



# CESARE III PROJECT

Interoperability of electronic fee collection systems in Europe

## D2.1 - DETAILED SERVICE DEFINITION

Document version	Final
Document status	Validated by project Steering Committee
File name	D2.1 - Detailed service definition - 9 October 2006 - Final.doc
Dissemination level	EC
Date	9 October 2006



**PROJECT CO-FUNDED BY THE EUROPEAN COMMISSION: DG TREN**



**TABLE OF CONTENTS**

- 1. REVIEW OF CESARE II SERVICE DEFINITIONS..... 3**
  
- 2. SUPPORTED BUSINESS MODEL AND SERVICE FUNCTIONS (SUMMARY INPUT FROM WP1)..... 7**
  
- 3. SYNTHESIS OF MAIN EETS ACTORS REQUIREMENTS ..... 9**
  - 3.1 Information gathering process ..... 9**
  - 3.2 Synthesis of Results for each Service Component ..... 10**
  - 3.3 Adoption of Expressed Preferences ..... 15**
  
- 4. EETS SERVICE COMPONENTS DEFINITION ..... 20**
  - 4.1 General EETS Service Description..... 20**
  - 4.2 Governance and Certification ..... 22**
  - 4.3 Contract Issuing..... 27**
  - 4.4 Service Use on toll roads ..... 38**
  - 4.5 Service Payment ..... 52**
  - 4.6 Service User Support ..... 57**
  - 4.7 Enforcement..... 65**
  - 4.8 Promotion ..... 70**

## 1. Review of Cesare II Service Definitions

According to the definition of CESARE II the main purpose of the common EFC system (named EETS under CESARE III) is to allow the user to pay for transport services provided by MoU signatory TSP's (included under the role Road Charger in CESARE III), by means of a single OBE, linked to a unique contract.

The following basic principles applied to the common EFC service:

- Service conceived for road tolling for all kinds of vehicles and also for private and business users.
- The service was intended for different road configurations (single structures such as bridges and tunnels, motorway branches and motorway networks).
- Tariffs are defined at national level, by competent authorities, and resulting from a classification scheme in place in each country.
- The service can be offered in open and closed tolling systems under different lane configurations (dedicated monolane, mixed monolane, multilane).
- The service was defined for a post-payment scheme (debit in user account after usage of the service).
- Payment means is physically supported by a monolithic OBE linked to a central account that can be general purpose or specifically issued for the tolling application (in order to be accepted the user must have a bank account)

The common EFC Service consisted of 4 main Service components, namely:

- Contract Issuing
- Service Usage
- Service Payment
- Customer Service Support

In figure 1 the overall organizational model is represented

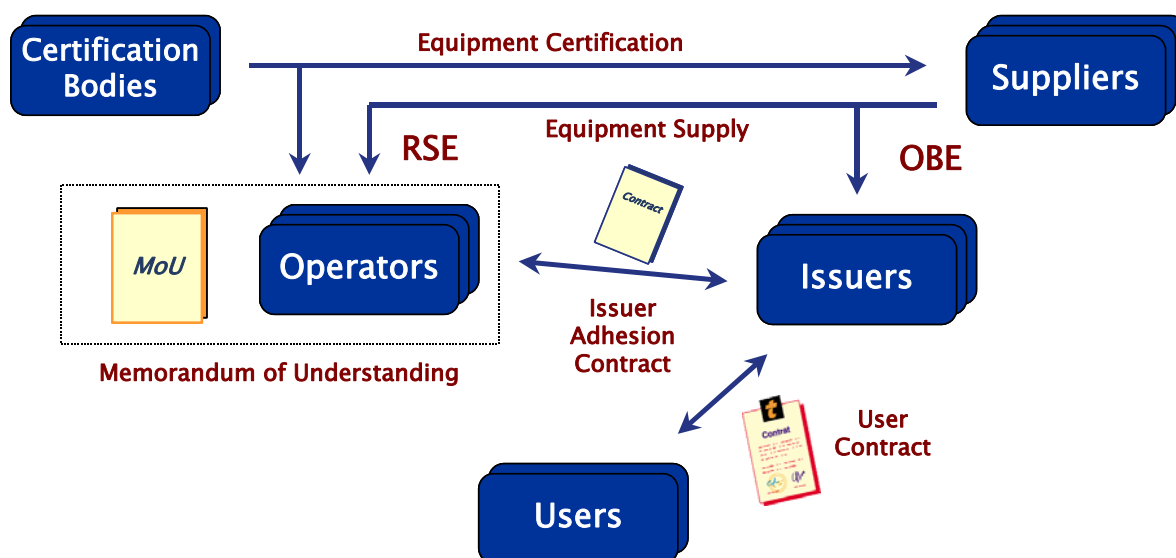


Figure 1 – Overall organizational model



In basic terms the relationship between the payers were defined according to figure 2.

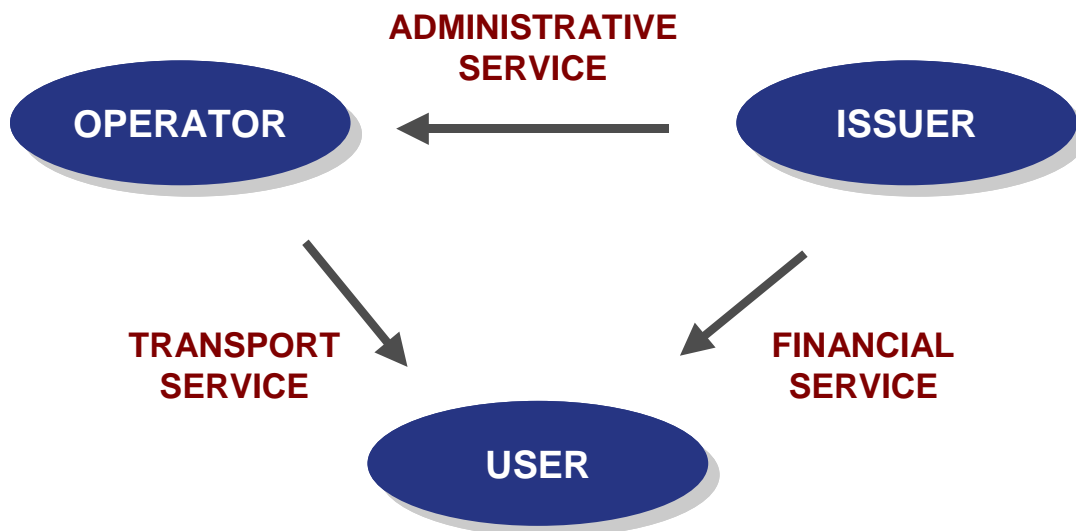


Figure 2 – Mutual relationships

The relationships were further detailed according to figure 3.

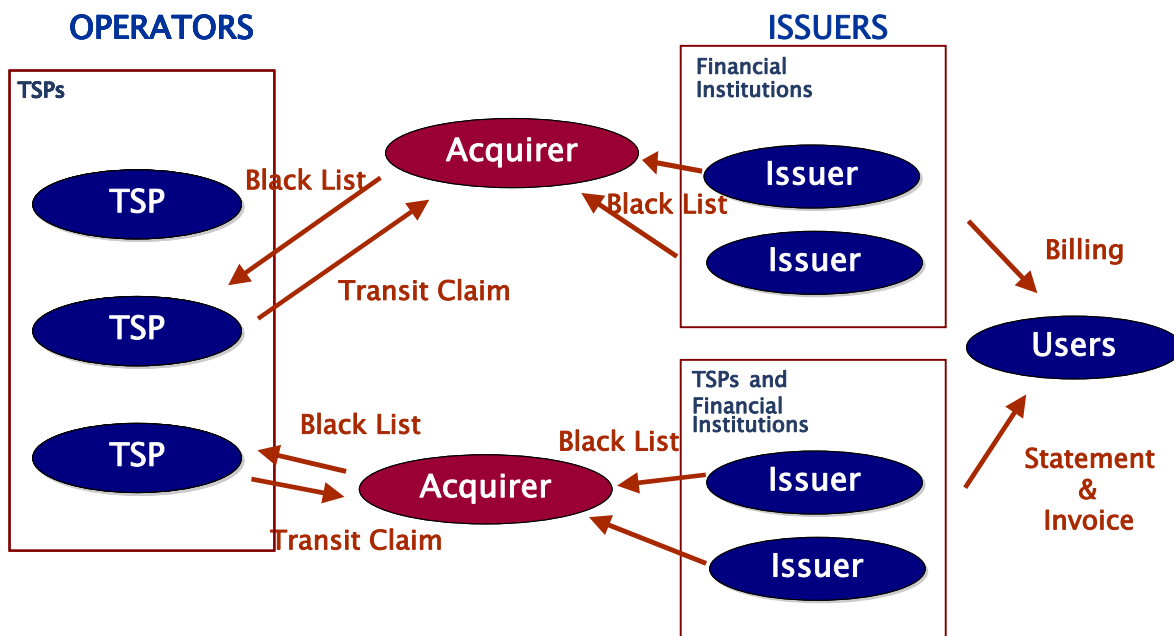


Figure 3 – Detailed interfaces



The main guidelines of the common EFC service were grouped under 4 main service components as mentioned before. The main guidelines for each of these service components were grouped in functions in the following way:

**I – Contract Issuing**

- I.1 Sign the Contract
- I.2 Provide equipment
- I.3 Install Equipment
- I.4 Distribute Contract Information

**II – Service Usage**

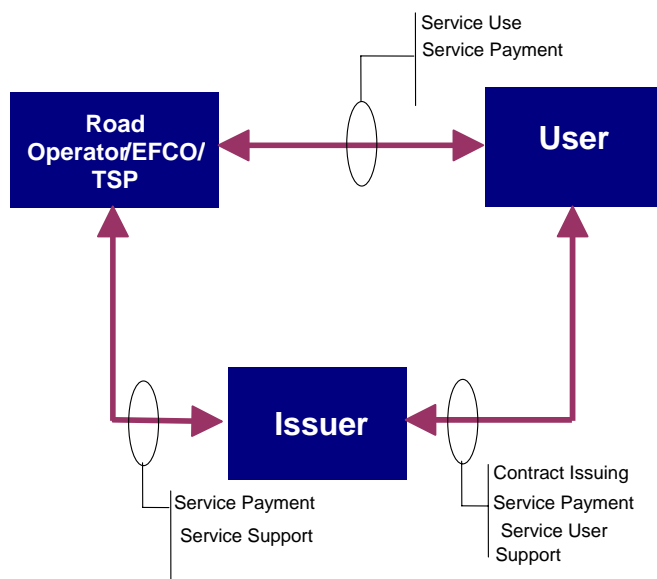
- II.1 Service Signalling in lane
- II.2 Classification
- II.3 Enforcement
- II.4 Exceptions handling
- II.5 Extended mode
- II.6 Inform about the transactions results

**III – Service Payment**

- III.1 Charge of fees
- III.2 Provide invoices to users

**IV – Customer Service Support**

- IV.1 Attend user's complaints about charged fees
- IV.2 Contract management
- IV.3 Provide technical support
- IV.4 Provide general information about the service



**Contract Issuing**

- Acquire personal , vehicle and account information
- Issue certified initialised OBE
- Common information about service
- List of EFC Operators , classification system and toll stations
- Information on OBE and its installation
- Magnetic card (extended mode )

**Service Use**

- Service signalling in the lane (logo)
- MMI for some vehicle parameters
- Classification , tariff, enforcement as a local issue
- Extended Mode
- Inform User on transaction results

**Service Payment**

- Issuer receives transits from TSP
- Issuer collects fees from User
- Issuer updates list of TSP's and toll stations accepting EFC
- If requested by business users , they are provided with invoice

**Customer Service Support**

- Attend User 's complaints
- Contract management
- Technical Support
- General information about the service

**Figure 4 – Overall view of Service Components and Interfaces in Cesare II**



Due to facts occurred after the conclusion of the CESARE II project, the model needs to be further revised in accordance. Amongst others, we could mention the following new facts:

- New Charging Schemes have been deployed and are operating;
- New technologies have been used in some of these Charging Schemes and consequent operational changes
- New enforcement solutions have been adopted
- The EC Directive on EFC systems has been issued
- New actors are arising with need to clearly define boundaries in terms of scope

CESARE III will have to address this new reality revising the model defined under CESARE II.



## 2. Supported Business Model and Service Functions (summary input from WP1)

Within WP 1, a basic model was designed in order to give a general overview of the EETS. In this basic model, 4 main roles were identified as being part of an interoperable EETS service. While 3 of the main roles are known in a similar way from other models there is clearly one new kind of main role: the Interoperability Management.

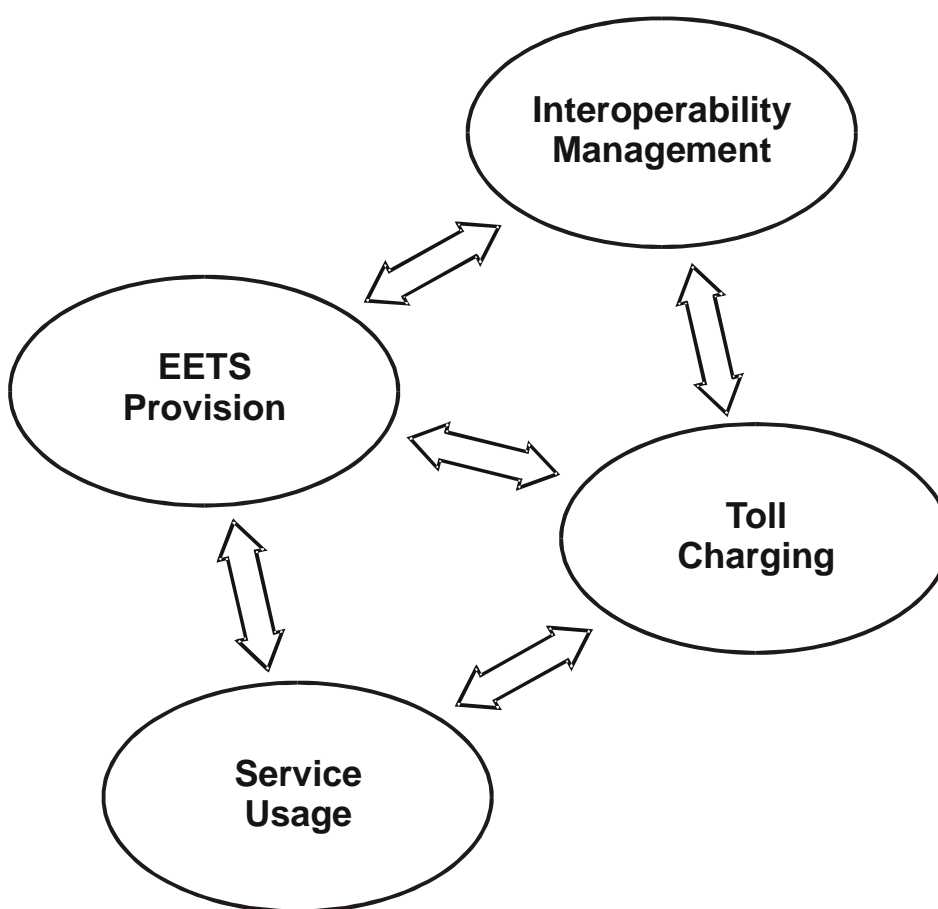


Figure 5: CESARE EETS Model

The main roles can be defined as follows:

### Toll Charging Role

Toll Charging means providing a transport service (often road usage) to a Service User and charge the latter a fee for this (the “toll”). The responsibility for levying toll in a toll domain is part of the Role and results in claiming payment from a third party within the EETS Provision Role.

### EETS Provision Role



EETS Provision means providing equipment (OBE), contracts and payment means to those who want to use the EETS. EETS Provision includes claiming money from users and guaranteed payment for genuine claims received from the Toll Charging Role.

Service Usage Role

Service Usage means taking advantage of the EETS for payment of tolls in the toll domains of the Toll Charging Role.

Interoperability Management Role

Interoperability Management gathers the functionality that deals with overall management of interoperable EFC. This includes rules for interoperability, id-schemes, certification, common specifications, etc.. Therefore this Role represents the regulatory Role of the EETS interoperability scheme.

The setting of rules can be on the regulatory level if (parts of) the service definition is integrated in (European or national) law – e.g. the Directive. Some of the rules can also be agreed between the participants upon a contractual relation. New organisations might be set-up for this purpose.

In real life, the Functions of one Role can be performed by a person, an organisation, or several organisations acting together, as each context can develop its own architecture.

In Cesare III, it was decided not to enter in the details of each of this architecture, but nonetheless there may be a need to name a representative of a Role that would perform all Functions of one Role, and only those Functions.

For example, an organisation within a Toll Charging Role will sign contracts with organisations within the EETS Provision Roles. This is complicated to be described using the names of the roles. In these contexts the generic representative of this role is used, i.e.:

<b>Toll Charger:</b>	generic representative of a toll domain within the Toll Charging Role
<b>EETS Provider:</b>	generic representative of an organisation taking the responsibility for the EETS Provision within the EETS Provision Role
<b>Service User:</b>	generic representative of the Service Usage Role
<b>Interoperability Manager:</b>	generic representative of the Interoperability Management Role

**Important: A generic representative of a role is NOT by all means always one organisation or one entity. There can be different organisations or entities representing the role depending on the interface function between the roles.**





### 3. Synthesis of main EETS actors requirements

---

#### 3.1 Information gathering process

In order to define the different EETS Service Components it was found relevant to gather the point of view of the actual actors involved in relevant european EFC operations. In order to be as objective as possible, different enquiries were produced, each destined to a specific type of actor. The EETS actors identified were:

- Principal
- Transport Service Providers
- Electronic Fee Collections Operators
- Payment Means Issuers
- Issuers
- Users

A total of 24 companies (or Associations), belonging to 9 countries, were interviewed. The implicated countries were:

- Spain
- Portugal
- France
- Italy
- Austria
- Netherlands
- Germany
- Switzerland
- England

Through the responses to the enquiries, and according to area of expertise, each interviewed company or association was able to express preferences regarding specific aspects of each Service Component. The covered Service Components, following the results of CESARE II and the view of the group at the time regarding other service aspects that needed to be added to the CESARE II model, were:

- Contract Issuing and management/service subscription
- Service Usage
- Service Payment and Invoicing
- Service User Support (Customer Service Support in Cesare II)
- Enforcement (new)
- Promotion (new).

The present chapter is intended to give a general view of the results of the above mentioned results, pointing out the main aspects which have clearly expressed as clear preference by the majority of the interviewed



entities. In the tables to follow, the expressed preferences are represented in blue, and those not representing a clear expressed preference in grey colour.

### 3.2 Synthesis of Results for each Service Component

The following tables show in a simplified way the results of the detailed enquiries undertaken by WG2 members.

#### 3.2.1 Contract issuing

Domains	User	EFC	TSP	PMI	Issuer	Principal
<b>Contract Issuing &amp; Management / Service Subscription</b>						
The European Electronic Fee Collection Service is a requirement						
The EETS contract is an extension to national contracts						
No cost beared by the user in order to use the EETS						
Would you pay more for the equipment (OBU) than you pay at present for the national service						
Service subscription & contract management should be possible in the following way:						
<i>Web site</i>						
<i>E-mail</i>						
<i>Fax</i>						
<i>Shops</i>						
<i>Contact centre</i>						
<i>Vending machine</i>						
<i>Through auto service partners</i>						
One contract should support more than one OBE						
The OBE should be easily self installed by the customers						
(Accept that) A (foreign) private organisation issues contracts for paying the tolls/tax						
The user has to be known by the Principal/TSP/EFC Operator						
There are differences in requirements for HGV and light vehicles						
Different levels of service for different profile of users (frequent or occasional) are required						
An OBU Certified for EETS usage is automatically certified for national/local use						
There should be a universal contract between CI's and Users						
The vehicle registration is requested to the user at the EETS subscription phase and/or contractual changes						
Original documents copied and reviewed by CI						
Who in your view should have access to user contractual and service usage data						
Client admission/refusal criteria are based on black list (no agreement on the origin of the black list)						



**Key :**  Expressed preference     No preference

### 3.2.2 Service Use on toll roads

Domains	User	EFC	TSP	PMI	Issuer	Principal
<b>Service Usage</b>						
There should be no barriers on EETS lanes.		X	X	X	X	X
There should be a unique EETS logo in all countries		X	X	X	X	X
Be able to exchange OBE from one vehicle to another		X	X	X	X	X
Special tariffs/discounts/campaigns regarding EETS should be informed by e-mail		X	X	X	X	X
have a smart card associated with the OBE in order to base payment of manual tolls or other payments related to the vehicle usage		X	X	X	X	X
At transaction declaration point or at the toll plaza there should be the service indications :						
<i>Traffic light indicating normal or exceptional transaction;</i>		X	X	X	X	X
<i>Value of transaction;</i>		X	X	X	X	X
<i>Sound or visual signal on the OBE;</i>		X	X	X	X	X
<i>SMS indicating transaction status and value.</i>		X	X	X	X	X
No level of redundancy required in data acquisition	X			X	X	X
There shall be detection on (possible) non-compliance in the EETS-OBU (which would reduce the enforcement resources)	X		X	X	X	
Non-compliance events should be received principally by CI	X		X	X		
It shall be not possible to turn off the EETS OBU	X			X		
The payment guarantee shall also be possible when there is no transaction under well specified rules (e.g. missing transaction in one motorway link)	X		X	X	X	
Level of details included in the invoice: transaction by transaction	X			X		
Common service logo	X			X		
Black list is a condition to verify in order for a TSP/EFC not to accept a specific OBU	X			X		X
Use of extended mode as specified in CESARE III (smart card associated with OBU for payment on manual lanes when EFC lanes is out of service)	X	X		X		X
Non-conformant transaction indicated by EETS-OBU through buzzer	X			X		X
EETS OBU has to behave in the same way in each TSP/EFC offering the EETS service	X			X		
Delay in updating black list on Road Side Equipment may lead to TSP losing revenue assurance	X			X		X

**Key :**  Expressed preference     No preference



**3.2.3 Service Payment**

Domains	User	EFC	TSP	PMI	Issuer	Principal
<b>Service payment and invoicing</b>						
What payment schemes should be supported						
<i>Pré-payment (central account)</i>						
<i>Post payment (central account)</i>						
<i>Both</i>						
The invoice should be issued monthly.						
What payment means would you select to support your OBE						
<i>Bank debit card</i>						
<i>Bank credit card</i>						
<i>Fuel company card</i>						
Users should receive an unique invoice for both National and European EFC						
VAT recovery is essential						
Have almost real time access (delay less than 48h) to transaction info on the WWW						
Invoice should be presented with the minimum information : detail with locations, date/time and value						
The maximum elapsed time between transit file and transit payment should be the same as national transactions						

**Key :**  Expressed preference      No preference



**3.2.4 Service User Support**

Domains	User	EFC	TSP	PMI	Issuer	Principal
<b>Service Support</b>						
What user support service would you expect in a foreign country?						
<i>OBE repair (battery change)</i>		X	X	X	X	X
<i>OBE substitution (case mal-function)</i>		X	X	X	X	X
<i>Access to service Help-Desk</i>		X	X	X	X	X
<i>Transaction details</i>		X	X	X	X	X
<i>Service brochure</i>		X	X	X	X	X
<i>Unique contact number of EETS in all of Europe (24 hour service, multilanguage)</i>		X	X	X	X	X
No cost for a OBU maintenance contract		X	X	X	X	X
What communication channels would you favour in terms of acquiring information on the EETS?						
<i>Web site</i>		X	X	X	X	X
<i>Newsletter</i>		X	X	X	X	X
<i>Electronic mail</i>		X	X	X	X	X
<i>Letter</i>		X	X	X	X	X
<i>Newspaper</i>		X	X	X	X	X
CI's/TSP's/EFCO's should give technical assistance to OBU's issued by foreign players	X					
CI should receive users complaints related to charged fees	X			X		
Maximum response time to complaints of users in regard to European EFC Service :						
<i>&lt;15 days</i>	X			X		
<i>&lt;1 month</i>	X			X		
No or restrictive access to user information by TSP	X			X		
Effectiveness of contract changes requested by user (asap or before leaving toll domain)	X			X		

**Key :**  Expressed preference       No preference



**3.2.5 Enforcement**

Domains	User	EFC	TSP	PMI	Issuer	Principal
<b>Enforcement</b>						
EETS shall cover enforcement aspects	X			X		
How do you see the involvement of TSP/EFC Op in enforcement processes? Do you have any requirements on that?	X					X
What cross- border enforcement would you expect from a foreign player (TSP, EFCO, CI, etc) in regard to a foreign driver for which you have a license plate?	X			X		
In order to act in your country on behalf of a foreign TSP (accessing license plate registration, contacting violator on behalf) what would your requirements be in terms of information received and supported costs?	X			X		
No enforcement action possible unless national authority	X			X		
No enforcement action possible unless reciprocity principle	X			X		
Enforcement data in autonomous systems on OBU	X			X		

**Key :**  Expressed preference       No preference

**3.2.6 Promotion**

Domains	User	EFC	TSP	PMI	Issuer	Principal
<b>Promotion</b>						
Who should promote the European EFC Service (EETS)?						
<i>TSP</i>	X					
<i>EFC Operator</i>	X					
<i>Contract Issuer</i>	X					
<i>EC</i>	X					
<i>DG Tren</i>	X					
<i>National governments</i>	X					
The promotion is relevant in what concerns EFC (national and European) penetration rate	X					
National campaigns and a European specific ones	X					

**Key :**  Expressed preference       No preference



### 3.3 Adoption of Expressed Preferences

The following table identifies all Expressed Preferences, grouped by Service Component, pointing out the justification in those situations where they were not adopted in the Service Component definition.

Expressed preferences	Accepted? (Yes/No/not decided)	Justification (only when not accepted)
<b>Contact Issuing &amp; Management / Service Subscription</b>		
The European Electronic Fee Collection Service is a requirement		
The EETS contract is an extension to national contracts	Y	
Service subscription & contract management should be possible in the following way:		
<i>Web site</i>	Y	
<i>E-mail</i>	Y	
One contract should support more than one OBE	Y	
The OBE should be easily self installed by the s	Y	
(Accept that) A (foreign) private organisation issues contracts for paying the tolls/tax	Y	
The user has to be known by the Principal/TSP/EFC Operator	nd	Under normal usage conditions such may not be necessary, and in some countries even not possible from a legal point of view. Enforcement scenarios may require that, under certain conditions, such information is made available to the Principal/TSP/EFCo. Under revenue assurance conditions to the Principal/TSP, it makes no sense that such data is disclosed to the above mentioned entities.
There are differences in requirements for HGV and light vehicles	nd	The differences in requirements have more to do with type of vehicle parameters to be loaded on the OBE and the type of entity subscribing the EETS Contract (private or company)
Different levels of service for different profile of users (frequent or occasional) are required	nd	It may be a commercial option that differentiates the offer of the different EETS Providers. Nothing specified prohibits this possibility.
An OBE Certified for EETS usage is automatically certified for national/local use	nd	It is implicit since the User can in an extreme situation subscribe the EETS just for national usage. Also it is mentioned that the EETS can be an extension of the national EFC service, with no mention for the need of equipment substitution or upgrade.
The vehicle registration is requested to the user at the EETS subscription phase and/or contractual changes	Y	
Client admission/refusal criteria are based on black list (no agreement on the origin of the black list)	Y	(Principles to be defined).



Expressed preferences	Accepted? (Yes/No/not decided)	Justification (only when not accepted)
<b>Service Usage</b>		
There should be no barriers on EETS lanes.	nd	It depends on each road operator, and specifically on the legal framework within each country.
There should be a unique EETS logo in all countries	Y	
Special tariffs/discounts/campaigns regarding EETS should be informed by e-mail	Y	
have a smart card associated with the OBE in order to base payment of manual tolls or other payments related to the vehicle usage	Y	
At transaction declaration point or at the toll plaza there should be the service indications :		
<i>Traffic light indicating normal or exceptional transaction;</i>	Y	
<i>Value of transaction;</i>	N	The indication on the OBE of the value transaction value to the User may be a legal requirement in some countries, but not mandatory European wide . Most OBE's on the market do not support such functionality.
No level of redundancy required in data acquisition	nd	It's a technical aspect which must be defined in a future CE initiatives
There shall be detection on (possible) non-compliance in the EETS-OBE (which would reduce the enforcement resources)	nd	Not covered in this Service Component. With Service Component (Enforcement?) to address ?
Non-compliance events should be received principally by CI	nd	During the service usage, it's firstly the Toll Charger who receives the information about non-compliant events. Of course the related Contract Issuer must be informed afterwards. The elaboration process of a type of "black list" must be defined in a future CE initiative
It shall not be possible to turn off the EETS OBE	nd	In principle no. It may represent an increased risk of revenue loss. An issue to be further analysed.
The payment guarantee shall also be possible when there is no transaction under well specified rules (e.g. missing transaction in one motorway link)	nd	One answer ("yes") only for correct claims (i.e. for valid transactions and/or for legally assessed charges). WP4 to answer ?
Level of details included in the invoice: transaction by transaction	Y	
Common service logo	Y	
Black list is a condition to verify in order for a TSP/EFC not to accept a specific OBE	Y	
Use of extended mode as specified in CESARE III (smart card associated with OBE for payment on manual lanes when EFC lanes is out of service)	Y	





Non-conformant transaction indicated by EETS-OBE through buzzer	nd	Aspect to be analyse and define in further EC initiatives
EETS OBE has to behave in the same way in each TSP/EFC offering the EETS service	nd	Aspect to be analyse and define in further EC initiatives
Delay in updating black list on the Road Side Equipment may lead the TSP to loose the revenue assurance guarantee	nd	Precise service conditions have to be defined and set in MoU's (WP4 and 5 ?)
<b>Expressed preferences</b>	<b>Accepted? (Yes/No/not decided)</b>	<b>Justification (only when not accepted)</b>
<b>Service Payment and invoicing</b>		
<b>What payment schemes should be supported</b>		
<i>Post payment (central account)</i>	Y	
<i>Both</i>	Y	
<b>The invoice should be issued monthly.</b>	nd	It will depend on the commercial offer of each EETS Provider, and surely a selection criteria for the User
<b>What payment means would you select to support your OBE</b>		
<i>Fuel company card</i>	nd	Since the EETS Provider will assure revenue, it is up to him to admit whatever payment means accepted. From the User's prespective the more type of cards accepted the better.
<b>Users should receive an unique invoice for both National and European EFC</b>	nd	It will depend on the commercial offer of each EETS Provider, and surely a selection criteria for the User
<b>VAT recovery is essential</b>	Y	
<b>Have almost real time access (delay less than 48h) to transaction info on the WWW</b>	Y	
<b>Invoice should be presented with the minimum information : detail with locations, date/time and value</b>	Y	
<b>The maximum elapsed time between transit file and transit payment should be the same as national transactions</b>	N	Payment interval is individual, i.e. ist not common, but defined between each EETS Provider and each Toll Charger



Expressed preferences	Accepted? (Yes/No/not decided)	Justification (only when not accepted)
<b>Service User Support</b>		
<b>What support service would you expect in a foreign country?</b>	<b>N</b>	No distinction was made regarding foreign or national realities/domains. Some constraints were identified regarding technical operation on OBE's by different CI's.
<i>OBE repair (battery change)</i>		
<i>OBE substitution (case mal-function)</i>		
<i>Access to service Help-Desk</i>		
<b>No cost for a OBE maintenance contract</b>	<b>N</b>	No analysis were made regarding maintenance contracts or costs. Each EETS Provider should set it's services according to market demand. Commercial offer may be different between EETS Providers..
<b>What communication channels would you favour in terms of acquiring information on the EETS?</b>		
<i>Web site</i>	<b>Y</b>	
<i>Electronic mail</i>	<b>Y</b>	
<b>CI should receive users complaints related to charged fees</b>	<b>Y</b>	
<b>Maximum response time to complaints of users in regard to European EFC Service :</b>		
<i>&lt;15 days</i>	<b>N</b>	A 30 days maximum response was preferred.
<i>&lt;1 month</i>	<b>Y</b>	
<b>No or restrictive access to information by TSP</b>	<b>Y</b>	
<b>Effectiveness of contract changes requested by user (asap or before leaving toll domain)</b>	<b>Y</b>	



Expressed preferences	Accepted? (Yes/No/not decided)	Justification (only when not accepted)
<b>Enforcement</b>		
<b>EETS shall cover enforcement aspects</b>	<b>Y</b>	However, the enforcement activities are limited in scope and only cover enforcement of EETS s who are non-compliant.
<b>No enforcement action possible unless national authority</b>		This is a statement which is true, but is not related to a requirement.
<b>No enforcement action possible unless reciprocity principle</b>		This is a statement which is true but not related to a requirement
<b>Enforcement data in autonomous systems on OBE</b>	<b>Y</b>	This is accepted as a requirement
Expressed preferences	Accepted? (Yes/No/not decided)	Justification (only when not accepted)
<b>Promotion</b>		
<b>Who should promote the European EFC Service (EETS)?</b>		
<i>Toll Charger</i>	<b>nd</b>	Depending on the promotion campaign, which will be defined by the EETS management
<i>EETS Provider</i>	<b>Y</b>	
<i>EC</i>	<b>Y</b>	
<i>DG Tren</i>	<b>nd</b>	Depending on the promotion campaign, which will be defined by the EETS management
<i>National governments</i>	<b>Y</b>	
<b>The promotion is relevant in what concerns EFC (national and European) penetration rate</b>	<b>Y</b>	
<b>National campaigns and a European specific ones</b>	<b>Y</b>	



## 4. EETS Service Components Definition

---

### 4.1 General EETS Service Description

Cesare II defined a basic model with entities/actors (such as Road Operator, Transport Service Provider, User, Issuer, etc.) and 4 service components (Contract Issuing, Service Usage, Service Payment, Service Support). This simplified model served the purpose of the identified requirements at that moment.

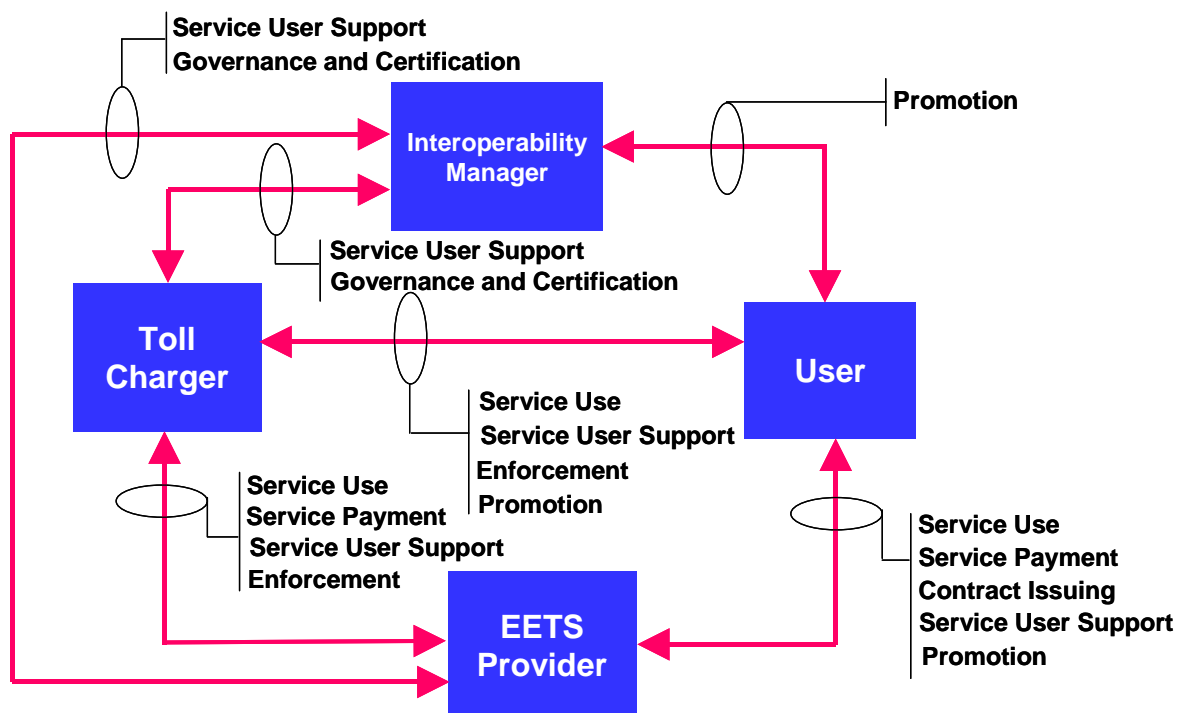
Meanwhile the reality has slightly changed. New electronic charging schemes have been deployed, some of them supported of different tolling and enforcement technologies and different national organizations. The EFC Directive has been issued defining minimum and basic requirements for the EETS.

The CESAREIII/ WP1 has redefined the basic CESARE II model, including a new role - the “Interoperability Manager”- and grouping the different entities defined in CESARE II into 4 main roles. This has to be done in order to accommodate the different realities in the different EETS countries. WP1 also defined a set of basic functions and the appointed those roles involved in the execution of each of these functions.

The WP2 members, supported on these two main contributions from WP1, have tried to adapt the list of service components defined in CESARE II to this new reality. As a result of this effort, 3 new service components have been added, namely:

- “Governance and Certification” as a direct consequence of the creation of the Interoperability Manager
- “Enforcement” and “Promotion” , both very superficially mentioned inside the 4 basic service components defined in CESARE II

The new proposed model incorporates the 4 roles defined in the CESARE EETS model (for better readability we use the generic representative of each role as User, Interoperability Manager, Toll Charger and EETS Provider) and 7 service components (Contract Issuing, Service Usage, Service Payment, Service User Support, Governance and Certification, Enforcement, Promotion). The diagram below shows a global overview of the general CESARE EETS service description :



**Figure 6: CESARE EETS Service Components**

Each Service Component is detailed hereafter, including the identification of the functions that have to be performed by each role. In a first step, all the functions for each Service Component are indicated. In a second stage, when dealing in more detail with each Service Component, only those functions which are directly linked to interoperability are described.

All the Service Components are structured as defined below :

- **Service description:** this part shows a diagram which presents a global overview of the service component with the relation between the roles and the related functions. A single table is added and indicates per function the role involved who, and if this function is required for interoperability.
- **Service preferences:** this part presents the interviewed entities point of view (see chapter 3) about what should be the service.
- **Main constraints:** this part identifies a list of different types of difficulties (legal, contractual, fiscal, operational or technical) to ensure the related service.
- **Service Level :** whenever possible and appropriate, this section describes the service level agreement that should be seen as a reference when defining and implementing procedures and also when establishing contractual relationships between roles..
- **Basic functions and description:** this part explains deeper in details the service component and the related functions. Only the functions that are required for interoperability are explained.



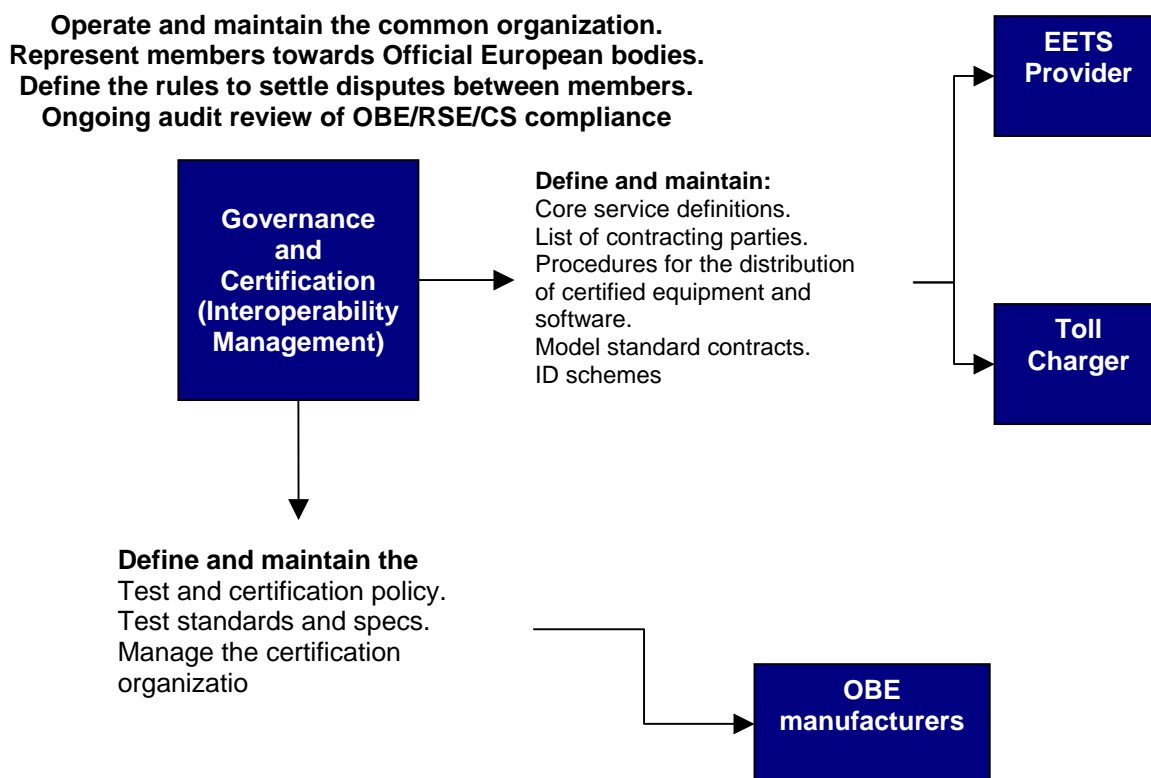
## 4.2 Governance and Certification

The following text intends to be an outline definition of the service component – **Governance** (Compliance) and **Certification** - in all its relevant perspectives.

<b>SERVICE COMPONENT</b>	<b>Governance and Certification</b>
--------------------------	-------------------------------------

### SERVICE DESCRIPTION

This Service Component can be described according to the following diagram:



**Definition:** This is the “umbrella” organization overseeing the complete EETS service which includes; laying down, safeguarding and monitoring the systems and processes used in the overall delivery of the EETS at an operational level by the key roles. The view is that this organization may act on behalf the contracting actors. In case of a 'contractual joint venture' it may only be a secretariat.

The following table identifies the different functions, the respective roles involved and the level of interoperability needed for the EETS :



EETS Service Component and Functions		Roles	Interoperability needs	
			YES	NO
<b>Governance</b>				
G1	Define and maintain the EETS Core Service Definitions, rules and regulations required for interoperability.	IM	X	
G2	Define the rules to settle disputes between members (Arbitration).	IM	X	
G3	Maintain and issue the authoritative list of contracting parties (EETS Providers and Toll Chargers).	IM	X	
G4	Define and maintain procedures for the distribution of certified equipment and/or its software.	IM	X	
G5	Ongoing audit review of OBE/RSE/CS compliance.	IM	X	
G6	Operate and maintain the common organization.	IM	X	
G7	Define, maintain and issue, if necessary, model standard contracts for co-operation between actors.	IM	X	
G8	Define and maintain ID-schemes and, if necessary, support the issuing of IDs.	IM	X	
<b>Certification</b>				
C1	Define and maintain the EETS Test and Certification policy.	IM	X	
C2	Define and maintain the Test documents (test standards, test specifications etc).	IM	X	
C3	Manage the certification organization and processes involved.	IM	X	

**INDICATION OF SERVICE PREFERENCES**

The Service requirements as set out below are an indication of the preferences expressed by the other stake holders in the EETS system as regards the Governance, compliance and certification role.

Toll Charger and EETS Provider requirements:

- No discrimination between Toll Chargers as regards the requirement to comply with and to operate within the rules and regulations of the Interoperability Management Body.
- Any applicant will be accepted who agrees to comply with the rules and regulations of the Interoperability management and the code of practice
- Well trained and professional personal to address and resolve critical issues in a timely manner.



- one contract, one invoice for usage of any toll road in EETS countries
- An EETS User must have access to same commercial conditions on tolls as any national EETS user (stated in the EETS Contract with Users)
- Responsible for common approach to the certification of third party hardware and software to be used by the other actors in the delivery and use of the EETS system (Toll Chargers, EETS Providers and their end users).

**MAIN CONSTRAINTS**

**Legal/Fiscal**

- How to best establish the Governance and Certification Organization from a legal entity point of view.
- From a fiscal perspective, what could be the preferred location(s) of the organization?

**Contractual**

- Defining and maintaining the Core Contracts which contain all the terms and conditions which are to be common for all contractual relationships between the parties.
- Criteria to include new candidate EETS Providers and Toll Chargers into the EETS membership

**Operational**

- Management of the “White” List, this being the list of accredited members of the EETS together with the agreed contractual details pertaining to each contract
- Registration of the certified manufacturers of hardware, firmware and software used to provide interoperability for the EETS.
- Periodic audits of the EETS contracting parties to ensure they are operating in accordance with the agreed performance parameters.

**Technical**

- Agree on the technology to be deployed, managing the release of updates.
- R&D function to keep abreast of innovative ways to keep the EETS current and to take advantage of any break –through involving new technologies which could be utilized in the EETS system.
- Certification of third party hardware and software for use by the members of the EETS.
- Ensure compatibility of the various systems used by members of the EETS.

**SERVICE LEVEL**

A common basic set of rules for the interoperable service and the rules and regulations governing the operational and legal basis for each of the members of the EETS (Toll Chargers and EETS Providers) must





be defined in order to ensure that there is a mutually agreed basis for the parties working together and for the exchange of information to allow each party to fulfill its business mission and legal obligations towards both their s and the legal and fiscal authorities.

In addition to the legal and operational guidelines there needs to be, in addition, a clear set of the technical specifications and update/revisions for both the on-board and off-board equipment (hardware, firmware and the operating and application software) to ensure that there can be seamless on-going communications between the parties at all times.

The complete suite of documentation and technical specifications should be kept under a revision-controlled environment and be readily available to both existing members and new applicants at all times

## BASIC FUNCTIONS AND DESCRIPTION

### GOVERNANCE

G1. Define and maintain the EETS Core service definitions, rules and regulations required for interoperability: This ensures that parties operate under the same, commonly understood and accepted, rules and regulations;

G2. Define the rules to settle disputes between members:

Provides a common set of principles and procedures to be followed in cases where members refer their dispute for resolution to the common organization;

G3. Maintain and issue the authoritative list of contracting parties:

Provides visibility to both internal and external parties of the membership of the EETS service;

G4. Define and maintain the procedures for the distribution of certified equipment and/or its software:

This helps all parties to understand the correct method for ordering, configuring and distribution of the EETS related equipment;

G5. Ongoing audit review of OBE/RSE/CS compliance:

To provide comfort that the parties are using the equipment that is both properly certified and which equipment is being used in the correct manner;

G6. Operate and maintain the common organization:

Acts as the primary vehicle for the communication to, from and between the members on matters of common concern and to help ensure the goals and objectives of the organization are mutually understood;

G7. Define, maintain and issue, if necessary, model standard contracts for co-operation between actors:



Provides the basic legal framework which all parties agree upon as being the basic ground rules to qualify for membership of the EETS system;

G8. Define and maintain ID-schemes and, if necessary, support the issuing of ID's:

Facilitates a controlled, logical and non-duplicated, system for the issuing of ID's to the user community and which allows both Toll Chargers and the EETS providers to exchange billing information in a common format;

### **CERTIFICATION**

C1. Define and maintain the EETS Test and certification policy:

Allows all the existing and potential new manufacturers to understand the guidelines under which they must QA their equipment if they wish to provide their equipment to the EETS community;

C2. Define and maintain the required test documents (test standards, test specifications, conformity declarations, etc.):

Helps equipment manufacturers to understand the specification, quality and functionality required of equipment to be used in the EETS environment and is the basis upon which their equipment will be judged for certification purposes;

C3. Manage the certification organization and processes involved:

Gives direction and guidance to third party certification bodies as to the manner in which they conduct their activities as regards the certification of third party manufactures of EETS related equipment;



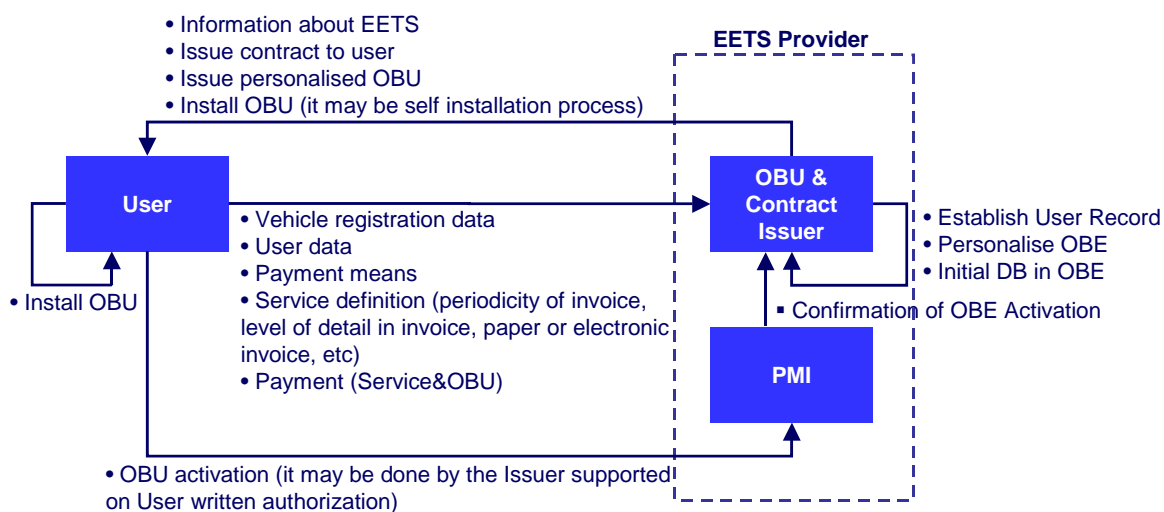
### 4.3 Contract Issuing

<b>SERVICE COMPONENT</b>	<b>Contract Issuing</b>
--------------------------	-------------------------

**SERVICE DESCRIPTION**

In general terms this Service Component follows the following process:

- The EETS Provider supplies information regarding the EETS Service to the User (commercial, service subscription, service usage, etc);
- The User supplies required User and vehicle information (in some cases the EETS Provider may require proof of supplied information);
- The User indicates an accepted payment means (or bank account) to support the EETS (OBE validation/activation);
- The EETS Provider records supplied data in User Data Base;
- The EETS Contract is issued to the User; (;
- The OBE is personalized with required data according to Vehicle Group (defined in EG2) and supplied to the User;
- The OBE is installed in the vehicle by the EETS Provider or by the User, depending on EETS Provider definition (it will depend mainly on the complexity of the OBE, need to interface to power supply equipment and other devices of the vehicle, etc). In case of a self-installation scheme (installation performed by the User) appropriate written instructions shall be provided by the EETS Provider.





The following table identifies the different functions, the respective roles involved and the level of interoperability needed for the EETS :

EETS SERVICE COMPONENT AND FUNCTIONS		Roles	Interoperability needs	
			YES	NO
<b>CONTRACT ISSUING</b>				
CI.01	Issue contract to user	EP	X	
CI.02	Associate payment means to OBE	US	X	
CI.03	Inform user on service	EP	X	
CI.04	Acquire vehicle registration information	EP	X	
CI.05	Acquire User information	EP	X	
CI.06	Establish user record (contract/OBE)	EP	X	
CI.07	Establish user payment account	EP	X	
CI.08	Personalise OBE	EP	X	
CI.09	Initial database in OBE (map, tariffs)	EP	X	
CI.10	Issue OBE to user	EP	X	
CI.11	Install and mount OBE	EP/US	X	

### INDICATION OF SERVICE PREFERENCES

The service preferences listed in this section are the result of enquiries to different entities throughout Europe and to the know-How and experience of the WP2 members.

#### Preferences from the User point of view

- no charge for EETS service subscription or usage besides toll value (tolls charged should cover the EETS costs);
- one single point of contact for all EETS related issues (contract management, invoicing, OBE technical support, doubts on charged values, etc);
- contract in native language and/or English;
- simple and quick subscription process;
- subscription locations at easy reach, and if possible through the WWW and e-mail;



- flexibility in terms of service configuration/options;
- use of already existing payment means;
- may wish to define specific format for the invoice (level of detail received, periodicity, etc);
- may wish to express privacy rules in what concerns the future use of his personal data supplied to the EETS Provider (block receiving of commercial announcements, delivery of personal data to other companies, even within the same Group, etc);
- well trained personal to clarify user on service usage, costs and options;
- one contract, one invoice for usage of any toll road in EETS countries;
- one contract should support more than one OBE;
- EETS an extension of the national EFC Contract;
- OBE available at EETS Subscription sites and real time personalization and activation;
- easy to use and reliable OBE;
- OBE installation instructions made available at subscription;
- OBE should be easily self installed by the user;
- OBE can be moved from one vehicle to another, even of different tariff class, after formal request to EETS Provider and consequent required OBE personalization modifications;
- dedicated desks for service subscription (reduce waiting time at subscription sites);

#### **Preferences from the Toll Charger point of view**

- reliable subscription process (personal and vehicle data confirmed);
- only MoU Issuers shall be allowed to issue EETS contracts;
- reliable information on basic requirements for service usage and that the client is well aware that only complying to those requirements may use the EETS ;
- subscription not possible for users on the black list;
- supplied OBE must be certified;
- personalization of OBE including all mandatory vehicle parameters for vehicle tariff class determination;
- Issuers to be made responsible for revenue loss due to problems on the OBE personalization data or mistakes or delays on the black list management;
- The vehicle registration is requested to the user at the EETS subscription phase and/or contractual changes;

#### **Preferences from the EETS Provider point of view**

- Reduce number of parameters to record on the OBE's for private cars (limit extent of personalization, a basic requirement in order to rapidly and cost efficiently deploy EFC systems);
- Reduce number of documents to request from User in order to validate relevant contractual data;



- User should be able to leave the subscription site with a valid contract and an active OBE ready for immediate use;
- The subscription process should be easy and quick for Users;
- An EETS User must have access to same commercial conditions on tolls as any national EFC user (stated in the EETS Contract with Users);
- Traceability on black list management and OBE personalization data is required in order to decide on responsibilities in case of loss of revenue by the Toll Charger;
- Toll Charger cannot refuse the acceptance of an OBE issued by an MoU accepted EETS Provider, which is not included in the black list;
- A User in a black list may not have access to the EETS Service by changing to a different EETS Provider and supplying a different payments means.

**MAIN CONSTRAINTS**

**Legal**

- Legalize User and Event Data Base (Personal Data Protection National Agency)
- Legal requirement to obtain (or not) User signature on EETS subscription documents
- Management of Black Lists
- OBE Warranty and type of occurrences covered
- Battery Warranty
- User authorization to use mobile contacts for SMS purpose (relevant for operational reasons)
- Legal constraints applicable to the supply of User data to a foreign Toll Charger (for example for enforcement purpose)

**Contractual**

- Contractual requirements deriving from the relationship between the EETS Provider and Toll Charger may have implications on the Contract between the EETS Provider and the User;
- Requirements deriving from rules set by the EETS Regulatory Entity;
- Specific User documents may be required in case of EETS subscription by companies;
- Extension of local contracts to EETS not possible if local toll service provider is not EETS provider;
- Use of existing OBE from Toll Chargers by EETS Providers;

**Fiscal**

- Applicable VAT values and authorized declaration formats (also language issues)
- Legal obligations for the EETS Provider in terms of invoices (including electronic invoice)
- Legal framework to issue statements/invoices on behalf of Toll Chargers

**Operational**

- Need to verify original data supplied by the User through original documents may limit the use of the WWW and mail distribution channels;
- Need to obtain User signature on subscription documents may limit the use of the WWW and mail distribution channels;
- Activation time between the service subscription/OBE personalization and the service usage;
- Management of Black List (impact on revenue assurance);
- Agreed Criteria to include a User in a Black List;
- Real time subscription difficult without local presence on the road network;
- Need of certified personalization equipment on every subscription site in case real time service is intended;
- All OBE's shall be tested before delivered to the User. In of-the-shelf sales, stocks shall be checked periodically;
- Self installation difficult for complex OBE;

**Technical**

- Only Certified OBE shall be supplied by the EETS Provider;
- In case the OBE installation requires professional intervention, only certified entities shall perform such activity;
- Even in a self installation scheme, some special vehicles may require installation by the EETS Provider;
- Accepted security mechanisms implemented in order to guarantee safety of User and vehicle data stored on the OBE and to minimize fraud;
- The use of several OBE (of one or more EETS Providers) for the same vehicle can lead to handling problems in the central system of some Toll Chargers;

**SERVICE LEVEL**

Depending on the commercial policy defined by each EETS Provider, different commercial channels are foreseen as possible, namely:

- distribution sites managed by the EETS Provider;
- distribution sites managed by agents acting on behalf of the EETS Provider (sites with EETS and National EFC Services as exclusive product/service);
- distribution through agents where the EETS and/or National EFC Service are just one more product (banks, Post Office, Car Selling Sites, etc);
- Through the EETS Provider Web Site;
- Through mail;



- Special promotion sites (gas stations, shopping centres, etc);
- Vending Machines.

It is fundamental that service subscription procedures and requirements are maintained as uniform as possible regardless the distribution channel, and that subscription reliability and security issues are maintained at minimum required level.

The Contract Issuing to the User shall conform to the following minimum service level requirements:

#### **I – Subscription Channels with personal contact between EETS Provider (or agent) and User**

- Different Service Subscription Channels shall have same subscription requirements and procedures (EETS Provider shops, agents, specific and mobile promotion sites, etc);
- Service shall be real time activated, this is, the OBE when acquired and received, at contract subscription or later, may be immediately used by the User;
- Regarding relevant personal data requested at the subscription stage and for that information critical in terms of contract management (ex: address) some type of prove shall be requested to User (original/copy document such electricity bill, etc, and copies may be kept);
- Vehicle data required for the subscription form and for the OBE personalization shall be verified through official (original or copy) vehicle documents used in each country (copy of such documents may be kept);
- Unlimited number of OBE´s may be requested under the same contract (contract document must support fields to declare unlimited number of vehicles and OBE´s, using for example an attachment to declare more vehicles and OBE´s than those that the contract main document can support;
- For the same vehicle more than one OBE can be requested (from the same or different EETS Provider). It is the User responsibility to have only one OBE installed in the vehicle at each time;
- All Users shall be supplied with a simple and reliable set of instructions on how to install the OBE and verify at first time on tolled road if the service is working properly;
- All clients shall receive written information on the main rules applicable to the EETS Service, including EETS lanes Identification, type of service information supplied on lanes at service usage, invoicing, procedure in case of service malfunction or doubt about the service, regardless the EETS country, technical assistance, etc;
- All Users shall receive written instructions on main contract management phases (change of address, change of OBE from between vehicles, alarm/notice of low battery, notice for OBE software upgrade, notice of OBE malfunction, problems with payment means associated with the OBE, etc);
- In case the contract subscription form is filled in electronically by personal of the EETS Service Provider, the User shall be requested to verify all filled in data before signing the contract and eventual attachments;





- The OBE supplied shall be tested (mobile reader/interrogator) before being delivered to the User.

## II – Remote Subscription Channels (WWW, mail)

- In case the subscription is requested through the mail, whatever requirements and sequence followed in each country, the EETS Provider shall guarantee a maximum of X days from first request to OBE delivery (deducted from delays attributed to the User);
- Copies of requested documents (personal and vehicle) shall be sent along with the subscription request;
- In case the User claims that the OBE has not been received, the EETS is responsible to supply a new OBE and to set previous one to state “Wanted” or include it in the Black List;
- All relevant information, including installation, contract management and using instructions must be sent to the User with the OBE;
- The OBE sent must be previously tested (mobile reader/interrogator). Due to additional damage to the OBE that may result from this type of delivery, the delivery letter should request the User to verify carefully the signalling being shown at the first passages and to report to the EETS Provider in case the lane signalling indicates that some type of problem exists;
- The EETS provider has to guarantee that the OBE cannot generate tolling transactions while being shipped to the ;

## BASIC FUNCTIONS AND DESCRIPTION

### CI.01 – Issue contract to the User

The issuing of the EETS Contract to the User can take place through personalized channels (EETS Provider shops, agents, provisory promotion sites) or through remote channels (mail, EETS Provider’s web site and vending machines). The EETS can be an extension of the national EFC Service, as long as the National EFC Service is also an EETS Provider. The User may request the EETS contract in national language or in English. The contract shall be part of a subscription kit, including besides contractual text (general and particular conditions), the subscription form, and pamphlet detailing the main aspects of the EETS service (way to use, service payment, how toll payment is performed, service identification on roads, support service, etc). For Users with an EFC Contract already active, the acquisition of a new OBE needs not the subscription of a new Contract. New OBE’s may be added to the same Contract if so desired by the User. In the same EFC Contract with several OBE’s covered, some may have the EETS service active and others not. The service subscription form must allow the User to declare if he wishes the EETS service on a per OBE basis. Documents required (personal and vehicle) and OBE personalization must comply with the description of the respective functions described below.

It is advisable that clients on the black list as a specific EETS Provider are made known to all other EETS



Providers in order to reduce financial risk amongst EETS Providers. The conditions applicable to such list and its management must be previously set.

#### **CI.02 – Associate payment means to OBE**

The EETS may accept pre-payment or post-payment schemes. In either situations the User is attributed a central account on an EETS contract basis (the same User may have different Contracts, each with a different Central Account). In case of a pre-payment scheme, payments should be possible on ATM machines in every EETS country (standard application to be developed by the bank system of all EETS countries), or if possible through a contact center reachable by the User in whatever country he is in. In order to facilitate the User and reduce the probability of service unavailability, the EETS should provide a pre-payment scheme in which the could allow for an automatic credit loading through a debit in a specific bank account when the credit accumulated in the pre-payment account is below a certain amount. Both limits, the value loaded and the lower limit of the pre-payment account, could be set at contract subscription, and changed later if needed. In case of the post-payment scheme, the payment can be performed through real time debit in a bank account indicated by the User at contract subscription or in specific cases, the EETS Provider may offer the possibility to issue periodic invoices to the User, covering all services used during respective period. This delay in revenue recovery may not be transferable to the Toll Charger. In some countries it may happen that the bank account is not indicated at the EETS subscription phase, but rather through an ATM machine where the OBE Identification (or a PAN) is associated with a bank account and/or a debit/credit card number. In this case only the bank system controls the correspondence between the OBE Identification and the bank account, and not the EETS Provider.

#### **CI.03 – Inform user on service**

An EETS User is informed about the main aspects of the service and its evolution through different means, namely:

- Service brochure at EETS Provider sites;
- Service brochure at sites of EETS actors (Principal, TSP, EFCO, CI, PMI);
- Service brochure at the websites of the EETS Provider agents;
- Web sites of EETS actors;
- Periodic information included in Invoices of national EFC Service;
- Special promotion/information campaigns conducted by EETS actors and specially those conducted under coordination and financing from the EETS Management;
- Service brochures at travel agencies, hotels, etc;
- The Contract itself, should include most relevant information, complemented with brochures and instructions supplied at the EETS subscription phase;
- Information on automatic and non automatic OBE update procedures;



Independently of the channel chosen by the User, the following EETS service information shall be supplied:

- EETS Service identification (logo) and where it is expected;
- Subscription sites and schemes;
- Documents needed for the subscription process;
- Types of OBE's accepted and countries offering the EETS;
- Service basic behaviour depending on technology used in each country (group by DSRC, GNSS, etc)
- Service invoicing;
- Procedure in case of complaint (malfunction of service, toll values, content of invoice, etc);
- support sites and helpdesk contacts;
- Procedure in case of need to update of User and/or vehicle data update;
- Service subscription and usage costs;
- Special information channels (telephone, email, SMS, mail, newspapers, etc) and information formats may be adopted in specific situations, like for example in case of OBE call for HW or SW upgrade/modification, special OBE technical verification, etc;

#### **CI.04 – Acquire vehicle registration information**

The type of required documents may depend on whether the User is an individual entity or a company.

EETS Provider should confirm the following data:

- personal data (name and address)
- vehicle data (vehicle model, license plate and other parameters eventually relevant for OBE personalization)

The EETS provider may request copies of those required documents. The vehicle data required will be set by the EETS Provider and not limited by the contents of the vehicle documents issued by the country where the vehicle is registered. It may be necessary that the vehicle owner is requested to use a certified vehicle inspection center so that certain required vehicle parameters are evaluated and reported by this certified entity.

All the data above mentioned will be part of the User file, kept by the EETS Provider. In order to facilitate future contract management, it may be advisable to digitalize these documents in order that all support sites of the EETS provider may have real time access to these documents whenever required. For those vehicles where declared parameters in the OBE may change over the lifetime of the vehicle, it may be necessary that the User exhibits documents following measurement or certification processes that the vehicles experiences during its lifecycle. Copies of these documents may also be kept. Depending on the technology used by each EETS Provider it may be necessary that the OBE is taken-in for recording of changed parameters. Others may allow remote updating.

**CI.05 – Acquire User information**

User information required for EETS subscription depends on the nature of the entity – individual or company. In the first case, name, address and fiscal number shall be a minimum. In order to facilitate contract management, other information may be requested, such as person for contact, email address, telephone number (fixed and mobile). Due to the relevancy of some of this information, documents may be requested to make proof.

In case of companies, documents identifying legal representatives must be requested in order to verify the validity of the signature on the contract.

The database built with User information shall be registered at the National Data Protection Agency.

**CI.06 – Establish user record (contract OBE)**

Data supplied and recorded on the EETS subscription form is recorded in a licensed database, which includes details on the supplied OBE's. This information is maintained in a secure way according to laws related to data privacy. It is important that all personal interactions with the User are used to verify if the User record is updated (address, phone contacts, etc). The other EETS roles, may not build their own User databases based on information legally received from EETS Providers, for example for Enforcement purposes.

**CI.07 – Establish user payment account**

The establishment of the User payment account can be performed in different ways. It may performed in an automated way associating the OBE or a set of OBE's to a bank account through a bank card using an ATM machine, by identifying a bank account for toll payments at contract subscription phase or an account can be set by the EETS Provider for post payment scenarios. In this last case the User receives a monthly invoice form the EETS Provider, regardless of the commercial arrangements between the EETS Provider and the Toll Charger.

**CI.08 – Personalise OBE**

The OBE is personalized in a secure way by the EETS Provider, taking into account the requirements of the future EETS (vehicle and personal data). The initial personalization is performed at the OBE issuing phase, which may take place at the Contract Issuing moment. In order to avoid human errors the personalization should be performed in a fully automated way, loading parameters previously recorded in the EETS Central System during EETS subscription. It is desired that the personalization unit include a reading device to check the reliability of the values recorded in the OBE against those in the EETS Central System. On a



bilateral basis, it may happen that some countries agree between themselves to include additional vehicle information on the OBE personalization, which may be used for specific national reasons (classification schemes, special discounts, etc). The OBE may have to be personalized after some technical interventions (battery replacement, repair operations, etc). The equipment at these repair sites must be connected, in a secure way, to the EETS Central System, so that necessary vehicle and personal data is retrieved.

#### **CI.09 – Initial database in OBE (map, tariffs)**

In EETS countries where the OBE works in an autonomous way it may be necessary to load at the OBE issuing stage relevant service data such as maps and tariffs. It should be desirable that the loading of such information could be performed remotely through Toll Charger Road Side Equipment or through mobile communication network.

#### **CI.10 – Issue OBE**

The issuing of the OBE can take place at the EETS subscription or at a latter moment. Only certified OBE's are accepted for the EETS service. If the OBE and Contract issuing take place at different moments, the personalization must always be performed by the entity issuing the Contract.

#### **CI.11 – Install and mount OBE**

The type of OBE installation will mainly depend of the complexity of the equipment and the installation process. A self-installation process is desired for at least private Users. For more complex equipment, requiring specific technical skills, the EETS Provider will indicate installation facilities that are certified to perform the installation. In self-installation schemes, the User must be supplied with specific set of installation instructions, which shall cover very special situations such as motorbikes, vehicles with special windshields, etc.

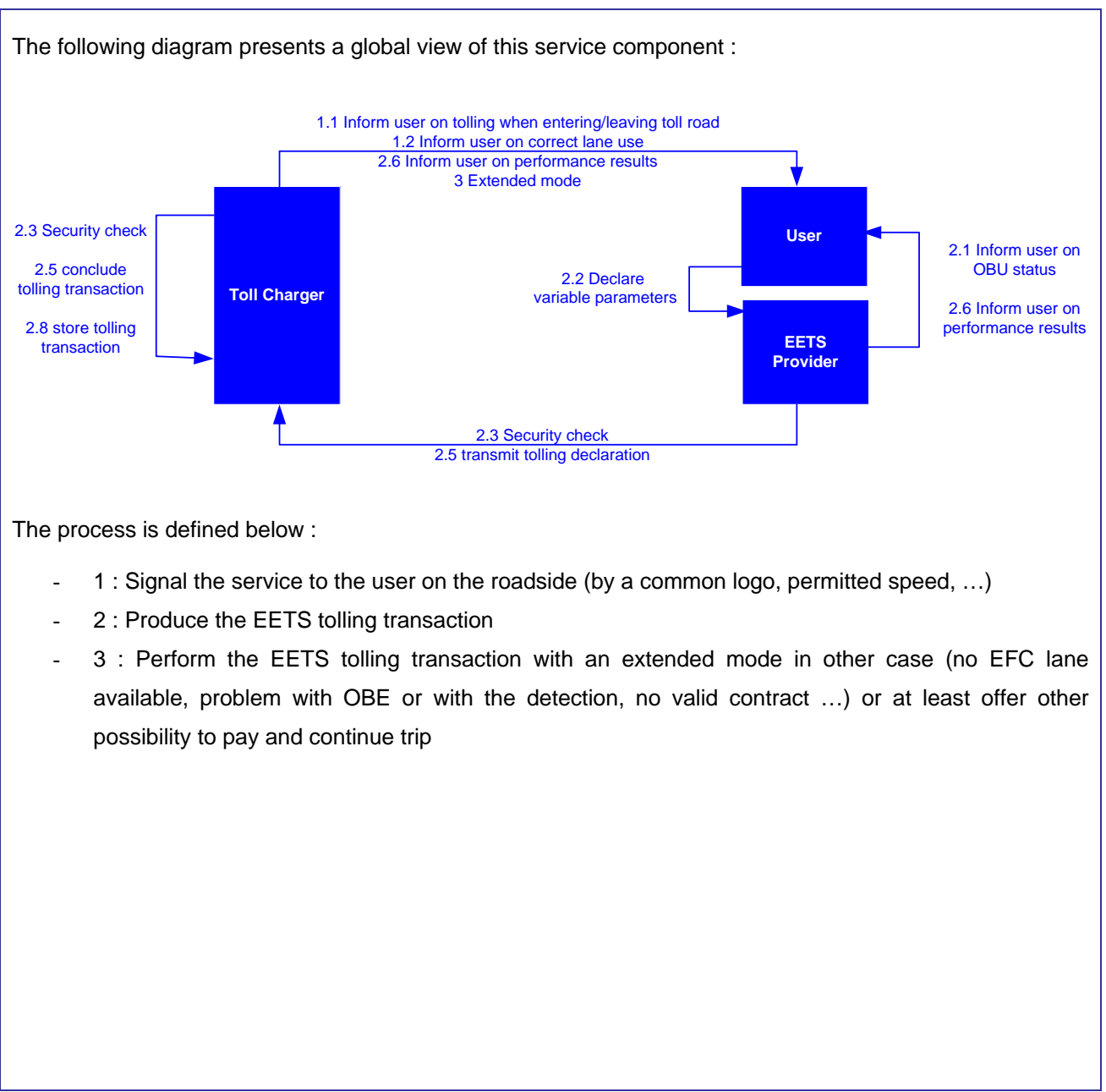


## 4.4 Service Use on toll roads

### 4.4.1 EETS Service Component definition from DSRC perspective

The following table represents detailed definition of the service component – Service use on toll roads, in all its relevant perspectives for a DSRC based system.

<b>SERVICE COMPONENT</b>	<b>Service Use on toll Roads - DSRC based Systems</b>
<b>SERVICE DESCRIPTION</b>	





The following table identifies the different functions, the respective roles involved and the level of interoperability needed for the EETS :

EETS SERVICE COMPONENT AND FUNCTIONS		Roles	Interoperability needs	
			YES	NO
<b>SERVICE USE ON TOLL ROADS - DSRC</b>				
<b>SU-DSRC 1</b>	<b>Service signalling on roadside</b>			
SU-DSRC 1.1	Inform user on tolling when entering/leaving toll road/network	TC		×
SU-DSRC 1.2	Inform user on : correct lane use	TC	×	
<b>SU-DSRC 2</b>	<b>Produce tolling transaction</b>			
SU-DSRC 2.1	Inform user on OBE status	EP		×
SU-DSRC 2.2	Declare variable vehicle parameters	US	×	
SU-DSRC 2.3	Validity check (in real time)	TC	×	
SU-DSRC 2.4	Transmit tolling transaction	TC	×	
SU-DSRC 2.5	Conclude tolling transaction	TC		×
SU-DSRC 2.6	Inform user about performance result	TC	×	
SU-DSRC 2.7	Store tolling transaction	TC		×
<b>SU-DSRC 3</b>	<b>Extended mode</b>			
SU-DSRC 3.1	Offer extended mode	TC	×	

Toll Charger and EETS management are involved in the service component “service use on toll roads” for the functions which are a need for interoperability.



## INDICATION OF SERVICE PREFERENCES

### Preferences from the user point of view

- There should be a common logo identifying EETS service availability
- The EETS logo shall identify lanes to be used (if necessary).
- Signalling should be installed at high-way entrance indicating EETS availability.
- The EETS shall be available at every toll charging point.
- High availability of the EETS regarding single toll transactions.
- The status of the OBE in terms of functionalities shall be signalled to the User.
- Value of transaction shall be presented to the User;
- A EETS card associated with the EETS OBE shall be made available for payments outside EFC lanes (supported on same central account).
- There should be no lifting bars on EETS lanes.
- At transaction declaration point there should be feedback on transaction performance result (sound or visual signal on the OBE or on roadside).
- Known procedure to adopt in case of non-valid transaction, avoiding to be pursued as a violator
- As much as possible. EETS usage shall be similar in all EETS countries thus contributing to facilitate the usage and avoid violations.
- User related data in the OBE should be protected toward privacy threats.

### Preferences from the Toll Charger point of view

- There should be one common logo for the service. An additional logo can be used simultaneous.- see above.
- The OBE status shall be signalled to user and shall be logged (for legal reasons).
- Non-valid transaction shall be communicated to the user immediately.
- Valid transaction, with correspondent value, shall be presented to the User.
- Toll Charger shall be able to check if the transaction is from authentic OBE of an EETS Provider and the authenticity of collected data.
- List of withdrawn payment guarantee shall be as small as possible (because of real time check)
- OBE shall be fixed to the vehicle (avoid involuntary violations due to OBE misplacement).

### Preferences from the EETS provider point of view

- A common service logo
- Use of extended mode as specified in CESARE II
- Visual or sound signals for non conformant transaction
- Same behaviour for the EETS OBE in each TSP/EFC
- Provision of list of s with withdrawn payment guarantee





- EETS provider shall be able to check if the transaction is from his user (authenticity)
- EETS provider shall be able to check if the transaction has not been altered (integrity)
- Protection against unauthorized use of OBEs.

## MAIN CONSTRAINTS

### Legal

- Signalling should be installed at high-way entrance indicating EETS availability.
- The indication on the OBE of the transaction value to User may be a legal requirement in some country, but not a mandatory system.

### Contractual

- Main service usage rules shall be included in EETS Contract.

### Operational

- Value of transaction cannot be displayed in all systems, fee sometimes calculated in the back-office

### Technical

- Possibility to check black list in real time.

## SERVICE LEVEL

A common basic set of rules for the service usage must be defined in order to ensure the interoperability needs and the clear identification of the service by the user.

That's why we can consider that the 3 main goals must be considered for a good service level :

### I - An easy and quick identification by the User of the service on roadside

- A common logo for the EETS must be defined and will be included in all dedicated EFC lanes
- EETS accepted at every toll charging point

### II – Producing an authentic and secure tolling transaction

- List of s with withdrawn payment guarantee must be provided by EETS Provider
- Agreed transaction and security
- Agreed feedback information



- Availability of the EETS regarding a single toll transactions >99.xx%
- Good and reliable data for producing claims.

### **III – Ensure the possibility to the User to pay the fee in an alternative way (extended mode)**

- In case of unavailability of EFC lane or invalid transaction
- Eventually the alternative allows to use the EETS payment means (e.g. same fuel card as assigned to OBE)

## **BASIC FUNCTIONS AND DESCRIPTION**

Service usage involves the following functions which will involve procedures described under WP5. The following text intends to identify relevant functions included in this Service Component, a brief description on each function, and some guidelines for the procedures to be developed under WP5:

### **SU-DSRC 1 : Service signalling on road side**

The user must be able to identify where he is obliged to pay and where he will have to go. For that purpose, the main functions are :

#### **SU-DSRC 1.1 : Inform User on tolling when entering/leaving toll road network**

- A User shall be informed when he enters or leaves the tolled road network or the tolled area. This is a general tolling issue relevant for all Users, not only applicable to EETS Users. Therefore it is not relevant for EETS interoperability.

#### **SU-DSRC 1.2 : Inform user on correct lane use**

- If special lanes have to be used these have to be indicated to the User by the EETS logo (lane speed limitations and lane availability are indicated as well).

### **SU-DSRC 2 : Produce tolling transaction**

The User must be able to identify where he is obliged to pay and where he will have to go. For that purpose, the main functions are :

#### **SU-DSRC 2.1 : Inform user on OBE status**

- The OBE status is available to users, the user can check the correct functioning of the OBE
- The user can judge if he can expect correct functioning of his OBE

#### **SU-DSRC 2.2 : Declare variable vehicle parameters**

- The user has to declare the variable vehicle parameters according to the local needs (i.e. axles in Austria)

**SU-DSRC 2.3 : Validity check (in real time)**

- The Toll Charger will check in real time with its local database if the OBE of the User has a valid contract type of the EETS Provider, if the OBE/PAN is not blacklisted and if all technical security checks are ok. If all checks are positive the tolling transaction can be performed.
- The Toll Charger needs from the EETS Provider a list of contract types for EETS, a Black list and security keys ,

**SU-DSRC 2.4 : Transmit tolling transaction**

- According to the DSRC specifications the tolling transaction has to be performed under the control of the Toll Charger.

**SU-DSRC 2.5 : Conclude tolling transaction**

- The tolling transaction has to be concluded by the Toll Charger. The tolling transaction can be identical with the toll declaration in case all relevant factors (e.g. fee) can be included in in real time during the exposure time of the OBE to the RSE influence, or may be processed out of the toll declaration at a further back office stage in the Central System of the Toll Charger in case some relevant factors are not available in real time. It is in any case the responsibility of the Toll Charger

**SU-DSRC 2.6 : Inform user about performance result**

- Valid and non-valid transactions have to be indicated to the user through a HMI on the OBE or at least at the RSE.

**SU-DSRC 2.7 : Store tolling transaction**

- After having concluded the tolling transaction, the Toll Charger has to store the data transaction (conformant or non-conformant transaction)
- This data could used for statistics (by Toll Charger or EETS management)

The valid toll transactions will be used for the Payment Service Component.

**SU-DSRC 3 : Extended mode**

Declaration of a valid tolling transaction in the extended mode by the user (manually or automatically with a local OBU) in case of the EETS malfunction. This could be charged directly by the Toll Charger (no interoperability needed) or will be used for the EETS Payment Services Component.

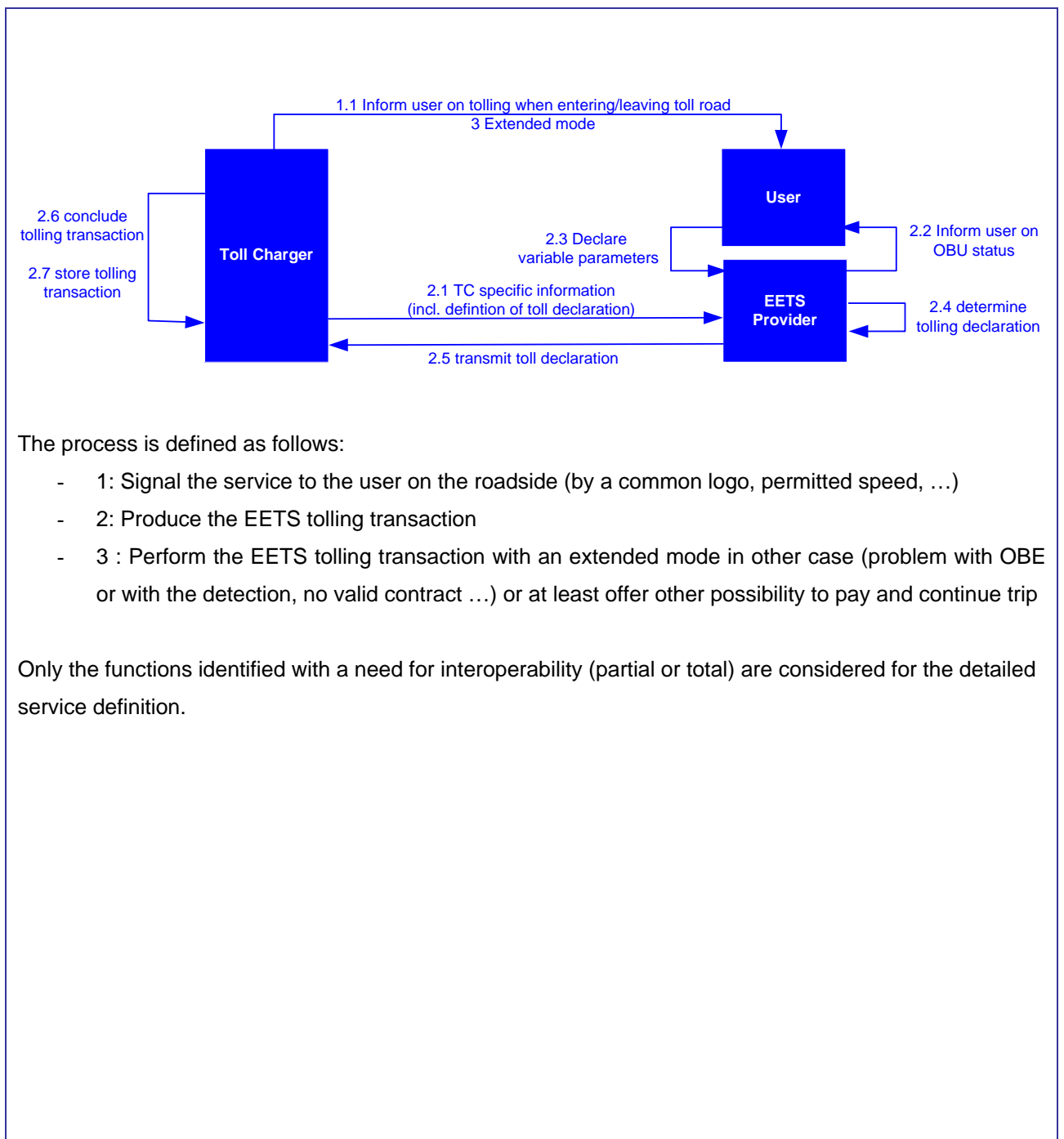


**4.4.2 EETS Service Component definition from GNSS perspective**

The following table represents detailed definition of the service component – Service use on toll roads, in all its relevant perspectives for an GNSS based system.

<b>SERVICE COMPONENT</b>	<b>Service Use on toll Roads - Autonomous systems</b>
--------------------------	---

**SERVICE DESCRIPTION**



The process is defined as follows:

- 1: Signal the service to the user on the roadside (by a common logo, permitted speed, ...)
- 2: Produce the EETS tolling transaction
- 3 : Perform the EETS tolling transaction with an extended mode in other case (problem with OBE or with the detection, no valid contract ...) or at least offer other possibility to pay and continue trip

Only the functions identified with a need for interoperability (partial or total) are considered for the detailed service definition.



The following table identifies the different functions, the respective roles involved and the level of interoperability needed for the EETS :

EETS SERVICE COMPONENT AND FUNCTIONS		Roles	Interoperability needs	
			YES	NO
<b>SERVICE USE ON TOLL ROADS – Autonomous Systems</b>				
<b>SU-AS 1</b>	<b>Service signalling on roadside</b>			
SU-AS 1.1	Inform user on tolling when entering/leaving toll road/network	TC		×
<b>SU-AS 2</b>	<b>Produce tolling transaction (GNSS)</b>			
SU-AS 2.1	TC specific information	TC	×	
SU-AS 2.2	Inform User on OBE status	EP		×
SU-AS 2.3	Declare variable parameter	US		×
SU-AS 2.4	Determine toll declaration	EP		×
SU-AS 2.5	Transmit toll declaration	EP	×	
SU-AS 2.6	Conclude tolling transaction	TC		×
SU-AS 2.7	Store tolling transaction	TC		×
<b>SU-AS 3</b>	<b>Extended mode</b>			
SU-AS 3.1	Offer extended mode	TC	×	

EETS management is involved in the service component “service use on toll roads” for those functions, which are needed for interoperability.



## INDICATION OF SERVICE PREFERENCES

### From service User point of view

- There shall be a common logo identifying EETS service availability- in our view this logo should be proposed and managed by the EETS Management entity.
- Signalling shall be installed at tolled roads indicating EETS availability.
- The EETS shall be available at every toll-charging domain subject to the Directive.
- High availability of the EETS.
- The status of the OBE in terms of functionalities shall be signalled to the User.
- Value of transaction shall be presented to the User (if possible).
- An EETS card associated with the EETS OBE shall be made available for payments outside EFC area (supported on same central account).
- At transmission of transaction there shall be feedback on transaction performance result (sound or visual signal on the OBE).
- As much as possible EETS usage shall be similar in all EETS countries thus contributing to facilitate the usage and avoid violations.
- User related data in the OBE shall be protected from privacy threats.
- Easy and quick installation of OBE.

### From Toll Charger point of view

- There should be one common logo for the service. An additional logo can be used simultaneous.
- The OBE status shall be signalled to User and shall be logged.
- Non-valid generation of toll related data shall be communicated to the user immediately.
- Valid transaction, with correspondent value, shall be presented to the User. (Not mandatory)
- Toll Charger shall be able to check, if the transaction is from authentic OBE of an EETS Provider, and the authenticity of collected data.
- OBE and sensors shall be fixed to the vehicle (avoid involuntary violations due to OBE misplacement).
- On-Board fraud detection must be possible.
- Certification of the toll charging value chain incl. EETS Provider and suppliers.

### From EETS Provider point of view

- A common service logo.
- Use of extended mode.
- Visual or sound signals to the User for non-conformant transaction.
- Provision of list of s with withdrawn payment guarantee to Toll Chargers.
- EETS provider shall be able to check if the transaction is from his user (authenticity).



- EETS provider shall be able to check if the transaction has not been altered (integrity).
- Protection against unauthorized use of OBEs.
- Possibility of value-added services using OBE.

**MAIN CONSTRAINTS**

**Legal**

- Toll Chargers require User to maintain correct OBE function while driving on tolled roads.
- Toll Chargers require User to operate OBE according to the toll domain rules (e.g. declaration of variable parameters)
- Being on a toll road and value of transaction cannot be displayed in all systems, map matching and fee calculation can also be executed in the back-office.
- Liability in case of s complaints for tolling transaction.
- Liability in case of no tolling (malfunction OBE, manipulation), especially in case when being in a foreign country.
- Responsibility in case of correct functioning of the OBE but failed central processing at the EETS Provider.

**Contractual**

- Main service usage rules shall be included in EETS Contract.
- Acceptability of off-board processing data at EETS Provider.
- Responsibility of road data, tariff model and change management.

**Fiscal**

- In some toll schemes determined by state authorities there is one institution acting as unique Toll Charger collecting all toll revenue.

**Operational**

- Transmission of toll data is depending of specific solution of EETS Provider.
- EETS Provider has to support several technical and procedural solutions as given by the Toll Chargers.
- Interaction between EETS Provider and each Toll Charger in the back-end systems.
- Implementation of support infrastructure between EETS-Provider and Toll Charger, especially if several autonomous EETS solutions are realised.
- Implementation of framework for data exchanging (e.g. black/white list).
- Definition of security aspects (Implementation of black list)

**Technical**

- Fraud detection of sensors and data transmission.
- Need for update mechanisms in case of onboard processing.



## SERVICE LEVEL

The service level in an autonomous system depends from the implementation in the OBE. To guarantee a high service level there must be a certification and audit process implemented to bring in OBE in the EETS Concept. Furthermore a yearly update should ensure to keep high service levels.

Otherwise it is necessary to keep the user acceptance as high as possible; therefore transparency in the tariff model and the charging process is needed. Each user should understand the monthly bill and should see his driven and tolled routes. In case of incorrect function the user must be informed and another payment method should be available.

## BASIC FUNCTIONS AND DESCRIPTION

Service usage involves the following functions that will involve procedures described in WP5. The following text intends to identify relevant functions included in this Service Component, a brief description of each function, and some guidelines for the procedures to be developed under WP5:

### **SU-AS 1 - Service signalling on road side**

The User must be able to identify where he is obliged to pay and where he will have to go. For that purpose, the main function is:

#### **SU-AS 1.1 Inform User on tolling when entering/leaving toll road network**

- A User shall be informed when he enters or leaves the tolled road network or the tolled area. This is a general tolling issue relevant for all Users, not only applicable to EETS Users. Therefore it is not relevant for EETS interoperability.

### **SU-AS 2 - Produce the EETS tolling transaction**

#### **SU-AS 2.1 TC specific information**

- The necessary toll rules (e.g. tariff, map data, etc) should be provided.
- The definitions of these toll rules are done by the Toll Charger, respecting some general rules according to European standardisation (e.g. classification, restrictions by EETS concept). The toll rules include the definition of the toll declaration required by the Toll Charger. The toll declaration may include sensor data or further processed data, e.g. route segments.
- The EETS Provider organises the installation and update and he is responsible for the correct functioning of the OBE.

#### **SU-AS 2.2 Inform Users on OBE status**





- The OBE status is available to Users, the User can check the correct functioning of the OBE
- The User can judge if he can expect correct functioning of his OBE

**SU-AS 2.3 Declare variable vehicle parameters**

- The User has to declare the variable vehicle parameters according to the local needs (i.e. axles)

**SU-AS 2.4 Determine toll declaration**

- The OBE and/or the Central System of the EETS Provider generate the toll declaration.
- The Toll Charger has to accept the way its toll declaration is determined (according to the specified toll rules).

**SU-AS 2.5 Transmit toll declaration**

- The EETS Provider transmits the toll declaration to the Toll Charger.
- The EETS Provider is responsible for the normal operation

**SU-AS 2.6 Conclude tolling transaction**

- The transmitted toll declaration will be concluded by the Toll Charger at the central service site to the EETS tolling transaction.

**SU-AS 2.7 Store tolling transaction**

- The concluded EETS tolling transaction will be stored at the central service site for service component payment
- This data could be used for statistics (by Toll Charger or EETS Management)

**SU-AS 3 – Extended mode****SU-AS 3.1 Offer extended mode**

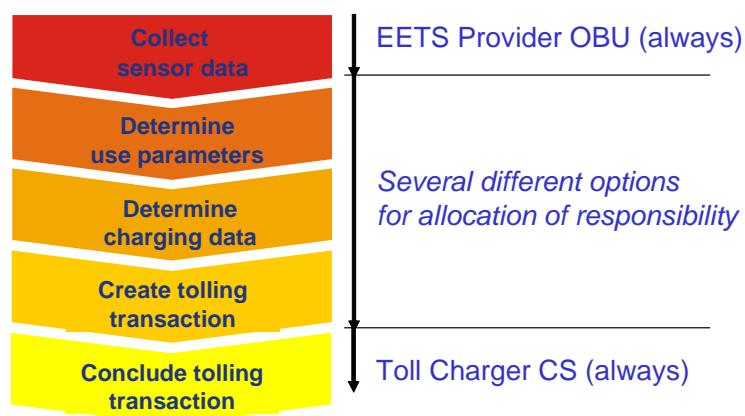
The user will be able to pay the fee with :

- Magnetic/chip card associated with the EETS OBE (extended mode). The EETS provider has to provide this type of alternative payment mean.
- Payment with other payment means (cash, debit/credit card, etc)

In specific cases, where the User may be held responsible for the non-conformant transaction, administrative costs may be applicable.

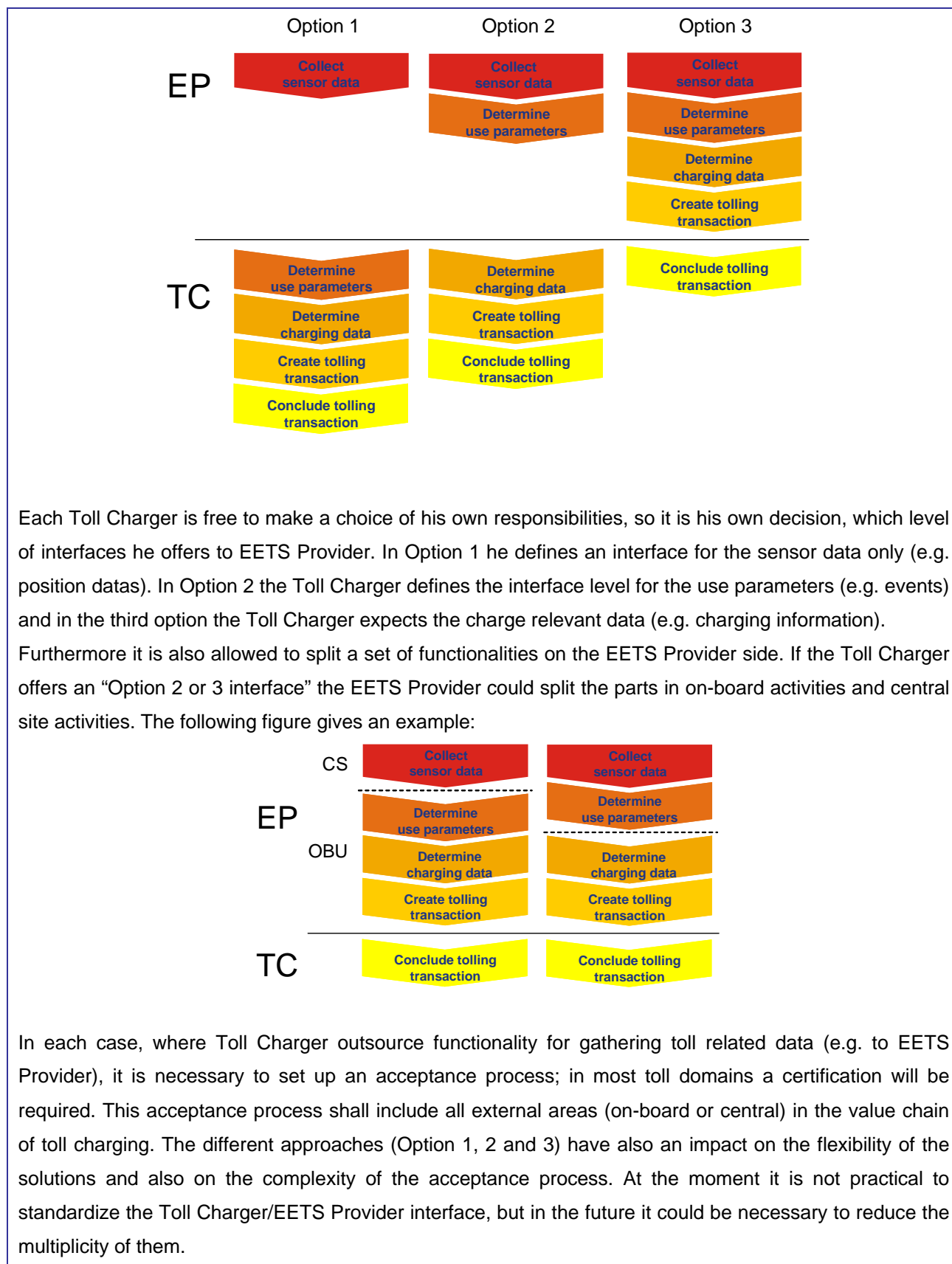
Furthermore the described situation is the ideal end-scenario. Today there are different autonomous toll schemes implemented in Europe (currently Switzerland, Germany) and other member states are in the preparation phase to use autonomous systems for their toll schemes (e.g. UK, Nederland, Sweden).

The different requirements from the different toll chargers will produce a different level of integration for each single solution. These levels will be:



- **collect sensor data** covers functionalities like localization raw data, trailer sensors or users interactions. This functionality is always under the responsibility of the EETS Provider.
- **determine use parameters** means to create events (e.g. entering toll section, change trailer status, leaving toll section)
- **determine charging data** covers the pricing (e.g. generate the charging record)
- **create tolling transaction** covers the processing of the charging data to the tolling transaction
- **conclude tolling transaction** is the formal acceptance of the tolling transaction which is the input for the payment process. This functionality is always under the responsibility of the Toll Charger.

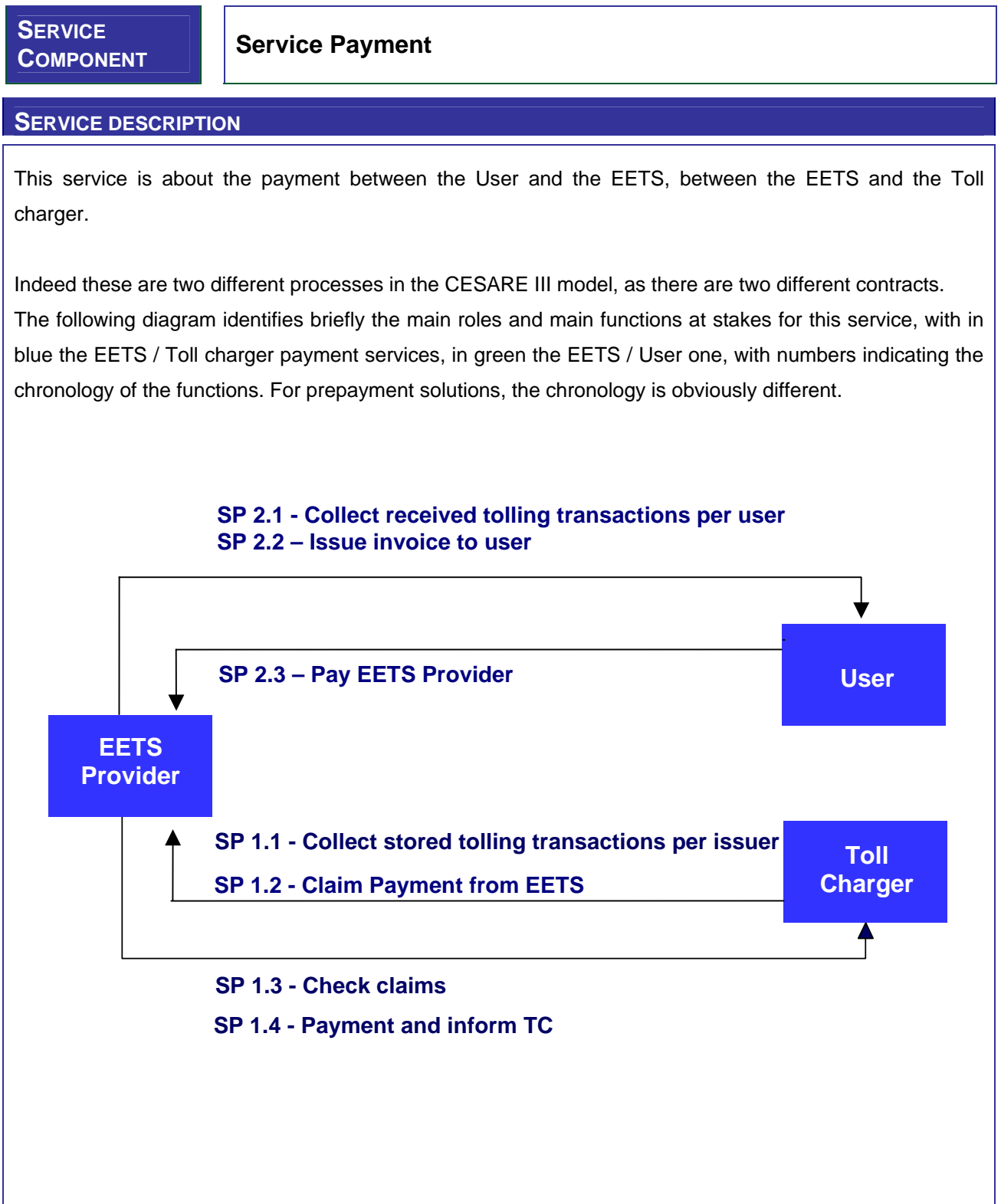
Today in the existing toll schemes the responsibilities of the whole value chain are only by the Toll Charger. Depending on the cut of responsibilities between the two entities (EETS Provider EP and Toll Charger TC) there are three main options:





## 4.5 Service Payment

The following table represents detailed definition of the service component – SERVICE PAYMENT in all its relevant perspectives.





The following table identifies the different functions, the respective roles involved and the level of interoperability needed for the EETS :

EETS SERVICE COMPONENT AND FUNCTIONS		Roles	Interoperability needs	
			YES	NO
<b>SERVICE PAYMENT</b>				
<b>SP 1</b>	<b>Invoice to the EP</b>			
SP 1.1	Collect stored tolling transactions per issuer	TC		×
SP 1.2	Claim payment from EETS provider	TC	×	
SP 1.3	Check claims	EP	×	
SP 1.4	Pay Toll Charger / Inform TC about payment	EP	×	
<b>SP 2</b>	<b>Invoice to users</b>			
SP 2.1	Collect all received tolling transactions per user	EP		×
SP 2.2	Issue invoice to user	EP	×	
SP 2.3	Pay EETS Provider	US		×

**INDICATION OF SERVICE PREFERENCES**

**Preferences from the Issuer point of view :**

- Post payment on central account
- To certain segments alternative payment methods are very important. So the service should also support pre-payment, monthly fee and a mix of payment means used with the split billing.
- The maximum elapsed time between transit file and transit payment should be in accordance with bilateral contract

**Preferences from the Toll Charger point of view :**

- Payment guarantee on correct claims (i.e. for valid transactions and/or for or for legally assessed charges)
- No on-board account



<p><b><u>Preferences from the User point of view :</u></b></p> <ul style="list-style-type: none"> <li>- For private users there should be the option for post and pre payment.</li> <li>- For HGV users monthly invoice is the preferable payment method.</li> <li>- Payment of all tolls in one clearing action</li> <li>- VAT recovery is essential to business users.</li> <li>- Business users require information almost real-time in order to invoice their s.</li> <li>- Invoice should have figures aggregated by operator</li> <li>- detailed transaction information (location, date/time and value) shall be available</li> </ul> <p><b><u>Preferences from the Principal point of view :</u></b></p> <p>No specific requirements regarding payment service</p>
--

**MAIN CONSTRAINTS**

<p><b>Contractual</b></p> <ul style="list-style-type: none"> <li>▪ The EP is responsible to recover the fee from the user and has to pay the TC for correct claims (i.e. for valid transactions and/or for legally assessed charges) in any case.</li> <li>▪ Maximum time interval for payment of claim.</li> <li>▪ Minimum/maximum time interval for transmitting the claims and transaction data.</li> <li>▪ An issuer can not offer all payment means types</li> </ul>
<p><b>Fiscal</b></p> <ul style="list-style-type: none"> <li>▪ VAT is mandatory in the invoice</li> </ul>
<p><b>Operational</b></p> <ul style="list-style-type: none"> <li>▪ The storage of transactions shall be certified</li> <li>▪ Pre-payment only possible off-board</li> <li>▪ Detailed transaction information shall be available to user</li> </ul>

**SERVICE LEVEL**

<p>There are two relations which can be separated in terms of Service level definition.</p> <p>EETS Provider - Toll Charger:</p> <ul style="list-style-type: none"> <li>- Definition of data exchange</li> <li>- Payment guarantee by EETS Provider to Toll Charger for correct claims (i.e. for valid transactions and/or for legally assessed charges)</li> </ul>
---



- Agreed procedure for claim refusal
- Claiming interval is individual, i.e. is not common, but defined between each EETS Provider and each Toll Charger
- Transmitting interval of transactions is individual, i.e. is not common, but defined between each EETS Provider and each Toll Charger
- Payment interval is individual, i.e. is not common, but defined between each EETS Provider and each Toll Charger
- Transfer interval of Black List is individual, i.e. is not common, but defined between each EETS Provider and each Toll Charger

#### EETS Provider - User:

- The EETS "invoice" shall be issued within x days *{or completely left to Issuer/User-to be discussed}*
- The detailed transactions shall be made accessible through internet (within x days).
- The EETS Provider is free in offering/accepting different payment means (i.e. there is no obligation for EETS Provider to offer fuel cards and debit/credit cards)

## BASIC FUNCTIONS AND DESCRIPTION

The service component is split into 2 parts, taking into account the CESARE III model and contractual frame: invoicing to EP and invoicing to users.

The first part between TC and EP is nondependent of the payment solution chosen by the user to the EP.

For the User invoicing, the pre-payment solution needs an additional comment on the function "Pay EETS Provider": this function will be obviously the first one in the timing, with a possible an additional function for additional credit recovering.

The payment service functions are in most cases self-explaning. Nevertheless some of these are herefater detailed.

### **SP 1: Invoicing to EP**

Collect stored tolling transactions per EETS Provider: We could state that interoperability imposes no restrictions on this function;

Claim payment from EETS provider: This function needs a common set of rules on format and procedures, in order to facilitate the contract Issuer claims checking and for Toll Charger payment process;

Check claims : No interoperability requirement on this function (assured by appropriate certification process that assures the reliability of the tolling transactions);

Pay Toll Charger / Inform Toll Charger: This function also requires a common set of rules regarding format and procedures in order to facilitate the management of the Toll Charger's operations.



**SP2: Invoicing to users**

Collect received tolling transactions per User

Issue invoice to User: A minimum common set of features/procedures/layout are required so that the Service is presented in a similar way in different countries and in order to facilitate the understanding by the User.

Pay EETS Provider: No interoperability requirement regarding this function





### 4.6 Service User Support

The following table represents a detailed definition of the service component – Service User Support, in all its relevant perspectives.

<b>SERVICE COMPONENT</b>	<b>Service User Support</b>
<b>SERVICE DESCRIPTION</b>	
<p>Service User Support includes all activities needed to maintain the service. These include:</p> <ul style="list-style-type: none"> <li>▪ Contract management;</li> <li>▪ Technical support;</li> <li>▪ Complaints about charged fees;</li> <li>▪ General information about the service;</li> <li>▪ Quality management information;</li> </ul> <p>EETS Provider should be the main interface to the user to all EETS Service related issues. Other players like Toll Chargers can provide general information about the EETS Service.</p> <p>The following diagram represents the main Support Service activities and the relevant EETS players:</p> <pre> graph TD     TC[Toll Charger] -- "Provide general information about the service" --&gt; U[User]     EP[EETS Provider] -- "Contract management" --&gt; U     EP -- "Provide technical support" --&gt; U     U -- "Complaints about charged fees" --&gt; EP     EP -- "Quality Management Information" --&gt; TC     EP -- "Quality Management Information" --&gt; EM[EETS Management]     EP -- "Provide general information about the service" --&gt; U     </pre>	



The following table identifies the different functions, the respective roles involved and the level of interoperability needed for the EETS :

EETS SERVICE COMPONENT AND FUNCTIONS		Roles	Interoperability needs	
			YES	NO
<b>SERVICE USER SUPPORT</b>				
<b>SUS.01</b>	<b>Complaints about charged fees</b>			
SUS.01.01	Receive user complaints on charged transactions	EP		×
SUS.01.02	Inquiry on complaints on charged transactions (2 <sup>nd</sup> level support)	EP	×	
SUS.01.03	Inform user about result on charged transactions complaint	EP		×
<b>SUS.02</b>	<b>Contract management</b>			
SUS.02.01	Contract modification	EP		×
SUS.02.02	Payment means modification	EP		×
SUS.02.03	Contract cancellation	EP	×	
<b>SUS.03</b>	<b>Technical support</b>			
SUS.03.01	Receive user complaints or support request regarding OBE	EP		×
SUS.03.02	Inquiry on complaints or support request regarding OBE (2 <sup>nd</sup> level support)	EP	×	
SUS.03.03	Inform user on solving OBE issue	EP		×
SUS.03.04	Update data, map, tariffs and/or software	EP		×
SUS.03.05	OBE technical support (repair, battery change)	EP		×
<b>SUS.04</b>	<b>General information about the service</b>			
SUS.04.01	Inform users on service	EP/TC		×
<b>SUS.05</b>	<b>Quality management information</b>			
SUS.05.01	Inform EETS Management about user complaints and support requests	EP	×	



## INDICATION OF SERVICE PREFERENCES

The service preferences listed in this section are the result of enquiries to different entities throughout Europe.

The text that follows is taken from the enquiries and it's not adapted to the later agreed CESARE III terminology.

### **Preferences from the User point of view**

- In case of malfunction the OBE should be replaced;
- There should be an unique contact number for EETS in all Europe (24 hour multi language service);
- Service brochures and information should be widely available on all EETS players shops, web sites, etc;
- Contract management should be possible the following ways: Fax, e-mail, www, contact centre, shops, auto service partners;

### **Preferences from the Issuer point of view**

- User complaints related to charged fees received by contract issuers;
- TSP's shouldn't access information;
- Maximum response time to complaints from users should be less than 30 days;
- Effectiveness of contract changes requested by user should be less than 1 day;

### **Preferences from the EFC Operator point of view**

- CI's should receive users complaints related to charged fees;
- Maximum response time to complaints from users should be less than 15 days;

### **Preferences from the Toll Charger point of view**

- There should be a 24/7 free line on all EETS supporting countries for service;
- The should be able to access the EETS web site to access transactions, routes and paid tariffs;
- The contract issuer should be the responsible to all demands, being the sole entity to contact with the ;
- User complaints about charged fees should be addressed to the contract issuer. The TSP's or other related entities responsible for the charged fees should support the contract issuer on resolving complaints;

## MAIN CONSTRAINTS

### **Operational**

- Personalization of OBE's issued by other EETS Providers;
- Clear and detailed interfaces must be defined between an EETS Provider and a Toll Charger with



contractual agreements in order to allow Toll Charger to act, as far as needed, as a 2nd level support to EETS Provider;

- If required by a common quality management entity a protocol must be defined between EETS Management and other players to inform about statistics and data relevant to quality management;
- An interface definition between EETS Provider and OBE manufacturer would be welcomed in order to make the process more efficient;
- Toll Chargers should provide maps and tariffs in order to be possible to configure OBE's when needed;
- When the OBE needs maintenance, the SLA is crucial. A without OBE may be prevented to use the vehicle and affect his own business;

#### Technical

- In order to personalize and configure OBE's from other EETS Provider's an EETS Provider needs specific equipment and access to relevant security keys and data needed to update information on the OBE;

### SERVICE LEVEL

Service Level is highly important in Service User Support. For each main activity service level can be understood as service availability (channels, hours of operation) and/or response time.

EETS Providers can receive **complaints about charged fees** through different channels: dedicated shops, web site, call centre, fax, e-mail and letter. The complaints should answered through the submission channel whenever possible. Toll Chargers will play an important role in this activity, as 2<sup>nd</sup> level support, and should be available to work with EETS Providers on resolving complaints. The complaints shouldn't take more than 30 days to be resolved.

**Contract management** functions are clear candidates to be implemented as self-care operations to be used by s on web sites. Traditional channels should be available as well. Clearly defined SLA's should be set for this activities, as some of them are critical in terms of revenue assurance, like contract cancellation.

**Technical support** is an essential activity to assure that EETS Service works as specified and to decrease lost of revenue. In order to provide technical support EETS Providers can set a network of technical partners who can perform needed operations. Service level on technical support is crucial, in order to decrease infractions and lost of revenue on free flow systems and to avoid vehicle unavailability, which is a uncomfortable situation to private users and a business constraints for companies.

EETS Providers are responsible to **distribute general information about the service**. s should be



informed about network changes, promotions and equipment through web site, newsletters, e-mail, newsletters and/or advertising.

**Quality management information** should be delivered to EETS Management. The regularity of delivery should be defined and respected in order to maintain EETS Management informed about the service. The information can reach EETS Management through e-mail, or dedicated web site submission. An agreed electronic format is needed to allow EETS Management easy data collection and analysis.

## BASIC FUNCTIONS AND DESCRIPTION

### **SUS.01.01 – Complaints about charged fees**

#### *SUS.01.01 Receive user complaints on charged transactions*

The EETS Provider will be responsible for receiving all user complaints about charged transactions. This process is interoperability independent, so it's up to each provider to set it up the way it fits best to its operation.

User complaints can be received in a written form (letter, complaint form, fax), by e-mail or through each EETS Provider web site.

#### *SUS.01.02 Inquiry on complaints on charged transactions (2<sup>nd</sup> level support)*

The EETS Provider may not be able to solve all transaction related complaints. In this case it must use the Toll Charger support, as a 2<sup>nd</sup> level support, to assist on solving complaints.

There should be a minimum set of rules, an interface and procedures defined in order to each EETS Provider be able to use each and every Toll Charger as a 2<sup>nd</sup> level support in EETS service.

#### *SUS.01.03 Inform user about result on charged transactions complaint*

The EETS Provider will be responsible to inform the user about his complaint, even if he used the Toll Charger as a 2<sup>nd</sup> level support. This process is interoperability independent.

### **SUS.02 – Contract management**

#### *SUS.02.01 Contract modification*

Whenever there is data from the contract that must be updated the user must contact the EETS Provider in order to update the contract.



Contract data covers such items like personal data information, vehicle registration information and contract configuration information (e.g.: user doesn't want invoice; user wants aggregated figures invoice; user wants electronic invoice...)

The user can approach the EETS provider to update contract information using a dedicated shop, partners, web site, fax, e-mail or other that the EETS provider has available.

#### *SUS.02.02 Payments means modification*

If the user wishes change the payment means of the EETS Service, he should address the EETS Provider. The EETS Provider will be responsible to all changes needed in order the new payments means to be effective, including if necessary OBE personalization.

#### *SUS.02.03 Contract cancellation*

Contract cancellation can occur in two distinct ways:

- User cancels the contract because no longer wishes to use the service;
- EETS Provider cancels the user contract because it was not respected (e.g.: misuse, fraud, payment means problem...);

Upon contract cancellation the EETS black list must be updated.

### **SUS.03 – Technical support**

#### *SUS.03.01 Receive user complaints or support request regarding OBE*

The EETS Provider is responsible to accept user complaints or support requests regarding OBE issues.

If the issue doesn't involve OBE manipulation, the user can submit it through e-mail, fax, call centre or even web site. Otherwise a dedicated shop or technical partner is the way to solve the problem.

#### *SUS.03.02 Inquiry on complaints or support request regarding OBE (2<sup>nd</sup> level support)*

The EETS Provider may use the support of OBE manufacturer and/or companies specialized in the installation, repair and maintenance of OBE as a 2<sup>nd</sup> level support to solve user complaints or support requests. A process protocol would be welcome to increase the support efficiency.

#### *SUS.03.03 Inform user on solving OBE issues*

If the user's issue doesn't involve OBE manipulation, the EETS Provider should respond to the user using the same communication channel: call centre, fax, e-mail...



#### *SUS.03.04 Update data, map, tariffs and/or software*

When necessary, the EETS Provider must update the following inside the OBE:

- Contract Data;
- Vehicle Data;
- Maps;
- Tariffs;
- Software;

The EETS Provider must have equipment to personalize and configure the OBE. It also must have access to security keys needed to write data on the OBE.

#### *SUS.03.05 OBE technical support (repair, battery change)*

When needed, the EETS Provider must work on the OBE itself. The EETS Provider may choose to call in qualified subcontractors for the technical support.

This work can consist on the following:

- Technical diagnosis;
- Repair;
- Battery change;
- Operations described in CS34;

The user must deliver the OBE to the EETS Provider or certified technical partner in order to allow the necessary work to be performed.

### **SUS.04 – General information about the service**

#### *SUS.04.01 Inform users on service*

The EETS Provider should inform users about the service. But the Toll Charger can also distribute and promote information about EETS.

Information about the service can include:

- EETS road network;
- Specific information on each country. E.g.: Classification, Logos, other...
- Information about EETS promotions;
- Information about discounts on roads charged using EETS;



- Information about equipments;
- Other;

The information can be available and distributed the following ways:

- through fliers distributed on shops and offices of EETS Provider and Toll Charger;
- the EETS Provider can use contract information to distribute information using e-mail;
- information can be available on web sites, both from the EETS Provider and the Toll Charger;
- very important information can be published on major newspapers and magazines;

The user can also request information directly to EETS Provider, using e-mail, fax or call centre.

### **SUS.05 – Quality management information**

#### *SUS.05.01 Inform EETS Management about user complaints and support requests*

EETS Management should be informed about user complaints, regarding transactions or OBE or other matters, in order to control the quality of the service.

A standard protocol should be defined in order to maximize the information dissemination and analysis.

The EETS Providers and Toll Chargers should inform the EETS Management on a regular basis





## 4.7 Enforcement

The following table represents detailed definition of the service component – Enforcement in all its relevant perspectives.

<b>SERVICE COMPONENT</b>	<b>Enforcement Support</b>
<b>SERVICE DESCRIPTION</b>	
<p>This service description is made under the assumption that the actual enforcement activities (barriers, stopping of vehicles, number plate based fines, etc) are carried out by the Toll Charger at his own discretion without interference or support from other roles normally involved in the EETS.</p> <div style="text-align: center; margin: 20px 0;"> <pre> graph TD     TP[EETS Provider]     TC[Toll charger]     U[User]     TC -- "Claim for additional payment" --&gt; TP     TC -- "OBU data Vehicle data Validation Info" --&gt; U     TC -- "Enforce (prosecute)" --&gt; U             </pre> </div> <p>The use of OBE suitable for use in multiple toll domains must be trusted by the toll chargers and must adhere also to enforcement requirements. The EETS must therefore be enforceable.</p> <p>Due to its nature EETS enforceability is limited to:</p> <ul style="list-style-type: none"> <li>➤ (Not blacklisted) s of EETS providers and/or vehicles contracted by these s. A toll charger cannot call an EETS provider to account for users that are not his s.</li> <li>➤ Provisions that can be agreed contractually. Criminal proceeding as e.g. proposed in VERA 2 is outside the scope of the EETS.</li> </ul> <p>The diagram is limited to the interoperable features of the EETS service. It is assumed that the distribution of blacklists is a service function and is dealt with elsewhere. This service only addresses EETS equipped vehicles. If an EETS equipped vehicle is deemed to have committed an offence, then the Toll Charger will normally pursue payment using the same procedures as for any other user. In the event that the Toll Charger’s normal charging procedures allow for additional (penalty) charges to be made to the user for some well-defined cases appropriate to certain infringements, or divergences from normal use, then the EETS Provider will support the payment of these charges, provided that he had agreed to this service element.</p>	



It is assumed that, for the enforcement process, the Toll Charger will attempt to communicate directly with vehicles entering an enforcement zone. There are four possible outcomes to this process.

Figure 1: Possibilities for vehicles entering the communication zone

Vehicle enters the enforcement zone			
Valid EETS Communication		Invalid or no communication	
Correct EETS information	Incorrect EETS information	Vehicle with EETS contract	Vehicle without EETS contract
Claim via EETS Provider	Possibility (a) of claim to EETS Provider	Possibility (b) of claim to EETS provider	"Normal" enforcement processes

Column 1 shows a fully compliant user – the result is a valid claim for payment from the EETS Provider. Column 3 and 4 shows a non-compliant user where there is no valid communication with the vehicle. In case 4 the toll charger follows local enforcement procedures to identify the person(s) liable for the toll and to collect payment.

Cases 2 and 3 are potential situations which might affect EETS users. The second column may represent an equipped EETS user, but in circumstances where the some charging anomaly has been detected by the Toll Charger., resulting in a discrepancy in the charge. For example, the user may be declaring the wrong number of axles on the vehicle. It might, under these circumstances, be feasible the Toll Charger to submit a claim for additional payment to the EETS Provider, perhaps subject to an appeal by the user. This would only be permitted if this was part of the normal operational procedure of the toll charger and/or agreed with the EETS provider.

In the third case, the vehicle may be equipped with an EETS OBE, but no valid communication is established. The Toll Charger may, under some circumstances, still be able to recognize the vehicle as an EETS user by means of the licence plate. This implies that the Toll Charger would have access to a database containing the licence plate of that EETS equipped vehicle. This requires co-operation between the toll charger and EETS providers that should be bilaterally agreed between them.

There are thus three steps in this process:

1. Toll charger attempts to communicate with the OBE to determine if the OBE (or transaction) contains a valid (EETS) contract. If it is valid, then a normal (EETS) transaction may take place.
2. If an anomaly is detected with an EETS equipped vehicle, such as failure to declare a trailer, the Toll Charger will determine according to his local toll regime if this is a case for invoking the enforcement process. If it is, then the Toll charger will take the process forward independently. If it is a situation where the normal procedure of the Toll Charger is to request an additional (penalty) payment from the user, then this may be handled as a normal EETS transaction (but may lead to a higher fee).
3. If the communication is not considered valid, then the Toll Charger will execute enforcement by whatever means are available (video, barrier, stop vehicle, etc.). This may also lead to additional capturing of information from the vehicle (e.g. video images of the number plate).



The following table identifies the different functions, the respective roles involved and the level of interoperability needed for the EETS :

SERVICE COMPONENT		Roles	Interoperability needs	
			Yes	No
<b>ENFORCEMENT SUPPORT</b>				
ES01	The EETS Provider provides information on the contracts, black-lists, security keys to the EETS management	EP	X	
ES02	Passive real time acquisition of enforcement data from an OBE (typically through Automatic Number-Plate Recognition equipment). This is part of the local enforcement system operated by the Toll Charger and not considered to required to be interoperable.	TC		X
ES03	Real time communication of enforcement data from an OBE (typically through a DSRC-link)	TC/US	X	
ES04	Non-real time communication of enforcement data from an OBE (typically over the Cellular Network-interface)	TC/US	X	
ES05	OBE transaction validity checks	TC/EP	X	
ES06	Execute enforcement (incl. claiming payment of fines)	TC/EP		X
ES07	Informing the EETS Provider of non-compliant activity or anomalies in OBE or data.	TC	X	
ES08	Notify user of non-compliant behaviour	EP	X	

**INDICATION OF SERVICE PREFERENCES**

**From the user point of view**

- privacy will be preserved by the EETS Provider
- the user is properly informed of the requirements for each toll scheme
- the user is informed of any non-compliant activity (by the EETS Provider)
- the user is given an opportunity to pay for accidental non-compliance
- the user be given the opportunity to challenge the Toll Charger claim of non-compliance



**From the toll charger point of view**

- the EETS Provider may ask the user for payment for non-compliant activities, provided that this is a normal procedure for the Toll Charger

**From the EETS provider point of view**

- That the Toll Charger will treat the user fairly
- That the Toll Charger enforcement system is reliable

**MAIN CONSTRAINTS**

**Legal**

- The functions for acquisition of data from the OBE (real-time and non-real-time) must not be in conflict with the national law or EU-directives, neither must any prescribed correlation of such data and other data-sources
- If the legal framework in Europe were to change, then there might be other service elements to assist in the recovery of non-payment

**Contractual**

- If the Toll Charger has the normal procedure to charge the user’s account “additional” charges when some anomaly has been detected, then the EETS Providers will need to incorporate these requirements into the terms and conditions of the user contract. It must be possible for the user to refuse to accept such charges, in which case the EETS Provider will notify the Toll Charger, who will take enforcement action

**Fiscal**

- The EETS Provider will expect some remuneration for any assistance provided to the Toll Charger. The only assistance envisaged is to inform the Toll Charger if the user refuses to pay additional charges. This is expected to be automatic and not lead to additional remuneration

**Technical**

- There are no technical considerations, as the Toll Charger should have a fully operational enforcement system and no changes are expected to this.

**SERVICE LEVEL**

This procedure deals with an exceptional circumstance. It is restricted to the situation where an equipped EETS user are detected at an enforcement point by a Toll Charger and they in some way non-compliant with the operational requirements of the toll scheme. The most likely cause is an incorrect declaration of the vehicle characteristics by the



driver, as most of the EETS functionality is completely automatic.

Since the driver may be liable for additional charges, he may not be concerned if no action is taken. However, incorrect action will be considered to be undermine the quality of the EETS and so must be avoided.

The prompt and fair treatment of the user is very important. It is envisaged that Toll Chargers who have existing procedures to levy additional charges in the case of incorrect vehicle declaration may make a claim to the EETS Provider. This claim must be notified to the user who must be given the opportunity to appeal against any additional charges.

## BASIC FUNCTIONS AND DESCRIPTION

### **ES.01 Provide information on the contracts, blacklists, security keys to the EETS management**

The EETS provider needs to enable the Toll Charger to identify EETS contracts. These will be distributed by the Interoperability management function. Any specific contracts which are no longer supported by the EETS Provider will need to be distributed to all Toll Chargers by the Interoperability Management.

### **ES.03 Real-time communication of enforcement data from an OBE**

The Toll Charger will need to confirm (in real-time) that the OBE is working correctly. It is expected that there will be a common declaration of data to confirm the correct operation of the OBE.

### **ES.04 Non-real-time communication of enforcement data from an OBE**

For OBE operating with cellular communication, some communication may be necessary to confirm that the autonomous OBE is functioning correctly.

### **ES.05 OBE transaction validity checks**

There should be a standardized approach to the check on the validity of the transaction

### **ES.07 Informing the EETS Provider of non-compliant activity**

In case non-compliance of an OBE is detected, the Toll Charger should notify the EETS Provider.

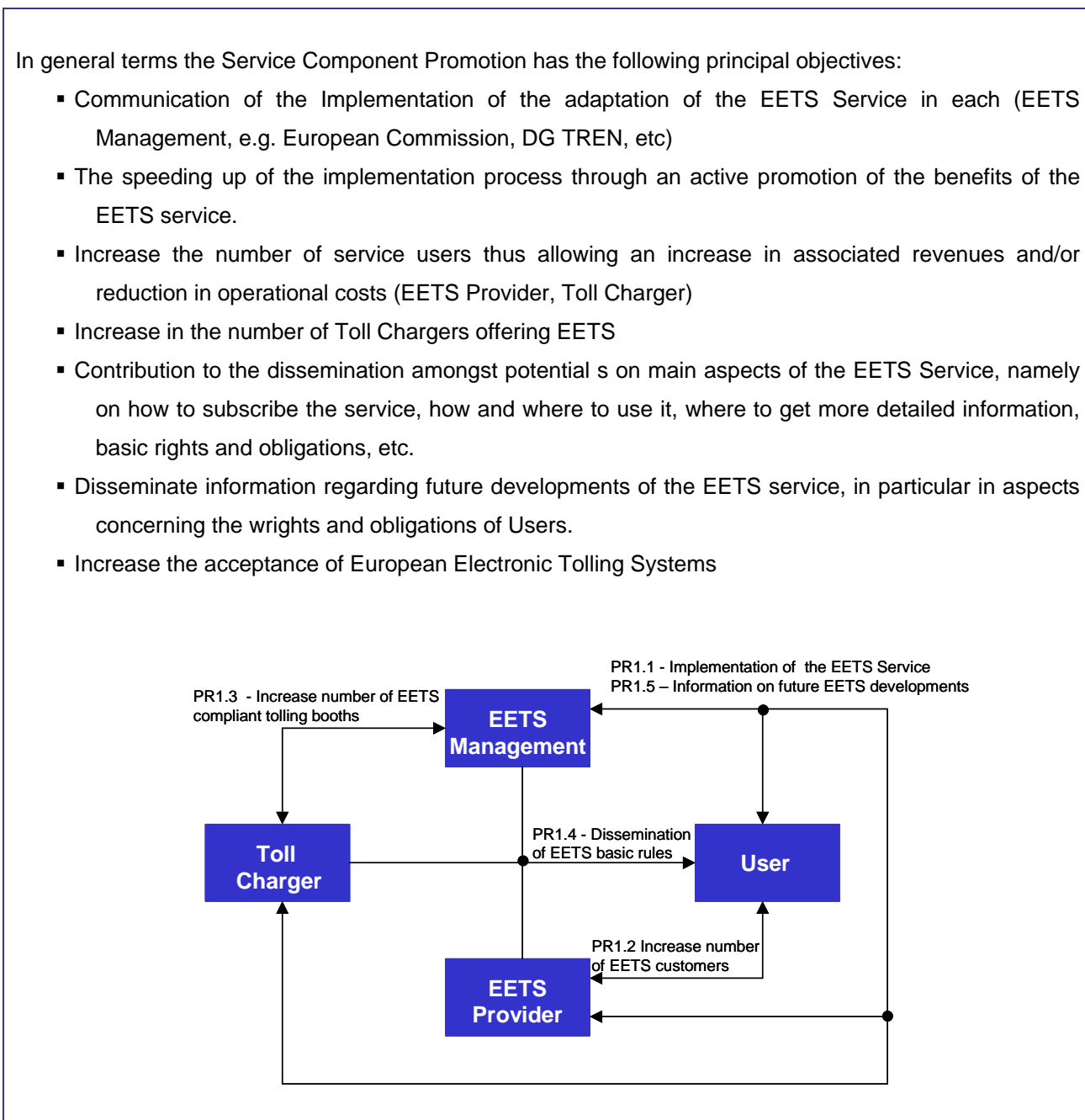


### 4.8 Promotion

The following table represents detailed definition of the service component – promotion, in all its relevant perspectives.

<b>SERVICE COMPONENT</b>	<b>Promotion</b>
--------------------------	------------------

**SERVICE DESCRIPTION**





The following table identifies the different functions, the respective roles involved and the level of interoperability needed for the EETS :

EETS SERVICE COMPONENT AND FUNCTIONS		Roles	Interoperability needs	
			YES	NO
<b>PROMOTION</b>				
PR1.1	Implementation of the EETS service	IM	X	
PR1.2	Increase in the number of s using EETS	EP/US	X	
PR1.3	Increase in the number of automatic tolling booths EETS compliant	TC	X	
PR1.4	Dissemination of information to Users regarding service basic rules	IM	X	
PR1.5	Information to EETS players, and specifically to Users on future EETS Service developments	IM	X	

**INDICATION OF SERVICE PREFERENCES**

The service preferences listed in this section are the result of enquiries to different entities throughout Europe.

The text that follows is taken from the enquiries and it's not adapted to the later agreed CESARE III terminology.

**Preferences from the User point of view**

- Being informed about the service on a regular basis
- The information provided should be simple and easily understood
- The Users should be made aware of any special commercial conditions offered by a Toll Charger in a particular territory / country.
- The Users will not wish to have or to see any increase in the tolling fee directly or indirectly to help fund the EETS promotion
- Transparent information about the system (EETS) advantages
- The Users do not want to support increases of prices due to EETS promotions



#### **Preferences from the Toll Charger point of view**

- Any kind of promotion activity should not adversely effect the operational expenses of the Toll Charger
- Each Toll Charger should have the freedom to promote their own local initiatives in support of the overall promotion campaign.
- Both European and national promotional activities should be endorsed by the national Toll Charger associations
- The Toll Charger should feel that they are profiting (i.e. numbers of vehicles using the system) from the promotion of the EETS service.
- That the promotion activities are publicized through multiple channels. Availability of the information at different levels and through different advertising medias.
- They should have the freedom to run their own discount policies so long as they treat all their user groups on the same basis, independently of nationality.
- Profit national advertising campaigns for promoting the EETS

#### **Preferences from the EETS Provider point of view**

- to have a justifiable and sustainable business case for the provision of EETS to their user set.
- to have the freedom to introduce promotional and marketing initiatives (e.g. discount on volumes, special situations) in order to keep and expand their user base.
- The EETS provider could launch regional promotion campaign
- Support for regionally campaign by Toll Charger

### **MAIN CONSTRAINTS**

#### **Legal**

- promotion activities need to be run in a manner which reflects the intentions of the directive
- legal framework to support the promotional activities, consider national law
- legal framework to handle the promotion of the EETS system, consider national law
- Licensing conditions for the use by the various actors of the EETS Logo and branding materials
- The level of access to the client database by the different contractual parties.
- allow actors to use logos
- allow actors to use clients databases

#### **Contractual**

- contractual requirements which govern the relationship between EETS – provider and Toll Charger may have implications for the promotion of the EETS system.
- contractual framework between EETS players directly involved in the promotion activity and the EETS Management entity
- when signing the contract with the EETS Provider, the client should allow to use its personal data





for promotion, depending on national data protection rights

#### **Fiscal**

- The level of co – funding by the European Commission for the promotion expenses
- Explore the possibility for the promotional campaigns to be tax deductible (rationale: EETS is being actively promoted by the EU).

#### **Operational**

- Agree on the procedures to start the promotion of the EETS system
- Promotion campaigns should be locally/nationally focused.
- Need to take into consideration the different languages of the user community.
- Uniform procedures to evaluate results of promotion in each country
- Central contact point at EETS Management to support questions from involved EETS Players (Help Desk)

#### **Technical**

- The materials used in the promotion campaign should be based on open standards to allow easy translation and or use in each of the member countries.
- There should be no bias towards promoting any particular brand or type of device to be used by either the Toll Chargers, the users or indeed on any of the roles.
- national promotions shall be coordinated at national level
- promotions shall be split on advertising image campaigns focused on informing and attracting the user to the EETS

### **SERVICE LEVEL**

Depending on the manner of promotion defined by the EETS Management, the following promotional channels are foreseen as being possible, namely:

- www
- specialized magazines
- through national and international drivers associations
- information at point of sale
- information via the individual EETS Providers
- information by the EETS Management themselves
- information by individual Toll Chargers
- direct marketing, e-mails or newsprint campaigns.

It is fundamental that the promotional procedures and activities are communicated as clearly as possible to the user / .

The EETS Management should provide a common logo for the promotion campaign (like TMC-logo)



## BASIC FUNCTIONS AND DESCRIPTION

### **PR1.1 Implementation of the EETS Service**

The implementation of the EETS Service in each country must be guaranteed. The responsibility for the communication and coordination between the entities which are in charge is obliged to the Interoperability Manager.

### **PR1.2 Increase in the number of s using EETS**

Through the use of sufficient ways of promotion for the use of the EETS service an increase in the number of s using EETS will happen.

### **PR 1.3 Increase in the number of automatic tolling booths EETS compliant**

Through the fact that an increase of the number of s using EETS will happen, the Toll Chargers have to guarantee that a sufficient number of automatic tolling lanes for the EETS service is available. If the number of s increases, also the number of automatic tolling lanes which are EETS compliant should increase.

### **PR 1.4 Dissemination of information to Users regarding service basic rules**

To ensure that the user knows the service basic rules regarding the EETS Service the promotion activities have to include this information. Although the main responsibility to inform the user about the service basic rules may rely on EETS Provider, this can be a shared activity by all EETS Players.

### **PR 1.5 Information to EETS players, and specifically to users on future EETS Service developments**

Any changes regarding the EETS Service must be communicated to the all EETS players and users, to ensure that they are informed about the changes in time.