



report

D 1.1

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A stylized map of Europe in light blue, overlaid with numerous curved, wavy lines in various shades of blue, creating a dynamic, flowing effect across the map.

Verification of the CESARE III Model

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1. Introduction

The Project

CESARE is a project promoted by ASECAP and supported by the European Commission with the objective of specifying, designing, developing, promoting and implementing a common interoperable Electronic Fee Collection System (EFC) on European toll roads. CESARE has been divided into several phases, whereby the previous phase called CESARE III has been completed in October 2006. The results of CESARE III showed that there is a need for further actions in a next project phase (CESARE IV) in order to realize the interoperability objectives. The main goal of CESARE IV is to define a framework for establishing an interoperable European Electronic Tolling Service (from now on, EETS), functioning in a coordinated way at the European level, while allowing the Member States to fasten the pace of their national implementation plans for EETS. In this way CESARE IV will contribute to the implementation of the Directive 2004/52/EC.

The Roles in the European ETC Interoperability

Within CESARE III, a basic model was designed as a general overview of the actors in EETS. In this basic model, four Roles are identified as being part of an interoperable service at European level.

The Roles are defined as follows:

- **Toll Charging Role (TC)**
Toll Charging means providing a transport service (often the usage of road) 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 TC role and results in claiming payment from a third party within the EETS Provision.
- **EETS Provision Role (EP)**
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 (US)**
Service Usage means taking advantage of the EETS for payment of tolls in the toll domains of the Toll Charging Role.
- **Interoperability Management Role (IM)**
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.

Relations within the Roles

The CESARE model for EETS defines also the functions and relations between the Roles, which are to be governed by a set of Guidelines or Rules. The setting of rules can be done on the regulatory level if (parts of) the service definition is integrated in (European or national) legislation - e.g. the Directive. On the other hand, some of the rules can merely be agreed between the participants upon a contractual relation. New organisations might be set-up for this purpose.

In real life, the functions of a specified 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 the different structures related to each Role, but nonetheless there may be a need to name the virtual organisations that would perform all Functions of one Role, and only those functions.

The following table provides the correspondence between the names of these virtual organisations, and the names of the Roles:

Toll Charger	Toll Charging Role
EETS Provider	EETS Provision Role
Service User	Service Usage Role
Interoperability Manager	Interoperability Management Role

Scope of the D 1.1 ‘Verification of the CESARE III Model’

This document is part of the reporting material of the CESARE IV Work Package 01 ‘EETS Basic Guidelines’ and covers a verification of the Roles and Functions as defined in CESARE III in the following existing interoperable EFC services:

- TIS-PL in France
- Via Iberica (a joint initiative between Via T’s (Spain) and Via Verde’s (Portugal) ETC systems to achieve an Iberian interoperability)
- NORITS Project in Scandinavia
- The German Truck Tolling System
- The MEDIA initiative (France, Italy, Austria, Slovenia)
- LSVa Swiss Truck Charging System

The aim of this Report is to provide a comparative study of the above listed studied Regional ETC systems and the CESARE III orthodoxy, in order to check the compliance and feasibility of the different functions. The studies were carried out by six Subgroups of Task 1100. Each of the studies analysed the roles of the different actors in the Regional ETC services, their contractual aspects, their practical experiences and the lessons learned. The summary of these experiences and lessons learned are shown in the Conclusion section of the Report.

The outcomes of the Regional ETC studies as produced by the Subgroups are appended as Annexes to this document. The summary of the results of the legal questionnaire to the six Subgroups studying the legal and contractual aspects Regional systems prepared by the seventh Subgroup is also presented as an Annex.

2. CESARE III Roles Assignment

The following table shows in a comprehensive way how the seven systems investigated in Task 1100 adapted the CESARE III Roles Model.

CESARE III	LSVA	MEDIA	NORITS	TIS-PL	German Toll Collection	Via Iberica	VIA-T
Toll Charging Role	Principal ----- Swiss Customs ----- Transport Service Provider	EFC Operator	EFC Operator	Toll Charger	Federal Republic of Germany ----- Federal Office for Goods Transport ----- Toll Collect	Transport Service Provider	Toll Charger
EETS Provision Role	Swiss Customs ----- Authorized garages ----- Payment Means Provider	Contract Issuer	Issuer	Issuer	Toll Collect ----- Service Provider	Issuer	Service Provider
Service Usage Role	User	Customer	User	Client	Truck Companies ----- Driver	User	User
Interoperability Management Role	not present	MEDIA Association	Support Organisation	Commission de Télépéage	not present	not described	Electronic Toll Committee

3. CESARE III Service Components and Functions

This chapter compares the implementation or planning of the service components and functions for the seven systems investigated in T1100 of CESARE IV. The tables provide a first-hand overview. However, the implementations of the CESARE III functions are not straightforward. There are many remarks, comments and differentiations related to implementations of the service components and functions.

Some of the comments have been abbreviated for legibility reasons (indicated by a >T< sign for “truncated”). Comments which are considered relevant only for the understanding of a particular system but not for comparison have been left out, in particular when they are made with respect to green, i.e. implemented” functions. The reader is advised to consult the respective report from T1101 to T1106 (see the list of annexes at the end of this report).

Function...	Colour code
Implemented	
Partly implemented	
Not implemented	
Not applicable or not relevant	
No valid entry possible. In particular where the functions of autonomous and DSRC systems are listed which are not applicable in the respective other system.	
Under study or other, see comments	
No information provided	
Only text information provided, no assignment of the degree of implementation made	

Components and functions		In line with CESARE III - see colour code explanations						
		TIS-PL	Via Iberica	VIA-T	NORITS	German EFC	MEDIA	LSVA
Governance								
G 1	Define and maintain the EETS Core Service Definitions, rules and regulations required for interoperability					Only for the German Tolling System	Task of MEDIA Association	Only for the Swiss Tolling System
G 2	Define the rules to settle disputes between members (Arbitration)		Under study	Disputes Telepeage cannot settle are handed over to higher instances (courts) or...referees >T<		not relevant	Task of MEDIA Association	
G 3	Maintain and issue the authoritative list of contracting parties (EETS Providers and Toll Chargers)		Under study. Now in Portugal Via Verde is the unique Issuer; In Spain the Issuers must sign one of two MoUs >T<	...no single organization to handle the list of contracting parties. ASETA runs only the TCs. EPs have their own list >T<		not relevant	Task of MEDIA Association	
G 4	Define and maintain procedures for the distribution of certified equipment and/or its software		Under Study >T<	ASETA defined procedure for certifying OBE; distribution by EPs >T<	Not relevant so far		No relevance	
G 5	Ongoing audit review of OBE/RSE/CS compliance		Under study for the future. Technical tests	As above, then: TCs are in	Audit/validation of RSE/CS compliance is		Each EFC Operator System issues	

Components and functions		In line with CESARE III - see colour code explanations						
		TIS-PL	Via Iberica	VIA-T	NORITS	German EFC	MEDIA	LSVA
			are made >T<	charge of testing RSE with the certified OBE	based on the use of a set of "control OBEs" ..compliance is responsibility of the issuer concerned >T<		an "Interoperabi- lity certificate" for each accepted OBU model	
G 6	Operate and maintain the common organisation		Not planned now				Task of MEDIA Steering Committee as organized in MEDIA Association Statutes	
G 7	Define, maintain and issue, if necessary, model standard contracts for co-operation between actors						Not foreseen so far	
G 8	Define and maintain ID-schemes and, if necessary, support the issuing of IDs	..		ISO / CEN organization provide Contract provider IDs and OBE Issuer IDs	... Danish/ Swedish EasyGo IM registers the attached operators >T<	not applicable, proprietary ID management	"ISO/CEN" organisation for Contract Issuer codes and EFC Operators.	

Components and functions		In line with CESARE III - see colour code explanations						
Certification		TIS-PL	Via Iberica	VIA-T	NORITS	German EFC	MEDIA	LSVA
C 1	Define and maintain the EETS Test and Certification policy		Further procedures will be prepared for final commercial operation >T<	EETS Providers have their own testing policies	NORITS test suite used for interoperability tests	System Improvement and Service Support Processes >T<	EFC Operators for their system	
C 2	Define and maintain the Test documents (test standards, test specifications etc.)		As above	EETS Providers have their own testing policies	NORITS test suite used for interoperability tests	Service Support Processes (for German tolling system)	EFC Operators for their system	
C 3	Manage the certification organization and processes involved		For the commercial trial an OBE used in one country will be accepted in the other >T<	ASETA carry out the process for certifying and auditing OBE since 2006. No other organization has been set up on purpose	Issuers and Operators must fulfil ... EasyGo specification. IM must accept data exchange and functionality at RS for new Operator and Issuer and new OBE from existing issuer >T<	Service Support Processes (for German tolling system)	EFC Operators for their system	

Components and functions		In line with CESARE III - see colour code explanations						
		TIS-PL	Via Iberica	VIA-T	NORITS	German EFC	MEDIA	LSVA
Contract issuing								
CI 1	Issue contract to User			EETS Providers acting as Issuers are in charge of issuing OBE and contracts to Users				
CI 2	Associate payment means to OBE			VIA-T OBEs are functionally equivalent to credit cards >T<	Customer not obliged to link OBE to bank account, e.g. may receive an invoice and pay in cash, but the most common ways are invoices, a link to credit card or bank account >T<			
CI 2a	Associate payment means to OBE							
CI 2b	Associate payment means (manual system) (non-cash payment of unequipped users)							only applicable for foreign users
CI 3	Inform User on service		Yes for Portuguese	This is a mission				

Components and functions		In line with CESARE III - see colour code explanations						
		TIS-PL	Via Iberica	VIA-T	NORITS	German EFC	MEDIA	LSVA
			Users; partially for Spanish Users Yes for Portugal; No for Spain	shared by TCs and EPs >T< No vehicle information is collected by Via-T Issuers	Only Norwegian systems require vehicle registration information. To be implem. in Denmark 2008			
CI 4	Acquire vehicle registration information		Yes for Portugal; >T<	...Neither ASETA nor the TCs get personal information from users unless users require invoices... >T<				
CI 5	Acquire User information							
CI 6	Establish User record (contract/OBE)							
CI 7	Establish User payment account	Issuer (Toll Charger establishes payment account per contract)						
CI 8	Personalise OBE		Done by the OBE supplier or specialized companies on behalf of the	Function is carried out by specialized companies under	Done by the OBE supplier on behalf of the Issuer	OBU installation		SCA: via chipcards AG: direct access

Components and functions		In line with CESARE III - see colour code explanations						
		TIS-PL	Via Iberica	VIA-T	NORITS	German EFC	MEDIA	LSVA
			Issuer. Planned for Via Verde Shops in the next future	contracts with EPs >T<				
CI 9	Initial database in OBE (map, tariffs)		not relevant	not required	not relevant	Operations services		Not tariffs
CI 10	Issue OBE to User		So far linked to the C1.01 by the Issuer			Supply Chain and installation of OBU >T<		
CI 11	Install and mount OBE			VIA-T OBE does not need specific installation >T<		OBU installation		

Components and functions		In line with CESARE III - see colour code explanations						
		TIS-PL	Via Iberica	VIA-T	NORITS	German EFC	MEDIA	LSVA
Service Use on Toll Roads - Autonomous systems								
SU-AS 1	Service signalling on roadside							
SU-AS 1.1	Inform User on tolling when entering/leaving toll road/network							Integrated in Customs procedures
SU-AS 2	Produce tolling transaction (GNSS)							
SU-AS 2.1	TC specific information							
SU-AS 2.2	Inform User on OBE status							
SU-AS 2.3	Declare variable parameter							
SU-AS 2.4	Determine toll declaration							
SU-AS 2.5	Transmit toll declaration							SCA (foreign) Owner (domestic)
SU-AS 2.6	Conclude tolling transaction							

Components and functions		In line with CESARE III - see colour code explanations						
		TIS-PL	Via Iberica	VIA-T	NORITS	German EFC	MEDIA	LSVA
SU-AS 2.7	Store tolling transaction							
SU-AS 3	Extended mode							
SU-AS 3.1	Offer extended mode					Toll invoicing		User has to use log-book

Components and functions		In line with CESARE III - see colour code explanations						
		TIS-PL	Via Iberica	VIA-T	NORITS	German EFC	MEDIA	LSVA
Service Use on Toll Roads - DSRC								
SU-DSRC 1	Service signalling on roadside							
SU-DSRC 1.1	Inform User on tolling when entering/leaving toll road/network		... there is no specific signalling for the ETC service when entering the motorways >T<	...no specific signalling of VIA-T, but of tolling service at the entrance of all motorways >T<				
SU-DSRC 1.2	Inform User on correct lane use							
SU-DSRC 2	Produce tolling transaction							
SU-DSRC 2.1	Inform User on OBE status	TC only specifies if OBE is accepted or not; ...client is invited to ask the issuer; very close to SU-DSRC 2.6 >T<	No for Spain. Via Verde informs the Portuguese Users ... if OBE malfunction was detected in Portuguese network.... >T<	Registered in TC back-office but not distributed to users	not relevant			
SU-DSRC 2.2	Declare variable vehicle parameters		No for Spain. Yes for Portugal. Not necessary for commercial trial... >T<	...no vehicle parameters stored. Some EPs interested in storing vehicle data, which are not mandatory >T<	not relevant (variable parameters accounted for by external classification)			

Components and functions		In line with CESARE III - see colour code explanations						
		TIS-PL	Via Iberica	VIA-T	NORITS	German EFC	MEDIA	LSVA
SU-DSRC 2.3	Validity check (in real time)							
SU-DSRC 2.4	Transmit tolling transaction							
SU-DSRC 2.5	Conclude tolling transaction			..after check gate is opened .implemented in mixed and dedicated ETC lanes, barriers automatic >T<				
SU-DSRC 2.6	Inform User about performance result	see SU-DSRC 2.1			Done in most systems / where relevant			
SU-DSRC 2.7	Store tolling transaction				NORITS data format			
SU-DSRC 3	Extended mode							
SU-DSRC 3.1	Offer extended mode		Not planned for Via Iberica Service	OBEs hold information; operator can manually collect OBE ID (PAN) at the lane and to check by keying data into the system >T<	not relevant			

Components and functions		In line with CESARE III - see colour code explanations						
		TIS-PL	Via Iberica	VIA-T	NORITS	German EFC	MEDIA	LSVA
Service payment								
SP 1	Invoice to the EP							
SP 1.1	Collect stored tolling transactions per Issuer							Only for foreign non-cash payment
SP 1.2	Claim payment from EETS Provider							Only for foreign non-cash payment
SP 1.3	Check claims							Only for foreign non-cash payment
SP 1.4	Pay Toll Charger / Inform TC about payment							Only for foreign non-cash payment
SP 2	Invoice to users							
SP 2.1	Collect all received tolling transactions per User							
SP 2.2	Issue invoice to User		No for Spanish Financial Issuer; Yes for Via Verde and Spanish Non Financial Issuers	Bank Issuers send transaction information to the Users in Bank account statements, but no invoices on behalf of TCs. Users ask TCs				

Components and functions		In line with CESARE III - see colour code explanations						
		TIS-PL	Via Iberica	VIA-T	NORITS	German EFC	MEDIA	LSVA
				for invoices. For this personal data has to be provided. TCs then invoice ... NFI can invoice users.. >T<				
SP 2.3	Pay EETS Provider		If EETS provider means <i>Via Iberica</i> Service Provider	EETS Provider retains percentage of transaction amount as a fee ... >T<	n.a., outside the scope of NORITS			Only for unequipped foreign users with non-cash payment

Components and functions		In line with CESARE III - see colour code explanations						
Service User support		TIS-PL	Via Iberica	VIA-T	NORITS	German EFC	MEDIA	LSVA
SUS 1	Complaints about charged fees							
SUS 1.1	Receive User complaints on charged transactions The rules have to respect legislation regarding privacy.		Via Verde and Spanish NFIs handle complaints; protocol with TCs to support their answers. Spanish FI process studied >T<	User complaints are received by issuers as user contracts are linked to the tags	... TC shall handle complaints, while in most cases the CI will receive requests. ... >T<			
SUS 1.2	Enquiry on complaints on charged transactions (2nd level support)		as above		as above			
SUS 1.3	Inform User about result on charged transactions complaint		as above	By each EP in their own format	as above			
SUS 2	Contract management							
SUS 2.1	Contract modification			Users may request Issuer to change data in the OBE... >T<				SCA (foreign) CRA (domestic)
SUS 2.2	Payment means modification			... OBE functionally equivalent to a post-payment credit card,... intrinsic to OBE >T<				

Components and functions		In line with CESARE III - see colour code explanations						
		TIS-PL	Via Iberica	VIA-T	NORITS	German EFC	MEDIA	LSVA
SUS 2.3	Contract cancellation							Not possible, legal duty
SUS 3	Technical support							
SUS 3.1	Receive User complaints or support request regarding OBE			Issuers call centre ...for the support of their Means of payment... >T<				
SUS 3.2	Enquiry on complaints or support request regarding OBE (2nd level support)			As a second level support Issuers' call centres may divert trans-action-related complaints to the TCs >T<				
SUS 3.3	Inform User on solving OBE issue							
SUS 3.4	Update data, map, tariffs and/or software			No such function in VIA-T. Responsibility of Issuer	Only data is relevant	Management of Geo- and Tariff Data	not relevant	
SUS 3.5	OBE technical support (repair, battery change)			Damaged OBE go to the manufacturer; Issuer generally provides new device.				

Components and functions		In line with CESARE III - see colour code explanations						
		TIS-PL	Via Iberica	VIA-T	NORITS	German EFC	MEDIA	LSVA
				TCs not responsible for technical support of OBEs >T<				
SUS 4	General information about the service							
SUS 4.1	Inform Users on service							
SUS 5	Quality management information							
SUS 5.1	Inform EETS Management about User complaints and support requests		under study	Applies only for complaints that reach the second level >T<				Not present

Components and functions		In line with CESARE III - see colour code explanations						
Enforcement support		TIS-PL	Via Iberica	VIA-T	NORITS	German EFC	MEDIA	LSVA
ES 1	The Service Provider provides information on the contracts, black-lists, security keys to the EETS management	Data is sent by EETS Providers to TC	Via Verde Portugal may act on behalf of the Spanish Toll Chargers on the prosecution of Portuguese drivers (either equipped or not) offending in the Via-T system. Related to Spanish Users the Portuguese Toll Chargers have big expectations regarding enforcement. In Portugal toll systems have no barriers, at present one toll system is multilane and more are planned for the future.	No.Data sent from the EPs to the TCs directly through the Acquirers/ Merchants >T<	There are no common NORITS rules for enforcement. Each EFC operator is responsible for the enforcement in its own EFC system	Not relevant	Within the MEDIA toll service no common rules for enforcement are established. Each EFC operator is responsible for the enforcement in its local EFC system	Not present
ES 2	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 be required to be interoperable			No. Currently ANPRS are not used at toll lanes but some studies are being carried out on this aspect				
ES 3	Real time communication of enforcement data from an OBE (typically through a DSRG-link)							
ES 4	Non-real time communication of enforcement data from an OBE (typically over the Cellular Network-interface)					Not relevant. Enforcement data gathered via ES02 and ES03 only		By chipcard, no GSM
ES 5	OBE transaction validity checks							
ES 6	Execute enforcement (incl. claiming payment of fines)	EETS Providers for the toll (but prosecution for fines)						

Components and functions		In line with CESARE III - see colour code explanations						
		TIS-PL	Via Iberica	VIA-T	NORITS	German EFC	MEDIA	LSVA
ES 7	Informing the Service Provider of non-compliant activity or anomalies in OBE or data.	TCs and Commission de telepeage	Despite the fact that it is not planned for the commercial trial it is absolutely necessary to develop future cross-border enforcement					not present
ES 8	Notify User of non-compliant behaviour	TCs and EETS Providers						not present

Components and functions		In line with CESARE III - see colour code explanations						
Promotion		TIS-PL	Via Iberica	VIA-T	NORITS	German EFC	MEDIA	LSVA
PR 1	Implementation of the service	TCs	The Promotion of the <i>Via Iberica</i> service is planned to be done by Issuers and possibly by Toll Chargers	ASETA	The promotion of the EasyGo service is partly done by the Support Organisation via its partners and partly by the EasyGo Issuers		The Service component promotion is not clearly defined within MEDIA. In case of the start of the MEDIA TOLL Service the promotion will be done by the MEDIA Association, the EFC Operators and the Contract Issuers	Mandatory for domestic vehicles, no promotion for foreign vehicles
PR 2	Increase the number of Users using the service	EETS Providers		This is a task for Issuers (EPs) However TCs can help user incorporations				
PR 3	Increase the number of automatic tolling booths being service compliant	EETS Providers		This is a task for Toll Chargers. In Spain, new motorways are requested to install VIA-T interoperable ETC systems				
PR 4	Dissemination of information to Users regarding basic service rules	EETS Providers and TCs		Web site...by ASETA. Some promotional campaigns ... >T<				
PR 5	Information to service players, and specifically to Users on future service developments	EETS Providers and TCs		New schemes announced on the media. No specific campaigns for VIA-T				

4. Additional Service Components and Functions, Contract Structure and Lessons Learned

4.1 Additional Service Components and Functions

Chapter 3 is aligned to CESARE III service functions. This chapter derives those service components and functions which are not mentioned in CESARE III from chapters 5 and 6 of the seven project descriptions.

Governance and Certification:

MEDIA

- define certification policy including the certification costs and their possible share allocation
- decide on requirements for a legal framework for the extension of User contracts (esp. in case of sub-EETS)
 - EETS Service goes step-by-step in operation
- establish advisory group(s) (Toll Chargers, EETS Providers, e.g.) to take into account all stakeholders
- define the legislation to have the possibility receiving special commercial conditions from a Toll Charger independent of local customers or EETS Users
- define the legislation for having the possibility of concluding bilateral contracts
- define a guideline for cost sharing of upgrading necessarily needed within the Toll Charger Systems to be compatible with EETS (e.g. security aspects)
- attend to that processes and the collected data are absolutely court-proof
- specify the information exchange between EETS Provider and Toll Charger
- recommend specific technical requirements for implementing the Service

VIA-T

- define a common agreement on technical and operational rules and make it part of the general contract framework
- see to it that the system is defined in an open market environment
- define a common agreement between TCs on contractual issues

LSVA

- audit periodically the data collection and the internal procedures of an EETS Provider (means: check availability, consistency, conformity, accuracy, completeness and authenticity)
- attend to that all partners are treated equally (dispute handling)

TIS-PL

- define a common set of rules specifying the service definition and the technical, administrative and financial requirements, and to be completed by bilateral contracts defining particular conditions (contributions, payment guarantees, terms of payment, etc.).
- guarantee a non-discriminatory entrance of new EETS Providers and/or Toll Chargers
- define precise dispute settling procedures including a possible intervention of an arbitrator on demand of the parties

Service User Support:

MEDIA

- define the cases where User complaints of charged transactions must be handled either by the EETS Provider or by the Toll Charger

LSVA

- obey the rules for cross-border invoicing

Contract Issuing:

MEDIA

- Define common rules with the possibility of bilateral contracts for remuneration of the work of the Contract Issuers
- Define a suitable business case for all partners

4.2 Contract Structure and specific features

TIS/PL

- The service is based upon a MOU between Toll Chargers, with their commitment to install compatible RSE, define the common rules and specify the functional and operative features (data transfer, payment guarantees);
- Bilateral agreements TIS/PL Providers – Toll Chargers. Each of the bilateral agreement by each pair TCs-EPs has general and particular clauses (the general clauses are mandatory and come from the MoU);
- TIS/PL providers establish a contract with the users;
- TCs may hold specific agreements with users for toll discounts

VIA-T

- A unique MoU between toll motorway concessionaires (toll chargers). New Toll chargers are able to be incorporated to the service by accepting the MoU and signing an addendum;
- Agreement between toll chargers and EETS representatives;
- A set of technical and operational rules, based on PISTA deliverables [See Ref.4]

VIA IBERICA

- MoU between ASETA members and (APCAP members + Via Verde Portugal);
- Spanish ETS Providers shall establish operative agreements with the Portuguese clearing house SIBS and Via Verde Portugal. The agreement will be slightly different for Bank issuers than for Non-financial issuers like RESSA, DKV or issuers related to petrol companies;
- A set of technical and operational rules shall be agreed by all Parties;
- Specific documents required for the incorporation of new TCs and Parking operators

NORITS

- The main principle of NORITS is: One Contract – One OBE – One monthly invoice – Multiple transport services – Cross-border service;
- The NORITS Contractual structure includes: A Joint Venture Agreement between TCs, which are either toll road operators or National Road Authorities; The NORITS Issuer Agreement (at the moment, signed by the same actors than the NORITS JVA) and the User Contract;
- The usage of NORITS is also extended to ferries as Toll Chargers

MEDIA

- The MEDIA Service MoU is signed by all parties (TCs and EPs) to set up the general conditions and obligations of the parties;
- Bilateral agreements are signed between each couple TC-EP. These agreements define how the payment is ensured and establish commercial rates and data information exchange;
- User contract with one of the EPs

GERMAN TRUCK TOLLING

- The German toll service covers the entire network of German motorways. The operator Toll Collect acts as toll charger and service provider. Some of the statutory tasks and the enforcement are carried out by the Federal Office for Goods Transport;
- The service components fit very well into the main roles as defined by the Cesare III reference model. For EETS purposes some of the existing functions may have to be split up to support the EETS roles Toll Charging and EETS Provisioning

SWISS LSV

- Legal framework supporting the service is the Act and Decrees for the establishment of the National Road Charging system for trucks and the entitlement of the Swiss Custom Authority to carry out the service

4.3 Lessons learned

TIS/PL

- Main advantages: A non-discriminatory market-based approach and a relatively easy incorporation of new actors;
- TCs shall sign his adhesion to the Joint Venture Agreement. However, new EP shall adhere to JVA and make 12 bilateral agreements with current Toll Chargers in TIS/PL;
- The main drawbacks is the need for the bilateral negotiations;
- The main difference with the previous TIS (LiberT) system is the division of tasks between TCs and EP, following the CESARE III model;
- Operating since January 2007, maybe it is still early for a deep evaluation.

VIA-T

- Advantages of the model: Efficient clearing service; Reduce the insolvency of clients/users; Share distribution channels;
- Drawbacks: Requires a complicate network of agreements; Invoicing to users not always solved; Several aspects need to be redefined;
- VIA-T outsourcing strategy has helped the TCs keep at their own business and improve efficiency in most of the functions;
- The system works properly in a national-wide context;
- Non-corporate management bodies can hold the system and take decisions like validating new models of OBE or introducing new Toll Chargers and/or Issuers;
- The model may need some adaptations if relevant changes in the interoperable scenario would appear;
- A set of technical and operational rules, based on PISTA Project outcomes. PISTA transaction model was fully based on CESARE II technical outcomes. This has been working properly but using lower levels of security. At this moment, CESARE/PISTA transaction model seems to have been superseded by new approaches (EG11, ISO15705). However these new models of transaction have not been implemented yet under real operating conditions.

VIA IBERICA

- Advantages: Big user expectations;
- Drawbacks: A cross-border enforcement system is required; Currently Portuguese ETC lanes have no barrier enforcement; Portuguese Toll Chargers need empowerment from the Spanish EPs to let them prosecute evaders; Spain needs a central invoicing system;
- Via Iberica Electronic Tolling service is not actually implemented.

NORITS

- The main advantage of NORITS is that JV Agreement shall make simple the access of new TCs and EPs to the service, by signing their adhesion to the existing regulations;
- It is important to realise that JV Agreement is much easier to apply with a limited number of participants, which is the case in the current NORITS system;
- Cooperation established based on bilateral agreements, which include a “walk away” clause, available for all partners;
- NORITS partners believe that the interoperability will be achieved by means of gradual extensions of cooperating networks of TCs and EPs. The extension of ETS interoperability will be based on multilateral contract agreements between stakeholders, which is not difficult at the current stage but will be more difficult when the number of partners increases.

MEDIA

- Advantages: A clear division of roles; Bilateral agreements between TC and EP, which provides flexibility to the model; and independent contractual models (agency/resellers);
- Disadvantages:
 - Data exchange interface is complicated (multiple formats)
 - Certification has no common process (different standards)
 - Bilateral agreements are time consuming and risky
 - Hard to change and amendments of common documents
 - Dispute handling. Neutral organisation needed for settlement
 - Security aspects.
- However, some of the disadvantages listed above exist not only in MEDIA, but also in many other Regional ETS. The system is still in the implementation phase, so there is no track record available for operational experiences.

GERMAN TRUCK TOLLING

- The main advantage of the German Truck Tolling system is the flexibility of the OBE comprising GNSS/GSM as well as DSRC technology;
- The national toll system is currently managed by a single operator within a contractual framework between the state and the operator including provisions for a high level of service quality;
- The national legal and contractual framework in Germany will probably have to be adjusted depending on the outline of the completed EETS regulation;
- In preparation of EETS additional service components will have to be defined; in particular the existing level of service will have to be achieved by EETS providers

SWISS LSVA

- The main advantage of the LSVA model: Full control by the Customs Agency. Easy to detect irregularities;
- As a drawback, the system is genuine (unique in Europe) and it has never been implemented outside the Swiss borders;
- On the other side, the system design is legally sound and court-proof. Guaranteed payment for the transactions. The enforcement is directly carried out by the Swiss Customs Authority with a high level of performance.

5. General Comments and Conclusions

The above chapters and the annexes provide a comparison between CESARE III functions and the different ETS systems developed and planned in European countries with the aim of European Electronic Toll interoperability. They study existing systems and initiatives and include the functions and roles of the CESARE III model, up to a certain degree.

Name of the service	CESARE III Model Degree of compliance	Comments
TIS-PL	High compliance	This DSRC-based ETS started up after the completion of CESARE III
Via Iberica	Medium compliance	The Electronic Toll Service involves cross-border interoperability but has not started yet
Via T	Medium/high compliance	This DSRC-based ETS was implemented previously to the completion of CESARE III
NORITS	Medium/high compliance	This DSRC-based ETS was implemented prior to the completion of CESARE III. NORITS involves cross-border interoperability
German Truck Tolling	Medium compliance	The GNSS/GSM based Electronic Toll Service was implemented prior to the completion of CESARE III
MEDIA	High compliance	This Electronic Toll Service involves cross-border interoperability in four countries and its development happened in parallel to CESARE III
Swiss LSVA	Low/medium compliance	Distance-based Electronic Toll Service

MEDIA and TIS/PL could be considered the Electronic Tolling Services which are most compliant with the CESARE III model. As both services were defined and are being implemented after the most relevant outcomes from CESARE III Project, they assumed most of those outcomes in their business model.

A common feature of the CESARE III compliant initiatives is a clear division into roles. This has been emphasized in the descriptive documents of TIS/PL, MEDIA, NORITS and VIA.T/Via Ibérica.

VIA-T in Spain can be considered compliant with many of the functions defined in CESARE III, but as the development and implementation of this service was prior to the outcomes from CESARE III, there are some aspects that should be adapted or simply were not required in VIA-T business model.

In France, there are remarkable differences between TIS/PL and the previous system TIS/LiberT. In the previous French system, which was intended only for light vehicles, the roles of Toll Charger and ETS Provider were carried out by the same organizations, the toll concessionaires. However, TIS/PL, which is a service focused on the heavy vehicles, the division of roles between Toll Chargers and ETS Providers was established as a basic feature.

The professional drivers are willing to pay for services as they realize these services provide enough value for their money: availability of a reliable means of payment, usage in a number and variety of places (fuel, repairs, restaurants and hotels, as well as toll roads) and countries, a common invoice, VAT refunds and other interesting services. This encouraged the French motorway toll operators to make use of the separated role model as defined in CESARE III.

In the Scandinavian countries NORITS provides for a true cross-border interoperable system. In this case the division in roles is not fully implemented as Toll Chargers like Øresund and Store Bælt Link operators (among others) also manage contracts with users and provide electronic devices. However, the system definition allows for a further appearance of pure ETS Providers or to accept European-wide users with contracts managed by with European ETS Providers.

MEDIA also focuses on heavy vehicles and is seeking to make the TIS/PL concept interoperable with other services and Toll Chargers in other countries, like the Austrian free-flow Electronic Tolling system and the Italian and Slovenian national systems. MEDIA Electronic Toll Service Providers shall provide a single contract but multiple devices (or multi-functional devices) to allow their clients go through the associated countries. The approach of MEDIA is a good test for the EETS and the results obtained are of paramount relevance.

Via Iberica is a project with the objective to make interoperable the Spanish VIA-T and the Portuguese Via Verde services, by means of a structure of roles and functions deeply inspired in the CESARE III. However, as the business models of two systems were designed in a substantially different way, both of them require certain modifications (mainly adaptations to the CESARE II model) to allow for a true contractual and operational interoperability. These adaptations are being gradually implemented, but there are still some aspects that need specific agreements.

On the other side, the rest of the national ET services studied appear to be substantially different than the above mentioned. Not only because they are based on different technologies, but also because their operational approach and business model is clearly different.

The German Tolling system is managed on behalf of the German Government by a single operator, not being the owner or the road assets (face to the toll road concessionaires, who are owner for a certain period of time). By means of a service contract (including high service level agreements) with the German Ministry of Transport, Building and Urban Affairs Toll Collect integrates the functions of Toll Charger and ETS Provider. The current business processes can be assigned to the CESARE III roles in the future without significant problems.

Interoperability of the German System in respect to technology can be achieved by software upgrades of the OBE.. The functions and roles defined in CESARE III can be incorporated in the German system, adjustments to the German legal and contractual framework will be necessary.

Finally, the Swiss LSVA system is a national system, managed by a Governmental Authority, the Swiss Customs. Toll is applied to trucks going across all roads in Switzerland based on the number of kilometres and the level of pollution. Swiss Customs Authority carries out the three CESARE III roles of Interoperability Manager, Toll Charger and ETS Provider. Although being a purely proprietary system, LSVA allows for external providers, but only for the manual process (which is not actually EFC but a tax prepayment scheme). On the other hand, Swiss OBEs are accepted as OBE in the Austrian truck tolling system, this being an example of asymmetric cross-border interoperability.

As a matter of conclusion, new initiatives tend to include more of the CESARE III concepts and functions, but most of the existing services would require relevant adaptations to achieve the common features for the European ETS.

As the Directive allows for a peaceful cohabitation of local/regional/national Electronic Tolling Services with the EETS, each of the existing service members shall decide on the implementation of the adaptations to convert their service into a fully compliant EETS or to leave them as a second choice for their national/local users.

In the case of big trucks, buses and other heavy vehicles which drive along the European network it seems reasonable to encourage them to be users of the EETS. However, the case of light vehicles, small goods vehicles, and specially the users that are non cross-border, the need for an EETS is not so clear and the national/local ETS can completely fulfil their needs. Also in the case of frequent cross-border users of light vehicles operate only via one border; this case is also easily solved with bilateral agreements between neighbouring national/local services.

Due to the large number of service users who are served well with local or national contracts, it seems reasonable to assume that practically all service providers will continue to offer the local contracts as an alternative to an EETS contract. EETS can be regarded as an add-on service.

6. Annexes

SG	System	Document
1101	TIS-PL	C-IV-WP01-SG1101 TIS-PL Project Description_V11 080305
1102	Via Iberica	C-IV-WP01-SG1102 Via Iberica Project Description_V10 080206
1102	VIA-T	C-IV-WP01-SG1102 VIA-T Project Description_V11 080305
1103	NORITS	C-IV-WP01-SG1103 NORITS Project Description_V10 080206
1104	German Toll Collection	C-IV-WP01-SG1104 EFC-Germany Project Description_V10 080206
1105	MEDIA	C-IV-WP01-SG1105 MEDIA Project Description_V10 080206
1106	Swiss LSVA	C-IV-WP01-SG1106 LSVA Project Description_V10 080206
1107	Legal Analysis	C-IV-WP01-SG1107 LegalAnalysisRegionalETS_V10 080212

7. References

Ref no.	Document
[1]	CESARE III Deliverable D1.2 - Revised CESARE Model – October 2006
[2]	CESARE III Deliverable D2.1 – Detailed Service Definition – October 2006
[3]	CESARE III Deliverable D6.1 – List of Relevant Procedures for Interoperability – October 2006
[4]	VIA-T Operative and Technical procedures of the Interoperable Systems for Tolling Applications of the Spanish highways (English translation in progress)
[5]	

