



CESARE III PROJECT

Interoperability of electronic fee collection systems in Europe

D3.1 REPORT ON NATIONAL ORGANISATIONAL ARRANGEMENTS FOR CONTRACTUAL INTEROPERABILITY

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1. Executive Summary

The number of toll schemes in Europe offering users the possibility to pay tolls electronically is increasing. Motorway toll schemes were the first to offer such payment services. These mostly used microwave communications between an in-vehicle device and a roadside beacon.

Other types of road charging schemes are being introduced which use different technologies. The European Commission became concerned that the various systems for electronic payment of tolls may not be interoperable and may therefore create a barrier to the free movement of people and goods across Europe.

Directive 2004/52/EC on the interoperability of electronic road toll schemes in the Community was adopted in April 2004. This Directive defines a European Electronic Toll Service (EETS).

The concept is that toll scheme users will be offered a service for the payment of all tolls across Europe. The service users will receive an in-vehicle device which will be guaranteed to communicate with any system offering EETS. It is intended that user will receive a single invoice covering all the tolls charges incurred in the period of the invoice.

The EETS involves many different aspects – regulatory, organisational, contractual, procedural, technical. It also has to balance the aspiration of providing a common payment service to users, while leaving the choice of charging policy and toll scheme to each country.

CESARE III has been charged with defining the contractual framework to deliver the service. This is complicated by the fact that the service is subject to a regulatory process involving Member States. While many of the entities involved will be commercial organisations who are able to enter into contractual arrangements, some are public sector organisations who face particular problems in being part of such a commercial framework.

This report is designed to assist Member States who at present have no suitable arrangements to enable them to fulfil the requirements of the Directive. It provides guidance to Member States and other countries on a process to move the responsibility for the delivery of the service from government level to the organisations who will actually operate the EETS.

CESARE III has proposed a refined business model. This involves four new roles: -

- Toll Charging

- EETS Provision
- Interoperability Management
- Service User

These terms are used in this report specifically to refer to the required roles to support and use the EETS, the EETS Provision by providing the (EETS) service to the user and Toll Charging by accepting EETS. The organisations undertaking these two roles – the Toll Charger and the EETS Provider - are the generic names given by CESARE III to the parties who will sign the contracts being drafted by CESARE III. They will therefore need to be able to enter into contractual obligations.

The entities who will provide the roles of Toll Charger and EETS Provider will be determined partly by national governments and partly by commercial market.

There are many different organisations currently providing toll services. The organisation to be designated as the Toll Charger will have the assigned responsibility to collect tolls for road use. These will generally be existing organisations, some being private organisations and some being publicly owned and operated. These organisations are obliged by the Directive to support the use of EETS in their toll scheme.

There is no single organisational structure proposed for implementation in each country. Each country is left free to assign the role of the Toll Charger to whatever entity is most appropriate to sign the EETS contract.

The EETS Provider is a newly defined role. The organisations fulfilling this role will provide the EETS to users. Users will sign a contract with an EETS Provider which will enable them to use and pay for all toll schemes within the scope of the Directive.

CESARE III proposes that any organisation fulfilling all the requirements for the EETS should be permitted to become an EETS Provider. These requirements will be defined and managed by the Interoperability Manager function.

Note: Germany does not share the understanding that the directive aims to create a completely open market so that any organisation would be free to offer the EETS if it fulfils certain requirements. In any case it is necessary that EETS providers are only admitted as such if they fulfil the relevant national requirements for an actor performing a comparable role within the domestic system.

CESARE III is defining the contractual aspects of the EETS, including the obligations, requirements, rules and procedures involving the Toll Chargers and EETS Providers in delivering the service.

EETS will operate within common European and specific National legal frameworks. Each Member State in the EU is obliged to ensure that the service is offered, if required. This report focuses on the process to be followed by Member States that currently have no national organisational focus for their toll schemes.

This report proposes that each Member State adopts the following approach: -

1. Establish enabling legal framework in the way applicable to the country's legal system (i.e. transpose directive)
2. Identify schemes which fall within the scope of the Directive
3. Identify current/new legal and commercial relationships
4. Establish a national governance process for the EETS.
5. Identify changes required to implement the legal, commercial and contractual arrangements for EETS
6. Undertake the necessary actions to implement the changes
7. Facilitate and maintain the implementation of the EETS in the countries

While accepting of the EETS will be a legal obligation on all relevant toll schemes within the European Union, it is possible that other countries as well as other toll schemes may wish to accept EETS. For example, accession countries (e.g. Bulgaria, Croatia and Romania) and EEA countries not in the EU (e.g. Iceland, Liechtenstein and Norway) and Switzerland may decide to accept EETS. EETS Providers may, but will not be legally obliged, to offer EETS in such countries.

This report is initially aimed at Member States which have toll schemes within the scope of the Directive, but which do not yet have a mechanism for signing the necessary legal agreements to participate in the interoperable toll service defined by the Directive. Countries with plans for future toll schemes may also find the document helpful.

This report also concludes that there is a risk that the implementation of EETS may be hampered by the initial lack of an Interoperability Management role. It proposes that an Interoperability Management role be established to undertake the completion of the remaining tasks required for the implementation of EETS. Interoperability Management may need to be supported by the European Commission and Member States as well as other interested countries.

Each Member State is invited to consider the guidance included in this report and to develop an appropriate national action plan. Other relevant countries are also invited to consider the guidance.

Countries may also wish to consider the implications of the proposal for Interoperability Management.



2. Purpose and structure of the report

2.1 Purpose of this document

This report is primarily intended **to provide national governments of Member States** with information and guidance to assist them with fulfilling the obligations of Directive 2004/52/EC on the interoperability of electronic road toll schemes.

While accepting that the EETS will be a legal obligation on all relevant toll schemes within the European Union, it is possible that other countries as well as other toll schemes may wish to accept EETS. For example, accession countries (e.g. Bulgaria, Croatia and Romania) and EEA countries not in the EU (e.g. Iceland, Liechtenstein and Norway) and Switzerland may decide to accept EETS. EETS Providers may, but will not be legally obliged, to offer EETS in such countries.

This report is initially aimed at Member States which have toll schemes within the scope of the Directive, but which do not yet have a mechanism for signing the necessary legal agreements to participate in the interoperable toll service defined by the Directive. Countries with plans for future toll schemes may also find the document helpful.

The report has been prepared by the partners in the CESARE III project. These include representatives of motorway toll operators from across Europe drawn from Association Européenne des Concessionnaires d'Autoroutes et d'Ouvrages à Péage (ASECAP) and also the following Member States belonging to the Stockholm Group: -

- Germany
- Netherlands
- Sweden
- UK

Switzerland as a member of Stockholm Group is also a partner in the project. Finland cooperates through the Swedish partner.

CESARE III proposes a business model for achieving the EETS. One of the roles defined in this business model is that of the Interoperability Management. In due course, it is expected that this will be organised and managed as a commercial operation within EETS. However, there is a need for some interim arrangements to ensure that a smooth transition from the present European legal framework to an operational commercial service is properly managed. This report includes recommendations on these arrangements.



The project is supported by the European Commission as part of the programme of work to support the implementation of the European Electronic Toll Service (EETS)

2.2 Structure of the report

Section 4 of this report provides a summary of the requirements of the Directive, and the obligations on the parties involved in the provision of the European Service. It presents the organisational model, service definition, and contractual framework proposed by CESARE III.

Section 5 describes charging schemes which come within the scope of the Directive and Section 6 explains the organisations which currently provide tolling services.

Section 7 presents the CESARE business model for delivering EETS, including the new roles.

Section 8 identifies the obligations of these new roles.

Section 9 provides an overview of the potential impacts of the introduction of new technologies for charging.

Section 10 considers the issues facing all the stakeholders in implementing the service.

The report proposes (in Section 11) an approach for use by each Member State and interested other country in **transforming the legal obligations as set out in the Directive into a commercial environment to achieve the realisation of the EETS.**

Section 12 identifies outstanding issues and Section 13 provides some conclusions.

2.3 Nature of this report

This report is rather different from other CESARE III reports. It may be viewed not so much as reporting on work done within CESARE III, but rather to provide an interface to the outside world in terms of the obligations and actions required by individual Member States and other countries. These actions are in addition to the European Governance process and are concerned with national governance issues.

Ideally, this report would address all the implications of CESARE III proposals for all countries. Unfortunately, this is not possible within the available resources. The report does provide a process to be followed by each country to ensure that these implications are understood and addressed. The way in which this will be done is left to each country to determine.

When finally approved, this report will be submitted to the European Commission, along with all the other CESARE deliverables.



2.4 Taking decisions on the EETS

The European Commission has established a Regulatory Committee to take the necessary decisions relating to the European Electronic Toll Service. That Regulatory Committee consists of 25 member states. Voting will be by a qualified majority. This means that: -

- The resolution must receive 232 votes weighted according to comitology rules governing Directives
- There must be a simple majority of Member States (i.e. 13 in favour)
- The countries in favour must (on request) represent at least 62% of the European population

The European Commission has also established an "EFC Expert Group" of nominated experts. In addition to the 25 Member States, this includes Iceland, Norway, Switzerland, Croatia, Romania, Bulgaria, Turkey, ACEA, ASECAP, IRU, IRF. This group meets regularly to receive reports and recommendations concerning EETS. It has no legal status and acts in an advisory capacity only.

It is expected that the CESARE documents will be considered by the EFC Expert Group for possible subsequent consideration by the EFC Regulatory Committee.



3. Introduction

3.1 Directive 2004/52/EC

The European Directive (2004/52/EC) on the interoperability of electronic road toll systems in the community was adopted in April 2004. The CESARE III project forms part of the programme of work commissioned by the EC to fully define the European Electronic Toll Service (EETS). It is expected that such a definition would form the basis of a decision to be taken by Member States through the Regulatory Process established to support the Directive.

3.2 The CESARE III project

CESARE III is the third phase of the CESARE programme, which started in 1998. The overall aim of CESARE is to allow road users to make use of their on-board unit (OBU) for payment of road user charges throughout Europe.

The first phase of CESARE (1998-1999) defined the requirements for technical and operational interoperability between the tolled motorway operations across Europe. CESARE I was undertaken entirely by ASECAP members and was focused on the specific need of Tolerated Motorway Operators.

The second phase (2001-2002) developed a Memorandum of Understanding defining all technical, organisational and operational rules upon which contractual interoperability among ASECAP members is going to be established. CESARE II involved several Member States in providing comments and input. An MoU was developed which defined the necessary commercial arrangements for interoperability.

CESARE III has taken place in the context of the implementation of the EFC Directive and therefore has taken full account of the other activities related to the European Electronic Toll Service (EETS) being coordinated by the European Commission.

The development of a business model for interoperability of electronic fee collection began in the MOVE-it project and has been developed further by CESARE and CESARE II, and CESARE III. Further relevant work has been done in other projects, such as CARDME, MANS, NORITS and MEDIA.

CESARE III consists of the following work packages:-

- WP1 Review and revise the CESARE business model
- WP2 Review and revise the service definition for EETS

- WP3 Propose organisational arrangements for contractual interoperability
- WP4 Review and revise the contractual documents
- WP5 Identify the relevant procedures

CESARE III is intended to broaden the approach developed in CESARE I and CESARE II to apply to all countries in Europe. Significant challenges which have been addressed by CESARE III are: -

- Involving new roles in the contractual framework
- Supporting equipment based on new technologies
- Dealing with new enforcement requirements
- Dealing with different types of service
- Supporting new European legislation.

3.3 Use of this report

This report is intended to be used primarily by Member States in addressing their obligations under the interoperability Directive (2004/52/EC). Whereas the Directive places obligations on operators and Issuers of toll schemes, some of the schemes are operated by Government Departments, or are under the direct control of such Departments.

The CESARE II approach was based on contractual agreements between commercial undertakings. Within CESARE III, the issues facing public authorities have been addressed. The proposals of CESARE III are also based on the expectation that the EETS will be provided by commercial undertakings.

This report is the outcome of work within the project to assist Member States to transform their legal obligations into a commercial environment in which the market can achieve the realisation of the EETS.

Other countries as well as other toll schemes not being subject to the Directive may choose to accept EETS. They are not under a legal obligation to do so.

3.4 Methodology

The methodology used for this report has been the following: -

- Confirm the requirements of the European Directive 2004/52/EC
- Consider the types of road toll schemes which are expected to come within the scope of the Directive and why



- Examine the current arrangements for delivering electronic fee collection across Europe
- Consider the impacts of the revised CESARE model and service definition as proposed to support the EETS.
- Consider the obligations of the Directive on the roles in the CESARE model
- Provide advice to Member States and other interested countries in applying the CESARE outputs and implementing the EETS



4. Obligations of Member States arising from Directive 2004/52/EC

4.1 The legal framework for inter-operable EFC

The Directive applies to the electronic collection of all types of road fees, on the entire Community road network, urban and interurban, motorways, major and minor roads, and various structures such as tunnels, bridges and ferries.

The Directive does not apply to:

- road toll systems for which no electronic means of collection exists
- electronic road toll systems which do not require the use of on-board equipment
- small, strictly local road toll systems for which the cost of compliance with the requirements of this Directive would be disproportionate to the benefits.

Article 2 of the Directive defines a European Electronic Service (EETS) which encompasses the entire road network in the Community on which tolls and road usage fees are collected electronically.

Clause 2 of Article 2 states that "Operators shall make available to interested users on-board equipment which is suitable for use with all electronic toll systems in service in the Member States."

The EETS is expected to be established through: -

- A contractual framework
- Technical standards
- The offer of a single contract to users which will cover the use of all charging systems within the scope of the Directive
- On-board Equipment (OBE) which is suitable for use with all electronic toll systems within the scope of the Directive.

Clause 1 of Article 3 states:

"A European electronic toll service shall be set up which encompasses all the road network in the Community on which tolls or road usage fees are collected electronically. This electronic toll service will be defined by a contractual set of rules allowing all operators and/or issuers to provide the service, a set of technical standards and requirements and a single subscription contract between the clients and the operators and/or issuers offering the service. This contract shall give access to the



service on the whole of the network and subscriptions shall be available from the operator of any part of the network and/or from the issuer.

Clause 4 of Article 3 states:

“Where Member States have national systems of electronic toll collection, **they shall ensure that operators and/or issuers** offer the European electronic toll service to their customers in accordance with the following timetable:

- (a) for all vehicles exceeding 3,5 tonnes and for all vehicles which are allowed to carry more than nine passengers (driver + 8), at the latest three years after the decisions on the definition of the European electronic toll service, as referred to in Article 4(4), have been taken;
- (b) for all other types of vehicle, at the latest five years after the decisions on the definition of the European electronic toll service, as referred to in Article 4(4), have been taken.”

Article 6 states: -

“Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive”

4.2 Interpretation of the Directive

During the detailed discussions held within the CESARE III Project, it has become apparent that the Directive can be interpreted in different ways.

For example, clause 4 of Article 3 of the Directive refers to “National systems”. There is a lack of clarity about the definition of “national systems”, yet there are specific obligations related to such countries. Inevitably therefore, some of the issues which arise from the Directive can only be addressed on a bi-lateral basis between the country concerned and the European Commission. Interpretation will need to be tested and confirmed by case law.

One of the key issues concerns the nature of the delivery mechanism for EETS. The Directive is a legal instruction, addressed to Member States, requiring them to transpose it into national law. However, the Directive refers to a contractual framework between all operators and/or issuers. The process whereby a legal framework is translated into a commercial framework is not defined in the Directive. There are divergent views on how this might be achieved.

This is the main problem addressed in this report. For some countries this is straightforward, for others it is seen as almost impossible.



4.3 Obligations on Member States

The Directive is a European legal instrument. All Member States are obliged to transpose the Directive into national law, at which point the national legal framework will determine the obligations on the parties concerned.

The Directive refers to operators and issuers of toll schemes. As will be described below, many, but not all of these are commercial companies.

The Directive places a particular obligation on Member States which have "national" systems, although it is not explicit about what constitutes a national system. For the purposes of CESARE III, "national" is taken to cover any "domestic" toll system coming within the scope of the Directive (subject to the exclusions mentioned in Article 1.2).

CESARE III has proposed a commercial framework which separates the process of charging the tolls from the payment service provided to the user for paying all the tolls and receiving a single invoice. Whereas the organisations undertaking the toll charging role will be determined by national governments, the payment service could be provided by any commercial organisation meeting the requirements of the EETS stakeholders. The role of governments in relation to such commercial service providers is uncertain. Toll operations in some countries are entirely commercial and therefore this approach is simply an extension of the present services. In countries where the national toll operation is (or expected to be) government controlled and subject to a government contract, it is not at all straightforward to determine the obligations of these governments in relation to European payment services.

Note: The CESARE III proposal has raised problems in Germany where there is a single contracted organisation providing all the functions. The principle of having to accept any commercial EETS Providers has not been agreed by Germany.

Since the EETS depends on these service providers, there is a question about what the role of a Member State could be. *It is not possible to* prescribe a commercial payment service provider by law. On the other hand: since the EETS business is an international one, it is questionable if a single state could contract a commercial company to do this, especially if that company was in competition with other commercial companies who have received no such assistance. If all Member States chose to wait and see whether payment service providers emerge, then there is a risk that none will emerge, and then the EETS will not be available. This would be in breach of the Directive requirements.

These issues are discussed further in the report.

4.4 Obligation on “operators”

The language of the Directive refers to “operators” and “issuers”.

- Art 2, par 2 states that “operators shall make available *on-board equipment*” without reference to the service.
- Art. 3 par 1 refers to a contractual set of rules *allowing* operators to provide the service.
- Art.3 par 4 states that “Member States shall *ensure that operators and/or issuers offer EETS* to their customers ...”

The Directive does not make clear the relationship between an OBU and the service. CESARE III has investigated the requirements further and has determined that the service to be offered will need to be paid for. Toll Operators expect to continue to receive the same revenue and users expect to pay the same toll. There is an issue on how the new service will be paid for. In particular, there is a need for more clarity on what the obligations of operators are and how to move from an obligation to offer the service and to provide the OBU, to the obligation to accept third parties' customers.



5. Charging schemes within the scope of the directive

5.1 Different types of scheme

The Directive refers to the entire Community road network, urban and interurban, motorways, major and minor roads, and various structures such as tunnels, bridges and ferries.

There are several different types of charging scheme which might fall within the scope of the Directive. These cover: -

- Motorway Toll Schemes
- National lorry charging schemes / Taxation schemes
- Urban congestion schemes
- Local infrastructure charging schemes - including bridges, tunnels and crossings

There are substantial differences in the legal basis for the different schemes, and in the way in which the schemes are organised and operated.

5.1.1 Motorway Toll Schemes

Most motorway schemes are operated by commercial companies under concessionary agreements. For example, there are many such schemes in Italy, France, Spain and Portugal. The operators manage the roads and collect tolls from all vehicles using their roads. The operational environment for the charging of tolls is stable and quite similar across these companies, mostly relying currently on users passing through toll plazas.

Users can be offered an additional service, for which they are charged and also loyalty or incentive discounts. Consequently toll operators are geared towards providing a service for their customers. They are usually well organised at the national level to address common issues. For example, there are national associations of toll operators in Italy (AISCAT), France (ASFA), Spain (ASETA), and APCAP (Portugal). The whole operation is commercial, with each company free to enter into commercial agreements to operate the toll collection in the most effective manner. This leads to variation in the organisational arrangements to support payment in different countries.

It is common for Toll Operators to offer users the possibility to pay the toll with a wide variety of payment means. Issuers of credit cards, debit cards and fuel cards provide their users with a payment service. The Issuers normally charge both the user and the merchant, in this case

the Toll Operator. The charge typically takes the form of a commission based on a percentage of the total value of the transactions using that payment means. This commission is traditionally quite low and reflects the low risks associated with toll plaza operation. Since all of these schemes use dedicated short-range microwave (DSRC) on-board equipment, which is reasonably priced, there is great potential for cost-effective inter-operability between these schemes.

These schemes are the most straightforward to bring within the scope of the EETS and the toll operators concerned are actively working on achieving this. Toll Operators often perform several roles, including that of Contract Issuer. CESARE III proposes for the provision and operation of the EETS to separate these roles, as did CESARE II. Some of the Toll Operators may undertake the roll of Contract Issuer for the EETS (known as an EETS Provider). Others may be happy just to accept EETS users from any Contract Issuer.

Nevertheless this does not come without cost: it may be necessary to adapt some of the existing tolling infrastructure, such as roadside equipment and the back-office processes and systems.

5.1.2 Nationwide lorry charging schemes

Lorry Toll Scheme in Austria

The nationwide Austrian truck tolling system ("GO-Maut") is applicable for all Austrian motorways and expressways encompassing a total length of more than 2000 km.

All vehicles above 3.5tons MLW are tolled by the Austrian distance related electronic tolling system for trucks and coaches.

ASFINAG is the operator of the Austrian motorway and expressway network. ASFINAG was founded in 1982. It is a private limited company owned by the Republic of Austria. Legal basis is the ASFINAG Act 1982 (BGBl. Nr. 591/1982).

In 1997, the company was assigned the competence to plan, build, maintain and toll the Austrian motorway and expressway network. Based on the ASFINAG Authorisation Act 1997 (BGBl. I Nr. 113/1997) in connection with the Contract of "Rights" concluded amongst ASFINAG and the Republic of Austria, ASFINAG is granted rights on of the entire Austrian motorway and expressway network. The ASFINAG will be in charge of all tolling operations in Austria, and has two roles: GO-Maut Service Provider (Contract Issuer) and Toll Charger.

Sovereignty over the design of toll categories and the toll tariffs is exercised by the Federal Minister for Transport, Innovation and

Technology. All revenues from tolling are exclusively dedicated to road construction and maintenance.

Tolls paid within the scope of the Austrian truck tolling system are fees under private law subject to VAT (20% for Austria at the moment).

The technical solution is based on dedicated short-range communication (DSRC). In an open toll system each passage of every single section subject to toll is detected, allocated and tolled according to the applicable tariff by means of stationary installations (toll gantries). Payment can be made using either post- or pre-payment.

The tolling system makes use of a mandatory on-board-unit (called GO-Box), which is based on DSRC compliant to CEN standards (5.8 GHz). It is built as an open toll system (i.e. the driven distance is determined by the motorway sections used), with free-flow multilane tolling technology, which collects toll without any obstruction of the traffic flow: on each motorway section, a free-flow multilane tolling station debits the fee due. In addition to these new tolling stations, beacons are installed also at the existing low-speed single-lane tolling stations (at six tunnels and special highway sections): in this way, the special fee can be charged through DSRC and does not have to be paid manually. The GO-Box allows the declaration of the number of axles of the vehicle combination through a simple button.

250 Point of Sales (PoS) are installed at petrol or border stations: the DSRC personalisation stations have been installed in the petrol stations near the cash register. The personnel of the petrol stations has been educated to personalise and substitute OBEs and charge belated payment of fee to users that signalled irregularities. Further information is available at the call centre and the internet portal.

As payment means the major credit and petrol cards, as well as Maestro cards are available. For reloading of Pre-pay OBEs cash is also accepted. In Austria no rebate system exists.

At the SelfCare portal at www.go-maut.at, customers can find detailed information and practical tools (e.g. toll calculator). In a secure area, they can also view their billed toll transactions.

The non-discriminatory access to the road network subject to toll is enabled by the use of a simple OBU, which can be obtained at many points of sale near to and on the road network at the cost of a processing fee of €5 (and a toll credit of 45€, unused toll credit will be refunded). Self-installation is simple and fast.

Based on a MoU with the Swiss Customs Authority (in Switzerland responsible for the truck tolling system) a one way interoperability was

reached, Swiss OBUs are accepted for tolling in Austria. Negotiations and technical discussions with Slovenia and Italy took place, but did not lead to successful results. These activities have in the meantime resulted into the MEDIA-project and are being further developed upon.

Accepting EETS Issuers may only require a modest extension to this service.

In the area of automatic enforcement, toll violators are detected by means of stationary and portable enforcement equipment and respective evidence is generated. Approximately 100 toll stations are also enforcement stations. HGVs and coaches are detected and checked if a correct transaction has been performed. In addition, portable monitoring systems are used that can be set up as required along various toll routes. If no complete transaction has been performed, if the OBE is blacklisted (due to: non valid payment means, theft, lost) or in case of "false axle declaration", a front and overview photo is taken and sent to the central system. The photos are manually checked on correctness. For domestic users the fine is sent to their home address. For foreign users the violation data is held in the database.

Enforcement officers at border stations or in special enforcement vehicles have on-line access to the database at anytime in order to check a foreign vehicles "criminal record". If the toll is not paid properly, the person evading the toll has the opportunity to immediately pay the substitute toll. In the event of total failure to pay the distance-based toll (truck, bus, motor home), the substitute toll is currently 220 euros of which 110 euros is for declaration of the incorrect category / number of axles. If the corresponding fees are not paid, administrative penalties follow.

Lorry Toll Scheme in Germany

The German Heavy Goods Vehicles Toll Scheme is ruled by the "Autobahnmautgesetz" law (ABMG; Motorway Tolls Act). The ABMG contains regulations regarding the **Principal**, the **Service Users**, the **Toll/EFC Operator** and the **Enforcement Authority**. The **Service User** is seen as the debtor of the toll, who can be the person, who

- is the owner or the keeper of the motor vehicle or
- decides on the use of the motor vehicle or
- drives the motor vehicle.

Debtors are liable as joint debtors.

The law defines certain obligations of the **Service User**, e.g. to contribute to the proper use of the tolling equipment.

The Bundesamt für Güterverkehr (BAG; Federal Office for Goods Transport) is determined as the recipient of the toll by law on behalf of the **Principal**, which is the Federal Republic of Germany.

The BAG is an authority, which is by law (among other tasks) responsible for the control of goods vehicles on federal roads. BAG has been performing this task of checking the technical conditions of vehicles and the compliance of drivers to driving time regulations at the road for more than 50 years now.

BAG was also responsible for the enforcement of the Euro-Vignette scheme between 1995 and 2003. Apart from being responsible for enforcement at the road BAG is also authorised to visit haulage companies located in Germany and to demand insight into freight documents.

The ABMG law allows the BAG to delegate the implementation and the operation of a tolling system to a private company.

In 2002 Toll Collect was assigned as the private assistant to the BAG after a formal award procedure according to European law. Thus Toll Collect can be seen as the real **Toll/EFC Operator**.

The Toll Collect system is composed of

- an EFC option based upon onboard units using GPS for location purposes and GSM as communication link to a central system, in which the due tolls are settled;
- a manual option comprising a pre-trip booking system with access via internet and dedicated terminals at petrol stations close to motorway entry points.

Location determination at certain points with limited availability of GPS signals is done using an infrared interface between the OBU and roadside beacons. This infrared interface is also used to request information about prior charging transactions stored in the OBU as part of compliance checking.

Any **Service User**, who is willing to pay the toll, has to use one of the payment options offered by Toll Collect (OBU, booking terminal or internet booking system). The use of cash is facilitated through the booking terminals.

To use the offered OBU or internet booking options **Service Users** need to register with Toll Collect. OBU can only be obtained and installed at one of about 1,900 service garages throughout Central Europe contracted by Toll Collect.

In doing so Toll Collect also acts as OBU Provider (and potential **EETS Provider**). The payment of the tolls can be made in different ways, which are dependent upon the elected Service User status (registered or not registered). Registered Service Users with an OBU can pay via fuel cards, credit or debit charge accounts.

The contract between BAG and Toll Collect was signed prior to the Directive 2004/52/EC coming into effect. However, in order to enable a technical solution for future interoperability the OBU of Toll Collect contains a DSRC interface (CEN TC 278, 5.8 GHz), which is not used by the German system.

The ABMG law is supplemented with two by-laws containing (among other things) some basic rules of using the components of the tolling system, e.g. the OBU.

By the contractual relationship between BAG and Toll Collect only Toll Collect is entitled to act as an operator. The main reason for that is, that the government wanted to encourage the industry to offer innovative solutions. To be open to the final technical design a functional specification was applied in the award procedure. One contractor (instead of many) can best take the overall responsibility for an innovative and complex system. Consequently, the government preferred to have one contract partner being responsible for the entire tolling system, in all its aspects, which also minimises the number of contractual interfaces.

In order to support the responsibility for the proper functioning of the system all parts of the system are owned by the Toll/EFC Operator, including the property rights.

The German on-board equipment, currently the only one using satellite based technology for location, is expensive, but is provided to users at no cost (although they have to pay for fitting the equipment). In line with its character and task as given by law, the BAG is responsible for the **enforcement** of the HGV Toll Scheme. Toll Collect assists the BAG by operating and maintaining most technical parts of the enforcement system as well as a part of the debt collection.

As requested by the Directive 2004/52/EC the contents have been transferred in to German law in December 2005. The "Mautsystemgesetz" law (MautSysG; Tolling System Act) is very closely formulated in line with the articles of the Directive. It also includes some basic rules on how to decide if toll schemes in Germany should be considered as being within the scope of the Directive. So far no other scheme within Germany, except the HGV Toll Scheme, is considered as being covered by the Directive. It can be expected that a few planned

local PPP motorway projects will become subject to the Directive because they are located along the routes of the TEN-T network.

There is now one nation-wide and two local EFC systems. There is not yet any interoperability between these systems. The MautSysG law inherently lays the ground rules for national interoperability within Germany, but this has not yet been applied.

Lorry Toll Scheme in Switzerland

In Switzerland all roads are subject to the Swiss Heavy Vehicles Fee (LSVA), which is considered as a taxation scheme. The Swiss Federal Roads Authority are responsible for the national roads, the 26 Swiss Cantons for the cantonal roads and the 2,740 municipalities for the municipal roads. The usage of the revenue is determined by law and is obliged for transport infrastructure.

The LSVA is a dual system, an Electronic Fee Collection system (OBU which records the driven distance from the tachograph, supervised by GPS positioning) and a manual system for occasional users (foreign users). The LSVA is similar to a closed system as entries and exits are registered.

The Swiss Customs is the operator of the LSVA toll system on behalf of the Swiss Confederation (Principal). Swiss Customs is owner and issuer of the OBU's which are available at no cost to users. All system components are purchased under the rules for public procurement by using functional specifications. For that reason Swiss Customs is owner of all relevant functional specifications used in the system. Customer contracts need not to be issued as the LSVA is a legal duty.

An important characteristic of the scheme is the obligation to co-operate, as well for the driver as for the haulier. For equipped vehicles the driver is responsible for correct manipulations on the road during the trip (declaration of trailer presence or absences and the border crossings). For non equipped vehicles the driver is responsible for the declaration of the tachograph reading and the trailer weight at entry and exit of Switzerland. For Swiss vehicles the person who keeps the registration (haulier) has to declare the road usage monthly by sending in a chipcard containing the collected data from the OBU and to pay the invoiced fee. In case of foreign vehicles the driver and the haulier together have the responsibility to pay the charged fee when leaving the country. In fact, the vehicle will not leave the country without a payment guarantee.

For Swiss vehicles the haulier receive a monthly invoice. In this case Swiss customs has different legal means to recover outstanding debts. Since the legal means for foreign vehicles are quite weak in principle the fee has to be paid when the vehicle is leaving the country. This can be done by the exit at the customs counter by cash or debit card. To benefit from faster processes the user can use fuel or credit cards. By using credit or fuel cards the fee is still invoiced to the legal responsible person for payment but the card company is paying on his behalf.

Since the Heavy Vehicles Fee is a legal duty independent of a service used no VAT is levied. The trip with a certain vehicle is the origin of the duty to pay the fee and therefore the fee can not be dealt independent from the vehicle. The purchase of the fee before a trip is impossible, which implies that reselling of the LSVA by a service provider is impossible. But even the liability for payment is given by law and remains unchanged it is possible, that through contractual arrangements a third party can pay the fee on behalf of the liable person.

Swiss customs as a federal administration is able and allowed to act in the frame of their legal mandate and the allocated budget. This mandate excludes all commercial activities generally and in particular the provision of road charging services witch go further than the levy of the LSVA.

Comment on existing lorry toll schemes

The existing national lorry charging schemes (in Switzerland, Austria and Germany) are "owned" by Government. These schemes are either subject to either taxation law (Switzerland) or toll specific law, which reserves the right to rule the tolling and namely the tariffs to the governments (Austria and Germany). In all three countries the obligation for the users to pay tolls are governed by law.

In Germany, the Government commissioned a single commercial company to operate the national toll collection service. The responsibilities and powers of the toll collection agent are laid out and defined in the contract.

The commercial freedoms of such an "operator" are quite limited. The Operator is typically paid for the toll collection service and must work strictly within their mandate. Any changes to the services offered can only be authorised by the Government and will usually require changes to the contract. While this is under the control of the Government, the process may involve considerable risk to the working systems, considerable time to renegotiate the contract and test the changes. All of this may be at a considerable additional cost.

If the changes involve a subsidy being paid by a government to a toll collection agent to offer services in other countries, in competition with commercial Issuers, then this will raise issues of fair competition, and may be challenged. On the other hand, if the collection agent is required to operate in a competitive environment, then the Government, as owner, may face a claim for lost revenue.

Switzerland has a national taxation scheme for heavy vehicles. The UK was, until June 2005, developing a taxation scheme for HGVs. Such schemes are governed by fundamentally different laws and operational procedures. For example, the user normally makes a declaration of the extent of road usage and this is accepted or challenged by the Tax Authority. This is quite a different process to that of a toll charge. The governance of national taxation schemes is likely to place tight constraints on the scope of the scheme.

Two roles are involved in the delivery of the EETS service, as proposed by CESARE III – Toll Charging and EETS Provision. Organisations fulfilling these roles are required to enter into commercial agreements to meet their obligations. This requirement may pose particular issues when the toll scheme is a taxation scheme operated on behalf of a government.

In taking the role of the Toll Charger, tax authorities and governments may find it difficult to enter into the necessary commercial agreements to empower EETS providers (being commercial agencies) to collect the tax or toll on their behalf. This is especially difficult if the commercial agency seeks to deduct a commission from the tax/toll revenue.

It appears that it may be possible for a third party to collect the money on behalf of the Swiss Customs Authority, of the German Federal Ministry and of ASFINAG (as it was previously), but this may not be the case for every country.

The EETS Provider role may also be difficult for tax authorities and governments to undertake (although there is no obligation for them to do so). Where schemes are operated by a single entity, such as in Germany and Switzerland, it may be necessary to redesign functions to implement the CESARE model for delivery of the EETS.

At least from the technical point of view the Austrian situation, being based on DSRC technology, and now operated directly by ASFINAG, as a company under public law 100% owned by the Government, is likely to be in a good position to accept payment from other Contract Issuers. In order to achieve the MEDIA Toll Service a public tender was issued for Contract Issuers. Inclusion of EETS may only be a modest extension to the MEDIA service.

CESARE has taken the view that each national situation is unique in relation to taxation schemes and national toll schemes ruled by governments. A general process to be followed to assist countries in creating opportunities for commercial organisations to offer services to support the EETS has been set out. It will, however, depend on the legal situation in each country and the extent to which this might be adapted to accommodate the EETS.

5.1.3 Urban congestion schemes

There are several urban charging schemes in Europe, such as in London, Rome, Bologna and Stockholm. These have generally different objectives and are usually organised at the City level. Most of the users are likely to be regular travellers into the city centre. Therefore there is a possibility that such schemes would be categorised as “small, strictly local toll schemes”, However the inclusion or exclusion of any scheme will depend on the outcome of a dialogue between the relevant Member State and the European Commission. The European Commission has suggested that it would consider the London Scheme to be within the scope of the Directive if it introduced electronic charging, but this has yet to be formally discussed with the UK.

5.1.4 Local infrastructure charging schemes

There are many local infrastructure charging schemes for bridges, tunnels and estuarial crossings. Some of these may be operated by ASECAP members and may be prepared to accept EETS users with equipment issued by an EETS Contract Issuer. It is unlikely these operators would wish to become an Issuer.

5.2 Response to questionnaire regarding national situations

In order to learn about the variety of national situations the partners of WP3 were asked to provide answers to a brief questionnaire. The results received are shown in a table in Annex B.

From these it can be seen that, in general, the thinking in the countries is still at an early stage. Only a limited number of Member States have so far transposed the Directive into national law so far.

Apart from Portugal, which is an ASECAP country, no other country has prescribed the institutions which will act as the signatories of an MoU.



5.3 International EFC Interoperability Initiatives

NORITS

In addition to single countries' answers, an input from the Scandinavian project NORITS was received. The situation in this regional interoperability initiative can be described as followed:

The NORITS Contractual Joint Venture (CJV) agreement is and will be signed in early 2006 by the following parties:

- (a) A large number of Norwegian toll operators as listed in an annex to the agreement
- (b) A/S Storebælt – a Danish limited liability company operating the Storebælt toll bridge
- (c) Vägverket – the National Swedish Road Administration (SRA) and
- (d) Øresundsbro Konsortiet – a bi-national legal entity based on an agreement between the Danish and Swedish governments in 1999 operating the Öresund toll bridge.

Notable is that SRA is not itself operating any toll collection services at this moment while the other parties play the role of toll charging. On the Swedish side of Svinesund a Norwegian toll charger is operating the toll service on behalf of SRA.

The main objective of the CJV is to implement and achieve a technical, procedural and contractual common platform for interoperable EFC between the EFC systems of the parties. The CJV agreement and its annexes include the required specifications and descriptions to deliver the service to the users and stipulations on how the common costs of the interoperability are shared between the parties.

The CJV is prepared to accept new Transport Service Providers (TSPs) from the Nordic countries. However, the steering committee consists of the four Original Parties and new TSPs are expected to accept the decisions and terms set by the Original Partners.

The parties agree to evaluate the possibility to evolve to a new form of legal entity called "NewCo", when the total number of parties is "significant".

The parties recognize that the ongoing process of developing an EETS will cause adjustments to the CJV agreement. The main implication is probably, that the EETS according to the Directive must be offered to all users in EFC systems that the Directive concern and that therefore a regulatory and organisational framework open for all parties on equal terms will be developed to administer this EETS. It is also recognised



that not all parties involved in EETS may be able to sign this type of arrangement.

MEDIA

MEDIA stands for “Management of EFC through DSRC Interoperability”. It is an interoperability initiative of tolling operators from Austria, France, Italy and Slovenia. MEDIA has the objective to find and implement a concrete solution to enable that tolls for heavy vehicles in the participating fee collection systems can be paid electronically and in an interoperable way.

MEDIA builds on existing foundations and especially uses material from the projects CESARE, PISTA and CARDME. In the definition of the MEDIA solutions, possible extensions to other countries and system types are envisaged and taken into account.

All four countries have electronic fee collection systems installed which employ microwave DSRC technology. It is the common vision of the partners to create a new contractual product for their customers. The product shall enable that:

- tolling fees for heavy vehicles can be paid electronically at all participating operators
- customers shall have a single contract and receive a single payment statement

MEDIA will not define a single technical product, but a set of requirements. Any product or mix of products that fulfils the MEDIA requirements is acceptable as a technical basis for the service. This might, for example, be a combination of two on-board units that reside side-by-side at the windscreen.

In MEDIA, every customer has a contract with a service company, named the Contract Issuer. For all aspects of paying tolls or fees in the participating systems, the Contract Issuer is the single point of contact for the user. The Contract Issuer prepares the on-board equipment with the required vehicle, payment and security data and delivers it to the customer.

The Contract Issuer pays to the toll system operators on behalf of the customer, giving the system operators a payment guarantee. Finally, the customer receives from the Contract Issuer a single statement, or invoice, for all tolls and fees in the various systems, including a service fee for the Contract Issuer’s services. MEDIA is managed and controlled by the MEDIA Association, the association of the core participating tolling system operators.



6. Organisations currently involved in electronic road charging

6.1 Entities currently involved in the delivery of toll services

The operation of Toll Systems in Europe is a major business. There are many companies involved and millions of users of electronic charging. There are a variety of different organisational approaches in the various Member States and countries. Indeed, some countries have several different approaches for different sectors of the market.

This section provides an explanation of entities **who are currently involved in toll operation**. This provided the starting point for CESARE III and formed the basis for discussions on the business model for interoperability.

Examples of current organisational arrangements are given in Annex A. CESARE III aims to provide European Interoperability without unduly affecting the specific arrangements within each Member State and country. It is important to understand the role currently played by the different entities in the Toll System world. In this section some of the entities which provide the current services are described. It will then be explained how these are dealt with in the CESARE model.

The entities identified by CESARE III are: -

Transport Service Provider (TSP): The organisation that provides a transport service to the user (i.e. the road operator, road authority, the "owner" of the road infrastructure)

Principal: The organisation or legal entity which is giving or defining the right of collecting toll. In legal terms the Principal can also be considered as the primary seller of the service.

EFC Operator: The organisation that has the right to collect the toll and is operating the EFC infrastructure on behalf of a Transport Service Provider or Road Authority.

EFC Cluster: The organisation that comprises several EFC Operators in order to achieve a common EFC system (e.g. in interconnected networks)

Contract Issuer (CI): The organisation that issues the service rights to the customer, administers customer and vehicle data. It may have a direct contractual relation with the operator (i.e. EFC Operator, or TSP)

Payment Means Issuer (PMI): The organisation that collects the money from the customer and handles the payment of services (e.g. credit or petrol card companies, banks)



Driver: the driver of the vehicle in the toll domain

Customer: the person who has signed the contract with the Contract Issuer to use the EETS

It is important to recognise that these entities do not necessarily provide exactly the same service in each country. CESARE III recognises these differences and does not try to harmonise them.

CESARE III has introduced new roles, with clearly defined responsibility, it is expected that each Member State and country will define the relationship between their present arrangements and those required to support the EETS.



7. The organisational model proposed by CESARE

7.1 Organisational model for achieving interoperability

Reference has already been made to the starting point for CESARE III. The project respects the different approaches used by Member States and other countries and has sought for some way to express the obligations and to describe the new service in ways which do not imply any new organisational approach, but respects existing organisational arrangements.

7.2 Approach used for develop the model

The solution was to define some new roles. These roles do not imply that new organisations are required, but just that there are some new responsibilities which are required to deliver EETS. The roles are: -

- Toll Charging
- EETS Provision
- Interoperability Management
- Service Usage

These roles were chosen after much discussion to cover the diversity of all situations, present and in the future. By defining these new roles, CESARE III has defined a high-level “theoretical” organisational model and then developed the service definitions and the contractual framework.

It should be emphasized that some **entities playing a role in the delivery of the EETS** may already exist – this is the case in general for the entities covered by the Toll Charging role, while the entities supposed to play the role of EETS Provision are just emerging. Issuers acting for the Spanish concessionaires would probably be able to act as EETS Provision; some initiatives have been taken in a few countries (in France, among others) to create such entities, and the Issuers involved in the Norits project play this role for the Nordic cluster.

There is no single organisational framework proposed for implementation in each country – this being considered to be infeasible. Each country is free to deliver the roles of the EETS actors in whatever manner is most appropriate to its circumstances.

Of course, this approach gives each country the freedom to work out how to apply the CESARE framework in the national context. This freedom also implies a devolved responsibility to each Member State to ensure that the obligations of the Directive are recognised, confirmed and met.

This report provides guidance on how Member States might approach such a task. In essence, the process involves creating an appropriate **commercial environment** which can provide EETS. In this context, commercial means an organisation that can enter into contractual obligations and participate in offering a commercial service to users. It is recognised that some publicly-owned companies may be able to enter into such agreements. It is also recognised that some public bodies involved in the operation of toll schemes may have difficulties in making such agreements. This situation is different from country to country and has to be resolved by individual Member States and countries.

7.3 The CESARE III model

The revised CESARE model has 4 main roles to deliver the interoperable EETS. These are shown in Figure 1.

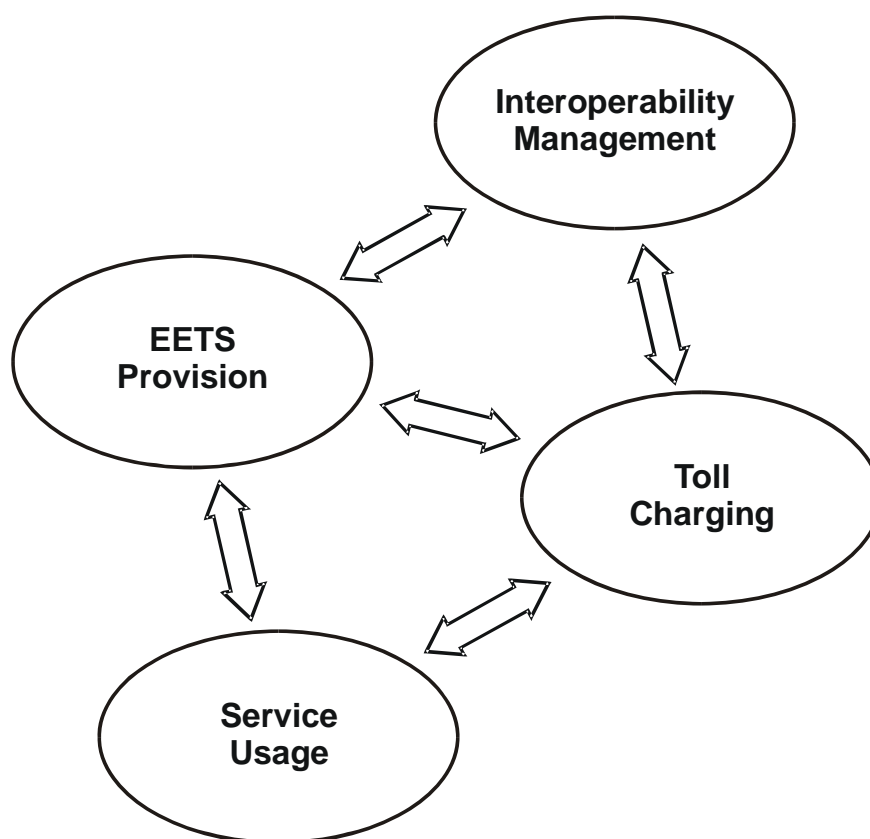


Figure 1: CESARE EETS model



The main roles can be defined as follows:

1. Interoperability Management

The Interoperability Management role sets the rules, criteria and boundaries for the interoperability and is therefore the regulatory body of the 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 such as a MoU. It may also be that such a responsibility may only be required during the set-up phase for this purpose and have no direct contractual relations with the two main actors.

It is envisaged that interoperability management will have the task of helping in the solving of disputes between the other actors¹.

2. Toll Charging

Toll Charging involves charging for the use of the road² and is receiving tolls from road users. This role is responsible for levying toll in a toll domain. Payment is claimed from the EETS Provision role for the road usage of their respective clients, which is guaranteed by a payment guarantee for genuine claims.

3. EETS Provision

EETS Provision involves offering EETS by issuing OBEs, contracts and payment means to the Service Users. Payment of the services consumed by their service users is guaranteed on production of genuine claims received from the Toll Charging function. The EETS provision role will include claiming payment from Service Users.

4. Service Usage

The Service Users are the ones taking advantage of the EETS . They will enter into a contract with an organisation offering the EETS Provision role and agree to pay for driving in the Toll Charger's toll domain. They will be able to use the interoperable EETS service in the domains of all EETS registered Toll Chargers.

¹ CESARE Deliverable D1.1 adds "in case some MoU signatories or some interoperability participants can not find commercial agreements with each other." WP4 is dealing with this issue and we propose deleting the phrase.

² CESARE Deliverable D1.1 refers to "selling the road usage". This is not appropriate for all toll schemes and so we propose a slightly different text.



7.4 Operation of the service

The user signs a contract for EETS Provision. The agent offering this role will provide the necessary equipment and offer the user an account for the payment of all tolls. The **Service User** is able to travel within the toll domains which offer EETS. The EETS Toll Charging role will gather the necessary charging data and claim the payment due. The arrangement between **Toll Charging** and **EETS Provision** will be based on the definitions prescribed by the **Interoperability Management** in the form of the contractual documents (which may be common or bilateral)

7.4.1 The role of toll organisations

The existing toll organisations were mentioned in Section 6. The expectation is that some of these organisations will take on the EETS roles, either acting on their own, or in combination with other organisations.

The concrete arrangements made between organisations to provide the various roles are left to each Member State and will NOT be prescribed in any way. The organisational arrangements for providing the Toll Charging and EETS Provision roles are likely to be different in each country.

7.5 Strategic implications of the CESARE model

There are some strategic implications associated with the application of this organisational model for the delivery of the EETS. Toll Charging and EETS Provision are specifically used in the context of the delivery of the EETS. These implications are as follows: -

- EETS is provided by two sets of roles – Toll Charging and EETS Provision. In this report, we use the terms “Toll Charger” and “EETS provider” to refer to those organisations entering into the contractual relationship defined by the Interoperability Management.
- The Toll Charging role can only be performed by organisations involved in operating toll systems. These are commissioned at a local (national) level. This in turn implies, that the directive has been transposed into national law beforehand.
- Once all preconditions are in place, organisations operating toll systems which are within the scope of the Directive are **obliged** to accept EETS users – these are referred to in this report as the Toll Chargers.

- The role of EETS Provision requires the provision of certified in-vehicle equipment which is accepted by **all EETS compliant Toll Schemes** across Europe. The organisations who undertake to provide this service are referred to in this report as “EETS Providers”
- All Toll Chargers are obliged to accept payment from **all EETS Providers**.
- The EETS provision role can potentially be performed by **any commercial organisation** that is willing to provide the service and meets the requirements of the Interoperability Manager.
- There will be an open market for the role of EETS provider.

7.6 Defining the European Electronic Toll Service

The CESARE III project has defined the EETS service components. These are grouped under the following headings: -

- Governance and Certification
- Contract Issuing
- Service Use
- Service payment
- Service user support
- Enforcement
- Promotion

Most of these are components of current toll schemes. The EETS definition will define the additional interoperable service, assuming that all these services are already provided.

However, the Governance and Certification service is different and needs some further explanation.

7.7 Defining the Contractual Framework to deliver EETS

The Contractual Framework to deliver EETS will be based on a commercial agreement which encompasses all Toll Chargers and all EETS Providers. It is expected that there will be a common core of documents which will be accepted by all the Toll Chargers. The conditions for acceptance as an EETS Provider will be established and defined within this basic contractual framework.



8. Obligations on the EETS Roles

8.1 Toll Charging

The role of "Toll Charging" will be performed by the organisations currently operating the toll scheme. These organisations might be Transport Service Providers, EFC Operators, or the Principal, in the form of a Government department. Toll Charging is always "authorised" by national governments, either by means of a concessionary agreement, through a direct contractual arrangements, or by national decision. The Toll Charging may be provided by several organisations working together.

It is for national governments, working with the current toll operators, to define how the role of Toll Charging will be supported. In most case, it will be an extension of their present role.

For EETS to work as envisaged in the Directive, Toll Charging will involve accepting payment on behalf of any EETS users from the EETS Provision role using approved EETS on-board equipment. The focus of CESARE has been on achieving this by means of a commercial, i.e. contractual framework. This report is concerned with the role of Member State governments in achieving interoperability of EFC systems.

Of course, this obligation is only one of several that may have to be accepted by those undertaking the Toll Charging role under certain conditions. CESARE III is defining these conditions. In summary, these conditions include: -

- the definition of the EETS to be offered;
- the obligations of EETS Provision and Toll Charging;
- the criteria for acceptance of EETS Provision;
- the technical specification for EETS equipment;
- the process for approving equipment for use with EETS;
- commercial agreement for EETS Provision.

Of course, such a new contractual arrangement will be quite complex to achieve. CESARE III has been working on all the necessary elements, including the governance of such a framework, the draft contractual documents and the operational procedures. One of the main complications is that the governance is at present in the hands of Governments through their own regulatory process. For EETS to become a real service, commercial organisations need to be involved, and the governance transferred to the private sector.

Existing toll operators will expect that any commission [if any, depending on the agreements of the Bilateral Contracts] to be paid to EETS Providers for EETS payment services will at least be comparable with their current commercial arrangements.

The costs incurred by those undertaking the Toll Charging role should be comparable with existing toll services, but will be negotiated between the relevant parties. Given that EETS Provision will involve providing equipment with all the technologies listed in the Directive, additional costs may be incurred which will need to be recovered either from their service users or other subsidies. For example, in Germany the OBU is provided to the user at no additional cost, although they must pay for fitting. The OBU cost is recovered in the service fees paid by the German government to Toll Collect. Given the international nature of EETS, EETS Provision cannot expect to receive a subsidy from Governments.

8.2 EETS Provision

EETS Provision provides a new role, which does not yet exist, as far as an international service is concerned. It is closest to the role of Contract Issuer, of which there are already many in existence. The current Contract Issuer for some of the toll schemes is the Toll Operator. Some countries already have separate Contract Issuers, such as in Spain and Portugal, but these operate in a national context.

The role of EETS Provision is expected to be available to any organisation willing to provide the service, to accept the obligations in the commercial agreement. EETS Provision will also need to meet certain conditions of membership of the "EETS club". These membership conditions are part of the process of governance of EETS and will be discussed under Interoperability Management.

One of the obligations of an EETS Provider is to offer service users a contract for the electronic payment of tolls and charges for all toll schemes throughout Europe which come within the scope of the Directive. The user will expect to receive some on-board equipment which will enable them to pass through any electronic charge point, ideally without stopping. The Directive expects that charges can be aggregated and presented as a single invoice. Users may expect to pay a service charge for this service.

Under this arrangement, the Toll Charger does not have any direct relationship with the user, as the payment is made on behalf of the user by the EETS Provider. The EETS Provider is the single point of contact to the user and is responsible to promote the service, provide technical assistance and answer complaints. The Toll Charger will require a

guarantee of payment of the toll by the EETS Provider. This is a service for which the EETS Provider may expect to receive a payment.

In the case of commercial users, they may also require support from the EETS Provider in recovering the VAT (although this may be a separately charged service).

This new role must be performed by a commercial organisation, as it will be required to enter into a contractual relationship with all those authorise for Toll Charging. Companies considering offering to undertake this role will be keen to assess the obligations and to determine whether there is a commercial case for participation.

Within CESARE III, one of the issues identified is that it appears difficult for Member States and other countries to **ensure** that there will be someone offering the role of EETS Provision. It appears that Member States and other countries would be unable to financially assist any prospective organisation wishing to offer the EETS Provision role. Such an action would invite a challenge of unfair competition.

8.3 Interoperability Management

The EETS will require to be initiated, governed and managed. In the CESARE III model, this role will be performed by the Interoperability Management. This may consist of organisations, formal committees, and other groups, but will include as a minimum the European Commission, Member States, and ASECAP representatives. It will specify, manage, monitor and safeguard the systems and processes used in the overall delivery of the EETS. The scope of activities for the Interoperability Manager will include, but not necessarily be limited to

GOVERNANCE, comprising:

- Define and maintain the EETS Core service definitions, rules and regulations required for interoperability
- Define the rules to settle disputes between members
- Maintain and issue the authoritative list of contracting parties
- Define and maintain the procedures for the distribution of certified equipment and/or its software
- Ongoing audit review of OBE/RSE/CS compliance
- Operate and maintain the common organization
- Define, maintain and issue, if necessary, model standard contracts for co-operation between actors
- Define and maintain ID-schemes and, if necessary, support the issuing of ID's

**CERTIFICATION, comprising:**

- Define and maintain the EETS Test and certification policy
- Define and maintain the required test documents (test standards, test specifications, conformity declarations, etc.)
- Manage the certification organization and processes involved

The form, content and legal status of this 'organisation' has yet to be decided. The legal basis for this organisation has not yet been determined.

The present governance of EETS is currently a legal process, managed through the Regulatory Committee. However it is not considered appropriate to govern interoperable commercial toll operations through such a mechanism when most the toll operations are operated commercially. Eventually, it is expected that the operational aspects of the EETS will be managed by means of a commercial framework.

One way to manage the transition from legal to commercial is to form the Interoperability Manager organisation and to get agreement on the process and timescale for transferring responsibilities from the Regulatory Committee.

8.4 The Service User

The Service User is, to a great extent, the most important actor. It is vital that the user is offered a solid and reliable service at a reasonable cost. This section explains how the EETS might work for a user.

Potential users of the service are expected to be those that regularly travel and pay tolls in different countries and different toll domains. EETS is designed to provide these travellers with an improved service.

There may be different types of persons attracted by the EETS, for example,

- people who live near national borders between countries with different toll domains
- Commercial drivers and operators on long-distance international freight haulage
- International passenger transport
- Commercial drivers who operate in several countries

These users will expect the EETS to be widely publicised and marketed. Once a user has been attracted by the information on EETS, he may consider using the service. The process begins when the Service User

signs a contract with an EETS Provider of his choice. At the same time they will also agree on a suitable payment means. This may be part of the EETS provision service, or may be offered by a specialised payment means issuer, such as the fuel card issuers.

EETS Provision will involve setting up an account for the user, personalise the OBE and arrange for the OBE to be installed. Again, this may be done by an OBE distributor on behalf of the EETS Provision role.

Once the OBU is installed and initialised, the user is ready. The user may then drive in confidence through all the toll domains which accept EETS. The driver will need to be made aware that some toll schemes will not offer EETS. If EETS is accepted, the driver will be able to use the tolled roads with minimum inconvenience. In general, the driver will not be required to stop, although there may be a few minor class roads where the non-stop payment service is not supported. In these cases, EETS will comprise and provide a means of payment for the driver which will ease the paying of tolls and which is linked to the same EETS contract.

All the charges for use of any toll scheme will be charged to the user's account and paid accordingly to the contractual arrangements agreed between the user and the EETS Provider.

The EETS Provider will in turn pay the Toll Chargers role all the revenues collected for a given toll scheme, less any agreed commission. Alternatively, the EETS Provider could receive a commission from the user. The user does not always need to be aware of these commercial arrangements.

There may be a case where the Toll Charger does not charge the user's account correctly or at all. For example, the OBU might be faulty, or incorrectly mounted. The user may make a declaration of vehicle characteristics which is challenged by the Toll Charger. In these cases, the user will wish to receive some support in paying any additional charges.

In general, the user will expect to be treated fairly. If the Toll Charger collects evidence to suggest that an EETS user may not be paying the correct tariff, for example related to the vehicle characteristics, then the Toll Charger may wish to apply an additional charge. The user will expect to be informed of this and given an opportunity to challenge the additional charge.

If the user fails to adhere to the terms of the contract with the EETS Provider, then the OBU/user may be placed on a 'black list'. This will be regularly distributed to all EFC Operators offering the EETS. The EETS OBU will then not be accepted for payment of tolls. The user will be

informed that the OBE is not currently being accepted and he will need to take some action to correct the situation if he wishes to continue to use the EETS service.

If it is not possible to recognise the user as an EETS user during the transaction and to identify the EETS Provider, the user will be regarded as a violator and become subject to enforcement.

The EETS Provider will accumulate all charges in the users account and then send the user a statement of charges. Payment by the user will be made using the payment means and under the payment terms agreed in the contract.

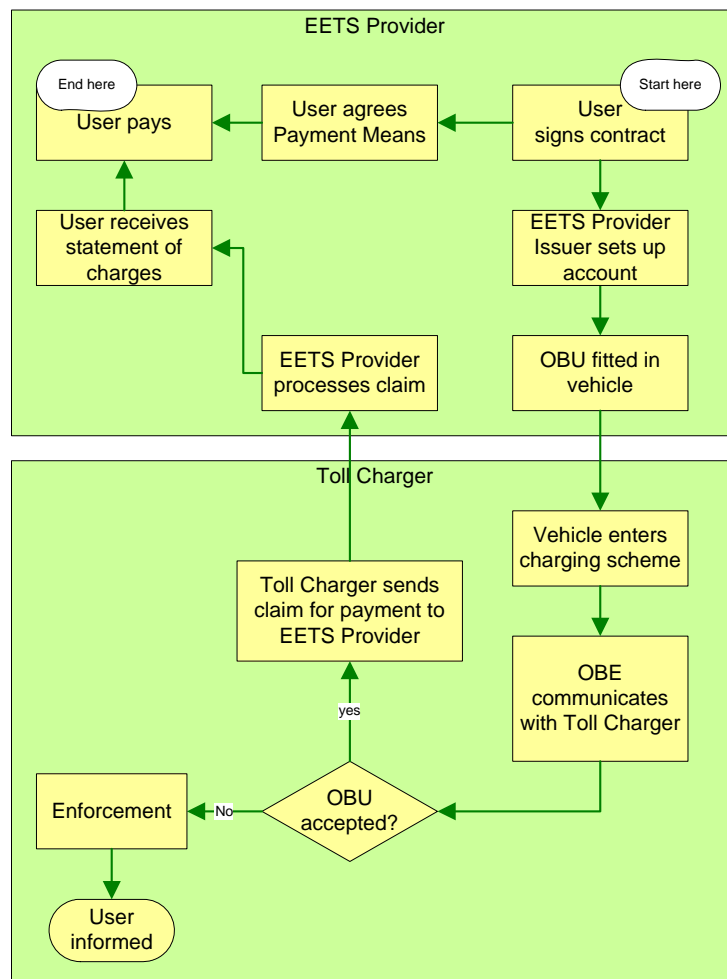


Figure 2: The Service User experience



9. Impact of New Technologies

9.1 Identification of the new technologies

Most current electronic tolling systems in Europe are based on the use of short-range microwave communications. As the vehicle passes under, or through a charging point, communication takes place between roadside equipment and the on-board equipment. Several functions are carried out at the charge point: -

- The driver is provided with information and assistance
- Evidence is collected of the use of the toll road (localisation)
- The driver is offered various ways to pay
- The vehicle is classified to determine the tariff class for the toll
- Vehicles equipped with valid on-board equipment are allowed to pass
- Evidence is collected of any infringement for later enforcement

The HGV tolling schemes in Switzerland and Germany use new technologies other than DSRC. It is expected that more toll schemes based on other technologies will be introduced in coming years.

These technologies include: _

- Satellite positioning technologies (GNSS / GPS (possibly GALILEO) for autonomous localisation/detection of a tolled road section
- Medium-range cellular network communications (CN / GSM (possibly UMTS) for autonomous communication between OBE and an operational center
- Possible data link to the tachograph for continuous distance recording.

Such technologies facilitate new approaches to tolling. The positive impacts of the use of these technologies are as follows.

9.2 Potential impacts of the new technologies (positive and negative)

- (a) Potential registration of every movement of the vehicle and the distance travelled
- (b) Reduced need for roadside infrastructure for charging
- (c) More flexibility on the location of charge points
- (d) Greater flexibility regarding the time and location of communication with operational center

- (e) Greater flexibility regarding the amount of data to be transmitted
- (f) Greater flexibility regarding functions allocated to the on-board equipment
- (g) Use of the tachograph for distance measurement needs to be supplemented by other technologies if the toll charges vary by time and location.
- (h) Localisation signals are not always available and there may be a requirement for additional short range (broadcasting) link between OBE and specific roadside equipment
- (i) The communications costs of the CN technology may be significant
- (j) Information and assistance to drivers must be provided some considerable time prior to use of the toll system
- (k) Users who are not equipped with on-board equipment need to be offered separate facilities for charging and payment remote from the tolled road in order to maintain the advantage of not having any roadside equipment.
- (l) The flexibility provided by the new technology may lead to unique service delivery models and designs of on-board equipment. The equipment may be difficult to harmonise to enable an EETS Provider to support all toll systems.
- (m) The OBE is normally much more expensive than microwave-based on-board equipment.
- (n) The installation of the on-board equipment containing these technologies often requires a considerable installation time and cost.
- (o) The software and data contained within on-board equipment using the new technologies has to be distributed from the central equipment.
- (p) The compliance checks may require an additional short range link between OBE and specific roadside equipment
- (q) The responsibilities for the end-to-end functionality of the system may be more complex than for DSRC systems.
- (r) The Toll Chargers will lose control of some aspects of the service usage on toll roads and service payment because they are transferred to third parties.

In general, the advantages are those generally associated with the decentralisation of data processing, storage and transmission.

This means that there is

- much greater flexibility in the allocation of functions between the different parts of the system,
- and much greater flexibility for the assignment of responsibilities within the system for these functions.

9.3 Some impacts on the CESARE actors

Toll Chargers are expected to make decisions on the need for roadside technology to be used for tolling. This freedom of choice may be limited by the obligation to offer the EETS.

The EETS technology is assumed to be based on a compulsory specification. This will place some limitations on EETS Providers and possibly Toll Chargers.

The fact that some of the functions are not directly undertaken by the Toll Charger requires an acceptance procedure for the whole data acquisition process not performed within Toll Charging.

In national charging / taxation schemes the government will be the Toll Charger. National taxation law might prevent “outsourcing” of responsibilities for charging functions like data collection.



10. Implementation of the EETS

10.1 Entities involved in delivering EETS

The previous section has referred to the role of the actors. In this section the various elements that may be involved in the governance are described and some of the implementation issues are mentioned.

Figure 3 shows the various entities involved in EETS and the legal and contractual interactions between them.

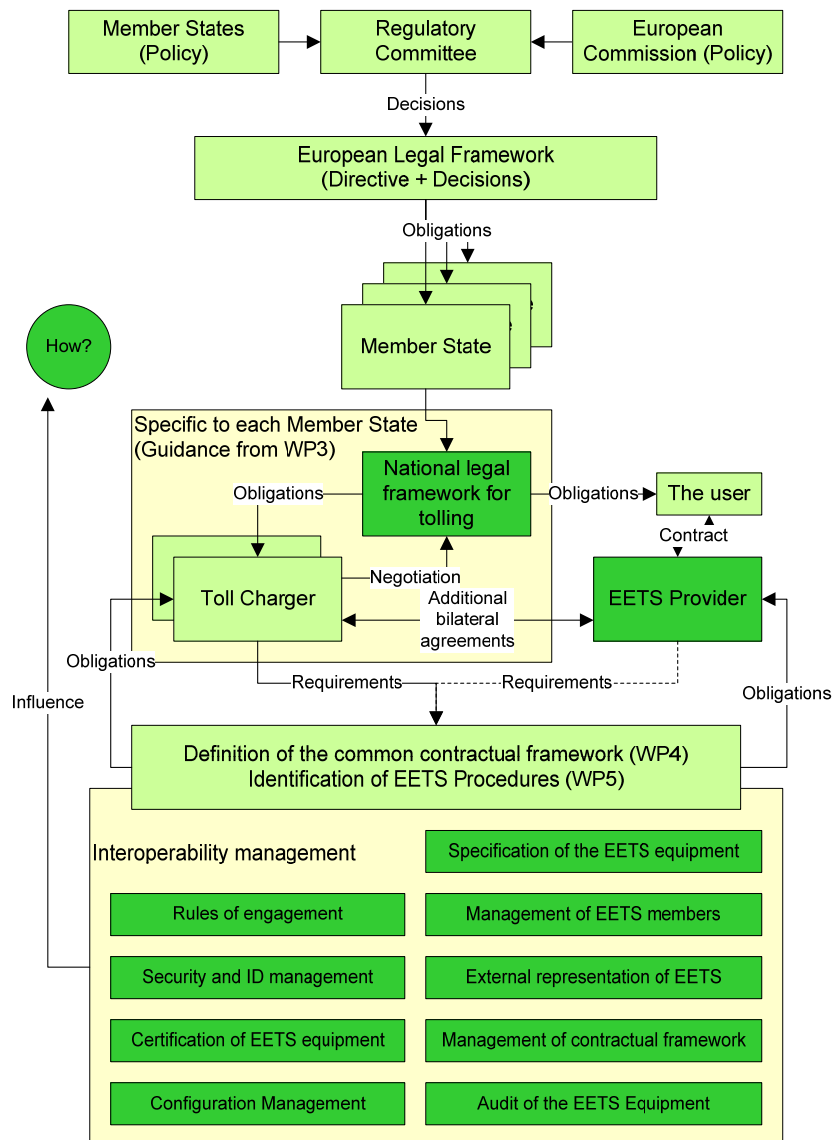


Figure 3: Governance of the EETS

Member States and the European Commission are both involved in the Regulatory Committee which takes the formal decisions regarding EETS. These decisions then take the form of obligations on the Member States. The flow of obligations through the system is a key element of EETS, as it involves transfer of legal obligations to commercial agreements.

The obligations on the Member States in the provision of the EETS include, as a minimum, the transposition of the Directive. Each Member State will convert the obligations into a national context; some may need to create a national framework for tolling. In addition to the obligation to transpose the Directive, this may also include some specific national provisions relating to the obligations to be placed on national Toll Chargers in relation to the acceptance of EETS. It is expected that Toll Operators will negotiate with their governments to secure an acceptable outcome. For example, national Toll Operators may need to upgrade roadside equipment, back-office systems, marketing and operational procedures to accommodate EETS. The purpose of the national legal framework is to pass the EETS obligations in respect of acceptance of EETS to the Toll Operators within each nation. This includes the necessary arrangements for accepting on-board equipment provided by EETS Providers and for receiving payment from them (taking into account a possible increase in credit risk).

Once the national legal framework is in place, and any national changes to implement EETS are agreed, then Toll Chargers will be able to enter into commercial agreements with EETS Providers. Those contractual agreements will place obligations on the Toll Chargers which need to be in accord with their national legal framework. Given that the national legal frameworks will be specific to each country and therefore different, this may be a complex process.

CESARE III has prepared a common contractual framework for potential agreement by all Toll Chargers. Ideally this will also be acceptable to EETS Providers, but they have no formal representation as stakeholders within the CESARE project. Consultation with some potential EETS Providers has been undertaken to understand the requirements of EETS Providers. It is recognised that, as well as the common contract, there may be a need for bilateral agreements between certain entities.

The shapes shaded in dark green in Figure 3 do not yet exist. The EETS Provider is a completely new role. Formally speaking, the Toll Chargers do not yet exist as this business model has not yet been implemented. However, the Toll Chargers will be new roles for existing toll scheme operators.

With the completion of the definition of the common contractual framework, there are now three missing elements from the EETS: -

- National legal frameworks for tolling
- EETS Providers
- Interoperability Manager

10.2 National legal frameworks

This report is intended to offer guidance to enable each Member State to undertake a process which will lead to the creation of a national legal framework in each of the Member States.

It may be appropriate for some Member States to work together on the development of these frameworks. Given the differences in current legal, commercial, operational and technical arrangements in each country, the development of the appropriate legal framework is left to each Member State. The aim will be the same in each case – to ensure that the obligations for the delivery of the EETS are transferred from Member States to Toll Chargers. Toll Chargers should then be in a position to enter into commercial agreements to accept the obligations of the EETS.

10.3 EETS Provision

The EETS Provider is a new role. There is some interest from the commercial world in offering such a service. However, commercial organisations are likely to require clarity on the precise obligations and powers of EETS Providers and appropriate remuneration for any services offered.

In the absence of any Interoperability Manager function, there is considerable uncertainty about the precise nature of all the elements shown in Figure 3 as the responsibility of Interoperability Manager. There cannot be any EETS Provider prior to the creation of the Interoperability Manager, as only this organisation can present the EETS Provider with an acceptable package.

10.4 Interoperability Management

Figure 4 highlights the responsibilities of the Interoperability Manager.

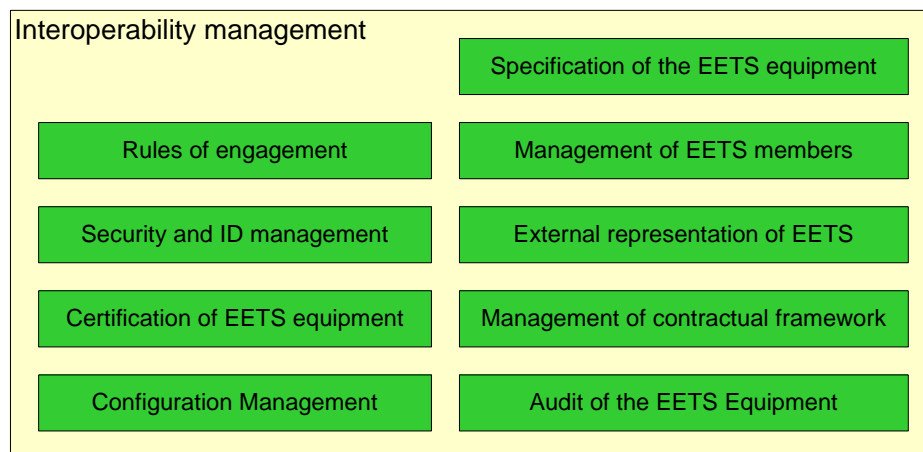


Figure 4: Responsibilities of Interoperability Manager

The aim of the CESARE III business model is to place all the responsibilities for managing EETS in the hands of an organisation structure with appropriate arrangements for ensuring that Toll Chargers and EETS Providers are properly represented.

However, as stated above, the involvement of the EETS Providers is essential to the establishment of the Interoperability Manager.

It is a CESARE III conclusion that the successful implementation of the EETS depends on the establishment of an Interoperability Management organisation. This would define the elements shown in Figure 4.

Many of the processes will need to be in place, and Toll Charger “buy-in” needs to be achieved before potential EETS Providers can be “signed up” for the EETS.

- Specification of the EETS equipment
- Rules of engagement
- Management of EETS members
- Security and ID management
- External representation of EETS
- Certification of EETS equipment
- Management of contractual framework
- Audit of EETS equipment
- Configuration management



10.4.1 Specification of the EETS equipment

The European Commission has initiated work on the specification of EETS equipment. However, this has not had the active involvement of the potential implementors of the systems, i.e. the Toll Chargers and potential EETS Providers. The technical requirements of each existing toll scheme for acceptance of EETS on-board equipment have not been identified for systems based on GNSS/CN technologies. The requirement of the Directive for on-board equipment to be "suitable for use" with all toll systems. This needs to be fully defined and agreed with all Member States.

10.4.2 Rules of engagement

There is a need to determine how the Interoperability Manager body will engage with Member States, Toll Chargers, EETS providers, the European Commission, European Standardisation Organisations and the Regulatory Committee. It will need some independence and yet in the early days be accountable to Member States. It will require strong support to be able to facilitate, in the first instance at least, the involvement of stakeholders interested in the EETS "rules".

10.4.3 Management of EETS members

The arrangements for the admission of members to the EETS "club" will be quite sensitive initially as the early members will probably yield considerable influence. The question of how Member States and the European Commission ensure that the arrangements are fair to all concerned will be a key objective of the Interoperability Management.

The Interoperability Management will be expected to oversee the audit of performance of Toll Chargers and EETS Providers. This is a daunting task across the whole of the EU. Given the potential early technical problems with interoperability, there will be a great onus on having in place formal arrangements that can ensure these problems are sorted out prior to full membership of the members.

10.4.4 Security and ID management

The EETS equipment will almost certainly require a new dedicated security framework, domain, architecture and services. This will require robust management and will need to be undertaken by a core Interoperability Management team. Decisions on the appropriate security and ID management scheme will also have to be taken.

10.4.5 External representation of EETS

The Interoperability Manager will interact, influence and be influenced by other stakeholders in EETS, such as Member States, and the European Commission. The commercial interests will need to be protected against interference from Member States. Public sector obligations must be guaranteed, but this may be difficult through commercial negotiation.

10.4.6 Certification of EETS equipment

The European Commission has initiated work on a possible certification network. The Certification Network needs to engage with, and be managed by, the Interoperability Management. The Toll Chargers and EETS providers must also be involved.

10.4.7 Management of contractual framework

The contractual framework will need to be refined and implemented from the initial situation when there are few (or no) signed up EETS Providers. Although some existing Toll Chargers may offer to be EETS Providers, the compatibility of their OBUs to other Toll Chargers in Europe will need to be verified.

10.4.8 Audit of EETS equipment

The Interoperability Management will be expected to oversee the audit of technical equipment. This may require technical capabilities and reference installations, and need to be established in advance of the first members.

10.4.9 Configuration management

Throughout the service, there will be a need to ensure that all parties concerned are operating with the correct versions of documents and agreements, during the early stages of reaching agreement.

10.4.10 Conclusion

It is clear that the Interoperability Management role raises some serious implementation issues. It will be important to address these soon to facilitate the deployment of EETS.



11. Proposed approach for Member States to support the EETS

The Directive is aimed at Member States and is a legal instrument. However, the EETS is expected eventually to be a commercial service offered by the market on commercial terms to users.

For some Member States, the EETS will be an extension of services already offered nationally. The commercial frameworks for Toll Operators and Contract Issuers can be developed to offer the roles of Toll Chargers and EETS Providers, without undue disruption. The EETS can be added to the range of existing services which are already marketed to users.

For other Member States, the EETS poses significant problems. It is these Member States that the work of Work Package 3 within CESARE III in general, and this document in particular are aimed to help.

As has been mentioned previously, the CESARE III partners have concluded that there is no possible prescriptive approach which can be applied to Member States. Indeed the Directive specifically states that the toll collection using the EETS must not interfere with national charging policies.

Consequently, the approach taken in this document is to recommend a generic process, which it is hoped can be followed by all, but which will address the particular issues arising from the national situations.

If this approach is acceptable to Member States, then it is proposed that they should each establish an implementation plan for EETS and should report progress and issues on a regular basis to the EFC Expert Group and to the Regulatory Committee. The steps in the process will hopefully provide some common structure to the implementation programme, even though there are many national differences.

[R 1] Member States are recommended to establish a national implementation plan for the EETS, based on the approach set out in D3.1 of CESARE III.

CESARE III is working on the defining what needs to be done by the Interoperability Management. However, the task of setting up the necessary organisational arrangements is complex. It is not even clear who is able to establish the required organisation, given the current involvement of both Member State governments and commercial Toll Operators. Should this be a public, or private organisation, or some combination? The scope of Interoperability Management is large and it will take time to set in motion. There may have to be interim arrangements put in place. This document aims to facilitate

engagement by Member States in this process, at least until the necessary commercial arrangements are established.

This approach assumes that CESARE III and subsequent work defines all aspects of the EETS, including all the obligations, requirements, rules and procedures involved in delivering the service. This paper focuses on how to actually implement it in countries that currently have no means of addressing the national issues.

The proposed approach is as follows: -

- (a) Establish enabling legal framework in the best way applicable to the Member State's legal system (ie. transpose directive)
- (b) Identify schemes which fall within the scope of the Directive
- (c) Identify current/new legal and commercial relationships
- (d) Establish a national governance process for the EETS.
- (e) Identify changes required to implement the legal, fiscal, commercial and contractual arrangements for EETS
- (f) Undertake the necessary actions to implement the changes
- (g) Facilitate and maintain the implementation of the EETS in the member state

These are explained in the following sections.

11.1 Establish enabling legal framework (transpose directive)

There is a legal obligation on Member States to transpose the Directive into national law by November 2005. Some, but not all, Member States have done this. Others, and particularly those who do not yet know the implications of such a law, are reluctant to try establish a national law until the EETS is fully defined.

In particular there are countries which do not yet have any tolls schemes. How should they prepare for EETS?

Member States need to work on a solution to this issue. It might be helpful if some Member States got together to prepare a common text which might be used to provide a common starting point for Member States to introduce an enabling law, giving the required powers, subject to suitable safeguards and allowing for the issue of subsequent regulations.

The European Commission is pressing Member States who have not yet transposed the Directive to do so. Member States have different legal systems and hence a common basis would probably not work. However it might be feasible for Member States to work together, with assistance



from the European Commission, on the issues faced in transposing the Directive.

[R 2] It is recommended that Member States who have not yet transposed the Directive consider some joint working arrangement to discuss and resolve any outstanding problems.

11.2 Identify schemes which fall within the scope of the Directive

It has already been mentioned that the Directive is not explicit in which schemes come within the scope of the Directive. It has not proved possible within CESARE III to determine the list of schemes within each country which come within the scope of the Directive, as this is considered to be a bi-lateral issue between the Member State and the European Commission. Uncertainty about this issue could lead to increased risk to the delivery of EETS and to unnecessary cost. The list of schemes within the scope of the Directive should be defined as soon as possible. This will facilitate work on the implementation plan and identify all the "Toll Charger" stakeholders.

[R 3] Each Member State should determine which toll schemes come within the scope of the Directive and agree the list with the European Commission.

11.3 Identify current/new legal and commercial relationships

Where there are several different organisations which will be required to fulfil the role of Toll Charger, it will be important to establish what the current legal and commercial relationships between the government and these organisations are, as this will provide the basis for the development of an implementation plan and for the delegation of the legal responsibilities of government on to the commercial organisations who will be operating the toll schemes subject to EETS. The obligations remain with Member State governments until this is achieved.

The present arrangements may be a complex legacy of primary legislation; secondary legislation; statutory instruments; regulation; commercial contract; franchise and / or legal, fiscal and commercial issues not covered by the above list.

This could mean that the process of passing the EETS requirements to the commercial sector could be both legally and commercially complex as well as time consuming.

11.4 Establish a national governance process for the EETS

It is clear from discussions in the EETS forum that there will be a need for some national 'organisations' in particular in Member States where there is more than one scheme within the scope of the Directive to co-ordinate matters relating to EETS. In some countries there are

associations of toll operators which could function as the 'national' organisation. Of course, some countries may decide – as the Nordic countries did - to have a common representation and approach covering several countries.

Member States who do not yet have any organisational arrangement will require some mechanism for communication between the commercial world of the Toll Chargers/EETS Providers and the legal world of the Regulatory Committee and national policy and law. One of the roles of such an organisation may be to decide how to promote an open market for EETS Providers. In France, work has begun on the establishment of separate Contract Issuers, who might in the future become EETS Providers. Such organisations could act as the focal point for dialogue between local schemes and the other European actors, but it is up to the Toll Chargers – in France the Concessionnaires – to decide whether or not they make use of such focal points.

In situations where the Contract Issuer is an integral part of Toll Operators, it is not clear how the role of EETS provider will be achieved.

Part of this function is to decide at the national level how the representation on the Interoperability Manager organisation will be arranged. Will each toll scheme be directly represented, or will national government seek to have a role in such an organisation?

[R 4] Each Member State should consider to establish a governance organisation to facilitate the transition of the EETS obligations to enable the realization of an open market.

Note: See the German reservation made in the Executive Summary.

11.5 Identify changes required to implement the legal, commercial and contractual arrangements for EETS and the creation of a focal point for contact between the national interests and the new EETS.

The purpose of the preceding tasks is to develop an implementation plan for each Member State. This will involve identification of all the necessary changes, be they legal, commercial or contractual, and setting out a plan and timetable for achieving these.

11.6 Undertake the necessary actions to implement the changes

The execution of any plan is likely to involve some changes at local and national level. At some point the Interoperability Management function will take over responsibility for management of the EETS Interoperability. There will be a need to ensure that all relevant schemes within the Member States implement common technical and procedural standards.



[R 5] The European Commission should establish an EETS coordinator to liaise with Member States on progress made with the national implementation plans for EETS.

11.7 Facilitate and maintain the implementation of the EETS in the Member State

The final stage is to manage the transition of the EETS from a legal instrument to a commercial service operating in an open market.



12. Major outstanding issues

12.1 Lack of agreed requirements for schemes using new technologies

CESARE III is charged with taking account of the introduction of new technologies, specifically the use of satellite positioning and cellular communications.

This has proved to be difficult due to the lack of national requirements for equipment based on GNSS/CN technologies

Germany is the only Member State with a working toll system based on GNSS/CN technologies. Germany has a proprietary system owned and operated by a single organisation. The specification of this system is currently not available to the market. The requirements of the German government for equipment to be provided by an EETS Provider may be the same or different from those imposed on Toll Collect. In any case, they are not known.

Other Member States expect to introduce toll schemes using the new technologies in the future. These systems have not yet been defined and therefore the requirements for equipment to be provided by an EETS Provider are not yet known. Certainly the requirements of other Member States are likely to differ from those of Germany.

It is currently not possible to specify, build or certify on-board equipment which is "suitable for use" with toll schemes in Germany and other future schemes using GNSS/CN technologies.

Various attempts have been made (by European Standards Organisations and the European Commission) to prepare appropriate standards and a specification for the EETS system. These have necessarily been largely theoretical. They have all lacked sufficient resources and progress has been slow as a result.

The EETS as currently conceived cannot be offered without an agreed technical specification.

[R 6] The German and Swiss Authorities and other authorities with an interest should be asked to define their required toll declaration and their requirements to accept in an autonomous system a toll declaration (i.e. the collection of charging data) by an EETS Provider.

The interoperability specification for microwave-based systems is almost complete.

[R 7] The European Commission should consider early or phased implementation of EETS based on the use of microwave



technology. This will enable all the legal, contractual, commercial, operational and procedural aspects to be verified while the specification for the more advanced service is developed

Work on the technical specification has to date been largely undertaken by consultants and suppliers. This process cannot be expected to lead to a specification without the involvement of the Toll Chargers concerned.

[R 8] Toll chargers using or expecting to use new technologies should be invited to play a full role in developing the full technical specification for the EETS, making appropriate use of emerging standards.

12.2 Lack of organisational framework for implementing EETS

Section 9 has highlighted the implementation issues for the EETS. The Interoperability Manager function is absolutely crucial. It is intended that the Interoperability Manager function will eventually be provided as part of the EETS commercial framework, with some input from Member States.

However, Member States have a strong interest in many of the aspects to be undertaken as part of the role of Interoperability Manager. It is therefore necessary for some Interoperability Manager organisation to be put in place which enables: -

- (a) the implementation of EETS
- (b) the smooth transition of the service from public law obligation to market provision

[R 9] An Interoperability Manager organisation should be established to undertake the implementation of the EETS and transition to the market.

12.3 There is no mechanism for ensuring that EETS Providers offer the required service.

Governments are believed to be able to oblige Toll Chargers on their national territory to support the EETS.

However, no institution can be forced by any government to be an EETS Provider. The only way to have EETS Providers is to create appropriate conditions to incentivise people/institutions to decide to become an EETS provider. These conditions are (above all) commercial conditions.

This is considered to be part of the responsibility for the Interoperability Manager organisation.



13. Conclusions

13.1 CESARE III deliverables

CESARE III provides: -

- the business model for the EETS (WP1)
- a definition of the service to be provided (WP2)
- Guidance to Member States (WP3)
- the contractual arrangements between Toll Chargers and EETS Providers (WP4)
- identification of the procedures involved in the operation of EETS (WP5)

13.2 Fulfilling Member State obligations

This report provides Member States with a proposed approach for transferring the legal obligations in the Directive towards a commercial delivery of services to users. The precise arrangements are left to national governments.

Some support for national governments is proposed, both by teaming up with other governments on common issues, and in coordinating the national approaches to the implementation of EETS.

13.3 Need for an Interoperability Manager organisation

The key conclusion of this report is that there is a need to establish an organisational framework with executive power which will take forward the short-term implementation of the EETS and ensure the smooth transition to a commercial service.

The organisation needs to be set up well in advance of the due date for the start of the EETS, as there are many detailed matters to be defined, such as joining rules, technical specifications, and security framework.

Ideally, this organisation would be created as part of the commercial service delivery process provided by the Toll Chargers and EETS Providers who will together support EETS. However, there are some crucial reasons why action is required: -

- the Interoperability Manager organisation will incur some initial investment cost – EETS providers are unlikely to enter into obligations for setting up the Interoperability Manager
- Some aspects of the service depend on Member State and EC decisions and therefore are a source of risk to Commercial service providers

- The acceptance of EETS is unlikely to be simultaneous across all EU countries and therefore some interim arrangements are necessary for potential EETS Providers under these circumstances.

An outline of the programme of work of the Interoperability Manager is given in the following table, in no particular order: -

- Agree on the terms of reference for an Interoperability Manager.
- Identify the organisations which will be involved in the Interoperability Manager organisation. This may need to include the EC, Member States, Toll Chargers and possibly other organisations
- Establish an implementation plan for the Interoperability Manager.
- Establish a budget for the Interoperability Manager.
- Establish the funding mechanism for the Interoperability Manager.
- Establish the necessary powers for the Interoperability Manager. It will be necessary for the Interoperability Manager to set up an office, procure services, make decisions, etc
- Establish the arrangements for resourcing the Interoperability Manager. Resourcing needs to be flexible and efficient. Current mechanisms used within the EC are inappropriate for an implementation organisation.
- Establish the relationship between the Interoperability Manager and the other stakeholders.
- Define and implement Security and ID Management
- Define and implement the arrangements for the certification of EETS equipment
- Setup proper procedures for the management of the Interoperability Manager, including configuration management
- Prepare and agree a specification for the EETS equipment and interfaces
- Define and implement arrangements for the auditing of EETS equipment
- Set up arrangements for the completion and management of the contractual framework

- Set up arrangements for management of the membership of the EETS
- Establish arrangements for the representation of EETS to other stakeholders
- Establish the membership and governance of the Interoperability Manager organisation
- Hand control to the Interoperability Manager organisation when appropriate

13.4 Stakeholder involvement

The Interoperability Manager functions require the involvement of a large number of stakeholders, as shown in the following table. All of these should be involved in the interim arrangements for the Interoperability Manager.

Issue	Potential Stakeholders involved
Technical specifications	Toll Chargers, Suppliers, EETS Providers, EC, Member States, CEN
Security	EC, Member States, Toll Chargers, EETS Providers
Identification of OBUs	Toll Chargers and EETS Providers
Management of EETS	Member States, Toll Chargers, EETS Providers , the EC
External representation	Toll Chargers and EETS Providers
Certification	Toll Chargers, EETS Providers, Certification Authorities
Contractual framework	Toll Chargers and EETS Providers
Audit	EC, Member States, Toll Chargers, EETS Providers



ANNEX A NATIONAL ORGANISATIONAL APPROACHES

13.5 Examples of organisational approaches

This annex provides an analysis of five different organisational approaches. These have some parallels in real life, but are not intended to match the arrangements in particular countries. Indeed, some countries have different organisational approaches for different types of scheme. But nevertheless, if the EETS is able to cope with all of this five approaches there is a certain guarantee that the service should be able to cope with all types of schemes.

The situations analysed were: -

- Standalone Toll Schemes
- Toll Schemes offering common payment means
- Toll schemes offering a variety of payment means
- Toll schemes working through an EFC operator
- national scheme operated by an EFC operator

Standalone Toll Schemes

This is the situation of a tolled estuarial crossing. The toll scheme is likely to be a standalone operation undertaken as an integral part of of the transport service and provided by the Transport Service Provider.

Toll Schemes offering common payment

Several toll schemes operated by TSPs may come to a mutual understanding and agree to accept the other TSPs in the group as payment means issuers and accept payment from them.

Toll schemes offering a variety of payment means

Several toll schemes in a country may decide to offer a common set of payment means. Users may take out a contract with any of the accepted Issuers, who will guarantee payment to all the Toll Operators.

Toll schemes working through an EFC operator

Another possibility is that TSPs will agree to use the same electronic fee collection (EFC) service. All operators will send electronic transactions to this service provider, who will recover payment from the appropriate issuer and pay the Toll Operator.

National scheme operated by an EFC operator

This is a situation where the national government contracts with a single company to provide all the services associated with toll charging and payment.










These five situations are analysed in the following sections. The entities are referred to by the current names, as they refer to present operations.



A.1 Key to the diagrams

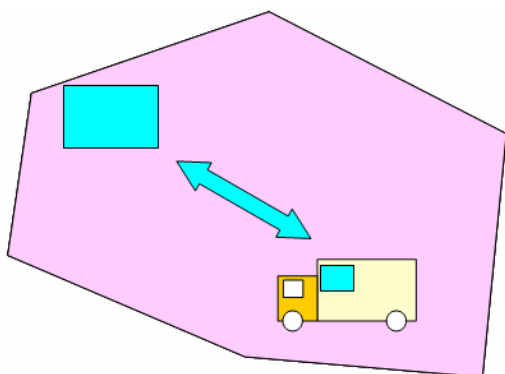
Key

	EFC Operator
	National data clearing node
	Data clearing network
	Contract Issuer
	Transport Service Provider
	Payment Means Issuer
	Principal

The following section provides some examples of different organisational arrangements for providing toll collection services.

A.2 Standalone toll scheme

Description of approach



This is an example of a scheme where all the necessary functionality is provided within a single operational framework which is controlled by the Principal. The Principal may be a Transport Service Provider, or a Government agency. Transport Service Providers will normally have received a concession from a Government Agency to operate the tolled facility. The detailed internal

organisation of such a scheme is not relevant to European interoperability.

Current Responsibilities

All the responsibilities fall to the scheme, including:

- installing infrastructure (e.g. toll plaza, back office, sales outlets)
- installing EFC
- providing the OBUs
- offering user accounts
- charging use to the account
- receiving payment

The TSP acts as both the Toll Operator and the Contact Issuer. The OBU is often described in such schemes as “the payment means”, especially where all the vehicles characteristics and other charging parameters are measured at the point of charging.

Examples

- Toll bridges
- London
- Austria (after buy-out)
- Switzerland



Expectations for EETS

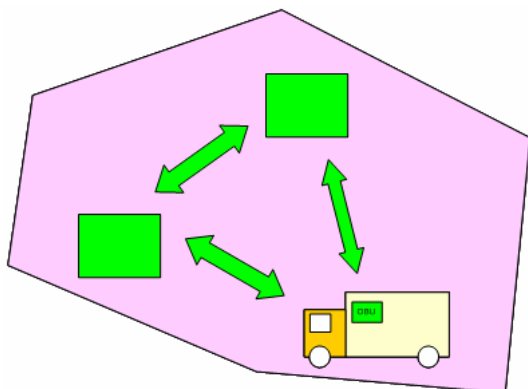
Operators of such schemes which are deemed to come within the scope of the Directive are obliged to offer EETS. As a Toll Charger, they may expect:

- that EETS users will be equipped with approved EETS on-board equipment
- that they will be paid the toll by the EETS provider
- that they will be charged a reasonable commission

It is generally unlikely that such an operator would wish to be an EETS provider, bearing in mind the obligation to offer a service across the whole of Europe.

A.3 Toll schemes offering common payment

Description of approach



This is the situation where there are several Transport Service Providers operating the strategic road network within a country. The TSPs may work together to provide an interoperable electronic charging service, governed by a set of common rules which are accepted by all TSPs

Current responsibilities

In this situation, each of the TSPs

- install the toll plazas on their own network
- install interoperable EFC
- offer users an EFC account, thus acting as the Contract Issuer
- charge use to all OBU accounts
- claim payment from Contract Issuers (i.e. other TSPs) for use of the road by their clients
- act as Contract Issuer and pay other TSPs for use of their roads by their own clients
- Collect payment from their clients for use of all roads

Examples

France (for private cars)

Norway (all TSPs as issuers)

Expectations for EETS

Operators of such schemes will come within the scope of the Directive and so are obliged to offer EETS. As Toll Chargers, they may expect:

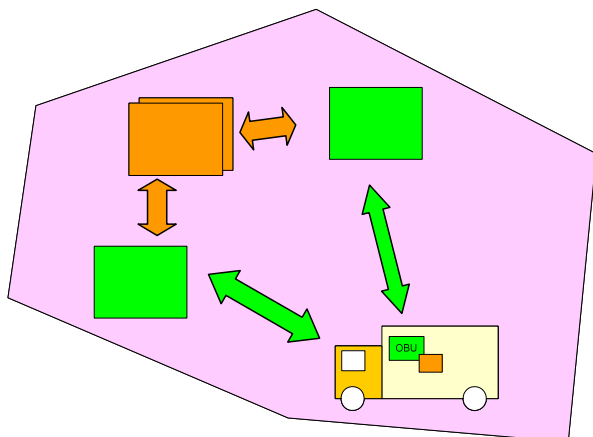
- that EETS users will be equipped with approved EETS on-board equipment
- that they will be paid the toll by the EETS provider
- that they will be charged a reasonable commission



These TSPs already act as Contract Issuer for significant numbers of clients. The role of EETS Provider may therefore be of some interest to such operators.

It is likely that some reorganisation of the interoperable service would be necessary if the scope of the payment services extends to the whole of Europe and not just the national operators. This may mean setting up one of more agents of the TSPs to undertake the EETS Provider role.

A.4 Toll schemes offering a variety of common payment means



Description of approach

In this situation, several TSPs act together to devolve some of the payment services to one or more Contract Issuers. The Contract issuers would normally, in this situation, offer a guarantee of payment to the TSPs and collect payment from the users. The TSPs may therefore not have any direct relationship with the user.

Current responsibilities

The TSPs:

- install the infrastructure (e.g. toll plazas and back offices)

The Contract Issuers:

- Issue OBUs to users
- Offer user accounts (The OBU would be linked to one of the available Payment Means)
- receive claims from the TSP
- charge use to each user
- guarantee payment to each TSP
- Collect payment from the user

In such cases the Contract Issuer could be either the TSPs, or the PMIs. One issue that arises is the responsibility for the OBUs in this situation tends to be divided between the TSPs, who have an interest in the roadside-vehicle communication, and the Contract Issuers who have the relationship with the user, but who may not be able to provide technical support to the user in respect of the use of the OBU.

Examples

Spain - Banks are the issuers mainly for private cars. RESSA, SERVISA, CEPESA and SOLRED are the Issuers specially for HGVs.



Expectations for EETS

Operators of such schemes will come within the scope of the Directive and so are obliged to offer EETS. As Toll Chargers, they may expect:

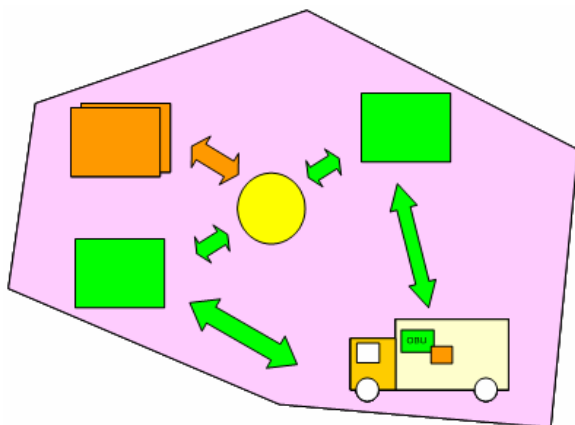
- that EETS users will be equipped with approved EETS on-board equipment
- that they will be paid the toll by the EETS provider
- that they will be charged a reasonable commission

These TSPs (or PMIs) already act as Contract Issuer for significant numbers of clients. The role of EETS Provider may therefore be of some interest to such operators.

It is likely that some reorganisation of the interoperable service would be necessary if the scope of the payment services extends to the whole of Europe and not just the national operators. This may mean clarifying the role of the PMIs in relation to the provision of EETS, bearing in mind the full responsibility of the EETS Providers.

A.5 Toll schemes working through an EFC operator

Description of approach



In this situation, the TSPs agree to operate through a single EFC operator. The transactions collected at the roadside are sent to the EFC Operator for processing. All the claims for payment and payments are handled by the EFC Operator who distributes the revenue back to the TSPs. The PMIs guarantee the payment of the toll and collect the money from their clients.

Current responsibilities

TSPs

- install the infrastructure (e.g. toll plaza and back office)
- install EFC
- send transactions to the EFC Operator
- Receive payment from the EFC Operator

The TSPs collectively:

- Approve the OBU specification
- Offer choice of payment means

The EFC Operator:

- provides an OBU
- offer user accounts
- gathers all TSP transactions
- charges use to users account
- claims payment from the PMI
- passes the revenue to the TSP

Contract Issuer:

Can be EFC Operator or TSP



Examples

Portugal (Via Verde is the issuer), Italy (Autostrade is the issuer)

Expectations for EETS

Operators (TSPs) of such schemes will come within the scope of the Directive and so are obliged to offer EETS. As Toll Chargers, they may expect:

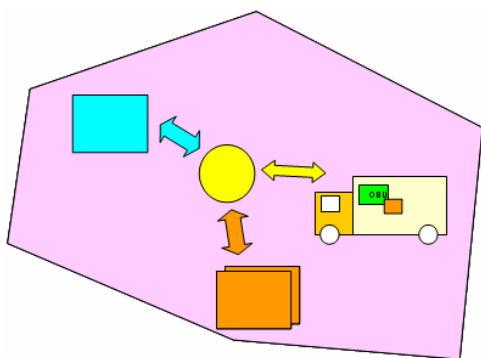
- that EETS users will be equipped with approved EETS on-board equipment
- that they will be paid the toll by the EETS provider
- that they will be charged a reasonable commission [Note: this example doesn't apply to Italy, where operators surely don't expect to be charged any commission, since no commissions are currently paid for the tolls collected!]

These TSPs (or EFC Operator) already act as Contract Issuer for significant numbers of clients. The role of EETS Provider may therefore be of some interest to such operators. [Note: in the example of this context, what does it happen when there is the Service User of a "third" EETS provider? Who is in charge of gathering all the transactions of the TSPs, providing payment guarantees to the TSPs, claiming payments to the PMIs, passing and redistributing the revenues to the TSPs? If these tasks are performed by the "national" EFC, then the relations with the EETS provider are different from all the other case and it would become arguable who should pay a commission to whom.]

The EFC Operator may be able to offer to be the national interface to facilitate the exchange of claims and payments with other counties. If the EFC Operator acts as Contract Issuer then it is possible that the role of EETS Provider might also be attractive, although it is likely that some reorganisation of the interoperable service would be necessary if the scope of the payment services extends to the whole of Europe and not just the national operators. This may mean clarifying the role of the EFC Operator in relation to the provision of EETS, bearing in mind the full responsibility of the EETS Providers. It would appear unlikely that PMIs in this situation would have an interest in becoming EETS Providers.

A.6 National toll schemes operated by an EFC operator

Description of approach



This is the situation where a National Agency commissions a commercial entity to collect the tolls. This implies a direct contractual relationship setting out the responsibilities of the EFC Operator. If there is a requirement for a contract, then the EFC Operator will act as the Contract Issuer. There may be several PMIs offering guarantees of payment to the EFC Operator.

Current responsibilities

The Principal (normally a Government Department)

- Has the right to raise charge on the road
- Contracts with the EFC Operator

The EFC Operator:

- provides the charging system
- operates the charging system
- provides for EFC
- provides the OBU
- offers user account
- Offers choice of payment means
- gathers all transactions
- charges use to users account
- claims payment from the PMI
- passes the revenue to the principal

The PMIs:

- Guarantee payment of the toll
- Receive claims from the EFC Operator
- Pay the EFC Operator
- Collect the money from their clients

Examples

Austria (before buy-out), Germany

Expectations for EETS

Given that the government concerned has contracted the EFC Operator. That EFC Operator would need to become an EETS Toll Charger

The EFC Operator would expect: -

- that users will be equipped with approved EETS on-board equipment
- to be paid the toll by the EETS provider
- to be charged a reasonable commission

Interest of an EFC Operator in being a EETS provider

What are the requirements to be a EETS provider: -

- Technical
- contractual
- procedures
- The government would need to approve the EFC Operator to become an EETS provider
- The EFC Operator will expect to charge a reasonable commission to EETS users and/or other toll chargers

Example of Germany

The Interest of the EETS Principal is:

- Compliance with the German Law and the Directive
- Existing purpose of the scheme must be maintained
- German law allows the toll to be collected by a private company on behalf of the government
- The government must authorise the EETS solution for Germany

ANNEX B SITUATION IN VARIOUS MEMBER STATES AND OTHER COUNTRIES

The following table shows information gathered from some Member States and other countries about their situation with regard to the preparation of the EETS.

Country	Switzerland	The Netherlands	Portugal	Germany	Finland	Sweden	United Kingdom
Question							
Has the EU Directive already been transposed into national law in your country?	NO, not required	Yes.	No	Yes, the "Mautsystemgesetz" ("Toll System Law") is in force since December 31, 2005.	Not yet.	Not yet.	Not yet
If not, will the EU Directive be transposed into national law in your country? If yes, when?	NO, this is not foreseen		Soon: text is ready to be published in the Official Journal	n/a.	The legislative process is started, and probably the law will be passed to the Parliament during the spring 2006.	Yes, during spring 2006.	Yes, by 1 January 2007
Which (existing and planned) EFC schemes in your country are considered as being/becoming subject to a national law on EFC interoperability (resp. to the EU Directive)?	Swiss HGV-Fee (LSVA)	A nation wide scheme to be operational in 2012.	All the 5 tolled concessions: BRISA, Lusoponte, AutoEstradas do Atlântico, AutoEstradas do Norte and Mafratlantico	HGV Motorway Tolls	None	*The toll charging systems at the Öresund and Svinesund bridges *The Stockholm Congestion charging scheme (if the referendum in Stockholm will result in "Yes" in Sept) *Planned kilometre tax for HGV	Transport for London; local authorities promoting charge schemes under Transport Act 2000; organisation running possible national distance charge.
Which institution is authorised/responsible for enforcement in these schemes?	Swiss Customs, Cantonal Police	Not yet decided.	Concessionaires	Bundesamt für Güterverkehr (BAG = Federal Agency for Goods Transport)	n/a	* Öresundsbridge Consortium * Svinesundsforbindelsen AS	Concessionaires and toll operators in the case of tolled crossings; the toll operator in London and Durham; to be decided in the case of future schemes
Is there already a contractual/procedural structure in place in your country regarding national interoperability of EFC schemes?	NO, but technical and procedural interoperability with Austrian System (Swiss OBU works in Austria)	No.	Yes: concession contracts impose the use of Via Verde; Via Verde Portugal is responsible for the system specification	No, since not necessary.	no	There is no national interoperability in place. In February all contractual arrangements for Nordic interoperability will be in place (Norits). This Nordic service will start to operate on 18 September 2006.	UK has work in progress on developing a national framework for interoperability, following the DIRECTS trial in Leeds and the work currently under way to develop local congestion charge schemes in collaboration with local authorities
Which institution(s) in your country would sign an MoU on EFC interoperability?	Not defined, but most probably Swiss Customs	Not yet decided, probably the toll charger	c and Via Verde Portugal	Probably the Federal Ministry for Transport Building and Urban Development (BMVBS).	either the Ministry of Transport and Communications (MTC), the Ministry of Finance (MF) or the Finnish Road Administration (FinRA) (if and when there are EFC systems in Finland)	Öresundsbridge Consortium and Swedish Road Administration	Transport for London; Local charge operators; possibly the Department for Transport

D3.1 Report on national organisational arrangements for contractual interoperability

Country	Switzerland	The Netherlands	Portugal	Germany	Finland	Sweden	United Kingdom
What are the responsibilities of this/these institution(s) within your country?	Operation of System	Not yet decided.	Concessionaries: TSPs Via Verde Portugal: Issuer	BAG: Supervision of goods transport and coaches on federal motorways and roads. BMVBS: Planning and ruling of the federal road network.	MTC: Transport and communications; MF: State treasury, taxation, state budget; FinRA: Public roads in Finland	See below	Operators of systems and possibly national government
Which role according to the CESARE-3 model does/do this/these institutions play?	Toll Charger	The role of toll charger.	Concessionaries: Toll chargers Via Verde Portugal: EETS provider	Principal and Toll Charger	MTC or MF: possibly Principal; FinRA: Toll charger	See below	Toll chargers
Which institution(s) within your country will play the role of							
the Principal	Government	Probably either the ministry of Transport of the Ministry of Finance	Estradas de Portugal	Bundesministerium für Verkehr, Bau und Stadtentwicklung (BMVBS) (Federal Ministry for Transport Building and Urban Development)	Assumption: Ministry of Transport and Communications or Ministry of Finance (or possibly even the Parliament)	Swedish Road Administration (or possibly the Swedish Government)	Department for Transport
the Toll Charger(s)	Swiss Customs Authority (EFC Operator)	Probably a private concessionaire.	Concessionaries (BRISA, Lusoponte, AutoEstradas do Atlântico, AutoEstradas do Norte and Mafratlantico)	Toll Collect on behalf of the BMVBS	Assumptions: <i>Road Administration, Regional bodies like Helsinki Metropolitan Area Council, Private road operators</i>	Öresundsbridge Consortium and Swedish Road Administration	Transport for London, toll undertakings, local authorities; not clear who would take the role for a national charging scheme
the EETS Provider(s)	none	Any toll service provider providing an EETS	Via Verde Portugal	Probably Toll Collect	If commercial EETS providers appear on the market as expected, probably no authority would take that role	the Öresundsbridge Consortium and Swedish Road Administration will possibly in their role as local Issuer have agreements with an EETS Provider (to fulfill the requirements from EFC directive)	Not known yet
the Service Users	Hauliers	the one liable for toll: probably the registered keeper the customer: anyone who wants to conclude a service contract for a vehicle.	Private users and HGV	HGV Motorway Tolls: Hauliers Local PPP concession schemes: All vehicle holders/drivers	Finnish and foreign road users (private car drivers and commercial transport companies)	Drivers, vehicle owners	All vehicle users
Which institution would you propose to play the role of the Interoperability Manager?	European Commission for Service Definition, Technical Committee for technical standardisation.	No particular one, Interoperability Manager may also be established by means of some contractual joint venture	EC/DGTREN	European Commission	We foresee a European entity (EETS Joint Venture), with members from all countries that have EFC systems which are concerned by the Directive.	We foresee a European entity (EETS JV), with members from all countries that have EFC systems which are concerned by the Directive.	Not yet clear, but would need to give a voice to toll chargers and EETS providers