEOPARK

The Neopark concept answers the question of parking for the light vehicles and light commercial vehicles.

Neopark confirms that TPA must necessarily have the information on their remaining capacity to be accessible through a booking system. Some principles of parking reservation used by Neopark can be easily adopted by example:

- 20% of the bill retained in case of no-show
- When parking is full it must find a substitute for a truck driver who arrives with his proof of reservation.

### 2.3.3. CARLSON WAGONLIT TRAVEL

The CWT system is based on a door-to-door service that offers better security for the traveller during his trip: protection against incidents with operators of transport services but also personal security in less safe countries.

Beyond the appearance of big brother, the term big mother might be more suited. A big mother holding the hand of the traveller who can solve the problems caused by unforeseen events.

The CWT model shows that there is a space for developing services « above » the operators of transport services (planes, trains, buses, rental cars, hotels, etc..) There is a market for service companies who are interested in a global offer.

CWT aggregates data for the traveller in any form in order to make them available to its customers through its reservation system and routing calculator.

Without being informed about current initiatives related to truck parking, our interview partner, specialist of reservation issues, highlighted that in the case of TPA social networks could play an important role in the following topics:

- Quality of services offered by TPA
- Occupancy of TPA
- Security of TPA

All this information could then be aggregated by a service provider into other road services: e.g. EETS, or TPA operators that offer a global journey service.

CWT highlights these websites: <http://www.rome2rio.com/fr/>, <http://www.routerank.com/fr/>

### 2.3.4. INTERNET PROCESS FOR HOTEL RESERVATION BY VOYAGES-SNCF

The following drawing shows how the process works in the case of hotel reservations in "Voyages-SNCF.com".

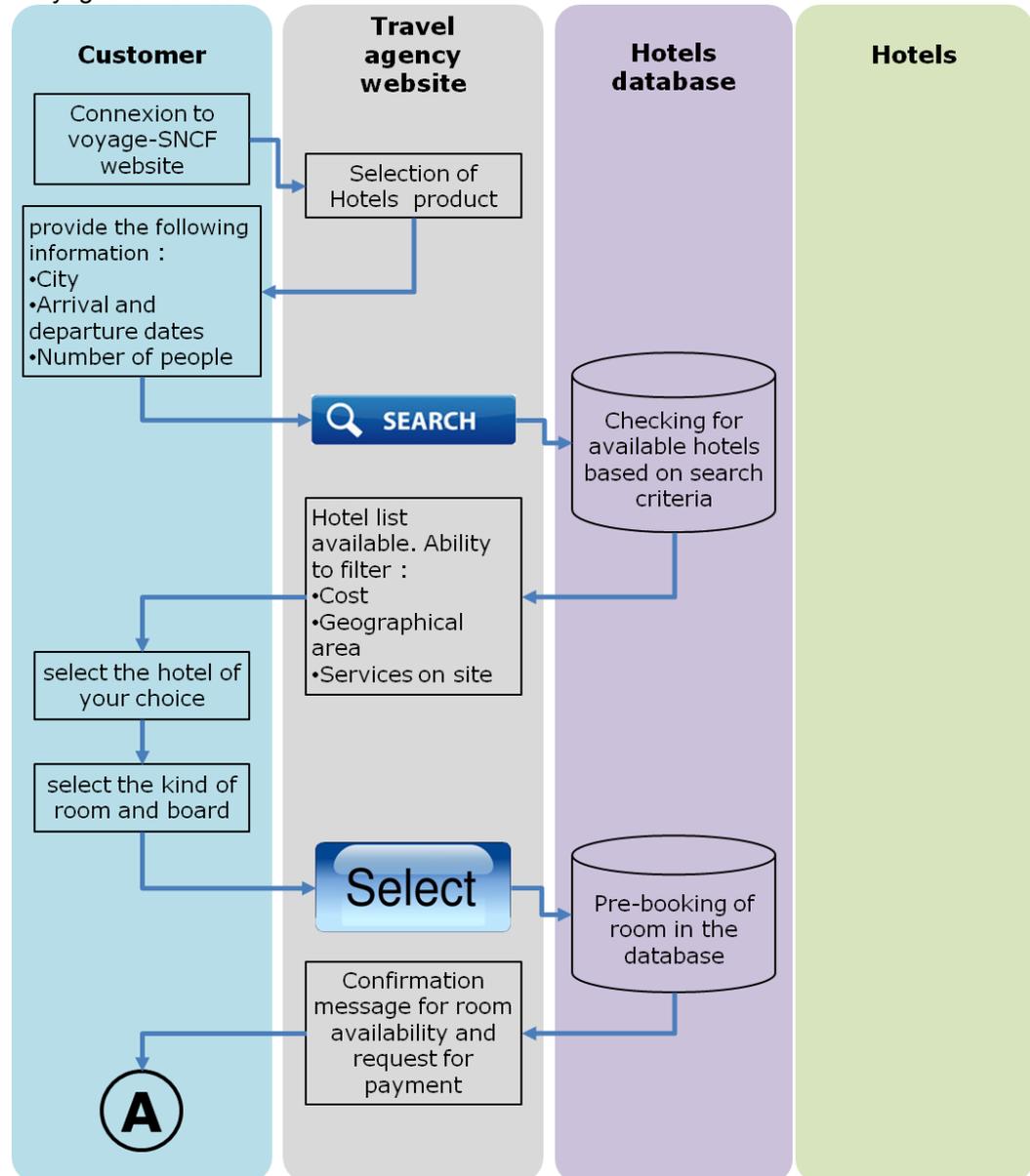
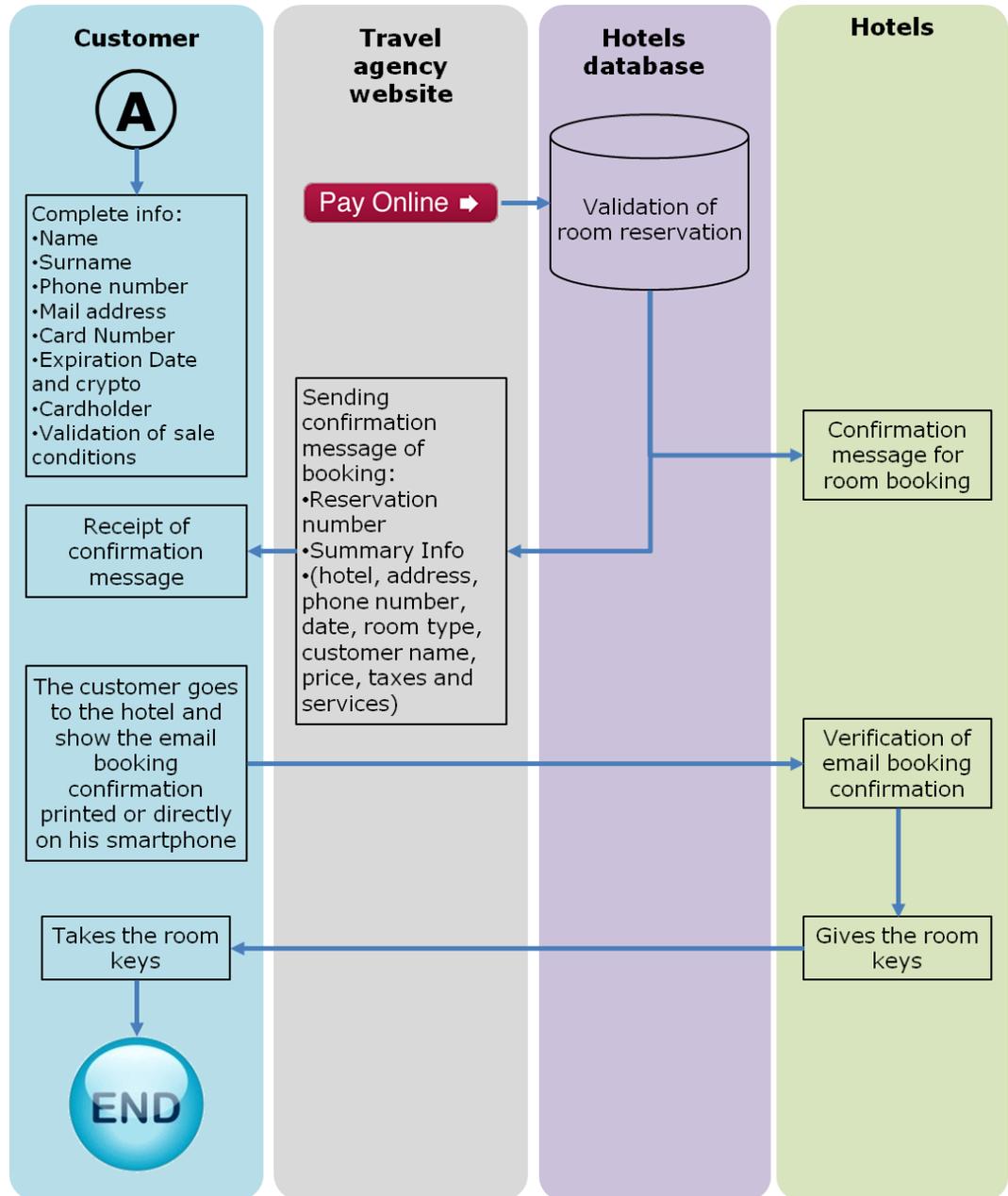


Figure 5 : Process diagram for hotel reservation by voyages-sncf.com (first part)



**Figure 6 : Process diagram for hotel reservation by voyages-sncf.com (continued)**

This process calls for some remarks:

- It works with any type of hotels, from large hotel chains to single independently operated hotels.
- The hotels database is maintained by Voyages-SNCF.com. Its structure is independent of what the hotel can provide.
- Exchanges between Voyages-SNCF.com and hotels are minimal and are through messages of booking confirmation.

- Booking by phone is possible, the process is exactly the same, except that the customer is connected with an advisor who performs the same actions described in the above process on the website.

## **2.4. Responsibilities and Requirements for Truck Parking Reservation on the TERN**

The study has purported to define the possible use cases that would need to be supported by the booking system specification, and the roles and responsibilities of the actors involved in delivering them.

The definition of the use cases proposed here takes into account potential service requirements of truck drivers needing to book during their trip, as well as pre-trip.

At this stage, the review of existing services shows that the reservation of parking spaces is still evolving. It appears that in the whole picture, TPA operators are not yet organized into a network that might enable the more widespread use of booking services.

The benefits of TPA are mainly concerned with road safety, the safety of goods transported and of the people who transport them. This latter aspect may become a criterion for selecting companies for drivers seeking employment.

The deployment of social networks, which starts again in the world of truck drivers after the CB network with community systems such as Coyote or otherwise, will enhance exchanges between the stakeholders involved on the road network and increase the information sharing. This kind of parallel information network should not be neglected.

## **2.5. Present TPA panorama**

The current situation shows a significant amount of stakeholders that does not facilitate the reservation in the TPA. It is clear that the reservation system requires that the park operators are able at any time to inform users about the occupancy of their parking places.

In the figure above, the yellow and blue arrows show bidirectional exchanges between the different stakeholders. At the present stage, in the construction of our use cases, we do not address the question of the usefulness of specifications of exchanges. Instead, we want to describe the contents in order to allow greater freedom in the interactions between

the different stakeholders. For example, it will be difficult to apply the same interconnection means for an operator who possesses one truck parking area as for an operator that would manage 10 parking areas.

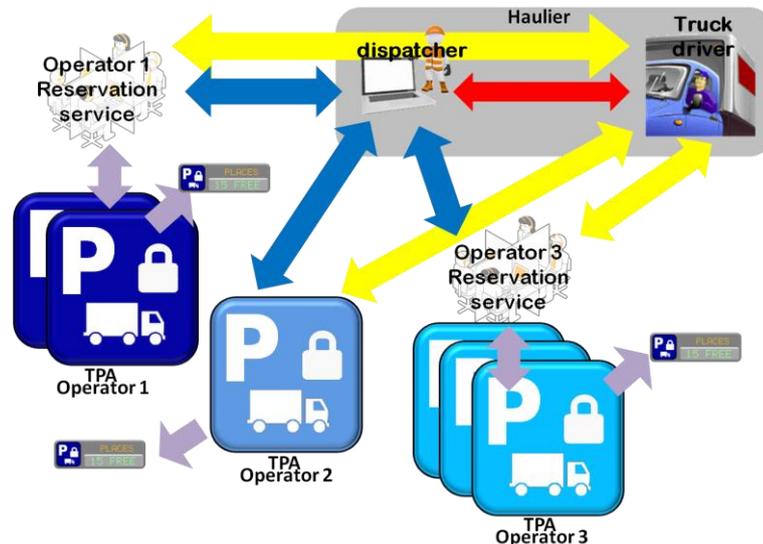


Figure 7 : Current situation of TPA reservation services

## 2.6. Scenario elements

The study has proposed a prospective scenario that expresses the client needs. For this reason, it identified life situations and steps in the booking process independently from the structures that exist today. The complete analysis is presented in Annex J.

## 2.7. Prospective scenario

### 2.7.1. PROPOSALS FOR ROLES IN PARKING RESERVATION FOR TPA

- *Customer*: submits his request: on/pre trip, location, time and date of arrival, parking duration.
- *TPA Reservation broker*: is a facilitator who acts as an interface between the freight community and the TPA operators. The TPA Reservation broker provides services in the native language of the user. He provides a list of truck parking areas parking corresponding to customer requirements and performs pre-booking. The parking place is reserved for only one entrance/exit. The cost of booking is owed by the customer, it can be included in a larger contract of assistance services for the trucker during his trip. Access means to the services of TPA reservation broker will be multiple and especially should consider the fact that the driver can call during his

trip: Website, smartphone application, embedded device application, call centre, etc.

The TPA Broker can be anyone from the moment he is able to conclude a contract with TPA operators. Thus, even a TPA operator can become a TPA Broker.

- *TPA reservation service*: TPA belonging or not to the same operator may choose to share their data and parking offers. The TPA reservation services can act on a region or more widely in the territory of a country. At this stage they aren't in the position to offer interfaces in all member states languages. Nothing forbids them from becoming brokers for their domestic customers or anybody else.
- *TPA operators*: first of all they offer secured parking areas for trucks. They can operate a single parking, or more. For booking purposes they maintain the list of their available places and provide it to the TPA reservation broker. They retain a place for the customer during all the time of booking. If the customer gives up the reservation and informs the TPA reservation broker before booking time he is fully repaid. If the parking has no longer place for a customer who has booked, the parking must find an alternative solution perhaps through the TPA reservation broker.
- *Drivers' social network*: accustomed to converse and share between each other with their CB in the past, it is obvious that drivers will completely renew this old social network with new technologies. They can act in several ways by broadcasting quality posts on TPA quality of service, availability, events, etc. This is not a way to certify TPA offer but it is certainly a good way to ensure the sustainability of the quality of services offered. The ParckR network is perhaps the first step of a truckers' social network.

### 2.7.2. RESPONSIBILITIES OF STAKEHOLDERS

	<b>Responsibilities</b>
<b>TPA Operator</b>	<ul style="list-style-type: none"> <li>• Accept reservations</li> <li>• Give access to blocked space</li> <li>• produce certificate of effective use</li> <li>• Inform on occupied space</li> </ul>
<b>TPA Reservation service</b>	<ul style="list-style-type: none"> <li>• Provide directory of his parking network</li> <li>• Handle reservation requests</li> <li>• Outputs confirmation to TPA operator</li> <li>• Manage free, blocked, booked space</li> </ul>

<b>TPA broker</b>	<ul style="list-style-type: none"> <li>• Build services that integrate a global reservation function</li> <li>• Propose available parking places to user</li> <li>• transmit reservation to TPA reservation data base</li> <li>• Valid reservation to TPA reservation data base</li> <li>• Outputs confirmation to user</li> </ul>
<b>User</b>	Use reservation services

2.7.3. SCENARIO DIAGRAM

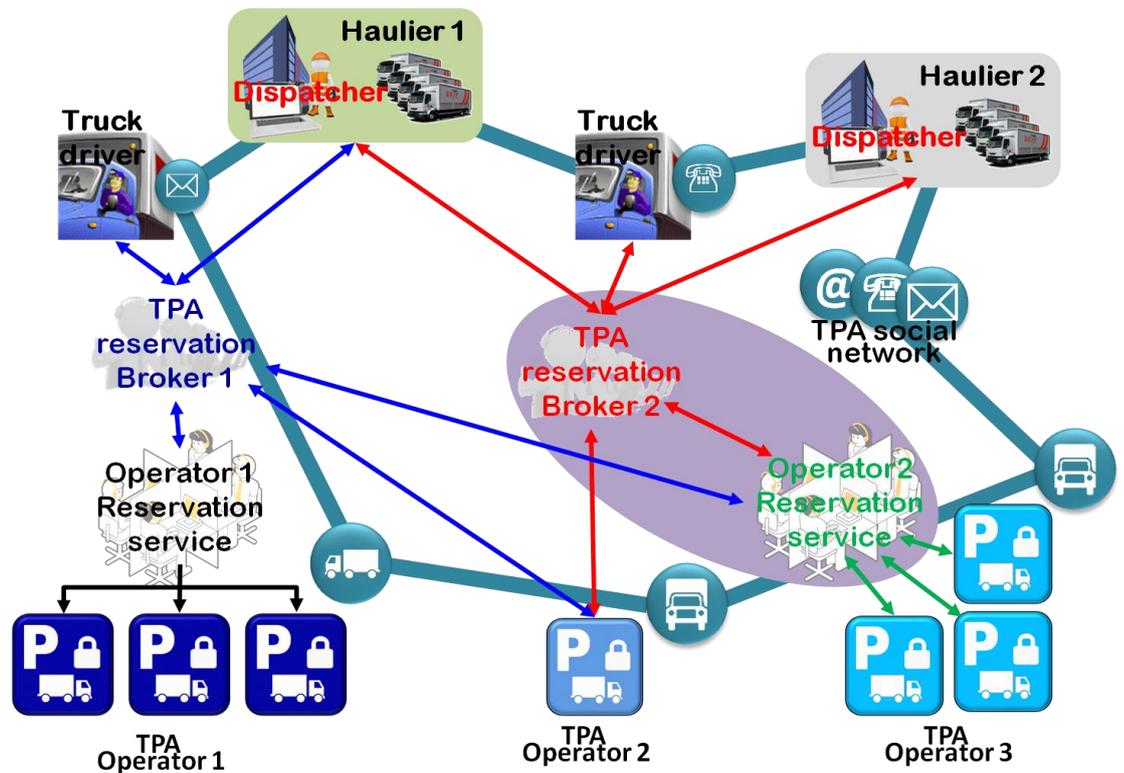


Figure 8 : Roles and interactions in the proposed scenario

2.7.4. EXCHANGES BETWEEN STAKEHOLDERS

In this chapter, it is assumed that static database of TPA exists. Information on available places is provided by TPA operators. We describe the exchanges only from the point of view of content.

A “step-by-step” description for these exchanges is presented in Annex K.

## 2.8. Data formats and technical solutions

The following analysis builds on the results of the study on action E, in particular on communication channels. In addition to the analysis conducted within the study on action E, the specific problem of technology used by hauliers and drivers to make their requests is addressed here. Furthermore, the principles used in the European SafeTrip project<sup>9</sup> are incorporated in the analysis.

Supporting evidence and data has been collected, including primarily cost figures, anticipated difficulties/potential barriers, and foreseen benefits of their implementation.

The complete analysis is presented in Annex L.

Findings:

1. The following communication technologies were identified to be suitable for processing information in truck parking reservation services:
  - SMS/MMS services
  - Voice response systems
  - (Mobile) internet
  - Electronic information/reservation booths
  - Satellite communication based on the S-MIM (E-SSA)
  - E-Mail
  - Letter
  
2. Only the following functions within truck parking reservation processes were identified to be relevant for the analysis of suitable communication channels as the end-user is concerned by them.<sup>10</sup>
  - (1a) Reservation request
  - (2a) Preliminary confirmation
  - (2c) Final confirmation
  - (3) Certificate of usage
  - (4) Invoice/Proof of payment

<sup>9</sup> see e.g. <http://www.safetrip.eu/>

<sup>10</sup> The other functions contain information exchanges which is realized between central IT-infrastructure for which the type of communication technology used depends on the specific requirements of and agreements between the partners

3. The findings from the qualitative analysis of the suitability of communication technologies for the identified functions in the case a dispatcher performs the reservation process are the following:

	Functions	Suitable Communication technology	Remarks
(1a)	Reservation request	Internet	
(2a)	Preliminary confirmation	Internet and/or E-Mail	
(2c)	Final confirmation	E-Mail	
(3)	Certificate of usage	E-Mail	
(4)	Invoice/Proof of payment	E-Mail	

4. The findings from the qualitative analysis of the suitability of communication technologies for the identified functions in the case that the truck driver performs the reservation process are the following:

	Functions	Suitable Communication technology	Remarks
(1a)	Reservation request	Mobile internet	
(2a)	Preliminary confirmation	Mobile internet	
(2c)	Final confirmation	Mobile internet and/or Email	Have been chosen as those information can be used in follow up processes (unlike SMS/MMS) and are more economical (unlike satellite communication)
(3)	Certificate of usage	Electronic booths, Email and/or letter	
(4)	Invoice/Proof of payment	Electronic booths, Email and/or letter	

5. The findings from the assessment of the criteria for each communication technology and the summary in the SWOT analysis are:

- Limited bandwidth restricts the usage of **SMS/MMS services** and **voice response systems** for parking reservation services. With respect to truck drivers both technologies may encourage mobile phone use while driving which results in driver distraction and increased accident risk. Furthermore high roaming costs incur if using these technologies abroad.
- **Internet** and **mobile internet** technology is available in whole Europe and provide a large bandwidth which offers the possibility to transmit almost all kinds of information related to parking

reservation. It distinguishes itself through the large installed base and its presents in almost all everyday situations. Only the incurring costs for data roaming and the risk of driver distraction if the end-user HMI is not designed properly are limitations for these technologies with respect to their application by truck drivers.

- Usage of **electronic booths** for reservation requests causes detours for truck drivers which results in loss of time and money. These limitations do not exist with respect to the usage of booths for parking certification and proof of payment where the possibility to print on spot is an advantage as it proves that the driver physically has been at the parking spot. In particular the high investment and operating costs for a dedicated reservation booths infrastructure are the main constraint for their application. This drawback could be overcome by creating synergies by using existing booth infrastructures.
- **Satellite based communication** provide a large availability and bandwidth. Due to the facts that the investment and operating costs are high and that the technology is not widespread yet, no real advantage can be identified in comparison to mobile internet services.
- **E-Mail** is an asynchronous way to communicate and is therefore limited when it comes to handle reservation requests. The usage of E-mail as accompanying media (besides internet) for all information towards the user seems to be appropriate as thereby the information remains available at the user and can be processed further on (e.g. can be forwarded or attached in follow-up processes)

Paper based information exchange in form of **letters** is a slow media and therefore not suitable for all reservation functions prior to parking. However printing out parking certificates, proofs of payment or invoices will still be the medium of choice when truck drivers pay at TPA offices on spot or when TPA reservation service providers sent those information to hauliers for a certain time span and several trucks.

### 3. Impact Assessment of envisaged options

#### 3.1. Definition of Deployment Options for the Impact Assessment

The following options are considered:

Id	Description
I.	<ul style="list-style-type: none"> <li>• Baseline scenario, there is no EU intervention.</li> <li>• Action E specifications are effective</li> </ul>
II.	<ul style="list-style-type: none"> <li>• Specifications for voluntary deployment of s+sTPA reservation services.</li> <li>• Definition of a standardised procedure for the booking service in a user friendly and safe manner.</li> <li>• When reservation services are implemented, Member States shall designate a controlling body, to head the deployment of specifications and the subsequent evaluation process.</li> </ul>
III.	<ul style="list-style-type: none"> <li>• Specifications for mandatory deployment of s+sTPA reservation services outside of the priority zones.</li> <li>• Same functional guidance as in Option II.</li> <li>• The responsibility for implementation is allocated to the Member States.</li> <li>• The Member States are responsible for ensuring the financing, the creation and the operation of the s+sTPA booking services by allocating funds to the service providers.</li> </ul>

**Table 3: Overview of the deployment options.**

A description of each deployment option is presented in Annex M.

## 3.2. Analysis of Impacts

### 3.2.1. ECONOMIC, SOCIAL AND ENVIRONMENTAL IMPACTS

The following impacts are considered<sup>11</sup>

Economic Impacts	General impact of RS
Functioning of the internal market/competition	Data collection, information and booking systems availabilities simplify services and allow efficient interactions between stakeholders. Reservation Services allow more reliable trip planning.
Competitiveness, trade and investment flows	Reservation Services (RS) implementation may attract new stakeholders to the transport side services market.
Operating costs	Reservation Services will add operating costs for service providers, TPA operators and hauliers but s+sTPA use will reduce hauliers costs related to cargo theft
Administrative burdens on businesses	RS market actors may have to conform to EU's standards and specifications.
Budgetary implications for public authorities	Public authorities may have implementation and operation costs in publicly owned TPA; costs for assessment of compliance and monitoring of the implementation.
Innovation and research	Innovation is stimulated to find solutions for cost effective RS business models
Consumers and households	RS will optimise transport efficiency.
Specific regions or sectors	RS will have a greater impact outside of the Priority Zones set up for action E implementation; RS will meet greater demand in the sector of high-value goods transport.

<sup>11</sup> Source : European Commission (2009), Impact Assessment Guidelines.

Social/Safety Impacts	
Employment and labour market	Development of a new activity sector, which brings new job opportunities to the market
Standards and rights related to job quality	Drivers job quality improves through: <ul style="list-style-type: none"> <li>- resting periods regulation is easy to conform to, since RS allow drivers to park wherever they need to</li> <li>- Risk of criminal attacks on drivers while parked decreases</li> </ul>
Public health	RS contribute to reducing dangerous parking
Crime Terrorism and security	RS contribute reducing risky parking
Environmental Impacts	
Climate	Slightly less circling traffic for parking spaces searching
Transport and use of energy	
Air quality	
Land use	Land use is optimised
Scale, likelihood of environmental risks	Hazardous cargo hauliers may book s+sTPA spaces in advance

**Table 4: List of economic, social and environmental impacts**

The relevant impacts are assessed for each deployment option (see Annex N). They are ranked in comparison to the baseline scenario between -2 (strong negative impact), 0 (neutral) and +2 (strong positive impact). The baseline scenario has a reference score of 0 for all impacts.

The aggregated ranking for each scenario is summarised below:

Scenario	I.	II.	III.
Economic Impacts	0	5	1
Social/Safety Impacts	0	4	8
Environmental Impacts	0	4	4
<b>Total</b>	0	13	13

**Table 5: Aggregated rankings from Annex N.**

Annex N leads to following observations:

- Impacts are generally positive in all categories.
- Voluntary implementation leads to more positive impacts on economic aspects than mandatory implementation. Among those aspects: administrative burdens on business, budgetary implications

for public authorities. The occurrence of operating costs is inevitable; they are lighter to bear in the VIS though.

- However, some other economic aspects have better impacts when RS are mandatorily implemented. It is the case of impacts on internal market and competition functioning, and on competitiveness, trade and investment flows.
- Impacts on social and safety matters are globally positive. Impacts on employment and labour market, on standards and rights related to job quality, on public health and crime are higher in the MIS.

### 3.2.2. IMPACTS ON STAKEHOLDERS

The table below summarises the key business goals and requirements of the affected stakeholders. To obtain commitment from all key stakeholders, a business model is required that will at least meet their business requirements, while not causing harm to their business goals.

Stakeholder	Key business goals	Business requirements
Driver	Efficient driving	Avoid searching and waiting time
	Parking comfort	Prefer TPA with facilities and side services availability
	Safety	Prefer safe TPA
	Minimise hassle with transactions related to parking (information, reservation, payment)	Avoid to pay TPA on personal expenses
TPA Operator	Maximise turnover	Maximise occupancy
	Reputation	Avoid on-site crime and provide reliable services
	Limit investments	Focus on low investment costs services.
	Limit operational costs	Minimise need for dedicated staff on-site. Prevent vandalism on infrastructures and equipment.
ITS Suppliers and Service Providers	Build efficient activity in the field of truck parking reservation services	Build interoperable/compatible services and devices (technical interoperability)
	Build safe services and devices	Standard business models

Stakeholder	Key business goals	Business requirements
Road authority	Road safety	Avoid off-site parking and queuing, avoid exceeding of driving times
	Optimal Traffic flow	Avoid off-site parking and queuing, avoid emergence of congestion hubs
Haulier	Efficient daily operations : optimise driving time and distance, minimise parking fees and fines, efficient and flexible trip planning	Avoid searching and waiting time (accomplish expenses in advance)
	Driver safety	Avoid theft and robbery
	Vehicle safety	Avoid theft and robbery
	Cargo safety	Avoid theft and robbery
Cargo Owner	Cargo safety	Avoid theft and robbery
Insurance Company	Cargo, vehicle and driver safety	Well-defined responsibilities in case of damage event

**Table 6: Key business goals and business requirements for each stakeholder.**

These impacts are assessed for each deployment option (see Annex O). They are ranked in comparison to the baseline scenario between -2 (strong negative impact), 0 (neutral) and +2 (strong positive impact). The baseline scenario has a reference score of 0 for all impacts.

The aggregated ranking for each scenario is summarised below:

Scenario	I.	II.	III.
Driver	0	6	7
TPA operator	0	6	-2
ITS suppliers and Service providers	0	4	2
Road authority	0	2	4
Haulier	0	7	7
Cargo owner	0	1	2
Insurance Company	0	1	2
<b>Total</b>	0	27	22

**Table 7: Aggregated rankings from Annex O.**

Annex O leads to following observations:

- The rankings are positive for all stakeholders, except for TPA operators in the MIS, regarding investments and operational costs.

- 
- For **drivers**, MIS is more useful than the VIS in terms of efficient driving, parking comfort and hassle with transactions related to parking. For safety matters, both scenarios have large positive impacts.
  - The most critical situation concerns the **TPA operators**. They could take advantage from RS implementation only if it is a voluntary process.
  - **ITS Suppliers and Service Providers** will benefit from RS implementation. Impacts are smaller in the MIS because the business development is hampered by the lack of business case for many TPA operators.
  - Impacts are positive for **Road Authorities**. They are higher in the MIS.
  - **Hauliers** will benefit from RS implementation. Impacts are less significant on the efficiency of routine operations than on driver's, vehicle's and cargo's safety. They are equal in both scenarios.

### 3.2.3. IMPACTS ON EXISTING MARKETS AND SERVICES

The expected market evolution induced by each deployment option has been analysed and described in qualitative terms. The description can be found in Annex P.

What RS bring in addition of Action E's implementation is a supplementary certitude of being able to park when and where it is required.

The analysis shows that reservation will become a routine practice in the segment of high-value cargo. Offering a reservation service will be a comparative advantage for TPA operators that target this segment of demand.

Different service providers will start building reservation databases in agreement with partnering TPA operators. Each of these service providers will develop a regional, national or international coverage according to the context of offer and demand (TPA operators willing to offer RS, frequent routes of high value goods transports...).

Some service providers will build parking reservation brokerage services for their customers. In particular, parking reservation brokerage will emerge as a side service to equipping fleets with in-vehicle ITS equipment.

By cooperating with different reservation databases, they will progressively approach EU-wide coverage.

In the MIS, many TPA operators will be forced to invest in RS while not having the business case for it. It may lead to unequal implementation in terms of service quality and reliability. Interoperability of systems may also be harmed, since not all TPAs will be ready to fully implement the requirements.

#### 3.2.4. SPECIAL IMPACTS

The deployment options have been assessed with regard to a list of special impacts. The full analysis can be found in Annex Q.

The summary of the assessment is as follows:

Special Impact	Synthesis of assessment
<b>Fundamental Rights (FR) – Protection of personal data</b>	<ul style="list-style-type: none"> <li>• Compliance with current legislation and standards ensures effective protection of personal data.</li> </ul>
<b>FR – Environmental protection</b>	<ul style="list-style-type: none"> <li>• More efficient use of parking and trip planning reduces traffic related to searching parking spots. Pollution and energy use decrease slightly.</li> </ul>
<b>FR – Fair and just working conditions</b>	<ul style="list-style-type: none"> <li>• More efficient pre-trip planning, easier compliance with driving and resting times rules.</li> <li>• Overall working stress and pressure is reduced.</li> </ul>
<b>Number and quality of the jobs</b>	<ul style="list-style-type: none"> <li>• Improved working conditions (material protection against theft and robbery; more certainty and less stress) may positively influence job attractiveness and increase the share of qualified drivers in the transport sector.</li> </ul>
<b>End-users and households</b>	<ul style="list-style-type: none"> <li>• The prices of transported goods will not change with RS implementation.</li> </ul>
<b>Liability</b>	<ul style="list-style-type: none"> <li>• Compliance with regulation and standards on on-board devices and systems is necessary in order to avoid drivers' distraction.</li> </ul>
<b>Inappropriate use</b>	<ul style="list-style-type: none"> <li>• TPA operators might be affected by misuse of reservation services and drivers. Harmonised measures for cancellations and penalties for no-shows should be applied.</li> <li>• Drivers might be affected by misinformation of parking places availability. Standardised rules and penalties for excessive overbooking must be applied.</li> </ul>

Special Impact	Synthesis of assessment
<b>Cost effectiveness</b>	<ul style="list-style-type: none"> <li>In the VIS, the RS will first address the high-value goods niche market, where they are cost-effective. In the MIS, cost-effectiveness is an issue because many TPA operators will be forced into costs without having a business case for reservation.</li> </ul>
<b>Administrative burdens</b>	<ul style="list-style-type: none"> <li>MS have implementation responsibilities.</li> <li>A national body should be designated to support and control RS implementation and use.</li> </ul>
<b>Third countries</b>	<ul style="list-style-type: none"> <li>General access is unrestricted but payment services might be limited to EU members.</li> <li>Systems and devices should be available in the driver's language.</li> </ul>

**Table 8: Summary of the assessment of special impacts.**

The assessment shows, in particular, that:

- RS implementation will have a little but positive impact on the specific truck driver's job market, improving its work conditions and therefore increasing its attractiveness.
- Cost-effectiveness is granted in the voluntary implementation scenario, but is an issue in the mandatory implementation scenario.

### 3.3. Comparison of Key Deployment Options

#### 3.3.1. MAPPING OF IMPACTS

The present section summarises the results of section 3.2 by means of a horizontal comparison between the deployment options defined in section 3.1.

#### 3.3.2. ECONOMIC, SOCIAL/SAFETY AND ENVIRONMENTAL IMPACTS

The aggregated rankings of economic, social/safety and environmental impacts, assessed as described in section 3.2.1, are repeated in the table below.

Observations:

- All deployment options rank positively.
- The dominant rankings are in the category social/safety, for the MIS. The economic category comprises the dominant rankings for the VIS.
- Impacts are related to the mandatory character of the deployment.

Scenario	I.	II.	III.
Economic Impacts	0	5	1
Social/Safety Impacts	0	4	8
Environmental Impacts	0	4	4
<b>Total</b>	0	13	13

**Table 9: Aggregated rankings on economic, social/safety and environmental impacts (identical to [Table 5](#). Dominant rankings are highlighted.**

### 3.3.3. IMPACT ON STAKEHOLDERS

The aggregated rankings of impacts on stakeholders, assessed as described in section 3.2.2, are repeated in the table below.

Scenario	I.	II.	III.
Driver	0	6	7
TPA operator	0	6	-2
ITS suppliers and Service providers	0	4	2
Road authority	0	2	4
Haulier	0	7	7
Cargo owner	0	1	2
Insurance Company	0	1	2
<b>Total</b>	0	27	22

**Table 10: Aggregated rankings on impacts on stakeholders. Dominant rankings are highlighted.**

#### Observations:

- As for the economic, social and environmental impacts:
  - all deployment options rank positively, except for the TPA operator's ranking in the MIS.
  - the impacts are related to the mandatory character of the deployment
- Cargo owners and insurance companies have low rankings. The most critical situation concerns the TPA operator, because his co-operation is inevitable for collecting occupancy data and for granting the availability of reserved parking spots.

### 3.3.4. IMPACT ON EXISTING MARKETS AND SERVICES

The horizontal comparison of the impacts, assessed as described in section 3.2.3, yields the table below.

Scenario	Impacts on existing markets and services
I.	<ul style="list-style-type: none"> <li>No further impacts than those assessed for Action E's implementation are expected.</li> <li>Reservation Services (RS) are a minor practice among TPA operators. They exist on commercial level in specific situations only, or as experimental developments on selected corridors.</li> </ul>
II.	<ul style="list-style-type: none"> <li>Reservation services are deployed by the private sector. Hence a coverage primarily addressed to privately operated TPA.</li> <li>They primarily target specific markets such as the high value loads segment. Stakeholders of this market will probably favour high safety facilities, inciting that segment of the TPA market to develop and implement RS.</li> <li>RS coverage will be adaptive to demand, but remain patchy.</li> <li>For TPA operators, offering RS will be a comparative advantage and be used as a marketing argument. It may also attract new entrants to the RS-TPA market.</li> <li>While market volume increases, investment cost decreases, initiating in this way a virtuous circle.</li> <li>Parking reservation brokerage will emerge as a side service to equipping fleets with in-vehicle ITS equipment. By cooperating with different reservation databases, they will progressively approach EU-wide coverage.</li> <li>New traffic hubs may emerge due to unequal availability of TPA providing RS, which may create new massively preferred ways.</li> <li>RS implementation will contribute to secure the road haulage market, in particular the segment of high value goods.</li> </ul>
III.	<ul style="list-style-type: none"> <li>Reservation services are deployed by the private sector similarly to Option II. They are controlled and complemented by public authorities initiatives. These public initiatives will be integrated into the more general public policies for developing truck parking infrastructure. Public initiatives will search an appropriate split of roles with the private sector.</li> <li>RS optimise the transport chain for hauliers and drivers.</li> <li>Since certainty and safety will be the major reasons of booking parking places, specific s+sTPA market will grow first and faster than average TPA.</li> <li>Public intervention will be needed for compensating the potential loss of revenue of private TPA operators in priority zones</li> <li>Many TPA operators will be forced to invest in RS while not having the business case for it. Some of these TPA operators will have very</li> </ul>

	<p>high compulsory operational costs to bear.</p> <ul style="list-style-type: none"> <li>• Drivers and hauliers may secure parking places according to their own safety standards, since service coverage is wide and tending to become homogeneous.</li> <li>• Overall, RS may optimise parking search, which may reduce air pollution levels. It also may help driver's compliance with resting and stopping times regulation.</li> <li>• Overcrowding and offsite parking (and related risks) decreases significantly, which prevent hauliers from cargo theft. Traffic management is more efficient.</li> </ul>
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**Table 11: Summary of impacts on existing markets and services.**

### 3.3.5. SPECIAL IMPACTS

The assessment is described in section 3.2.4, where a summary across all deployment options is given also. The main elements for each deployment option are given in the table below.

Scenario	Special Impacts
I.	<ul style="list-style-type: none"> <li>• No impacts expected</li> </ul>
II.	<ul style="list-style-type: none"> <li>• Need to comply with existing laws and standards.</li> <li>• Unequal levels of data protection.</li> <li>• Minor environmental impacts</li> <li>• Overall working stress and pressure is reduced.</li> <li>• Improved working conditions may increase job attractiveness.</li> <li>• No changes in the transported goods' prices are expected.</li> <li>• Poorly designed on-board devices might affect drivers. TPA operators might be affected by RS misuse. Systems and devices have to comply with current regulations and measures for cancellations and penalties must be set up and harmonised.</li> <li>• Administrative burdens are significant to designated national bodies</li> <li>• RS access is unrestricted. Payment methods could be an issue though.</li> </ul>

III.	<ul style="list-style-type: none"> <li>• Need to comply with existing laws and standards.</li> <li>• RS implementation may speed up the revision of current European directive.</li> <li>• Minor environmental impacts.</li> <li>• Rest stops can be planned ahead TERN-wide. Compliance with driving and resting times rules is eased.</li> <li>• Improved working conditions may increase job attractiveness.</li> <li>• No changes in the transported goods' prices are expected.</li> <li>• Poorly designed on-board devices might affect drivers. TPA operators might be affected by RS misuse. Systems and devices have to comply with current regulations and measures for cancellations and penalties must be set up and harmonised.</li> <li>• Administrative burdens are significant to designated national bodies</li> <li>• RS access is unrestricted. Payment methods could be an issue though.</li> </ul>
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**Table 12: The main elements of “Special impacts” for each deployment option.**

### 3.3.6. COMPLIANCE WITH PRINCIPLES SET OUT IN THE ITS DIRECTIVE

All deployment options are assessed as generally compliant with the principles. Some specific issues are indicated in the table below:

Scenario	Compliance with principles set out in the ITS directive.
I.	<ul style="list-style-type: none"> <li>Do not apply</li> </ul>
II.	<ul style="list-style-type: none"> <li>RS will lead to better trip planning for hauliers and drivers, who are able to comply with resting times regulation by securing parking spots in advance. They will be particularly relevant for highly secure TPAs used by high-value cargo, and will thereby contribute to reduce the events of thefts and robbery.</li> <li>The voluntary implementation scenario is cost-effective, because RS will address firstly the niche market of high-value goods, where the business case is given.</li> <li>The voluntary implementation scenario is assessed as proportionate. In this scenario, it is expected that RS will first become available for TPAs that target segment of high-value goods transport, and that the progressive emergence of reservation databases and reservation brokers will ensure a good level of geographical coverage and service quality to drivers and hauliers.</li> <li>The specifications ensure that reservation services will have transnational coverage, by prescribing the static data and contact information that TPA operators offering reservation shall provide in addition to the information provided under action E, and by describing a reference process that will allow reservation service providers to build EU-wide continuous services.</li> <li>By prescribing the static data and contact information that TPA operators offering reservation shall provide in addition to the information provided under action E, and by describing a reference process for booking, the specifications set the basis for technical interoperability. This will provide effective interoperability in the voluntary deployment scenario, where each TPA operator and ITS service provider is driven by his respective business case, and where reservation databases and reservation brokers have a vital interest in exchanging data with the largest possible number of partners in order to offer attractive coverage to their customers, while the industrial stake of the data format definition is relatively limited.</li> </ul>

	<ul style="list-style-type: none"> <li>• The specifications of action F respect existing solutions for booking transactions, since they do not prescribe a standard data format.</li> <li>• In the option of voluntary deployment, RS implementation doesn't require any modification on the road networks and infrastructure. TPAs that do not have appropriate characteristics are not obliged to implement RS.</li> <li>• The risk assessment in section 4.3.7 indicates that there is no issue of maturity, but that the more volume of operational experience is required for remarkable developments in terms of service quality and user experience.</li> <li>• The deployment options are fully compatible with the use of satellite-based technology for timing and positioning, although they do not prescribe the technology to be used.</li> <li>• There are Truck Parking Areas in the vicinity or within the perimeter of important intermodal terminals (e.g. seaports). RS will contribute to secure and to optimise the use of such TPAs.</li> <li>• The specifications on reservation services are fully coherent and complementary with the specifications on truck parking information services (action E).</li> </ul>
<p>III.</p>	<ul style="list-style-type: none"> <li>• RS will lead to better trip planning for hauliers and drivers, who are able to comply with resting times regulation by securing parking spots in advance. They will be particularly relevant for highly secure TPAs used by high-value cargo, and will thereby contribute to reduce the events of thefts and robbery.</li> <li>• The mandatory implementation scenario is insufficiently cost-effective because many TPA operators will be forced into costs without having a business case for offering reservation.</li> <li>• Mandatory implementation can have the effect of forcing TPA operators into offering reservation service, without being proportionate.</li> <li>• The specifications ensure that reservation services will have transnational coverage, by prescribing the static data and contact information that TPA operators offering reservation shall provide in addition to the information provided under action E, and by describing a reference process that will allow reservation service providers to build EU-wide continuous services.</li> <li>• By prescribing the static data and contact information that TPA operators offering reservation shall provide in addition to the information provided under action E, and by describing a reference process for booking, the specifications set the basis for technical interoperability. The specifications might be insufficient for ensuring effective interoperability in the mandatory deployment case, because TPA operators and road authorities that would be forced into deploying RS without having a sufficient business case, would do minimal effort and not voluntarily seek to maximise data exchange. Therefore, in the case of mandatory deployment, a standard data format appears as a prerequisite for achieving</li> </ul>

interoperability.

- The specifications of action F respect existing solutions for booking transactions, since they do not prescribe a standard data format.
- In the option of mandatory deployment, some TPAs will not be disposing of the right business and/or infrastructure configuration and will therefore need to conduct some changes.
- The risk assessment in section 4.3.7 indicates that there is no issue of maturity, but that the more volume of operational experience is required for remarkable developments in terms of service quality and user experience.
- The deployment options are fully compatible with the use of satellite-based technology for timing and positioning, although they do not prescribe the technology to be used.
- There are Truck Parking Areas in the vicinity or within the perimeter of important intermodal terminals (e.g. seaports). RS will contribute to secure and to optimise the use of such TPAs.
- The specifications on reservation services are fully coherent and complementary with the specifications on truck parking information services (action E).

**Table 13: Specific issues regarding the compliance with the principles set out in the ITS directive.**

### 3.3.7. RISKS

The main risks for each deployment are indicated in the table below.

Scenario	Main Risks
I.	<ul style="list-style-type: none"> <li>• Cases of non-compliance with stopping and resting times rules may get worst. Also, situations of off-site parking would not be reduced.</li> </ul>
II.	<p><b>Institutional Risks :</b></p> <ul style="list-style-type: none"> <li>• related to Member States :               <ul style="list-style-type: none"> <li>▪ Lack of commitment with RS implementation specifications. Lack of experience and existing markets foundations on ITS in general.</li> </ul> </li> <li>• related to decentralised road authorities and TPA operators               <ul style="list-style-type: none"> <li>▪ Slow or non-compliance with obligation of declaring TPAs. Insufficient quality of TPA data</li> </ul> </li> </ul> <p><b>Market Risks</b></p> <ul style="list-style-type: none"> <li>• related to private TPA operators               <ul style="list-style-type: none"> <li>▪ Same as above.</li> </ul> </li> <li>• related to service providers               <ul style="list-style-type: none"> <li>▪ Insufficient business margin.</li> </ul> </li> <li>• related to cargo owners, hauliers and drivers               <ul style="list-style-type: none"> <li>▪ Lack of interest in services (cost, utility, loss of flexibility)</li> </ul> </li> </ul> <p><b>Technology Risks</b></p> <ul style="list-style-type: none"> <li>• related to availability of standards and systems               <ul style="list-style-type: none"> <li>▪ Unequal capacity to implement RS on the basis of already available ITS</li> <li>▪ Failure to define a widely accepted standard for handling reservation requests</li> </ul> </li> </ul>

III.	<p><b>Institutional Risks:</b></p> <ul style="list-style-type: none"> <li>• related to Member States :             <ul style="list-style-type: none"> <li>▪ Slow or non-compliance with RS requirements established by the implementation specifications.</li> </ul> </li> <li>• related to decentralised road authorities and TPA operators             <ul style="list-style-type: none"> <li>▪ Unwillingness to organise and to incur costs for handling of reservations (e.g. in case of sufficient occupancy)</li> </ul> </li> </ul> <p><b>Market Risks:</b></p> <ul style="list-style-type: none"> <li>• related to private TPA operators             <ul style="list-style-type: none"> <li>▪ Same as above.</li> <li>▪ Lack of profitable business models.</li> </ul> </li> <li>• related to service providers             <ul style="list-style-type: none"> <li>▪ Insufficient business margin.</li> </ul> </li> <li>• related to cargo owners, hauliers and drivers             <ul style="list-style-type: none"> <li>▪ Lack of interest in services (cost, utility, loss of flexibility)</li> </ul> </li> </ul> <p><b>Technology Risks:</b></p> <ul style="list-style-type: none"> <li>• related to availability of standards and systems             <ul style="list-style-type: none"> <li>▪ Unequal capacity to implement RS on the basis of already available ITS</li> <li>▪ Failure to define a widely accepted standard for handling reservation requests</li> </ul> </li> </ul>
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**Table 14: Main risks identified for each deployment option.**

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### 3.4. Trade-off and synergies

#### 3.4.1. TRADE-OFFS

The main issue arising from the impact assessment is that the deployment options do not prescribe a technical standard for reservation services. No appropriate existing standard could be identified. In the absence of a prescribed standard, effective interoperability depends on the willingness of the involved actors to agree on common formats (see Annex L)<sup>12</sup>.

There is a trade-off between, on the one hand, deploying RS based on the sole definition of static data items and a reference booking process, as foreseen by the deployment options, and on the other hand, elaborating a standard<sup>13</sup> before deploying RS more widely.

There is, however, a recommended solution to this trade-off resulting from the present study:

- For the voluntary deployment scenario, which results as the preferable option from the impact assessment, it appears opportune to **start deployment without awaiting the prior elaboration of a full technical standard**. It is opportune nevertheless to initiate the elaboration of a technical standard.
- For the mandatory deployment scenario, it would be more opportune to agree on a full technical standard first, and then to make it binding when prescribing deployment.

The present study shows that the TPA-RS is a market that is not mature yet. It is a niche market at present, with heterogeneous technical solutions and low business volumes. It would be premature to agree on a technical standard.

The demand arises primarily from the High Value Goods (HVG) transportation sector, with a strong focus on pre-trip planning. Different service providers are developing services. They are private actors, and they progressively develop the functions of (supply-faced) reservation database and (demand-faced) reservation brokerage. It is there business

<sup>12</sup> For Action E implementation, standards on the content and on the formats (DATEX II compatible) of static information have been prescribed.

<sup>13</sup> In the CEN framework, different levels of technical standards may be specified: European Norms (EN), Technical Specifications (TS), Technical Reports (TR). They differ in how binding they are, in the length of procedure, and in the required level of consensus. While it takes several years and requires the backing of a number of CEN members to elaborate a full standard (EN), a TR can be agreed among interested partners in much less time.

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interest to achieve wide geographical coverage, and this will lead them to exchanging reservation transactions (as shown in chap. 3).

Action F specifications define the reference booking process between the broker and the TPA reservation databases. The specifications do not contain a technical standard, but they are an effective guidance to stakeholders during the implementation process. The specifications do not interfere with the commercial terms.

With the development of RS being encouraged by the Action F specifications, and the commercial terms being progressively defined between the involved parties, it can be expected that the service providers in the RS value chain should respond favourably to an initiative of technical standardisation.

#### 3.4.2. SYNERGIES.

It follows from what is said above that the need of standardisation concerns, from the perspective of the present study, the **transactions between reservation brokers and reservation databases**<sup>14</sup>. These are primarily transactions between central systems of different service providers. It is reminded that the service providers seek to integrate TPA-RS in wider service bouquets. Also, it is reminded that the present study does not lead to express a clear demand for direct transactions between a driver and a TPA operator.

However, there are synergies between the topic of standardisation identified in the present study, and wider topics.

- On-board devices will probably integrate TPA reservation functions, as the TPA-RS market evolves. Also, the demand for on-trip booking could become stronger. Hence, since TPA reservation will on medium term be part of in-vehicle ITS, the standardisation of TPA reservation transactions should be considered the context of action 4.1 of the ITS Action Plan (open in-vehicle platform).
- Truck parking reservation could also be connected to Light Vehicles' Parking Reservation Services, in the long term, where the market volume will be much larger.
- Parking reservation for trucks could also be connected to reservation of other facilities for trucks. This concerns urban and peri-urban logistics in particular. European cities are concerned with optimising the use of delivery slots, electrical charge points, etc.

<sup>14</sup> It is reminded that vertical integration of these functions will continue to exist (see chap. 3).

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### 3.5. Preferable options

On the basis of Impacts Assessment 's results, Voluntary Scenario appears to be the best option of implementation.

The main conclusions of the analysis are:

- Without specifications under action F, reservation services would continue, as presently, to exist on a low level of business activity.
- Impacts are rarely negative in the voluntary implementation scenario (VIS), while they are frequent in the mandatory implementation scenario (MIS).
- The VIS produces more positive impacts in the economic field.
- The MIS leads to more positive impacts in the social/safety field.
- From stakeholders' perspective, the VIS enables them to implement reservation services according to their own business cases.
- The most positive impacts related to efficiency of the implementation and cost-effectiveness appear in the VIS. Since reservation services address the HGV niche market, which is where the business case is strongest, the best way of deploying those services is to let the market expand at its own speed, adjusting the offer and demand in a natural way.
- The VIS also enables a better interoperability of reservation service systems. Since stakeholders are driven by their own business cases, they have a vital interest in exchanging data with the largest possible number of partners. Because wide coverage is not imposed, it becomes an element of competitive advantage, making stakeholders endeavour to reach it.
- The VIS is also more respectful towards existing road network and infrastructures.

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## **Annex A. Requirements for specifications on TPA reservation services.**

According to Annex 1 of the ITS Directive, the specifications (and standards) shall include the following:

The definition of **the necessary measures to provide ITS based reservation services** for safe and secure parking places for trucks and commercial vehicles in particular in service and rest areas on roads based on information both for transport companies and drivers:

- the information on precise reservation services on safe and secure parking areas
- the definition of standardised procedure for proceeding to booking (incl. reservation, payment, cancellation, no show management) by electronic means and in a user friendly manner
- the relevant definition for data exchange and consistency between ITS technologies in both vehicles and road parking facilities not forgetting the necessary update of the information on available parking space for reservation purposes.

Specifications are to be adopted by the European Commission as a delegated act (Article 290 TFEU) until the end of 2013. In the process of elaborating the specifications, and prior to their adoption, an Impact Assessment including a cost benefit analysis has been conducted on priority e and f as per Article 6.7 of the ITS Directive. The analytical work under this contract will be used to complement the definition, both functional and technical, with respect to reservation services.

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## **Annex B. Problem definition: complementary details.**

Possibilities to secure a parking place with a reservation can be useful or required mainly in the following situations:

- Pre-trip booking: a route is defined by a fleet manager with an advanced booking
- On-trip booking: booking occurs any time while the truck driver is on its way and he or his company wants to secure a parking place.

Specific needs to be addressed are mainly: high value cargo and/or dangerous goods that need to be informed on reservation possibilities on highly secured parking places.

In today's situation, very few dissemination means offer the location of parking facilities on main EU axis, there is no systematic collection of relevant and harmonised information (attributes) regarding each parking facility (e.g. total number of parking places; periodic count of available parking places, security level of parking areas, etc.).

Specifications for information services (action e) have provided the definition, the roles and the procedures to define harmonised collection, sharing, dissemination of information on safe and secure parking places for trucks and commercial vehicles.

After this first step, the specifications on reservation of parking places is the next step as a logical continuation for harnessing the benefits of the provision of information on safe and secure parking places for trucks and commercial vehicles.

Reservation services remain scarce across Europe but the foreseen increase of the freight road traffic in the future will call for an extension of this type of services.

The shortcomings in the reservation system along the main road axis are due to the following reasons:

- 1) There is no extensive inventory over suitable, safe and secure parking places for trucks based on a harmonised classification of facilities along the main European road axis that offer a reservation service
- 2) There is no standardised and user friendly rules and procedures defined to make a reservation including payment (to be confirmed by the study) before trip or during the trip
- 3) Reservation services are linked to specific situations covering a small percentage of all trips :

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- a. Trucks transporting high value goods need to secure their cargo,
  - b. Trucks transporting dangerous goods have specific needs,
  - c. On corridors where demand exceeds supply, some may need to secure a parking place.
- 4) Only few truck parking areas are equipped with dynamic real time information on available places which would enhance the potential efficient management of real time reservations
  - 5) The reservation services need to be cost effective to be implemented what calls for cost effective business models highly dependent on the location of the parking.

The measure will potentially affect the truck and commercial vehicles drivers, who will directly benefit from the availability of such parking reservation services.

The measure will also impact all the other actors and stakeholders concerned with commercial transport, such as the transport and road operators, the existing parking operators, the police and emergency services, the central, regional and local authorities, the insurance companies, and more broadly telecom companies, public/private traffic information providers, ITS service providers, user associations and any road users, etc.

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## Annex C. Previous studies' results

Concerning reservation services, the main conclusions and recommendations of the previous study are as follow:

- The preferable options are characterised by mandatory extensive deployment of static information, mandatory selective deployment of dynamic information, and voluntary deployment of reservation services.
- Voluntary deployment of information and reservation services yields relatively small impacts only.
- The most positive impacts relate to road safety and the working conditions of drivers. Consequently, these benefit the public authorities and the drivers. The economic impacts are positive and benefit mainly the hauliers. There are positive impacts for the environment as well. The benefits are small or nil for other stakeholders (TPA operators, cargo owners, insurers) due to extra costs upon them. The participation/commitment of TPA operators is critical both for collecting data and handling reservations.
- The pairwise comparison of the respective scenarios with and without reservation shows that once dynamic information is effective in a priority zone, the additional benefit of reservation services is not guaranteed for all parking operators and all hauliers.
- The evidence for the assessment of cost-effectiveness of the reservation services is insufficient.
- Considering the present variety of different reservation services concepts and the still early status of development of standards for reservation transactions, coupled with the need to ensure synchronisation and consistency between dynamic information and reservation services, specifications should remain functional.
- The specifications for reservation services should leave room for a wide range of needs and situations: on-trip bookings as well as pre-trip bookings for different types of truck parking.
- The specifications should ensure that reservation services benefit drivers as much as their employers, are based on a cost effective business model, and minimise the hassle of transactions and possible additional constraints to drivers.
- The specifications should include requirements on reliability of dynamic data and on rules for overcoming cases of malfunction.
- The specifications should include harmonised rules for cancellations and assess the options of penalties for no-shows.
- The specifications should ensure that neighbouring Member States concerned by truck parking priority zones located along cross-border transport corridors are encouraged to cooperate for an optimal continuity of services.

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- The specifications should ensure sufficient flexibility or time lapses to allow existing legacy systems to be renewed and/or adapted in accordance with their own lifecycle.
  - The specifications should ensure that a single standard for handling reservation requests is prescribed, in order to prevent the risk of diverging and costly future developments and updates.
  - The specifications should ensure that dynamic information and reservation services follow consistent objectives in priority zones, in order to abate the risks.
  - TPA operators should have the greatest possible freedom when it comes to handling the reservations on-site (e.g. choice of automatic and manual means, implementation on specialised truck parking areas as well as on areas for mixed public).
  - The information on the availability of parking places may become essential to proceed to a reservation.

## Annex D. Existing truck parking reservation services

This annex describes the best-known truck parking reservation services in Europe at present.

### Truckinform



#### General information

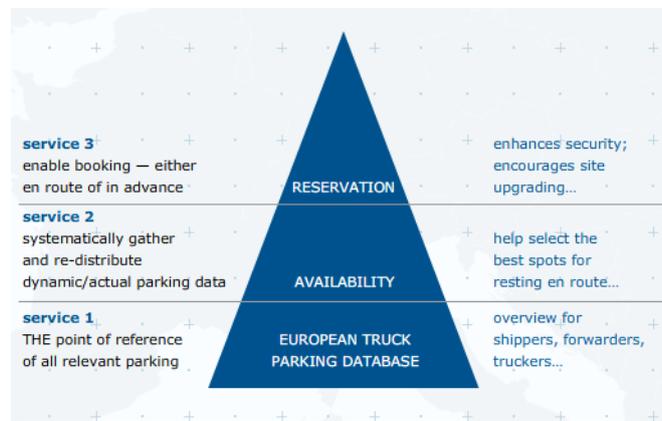
Truckinform is a European truck parking portal covering about 2.800 truck parking areas (TPAs) in 40 countries.

Truckinform was co-financed by the European Commission, as part of the [SETPOS](#) and [LABEL](#) projects. The Truckinform portal ([www.truckinform.eu](http://www.truckinform.eu)) can be accessed from the Internet or from on-board devices. The portal is run by Move & Park, which is owned by Allmobile, a transport telematics company.

#### Description of the service

Truckinform aims at providing three services, see [Figure 9](#):

- Information: Truckinform offers searchable overviews and many details on parking areas to drivers and dispatchers.
- Guidance: Truckinform's dynamic parking data helps to guide drivers in time to the optimal available parking area.
- Reservation: As soon as a truck parking area operator has subscribed to the reservation service, drivers and dispatchers can book a parking space days or hours in advance.



**Figure 9 : Three services of Truckinform**

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The three Truckinform services help the European transport industry to become even more reliable, efficient, safer and – by avoiding detours – more sustainable. The portal serves an estimated 4 million long-distance truck drivers and their dispatchers throughout Europe.

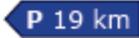
With the implementation of this full service suite:

- parking site owners can increase the usage of their facilities and derive a quicker return on investment
- lorry drivers get an instrument to help them organise their rest time in the framework of the driving time regulations
- dispatchers can plan journeys more accurately and easily
- public authorities and road network operators gain an improved view of the traffic and parking situation
- the interplay of different transport carriers – road-rail-ship – becomes smoother
- less search traffic for parking spaces has a positive environmental impact
- road transport as a whole becomes safer and more secure

Currently the website is available in 4 languages (English, French, German and Russian).

#### *Flag system*

Quick and advanced parking searches can be made on the Truckinform portal. The search results map shows Truckinform's "flag system":

-  means that there is a truck parking facility 8 km from your search position
-  blue indicates that the truck park area is partnering with Truckinform to ensure that the information is up to date
-  green means that there is truck parking space available
-  red means that the park area is full for trucks that do not have an advanced reservation, "R" means reservable, an "\*" would mean that additional security & comfort information is available

The targets are to include all European truck parking areas, to encourage truck parking area operators to update their information, and to supply in collaboration with the operators real-time data and reservation possibilities.

#### *Reservation service*

The exact number of TPAs covered by the Truckinform reservation service is confidential. In 2011, about 13% of European TPAs were registered, of which only 3 were available for reservation.

Users can make an online reservation. The website transfers this request to the TPA Operator. Some of the TPAs are connected by a computerised interface; others use an indirect interface (e.g. e-mail, SMS, fax, phone).

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The operator confirms or cancels the reservation request. He receives the reservation list daily at a fixed hour (e.g. by e-mail) or he can consult the list online. He can also set a limit hour, after which online reservations are not possible anymore.

The TPA Operator can handle access control manually (based on the reservation list) or he can connect the parking management system (if any) (e.g. gate, barrier) to the central reservation system.

#### *Agency Agreement*

For reservation services, there is an Agency Agreement between Move & Park (the “Agent”) and the TPA Operator (the “Client”).

The Agent acts as an intermediary for the parking spaces registered by the Client in their reservation profile. He is authorised to conclude contracts in their name and on their account for the parking spaces released for placement in their reservation profile. The brokering of parking spaces is not limited to a specific region.

The agreement further includes obligations of the Agent, e.g. that the agent must safeguard the interests of the Client and perform his activities with the care of a prudent businessman. It also includes responsibilities of the Client, e.g. that the Client undertakes to always make at least 3 free parking spaces for a total time of 600 hours per month available to the agent for brokerage each month.

The reservation is only a permission to store the user’s vehicle on the land of the operator intended for that purpose. Services beyond that, such as monitoring or safekeeping by the parking space operator, as well as the information on the Truckinform website relating to the parking space operator’s infrastructure, are not part of the agreement.

#### *Registration and charges*

All of Truckinform’s information and information search functions can be used freely, without registration. However, certain services, like truck parking reservation, are only available to registered users. Registration is free and carries no obligations.

The three services are currently free of charge for users. Also the brokering of parking spaces via Truckinform is free of charge. However, Move & Park reserves the right to request a fee in future (e.g. a reservation fee of 3 EUR).

Truckinform is nowadays the only European-wide approach for truck parking reservation services. Further success factors are expected to lie in its extension (i.e. providing parking space reservation at numerous TPAs throughout Europe) and the distribution of data to end user’s equipment (as was done in the pilot with FleetBoard’s mobile handheld “DispoPilot”) and to third party websites and portals.

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### Contact information

- [www.truckinform.eu](http://www.truckinform.eu) or [www.truckinform.com](http://www.truckinform.com)
- [info@truckinform.eu](mailto:info@truckinform.eu)

Truckinform.eu was built and is run by Move & Park, which was founded in Paris in 2006 for this purpose. Move & Park is owned by Allmobile, a transport telematics company. Software from C-oncept software GmbH, Vienna, is used for the portal.

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### All4Trucks



### General information

All4Trucks is an innovative concept of offering all services for truckers on one location: safe parking area, restaurant, personal care, communication zone as well as diesel supply accepting almost every international fuel card.

All4Trucks is an initiative of a group of investors from the Netherlands and France with business experience in transportation/logistics and fuel sales.

### Description of the service

In January 2009 the first location of All4Trucks was opened in Calais, France, offering 310 parking places with registration and full surveillance behind secure fences.

Parking reservations for the A4T Calais SAS can be made via the website ([www.all4trucks.com](http://www.all4trucks.com)), at least 48 hours in advance. A confirmation will be sent by e-mail.

The parking area offers:

- a) 310 secure parking places
- b) In a secure trucks only zone

- c) A closed perimeter controlled by (highpower) fence and video
- d) General surveillance on the premises 24h/24h
- e) Registration (front and rear) of all trucks entering and leaving the premises
- f) With full services for the truck driver

By submitting the online reservation form, the user agrees with the Terms & Conditions and the Contract. There is no reservation fee. All other payments are to be made by the driver at the time of use at the rack rate. Cards are accepted for parking payment, such as Visa, Mastercard, Maestro, DKV, UTA, Morgan Fuels.

The vehicle may be parked for no more than fifteen days in succession, unless A4T CALAIS SAS has agreed otherwise. There is a 5% rebates for a usage of 500-5.000 EUR per calendar month, paid in arrears and a 10% rebate for over 5.000 EUR.

Currently the website is available in 3 languages (English, Dutch and French).

The All4Trucks consortium plans to create a network of 20 similar sites in strategic locations in Europe, setting a new standard for services in the transportation business.

#### **Contact information**

- [www.all4trucks.com](http://www.all4trucks.com)
- [info@all4trucks.com](mailto:info@all4trucks.com)

The All4Trucks concept is developed by:

All4Trucks BV  
Nieuwe Boschstraat 9  
4811 CS Breda  
The Netherlands  
T +31 (0)76 52 22 592  
F +31 (0)76 51 38 819

Truck parking reservations are possible for the site:

A4T Calais SAS  
A16 Exit 48  
ZAC-Transmarck Ouest  
504, Avenue Henri Ravisse  
62730 Marck  
France  
T +33 (0)3 21 17 71 80  
F +33 (0)3 21 17 71 84

## SystemParken



### General information

SystemParken is an online reservation platform based on a central reservation system, which allows for booking of parking spaces at currently 45 TPAs in 11 federal states of Germany.

SystemParken was created in 2008 by a TPA operator. Other operators have since joined the database.

### Description of the service

The user can search for TPAs by region or by roads on the website ([www.systemparken.de](http://www.systemparken.de)), check occupancy and make an online reservation for the appropriate time and day.

Registration is not required, although personal data are required for making the reservation.

There is a combined fee of 12,50 EUR for reservation and parking, which can be paid through a secured online transaction by fuel card, credit card and Systemparken Card. A confirmation of the reservation is sent by SMS or e-mail.

The user is asked to inform the respective TPA in case of a delay of more than 3 hours. For cancellations less than 2 hours before the reservation time, a cancellation fee of 4 EUR needs to be paid.

The terms and conditions of the participating TPAs apply to parking reservations, usage of the TPA and the Systemparken Card.

SystemParken also offers services at a webshop and a SystemParken Card with discounts and special offers at five participating TPAs.

It is a rather advanced truck parking reservation service, but only for Germany. Also the website is only available in German.

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#### Contact information

- [www.systemparken.de](http://www.systemparken.de)
- [info@systemparken.de](mailto:info@systemparken.de)

Autohof-Tanken-Rasten Parken e.G.  
Managing Director: K.-H. Schneider  
Breisgauallee 2-4  
79336 Herbolzheim  
Germany  
T 09005 556672  
F +49 (0)7643 / 91 10 20

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#### Autohof Parken

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#### General information

Autohof Parken is an online reservation service for booking of parking spaces at 1 TPA in Germany: Bad Rappenau at the A6 motorway.

Autohof Parken is an initiative of 24-Autobahn-Raststätten GmbH. Bad Rappenau is one of the nine "Autohöfe" of this company.

#### Description of the service

Parking reservations can be made via the website ([www.autohof-parken.de](http://www.autohof-parken.de)), but also via fax, mail and telephone. The website shows how many of the 20 reservable truck parking spaces are available.

For online reservations, a user account needs to be made. Then the required location, day and time can be selected and the personal data filled in. After accepting the price and payment conditions, a confirmation of the reservation is sent by e-mail and SMS. Changes to a registration can only be made by calling the respective TPA.

The reservation fee is 15 EUR and includes surveillance and a 10 EUR voucher for the restaurant. There are possibilities to pay online via a non-secured transaction or on the premises. Payment with fuel cards is not possible.

Parking is limited to a maximum of 24 hours, unless otherwise agreed between TPA Operator and Client.

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Autohof Parken is a proprietary truck parking reservation service for only one TPA in Germany. The website is only available in German.

**Contact information**

- [www.autohof-parken.de](http://www.autohof-parken.de)
- [info@24-autohof.de](mailto:info@24-autohof.de)

**24-Autobahn-Raststätten GmbH**

businessPARK  
Osterhofener Str. 12  
93055 Regensburg  
Germany  
T: +49 (0)941 / 30 708 - 24  
F: +49 (0)941 / 30 708 - 29  
[www.24-autohof.de](http://www.24-autohof.de)

Truck parking reservations are possible for the site:

24-Autohof Bad Rappenau  
Buchäckerring 40  
74906 Bad Rappenau  
Germany  
T: +49 (0)7066 / 91 58 824  
F: +49 (0)7066 / 91 58 825  
[badrappenau@24-autohof.de](mailto:badrappenau@24-autohof.de)

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**Truck Etape**

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**General information**

Truck Etape provides three Truck Etape Secure Truck Parks in France. For two of them, online reservations can be made.

The Truck Etape website is owned by the Truck Etape Holding, which is a subsidiary of Vinci Concession.

**Description of the service**

The aim of Truck Etape is to offer all services for truckers on one location, like All4trucks.

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Parking reservations can be made via the Internet ([www.trucktape.net](http://www.trucktape.net)) for two Truck Etape Secure Truck Parks: Beziers and Valenciennes. There is no reservation fee.

Truck Etape is a proprietary truck parking reservation service for only two TPAs in France. The website is only available in French.

#### Contact information

- [www.trucktape.net](http://www.trucktape.net)

The Truck Etape website is owned by the Truck Etape Holding, which is a subsidiary of Vinci Concession. The Vinci Group is a French concessions and construction company. Besides Vinci Concession, the Vinci Group holds Vinci Autoroutes (motorway companies: ASF, Cofiroute, Escota and Arcour) and Vinci Construction.

Truck Etape c/o VINCI Concessions  
1 cours, Ferdinand de Lesseps  
92581 Rueil-Malmaison  
France  
T: +33 3 27 43 60 66  
F: +33 3 27 49 29 84

#### Sites:

- Béziers: +33 4 67 620 620, [trucktape.accueil@asf.fr](mailto:trucktape.accueil@asf.fr)
- Valenciennes: +33 3 27 43 60 66, Director: Philippe Morvillers ([philippe.morvillers@vinci.com](mailto:philippe.morvillers@vinci.com)), [accueil\\_valenciennes@trucktape.com](mailto:accueil_valenciennes@trucktape.com)

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### SecuriTpark

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#### General information

SecuriTpark is a secure TPA in France at the junction of the motorways A10/A83 (La Crèche) offering 40 secure truck parking places, which can be reserved.

**SecuriTpark** is an equipment of The Deux Sevres Chamber of Commerce and Industry (CCI Deux-Sevres).

#### Description of the service

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SecuriTpark is a secure parking place offering a surrounding fence with an infrared security alarm, screened entry for vehicles, 24h CCTV covering the whole compound with recorded data and controlled access for pedestrians.

Parking reservations can be made via the Internet ([www.securitpark.fr](http://www.securitpark.fr)) through the online contact form. There is no reservation fee.

SecuriTpark is certified according to the European Truck Parking Label with 4/5 in terms of security level and 3/5 in terms of services offered to the drivers.

Access to the car park is strictly reserved for users only. People on site without specific authorisation or without a valid car park permit may be prosecuted.

Unless otherwise authorised by SecuriTpark, the maximum length of stay for a parked vehicle is 5 days.

Users can pay their parking fees at SecuriTpark with a TOTAL, AXXES, DKV or EUROTOLL badge.

SecuriTpark is a proprietary truck parking reservation service for only one TPA in France. The website is available in three languages (French, English and Spanish). Instructions for using the parking place are provided in 8 languages.

**Contact information**

- [www.securitpark.fr](http://www.securitpark.fr)

Xavier Robin  
T +33 (0)5 49 28 79 94  
[x.robin@securitpark.fr](mailto:x.robin@securitpark.fr)

Chambre de Commerce et d'Industrie Territoriale des Deux-Sèvres  
Organisme Consulaire  
SIREN : 187 900 014  
BP 90314  
10 Place du Temple  
79003 NIORT CEDEX  
France

## Truckparking Rotterdam



### General information

Truckparking Rotterdam is an initiative of the Port of Rotterdam consisting of three secure truck parking areas in the port area of Rotterdam, for which online reservations can be made.

The website is administered by Koninklijke Volker Wessels Stevin nv ("VolkerWessels"), a Dutch group of private companies related to construction.

### Description of the service



**Figure 10 : Location of the TPAs of Truckparking Rotterdam**

Truckparking Rotterdam offers three secure truck parking areas in the port area of Rotterdam (see [Figure 10](#)): Waalhaven (114 parking spaces), De Punt (72 parking spaces) and Botlek Distri (82 parking spaces). In 2014 a fourth truck parking will be built: Maasvlakte Plaza with 500 parking spaces.

Parking reservations for the three existing TPAs can be made via the Internet ([www.truckparkingrotterdam.com](http://www.truckparkingrotterdam.com)). There is no reservation fee.

During the day truck drivers can park free of charge and secure on the Truckparkings. From mid-August 2012, drivers are obliged to park their truck and chassis exclusively at designated places between 18:00 and 06:00.

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Users enter and leave the TPA through a barrier / speed gate. On arrival, they receive a card that remains their property. This card can be recharged at the pay machine with credit cards, debit cards or DKV and UTA cards. This card can be used to pay for the facilities and any parking fees due upon leaving the site. Users must always hold a personalised and valid access pass stating the vehicle and/or trailer registration number.

Truckparking Rotterdam offers truck drivers who avoid rush hour (between 15:00 and 18:00) by parking at one of the monitored Truckparkings in Rotterdam extra benefits, such as free gadgets. In order to reward drivers who often avoid rush hour a special savings system has been set up.

Truckparking Rotterdam is a proprietary truck parking reservation service for three TPAs in the Netherlands. The website and the regulations are available in ten languages.

#### Contact information

- [www.truckparkingrotterdam.com](http://www.truckparkingrotterdam.com)
- [info@truckparkingrotterdam.com](mailto:info@truckparkingrotterdam.com)

The website is initiated by the Port of Rotterdam with the following partners: VolkerWessels and its companies Vialis, KWS and PCH. The website is administered by VolkerWessels.

VolkerWessels  
Podium 9  
3826 PA Amersfoort  
The Netherlands  
T +31 88 186 6186  
F +31 88 186 6187

Three sites:

- Waalhaven  
Beatrix de Rijkstraat 1 + 99  
3088 HL Rotterdam  
The Netherlands
- De Punt  
Botlekweg 176  
3197 KA Rotterdam  
The Netherlands
- Distripark Botlek  
Tweedweg 1  
3197 LM Rotterdam  
The Netherlands

Emergency number / control room: + 31 (0) 88 1869437

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## UTA Parking Reservation Service

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### General information

The UTA Parking Reservation Service provides information on several secure or attended truck parking areas in Germany, France, Spain and the Netherlands. Reservation information is given for only two TPAs in Germany.

UTA (UNION TANK Eckstein GmbH & Co. KG) is amongst the leading issuers of fuel and service cards for commercial goods transport and transportation of passengers.

### Description of the service

Parking reservations can only be made at two secure TPAs in Germany (i.e. Uhrsleben at motorway A2 and Wörnitz at motorway A7/A6). The website ([www.uta.com/tankkarte/tindex/en\\_parkingreservation-parkingservice.htm](http://www.uta.com/tankkarte/tindex/en_parkingreservation-parkingservice.htm)) provides an e-mail address and a telephone number for making reservations at these two TPAs.

The charges for the respective TPAs can be settled either by means of the UTA Card or by means of the UTA MultiBox®, which records the exact date and time when entering or leaving the TPA and states the relevant details in the toll statement enclosed to the next invoice.

The UTA Parking Reservation Service is not comparable to the other services in this report. It does not provide an online reservation tool, but only an e-mail address and a telephone number for making reservations at two TPAs in Germany. The UTA website is available in seven languages.

### Contact information

- [www.uta.de](http://www.uta.de) and [www.uta.com](http://www.uta.com)
- [info@uta.de](mailto:info@uta.de) and [service@uta.com](mailto:service@uta.com)

**UTA-Service Hotline: +49 (0) 60 27 509 131**

UNION TANK Eckstein GmbH & Co. KG  
Heinrich-Eckstein-Str. 1  
63801 Kleinostheim am Main  
Germany

T +49 (0) 60 27 509 0  
F +49 (0) 60 27 5 09-77177

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## Highway Park

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### General information

HighwayPark provides a truck parking information and reservation system on the Internet for booking of parking spaces at 19 TPAs ("Autohöfe") in Germany.

Highway Park started as a pilot project in 2008, initiated by Softways, an IT Consulting Company. However, the service seems to be temporarily stopped.

### Description of the service

HighwayPark developed a truck parking space reservation system, composed by a central database and a reservation software system, which allows booking of parking spaces at 19 German TPAs.

Parking reservations can be made on the Internet ([www.highway-park.de](http://www.highway-park.de)) or by using the call centre (0180 LKWPARK). There is no need to register before making a reservation. Without registration, you are allowed to make at maximum five reservations.

There are only 3 to 5 places per TPA available for booking. There are no places for refrigerated trucks. Some TPAs are able to answer a booking request 24/7, others only reply between their opening hours (i.e. during the presence of their TPA Operator, e.g. Mo-Fr between 17:00 and 23:00).

A reservation confirmation is sent by e-mail, SMS or Internet. The reservation service costs 3 EUR and can be paid using a fuel card. There is a cancellation procedure and extra charges are due if the driver does not show up or cancels too late (less than 1h).

There is a time buffer for arriving at the TPA of +/- 1 hour with respect to the reservation time. The parking space will be reserved until the end of the shift of the TPA Operator (e.g. 23:00).

Authorisation at the TPA is done by fuel card, reservation number or number plate. At TPAs with a gate, the fuel card can be used like an "eTicketing" solution, since an online communication to the parking gate system can be elaborated. At manually guarded TPAs, the TPA Operator will check the reservation.

The software structure of the Internet platform is conforming to the industry standards:

- Back Office separated from the portal
- Use of Java, SSL, SQL-Databases, Linux-Server

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There is a secured online transaction (White List, Black List, SSL-Secure: Key 128bit).

Moreover, Highway Park aimed at easy implementation by partners:

- as a “White Label” product for integration in other websites, using the central database with own surface
- as a software product for any supplier of truck parking space or Service Provider

Highway Park started as a pilot project in 2008. However, Highway Park seems to be temporarily stopped. At present, the Internet portal ([www.highway-park.de](http://www.highway-park.de)) does not have a proper security certificate and it seems impossible to reserve a parking space via Internet.

The website is only available in German.

**Contact information**

[www.highway-park.de](http://www.highway-park.de)

[info@highway-park.de](mailto:info@highway-park.de)

T: 0180 LKWPARK

Highway Park is a privately owned company. Shareholder of Highway Park is Softways, an IT Consulting Company in the area of transport and logistics and market leader in Germany for Road Toll Billing and Fuel Card Management Systems.

Softways GmbH  
CEO: Dirk Ortmann  
Highway Park GmbH  
Birkenwaldstr. 38  
63179 Obertshausen  
Germany

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## Annex E. Potential new entrants to the TPA reservation services' market.

**TRANSPark** is a free of charge Internet application of IRU<sup>15</sup> including a database with static information on more than 4.000 truck parking areas in more than 40 countries. The view of the promoters of TRANSPark is that the optimal solution would be to extend the database with dynamic data to include parking space availability information provided (pull or push) via a standardised ITS specification, protocol and interface – then and only then reservation systems can be developed<sup>16</sup>.

In particular the Stakeholders Interviews and the Stakeholders Workshop carried out in one of the previous studies<sup>17</sup> have provided valuable information on the potential interest in becoming a Service Provider by:

- Toll Motorway Operators / ASECAP Members
- Fuel Card Issuers / prospective EETS<sup>18</sup> Providers
- Fleet Management Solution Suppliers (e.g. FleetBoard, Continental, Parckr)

### Toll Motorway Operators / ASECAP Members

The European Association of Operators of Toll Road Infrastructures, ASECAP, has a pan-European dimension: ASECAP Members' network constitutes a basic part of the TERN by covering over 50.000 km of motorways, bridges and tunnels across 21 countries.

ASECAP proposed at the Stakeholder Workshop in June 2012 a European E-Parking Information Service, EEPIS<sup>19</sup>:

- EEPIS is the road map leading to the final destination/target, which is “reserving the available parking area”
- EEPIS is about managing the static and dynamic information on the availability of parking areas, as well as providing related guidance (with a view to parking reservation as a target, but not included as a precondition)

Reservation management requires resources (IT systems, human resources) and increases the complexity of the parking area operator's business. The parking operator needs to maintain empty the reserved capacity (with risk of no-show, late arrival or early arrival). In low demand areas, this may not be relevant, but in high demand areas, this requires strong access control and may lead to a decrease of available parking.

**Figure 11** shows the key players of EEPIS:

<sup>15</sup> International Road Transport Union (IRU)

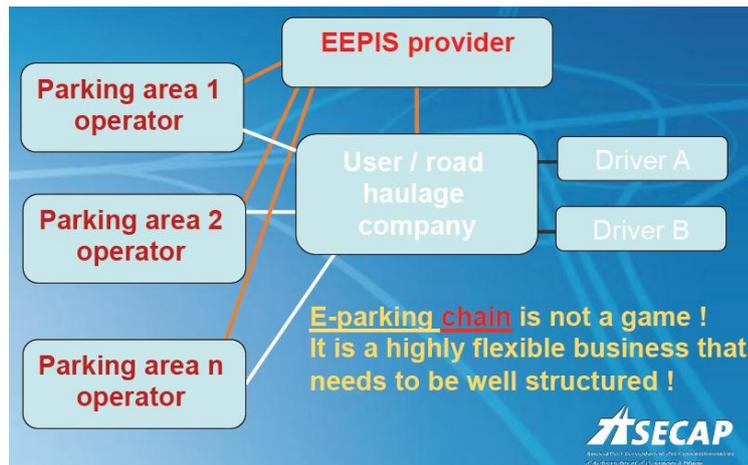
<sup>16</sup> Contribution by M. Nielsen (IRU) to the EC stakeholder workshop on Truck Parking Information and Reservation Services in June 2012.

<sup>17</sup> ITS Action Plan, Priority Actions E and F, D2 Stakeholders Consultation Report (2012)

<sup>18</sup> European Electronic Toll Service (EETS)

<sup>19</sup> Contribution by K. Dionelis (ASECAP) to the EC stakeholder workshop on Truck Parking Information and Reservation Services in June 2012.

- EEPIS provider
- Parking area operator
- User/road haulage company



**Figure 11 : EEPIS stakeholders**

It is believed that the management of the “European electronic information flow” would not be so complex. Rather the management of “dyadic reservation/money flow” is considered to be hard and risky.

Important aspects include:

- Value chain: structure of service, who sells what, who provides, who buys, risk allocation, profit?
- Business case: who moves first?

### **Fuel Card Issuers / prospective EETS Providers**

Already today some Fuel Card Issuers are involved in truck parking reservation services. For example, Highway Park was the first Internet truck parking reservation service that provided payment with fuel cards. Also Truckinform provides the possibility of payment with fuel cards (DKV, EuroShell, UTA).

Besides, truck parking reservation services need advertisement and marketing. This is another aspect where Fuel Card Issuers come into play. Truck drivers are valuable and regular customers and have on average more than one fuel card. Fuel Card Issuers have established “customer loyalty” towards these truck drivers and their companies. For Service Providers of truck parking reservation services it is very useful to team up with Fuel Card Issuers and make use of this customer loyalty.

It is expected that Fuel Card Issuers will on the one hand strengthen their current roles with respect to payment and marketing. On the other hand, they may expand with new roles in the truck parking reservation process.

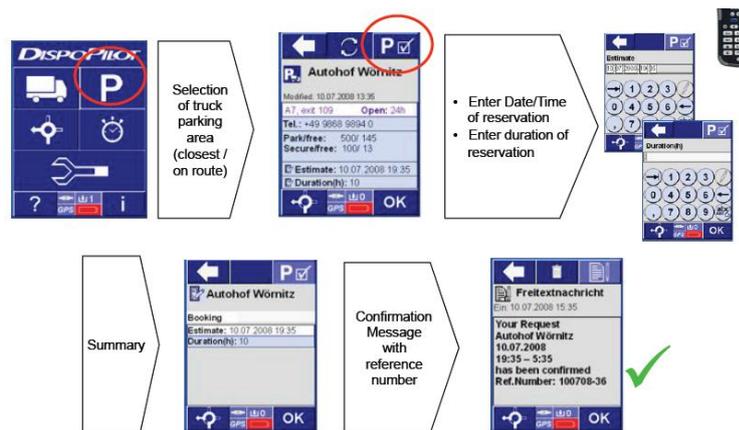
Such new roles may be related to the potential interest of Fuel Card Issuers in becoming a future EETS Provider, providing service contracts, on-board units (OBUs) for electronic toll collection as well as payment means to the Service Users subscribed to the EETS. Truck parking reservation services may be seen as one of the value-added services on an OBU. In principle these devices (and the supporting contractual relationships) could be used to facilitate access control to secure parking sites, to prove/verify/attest use (and times of use) of the parking facilities and to provide a secure payment means / invoice information.

### Fleet Management Solution Suppliers

Business models and the return on investment seem the biggest obstacles for a successful truck parking reservation service. Due to high development and operating costs, it is believed that such services would only be successful in combination with existing established services already used by the truck drivers and dispatchers.

Therefore, it is expected that in future truck parking reservation services will be directly integrated into the business application of the transportation sector, i.e. the dispatcher system and the navigation system.

The European SETPOS project has proven that it is technically possible to integrate a truck parking reservation service into an on-board device. **FleetBoard** developed a prototype of such application on their mobile handheld DispoPilot, see [Figure 12](#). The necessary data and booking mechanisms were made available by Truckinform.



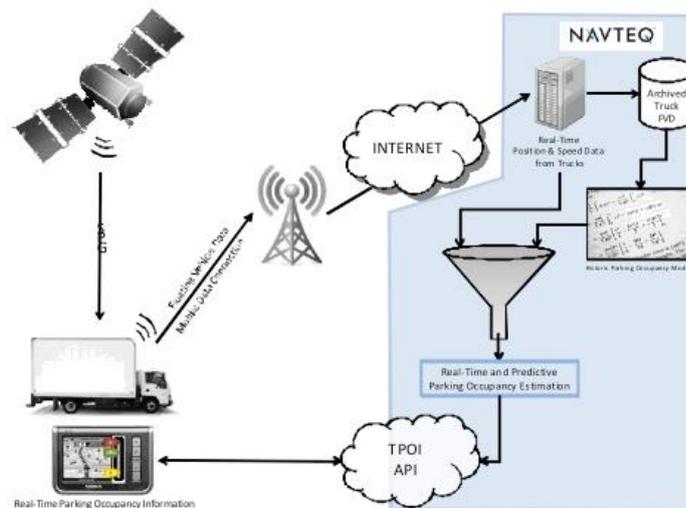
**Figure 12 : Parking place reservation on the FleetBoard DispoPilot**

FleetBoard believes that OEM-related telematics supplier can cover part of the process chain for parking place reservation<sup>20</sup>. Potential roles may include:

- Marketing & sales channel
- Technical enabler for in-cab reservation and via dispatcher (telematics front-end system)
- Billing of reservation fee

One of the challenges mentioned by **Highway Park** is to develop a reservation interface to parking gate systems and navigation systems<sup>21</sup>.

**ParckR** is the first community for truck drivers to share information on truck parking areas, and the first smartphone app to predict occupancy rates for truck parking areas<sup>22</sup>. It combines a Historic Parking Occupancy Model with Real-Time FVD Data and trucker feedback to estimate the current and near-term (up to 24 hours) use of parking spaces, see [Figure 13](#). Currently, there are initial ideas about integrating a reservation function into the ParckR app.



**Figure 13 : ParckR architecture**

<sup>20</sup> Contribution by CH. Ludwig (Fleetboard) to the EC stakeholder workshop on Truck Parking Information and Reservation Services in June 2012

<sup>21</sup> Contribution by D. Ortmann (Highway Park) to the EC stakeholder workshop on Truck Parking Information and Reservation Services in December 2010

<sup>22</sup> Contribution by T. van de Ven (ParckR) to the EasyWay 5th Annual Forum, London 2012.

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## Annex F: Other relevant truck parking reservation services

This paragraph shortly described two truck parking reservation initiatives: Smart Truck Parking in the USA and GoSwift in the Baltic States. This annex includes more information on these services.

### Smart Truck Parking in the USA<sup>23</sup>

Smart Truck Parking is a federally funded project. It is designed to assist truck drivers, fleet and logistics companies in obtaining information about participating Truck Stops, availability of parking spaces, mapping and routing information, and the ability to make reservations.

More than 80% of truckers surveyed felt that a Smart Truck Parking system would be useful to the trucking industry overall. The system provides the following capabilities:

- Truck Stop attributes (gas, showers, Wi-Fi, etc.)
- Real-time and historical parking availability
- Capability to make advanced parking reservations
- Truck specific routing information
- Parking check-in/check-out capability

Several pilots are planned or already taking place in the states of California (along the interstate highway I-5) and Michigan (along the interstate highways I-94 and I-95). The main communication channels will be the Internet ([www.smarttruckparking.com](http://www.smarttruckparking.com)) and Mobile Apps, see [Figure 14](#).

The I-94 pilot also includes 10 trucks with a 5.9 GHz Dedicated Short Range Communications (DSRC) in-vehicle unit and corresponding roadside equipment, both with customised application software that provide drivers with real-time truck parking availability information from MDOT facilities and private truck stops. The system will be fully delivered in December 2013.

<sup>23</sup> Source : I-5 Smart Truck Parking in California: Public-Private-Academic Collaboration to Aid Truckers in Finding Safe, Legal, and Available Parking Through ITS Technology, Elliot Martin, PhD University of California, Berkeley and Rick Warner ParkingCarma, 2012.

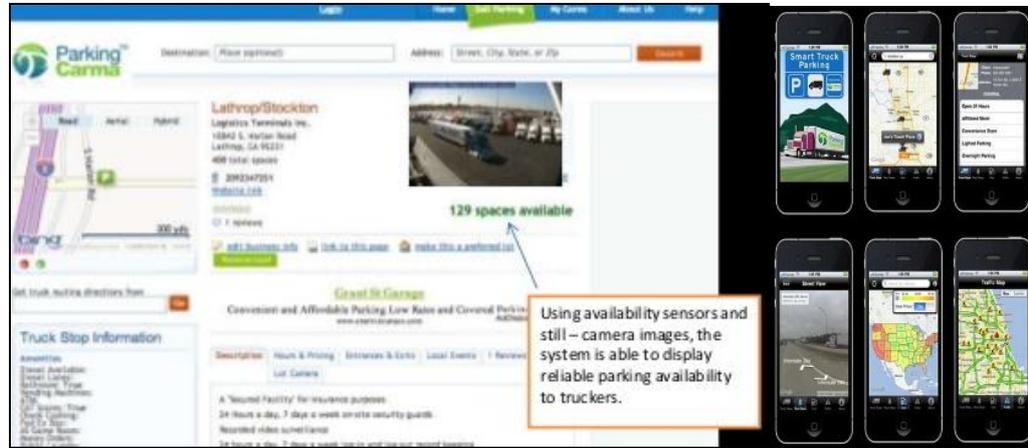


Figure 14 : Main communication channels of Smart Truck Parking (left : Internet, right : Mobile App)

Truck parking is mostly about **privatized infrastructure**; for example, on the I-5 in California there are 3.802 private spaces (86%) and 600 public spaces.

Parking space availability is determined by using:

- Loop sensors
- Video traffic analysis
- RF tag detection and traffic analysis

Figure 15 shows the Smart Truck Parking architecture.

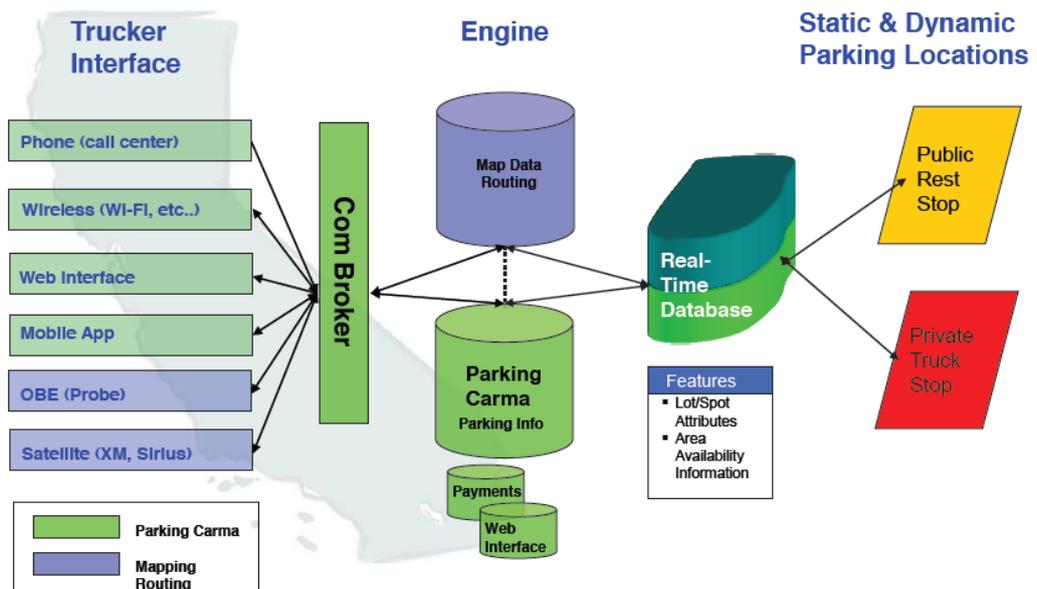


Figure 15 : Smart Truck Parking architecture

Next to launching all sub-projects in California and Michigan, further next steps include :

- 
- The collection of as much feedback from all project stakeholders (truckers, truck stop operators, CALTRANS, MDOT)
  - A unified national rollout approach:
  - Work on a private public partnership rollout focused on the top trucking corridors
  - Work on standardisation (APIs, data sharing, etc.)
  - Truckers will get the most benefit from a single system nationally
  - Cost and implementation time will be lower with a single national system
  - Cost to operate a single network nationally is substantially cheaper

The system needs to address multiple challenges that are often addressed in isolation. A team composed of government (CALTRANS, MDOT, university (UC Berkeley) and private sector (ParkingCarma, NAVTEQ, Promiles) is expected to be uniquely equipped to build this system, overcome challenges, and transition research into practice.

This Public-Private-Academic partnership is pursuing an integrated approach. The broader objective is to test this partnership model and to demonstrate a system that can address the public needs of the project, while building a self-sustaining business model that can be scaled across the country and succeed without federal support.

#### **GoSwift in the Baltic States**<sup>24</sup>

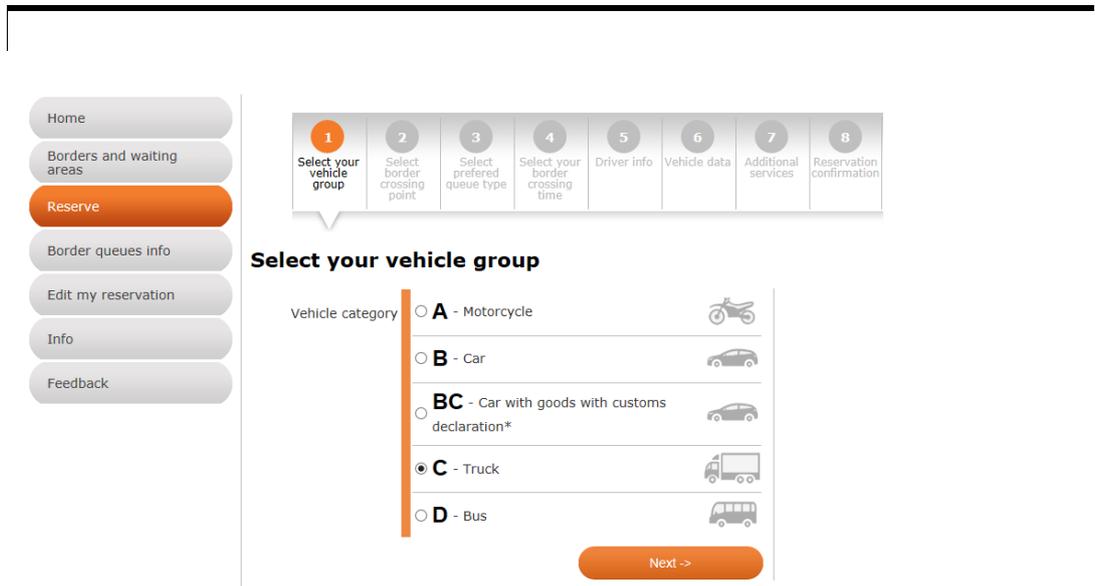
GoSwift is a border queue management service designed to operate an electronic border queue system. Since August 2011 the GoSwift service has been implemented in all border checkpoints between Estonia and Russia. Lithuania started using the GoSwift service in July 2013 at the Lithuanian-Russian and Lithuanian-Belarusian road border checkpoints.

The GoSwift service turns the long queues at the border checkpoints into virtual queues, thereby reducing environmental pollution, improving internal security and making border crossing a smooth and scheduled procedure. The service provides a great degree of flexibility to road hauliers, as it enables them to plan their truck drivers' time and make better use of the available time.

According to Estonian law, all motor vehicles, irrespective of their category, need to have a reservation for crossing the border. A reservation can be made on the Internet, by phone or in the official waiting area near the border at self-service stands or with the help of an attendant. A reservation can be made up to 90 days in advance. The quickest and most convenient way for making the reservation is on the Internet ([www.eestipiir.ee](http://www.eestipiir.ee) or [www.estonianborder.eu](http://www.estonianborder.eu)).

The online reservation consists of 8 steps, as can be seen in [Figure 16](#).

<sup>24</sup> Sources : « Online reservation system for border crossing queue », presentation by Hannes Plinte (GoSwift) at the ITS in Europe congress, June 2013 ; GoSwift brochure, 2012.



**Figure 16 : Online reservation ([www.estonianborder.eu](http://www.estonianborder.eu))**

In order to make the reservation, the data of the driver's travel document and vehicle crossing the border need to be sent to the system and the period of time and border crossing point when and where you wish to cross the border need to be given to the system.

The current reservation fee is 1.30 EUR for each vehicle category. For Internet bookings, a bank link or credit card can be used for payment. For phone bookings, a credit card or a mobile payment can be used. In case of a mobile payment, confirmation is asked during the call and the reservation fee is added to the phone bill. In the waiting areas it is possible to pay in cash or by a bank card. The reservation will be valid after making the payment.

After a successful reservation, a one-time free notification is sent by e-mail, SMS or phone in accordance with the means selected by the client. It is possible to get free information about the reservation, the expected waiting time in the queue and the expected time of being transferred from the waiting area to the border crossing point on the Internet. Extra notification by e-mail, SMS or phone can be ordered as a paid additional service.

The fee for the main GoSwift service (i.e. taking a place in the border crossing queue) is non-refundable. The reservation can be changed not more than 3 times and not later than 3 hours before the reservation time.

All the vehicles need to pass through the waiting area before being sent to the border checkpoint. Trucks (vehicle category C) with a reservation need to arrive in the waiting

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area 3 hours before the reservation time. All other vehicles with a reservation need to arrive in the waiting area by the beginning of their reservation time at the latest.

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## **Annex G. Member States' report on ITS activities on the national level: Envisaged actions for TPS reservation services' implementation.**

The ITS Plan of the Netherlands (2013-2017) mentions that reservation services are theoretically possible for secure sites. There is a large site at Roosendaal (Borchwerf) which offers a reservation service. Furthermore, Rotterdam City Council is working on the development of a paid truck parking facility which offers reservations as part of the development of the area, including its own bye-laws and security staff to prevent illegal overnight stays and nuisance. The need for reservation services is expected to increase in future, but the facilities offered today are too limited for the development of commercial reservation services. The development of reservation services is regarded as something to supplement information services. The following issues are deemed important for the development of reservation services:

- There must be easy access for each parking site which allows reservation requests to be processed by a number of Service Providers.
- Research the business case for Service Providers and provide them with temporary support if necessary.
- Encourage reservation services for both immediate (within 1 hour) and longer term bookings.

The German ITS Action Plan for the Roads mentions that in the years ahead, the authorities in Germany will give priority to improving the parking situation for Heavy Goods Vehicles (HGVs). However, no concrete measures on truck parking reservation services are presented in the ITS Action Plan. Germany's report on ITS activities mentions the currently existing truck reservation services SystemParken and Highway Park. In general, reservation is seen as a purely private sector solution whereby Service Providers cooperate with TPA operators. Reservations are only expected for a part of the truck parking areas and are seen as part of the route choice. **Note that by German law, it is not allowed to make reservations on a federal parking area.**

According to the report on national ITS Actions in the UK, the Department for Transport (DfT) has no project in the area of reservation and information services for safe and secure parking places for trucks and commercial vehicles. However, the DfT is currently considering a number of options for improving the quality, provision and use of truck parking areas. These include dissemination of information about the location and quality of truck stops. Furthermore, it will be important to ensure that any moves to introduce interoperability requirements do not place limitations on operators' freedom of choice to adopt or develop a system best suited to their commercial needs.

The ITS Initial Report of Belgium mentions that in Walloon several public and private initiatives have been conducted since 2009 to provide secure truck parking as well as reservation facilities (e.g. the new secured area in the parking of Wanlin, A4). The

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provision of information and reservation services will be elaborated according to EasyWay Deployment Guidelines.

According to the Danish strategy for ITS, several advanced lorry parking spaces have been set up in various places in Denmark (e.g. Ustrup Øst). Lorry drivers can reserve parking at these parking areas an hour before their expected arrival time so that they can make the best use of driving and regulatory rest periods. Furthermore, it is confirmed that the Danish authorities are complying with European standards and regulations on the provision of truck parking information and reservation services.

The ITS Plan of France (2013-2017) does not mention anything on truck parking reservation services. According to the report on ITS activities, there is currently at national level no central system providing information on the availability of highly secure parking areas or a reservation service for such areas. Note that only highly secured TPAs are considered. Given the current observed occupancy rate, there appears to be no obvious need for such central system. In its contribution to the ITS Plan of France, ATEC-ITS France states that all stakeholders agree on the insufficient profitability of highly secured TPAs, due to:

- Insufficient supply of such areas to have a critical mass
- Insufficient usage of such areas to finance the development of services
- Current driver behaviour: drivers do not plan their parking area because of changing traffic conditions (e.g. congestion)

A business model needs to be defined to ensure financing while encouraging usage. Better perspectives are expected if this theme would have a wider scope, extending it to urban freight management.

The report on national ITS Actions in Latvia mentions a certain ambiguity concerning parking places for trucks. Therefore, the utility of the provision of reservation services for safe and secure parking places for trucks and commercial vehicles in Latvia will be evaluated later.

Information and reservation services for safe and secure parking places are not applicable to Malta due to the short distances travelled.

According to the ITS Initial Report of Norway, information and reservation services for safe and secure parking places are not planned in Norway.

Due to Portugal's more peripheral geographic location in relation to the centre of Europe, the concession holders did not identify a real need for truck parking information and reservation services. However, the associated requirements should be considered, in particular by adopting the Deployment Guidelines provided for by EasyWay in this context, taking account of their future implementation as an integral part of Europe in order to present the same levels of service quality.

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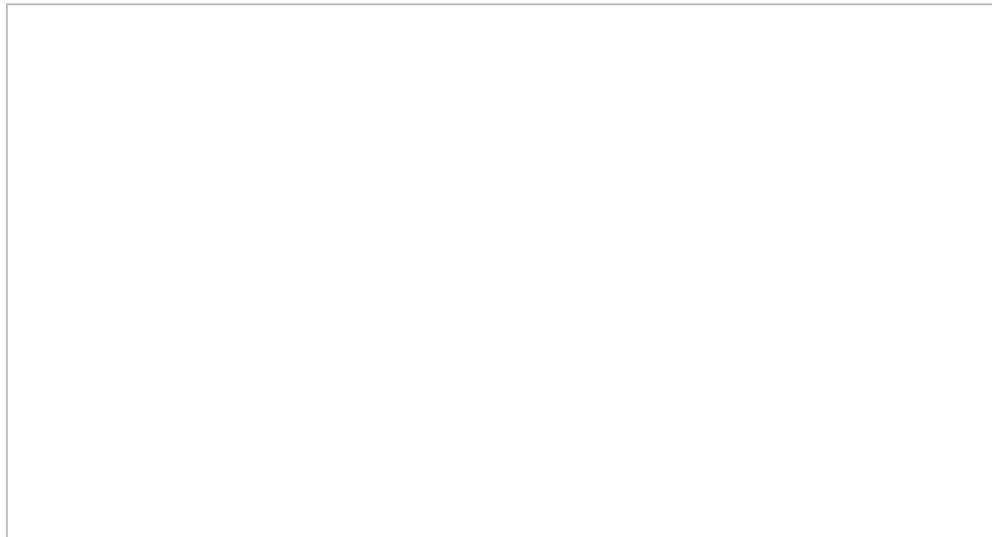
Information and reservation services for safe and secure parking places are planned in Sweden. However, the Swedish Transport Administration will not provide truck parking services on a commercial basis. Neither will the Swedish Transport Administration apart from a basic outlet provide services that could be provided by private Service Providers (for example secure parking). So far there have been difficulties for Service Providers finding solid business cases for the provision of truck parking on a commercial basis. This also reflects that road freight transport is to a large extent a low margin business, which constitutes a general challenge for the introduction of ITS services supporting road freight transport. The Swedish Transport Administration will continue to study Intelligent Truck Parking (ITP) and actively participate in the European cooperation on ITP within the EasyWay project.

In Slovenia, truck parking reservation services are not on the priority list of activities, because suitable infrastructure and a suitable model are not currently available. However, options for solutions of this kind are included in activities connected to ITS construction, upgrading or deployment. For example, the plan for a new toll collection system envisages the possibility of using it to provide reservation and payment services for safe and secure parking areas for trucks and commercial vehicles.

Other European national ITS plans available at present do not address the topic of truck parking reservation services.

## Annex H. Reservation structure.

One of the previous studies<sup>25</sup> presented three different reservation structures, as represented in [Figure 17](#).



**Figure 17 : Three different reservation structures / components : SP, TPAO and BO**

Service Provider (SP) Systems are platforms developed for truck drivers to carry out various applications. SPs are responsible for personalising the content for their customers, and optimising the information for their channel(s). SPs can include public and private parties.

The Truck Parking Area Operator (TPAO) System allows the TPAO to manage his capacity, to process reservation requests from Booking Operators and to manage user's direct reservations.

The Booking Operator (BO) System provides a single channel for making reservations on a large number of parking areas to SPs and users, and for receiving reservations from a large number of SPs and users to TPAOs.

[Table 15](#) describes several interfaces of the three reservation structures above to provide an efficient solution for truck parking reservation services. Some of these interfaces do not currently exist (e.g. the ones related to a Booking Operator), but they could easily be developed. In other sectors, reservation services are often based on

<sup>25</sup> ITS Action Plan, Action 3.5, D5D Concept for information dispatch and assessment of truck parking reservation systems (2011)

proprietary information exchange methods. However, open and standardised interfaces could largely benefit the efficiency of the seamless cross-border dispatch.

Nr	Interface
3.1	Interfaces that allow truck drivers or dispatchers to make reservations from possibilities selected by the SP through channels offered by the SP.
4.1	Interface that allows truck drivers or dispatchers to make reservations for a specific parking area through channels offered by the TPAO.
4.2	Interface that transmits tariffs and capacities from the TPAO to the BO and reservation details from the BO to the TPAO.
4.3	Interface that allows the SP system to forward reservation requests, and responds with a conformation or rejection from the TPAO.
5.1	Interfaces that allow truck drivers or dispatchers to make reservations from possibilities covered by the BO through channels offered by the BO.
5.2	Interface that allows the SP system to forward reservation requests, and responds with a conformation or rejection from the BO.

**Table 15 : Interface descriptions**

The presented reservation structures can co-exist. The roles of the three components are not mutually exclusive and can easily add up to meet the needs of the truck driver. For example, instead of being an inventory, the SP System could thereby become an intermediary that uses the inventory of the BO System (see interface 5.2).

Moreover, it should be noted that the SP System could be more or less developed, providing static information or real-time information about reservable parking spaces, while the BO System provides an inventory of directly reservable parking spaces. The major difference between those two systems stems from the fact that the BO has the capability to confirm a reservation itself, whereas the SP should first ask the TPAO or the BO.

All three reservation structures have advantages and disadvantages that were assessed in one of the previous studies<sup>26</sup>. Regardless of the structure, it is deemed wise to offer several channels of reservation: Internet, Telephone, Fax, Mail, on-board device, etc. It seems impossible for a TPAO to provide reservation possibilities through all these channels, without making use of SPs. This conclusion can also be extended to BOs, which could prefer to let SPs develop various channels to access their reservation system.

<sup>26</sup> ITS Action Plan, Action 3.5, D5D Concept for information dispatch and assessment of truck parking reservation systems (2011)

Thus, SPs seem to have an obvious role to play in providing easy and aggregated access to reservation services. In the same way, the participation of TPAOs is indispensable to the reservation process on the level of the single facility.

However, the real question concerns the utility of one or more BOs, the role they have to play, how they relate to TPAOs and SPs, and the characteristics they require to become an electronic market<sup>27</sup> useful for every stakeholder.

#### BUSINESS MODELS

One of the previous studies<sup>28</sup> presented four different scenarios or business models for truck parking reservation services, see [Table 16](#). The business models are based on different organisational setups, ranging from a mainly public scenario to a mainly private scenario.

Scenario	Main actor(s)	Description
Public	All roles that can be carried out by public authorities are carried out by public authorities.	Funds for the implementation and operation of the service are provided by public authorities. Public authorities also play the leading role in the operation of the system.
Public Private Partnership (PPP)	Public and private organisations develop a partnership where roles and responsibilities are divided between public authorities and one or more private companies, with or without setting up a joint organisation.  In general a PPP will be based on a covenant signed by key stakeholders.	Public authorities and TPAOs collect and publish occupancy information for all TPAs on the TERN and provide a standardised reservation interface.  The aggregation of occupancy information and the delivery to the end-users is a task for private SPs.  Private companies also develop and promote TPA reservation portals.
Trusted Third Party (3TP)	One organisation is endorsed by public and private organisations to carry out operational tasks.  This organisation can be a not-for-profit organisation or a private company.	Existing non-profit content TPA aggregators are the trusted parties that would collect and publish occupancy data from the TPA, and provide a TPA reservation portal.  The trusted parties are obliged to provide private companies access to the information and reservation services.  The responsibilities of public authorities and TPAOs are similar to those in a PPP.
Private	The implementation and operation is left to the market.  This means private parties cover costs for the implementation and operation of the service.	Private companies collect occupancy data themselves on-site.  Public and private TPAOs would only host the required equipment.

**Table 16 : Four business models or scenarios for truck parking reservation services**

<sup>27</sup> Acting as a single point of contact for sellers and buyers, as opposed to a dyad between pairs of seller and buyer.

<sup>28</sup> ITS Action Plan, Action 3.5, D5E Report on a feasible business model for an information/reservation system for trucks and market acceptance survey (2011)

**Table 17** provides a more detailed overview of the possible allocation of tasks and responsibilities to the various stakeholders in the four different business models.

		Public	Public-private partnership	Trusted 3rd party	Private
<b>TPA reservation service</b>					
Access/control system	Critical	Local road authority TPA operator Local road authority	TPA operator	TPA operator	Private TPA-IRS providers TPA operator Private TPA-IRS providers
Local TPA reservation handling	Critical	National road authority or DoT TPA operator	National road authority or DoT TPA operator	Trusted 3rd parties TPA operator	Private TPA-IRS providers TPA operator
Reservation portal(s)	Critical	National road authority or DoT	National road authority or DoT	Trusted 3rd parties	Private TPA-IRS providers
Service access in-vehicle	Key	Fleet management and navigation solution providers	Fleet management and navigation solution providers	Fleet management and navigation solution providers	Fleet management and navigation solution providers
Service access back-office	Important	Fleet management solution providers	Fleet management solution providers	Fleet management solution providers	Fleet management solution providers
Promotion of service	Key	National road authority or DoT	Fleet management and navigation solution providers	Fleet management, nav. solution providers, trusted 3rd party	Fleet management and navigation solution providers

**Legend**  
 Public authorities: Yellow  
 Both public and private organisations: Green  
 Private companies: Blue

**Table 17 : Possible allocation of tasks and responsibilities in the four business models**

N.B. TPA-IRS = Truck Parking Area Information and Reservation System. TPA-IRS provider and Fleet management (and navigation) solution providers are referred to as Service Providers (SPs) in the rest of this section.

The suitability of the business models has been assessed against the product and stakeholder requirements and business goals as well as the product success factors in one of the previous studies<sup>29</sup>. **Table 18** provides an overview of the degree of fulfilment that is expected to result from the four business models in the deployment and operation of the TPA reservation service.

Product success factors	Scenario	Public	PPP	T3P	Private
TPA reservation service	Critical	Less likely	Likely	Likely	Very likely
Availability of TPA information service	Key	Less likely	Likely	Likely	Very likely
Consistent reservation processing at TPA	Key	Less likely	Likely	Likely	Very likely
Sufficient TERN coverage	Key	Less likely	Likely	Likely	Very likely
Availability of European reservation portal(s)	Critical	Unlikely	Less likely	Likely	Very likely
Service access in-vehicle	Key	Less likely	Likely	Likely	Very likely
Service access back-office	Important	Less likely	Likely	Likely	Very likely
Service awareness key stakeholders	Key	Less likely	Likely	Likely	Very likely
Sufficient usage	Key	Less likely	Likely	Likely	Very likely

**Legend**  
 Fulfilment of success factor:  
 Very likely: Green  
 Likely: Yellow  
 Less likely: Orange  
 Unlikely: Pink

**Table 18 : The four business models against the product success factors**

Overall, the private model serves the product success factors best for a truck parking reservation service. It is most likely to lead to fast deployment of the service in vehicles. It

<sup>29</sup> ITS Action Plan, Action 3.5, D5E Report on a feasible business model for an information/reservation system for trucks and market acceptance survey (2011)

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requires however TPAOs to cooperate in providing TPA information, and by actively processing booking requests.

Establishing a successful reservation service requires the central processing of reservation requests. The public and PPP models seem less suited since this requirement conflicts with the subsidiarity.

If occupancy information and the reservation services are made available by TPAOs in a standardised way, there is no need for a trusted party that acts as a central portal. Instead multiple portals can develop.

Thus, it was concluded that the private model is the recommended organisational setup for establishing a truck parking reservation service. Such reservation services can be operated at marginal costs for a large number of TPAs. They can be developed quickly and operated cost-efficiently by private parties.

#### ASSESSMENT OF EXISTING TRUCK PARKING RESERVATION SERVICES

Existing truck parking reservation systems have proven that technology is not the issue. Rather business restrictions have hindered systems from developing rapidly. In this section the existing truck parking reservation services are assessed with respect to their reservation structure and their business model.

#### **Reservation structure**

Three reservation structures were defined: Service Provider (SP) System, Truck Parking Area Operator (TPAO) System and Booking Operator (BO) System.

Truckinform and Highway Park can be regarded as SP Systems. They act as mediator between user and TPAO in case of parking reservation requests.

All4Trucks, Autohof Parken, Truck Etape and SecuriTpark can be regarded as TPAO Systems. They manage their own parking capacity and process incoming reservation requests themselves.

BO Systems do not seem to appear a lot, although SystemParken could be regarded as one, since it provides a single channel for making reservations on a large number of TPAs. However, this characterisation very much depends on who has the capability to confirm a reservation. If this is SystemParken, then it acts as BO System; if this is the TPAO, then it more resembles an SP System.

#### **Business models**

Furthermore, four business models based on different organisational setups were defined: Public, Public Private Partnership (PPP), Trusted Third Party (T3P) and Private.

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Truckinform started as PPP, but has now a private business model.

All other existing truck parking reservation services can be regarded having a private business model.

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## **Annex I. Reservation Schemes in Other Sectors.**

### **BRITTANY FERRIES**

Brittany Ferries operates freight transportation on the Channel and with the north of Spain.

Born 40 years ago with a desire to open up areas for transport across the Channel of Brittany agricultural production, Brittany Ferries is now more than 6000 crossings and 190,000 commercial vehicles transported per year.

In 2007 Brittany Ferries has created a line between Spain and Great Britain between Poole and Santander, adopted by the European Commission as part of its actions in favour of the intermodal development.

#### *PRINCIPLES OF BOOKING*

Brittany Ferries knows very well the occupation of its ships. The booking is based on an allocation for the hauliers in all the ships. This allocation is verified every Thursday for the next week crossing. Brittany ferries benefits of a situation in which the travels across the Channel for or to Great Britain are scheduled far in advance. Thus, there are few contingencies, and this method of booking is working properly. There are few cases of no show. In this situation, the transport company that has a contract with Brittany Ferries and signals its absence early before the departure is not charged. It frees a place for the waiting list.

#### *BOOKING MEANS*

Ways to book are basic: call center and website. They are specific to Brittany Ferries.

#### *ATTESTATION OF EFFECTIVE USE OF THE RESERVED SLOT*

The Brittany Ferries staff verifies all the trucks and their merchandises just before the boarding.

#### *PAYMENT*

Heavy vehicles using ferries are often owned by companies that have signed annual contracts with Brittany Ferries. In this case the payment is made in the form of an invoice paid at month end.

Occasional travelers must pre-pay their trips. All official means of payment are accepted. The fuel cards are not accepted.

### **NEOPARK**

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NEOPARK is a six-year-old company, offering parking reservation for light vehicles and small trucks based in Paris. Neopark offers to its partners such as Google, Navteq, Mappy more than 4,300 POI public car parks in towns of over 60,000 inhabitants.

This information is updated by the parking operators themselves. They find more than 80 available criteria: availability status, rates, payments accepted, the opinion of motorists, recent online bookings, ...

#### PRINCIPLES OF BOOKING

This young company offers a booking service for car parks in the city of Paris. This is an innovative service, for car parks in this city are not all operated by the same operator. The offer of Neopark seems to be unique in its kind in France.

It is necessary to register to reserve a parking place. The booking portal offers a range of car parks, sorted by distance and price that might suit the customer's request.

Finally, the reservation is valid for one parking and a time slot. In case of absence, after a quarter of an hour, the parking operator decides whether or not to maintain the free space.

If the customer doesn't come, he is reimbursed up to 80%. The remaining 20% will be credited in the form of vouchers by Neopark.

When the car park is full when a client arrived while he has booked a place, the car park operator must find an alternative.

Neopark indicates that the booking is working properly because they have real-time information about the occupancy rate as well as the history of this rate.

#### *BOOKING MEANS*

Reservations are made through a website or smartphone application. This limits the service to the « happy few » who have found this service on the internet. In the case of unforeseen circumstances, there is no telephone service, you must contact the car park.

#### *ATTESTATION OF EFFECTIVE USE OF THE RESERVED SLOT*

Once the reservation is made, the customer comes to the parking and can enter through the following means: reservation vouchers, code identification, plate reading or QR code.

#### *PAYMENT*

All commonly used modes of payment on the net can be used to pay for the reservation of a parking space: visa, CB, paypal, etc. However, the mode of payment is in all cases the pre-payment. The petrol cards aren't accepted at this moment.

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## CARLSON WAGONLIT TRAVEL

CWT's company mission is to deliver efficient and innovative solutions for business travel and meetings and events management, with global reach and superior service. The company also provides service and assistance to travellers.

### *PRINCIPLES OF BOOKING*

CWT covers all transportation means, it is a particularity of the services offered by this company. So they are able to "escort" the traveler in every step of his journey in a door-to-door concept. This offer applies worldwide to only business travel at present.

Throughout the trip, CWT offers a concierge service to provide information on the rest of the trip. Of course, travellers can call this service to request a change in his journey. Depending on events, CWT may propose a modification of the trip. For example, if a flight is deleted CWT reserves a place on another flight and changes, if necessary, other reservations (hotels, trains, etc.) in the rest of the trip.

CWT's business model is essentially based on the principle of the subscription+fees. But in its offers CWT includes partners with whom they have concluded global markets contracts.

### *BOOKING MEANS*

CWT has a unified portal to book a trip. Wherever he is, the traveller finds the same man-machine interface. The other way is to use a smartphone application designed by CWT.

### *ATTESTATION OF EFFECTIVE USE OF THE RESERVED SLOT*

The companies that use the CWT services wish to secure the travel of their employees worldwide. CWT bases its service on its knowledge at every moment of the traveller location and of the travel means used by the traveller. CWT asks the traveller to communicate by SMS, email or voice call, where he is, or follows him through the roaming of the mobile phone. CWT provides information about the rest of the journey every time it is interesting for the traveller.

### *PAYMENT*

The services offered by CWT are addressed to companies who subscribe. The payment is therefore made on the basis of monthly bill + subscription.

Daily fees, hotels, restaurants or otherwise, are not all included in the package CWT. So CWT request that payments are made through a corporate CB. It may even happen that CWT requests a picture of a CB ticket to check the payment: amount and recipient.

Nevertheless, there are still countries where cash is the only form of payment with a volatile trading on prices. As soon as the cash is used, it is difficult to fight against fraud.

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**Annex I bis :**

**Contact persons from other sectors**

The following persons have had the kindness to provide information on reservation schemes in other sectors.

<i>Brittany Ferries</i>	<i>David Mercier</i> <i>+33 (0)2 31 36 36 32</i>
<i>Neopark</i>	<i>Leonard De Paysac</i> <i>+33(0)6 68 67 03 56 (<a href="mailto:leonard@neopark.fr">leonard@neopark.fr</a>)</i>
<i>Carlson Wagonlit Travel</i>	<i>William El Kaim</i> <i>+33 (0)6 27 68 36 92</i> <i>(<a href="mailto:welkaim@carlsonwagonlit.com">welkaim@carlsonwagonlit.com</a>)</i>
<i>Voyages-sncf.com</i>	<i>Contacts through DG MOVE</i>

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## Annex J. Scenario Elements.

At this level of analysis, it is important to preserve the flexibility and agility to facilitate the entry of new stakeholders, whatever they are.

The description of the scenarios will have to take into account the man-machine interface means that will be very important when the truck driver is involved.

### LIFE SITUATIONS

For developing our scenarios, we propose to retain two life situations:

- **Pre trip:** it is the preparation of the truck travel. The dispatcher determines the route with cargo and deliveries to be made. In the case of a long journey, he will need to take into account the mandatory rest periods for the driver along the route to fulfil the social regulation on driving and resting times.
- **On trip:** It must be possible to reserve a parking space during the trip, either through truck driver, his dispatcher or directly from an agency that has the ability to reserve parking spaces.

For these two life situations, we define the following reservation model:

1. **Reservation request:** at this step the caller specifies his request who he is (truck driver, company, truck characteristics), payment means, substance carried, hours of arrival and departure, etc.
2. **Confirmation of reservation:** it is a proof that the reservation request has been recorded. It is materialised by this confirmation that the truck driver may enter the TPA. It may be used in the event of a dispute with the parking operator.
3. **Certificate of effective use of the reserved slot:** this double evidence certifies the use of the parking reservation. On one hand the parking operator can prove that the truck has used the space reserved and on the other hand, it is a proof for the haulier that his truck was parked in a TPA. Proof used, for example, for his insurance.
4. **Invoice or proof of payment:** following the period of parking, the car park operator may issue the invoice and claim the amount due for services provided.

There are commercial elements in this reservation model, e.g. the modalities of invoicing and payment. The commercial elements will be outside the scope of EC specifications since they should be left to be defined in the business relationships between the concerned parties.

### PRE TRIP SITUATION

The figure below shows the current situation of a dispatcher, who would reserve parking spaces while he programs the journey of his drivers.

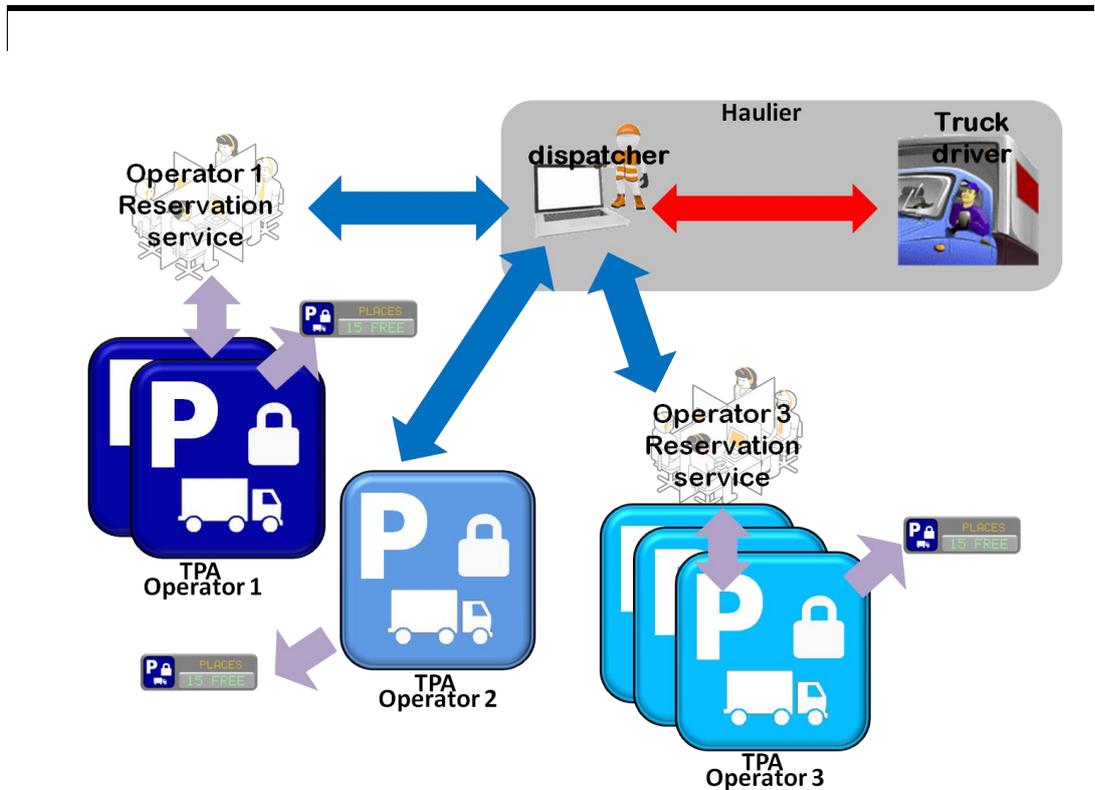


Figure 18 : Pre-trip situation

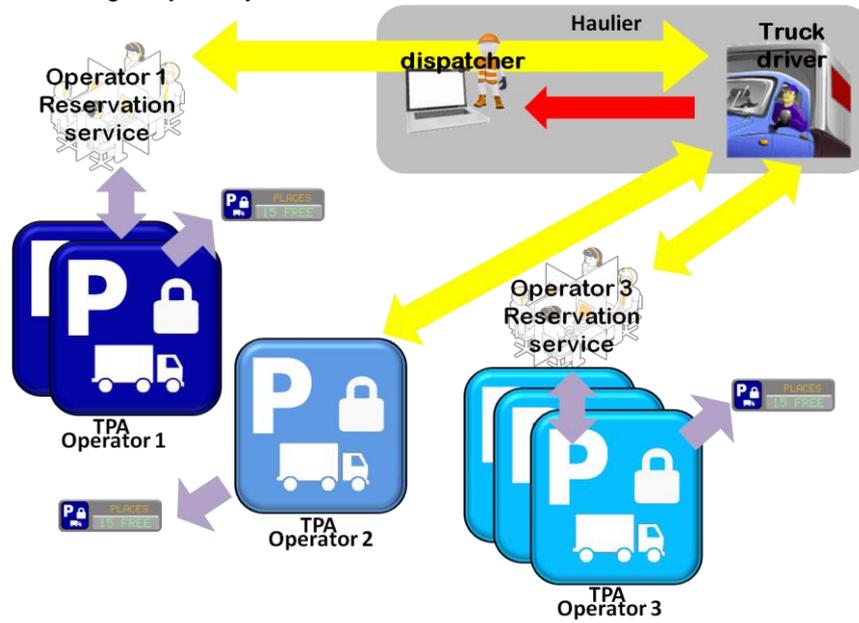
The following table describes the needs of the user. In this case, it is the dispatcher who is installed in a comfortable office with an easy access to every means. No recommendation for HMI is needed, except multilingualism.

Step	Needs	Possible means
1 reservation request	Access to reservation services	<ul style="list-style-type: none"> <li>•Phone call</li> <li>•Website</li> <li>•Mail</li> </ul>
2 confirmation of reservation	A proof addable to the trip plan	<ul style="list-style-type: none"> <li>•Mail</li> <li>•Phone call</li> </ul>
3 Certificate of effective use of the reserved slot	Proof in case of dispute	<ul style="list-style-type: none"> <li>•Mail</li> <li>•Letter</li> </ul>
4 Invoice or proof of payment	A proof to show for the charger and/or insurance	<ul style="list-style-type: none"> <li>•Mail</li> <li>•Letter</li> </ul>

For a long trip, the dispatcher will have to address several reservation systems based on parking he has selected. He/she will need to take into account a security margin for unforeseen events. The heaviness and the length of these procedures don't facilitate the use of such a procedure.

ON TRIP SITUATION

The figure below shows the current situation of a truck driver, who would reserve parking spaces during his journey.



**Figure 19 : On-trip situation**

In the case where the driver can't call an outside help, the yellow arrows show the exchanges to be established to book a parking space. This situation, difficult to manage for the driver alone in his truck is a barrier to the parking reservation process. The introduction of an additional actor is essential. The figure below shows in the middle the Reservation Service Provider who will act as an interface between users (dispatcher or truck driver) and parking operator.

The following figure shows how the Reservation Service Provider could interact with the other stakeholders.

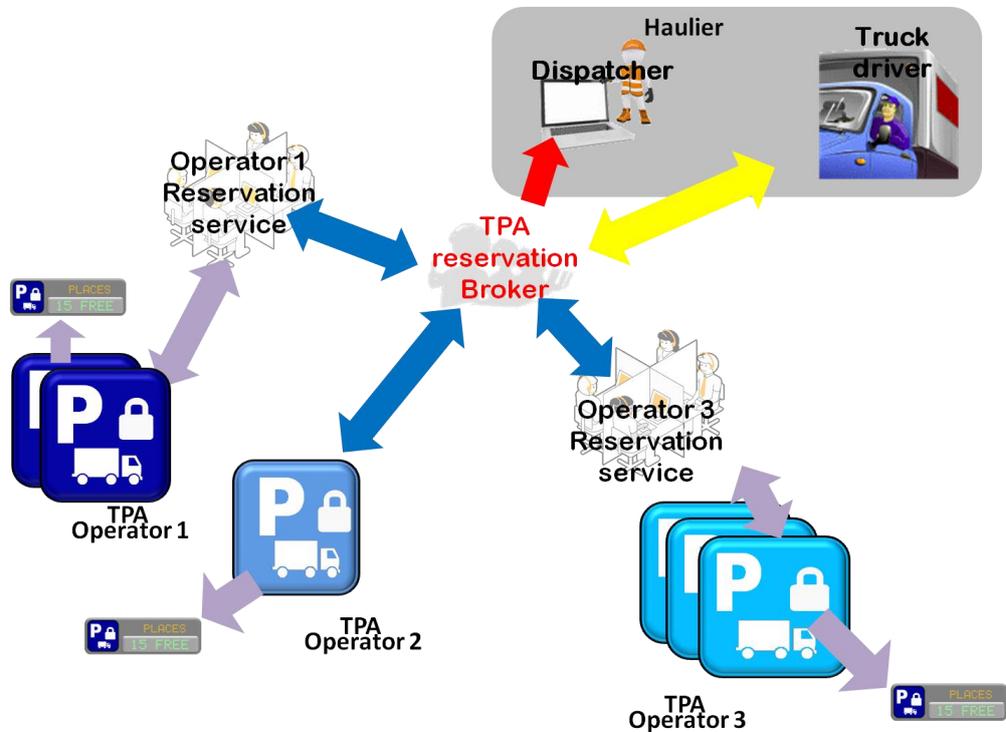


Figure 20 : On-trip situation with an additional actor

The following table shows the needs of a truck driver who needs to reserve a parking space.

Step	Needs	Possible means	comments
1 reservation request	Access to reservation services quickly and easily	<ul style="list-style-type: none"> <li>• Phone call</li> <li>• Embedded application</li> </ul>	
2 confirmation of reservation	Assurance to have a place	<ul style="list-style-type: none"> <li>• SMS</li> <li>• Phone call</li> <li>• QR code</li> </ul>	place request sent to dispatcher
3 certificate of effective use of the reserved slot	Proof in case of dispute	<ul style="list-style-type: none"> <li>• Mail</li> <li>• Letter</li> </ul>	Sent directly to the dispatcher
4 Invoice or proof of payment	A proof to show for the charger	<ul style="list-style-type: none"> <li>• Mail</li> <li>• Letter</li> </ul>	Sent directly to the dispatcher

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Concerning HMI : We make the hypothesis that the driver is in driving situation. Thus, it is necessary to provide an easy and quick HMI in order to reduce the distraction during the parking reservation request. In this case HMI will fulfil the European HMI code of practice (European State Of Principle).

In the U.S. after the murder of a truck driver, a law, so called Jason's law, was voted by the Senate about trucks stops. This is Jason's Law in quick summary:

- Construction of safe truck parking facilities & construction of public parking facilities next to commercial truck stops and travel plazas.
- Use existing facilities for truck parking, including inspection and weighing stations and park-and-ride facilities.
- Construct turnouts along the National Highway System & promote the availability of publicly and privately owned parking.
- Make capital improvements to public truck parking facilities currently closed on a seasonal basis.

In parallel truckers have set up a social network that allows them to communicate and exchange but one of the actions is the survey of secure parking facilities (<http://truckingsocialmedia.com/#about>)

The following figure shows the possible interactions between the TPA operators' structure and the truckers' social network.

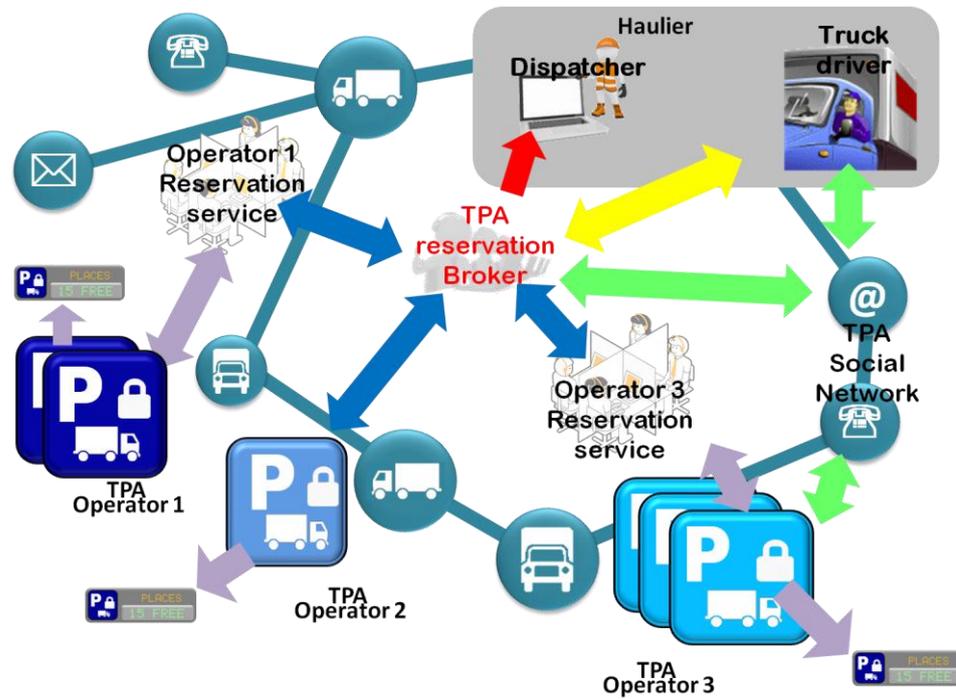


Figure 21 : Interactions between reservation services and social networks

ROLES OF STAKEHOLDERS IN ANOTHER DOMAINS

With task 1.2 we were able to identify good practices for booking services in different areas. Now, we want to focus on two cases:

- Booking hotel rooms
- Reservation of parking spaces for cars in Paris

ROLES OF STAKEHOLDERS IN HOTEL RESERVATION

The distribution of roles in a reservation system via internet or call center is very similar for domains as train, airplanes or restaurants. We focused below on the hotel case:

- *Customer*: submits his request: location, time and date of arrival, time and date of departure for a hotel. He must communicate the number of people.
- *Travel agency*: translates the customer request in a format understandable by the hotels database, then provides a list of hotels available from the hotels database. Filtering by price, location and services is possible.
- *Hotels database*: has a list of all hotels with available rooms in each. Provides a list of hotels corresponding to customer requirements and performs pre-booking. After agreement validates the room reservation and confirms it to the hotel.
- *Hotels*: maintain the list of their available rooms and provide it to the hotels database. Welcome guests upon arrival and establish the invoice.

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#### *ROLES OF STAKEHOLDERS IN PARKING PLACE RESERVATION FOR LIGHT VEHICLES*

The following description of roles in the case of reservation of parking place for light vehicles corresponds to the model used by Neopark in Paris.

- *Customer*: submits his request: location, time and date of arrival, parking duration.
- *Reservation website*: has a list of car parks under contract, with information on the available places for most of them. Provides a list of car parks corresponding to customer requirements and performs pre-booking. The parking place is reserved for only one entrance/exit. The reservation cost is about 1€, the process can be done through the website or smartphone application.
- *Parking operator*: maintains the list of their available places and provides it to the reservation website. Retains a place for the customer during all the time of booking as it was paid for it. If the customer abandons the reservation and prevents parking in time he is fully repaid. If the parking has no longer place for a customer who has booked, the parking must find an alternative solution. If the customer exceeds the period for which it has a place, then he/she must pay extra.

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## **Annex K. Exchanges between stakeholders: step-by-step.**

### *STEP 1 RESERVATION REQUEST*

The customer request will contain:

- Localisation where the parking is needed
- Arrival and departure dates/hours
- Size of truck

Data exchange content for this step coming from customer:

- parking localisation, arrival and departure dates and hours size of truck

### *STEP 2 ANSWER TO RESERVATION REQUEST*

Entity asked by the customer provides:

- Parking list available
- Cost
- Services on parking

Data exchange for this step is coming from parking operators:

- List of available places with their sizes and availability periods

### *STEP 3 PARKING SELECTION BY THE CUSTOMER*

The customer selects the parking where he wants to book a place:

- Selected parking

Data exchange content for this step is coming from customer:

- idem

### *STEP 4 CONFIRMATION OF RESERVATION*

Entity asked by the customer sends confirmation message of booking to him and after payment to TPA:

- Reservation number
- Summary Info: (Parking localisation, phone number, timestamp, customer identification, price, taxes and services)

Data exchange content for this step:

- Idem

- 
- There are more information exchanged between entity asked by customer and the TPA operator but they are under commercial agreement and aren't part of our study

*STEP 5 THE CUSTOMER GOES AND USES THE PARKING PLACE*

TPA operator validates the stay of the customer and issues the invoice.

Data exchange content for this step:

- Depending on commercial agreement.

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## Annex L. Analysis of data formats and technical solutions.

### METHODOLOGY

First possible technical solutions for communication channels which could be used to transmit information within the identified functions of a parking reservation scheme are identified. Therefore the outcome of the study on action E and the current work of the SafeTrip project is analysed for suitable information.

Secondly the relevant functions are recapitulated and the communication channels which have already been identified in the previous study are described.

Then the identified communication channels analysed with respect to their suitability to fulfil the information exchange for the specific function of the parking reservation services. The analysis distinguishes between the reservation situation where the reservation process is conducted by a dispatcher and the situation where the process is conducted by the truck driver during his trip.

Besides a SWOT analysis is conducted for the communication channels which ate might be suitable and therefore applicable for the relevant reservation functions. To do so supporting evidence data is collected to substantiate the comparison.

As the result of the comparison of communication channels draws the conclusion and sums up the findings of this chapter.

### IDENTIFICATION OF POSSIBLE COMMUNICATION TECHNOLOGIES

#### *ANALYSIS OF STUDY ON ACTION E*

With respect to **possible communication channels** the study on action E analysed the following:

- Road-side VMS
- SMS/MMS services
- Voice response systems
- RDS/TMC data casting
- Truck radio station
- DAB/TPEG data casting
- DVB-H TV channel
- DVB-S/TPEG data casting
- DVB-SH data communication
- Mobile internet
- Electronic information/reservation booths

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17 criteria were used in the assessment of these communication channels. The channels found to be suited for TPA information channels are DAB/TPEG or DVB-S/TPEG data casting, DVB-SH data communication and Mobile internet.

### **Suitability regarding reservation**

With respect to the process of reservation especially the backlink functionality is essential which is only present with SMS/MMS services, Voice response systems, Mobile internet and electronic information booths. Regarding DVB-SH data communication it must be taken into consideration that broadcasting excludes sending specific content to single end-user devices which means that this technology might be suitable for publish general parking information but not for processing user specific reservation information (see next chapter as well).

### **ANALYSIS OF SAFETRIP PROJECT<sup>30</sup>**

The project SafeTrip promotes the combination of satellite technology for both accurate positioning and communication features. Thereby two ways of communication are described:

- Interactive broadcast: usage of DVB-SH standard for broadcasting of information from satellites or ground components to vehicles and realisation of the backlink via messaging based on the S-MIM (E-SSA) standard.
- Bi-directional communication: Bi-directional communication directly between the vehicle and S-band satellites.

<sup>30</sup> See [http://www.google.de/url?sa=t&rct=j&q=introduction%20to%20s-band&source=web&cd=1&ved=0CC8QFjAA&url=http%3A%2F%2Fsafetrip.virtualcentre.it%2FFS%2Fdownload%3Fcode%3Dzaj6RjgllRhEHQ1QU1k5XQiocxCFI&ei=47z2UeXIK4XAswbD8YHoBw&usg=AFQjCNHSYmaUPLxMq50Sbw9F\\_Ai60vzCHq&bvm=bv.49784469.d.Yms&cad=rja](http://www.google.de/url?sa=t&rct=j&q=introduction%20to%20s-band&source=web&cd=1&ved=0CC8QFjAA&url=http%3A%2F%2Fsafetrip.virtualcentre.it%2FFS%2Fdownload%3Fcode%3Dzaj6RjgllRhEHQ1QU1k5XQiocxCFI&ei=47z2UeXIK4XAswbD8YHoBw&usg=AFQjCNHSYmaUPLxMq50Sbw9F_Ai60vzCHq&bvm=bv.49784469.d.Yms&cad=rja)

The new technologies  
**Interactive Broadcast**

- Broadcast based on DVB-SH standard
- Messaging based on S-MIM (E-SSA)
  - ▶ Full and immediate coverage
  - ▶ Asymmetric communications
  - ▶ Low cost / capability to address millions of terminals
  - ▶ Low power requirements
  - ▶ CGC in urban area

S-band satellite

DVB-SH  
E-SSA

SafeTRIP.eu

Final Conference - 25/02/2013 9

**Figure 22: Interactive Broadcast between satellites/ground stations and vehicles according to the SafeTrip project**

The new technologies  
**Bi-directional communications**

- Enabling voice and video
  - ▶ Full and immediate coverage
- Limited by the small amount of MSS spectrum
  - ▶ Premium or professional service
  - ▶ Hybrid Satellite + terrestrial network
- Different technologies available
  - ▶ INDRA's QS-CDMA solution integrated in the S-MIM standard
  - ▶ Tight integration with interactive broadcast

S-band satellite

Bi-Directional communications

SafeTRIP.eu

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**Figure 23: Bi-directional communication between satellites and vehicles according to the SafeTrip project**

### Suitability regarding reservation

With respect to reservation services only the second way of communication might be suitable as bidirectional communication between central services and vehicles is possible. The first way of communication is based on broadcasting principle which “broadcasts”

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information to plenty of recipients and excludes that user-specific information is transmitted to one single end-user device only.

*SUMMARY OF POSSIBLE COMMUNICATION TECHNOLOGIES*

- With respect to possible communication channels which might be useful in the context of truck parking reservation services the analysis has shown so far, that the following technologies or methods might be used to transmit information for reservation services:
  - SMS/MMS services
  - Voice response systems
  - (Mobile) internet
  - Electronic information/reservation booths
  - Satellite communication based on the S-MIM (E-SSA)

In particular with respect to the pre-trip situation we add the following two more are less “manual” communication technologies:

- E-Mail
- Letter

Communication Channel	Description
SMS/MMS services	Services that exchange information with truck drivers by sending and receiving SMS or MMS messages.
Voice response systems	Services that interact with truck drivers through automated voice prompts over a telephone connection.
(Mobile) internet	Services that either exchange information with truck drivers through terrestrial mobile internet connections such as GPRS, UMTS, WiMAX and LTE-A (mobile internet) or with dispatchers through terrestrial internet connections such as DSL.
Electronic information/reservation booths	Fixed electronic information/reservation booths at TPA or other by truck drivers frequented locations
Satellite communication based on the S-MIM (E-SSA)	Bi-directional communication directly between the vehicle and S-band satellites based on the S-MIM (E-SSA)-Standard
E-Mail	Asynchronous exchange of information using electronic mail services.
Letter / Paper	Asynchronous exchange of information in letters using postal services or by direct exchange at the TPA operators office

RECAPITULATION OF RELEVANT FUNCTIONS WITHIN RESERVATION SERVICES

The following generic functions within parking reservation services have been addressed:

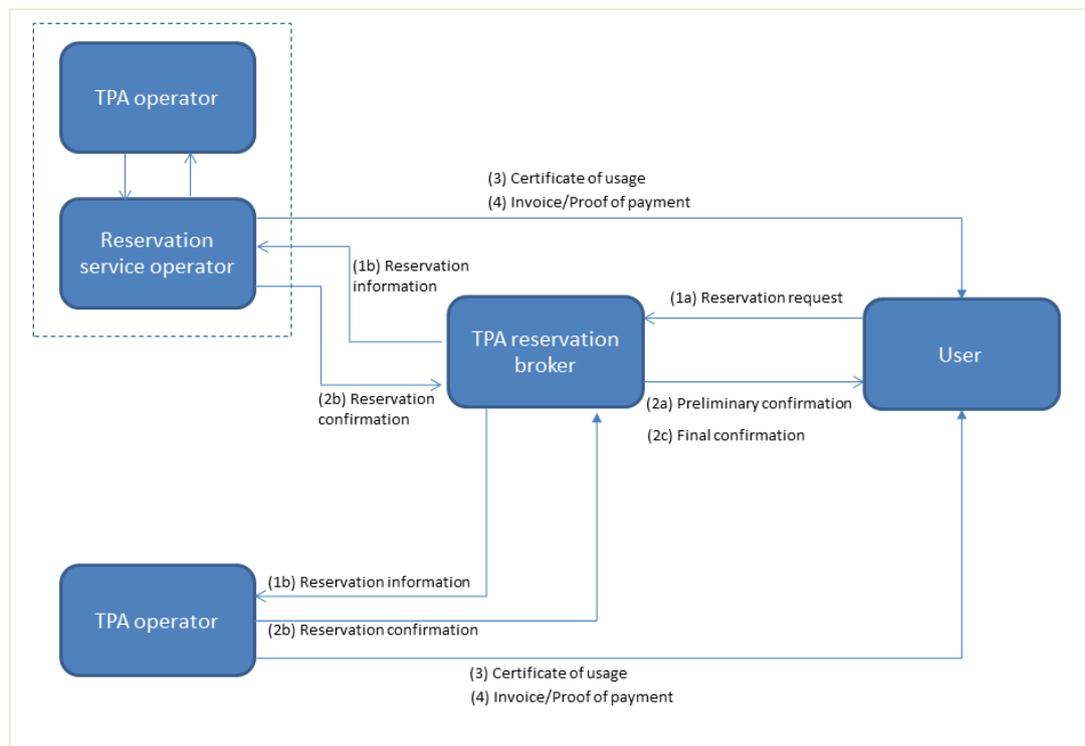
1. Reservation request
2. Confirmation of reservation
3. Certificate of effective use of the reserved slot
4. Invoice or proof of payment

Those functions can be applied in both the two described reservation life situations:

- Pre trip
- On trip.

For the analysis of the suitability of communication channels these two life situations will have to be distinguished.

For this analysis the functions are subdivided according to the information that has to be exchanged between the stakeholders within the model. The following figure shows the information exchanges.



**Figure 24 : Information exchanges induced by the analysed scenario of reservation services**

The further analysis will not consider information exchanges for which dedicated communication lines between central IT-systems will be established. The specific way in which data exchange between the central IT infrastructures of business partners will be conducted, is a subject to those partners themselves.

Therefore the following analysis focuses on the following information exchanges:

- (1a) Reservation request
- (2a) Preliminary confirmation
- (2c) Final confirmation
- (3) Certificate of usage
- (4) Invoice/Proof of payment

ALLOCATION OF COMMUNICATION TECHNOLOGIES TO INFORMATION EXCHANGE PROCEDURES

The following two chapters show the results of the allocation of communication technologies to the above mentioned information exchange procedures.

The first subsection below shows the allocation in the case that the reservation is conducted by a dispatcher at the haulier's office. Thereby it is not relevant whether the reservation is conducted before (pre-trip) or during the truck's journey.

The subsequent subsection contains the allocation in the case that the reservation is conducted by the driver himself during his trip.

The evaluation of the suitability is conducted in a qualitative way. The grades of suitability are:

- does not suit
- might be suitable
- suits well

More details can be found in Annex M bis.

SCENARIO: PRE-TRIP OR ON-TRIP – PROCESS CONDUCTED BY DISPATCHER

Communication Technology		SMS/MMS services	Voice response systems	(Mobile) internet	Electronic information booths	Satellite communication based on the S-MIM (E-SSA)	E-Mail	Letter
Information Exchanges								
(1a)	Reservation request	●	●	●	●	●	●	●
(2a)	Preliminary confirmation	●	●	●	●	●	●	●
(2c)	Final confirmation	●	●	●	●	●	●	●
(3)	Certificate of usage	●	●	●	●	●	●	●
(4)	Invoice/Proof of payment	●	●	●	●	●	●	●

**Table 19: Summary of qualitative evaluation of suitability of communication technologies for information exchange processes (Pre-Trip / On-Trip Scenario by dispatcher)**

For situations in which a dispatcher is conducting the parking reservation process for the haulier's driver (both pre- and on-trip) the result looks as shown in **Table 20**.

No.	Information Exchange	Applicable communication technology
(1a)	Reservation request	<u>Suits very well:</u> - Internet <u>Might suit:</u> - Voice response systems - E-Mail
(2a)	Preliminary confirmation	<u>Suits very well:</u> - Internet - E-Mail <u>Might suit:</u> - SMS/MMS services - Voice response systems
(2c)	Final confirmation	<u>Suits very well:</u> - E-Mail <u>Might suit:</u> - SMS/MMS services - Internet
(3)	Certificate of usage	<u>Suits very well:</u> - E-Mail <u>Might suit:</u> - Internet - Letter
(4)	Invoice/Proof of payment	<u>Suits very well:</u> - E-Mail <u>Might suit:</u> - Internet - Letter

**Table 20: Allocation of communication technologies to steps in the parking reservation process (Pre-Trip / On-Trip Scenario by dispatcher)**

SCENARIO: ON-TRIP - PROCESS CONDUCTED BY TRUCK DRIVER

Communication Technology		SMS/MMS services	Voice response systems	(Mobile) internet	Electronic information booths	Satellite communication based on the S-MM (E-SSA)	E-Mail	Letter
Information Exchanges								
(1a)	Reservation request	●	●	●	●	●	●	●
(2a)	Preliminary confirmation	●	●	●	●	●	●	●
(2c)	Final confirmation	●	●	●	●	●	●	●
(3)	Certificate of usage	●	●	●	●	●	●	●
(4)	Invoice/Proof of payment	●	●	●	●	●	●	●

**Table 21: Summary of qualitative evaluation of suitability of communication technologies for information exchange processes (On-Trip Scenario by truck driver)**

For situations in which the truck driver is conducting the parking reservation process for the haulier's driver the result looks as shown in.

No.	Information Exchange	Applicable communication technology
(1a)	Reservation request	<u>Suits very well:</u> - Mobile internet <u>Might suit:</u> - SMS/MMS services - Voice response systems - Electronic booths - Satellite based communication - E-Mail
2a)	Preliminary confirmation	<u>Suits very well:</u> - Mobile internet <u>Might suit:</u> - SMS/MMS services - Electronic booths - Satellite based communication - E-Mail
(2c)	Final confirmation	<u>Suits very well:</u> - none <u>Might suit:</u>

		<ul style="list-style-type: none"> <li>- SMS/MMS services</li> <li>- Mobile internet</li> <li>- Satellite based communication</li> <li>- E-Mail</li> </ul>
(3)	Certificate of usage	<p><u>Suits very well:</u></p> <ul style="list-style-type: none"> <li>- Electronic booths</li> <li>- E-Mail</li> <li>- Letter</li> </ul> <p><u>Might suit:</u></p> <ul style="list-style-type: none"> <li>- Mobile internet</li> <li>- Satellite based communication</li> </ul>
(4)	Invoice/Proof of payment	<p><u>Suits very well:</u></p> <ul style="list-style-type: none"> <li>- Electronic booths</li> <li>- E-Mail</li> <li>- Letter</li> </ul> <p><u>Might suit:</u></p> <ul style="list-style-type: none"> <li>- Mobile internet</li> <li>- Satellite based communication</li> </ul>

**Table 22: Allocation of communication technologies to steps in the parking reservation process (On-Trip Scenario by truck driver)**

COMPARISON OF IDENTIFIED COMMUNICATION TECHNOLOGIES

*CRITERIA FOR COMPARISON*

The following criteria were used in the comparison. For each communication technology, the full set of criteria was assessed.

Nr	Name	Description
1	Reach	To what extent is it capable of reaching truck drivers or dispatchers at haulier's offices in Europe
2	Geographical availability	In how many Member States Is the infrastructure available
3	Bandwidth	Is bandwidth sufficient to transmit all relevant information
4	Location awareness	Does the channel allow that only relevant information based on the position, road section and/or planned route are presented to the service user?
5	Technical maturity	How mature is the communication technology; is it under development, tested in pilots, deployed in operational environments, etc.
6	Usability	How easy and comfortable is it for the user to enter and receive information over the communication technology?
7	Integration in follow-up processes	Can information sent or received using the communication technology re-used in follow-up processes?
8	Costs	What are cost-related impacts when using the communication technology?
9	Responsiveness	How is the interactivity of the communication technology?, can e.g. instant feedback be provided after a reservation request?

*RESULTS OF COMPARISON*

The following table shows the results of the comparison and summarises them in form of a SWOT-analysis. The detailed assessment of the criteria for each communication channel can be found in Annex L bis.

	STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
SMS/MMS services	Good network coverage and large installed base	The limited bandwidth poses severe restrictions on the service's functionality. Roaming costs for the user, further processing of information not possible	Mobile phones have near 100% penetration amongst truck drivers and GSM networks provide nearly 100% coverage in the EU	Services on this channel are likely to encourage texting and reading while driving unless an appropriate HMI application is installed in the vehicle
Voice response systems	Good network coverage and large installed base	The limited bandwidth and omission of push-mechanism poses severe restrictions on the service's functionality. Roaming costs for the user, further processing of information not possible	Mobile phones have near 100% penetration amongst truck drivers and GSM networks provide nearly 100% coverage in the EU	Services on this channel are likely to encourage mobile phone use while driving unless an appropriate HMI application is installed in the vehicle
(Mobile) internet	large bandwidth, proven technology, information for TPA reservation can be described in detail, large installed base (both in offices and among truck drivers), specific information can be stored and further processed	data roaming costs can lead to serious costs for the truck driver	With this communication technology a very large part of the EC can be covered in a standardised way, future proof as this technology will be around for many more years	Data roaming costs may hamper cross-border use. Poorly designed smartphone apps may cause driver distraction.

Electronic booths	Transmits information without causing driver distraction, information can be presented in text, speech, maps, and graphs, specific information can be printed out (e.g. certificate and proof of payment)	Cannot be used in truck cabin, limited network coverage, specific booth's locations result in detours and loss of time for truck drivers	Useful for specific information exchange processes after the parking period itself if the booth is located at the TPA (e.g. certificate and proof of payment), Usage of booth means automatically that truck driver/truck has been at the TPA Usage of existing booth infrastructure networks (e.g. toll booths) would reduce costs	Implementation and operational costs are very high
Satellite communication based on the S-MIM (E-SSA)	large bandwidth, information for TPA reservation can be described in detail, specific information can be stored and further processed	Costly operation for the satellite channel and high investment costs to install the end-user device base, technology not proven yet	With this communication technology a very large part of the EC can be covered in a standardised way	There is no installed base yet. It is unlikely that truck drivers will be inclined to buy yet another device.
E-Mail	large bandwidth, high reach both in offices (dispatchers) and truck drivers, information for TPA reservation can be described in detail, specific information can be stored and further processed	Low responsiveness due to asynchronous communication principle limits usage for reservation requests	E-Mail is standard means of communication for hauliers, E-Mail based on smartphones with mobile internet connection covers a very large part of the EC	Using E-Mail is likely to encourage mobile phone use while driving unless an appropriate HMI application is installed in the vehicle
Letter / Paper	Well established media and communication to communicate certificates and invoices, coverage throughout Europe	Low responsiveness, laborious and slow way to exchange information, high costs for paper and postage	Useful for specific information exchange processes after the parking period itself (e.g. certificate and proof of payment is given to truck driver or sent out by mail)	Letter based information exchange will lose importance due to the trend of paperless office

### Annex L bis. Detailed Assessment of Communication Technologies

Pre-Trip Scenario and On-Trip Scenario (accomplished by dispatcher)							
Communication Technology	SMS/MMS services	Voice response systems	(Mobile) internet	Electronic information booths	Satellite communication based on the S-MIM (E-SSA)	E-Mail	Letter / Paper
Information Exchanges							
(1a) Reservation request	- not suitable as communication channel for dispatcher in the hauliers office	- might be suitable as dispatchers are located at the hauliers offices and making phone calls is their daily business	- suits very well as computer/internet based work is the daily business of a dispatcher in the hauliers office - "Internet" means here the usage of internet booking websites for truck parking spaces which accomplishes the booking process in a synchronous way until the preliminary confirmation is sent to the user			- might be suitable although emailing is a asynchronous process which does not provide a instant reply	
(2a) Preliminary confirmation	- might be suitable as the preliminary and final confirmation do not consist of much information (in extreme only a reference number)	- Might be suitable as a preliminary booking confirmation number which the dispatcher has to write down could be transmitted using a voice response system					- not suitable due to long time interaction/transmission time - The costs are disproportionate to the information transmitted
(2c) Final confirmation	- Forwarding SMS/MMS to truck driver is easy		- might be suitable, although the transmission of the final confirmation, the certificate of usage and the invoice/proof of payment is decoupled from the booking process itself and comes with a delay - Such asynchronous information exchanges could be conducted using a web-portal	- not suitable as communication channel for dispatcher in the hauliers office	- not suitable as satellite based data communication is a technology for mobile communication which is not needed in Pre-Trip scenario	- suits very well as emailing is the daily business of a dispatcher in the hauliers office - Suitable as E-Mail can contain almost all information and can be stored and forwarded easily	
(3) Certificate of usage		- not suitable as the information given by a voice response system cannot be stored or filed at the dispatcher					
(4) Invoice/Proof of payment	- not suitable as communication channel for dispatcher in the hauliers office						- might be suitable if TPA operators or TPA reservation service providers collect those information for a certain time and send them together to the dispatcher/haulier

**Table 23: Detailed qualitative evaluation of suitability of communication technologies for information exchange processes (Pre-Trip / On-Trip situation by dispatcher)**

On-Trip Scenario (accomplished by truck driver)							
Communication Technology	SMS/MMS services	Voice response systems	(Mobile) internet	Electronic information booths	Satellite communication based on the S-MM (E-SSA)	E-Mail	Letter / Paper
Information Exchanges							
(1a) Reservation request	<ul style="list-style-type: none"> <li>- might be suitable but high risks due to the fact that SMS/MMS is an uncomfortable way for data input</li> <li>- only suitable while truck is not moving</li> <li>- not suitable while truck is moving (driver distraction, accident risks)</li> <li>- poor usability due to text-based input and asynchronous process without instant feedback</li> </ul>	<ul style="list-style-type: none"> <li>- might be suitable although driver interaction is needed (voice input of driver)</li> <li>- poor usability as input is needed without a graphical user interface</li> </ul>	<ul style="list-style-type: none"> <li>- suits very well as mobile internet connections have high availability and reach and realize bidirectional point-to-point communication between single partners</li> <li>- GUI of the end-user device can be designed according to the drivers needs and is not limited due to the communication channel</li> </ul>	<ul style="list-style-type: none"> <li>- might be suitable and presumes that the driver makes the reservation while his truck is parking or prior to his journey</li> <li>- Technology would be only suitable if the booth's location is not at the TPA for which the driver want to make a reservation</li> </ul>	<ul style="list-style-type: none"> <li>- might be suitable as satellite communication have a high availability and can realize bidirectional point-to-point communication between single partners but the reach of satellite communication is still low due to high costs and low spreading of compatible end-user devices</li> <li>- GUI of the end-user device can be designed according to the drivers needs and is not limited due to the communication channel</li> </ul>	<ul style="list-style-type: none"> <li>- might be suitable but only while truck is not moving</li> <li>- not suitable while truck is moving (driver distraction, accident risks)</li> <li>- poor usability due to text-based input and asynchronous process without instant feedback</li> </ul>	<ul style="list-style-type: none"> <li>- not suitable as exchanging information based on letters/paper is not possible for truck drivers</li> <li>- paper based information exchange does not fit to the interaction requirements of a parking reservation process</li> </ul>
(2a) Preliminary confirmation	<ul style="list-style-type: none"> <li>- might be suitable as the preliminary and final confirmation do not consist of much information (in extreme only a reference number)</li> <li>- Every truck driver has a mobile phone nowadays</li> <li>- Reception by the driver while driving causes driver distraction and increases accident risks</li> </ul>	<ul style="list-style-type: none"> <li>- not suitable, as those information are not stored/filed automatically</li> <li>- there is no proof of confirmation in case driver has written down wrong confirmation number</li> </ul>	<ul style="list-style-type: none"> <li>- "mobile Internet" means here the communication channel that enables the usage of booking websites or apps by the truck driver (independent from the end-user device) for truck parking spaces which accomplishes the booking process in a synchronous way until the preliminary confirmation is sent to the user</li> </ul>	<ul style="list-style-type: none"> <li>- might be suitable as the preliminary confirmation can be present to the truck driver as the result of his reservation process on spot</li> </ul>	<ul style="list-style-type: none"> <li>- "bi-directional satellite communication" means here the communication channel that enables the usage of booking websites or apps by the truck driver (independent from the end-user device) for truck parking spaces which accomplishes the booking process in a synchronous way until the preliminary confirmation is sent to the user</li> </ul>	<ul style="list-style-type: none"> <li>- might be suitable, but reception by the driver while driving causes driver distraction and increases accident risks</li> </ul>	
(2c) Final confirmation			<ul style="list-style-type: none"> <li>- might be suitable, although the transmission of the final confirmation, the certificate of usage and the invoice/proof of payment is decoupled from the booking process itself and comes with a delay</li> </ul>	<ul style="list-style-type: none"> <li>- not suitable as the final confirmation comes with a delay after the reservation request which would mean, that the truck driver had to wait an indefinite time in front of the booth</li> </ul>	<ul style="list-style-type: none"> <li>- might be suitable, although the transmission of the final confirmation, the certificate of usage and the invoice/proof of payment is decoupled from the booking process itself and comes with a delay</li> </ul>		
(3) Certificate of usage	<ul style="list-style-type: none"> <li>- not suitable as further usage of SMS/MMS certificate in the following processes is questionable</li> </ul>	<ul style="list-style-type: none"> <li>- not suitable, as those information are not stored/filed automatically</li> <li>- cannot be used in following processes</li> </ul>	<ul style="list-style-type: none"> <li>- Such asynchronous information exchanges could be conducted using a web-portal or by storing those information in the respective app of the device of the end user (e.g. smartphone app, on-board-equipment)</li> </ul>	<ul style="list-style-type: none"> <li>- suits very well as usage of electronic booths at the truck's parking location presume that the driver/truck has physical been at this location, offer the possibility to pay for the parking time and print the respective receipt (proof) of payment</li> </ul>	<ul style="list-style-type: none"> <li>- Such asynchronous information exchanges could be conducted using a web-portal or by storing those information in the respective app of the device of the end user (e.g. smartphone app, on-board-equipment)</li> </ul>	<ul style="list-style-type: none"> <li>- suits very well if the system of the TPA operators or TPA reservation service providers sends those information to the truck driver (or dispatcher) directly at the time when the parking is left</li> </ul>	<ul style="list-style-type: none"> <li>- suits very well if TPA operators or TPA reservation service providers print out those information and hand it over to the truck driver directly at the time of payment or when the parking is left</li> </ul>
(4) Invoice/Proof of payment	<ul style="list-style-type: none"> <li>- not suitable as further usage of SMS/MMS certificate in the following processes is questionable and SMS/Invoice does not comply with general accounting policies</li> </ul>	<ul style="list-style-type: none"> <li>- certificate/invoice transmitted over voice does not comply with general accounting principles</li> </ul>					

**Table 24: Detailed qualitative evaluation of suitability of communication technologies for information exchange processes (On-Trip situation by truck driver)**

	Criteria	SMS/MMS services	Voice response systems	(Mobile) internet	Electronic information booths	Satellite communication based on the S-MIM (E-SSA)	E-Mail	Letter / Paper
1.	<b>Reach</b>	Nearly all, as almost every truck driver/dispatcher has a mobile phone	Nearly all, as almost every truck driver/dispatcher has a (mobile) phone	very high, internet based work is standard in haulier's business, smartphones getting more widespread	very limited, as dependent from physical distribution network	Currently none, potentially all	very high, both in hauliers office and with truck drivers based on smartphones	Nearly all
2.	<b>Geographical availability</b>	high, SMS/MMS services are available throughout Europe	high, voice calls can be conducted throughout Europe	high, (mobile) internet services are available throughout Europe	potentially high, but booths network needs to be established	most EC member states	high, as the basis technology (internet services) are available throughout Europe	high, paper letter and postal services are available everywhere
3.	<b>Bandwith</b>	Very limited (160 characters per SMS, MMS limited by end-user device and mobile network operator, in Germany 300 kByte)	Very limited, as only speech information can be transmitted	Adequate	low, as only visual information can be transported via screen and printed out tickets/receipts	Adequate	Adequate	Very limited, as only written information can be transmitted
4.	<b>Location awareness</b>	Not automatically, only after manual input	Not automatically, only after manual input	Possible, depends on end-user device	Yes, as booths are at fixed locations	Possible, depends on end-user device	Not automatically, only after manual input	Not automatically, only after manual input
5.	<b>Technical maturity</b>	very high	very high	high	high	low	very high	very high
6.	<b>Usability</b>	low, as only textual information can be entered and transmitted, entering information is difficult due to mobile phone HMI	low, as only speech information can be sent and received	depends on end-user device	high with respect to the booths usability (GUI, print out), low due to the fact that booths require the trucks to stop at specific locations	depends on end-user device	medium, text and additional attachments can be sent, various content can be received	low, with respect to sending out letters by the users (only dispatcher) medium with respect to receiving letters from TPA operator or TPA reservation service provider (e.g. certificates, invoices)
7.	<b>Integration in follow-up processes</b>	not possible, as there is no link to integration information received by SMS in following processes like e.g. accounting processes	not possible, as the information exchanged within a phone call cannot be used further by automated processes. Manual intermediate steps are needed	possible, as information is exchanged in digital form which can thereby further processed	not possible, as the information exchanged within a reservation process using an electronic booth cannot be used further by automated processes. Manual intermediate steps are needed (e.g. scan of tickets/receipts)	possible, as information is exchanged in digital form which can thereby further processed	possible, as E-Mails can be forwarded or its content can be used further in follow-up processes	information exchanged using letters/paper cannot be used further by automated processes. Manual intermediate steps are needed (e.g. scan of letter)
8.	<b>Costs</b>	No/low investment as mobile phones are widespread, Roaming costs apply to the users	No/low investment as (mobile) phones are widespread, Roaming costs apply to the users	moderate investments in order to enlarge the smartphone base at truck drivers, roaming costs apply to user of mobile internet abroad	high, large investments needed in booth infrastructure and network, high operating costs for maintenance and support	high investments costs, as the base of respective end-user devices still have to be developed, high operating costs for satellite data transmission	No/low investment as smartphones (mobile E-Mail) and Internet usage is widespread, Roaming costs apply to mobile users	no investment costs, as infrastructure is existing in every office, medium operating costs (paper, postage)
9.	<b>Responsiveness</b>	limited, as SMS/MMS is a communication technology based on PUSH-principle	high, as voice response systems provide instant feedback during a phone call without delay	high, as data exchange is conducted instantly in both directions once an IP-context has been established between two communicating nodes	high, as booth provide instant feedback during the reservation procedure incl. Print possibility	high, as data exchange is conducted instantly in both directions once an IP-context has been established between two communicating nodes	limited, as E-Mail is a communication technology based on PUSH-principle without instant feedback	low, as letter exchange causes delays of several days between each interactions

**Table 25: Assessment of criteria for each communication technology**



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## **Annex M. Complete description of deployment options for TPA reservation services implementation**

### **OPTION I. BASELINE SCENARIO**

In the baseline scenario, there is no EU intervention. However it is considered that the specifications on Information Services for Safe and Secure Parking Places for Trucks and Commercial Vehicles (Action E) are effective.

### **OPTION II. SPECIFICATIONS FOR VOLUNTARY IMPLEMENTATION OF RESERVATION SERVICES**

Voluntary Implementation Scenario (VIS) : The EU adopts specifications under the ITS Directive.

The specifications lend guidance to voluntary implementation of s+sTPA reservation services.

The specifications apply to any s+sTPA operator (public or private) reservation service operator or reservation broker.

The specifications do not target specifically the priority zones, defined for Action 2 implementation. On the contrary, it is expected that TPAs located in priority zones would have little advantage in providing reservation services to optimise their occupancy since they will already be benefiting from real time information services.

The specifications prescribe the static data and contact information that TPA operators offering reservation shall provide in addition to the information provided under action E. They describe the reference process of TPA reservation, and prescribe minimal quality management requirements. Other technical or operational details are left to the service providers.

The specifications do not prescribe which data formats should be used in the reservation process nor any institutional responsibilities. Nevertheless, when reservation services are established, Member States are required to provide for assessment of compliance through a designated body.

### **OPTION III. MANDATORY IMPLEMENTATION OF RESERVATION SERVICES**

Mandatory Implementation Scenario (MIS): The EU adopts specifications which contain the same functional guidance as in Option II.

The specifications do not apply to the priority zones, defined for Action E implementation. It is expected that TPAs located in priority zones would have little advantage in providing reservation services which will be much more useful outside of the priority zones.

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The responsibility for implementation is allocated to the Member States within their respective territories. Each Member State determines within its jurisdiction how to allocate the responsibility for building up and operating the reservation services.

The Member States are responsible for ensuring the financing, the creation and the operation of the s+sTPA booking services. They may adopt different rules of cost allocation.



### Annex N. Impact Assessment: Economic, Social and Environmental aspects.

		I. Baseline Scenario - No EU intervention	IL	II. Voluntary implementation of reservation services	IL	III. Mandatory Implementation of reservation services	IL
Indirect Impacts	Expected Impacts of s+sTPA reservation services across Scenarios						
Economic Impacts							
<b>Functioning of the internal market/competition</b>	Data collection, information and booking systems availability simplify services and allows efficient interactions between stakeholders. Reservation Services allow more reliable trip planning.	The general availability and the harmonisation of static and dynamic TPA information, planned in action E, benefits all drivers and hauliers. It allows efficient transport but the driver is still not sure of finding a vacant s+sTPA where and when he needs to stop.	0	RS make the trip planning reliable for hauliers and drivers, when it is available, but the accessibility will be unequal.	1	RS allow additional trip planning reliability	2
<b>Competitiveness, trade and investment flows</b>	Reservation Services (RS) implementation may attract new stakeholders to the transport side services market.	Thanks to the availability of harmonised information, transport market is efficient.	0	Unequal availability of booking systems may lead to the emergence of new traffic hubs, where TPA with available RS are concentrated.	-1	Plannig of trips and reduction of pressure around Hot Spots leads to more reliable transport.	1
<b>Operating costs</b>	Reservation Services will add operating costs for service providers, TPA operators and hauliers but s+s parking use will reduce hauliers costs related to cargo theft	Parking operators have costs for data collection, Database operators have maintaining costs and a fee for mobile services apply to haulier or driver.	0	When RS are implemented, it will engender added-value for the service providers and TPA operators. The s+s parking use will reduce haulier's costs related to cargo theft	-1	Parking operators have costs for data collection and RS implementation / Database operators have maintaining costs / Drivers need to pay for reservation services / Services Providers have operating costs / public authorities have standards controlling costs	-2
<b>Administrative burdens on businesses</b>	RS market actors may have to conform to EU's standards and specifications.	Data collection is effective, standardized data formats are applied	0	Use of reservation services is voluntary for operators and drivers	1	RS market actors have to conform to EU's standards and specifications.	-2
<b>Budgetary implications for public authorities</b>	Public authorities may have implementation and operation costs in publicly owned TPA; costs for assesment of compliance and monitoring of the implementation.	Administration of specifications for collection and dissemination costs, also road authorities have maintaining costs for the database.	0	Private solutions, no impact for public authorities	2	Public authorities have frame and control costs for implementation , dissemination and use of RS.	-2
<b>Innovation and research</b>	Innovation is stimulated to find solutions for cost effective RS business models	Innovation is stimulated to find solutions for cost effective data collection and to a limited degree for dissemination.	0	Innovation is stimulated to find solutions for cost effective RS business models	1	Innovation is stimulated to find solutions for cost effective RS business models and standards and supported by public authorities.	2
<b>Consumers and households</b>	RS will optimise transport efficiency.	No Impact Expected (NIE)	0	Losses due to cargo theft and robbery are reduced; Transfer of high value goods to the contraband market decreases.	2	No further impact expected (NFIE).	2
<b>Specific regions or sectors</b>	RS will have a greater impact outside of the Priority Zones set up for action E implementation; RS will meet greater demand in the sector of high-value goods transport.	NIE	0	It is expected that TPAs located in priority zones would have little advantage in providing reservation services to optimise their occupancy since they will already be benefiting from real time information services. RS may be consider as a comparative advantage and therefore be implemented by TPAs which are not benefiting from action E priority zones	0	NFIE	0
Social/Safety Impacts							

Social/Safety Impacts							
<b>Employment and labour market</b>	Development of a new activity sector, which brings new job opportunities to the market	NIE	0	Drivers can plan ahead and book parking places, when service is available.	1	Drivers have more control over their resting and parking requirements and can book according to their need.	2
<b>Standards and rights related to job quality</b>	Drivers job quality improves through: - resting periods regulation is easy to conform to, since RS allow drivers to park wherever they need to - Risk of criminal attacks on drivers while parked decreases	Drivers are informed about traffic conditions and TPA's availability	0	When RS are available drivers and hauliers are able to guarantee a parking place and to control the stopping and resting times in advance.	1	Resting and parking requirements are easy to conform to (from drivers perspective) and easily controlled (from hauliers perspective)	2
<b>Public health</b>	RS contribute to reducing dangerous parking	s+s TPA are promoted, information is accessible and influences behaviour in finding parking spaces.	0	Dangerous parking still occurs, but RS availability in s+sTPA minimises the problem in some areas.	1	RS reduces dangerous parking and related accidents.	2
<b>Crime, terrorism and security</b>	RS contribute to reduce theft and robbery hazardous parking	s+s TPA are promoted, information is accessible and influences behaviour in finding parking spaces.	0	Drivers may book a s+sTPA space, especially for those carrying high risk loads around crime spots.	1	High risk cargo hauliers may be obliged to book s+sTPA in advance	2
Environmental Impacts							
<b>Climate</b>	Slightly less circling traffic for parking spaces searching	Drivers spend less time searching for parking spaces, but effect for the environment are marginal.	0	Circling traffic for available parking is reduced.	1	NFIE	1
<b>Transport and use of energy</b>							
<b>Air quality</b>							
<b>Land use</b>	Land use is optimised	Information may help optimising land use planning according to demand, reducing the need for new constructions.	0	RS balance offer and demand, which contributes to optimise the use of the market existing infrastructures.	1	NFIE	1
<b>Scale, likelihood of environmental risks</b>	Hazardous cargo hauliers may book s+sTPA in advance	NIE	0	Hazardous cargo hauliers may book s+sTPA in advance	2	Hazardous cargo hauliers may book s+sTPA in advance	2
<b>Total Impact Level</b>			<b>0</b>		<b>13</b>		<b>13</b>

### Annex O. Impacts on Stakeholders

Stakeholder	Key business goals	Business requirements	I. Baseline Scenario - No EU intervention	IL	II. Voluntary implementation of reservation services	IL	III. Mandatory implementation of reservation services	IL
Driver	Efficient driving	Avoid searching and waiting time	Searching and waiting time will be reduced thanks to static and dynamic information on TPA (Priority action E). Uncertainty regarding the actual availability of parking spaces can still cause need of searching and waiting.	0	Searching and waiting time can be avoided, where RS are available.	1	Searching and waiting time can be avoided systematically, and booking parking spaces in advance could become a habit among certain categories of drivers who wish to be sure of parking when and where they want.	2
	Parking comfort	Prefer TPA with facilities and side services availability	Reliable service descriptions are available, but drivers are not certain to have a vacant place in the desired parking facility	0	Facilities and side services can be secured in advance or during the trip according to the driver's choice, where RS are available.	1	Facilities and side services can be secured systematically.	2
	Safety	Prefer safe TPA	Drivers have the information needed to avoid high risk areas and to know where s+TPA are but they don't have assurance that they will be able to park there at the needed time.	0	Drivers may secure a parking place according to their safety requirements (specially high-value and hazardous cargo drivers). RS will become available primarily in TPAs with high safety	2	Drivers may secure a parking place according to their safety standards.	2
	Minimise hassle with transactions related to parking (information, reservation, payment)	Avoid to pay TPA on personal expenses	Static and dynamic full information availability improve trip management but no transaction related to parking can be made in advance.	0	Reservation services will be integrated with information and payment means, that will reduce the need of on-trip transactions. RS will primarily develop on TPAs that incur parking fees.	2	Integrated services that reduce the need of on-trip transactions will develop, but only for TPAs that do not incur parking fees. Reservation fees will still lead to additional transactions for the drivers.	1
TPA Operator	Maximise turnover	Maximise occupancy	Standardised information on service levels already exists, which enables direct comparability and increases occupancy of well featured TPA.	0	RS will help improving turnover and occupancy rates for TPAs targeting special segments of demand (especially high-value cargo).	2	RS will help TPAs with special features in improving turnover and occupancy rates. For TPAs where occupancy is already high, there will be no increase gain.	1
	Reputation	Avoid on-site crime and provide reliable services	TPA are rated by customers and the ranking is available such as static and dynamic data on TPA.	0	RS may be considered as a comparative advantage for TPA providing them (especially for TPAs with high safety standards).	2	RS may be consider as a comparative advantage and help increase good reputation.	1
	Limit investments	Focus on low investment costs services.	Investment costs for detection technology stabilise with action E implementation. Investment costs for access control and reservation systems remain high and unequal, because of low market volume and lacking business standards.	0	Investment costs for RS implementation decrease thanks to higher market volumes and homogeneous business standards. An increasing number of TPAs will choose to implement RS, especially TPA with special features.	1	Investment costs for RS service decrease. However, many TPAs will be forced to invest for implementing RS without having a business case for it.	-2
	Limit operational costs	Minimise need for dedicated staff on-site. Prevent vandalism on infrastructures and equipments.	Dynamic information services will be implemented on the basis of automated systems. RS will mostly require on-site staff, fully automated access control will not develop.	0	TPA operators who have a business case for on-site staff (side services, high safety standards, ...) will implement RS. RS based on access control without on-site staff may develop.	1	Many TPA operators will have high compulsory additional operational costs.	-2
ITS Suppliers and Service Providers	Build efficient activity in the field of truck parking reservation services	Build interoperable/compatible services and devices (technical interoperability)	Present situation persists, slow business development (ITS suppliers already have TPA database and information. RS are a small element of the wider framework of ITS, they will adapt to the big trends on these markets, without influencing them significantly.)	0	Technical interoperability progresses with future standardisation. RS business will develop gradually (primarily for high-value goods in a first stage).	2	Technical interoperability progresses with future standardisation. RS business will develop, but will be hampered by lack of business case for many TPA operators.	1
	Build safe services and devices	Standard business models	Present situation persists, slow business development (ITS suppliers already have TPA database and information. RS are a small element of the wider framework of ITS, they will adapt to the big trends on these markets, without influencing them significantly.)	0	Business processes converge, leading to positive business development in the segment of high-value goods in particular.	2	RS business will develop, but will be hampered by lack of business case for many TPA operators.	1
Road authority	Road safety	Avoid off-site parking and queuing, avoid exceeding of driving times	Off-site parking and queuing will be reduced, thanks to full information availability, but overcrowding cannot be excluded.	0	Overcrowding of TPA and associated safety risks (off-site parking and queuing) will be further reduced, because a fraction of drivers will divert on bookable parking spaces.	1	Overcrowding of TPA and associated safety risks (off-site parking and queuing) are significantly reduced.	2
	Optimal Traffic flow	Avoid off-site parking and queuing, avoid emergence of congestion hubs	Off-site parking and queuing will be reduced, thanks to full information availability, but overcrowding and congestion cannot be excluded.	0	Traffic flow disturbance due to queues at TPA's entrances and off-site parking will be further reduced, because a fraction of drivers will divert on bookable parking spaces.	1	Traffic flow disturbance due to queues at TPA's entrances and off-site parking is reduced. Traffic management is more efficient.	2
Haulier	Efficient daily operations : optimise driving time and distance, minimise parking fees and fines, efficient and flexible trip planning	Avoid searching and waiting time (accomplish expenses in advance)	Searching and waiting times can be managed more efficiently due to planning with full information on TPA provisions but there is no of guaranteeing a vacant place in the prescribed TPA.	0	Hauliers who do pre-trip planning of breaks can increasingly make sure that the driver can stop when and where he would be required to.	1	Pre-trip planning is optimised. All stopping and resting times may be organized in advance TERN-wide. However, the workload of pre-trip planning increases for all hauliers.	1
	Driver safety	Avoid theft and robbery	TPA destinations can be pre-planned according to needs/expectations but there is no way of guaranteeing a vacant place in the prescribed TPA.	0	Hauliers can increasingly make sure that the driver stops on safe and secure TPAs, especially for high-value goods with highest exposure to theft and robbery.	2	Trips are safer. All stopping and resting times may be assured in advance to take place in S&S TPAs TERN-wide.	2
	Vehicle safety	Avoid theft and robbery	TPA destinations can be pre-planned according to needs/expectations but there is no way of guaranteeing a vacant place in the prescribed TPA.	0	Hauliers can increasingly make sure that the vehicle stops on safe and secure TPAs, especially for high-value goods with highest exposure to theft and robbery.	2	Trips are safer. All stopping and resting times may be organized in advance TERN-wide.	2
	Cargo safety	Avoid theft and robbery	TPA destinations can be pre-planned according to needs/expectations but there is no way of guaranteeing a vacant place in the prescribed TPA.	0	Hauliers can increasingly make sure that the vehicle stops on safe and secure TPAs, especially for high-value goods with highest exposure to theft and robbery.	2	Trips are safer. All stopping and resting times may be organized in advance TERN-wide.	2
Cargo Owner	Cargo safety	Avoid theft and robbery	Agreements on desired TPA standards and service levels can be arranged based on reliable information but there is no way of guaranteeing a vacant place in a s+TPA.	0	Cargo owners (especially in the high-value segment) will have increasing possibility of requiring safe and secure parking.	1	Cargo owners (especially in the high-value segment) will have the possibility of requiring safe and secure parking.	2
Insurance Company	Cargo, vehicle and driver safety	Well-defined responsibilities in case of damage event	NIE	0	RS may be a variable taken into account for the calculus of insurance services. Use of reserved parking spaces reduces the number of events and clarifies responsibilities in case of damage event. Insurance Companies may encourage hauliers and drivers (specially from the high-value cargo segment) to book parking places in advance.	1	RS may be a variable taken into account for the calculus of insurance services. Use of reserved parking spaces reduces the number of events and clarifies responsibilities in case of damage event. Insurance Companies may oblige hauliers and drivers (specially from the high-value cargo segment) to book parking places in advance	2
				0	27		22	

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## Annex P. Impacts on Existing Markets and Services

The present appendix contains the analysis of the market evolution induced by each deployment option.

### *Option I. Baseline scenario*

Static and dynamic ITS are deployed, under Action E framework. Static databases are being harmonised and their availability is increasing, to reach total coverage. Dynamic information develops in the priority zones. Service providers incorporate the static information into multiple websites and smartphone applications, and into the leading products for navigation and fleet management. In particular, some products will integrate the static TPA data with in-vehicle data on remaining driving time extracted from future tachographs. Most MS implement an official website for their territory. Access to dynamic data for service providers will generalise progressively, when TPA operators have sufficient experience for anticipating the effect of dynamic information on occupancy.

Drivers and hauliers have the means to plan stops in TPA according to their needs and have their trips planned efficiently. However, drivers can't be sure of having a vacant place to park in.

Reservation Services (RS) are a minor practice among TPA operators. They exist on commercial level in specific situations only, or as experimental developments on selected corridors. Drivers and hauliers may book a parking place in advance. Integrated solutions for on-board booking do not exist yet, hence RS are effectively restricted to pre-trip times and to few locations.

Thanks to Action E implementation, the increase of unsafe parking behaviour is halted. There is a strong improvement to situations of overcrowding and inefficient distribution in priority zones. A number of dangerous situations will be eliminated. Traffic management and haulage operations become more efficient in peak times, and a reduction of kilometres and time for parking will be observable in the concerned priority zones.

Apart from priority zones, existing s+sTPA capacity remains underused at some places, while some other parking areas are overcrowded at specific peak times. Situations of overcrowding continue leading to dangerous parking or drivers breaking resting time rules. Cargo theft is still a problem for hauliers.

### *Option II. Voluntary Implementation Scenario.*

Information services develop as in the baseline scenario.

In addition, reservation services are deployed by the private sector. They cover primarily TPAs that target specific markets, such as the high value loads segment, or that are located in specific areas where risk of theft and robbery is high. They cover primarily privately operated TPAs, Most public TPA operators will continue to opt for addressing the

general truck parking demand, rather than special segments of demand. Overall the RS coverage will be adaptive to demand, but remain patchy.

For TPA operators, offering RS will be a comparative advantage and be used as a marketing argument. It may also increase TPA's added-value and attract new entrants to the RS-TPA market, which will expand at its own rhythm. While market volume increases, investment cost decreases, initiating in this way a virtuous circle.

Different service providers will start building reservation databases in agreement with partnering TPA operators. Each of these service providers will develop a regional, national or international coverage according to the context of offer and demand (TPA operators willing to offer RS, frequent routes of high value goods transports...).

Some service providers will build parking reservation brokerage services for their costumers. In particular, parking reservation brokerage will emerge as a side service to equipping fleets with in-vehicle ITS equipment. By cooperating with different reservation databases, they will progressively approach EU-wide coverage.

At first, RS will attract high-value cargo owners and hauliers, who may start booking parking places in advance as a routine procedure. These stakeholders will probably favour high safety facilities, encouraging that segment of the TPA market to develop and implement RS.

Although RS' availability will scatter, TPA reservation is not a routine practice to the whole truck transport industry.

RS implementation will contribute to secure the road haulage market, in particular the segment of high value goods.

For this segment, it will optimise the driver's compliance with resting and stopping times regulation, and the circling traffic due to parking search. It will reduce the risk of accidents related to offsite parking and exceeding driving times, and contribute to reducing air pollution levels. However, applying to some segments of road haulage only, these impacts will be of minor volume as compared to the impacts of action E implementation.

### *Option III. Mandatory Implementation Scenario.*

Information services develop as in the baseline scenario.

Reservation services are deployed by the private sector similarly to Option II.

In addition, public initiatives in each MS address the task of implementing reservation services that cover all TPAs on the TERN according to the prescriptions on the European specifications. In most MS, this coverage will include publicly operated TPAs that do not charge any fee and are not foreseen for managing reservations at present. Hence, these public initiatives will be integrated into the more general public policies for developing truck parking infrastructure.

On the level of reservation databases and brokerage services, the public initiatives will search an appropriate split of roles with the private sector.

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Systems for managing reservations on s+sTPA are maturing and expanding, prices are stabilising.

RS optimise the transport chain for hauliers and drivers.

Since certainty and safety will be the major reasons of booking parking places for hauliers, specially in the segment of high-value loads, it is worth considering that the specific s+sTPA market will grow first and faster than average TPA.

Priority zones are where demand is more intense. They match Hot Spots areas, where capacity management is most critical. However, this might not constitute a viable business case for all TPA in priority zones. Public intervention will be needed for compensating the potential loss of revenue of private TPA operators in priority zones.

Many TPA operators will be forced to invest in RS while not having the business case for it. It may lead to unequal implementation in terms of service quality and reliability. Interoperability of systems may also be harmed, since not all TPAs will be ready to fully implement the requirements. Some of these TPA operators will have very high compulsory operational costs to bear.

These factors could lead to poor and/or unequal business development, despite national interoperable standards imposition. In the longer term, systems are going to be more robust, investments will therefore decrease, letting market volumes increase.

Drivers and hauliers may secure parking places according to their own safety standards, since service coverage is wide and homogeneous.

Overall, RS may optimise circling traffic (due to parking search), which may reduce air pollution levels. It also may help driver's compliance with resting and stopping times regulation.

Overcrowding and offsite parking (and related risks) decreases significantly, which prevent hauliers from cargo theft. Traffic management is more efficient.

## Annex Q. Special Impacts

Special impacts related to:	Voluntary implementation of reservation services	Mandatory implementation of reservation services
Fundamental Rights - Protection of personal data	<ul style="list-style-type: none"> <li>Reservation interfaces, systems and devices have to comply with data protection laws, all exchanged data (identification, personal data, payment information) have to be carefully used and stored, according to existing official (european and national) regulations and standards (private and paragovernmental bodies).</li> <li>Unequal levels of protection and inefficiencies might be observed, due to differences in national implementations and to different rules and procedures for cross-border services.</li> </ul>	<ul style="list-style-type: none"> <li>Reservation interfaces, systems and devices have to comply with data protection laws, all exchanged data (identification, personal data, payment information) have to be carefully used and stored, according to existing official (european and national) regulations and standards (private and paragovernmental bodies).</li> <li>RS will develop Europe-wide, MS will have to comply with a number of data protection rules. RS implementation may speed up the revision of the current european directive (which is from 1995).</li> </ul>
Fundamental Rights - Environmental protection	More efficient use of parking and trip planning reduces traffic related to searching parking spots. Pollution and energy use decrease slightly, benefits are minor.	More efficient use of parking and trip planning reduces traffic related to searching parking spots. Pollution and energy use decrease slightly, benefits are minor
Fundamental Rights - Fair and just working conditions	Unequal improvement of working conditions thanks to RS implementation: more efficient pre-trip planning, easier compliance with driving and resting times rules. Overall working stress and pressure is reduced.	Rest stops can be planned ahead TERN-wide ; Pressure to find parking is reduced, it can be found during the pre-trip planning ; Compliance with driving and resting time rules is eased.
Number and quality of the jobs	Improved working conditions (material protection against theft and robbery ; more certainty and less stress) may influence job attractiveness and increase the share of qualified drivers in the transport sector.	Improved working conditions (material protection against theft and robbery ; more certainty and less stress) may influence job attractiveness and increase the share of qualified drivers in the transport sector. However, drivers training is different from a MS to others. Compulsory implementation may lead to inequalities in terms of capacity to use RS in a optimal way.
End-users and households	RS tend to be implemented first by those stakeholders of the high-value load transportation segment. RS costs are amortised thanks to the amount of money saved from theft damages. RS costs are diluted before they get to the service's final customer.	The transported goods prices will not change with RS implementation. The cost for hauliers of using reservation services for safe and secure parking is small and will not affect end prices.
Liability	Issues may arise due to possible distraction of drivers handling poorly designed devices to book parking places on-trip. That is why systems and devices have to comply with regulation and standards on those equipments and their use.	Issues may arise due to possible distraction of drivers handling poorly designed devices to book parking places on-trip. That is why systems and devices have to comply with regulation and standards on those equipments and their use.
Inappropriate use	TPA operators might be affected by misuse of reservation services. Harmonised measures for cancellations and penalties for no-shows should be applied. Drivers might be affected by misinformation of parking places availability. Standardised rules and penalties for excessive overbooking must be applied.	TPA operators might be affected by misuse of reservation services. Harmonised measures for cancellations and penalties for no-shows should be applied. Drivers might be affected by misinformation of parking places availability. Standardised rules and penalties for excessive overbooking must be applied.
Cost effectiveness	RS will first address the high-value goods niche market.	RS will provide financial benefits from cargo owners to hauliers, since they will be able to secure their loads by stopping in reserved parking places, for resting times purposes, or for safety reasons (high-value / hazardous loads).
Administrative burdens	MS have implementation responsibilities (the deployment of a new sector of activities and market has to be followed by public authorities, depending on national economic policies). MS have to designate a national body to support and control RS implementation and use. Burdens are significant to this body.	MS have high implementation responsibilities. MS have to designate a national body to support and control RS implementation and use. Burdens are significant to this body.
Third countries	Third, non-EU, countries are not negatively affected by the implementation of the ITS service. Using the services will not be restricted to EU member drivers and accessibility to the service can be acquired at the same costs for all drivers.	General access is unrestricted but payment services might be limited to EU members (according to credit cards compatibility). Systems and devices should be available in the driver language (European languages). Issues may arise from that aspect.