



# EasyGo Processes

## Annex 4.3 to Joint Venture Agreement Toll Service Provider Agreement

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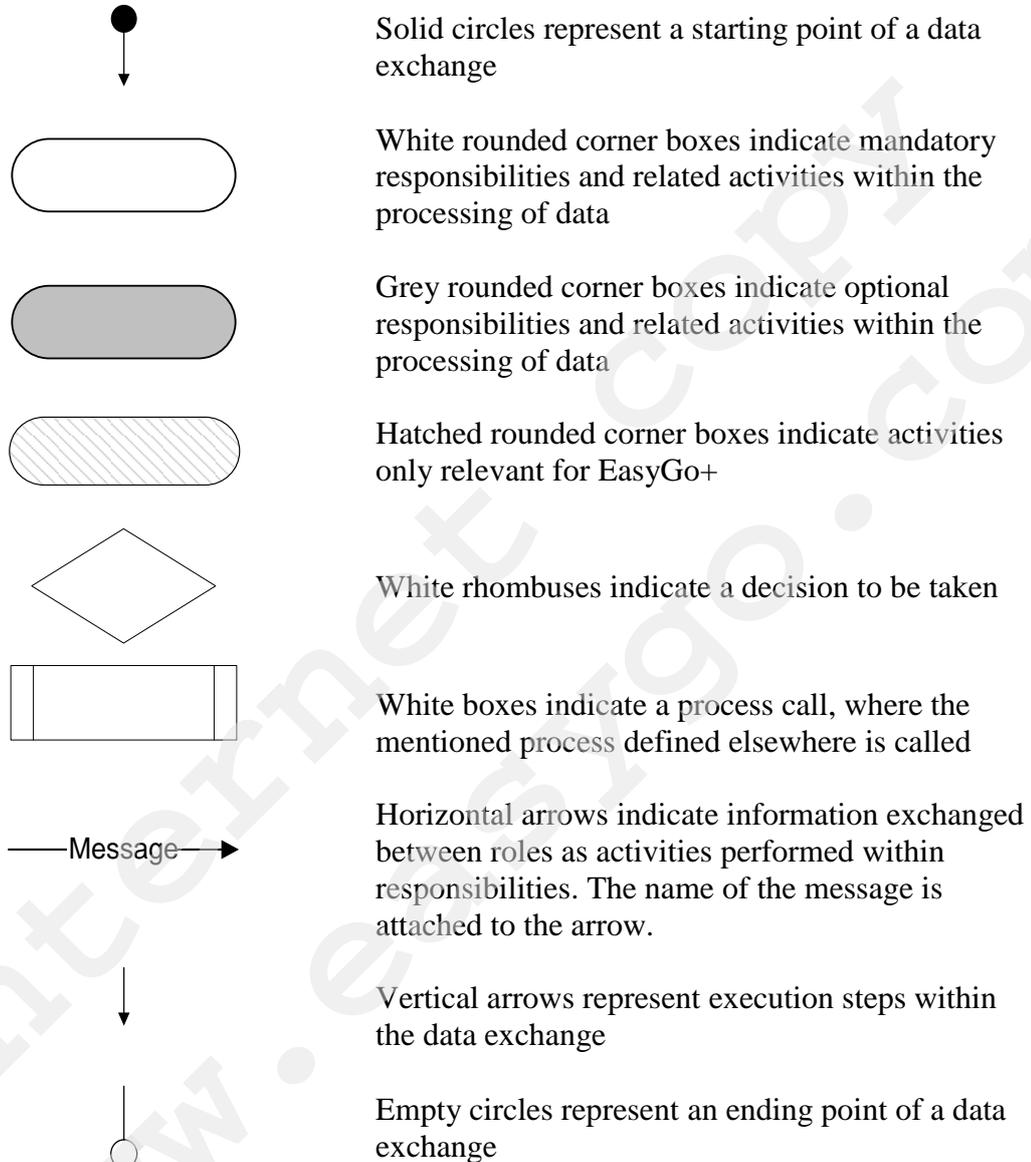
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## Document Revision History

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1.0	2013.02.27	SC	Approved by steering committee
2.0	2015.11.12		Approved by steering committee
3.0	2017.11.20	ASK	Approved by steering committee
3.1	2020.10.29	ASK	Inclusion of ADU process Inclusion of FIF/FIC process Deletion of chapter 7.2 (moved to document 304) Editorial changes
3.2	2020.12.10	ASK	Inclusion of basic ANPR process Editorial changes
4.0	2020.12.21	ASK	Approved by the EasyGo steering committee

## Symbols

The processes in this document use the following symbols.



## 1 Introduction

This document gives an overview of all processes between Service Users (SU), Toll Chargers (TC), Toll Service Providers (TSP) and/or EasyGo Interoperability Management (EIM). Some of the descriptions in this document refer to other EasyGo documents/annexes where more detailed descriptions can be found.

The definition of the interfaces between the different roles depend on the processes described in this document, the relevant international and European standards and the EasyGo documents. The most relevant standards are:

- EN ISO 17573 Electronic fee collection — System architecture for vehicle related tolling
- EN ISO 12855 Electronic fee collection — Information exchange between Service Provision and Toll Charging
- CEN/TS 16986 Electronic Fee Collection — Interoperable Application Profiles for information exchange between Service Provision and Toll Charging
- EN ISO 14906 Electronic fee collection — Application interface definition for dedicated short-range communication
- EN 15509 Electronic fee collection — Interoperability Application Profile for DSRC
- EN ISO 19299: 2020 Electronic fee collection security framework

An overview of terms and definitions used in this and other documents can be found in document 401 “Overview of annexes to contracts JVA and TSPA”.

## 2 Architecture

### 2.1 Main roles in a toll charging environment

The interoperability within EasyGo is built upon the standard EN ISO 17573 – EFC – System architecture for vehicle related tolling. EN ISO 17573 defines the four main roles shown in fig. 1.

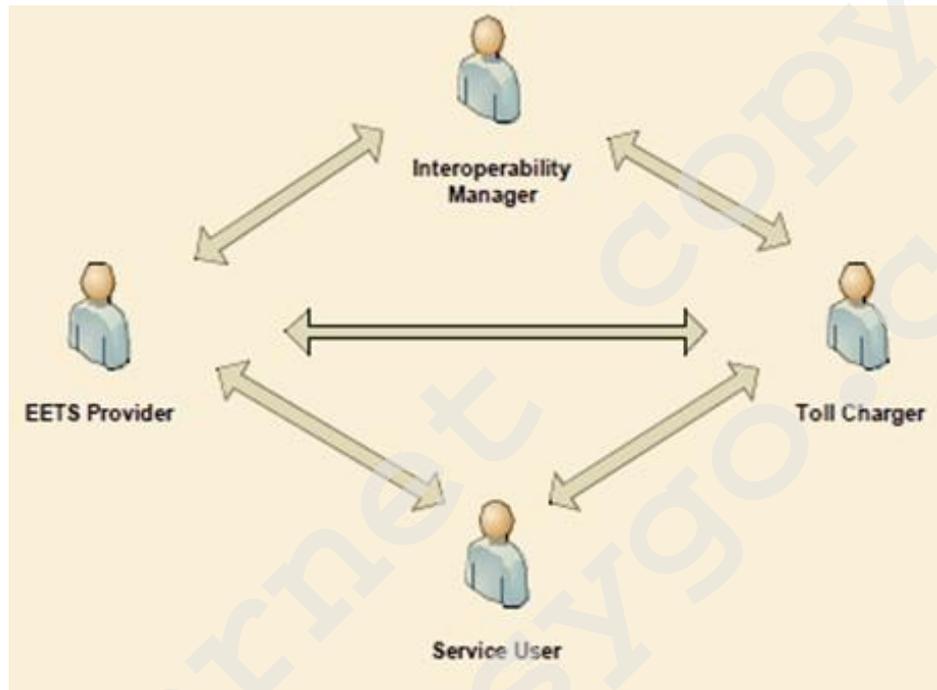


Fig 1. Roles in the Toll Charging environment

#### 2.1.1 Provision of the toll service

The role related to the provision of the toll service is responsible for providing the basic artefacts, mechanisms, organisation structures, and information transfer tools needed to run an EFC system. Provision of the OBE and the EFC contract with the SU are two of the most important responsibilities of the role. An actor covering all responsibilities of this role is called a TSP.

#### 2.1.2 Use of the service

In the standard EN ISO 17573 a transport service is related to the use of or the presence of a vehicle in a toll domain. The toll domain may be a road network, a specific section of a road (e.g. a bridge, a tunnel or a ferry connection) or a specific area offering a service (e.g. a country, a region, a parking lot or access to a protected area in a city). This role is thus identified that it covers all aspects of using the toll system and the transport service. Implementations of toll systems in various toll domains identify actors in this role that are commonly referred to as, e.g. driver, SU or customer.

### **2.1.3 Charging of the toll**

The role related to the charging of the toll covers all actors who define the toll regime, operate the toll domain and may provide transport services. The role includes the related charging infrastructures and who defines the toll. Enforcement is also part of this role. An actor covering all responsibilities of this role is called a TC.

### **2.1.4 Management of the toll charging environment**

There is a need for an overall management of the toll charging environment defining and organising the policy that enables the daily operation of the toll charging equipment involving several different actors. A specific role is identified to manage the toll charging environment, i.e. defining and maintaining a set of rules that, taken together, defines the policy of a given regime or of the overall toll charging environment. An entity covering all responsibilities of this role is called an Interoperability Manager.

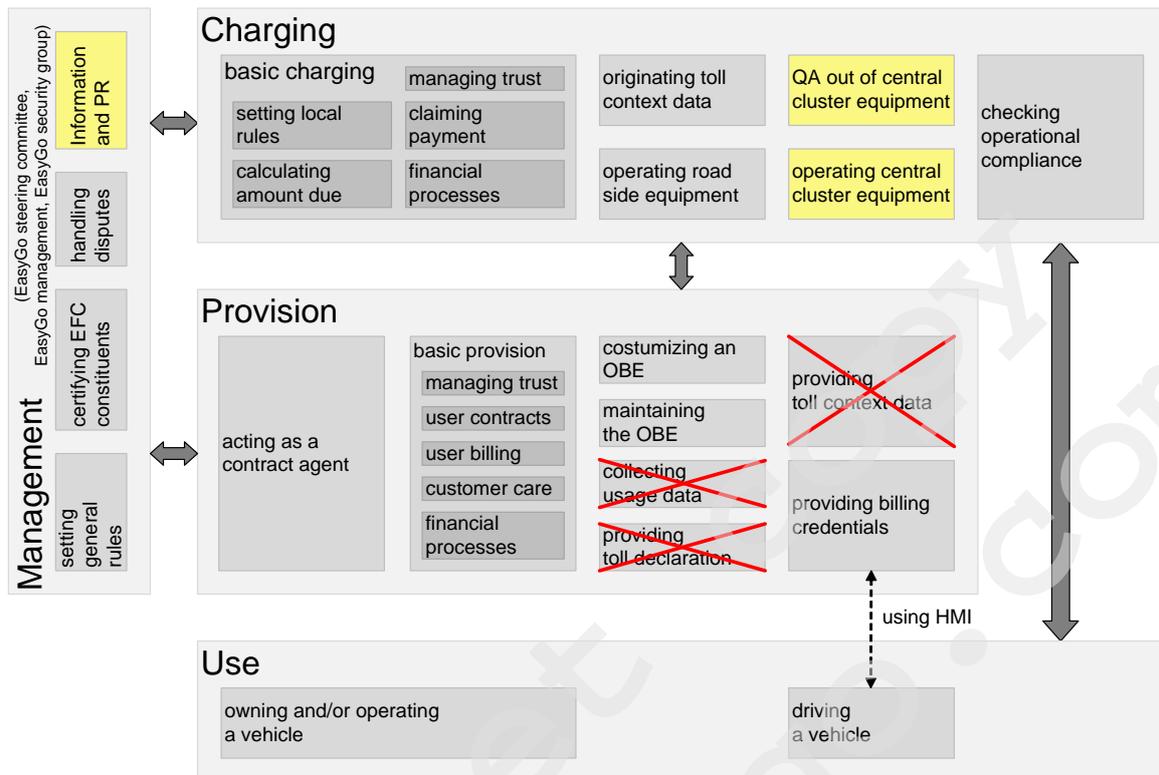
It should be noted that the definition of interoperability management in EasyGo differs from the definition in EETS where interoperability management refers to the regulatory framework for EETS.

## **2.2 Roles and responsibilities**

### **2.2.1 System architecture, roles and responsibilities in EasyGo**

The architecture standard ISO 17573 defines the allocation of responsibilities to the defined roles in a common way.

In the specific context of the interoperability of the EasyGo services the allocation of responsibilities to the roles and actors are slightly adapted.



**Figure 2: Responsibilities and their relations in the EasyGo context**

In EasyGo the responsibilities differ somewhat from the more general architecture standard ISO 17573 in the following regards:

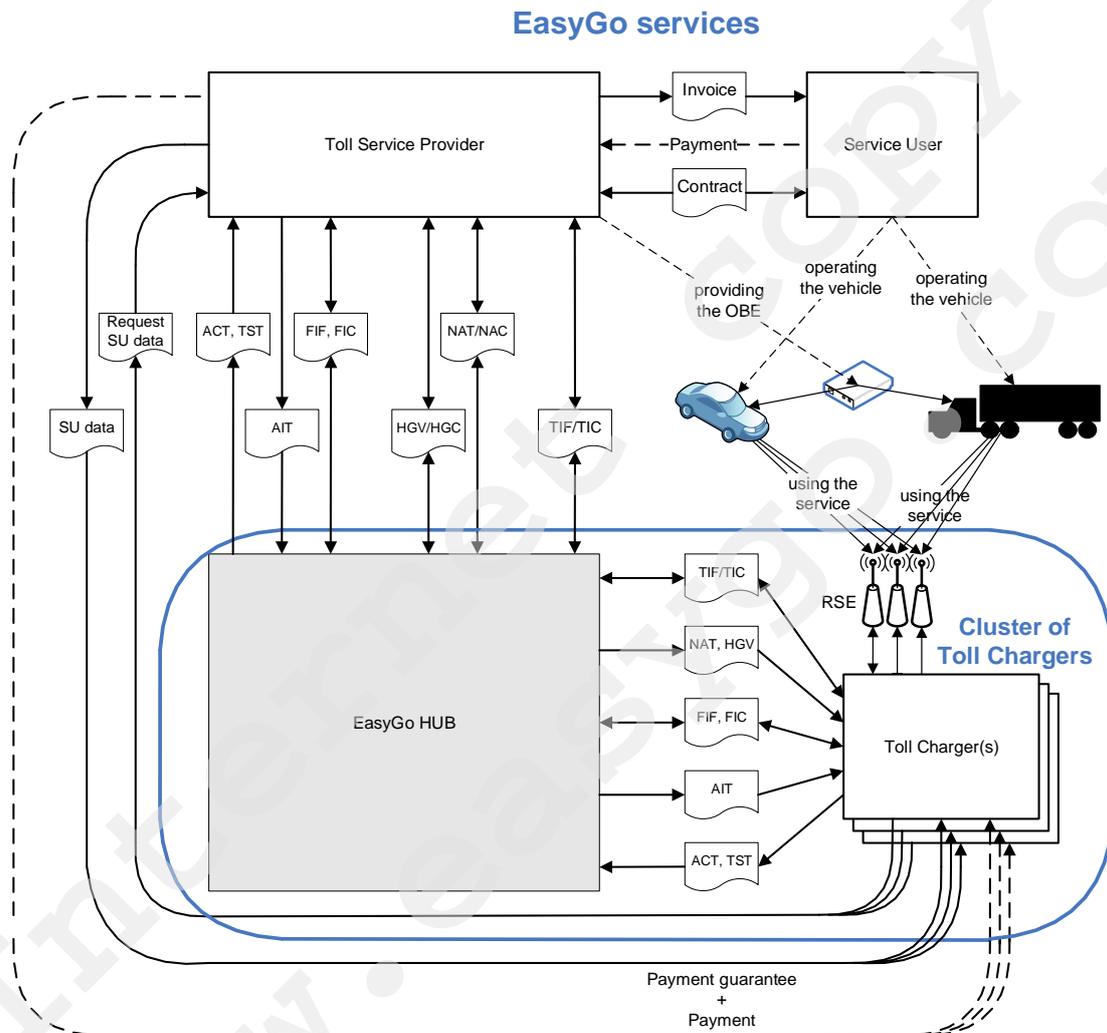
- The Information and PR is centrally organized and a responsibility of the Management role. This is not included in the architecture standard as it is a non-technical responsibility outside the scope of the architecture standard.
- The cluster of TCs requires the operation of some common infrastructure (EasyGo HUB = EGH) which is under the responsibility of the TCs. The cluster approach is not explicitly detailed in the architecture standard but is needed for the operation of EasyGo.
- Quality assurance is based on data passing the EGH and on TC / TSP reports. Since quality assurance is not explicitly covered in the architecture standard it is introduced as a new responsibility.
- The responsibilities of “providing toll context data”, “collecting usage data” and “providing toll declarations” are solely associated to the operation of a GNSS based tolling system and are therefore not needed for EasyGo as long as there are only DSRC toll domains.

In EasyGo the Management role as defined in fig 2 is currently held by the EasyGo steering committee (ESC), the EasyGo management (EM) and the EasyGo security group (ESG).

Descriptions of processes that are performed internally at a TC or TSP are outside the scope of this document,

According to the above allocation of responsibilities the EasyGo processes can be defined for each role. In EasyGo the interactions between the different actors covering the associated roles and responsibilities are according to the figure below.

The illustration below is based upon the EFC standards, but with usage of agreed EasyGo terminology.



**Figure 3: Data flow in EasyGo**

The dashed lines indicate that these functions are handled outside the EGH but according to EasyGo agreements.

The files being exchanged between the entities shown in the figure are:

- ACT Actor table
- TST Toll Station Table
- AIT Accepted Issuer Table
- FIF Financial Information File
- FIC Confirmation of FIF

- HGV Heavy Goods Vehicle list
- HGC Confirmation of HGV
- NAT Not Accepted Table (Exception list)
- NAC Confirmation of NAT
- TIF Transaction Information File
- TIC Confirmation of TIC

A description of each of these and how they are used is included in documents 201 and 203.

In addition to these files TCs and TSPs can exchange files via ADU (see chapter 5.13).

A detailed description of the EasyGo support organisation can be found in Annex 1.1 to the JVA “*Definition of support organisation*”.

The responsibilities of TCs and TSPs are described in the Joint Venture Agreement (JVA), the Toll Service Provider Agreement (TSPA) and the annexes to these agreements. The responsibilities of the SUs are described in Annex 3.1 “*Minimum set of clauses of the agreement between Toll Service Provider and Service User*”.

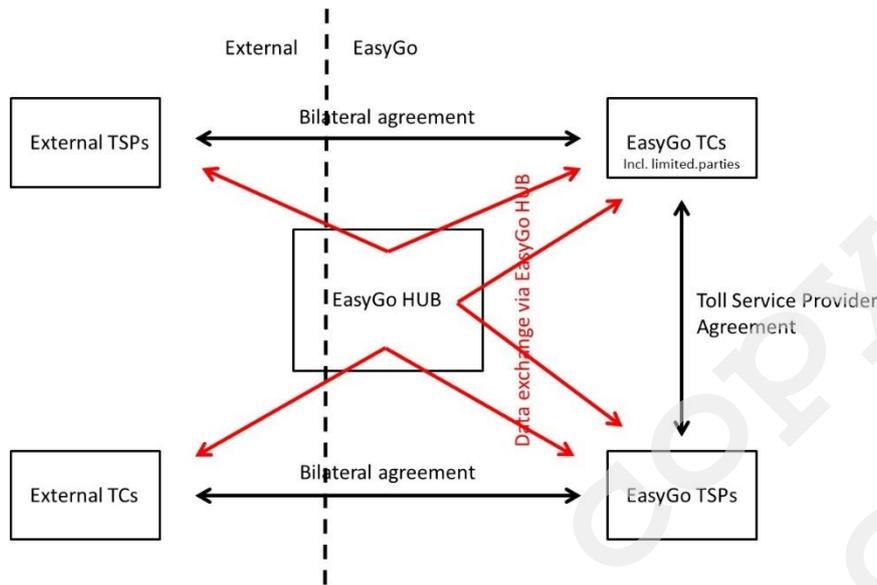
### **2.2.2 External TCs, TSPs and system support**

In addition to the TCs and TSPs that are part of the EasyGo operation, there are other organisations which either use the EasyGo infrastructure or have roles related to the support of the EasyGo infrastructure and services.

- External TCs are TCs which have bilateral agreements with one or more EasyGo TSPs and exchange data with the TSP(s) via the EGH. They are not part of the EasyGo service and have neither signed the JVA nor the adhesion agreement.
- External TSPs are TSPs which have bilateral agreements with one or more EasyGo TCs and exchange data with the TC(s) via the EGH. They are not part of the EasyGo service and have not signed the TSPA.

Entities exchanging data via the EGH but who are not a part of EasyGo are also referred to as “Service recipients”.

The relations with external TCs and TSPs are shown below:



**Figure 4 – Relations between EasyGo parties and external TCs and TSPs**

There are also other organisations which have roles in the EasyGo operation or in the support of the EasyGo infrastructure and/or services as for example:

- The “Appointed party” which operates and maintains the EasyGo infrastructure according to the “IT Service Agreement”
- Organisations that operate toll facilities and/or service provision on behalf of TCs and TSPs who have outsourced the operation of their activities

Document 404 “Overview of organisations involved with EasyGo” includes an overview of all organisations that are part of the EasyGo operation, use the EasyGo infrastructure or have roles related to the support of the EasyGo infrastructure and services.

### 3 Overview of EasyGo processes

Each of the processes of EasyGo involves two or more entities. This is shown in the table below. Entities marked with X are involved in the process. The entity marked with **X** is the entity which initiates the process. Some processes may be initiated by different entities.

The EasyGo processes are divided into three groups:

1. Preconditions - Processes which have to be fulfilled before charging is in operation
2. Operation - Processes taking place during normal operation of EasyGo
3. Changes – Processes to follow when a change shall be made to the system

	Chapter	EasyGo processes	Participation in process				
			SU	TC	EGH	TSP	EIM
Preconditions	4.1	Add new TC		X	X	X	X
	4.2	Add new TSP		X	X	X	X
	4.3	Originate EFC context data		X	X	X	X
	4.4	Exchange of trust objects		X	X	X	
	4.5	Open a contract	X			X	
	4.6	Distribute validation data		X	X	X	
Operation	5.1	Data exchange RSE - OBE	X	X		X	
	5.2	TC generates transactions	X	X		X	
	5.3	TC reports billing details to TSP		X	X	X	
	5.4	TC claims payment from TSP for service usage		X		X	
	5.5	TSP claims payment from SU for service usage	X			X	
	5.6	TSP claims issuer fee from TC		X		X	
	5.7	Change contract data	X			X	
	5.8	Exchange OBE	X			X	
	5.9	Close SU contract	X			X	
	5.10	Handle customer relations	X	X		X	
	5.11	KPI management		X	X	X	X
	5.12	TC generates financial information files (FIF)		X		X	
	5.13	Application Data Unit (ADU)		X		X	
Changes	6.1	Handle change request		X	X	X	X
	6.2	New equipment/updates by TC, TSP or in EasyGo infrastructure		X	X	X	X
	6.3	Termination of operation by TC or TSP		X	X	X	X

**Table 1 - Overview of EasyGo processes**

The EGH is defined as a separate entity because many processes need to differentiate between the responsibility of the individual TC and the responsibility of the infrastructure “owned” by the TCs collectively. It is the “Appointed party” (see chapter 2.2.2) who operates and maintains the EGH.

The following processes are different for EasyGo Basic and EasyGo+:

- Open a contract (chapter 4.5)
- Change contract data (chapter 5.7)
- Exchange OBE (chapter 5.8)

In these processes, the EasyGo Basic processes are sub-sets of the EasyGo+ processes. The rest of the processes are similar for EasyGo Basic and EasyGo+.

The processes listed in table 1, are described in detail in chapters 4, 5 and 6 and include EasyGo basic as well as EasyGo+.

New EasyGo TCs and TSPs must implement all processes in which they are included.

If a TSP only issues EasyGo basic OBEs he does not need to implement and test EasyGo+ processes and vice versa.

External TCs (example parking companies) and TSPs (example EETS providers) must implement and test subsets of the processes listed above on a bilateral basis. See documents 104 and 105 “*TC / TSP Requirements to a Service Recipient regarding the use of the EasyGo HUB services*”.

## 4 Preconditional processes

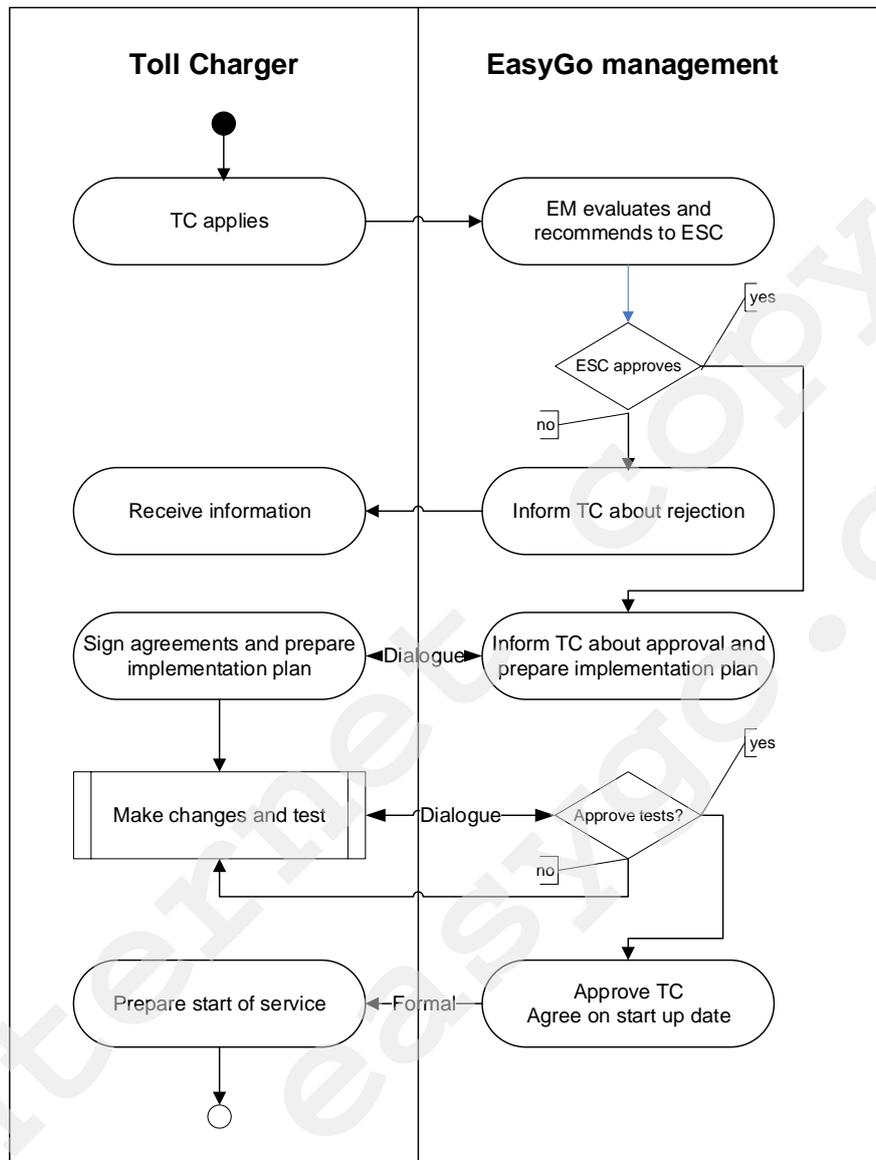
The following processes must have been carried out before charging can take place.

### 4.1 Add a new Toll Charger

Definition of process: The process is used when a new TC applies to be allowed to exchange data with TSPs via the EGH and shows the implementation if the application is approved. The TC initiates the process.

There are three types of TCs.

- A general party – a TC with a seat in the ESC
- A limited party – a TC without a seat in the ESC
- External TCs - TCs which have bilateral agreements with one or more EasyGo TSPs and exchange data with the TSP(s) via the EGH. They are not part of the EasyGo service and have signed neither the JVA nor the adhesion letter.



**Figure 5 - Adding a new TC**

When a new TC applies to become part of EasyGo the initial evaluation is done by EM who gives a recommendation to the ESC. If EM and the ESC do not recommend that the TC is included in EasyGo EM informs the TC about this decision.

If the ESC approves the TC to become part of EasyGo, EM informs the TC about this decision. The new TC shall sign the relevant agreements and EM and the new TC shall prepare a joint implementation plan.

When a new TC gets access to the EGH it is given access to a number of folders in the EGH which it needs to fill in.

Tests are carried out according to the EasyGo test specifications and when the tests are approved by EM the new TC can start operation. This is described in Annex 2.6 “*EasyGo test strategy*”.

To allow sufficient time for planning and testing the start-up of new toll domains should be reported by the parties in due time.

The approval process is somewhat different for the three different types of TCs listed above, but they are identical from a technical point.

#### External TCs

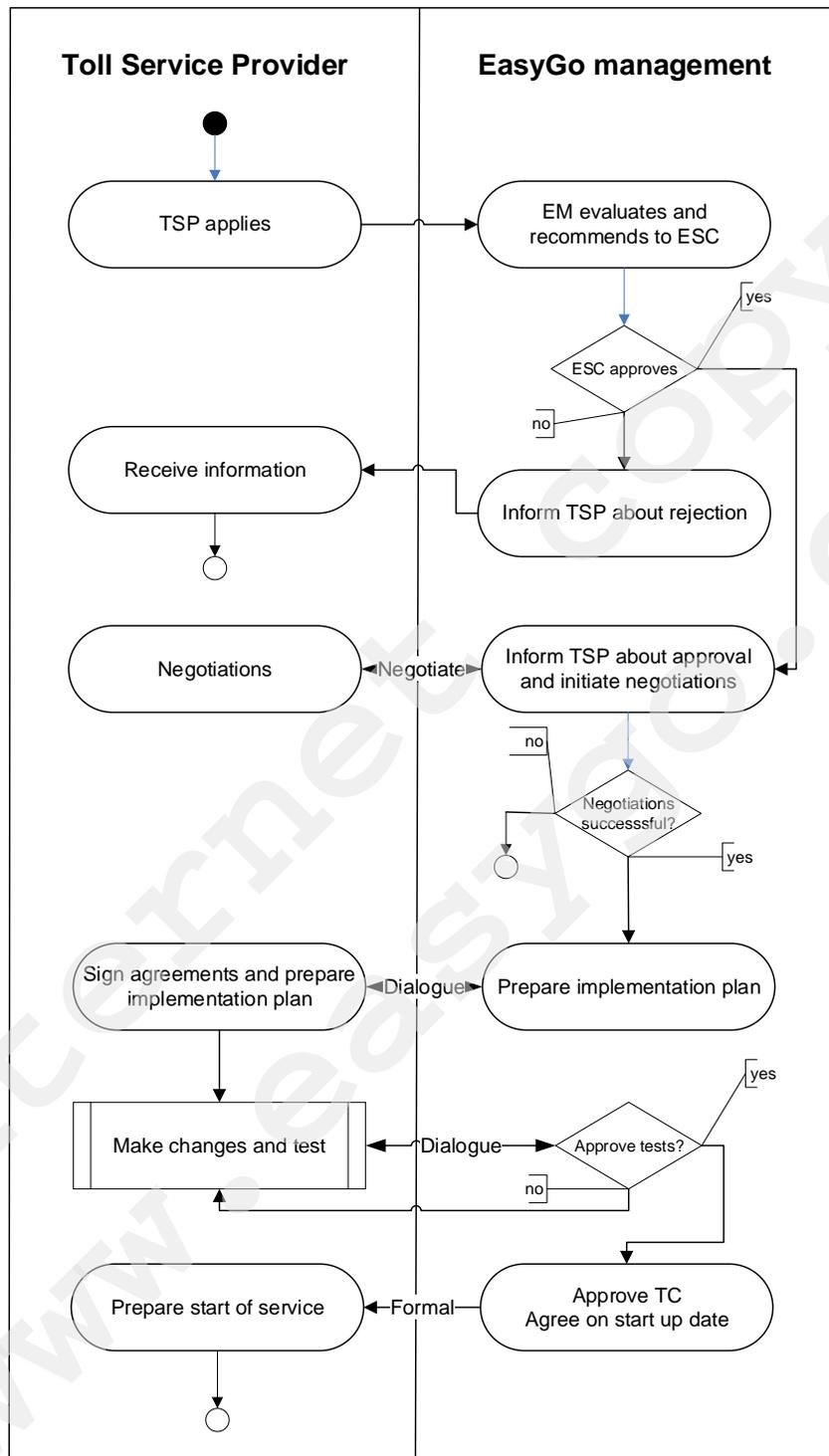
The ESC shall approve all new external TCs. External TCs have to comply with the technical specifications (required to exchange data via the EGH) and carry out tests of this data exchange according to the principles stated in document 206.

### **4.2 Add a new Toll Service Provider**

Definition of process: The process is used when a new TSP applies for being part of EasyGo and shows the implementation if the application is approved. The TSP initiates the process.

There are two types of TSPs:

- EasyGo TSPs – TSPs which have signed the TSPA and are thereby approved by all EasyGo TCs
- External TSPs - TSPs which have an agreement with one or more EasyGo TCs and exchange data with the TC(s) via the EGH. They are not part of the EasyGo service and have not signed the TSPA.



**Figure 6- Adding a new TSP**

### EasyGo TSPs

The initial evaluation of the application is done by EM who gives a recommendation to the ESC. If EM and the ESC do not approve the TSP, EM informs the TSP about this decision.

If the ESC approves the TSP, EM informs the TSP about the decision. The new TSP shall sign the TSPA, and EM and the new TSP shall prepare a joint implementation plan

When a TSP gets access to EasyGo it is given access to a number of folders in the EGH which it needs to fill in.

Tests are carried out according to the EasyGo test specifications and when the tests are approved by EM the new TSP can start operation in the EasyGo toll domains.

The approval process is somewhat different for the two types of TSPs listed above, but from a technical point they are identical.

### External TSPs

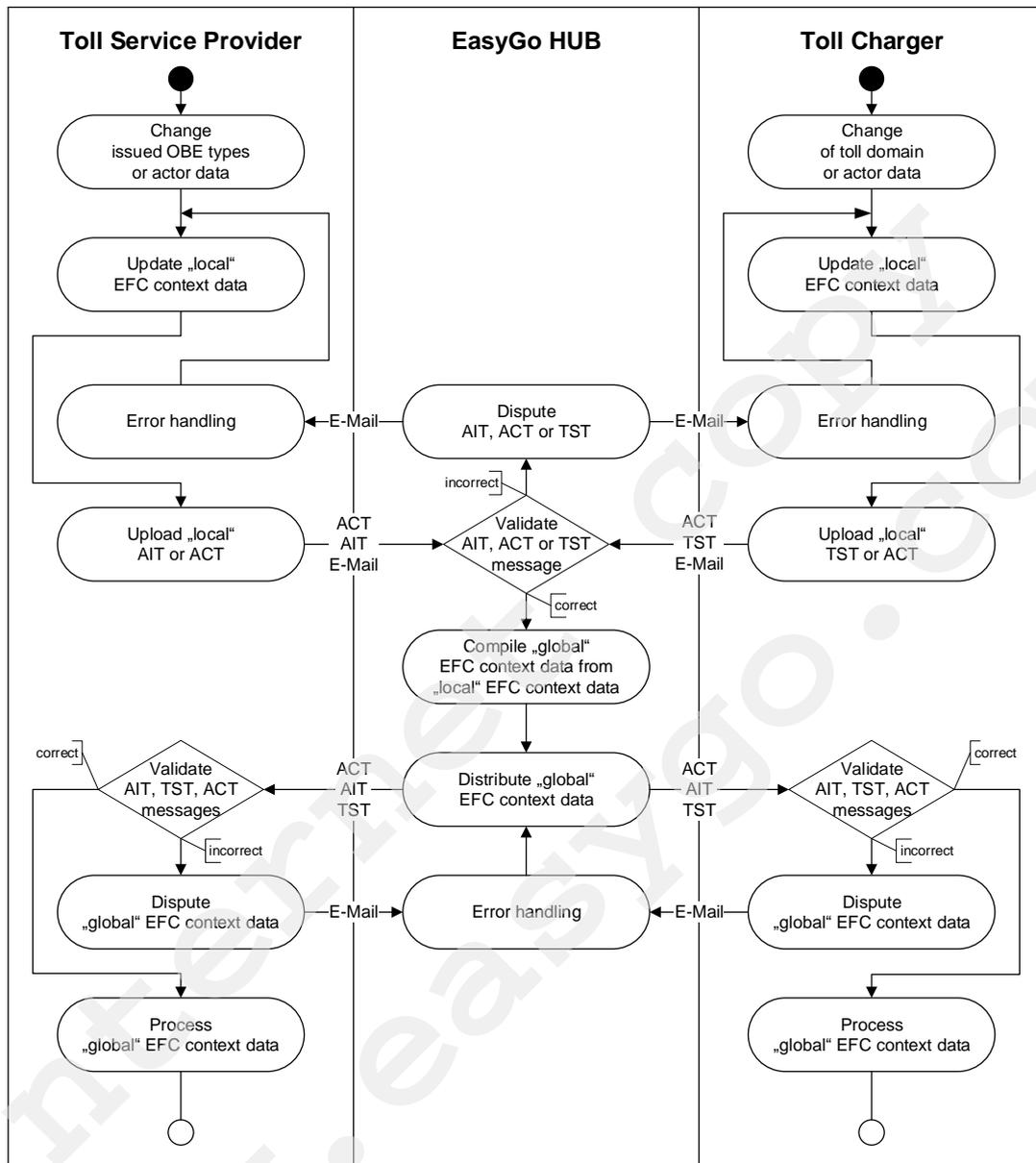
The ESC shall approve all new external TSPs. External TSPs have to comply with the technical specifications (required to exchange data with its TC via the EGH) and carry out tests of this data exchange according to the principles stated in document 206.

## **4.3 Originate EFC context data**

Definition of process: The EFC context data consists of the Actor table (ACT), the Toll Station Table (TST) and the Accepted Issuer Table (AIT). The process describes the handling of the ACT, the AIT and the TST between originator, EGH and recipient.

The format of the messages used in this data exchange is described in Annex 2.3, chapters 2.1 – 2.3 and the detailed technical process is described in Annex 2.1, chapter 3.2.1

The process is described in the figure and text below:



**Figure 7 - Originate EFC context data**

### Changes by TC

If one of the following occurs:

- a new toll domain is established
- an existing toll domain is closed
- the toll regime of an existing toll domain is changed
- actor data of the TC is changed

the process of originating / revising the ACT and/or TST is initiated by the TC either sending an updated “local” ACT to the EGH according to the defined schedule (see Annex

2.1 chapter 5) or by sending the updated data to the EGH support by e-mail (see contact details in document 208 chapter 1.4) who will enter it directly into the “global” ACT.

If an existing toll domain is changed the process is initiated by the TC responsible for the toll domain. The TC has to update his TST and distribute the “local” EFC context data to the EGH according to the defined schedule.

#### Changes by TSP

If the actor data of a TSP is changed the process is initiated by the TSP either sending an updated “local” ACT to the EGH according to the defined timing or by sending the updated data to the EGH support by e-mail who will enter it directly into the “global” ACT.

If the types of issued OBEs are changed, the process is initiated by the TSP. The TSP has to update his AIT and distribute the “local” EFC context data to the EGH according to the defined timing. A relevant change may be initiated by the issuing of a new type of OBE or a major software update leading to a change of the Context mark.

#### Consequences

The responsibility of the delivery of a valid “local” ACT or AIT list on time to the EGH lies always with the TSP. The responsibility of the delivery of a valid “local” ACT and TST list on time to the EGH lies always with the TC.

Any of the above changes shall cause the EGH to generate new “global” EFC context data. The EGH shall validate the formal correctness of the received “local” EFC context data (ACT, AIT and/or TST) and dispute it to the sending TC and/or TSP by e-mail if an error is detected.

The EGH shall, after a positive validation, compile new “global” EFC context data from all valid “local” ACT and/or “local” AIT received on time from a TSP or respectively all valid “local” ACT and/or “local” TST received on time from a TC according to the defined schedule. If no new or an invalid “local” ACT, “local” AIT and/or “local” TST have been received the last valid list will be used during the compilation.

After the compilation of new “global” ACT, AIT and/or TST it shall be distributed by the EGH to all TCs and TSPs.

The recipients shall validate the formal correctness of the transferred “global” EFC context data and dispute it to the EGH support by e-mail if an error is detected.

The recipient who initiated the update of the “global” EFC context data shall additionally validate his own data for correctness in the new “global” EFC context data and dispute it to the EGH support by e-mail if an error is detected.

In case of an error the EGH support shall analyse the error and rectify the problem and transmit corrected “global” EFC context data according to the defined schedule. Until valid “global” EFC context data are transmitted, the last correct lists remain active in the systems of the recipients.

In case of no errors, the recipients shall implement them in their systems according to the defined schedule.

NOTE: A toll regime is defined as set of rules and regulations for any area (toll domain) where a fee is collected for its use or passage. It is described by the TC as a set of parameters which define its physical, geographical, interface and fee related properties as a set of tolled objects needed by any TSP to offer its service in the toll regime. The EFC context data may be implemented in the form of the EasyGo toll station table.

NOTE: An implementation or an update of a toll regime may be triggered by a road administration (public or private authority), in whose jurisdiction the toll regime is located. Some changes to toll regimes may require approval by the authorities and starts with some form of legislative measure. The responsibility to implement or update a toll regime may be transferred to the TC, who may be responsible for it. When all necessary changes are completed the TC has to update the EFC context data for the affected toll regime, before it becomes effective for any vehicle which uses the toll regime.

#### **4.4 Exchange of Trust Objects**

Definition of process: The “Exchange of Trust Objects” process is initiated, when a TC or a TSP is added to the toll scheme or when one of these entities wishes to update its security keys. In these actions, the entities shall exchange Trust Objects to be used for securing their bilateral communication.

The principles for exchange of security keys are described in document 205. The exchange is done directly between TSP and TC and is agreed bilaterally between them. The exchange process is therefore not described in this document.

The tests regarding the use of security keys shall be part of the test procedures for communication between OBE and RSE as described in document 206.

#### **4.5 Open a contract**

Definition of process: The process is initiated, whenever a SU applies to open a contract with a TSP.

There are three different processes to consider:

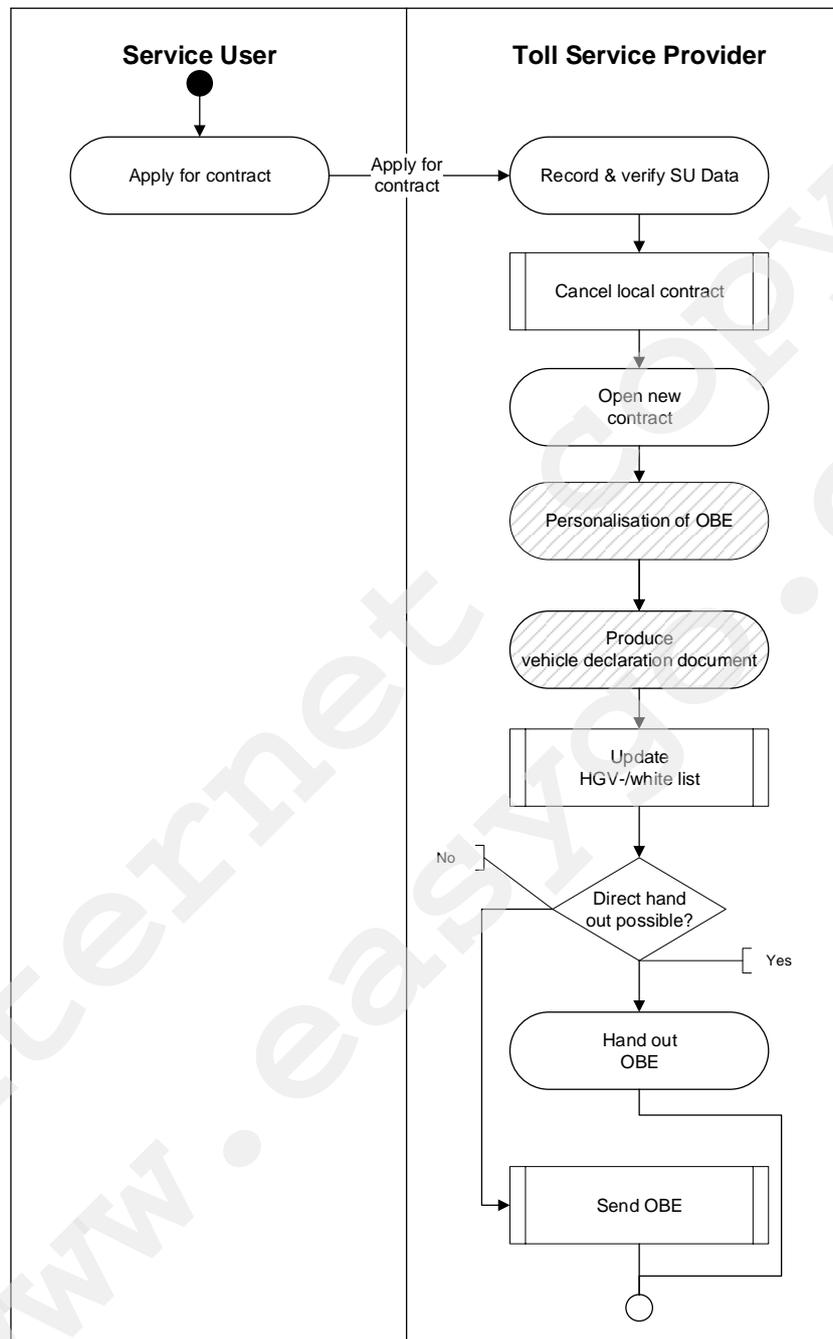
- A. A new SU who does not already hold a contract from any TSP
- B. A SU who has an existing contract with another TSP which may be replaced with a contract from a new TSP
- C. A SU who has a contract with a TSP and, in addition, wants to enter into a local contract with a TC to receive a higher discount

A is described in chapter 4.5.1 “Open contract”. B is an option within “open contract” but is described separately in chapter 4.5.2 “Cancel existing contract”. C is described in chapter 4.5.3 “Local contracts with EasyGo TCs”.

The processes are valid for EasyGo Basic and EasyGo+. There are however some elements only valid for EasyGo+. These are:

- Personalisation of OBEs
- Production of Vehicle Declaration

#### 4.5.1 Open contract



**Figure 8 - Open contract**

If a SU wants to open a contract, the TSP should ask the SU if he already has an OBE from another TSP or TC (local contract). The SU is not obliged to respond to this request.

If the SU already has an OBE, the TSP should request that this OBE / local contract is terminated if it is no longer needed. The new OBE can be used as a basis for a (additional) local contract instead of the SU having two or more OBEs. The TSP should inform the SU

that he should have only one OBE in the vehicle and that he can have several contracts connected to this OBE.

The TSP is responsible for the correct vehicle data for each contract.

The HGV-/white list shall be updated (see chapter 4.6.2 “Update and distribute HGV-/white list”) to include the new OBE(s) for the SU.

For EasyGo+ these verified SU data shall be used as basis for personalisation of the OBE and production of vehicle declaration. This is described in detail in document 202-B:

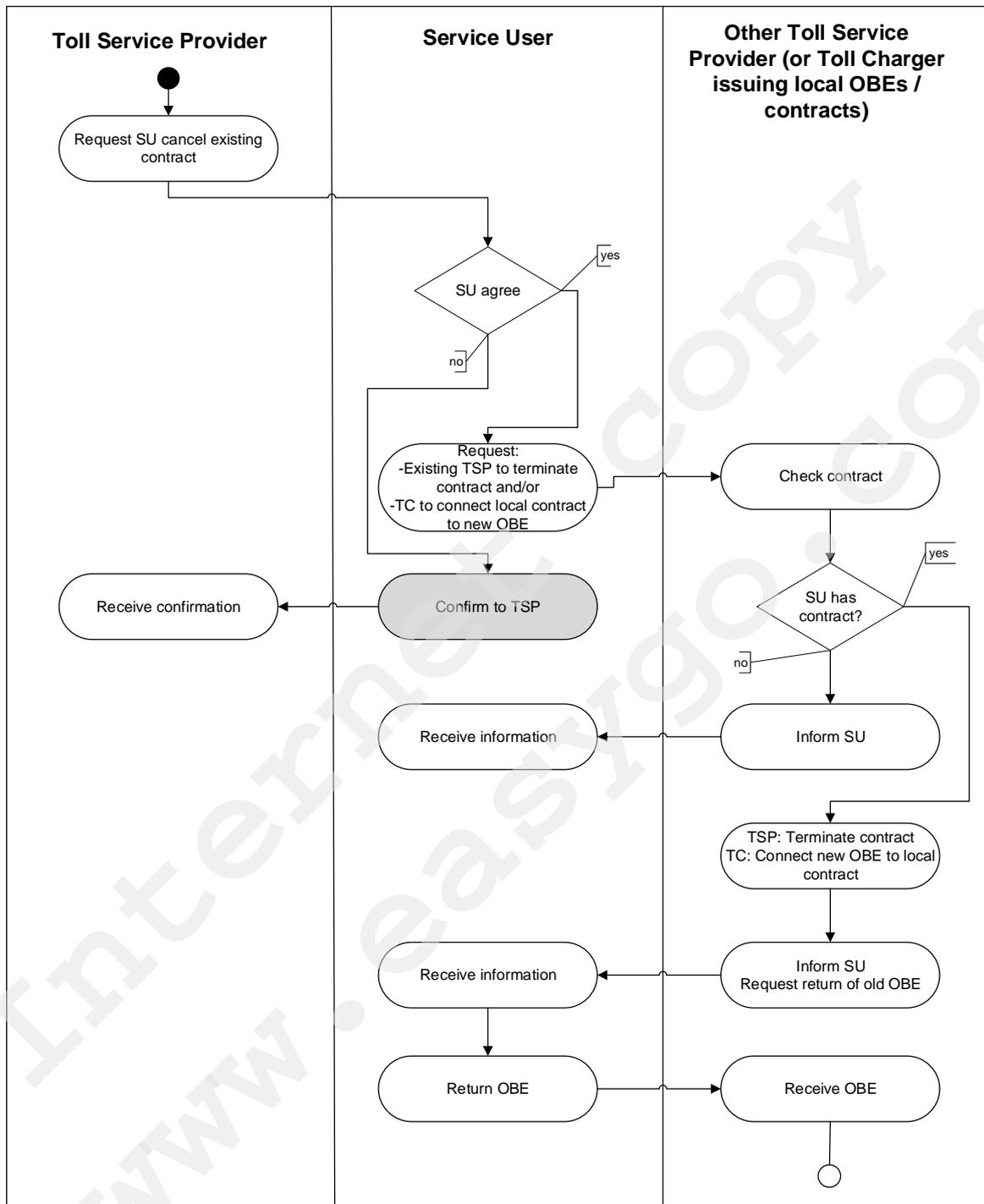
If possible, the SU can stop at a POS where the OBE can be updated and he can receive an updated vehicle declaration.

If this is not possible, the TSP must replace the OBE with a new one. The old OBE shall be removed from the HGV-/white list and put on the Exception list. The SU must return the old OBE to the TSP.

The TSP has also to store relevant proof documents and allow verification by the TC.

#### **4.5.2 Cancel existing contract**

The process for cancelling contracts is shown below:



**Figure 9 - Cancel existing contract**

When a SU applies for a contract with a TSP, the TSP shall ask the SU if he already has a contract with another TSP. This should be done to avoid the use of multiple OBEs in the vehicle which can disturb communication between OBE and RSE and lead to errors.

He should also ask if the SU has a local additional contract with a TC and ask him to connect this contract to the new OBE (see 4.5.3 below).

The SU is not obliged to respond to this request.

The TSP should, however, inform the SU about possible consequences of maintaining several contracts / OBEs.

The SU should request the TSP with whom he has a local contract to terminate this contract and on request, return the old OBE to this TSP.

The SU should request the TC with whom he has a local contract to connect the contract to the new OBE and return the old OBE.

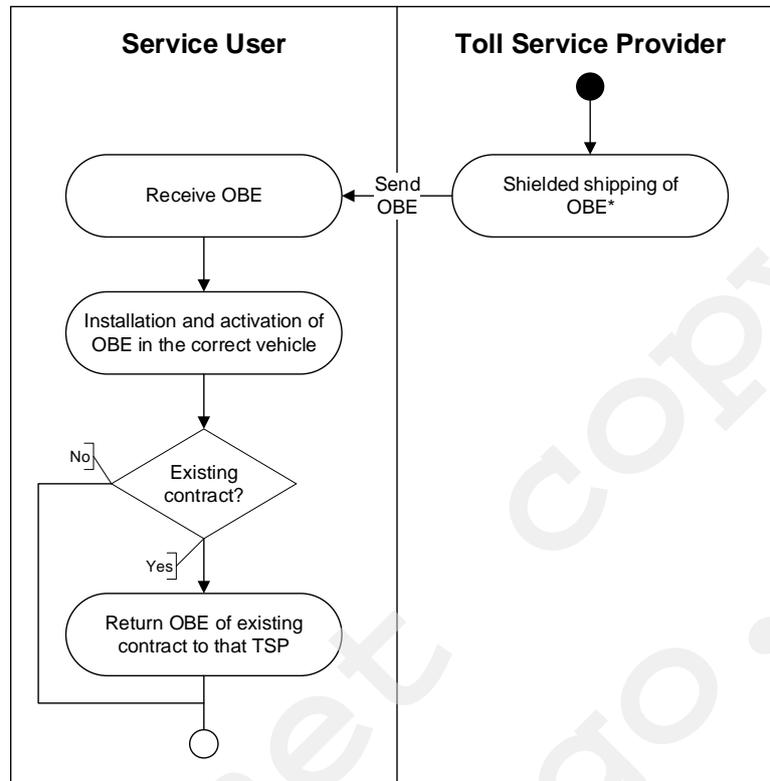
#### **4.5.3 Local contracts with EasyGo TCs**

Some TCs allow SUs to sign additional local contracts with them. This is for example the case if the SU can obtain a discount if prepaying the contract/toll fee. An OBE received from the SUs TSP can be used as a basis for such a local contract.

Additional local contracts between SUs and TCs are outside the scope of EasyGo, but the TC shall pay an annual fee for the use of the OBE to the TSP who has issued the OBE. The procedure for registration and payment of this fee is described in document 306.

#### **4.5.4 Send OBE**

When the TSP sends an OBE to a SU the following procedure shall be followed:



**Figure 10 - Send OBE**

\*For EasyGo+ the TSP shall include the vehicle declaration with the shipment of the OBE and the SU has to carry the provided vehicle declaration and the original document(s) which prove(s) the correct data, in the vehicle together with the OBE.

The OBE has to be shielded during sending to prevent it from interacting with the RSE of any toll stations passed during delivery.

After receiving the new OBE, the SU shall install it correctly in the corresponding vehicle.

If the SU already has a contract / OBE with the TSP, he should return the old OBE to the TSP.

If the SU has an OBE from another TSP, he should return it to this TSP/TC.

#### **4.6 Distribute validation data**

Definition of process: The process ensures the correctness of the data used to check if a user has a valid contract or not.

The data is produced by the TSPs, distributed via the EGH and used by the TCs. The validation data include two types of data:

- Exception list (NAT): List of OBEs that are not approved
- HGV-list / white list (HGV): List of approved OBEs including vehicle parameters like vehicle category, license plate, emission class etc.

The handling of these two types of lists is described below.

#### **4.6.1 Update and distribute Exception list**

It is vitally important for the TSP to block any SU from using any toll domain(s) of a TC, to prevent payment guarantee in favour of the TC, even if the SU is no longer able or no longer required to pay (e.g. SU is not paying, stolen OBE ...).

To avoid the term of blacklist, which has a differing meaning in various existing toll regimes and to include other lists with a similar meaning (e.g. grey or black list of PAN numbers, black list for license plates or OBEs ...), the term “Exception list” is used as in EN ISO 17573 and EN ISO 12855 to summarize all possibilities of limiting the usability of an OBE in a toll regime. Other standards may still use differing terms, but they are all included in the term “Exception list”.

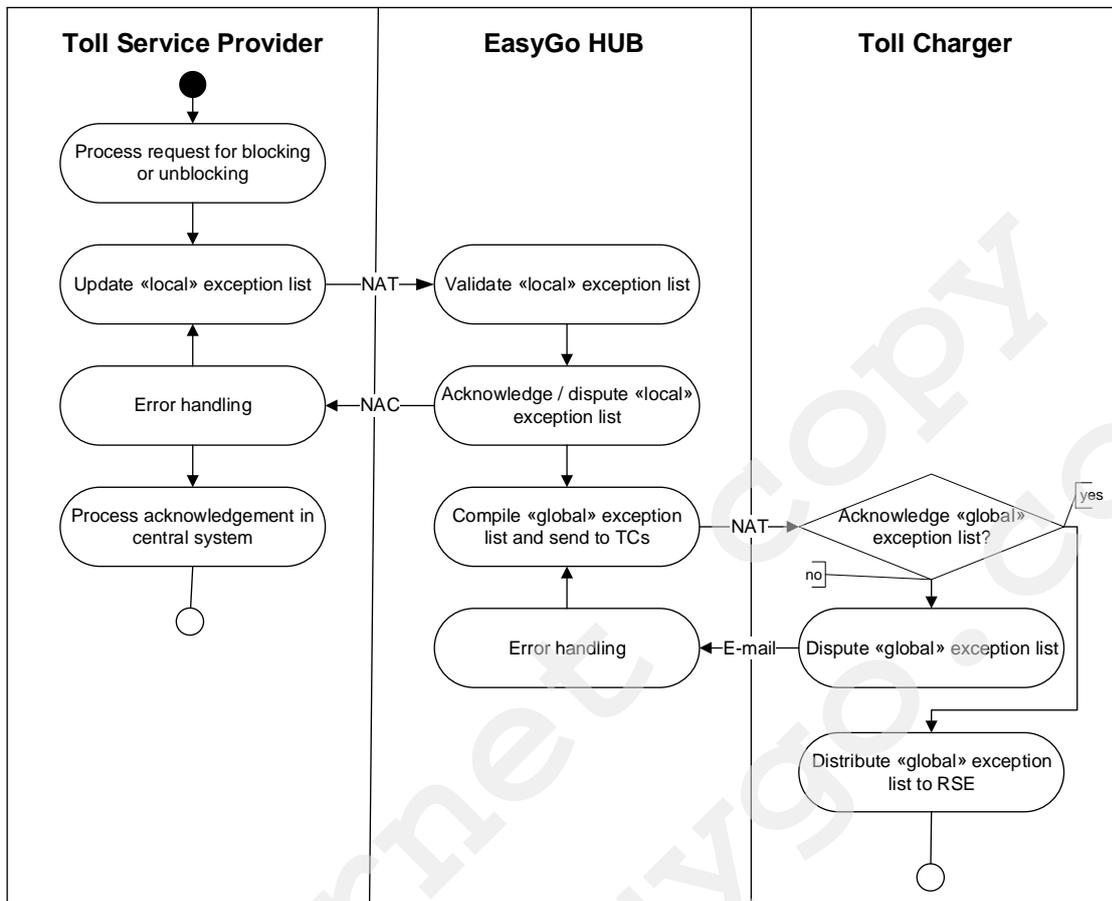
The Exception list may only be used to limit or restrict the acceptance of an OBE within all toll domains connected to the EGH (not for individual toll domains).

The conditions and the periods of time when the acceptance of an OBE within a toll regime is limited are the sole responsibility of the TSP that issued the OBE.

An entry in the Exception list always consists of the PAN, the OBE-ID, the Context Mark and a reason code.

Document 203 describes the general handling of the Exception list.

The process for updating and distributing the Exception list is shown in figure 11 below.



**Figure 11 - Update and distribute Exception list**

The “Update and distribute Exception list” process shall be used whenever a TSP needs to revoke the payment guarantee for an OBE issued to a SU. This could be caused by a SU terminating or violating the contract with the TSP or it may be caused by the report of a broken, lost or stolen OBE. The process is also used when the TSP needs to remove an OBE from the Exception list.

TSPs shall generate their “local” Exception lists and send them to the EGH. The EGH shall validate the formal correctness of the message and shall either acknowledge or dispute it to the sending TSP by the means of a NAC message.

The EGH shall compile a “global” Exception list from all valid “local” Exception lists received on time from all connected TSPs. If no new or an invalid “local” Exception list is received from a TSP, the last valid “local” Exception list for this TSP will be used during the compilation.

The EGH shall be able to filter the compiled “global” Exception list based on the Context mark or intervals thereof if required by a TC. For example – A TC only accepting EasyGo+ can require that the EGH only sends data relevant for EasyGo+.

The “global” Exception list shall be distributed to all connected TCs by the means of a NAT message.

When a new “global” Exception list is received, the TC shall process it. The grace period for the activation of the list is described in the timing schedule (document 201 chapter 5), after which the liability for any toll transactions with OBE on the new Exception list is transferred from the TSP to the TC (i.e. the payment guarantee of the TSP ends).

The TC may optionally validate the formal correctness of the message and dispute it to the EGH support by e-mail if an error is detected.

In case of an error the EGH support shall analyse the error and rectify the problem and transmit a corrected “global” Exception list. Until a valid “global” Exception list is transmitted, the last correct list remains active in the systems of the TC.

The format of the messages used in this data exchange is described in Annex 2.3 and the detailed technical process is described in Annex 2.1.

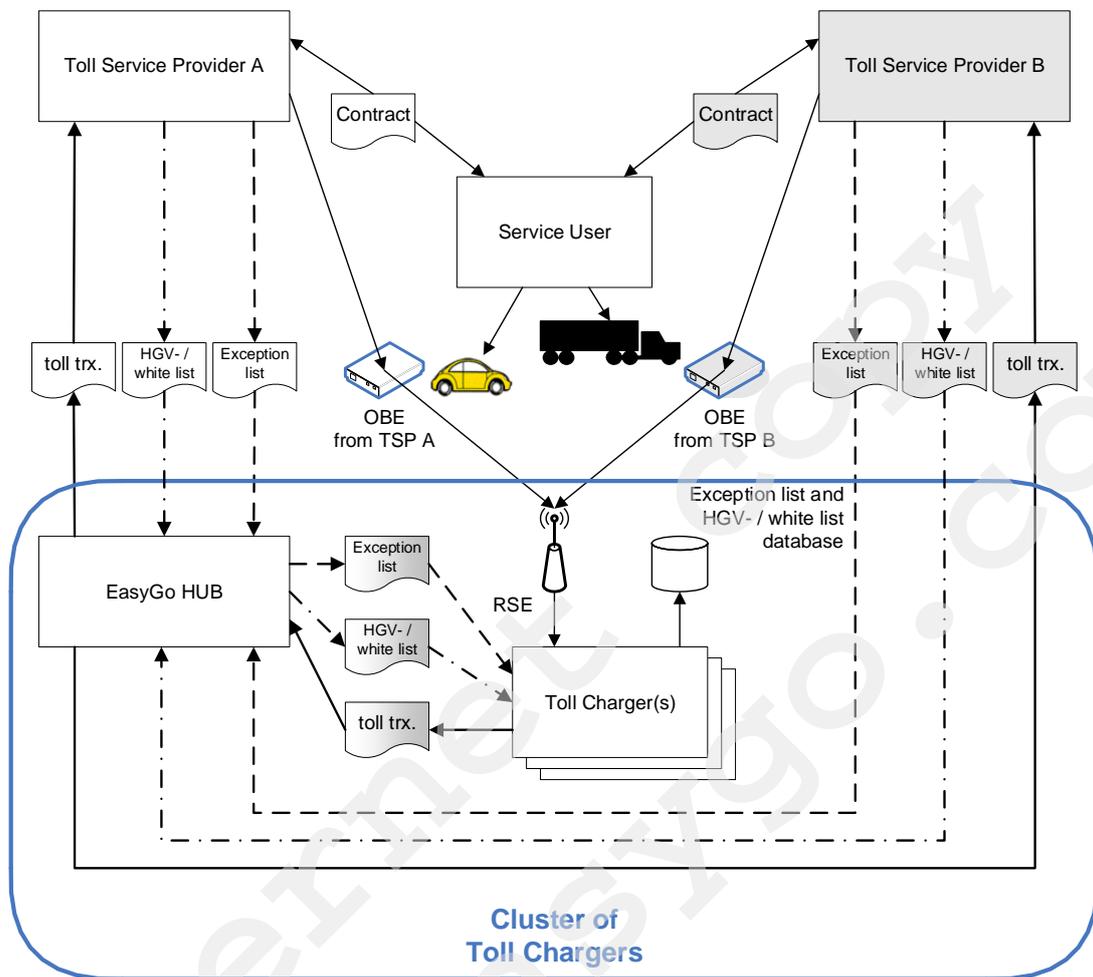
Exchange of data between TSP, EGH and TC shall be according to the timing schedule described in document 201 chapter 5.

Any error not attributed to a corrupt “local” Exception list sent by a TSP lies in the responsibility of the cluster of TCs. Thus, any toll transaction made by an OBE which was correctly blocked by the issuing TSP (i.e. put on an acknowledged “local” Exception list) falls into the responsibility of the cluster of TCs.

#### **4.6.2 Update and distribute HGV- / white list**

Although the use of a whitelist is not explicitly contained in the EETS decision, the EasyGo service uses this kind of information to improve the usage of the degraded mode and/or the local enforcement process. As long as the information in the whitelist is limited to EasyGo contracts the use of these lists is conformant to the national and European data protection regulations. In EasyGo the white list is also referred to as HGV list (Heavy Goods Vehicle - as the original list was introduced to identify vehicles above 3.5 tons).

The general use of HGV- / white list is shown in figure 12 below:



**Figure 12 - Use of HGV-/white lists**

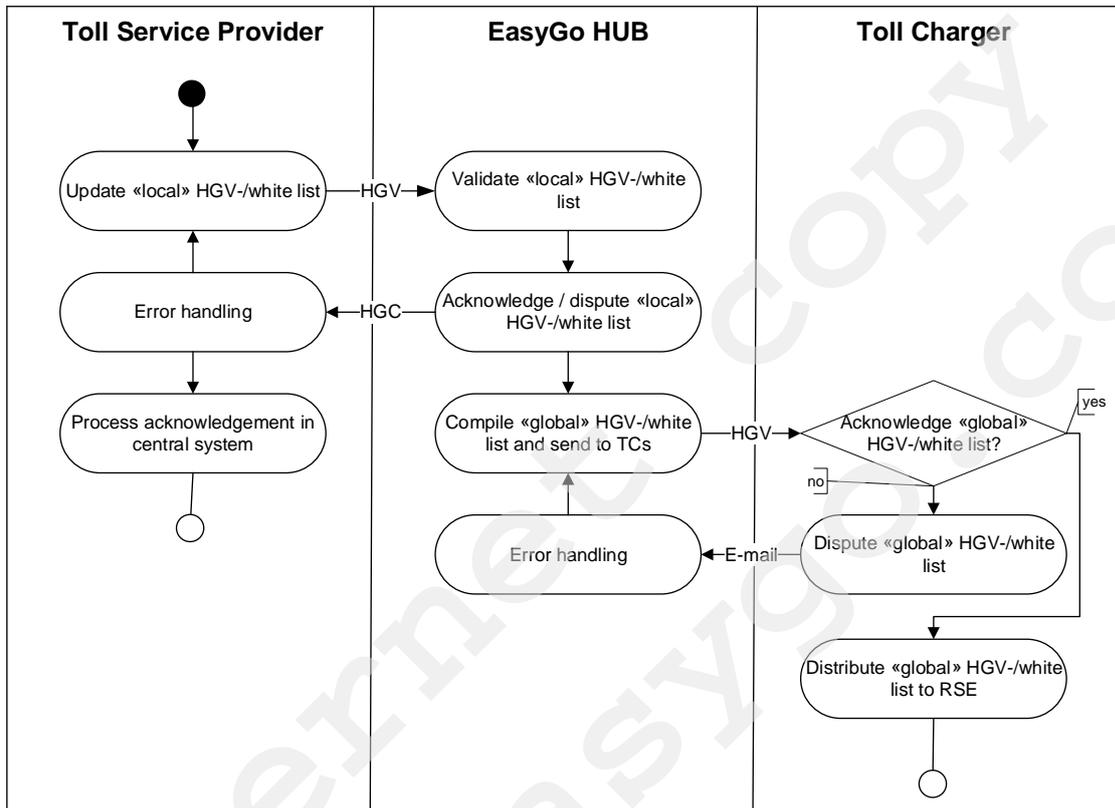
In case of a malfunctioning OBE the TC can then check the HGV-/white list whether the license plate of the detected vehicle is included or not. Such an entry can be used to generate a transaction in degraded mode (e.g. video transaction = C8) and send it to the responsible TSP. If this is not possible the information about the TSP can be used to request the SUs address details (see chapter 5.2.1).

The TSP shall update and distribute the “local” HGV-/whitelist when any of the following occur:

- When a new contract is established a new entry shall be put on the HGV-/whitelist.
- When an existing contract is changed, the current entry shall be removed from the HGV-/whitelist and a new entry is put on the whitelist
- When an existing contract is closed, the current entry shall be removed from the HGV-/whitelist
- When an existing OBE/contract is put on the Exception list the same OBE/contract shall be removed from the HGV-/whitelist

- When an existing OBE/contract is removed from the Exception list the same OBE/contract shall be put on the HGV-/whitelist

A detailed description of the use of HGV- / white list can be found in document 201. An overview of the process is shown in figure 13 below:



**Figure 13 - Update and distribute HGV-/ whitelist**

The update of the HGV-/white list is initiated by the TSP who shall generate his “local” HGV-/whitelist containing entries of all of his valid OBEs/contracts and send them to the EGH.

The EGH shall validate the formal correctness of the message and shall either acknowledge or dispute it to the sending TSP by the means of a confirmation message (HGC).

If a formal error in the received “local” HGV-/white list is detected the whole list shall be disputed. If an error in the content of the file is detected a partial acceptance of the list is possible only disputing single lines.

The responsibility of the delivery of a valid “local” HGV-/white list on time to the EGH lies always with the TSP, i.e. the “infrastructure” cannot be made responsible.

The EGH shall compile a “global” HGV-/white list from all valid “local” HGV-/white lists received from all connected TSPs. If no new or an invalid “local” HGV-/white list is

received from a TSP, the last valid “local” HGV-/white list for this TSP will be used during the compilation.

The EGH shall be able to filter the compiled “global” HGV-/whitelist list based on the Context mark or intervals thereof if required by a TC. For example – A TC only accepting EasyGo+ can require that the EGH only sends data relevant for EasyGo+.

After filtering the “global” HGV-/white list it shall be distributed to all connected TCs by the means of a HGV message.

The TC may optionally validate the formal correctness of the message and dispute it to the EGH support by e-mail if an error is detected.

In case of an error the EGH support shall analyse the error and rectify the problem and transmit a corrected “global” HGV-/white list. Until a valid “global” HGV-/white list is transmitted, the last correct list remains active in the systems of the TCs.

The format of the messages used in this data exchange is described in Annex 2.3 and the detailed technical process is described in Annex 2.1.

Exchange of data between TSP, EGH and TC shall be according to the timing schedule described in document 201 chapter 5.

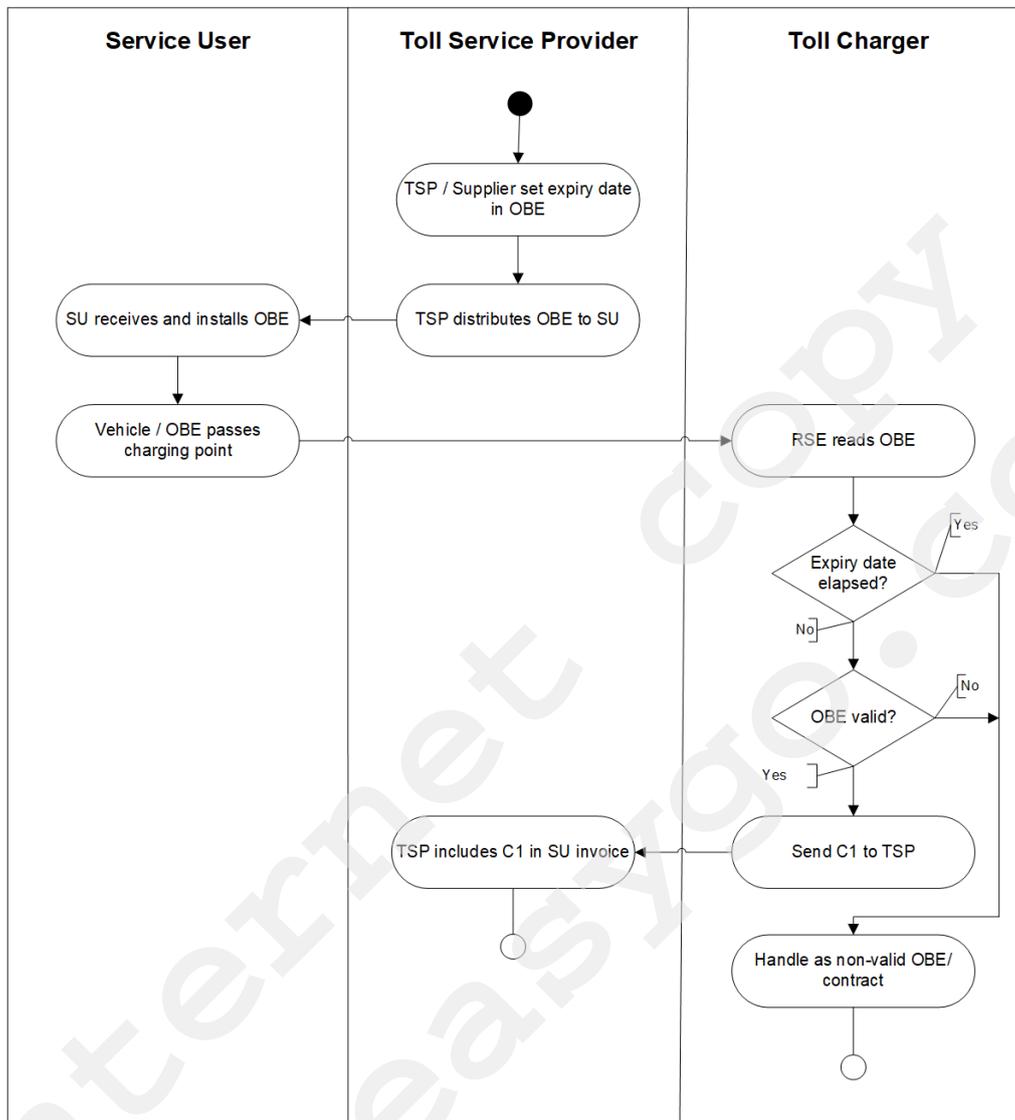
Any error not attributed to a corrupt “local” HGV-/whitelist sent by a TSP lies in the responsibility of the cluster of TCs. Thus, any toll transaction made by an OBE which was incorrectly put on the HGV-/white list by the EGH, falls into the responsibility of the cluster of TCs.

#### **4.6.3 Additional validation data in the OBE**

There are special functions / features used by TSPs which requires the TC to perform additional checks and verifications when an OBE is read.

##### **4.6.3.1 Expiry date**

It is possible for the TSP to set an expiry date (Payment Means Expiration Date) of his own choice in the OBE. Any OBE with an elapsed expiry date shall be treated by RSE as invalid. The handling of the expiry date is shown in the figure below:



**Figure 14 – Handling expiry date in OBE**

The TSP can enter the expiry date into the OBE during personalisation or it can be done by the producer of the OBE before delivery.

The TC needs to read the expiry date and do one of the following:

- If the expiry date has not elapsed, the TC will check if the OBE is connected to a valid contract. If both conditions are satisfied the reading of the OBE will result in a valid transaction being sent to the TSP.
- If the expiry date has elapsed, the TC will handle this as an invalid OBE.

The reading of the expiry date must be an integrated part of the validation procedure by the TC described in chapters 5.2.1 and 5.2.2.

For EasyGo+ the function is described in document 202-B chapter 2.2 “Attribute 32: PaymentMeans”. For EasyGo Basic the function is/will be described in document 202-F.

#### 4.6.3.2 Blacklist bit

In general, OBEs have the feature of setting a blacklist bit (via the RSE in DSRC systems and / or via GSM/UMTS in GNSS/Hybrid systems) with which the OBE signals the roadside upon passages that it is blacklisted. The usage of this feature by TSPs is currently quite rare.

The blacklist bit is managed as shown in the figure below.

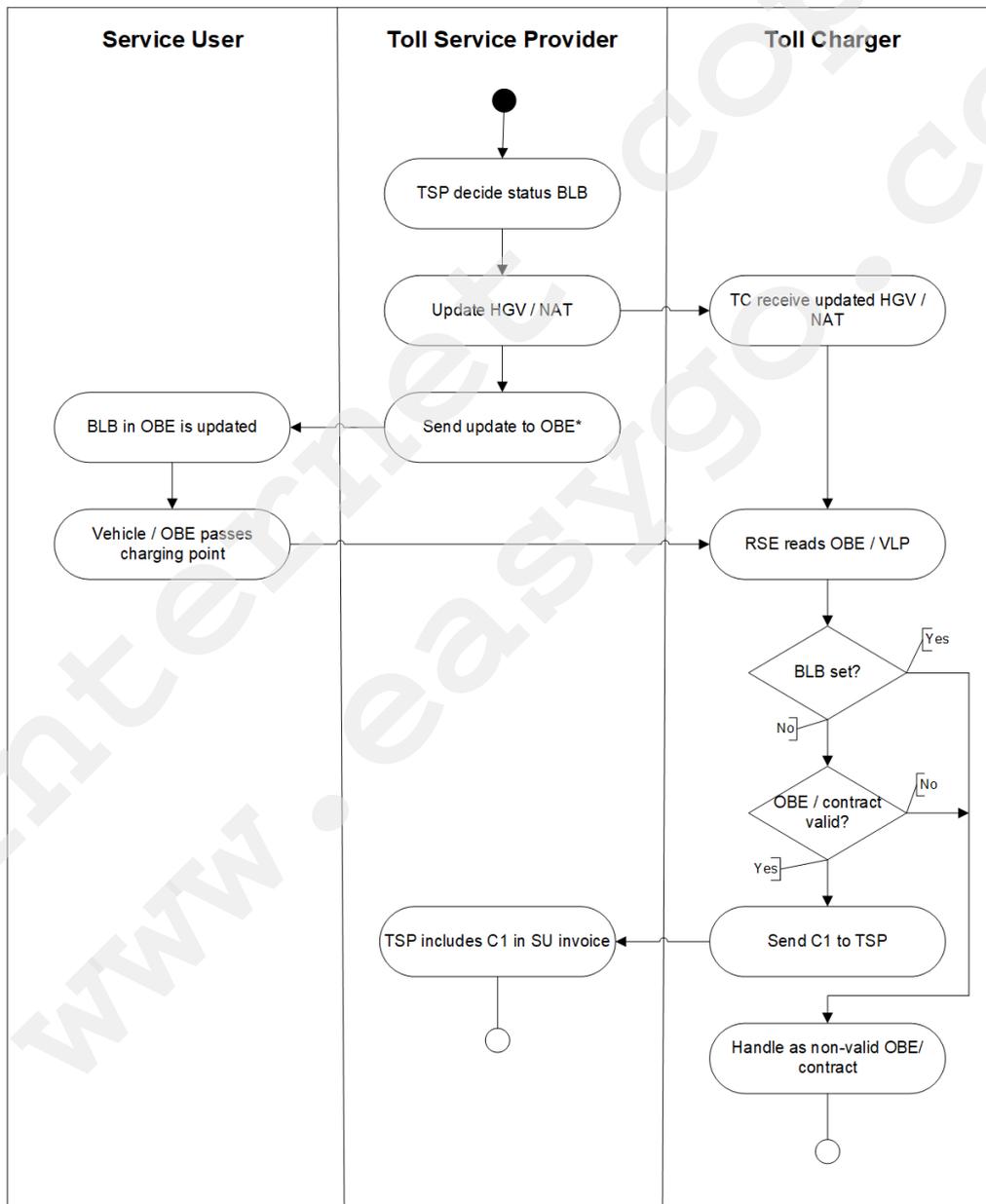


Figure 15 – Handling of Blacklist Bit

When a TSP changes the Blacklist bit, he must simultaneously update the HGV / NAT list accordingly.

The TC needs to read the blacklist bit and do one of the following:

- If the blacklist bit is not set, the TC will check if the OBE is connected to a valid contract. If both conditions are satisfied the reading of the OBE will result in a valid transaction being sent to the TSP.
- If the blacklist bit is set, the TC will handle this as an invalid OBE.

The reading of the blacklist bit must be an integrated part of the validation procedure by the TC described in chapters 5.2.1 and 5.2.2.

The function is described in document 202-B chapter 2.12 “Attribute 26: EquipmentStatus”

The function is currently not used by any EasyGo TSPs. Only ASFINAG among the TCs reads the blacklist bit.

## 5 Operational processes

The following processes are required during normal operation of EasyGo.

### 5.1 Data exchange RSE – OBE

Definition of process: The process describes the data exchange between RSE and OBE when a vehicle passes a charging point.

A detailed description of the process can be found in document 202 “Road side and on-board equipment” chapter 6.

### 5.2 TC generates transactions

TCs can generate transactions types defined by the EasyGo specifications: C1, C2, C3, C4, C6, C7 and C8. In addition, there are two processes related to the generation of transactions not defined by C1-C8. These are described separately in chapters 5.2.5 “Retroactive payment” and 5.2.6 “Enforcement and invoicing of non-equipped users”.

Table 2 below shows which of these transactions can take place at which TCs.

	Types of transaction	ASFINAG	Storebælt	Øresund	NPRA
C1	A complete and correct registration of a valid OBE	X	X	X	X
C2	A manual entry of OBE-ID in a barrier operated system		X	X	
C3	A corrected Billing detail where changes have been applied (e.g. changed amount) to get it accepted.	X	X	X	X
C4	A reconstructed transaction (also called synthetic transaction). A TC may reconstruct a transaction when a vehicle has to have passed a toll gantry because the OBE was detected at the gantries before and after.	X			
C6	An incomplete transaction	X			
C7	Video based transaction type 2. Correcting “wrongful” collection by TC		X	X	X
C8	Video based transaction type 1. The Vehicle License Plate (VLP) is read and matches a contract and an EasyGo transaction is generated	X	X	X	X

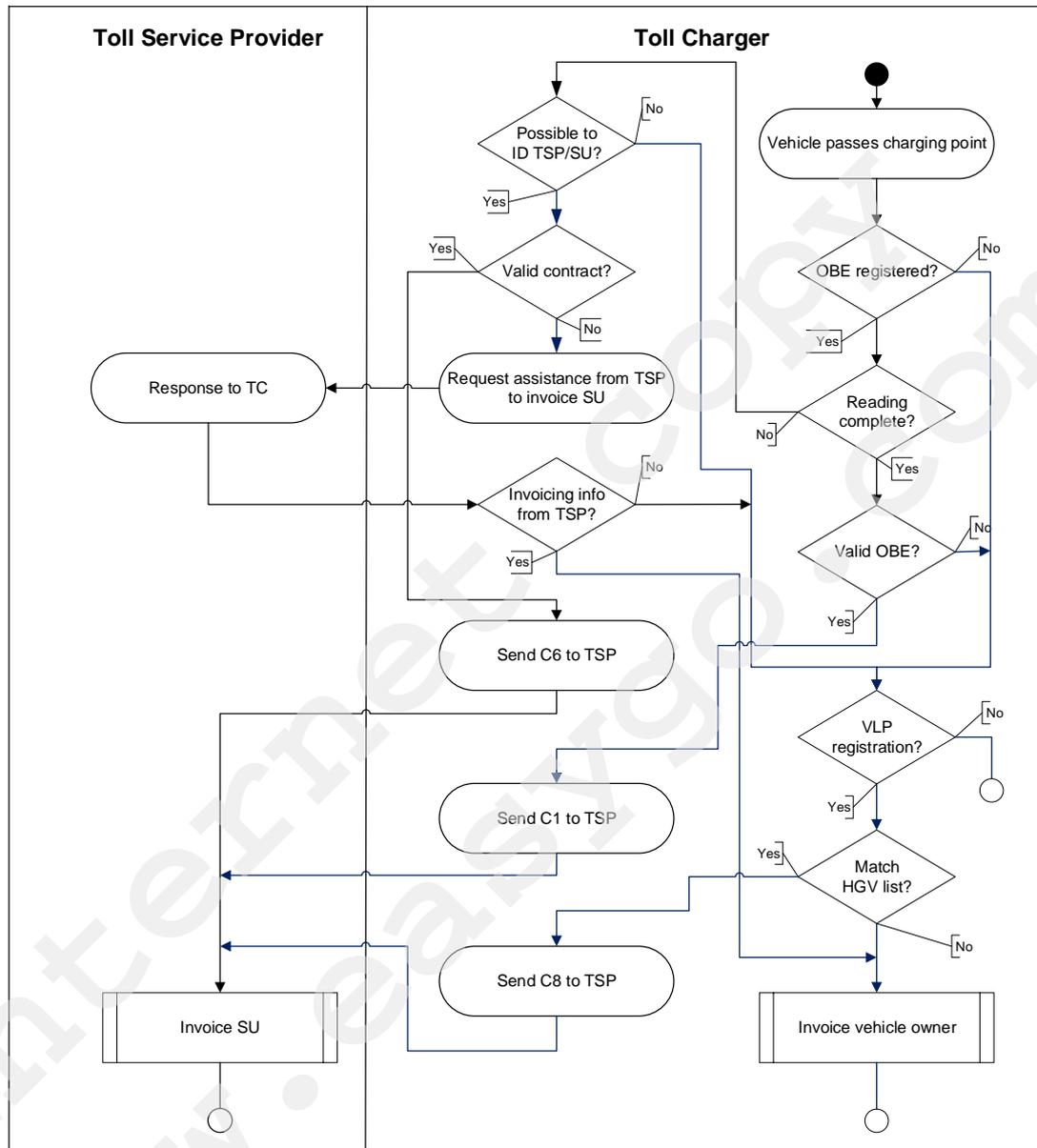
**Table 2 – Types of transactions**

The transaction types C1 – C8 are described in detail in document 201 chapter 8.

Some of the transaction types are also monitored as KPIs (see document 307)

#### 5.2.1 Free flow tolling systems

Definition of process: The process shows how different types of transactions are generated in free flow tolling systems



**Figure 16 - Transaction in free flow systems**

The following types of transactions can be generated in a free flow tolling system:

**C1 – Correct registration of a valid OBE**

If there is a complete and correct registration of a valid OBE a C1 transaction is generated and sent to the TSP.

It should be noted that the checking of validity needs to include the “Expiry date” and the “Blacklist Bit” as described in chapter 4.6.3.

### C6 – Incomplete transaction

If an OBE has been read but the reading is incomplete, the TC may be able to identify the TSP/SU from the incomplete data. From this there are the following possibilities:

- If the SU holds a valid contract, the TC shall send a C6 transaction to the TSP
- If the SU does not hold a valid contract but the TSP can be identified, the TC may ask the TSP for assistance in invoicing the SU
- If neither of the alternatives above are possible, the TC will try to identify the SU from the VLP (see chapter 5.2.6)

### C8 – Video based transaction type 1

If a valid OBE is not registered, but the VLP of the vehicle matches a valid contract on the HGV-/whitelist, the TC shall send a C8 transaction to the TSP

### C4 – Reconstructed transaction (also called a “synthetic” transaction)

A TC may reconstruct a transaction when a vehicle has to have passed a toll gantry because the OBE was detected at the gantries before and after. In this case the TC shall send a C4 transaction to the TSP.

Generation of C4 transactions are not shown in the figure above, but described in detail in document 307.

### No valid OBE / contract

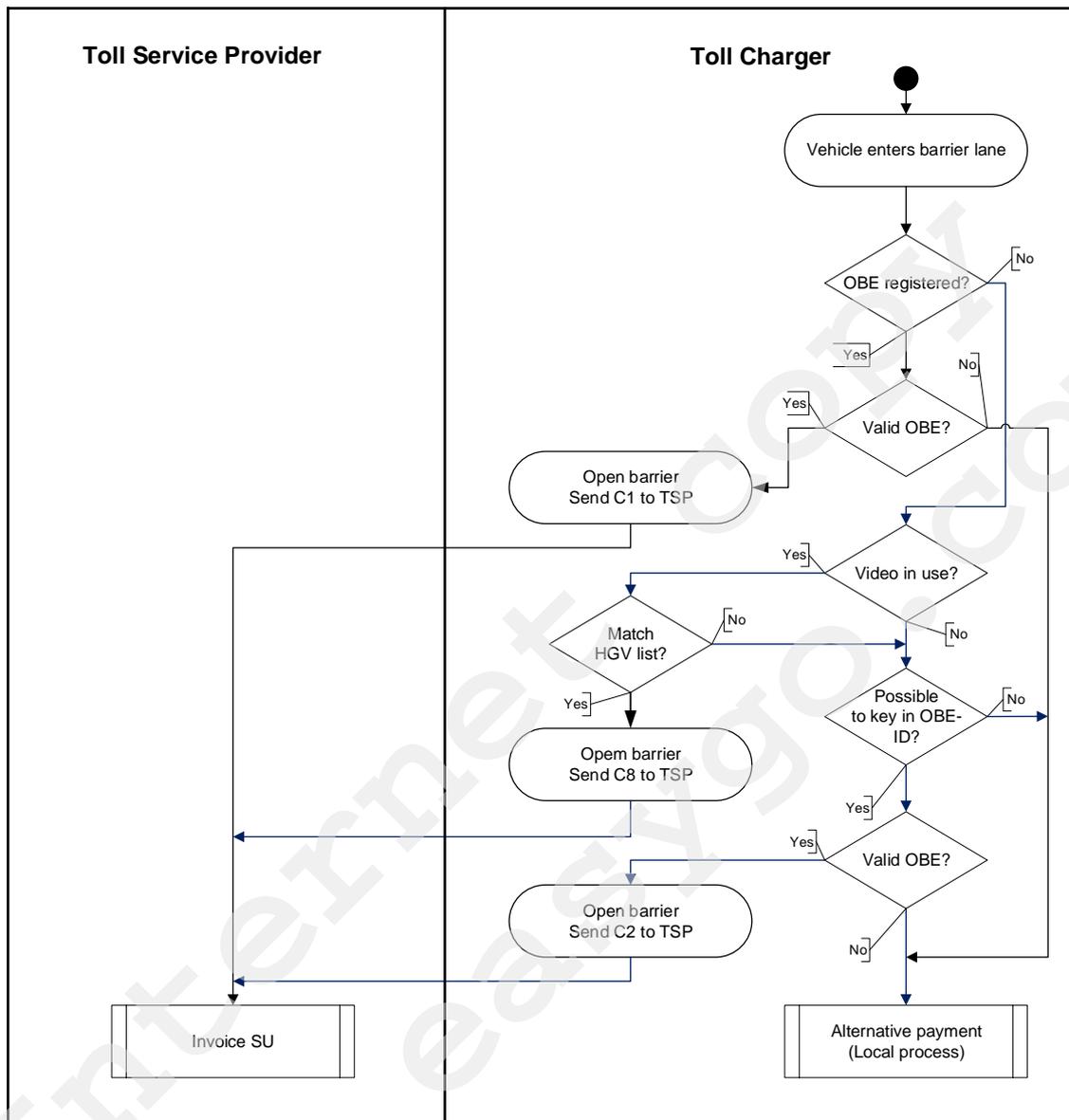
If no valid OBE is registered, and the video registration identifies a VLP that cannot be matched to a contract, the TC shall invoice the SU (directly or via an external debt collector). In some toll domains where OBEs are mandatory the lack of an OBE may lead to legal consequences due to toll evasion (see chapter 5.2.6).

### Quality monitoring

C4, C6 and C8 transactions are monitored as KPIs and the TC and EGH therefore have to report the occurrence of such transactions. Document 307 describes the reporting and monitoring of these KPIs.

## **5.2.2 Tolling systems with barriers**

Definition of process: The process shows how different types of transactions are generated in a barrier based tolling systems.



**Figure 17: Transactions in tolling systems with barriers**

The following types of transaction can be generated in a tolling system with barriers:

**C1 – Correct registration of a valid OBE**

If there is a complete and correct registration of a valid OBE a C1 transaction is generated and sent to the TSP.

It should be noted that the checking of validity needs to include the “Expiry date” and the “Blacklist Bit” as described in chapter 4.6.3.

**C2 – Manual entry of OBE-ID**

If no OBE has been read and the lane does not have any video equipment, the OBE-ID may be manually entered by a toll attendant. If the OBE-ID matches a valid contract, the barrier is opened and a C2 transaction shall be sent to the TSP

Not all barrier-based systems have video registration equipment.

#### C8 – Video transaction type 1

If no OBE is read but the license plate is read and can be matched with a valid contract, the barrier will open and a C8 transaction shall be sent to the TSP

#### No valid OBE / contract

If an OBE is registered but no valid contract can be found for this OBE, the user needs to use alternative payment means (credit card, cash)

#### Quality monitoring

C2 and C8 transactions are monitored as KPIs and the TC and EGH therefore have to report the occurrence of such transactions. Document 307 describes the reporting and monitoring of these KPIs.

### **5.2.3 ANPR contracts in EasyGo**

#### *5.2.3.1 Background*

The EETS Directive adopted in 2019, includes ANPR (Automatic Number Plate Reading) tolling technology. It has therefore been decided to include ANPR solutions as an integrated part of EasyGo. ANPR has until 2019 mainly been used as back-up for DSRC and for enforcement. There are, however, examples of ANPR contracts like “Pay by plate”, the use of ANPR solutions in the congestion charging systems in Sweden and the previous “visitor payment” in Norway. Currently also an English collection company under contract with NPRA, offers foreign users to register their vehicle number plate (VNP) and be invoiced by them for passages made in Norway. This chapter describes processes related to the use of VNP as basis for contractual relations between TSPs and SUs and payment at TCs.

#### *5.2.3.2 Introduction*

The main processes related to ANPR tolling are:

1. SU signing an ANPR contract with a TSP
2. SU with ANPR contract driving in an ANPR toll domain
3. SU driving in a combined DSRC / ANPR toll domain
4. Handling of errors

Each of these are described in more detail in chapter 5.2.3.3 – 5.2.3.6 below.

#### *5.2.3.3 SU signing an ANPR contract with a TSP*

The process between a SU and a TSP to sign a contract is much the same as entering into a DSRC contract but with two main differences:

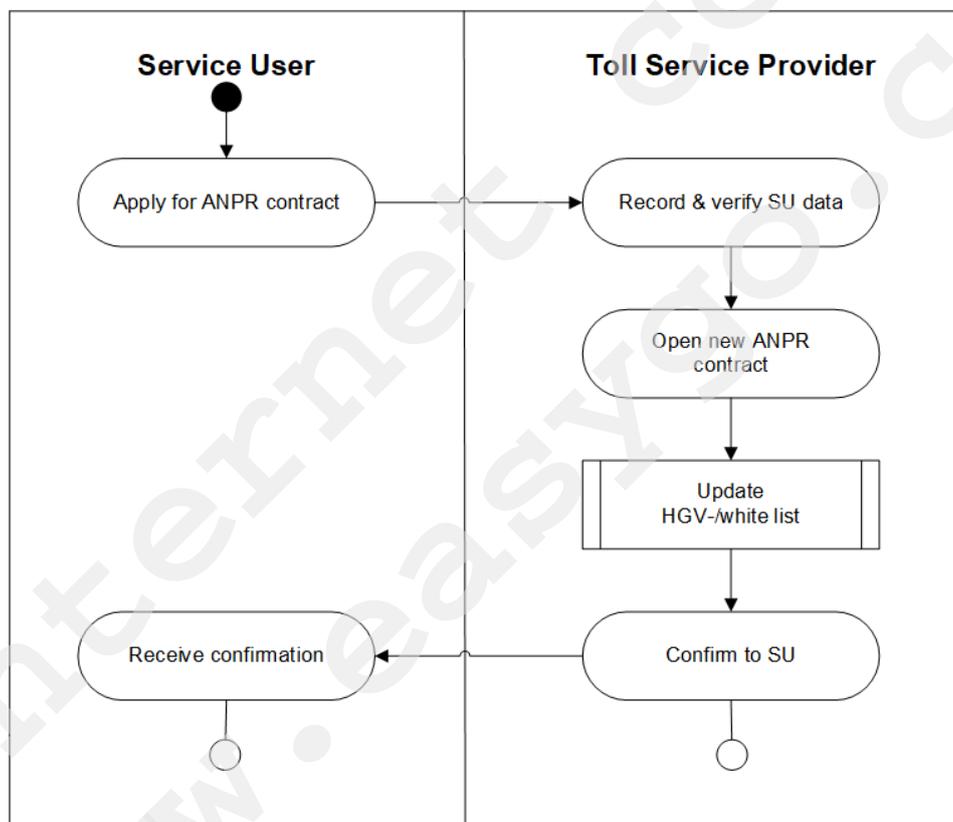
- The SU will not receive an OBE from the TSP
- The TSP needs to confirm the contract to the SU

The TSP should, to the extent possible, verify that the person registering or changing contract data is the owner or user of the vehicle or is mandated by the owner of the vehicle before giving the person access to reading or changing these data. The same requirement is valid for access to transaction data for the registered vehicle.

The TSP should also validate that the vehicle data provided are complete and correct.

ANPR data may be exchanged via the HGV-list, or if this is not sufficient, a separate ANPR-list including all valid VNPs may be included for example in an ADU file.

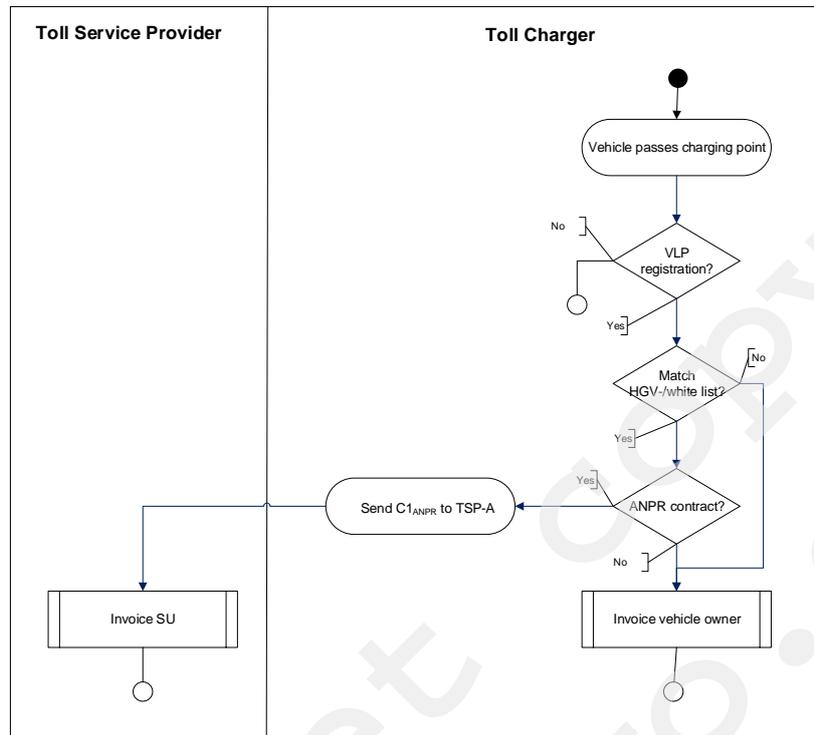
The data entered into the HGV-list is defined in document 203.



**Fig 18 SU entering into an ANPR contract with a TSP**

#### 5.2.3.4 SU with ANPR contract driving in an ANPR toll domain

The basic ANPR process in a free flow system is described below. In a barrier-based system, the process will be somewhat different, as the vehicle will not be let through until valid identification/payment has been confirmed.



**Fig 19 SU with ANPR contract driving in an ANPR toll domain**

See below for definition of  $C1_{ANPR}$ .

### 5.2.3.5 SU driving in a combined ANPR / DSRC toll domain

Many toll domains accept both DSRC- and ANPR contracts. If interoperability is to be offered to both ANPR and DSRC systems, a process is required to handle SUs who have valid DSRC and/or ANPR contracts.

The current normal procedure for charging is:

- Priority 1 - DSRC reading
- Priority 2 - Reading of VNP as back-up for a faulty OBE reading
- Priority 3 - Reading of VNP with a valid ANPR contract

If a TC needs a different priority the TSP and the SU must be informed of this via the Toll Domain statement.

There are alternatives how to distinguish between different types of transactions. One possibility is to define “virtual OBEs” as basis for ANPR-contracts. Another alternative could be to define transactions as follows:

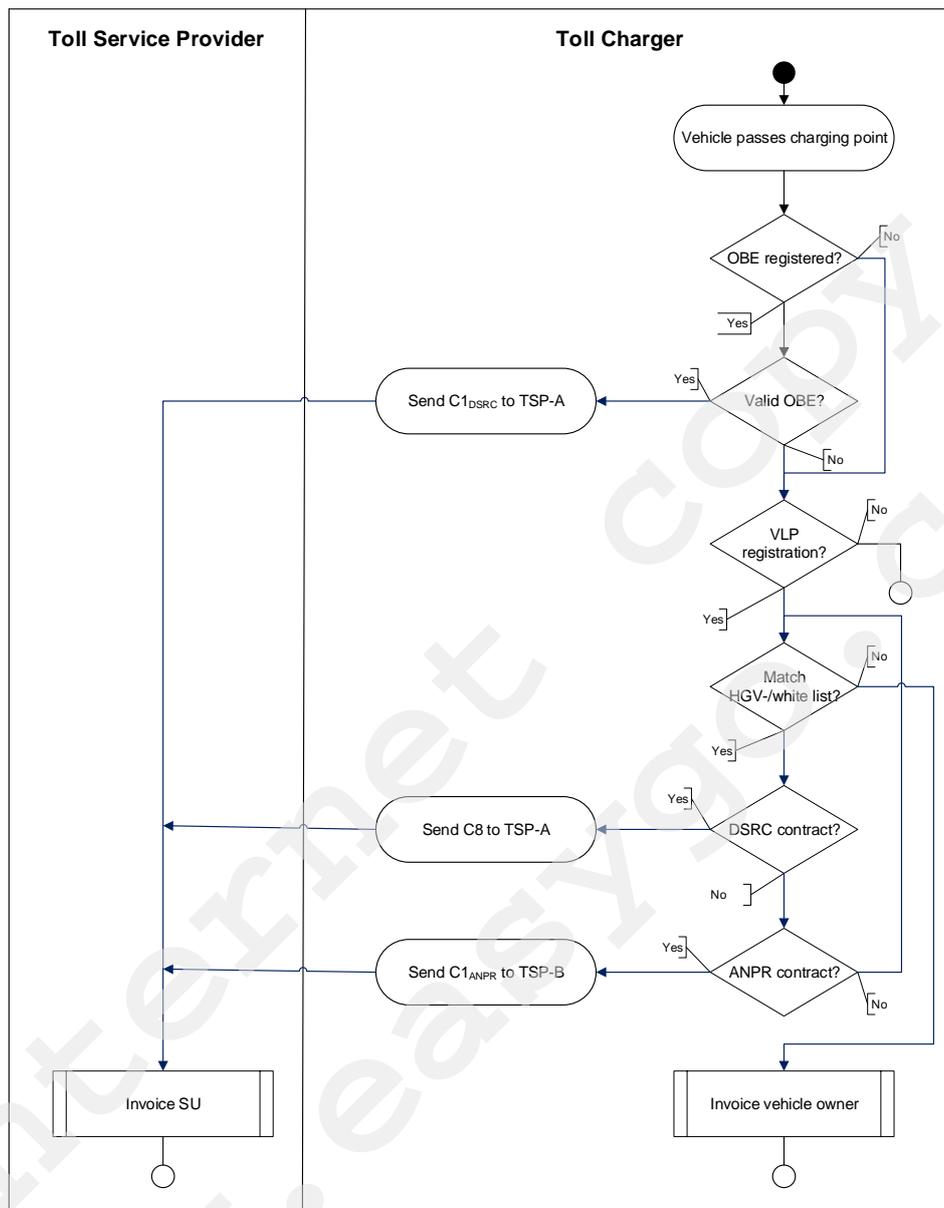
- $C1_{DSRC}$  A transaction based on a correctly read and valid OBE in a DSRC toll domain
- $C1_{ANPR}$  A transaction based on a registered VNP connected to a valid ANPR contract in an ANPR toll domain

- C8 A transaction based on a VNP connected to a valid DSRC contract, when an OBE has not been read

The process in fig 20 below is the combined DSRC and ANPR process using the second alternative above.

It should be noted that:

- It is the responsibility of the TC to define the correct type of transaction. If the SU has both a DSRC and an ANPR contract he/she must specify, what contract shall be used in combined DSRC/ANPR toll domains.
- Some TCs do not accept that the SU has ANPR contracts with more than one TSP. If the TC detects more than one ANPR contract for a VLP, it will inform the TSP who must inform the SU about this.
- A TC can state a principle in its toll domain statement (TDS) how it decides which contract to debit if a license plate is registered in two (or more) ANPR contracts.
- A SU is free to sign local ANPR contracts with TCs who require a local agreement for the SU to receive a local discount. If the SU has signed such a contract with the TC, this contract will take precedence before any contract the SU may have with a TSP.
- A SU having an ANPR contract and driving in a DSRC toll domain and vice versa can be registered by the TC as the VLP is registered in both types of contracts and available on the HGV-list. Acceptance of any contract does however depend on a bilateral agreement between the TC and the TSP having the contract with the SU.



**Fig 20 Principle road-side process in combined DSRC / ANPR toll domains**

### 5.2.3.6 Handling of errors

Several types of errors can occur which need to be corrected based on agreed procedures:

- SU being wrongfully invoiced:
  - VNP not read correctly
  - VNP read correctly, but nationality is wrong
  - VNP is read correctly, but the license plate is wrongly registered in the ANPR contract - deliberately or by accident
  - VNP is read correctly, but the name and address are wrongly registered in the ANPR contract - deliberately or by accident

When any of the errors above occur, the SU being wrongfully debited must be credited and if the correct vehicle/contract can be identified it should be invoiced / debited accordingly.

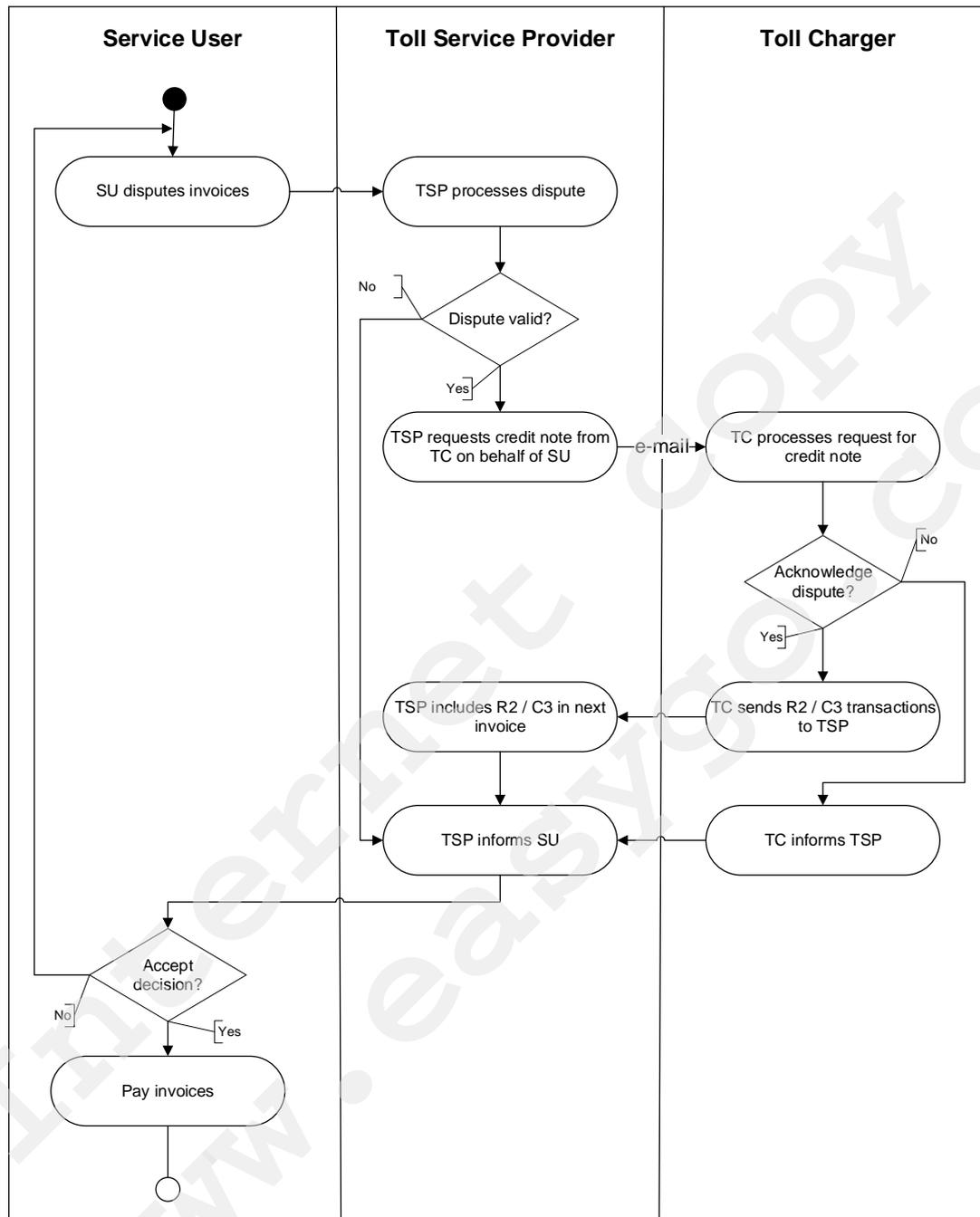
- Errors when selling or renting vehicles:
  - SU being wrongfully invoiced as VNP is read correctly, but the former owner of the car has sold the car to a new person, without the former owner has changed the VNP in the ANPR contract
  - Sale of a vehicle while keeping the VNP
  - Sale of a vehicle with the VNP
  - Subcontracted vehicle

Errors related to selling and renting vehicles are described in detail for DSRC systems / contracts in appendix 1 in this document. The text in appendix 1 shall be moved to document 301 when document 301 is updated and when this is done, text related to ANPR contracts should be added.

#### **5.2.4 SU disputes invoice from TSP**

Definition of process: A SU complains that the invoice received from the TSP is wrong, and this is corrected by the TSP and / or TC.

The process is shown in figure 18 below.



**Figure 21: Correction of errors in invoice from TSP to SU**

If the SU disputes the invoice he complains to the TSP. In a customer relations-process the disputed invoice is clarified between the SU and the TSP. This may also involve a request to the TC for the disputed billing details.

If the dispute is found to be valid, the TSP requests a credit transaction in order to produce a credit note for the disputed billing details from the responsible TC. If the SU has been charged the wrong price the TC will credit the original billing details with a R2 transaction and send a new C3 transaction with the correct price.

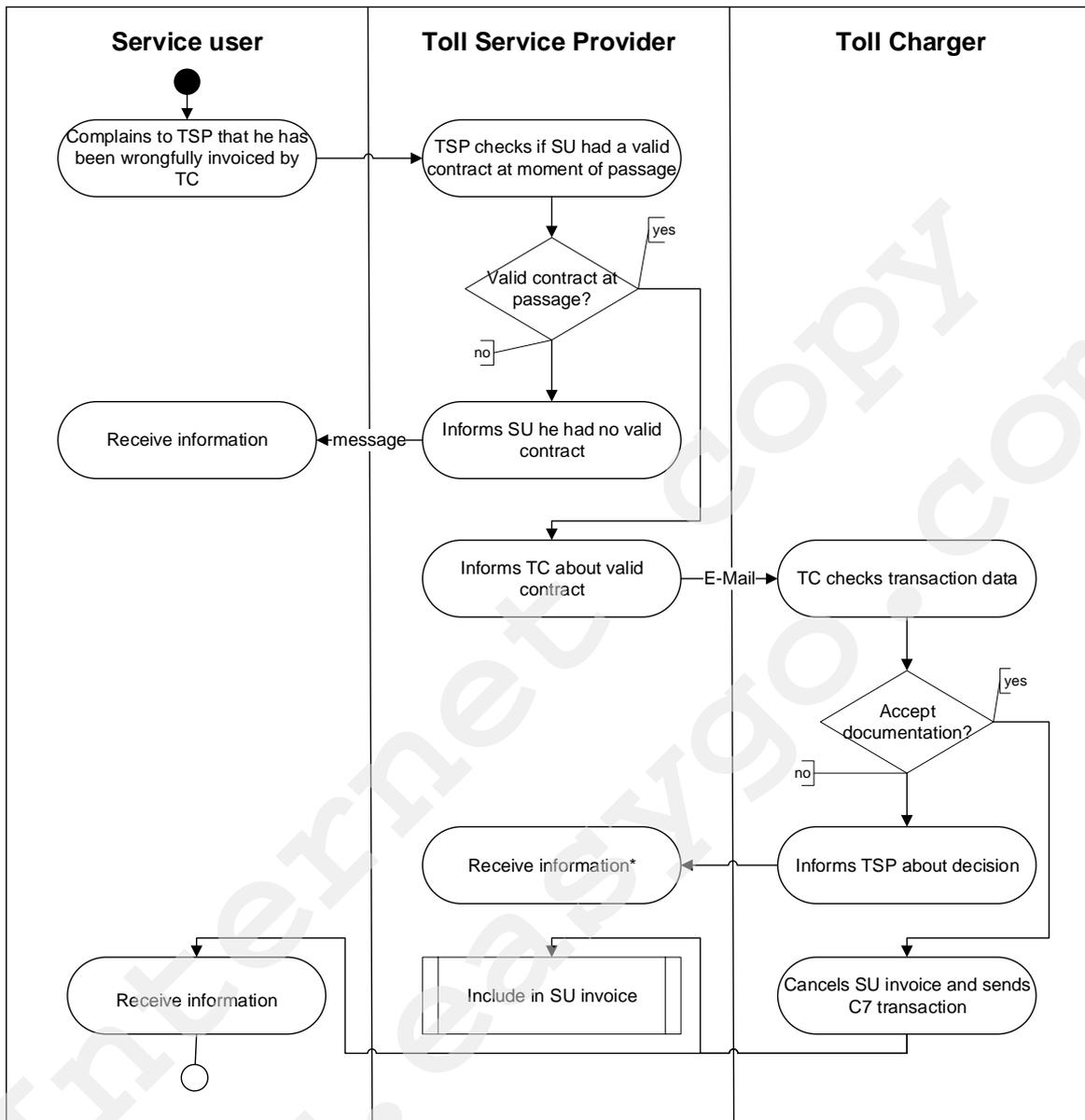
The TC processes this request for a credit note and either acknowledges or disputes it based on the provided evidence.

### **5.2.5 Correcting “wrongful” collection by TC**

Definition of process: The process is initiated when a TC has invoiced a SU as a non-equipped user even if the SU had a valid contract at the time of passage.

The situation can occur if:

- The OBE was not read correctly at passage of charging point and the TC did not check the whitelist as he should have
- The OBE was not included on the whitelist
- The TSP had not updated the whitelist correctly
- The TSP has not updated the exception list correctly



**Figure 22: Correcting “wrongful” collection by TC**

The SU informs his TSP that he has received an invoice directly from a TC even if he had a valid contract with the TSP at the time of passage. The TSP checks this claim and if he can confirm it he shall inform the TC about this.

If the TC accepts the information from the TSP, the TC will cancel the SU invoice and send a C7 transaction data to the TSP who invoices the SU as an EasyGo transaction.

\*If the TSP does not agree to the decision made by the TC, they should inform EM about the dispute and may request advice from EM.

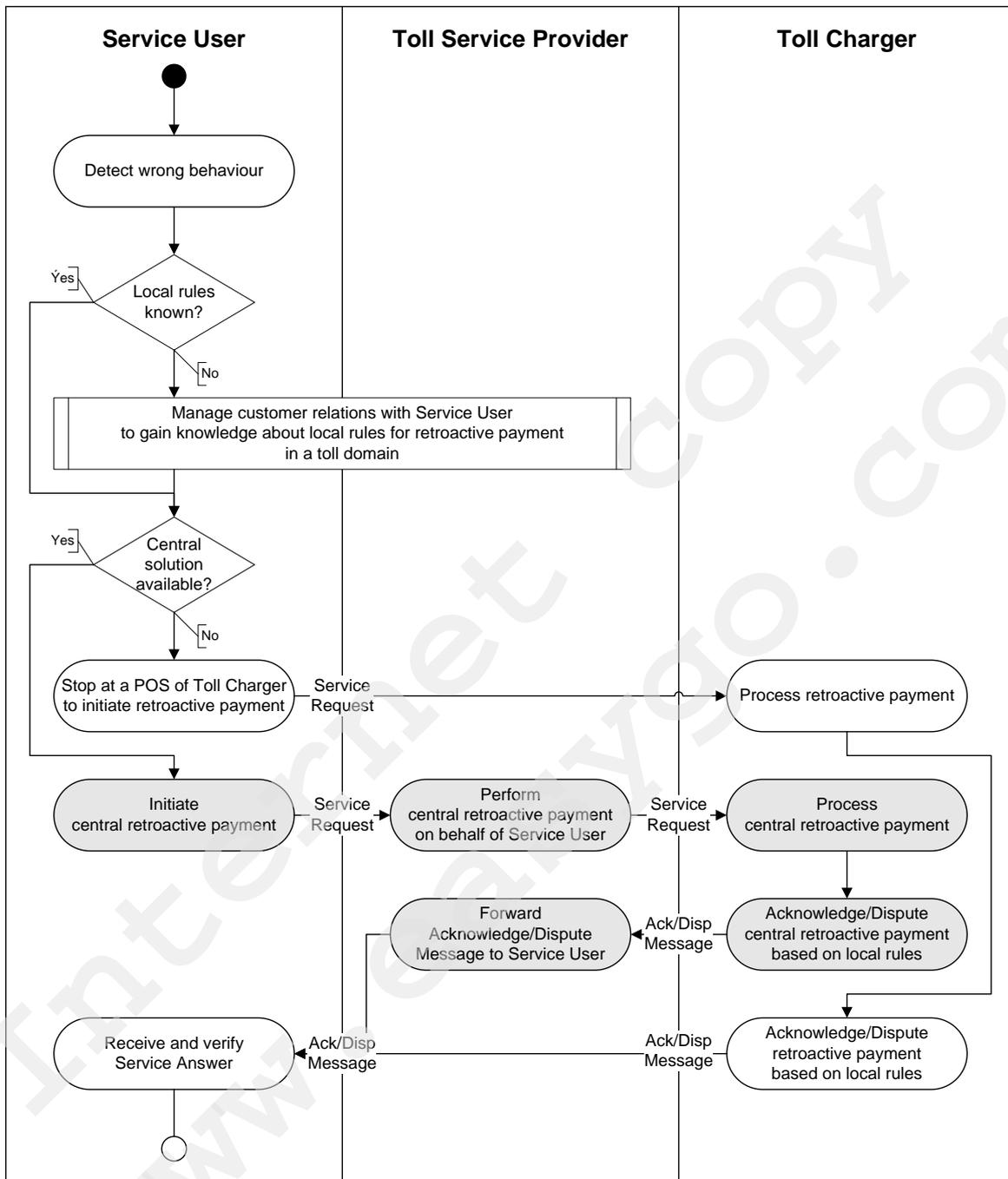
### Quality monitoring

C7 transactions are monitored as KPIs and the TC and EGH therefore have to report the occurrence of such transactions. Document 307 describes the reporting and monitoring of this KPI.

#### **5.2.6 Retroactive payment**

Definition of process: Tolls that have either not been paid or only been paid partly by the use of an OBE can be paid retroactively by a SU to avoid enforcement.

Internet  
www.easygo.com  
COPY



**Figure 23: Retroactive payment**

A retroactive payment by a SU is possible via internet, apps or at POS stations operated by the TC. It might also be possible with mobile enforcement officers of the TC in certain contexts. The methods of payment are decided by the individual toll domain.

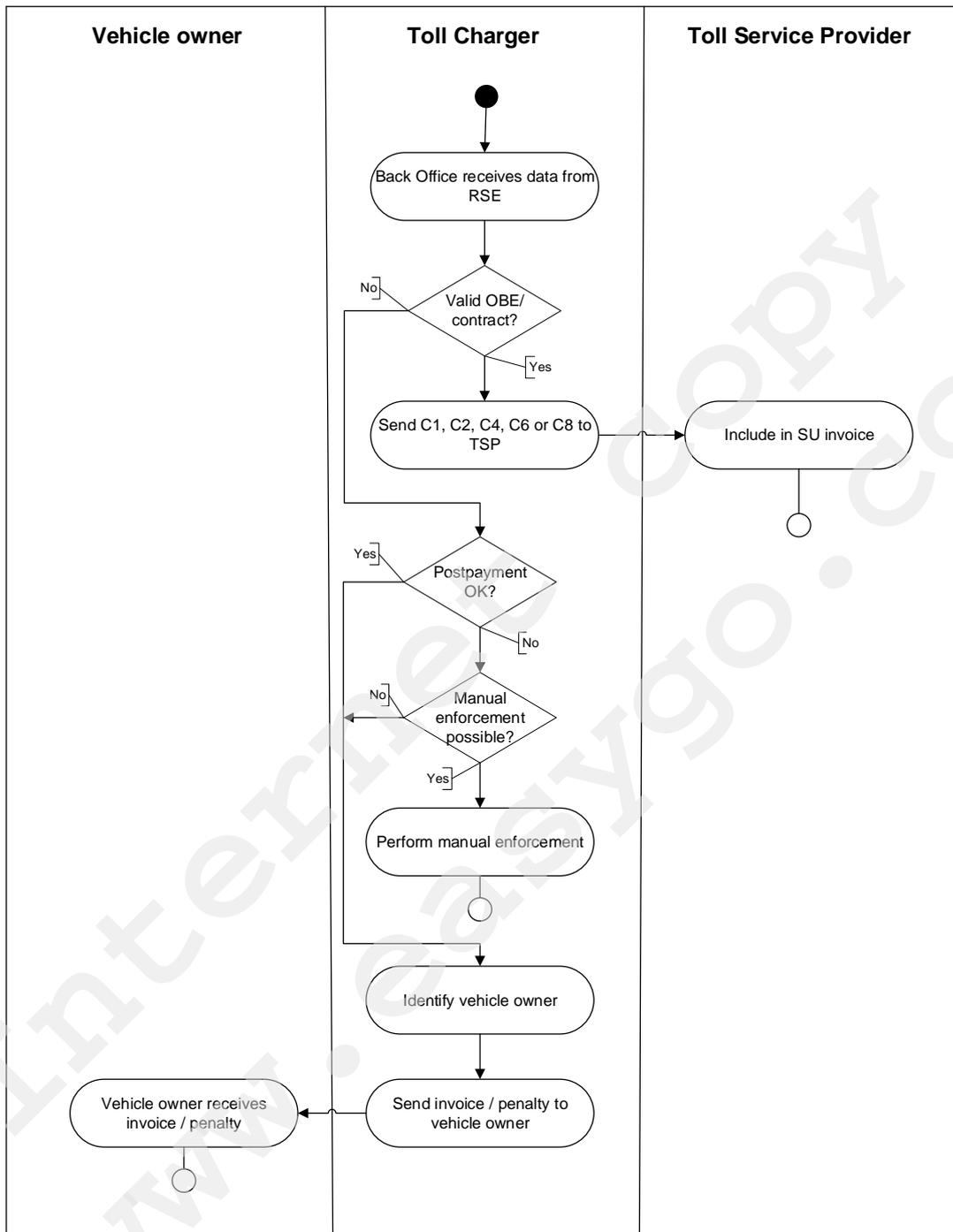
Currently the following applies regarding retroactive payment within EasyGo:

- In Austria, this foresees the possibility of a retroactive payment only within 100 km and five hours after the vehicle has passed the first toll collection point where the toll transaction was not made correctly.

Retroactive payment can be made only when a wrong category (number of axles) or a wrong emission category was declared during a successful toll transaction within 48 hours after the vehicle has passed the first toll collection point where the wrong declaration took place. The SU has to contact his TSP to perform the retroactive payment on his behalf. The SU needs to indicate the licence plate number, the start time and end time of the wrong declaration of the toll as well as an accepted means of payment the retroactive payment shall be charged to.

### **5.2.7 Enforcement and invoicing of non-equipped users**

Definition of process: The process is used when TCs invoice users without a valid OBE/contract. The same process is used when a TC needs to enforce a non-compliant behaviour of a SU or a vehicle.



**Figure 24: Enforcement and invoicing of non-equipped users**

The process starts when the back-office receives transaction data from the RSE.

If the transaction data are complete and the OBE represents a valid contract, the transaction data is sent to the TSP for SU invoicing. This may be a C1, C2, C4, C6 or C8 transaction depending on type of toll domain and if the data sent from the RSE to the back

office requires processing before sending it to the TSP (see chapters 5.2.1 and 5.2.2 for details on the generation of different types of transactions).

Some toll domains can decide to manually enforce the vehicle if no valid transaction is found.

NOTE: In Austria, the manual enforcement process is used for all vehicles registered outside of Austria and Germany. The authorized staff (mobile enforcement officers) tries to catch the violator during a period of five months on the Austrian road network.

If a valid OBE / contract cannot be found for the vehicle, one of two reactions can take place:

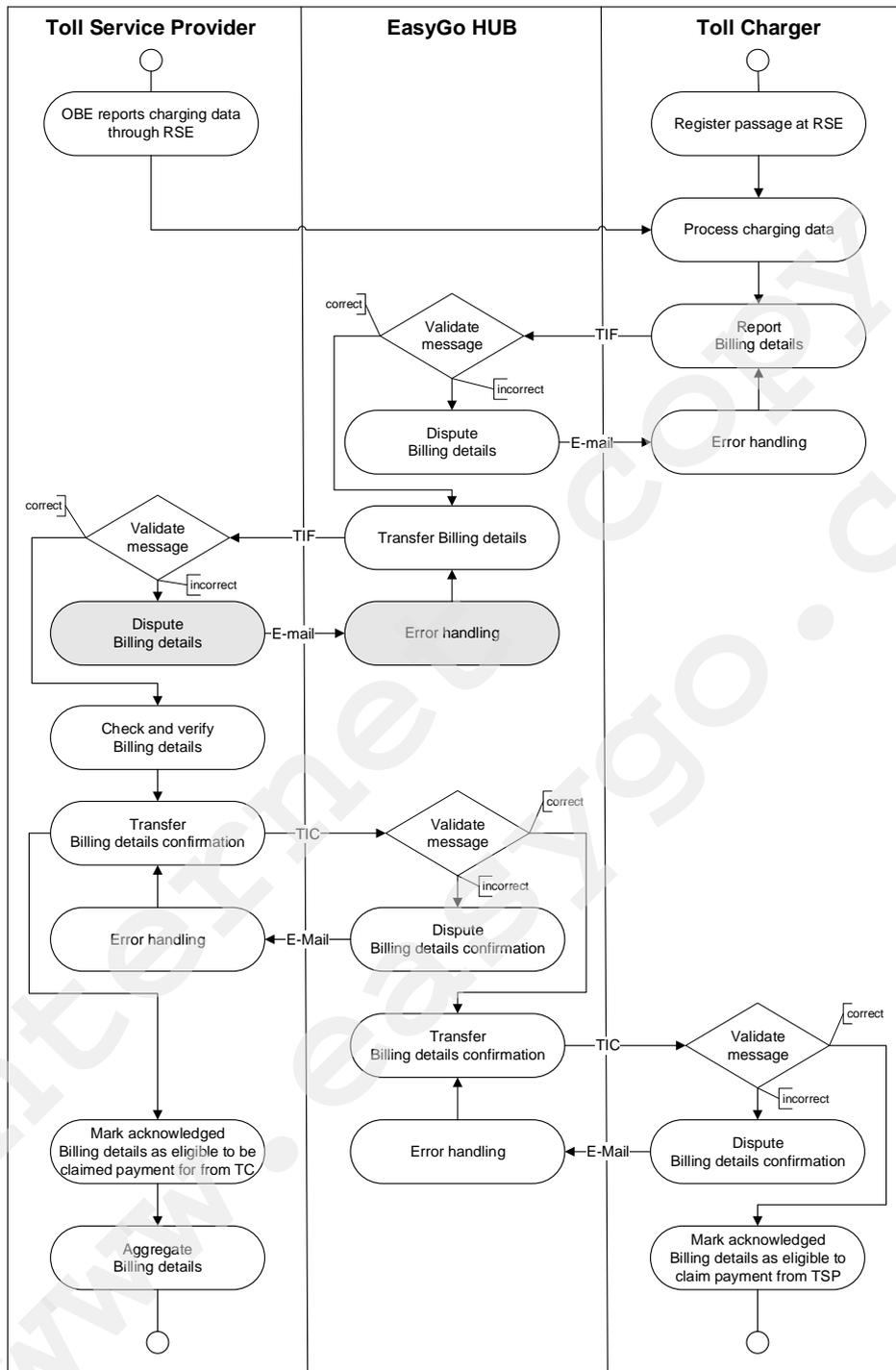
- In a toll domain who allows post payment based on video registration, the vehicle owner is identified via local or foreign VLPR and an invoice for the toll fee is sent to the vehicle owner.
- In a toll domain who does not allow post payment based on video registration such a passage is considered illegal. If a manual enforcement is not used, the vehicle owner will be identified via local or foreign VLPR and a penalty claim is sent to the vehicle owner.

The processes to identify the vehicle owner and to issue invoices for toll fee or penalty are similar in the two cases.

### **5.3 TC reports billing details to TSP**

Definition of process: Charging data is collected whenever a passage is registered at the charging point and / or there is an exchange of data between an OBE and the RSE. When a transaction can be referred to a valid OBE / EasyGo contract, relevant billing details are sent to the TSP which has issued the OBE.

The TC processes the charging data and reports the billing details which are acknowledged by the EGH and the TSP as shown in the figure below:



**Figure 25 - Process, report and acknowledge Billing details**

Charging data can be established either by a single toll event (e.g. open system) or by a combination of several toll events (e.g. entry, passage and exit in a closed system). The interface between OBE and road infrastructure is covered in DSRC related standards like EN ISO 14906 and EN 15509.

There are several types of transactions (C1 – C8). Chapter 5.2 in this document describes these and how they are generated. Documents 201 and 203 describes the details of the reporting and acknowledging of the Billing details.

Charging data normally contains the associated security elements. The presence of security elements enables the responsible TSP to check the authenticity of the toll events and authenticate or dispute them, when he receives them as billing details from the TC.

Possible disputing reasons are, among others:

- Inconsistency of one or several data elements
- Payment means, OBE ID or License plate in Exception list at time of usage
- Incorrect security elements

After processing the Charging data if it is complete and the conformity is checked, they become billing details within the central system of the TC.

After preparing the billing details, the TC shall report them to the EGH. The EGH shall validate the formal correctness of the transferred billing details and shall dispute it to the sending TC by e-mail if an error is detected.

The TC shall store any billing details for at least up 90 days for later delivery in case he cannot deliver them to the EGH as scheduled.

Any valid billing details shall be directly transferred by the EGH to the addressed TSP by the means of a TIF message.

The TSP shall check and verify all received billing details he is responsible for. Depending on the result of this check, he may dispute every single billing detail or the complete TIF message and send this back through the EGH as a billing details confirmation message (TIC) to the issuing TC.

If the security elements are not present in the Billing details for any reason, the TSP has to check if the Billing details are still acceptable. Reasons why Billing details without security elements may still be acceptable are, among others using degraded mode or generating reconstructed transactions (see chapter 5.2)

If the TSP is not able to verify the authenticity of the Billing details he may decline it and ask for clarification by the TC. Otherwise the TSP is obliged to accept the Billing details received from the TC.

All non-disputed billing details shall be marked as eligible to claim the payment for service usage from the TSP(s) by the TC. At this point the acknowledged billing details shall be transferred to the bookkeeping systems.

When preparing and sending the billing details there are explicit rules that have to be followed regarding rounding differences. These rules are described in document 304 “Invoicing specification - Guidelines”.

#### 5.4 TC claims payment from TSP for service usage

Definition of process: TC claims payment for service usage from the TSP based on the billing details defined in process 5.3.

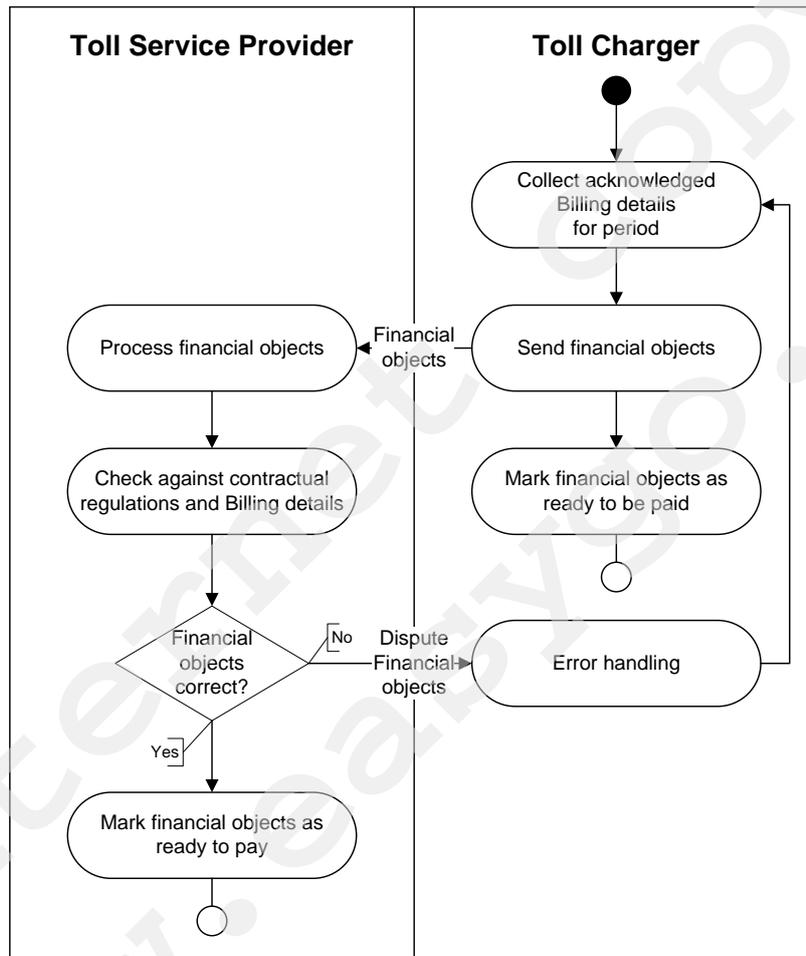


Figure 26 – TC claims payment from TSP for service usage

The payment claim can happen with a different periodicity than the report of billing details. In EasyGo this period is set to once a month.

The term “financial object” is used in this case as an agreed method to summarize the terms of invoice, account statement and other similar terms as the actual selling process depends on the legal status of the levied toll as private fee, tax or customs. This term is used in line with ISO 17573 and EN ISO 12855.

After the mutual acknowledgement of the billing details between the TSP and the TC for a given period, the information is marked as eligible for the claiming of the payment (e.g. exchange of financial objects) and the TC is able to issue an account statement to the TSP.

There is no data interface needed for this process, as the financial objects are sent either electronically or on paper and any dispute will be handled by e-mail or in writing.

Within EasyGo a financial object is identical to an account statement, since the agency model from CESARE IV is used and the toll is not sold from the TC to the TSP.

In cases where the reseller model is used (example REETS Providers), the account statement is replaced by an invoice.

The exchange of financial objects references the agreed billing details and indicates the total amount due. During the exchange of financial objects, the billing details may be summed up to allow a more compact presentation. It shall contain in total the finally agreed amount of the already exchanged billing details and additional claims. The exchange of financial objects allows the monitoring of commercial processes operated by entity divisions applying state of the art commercial tools.

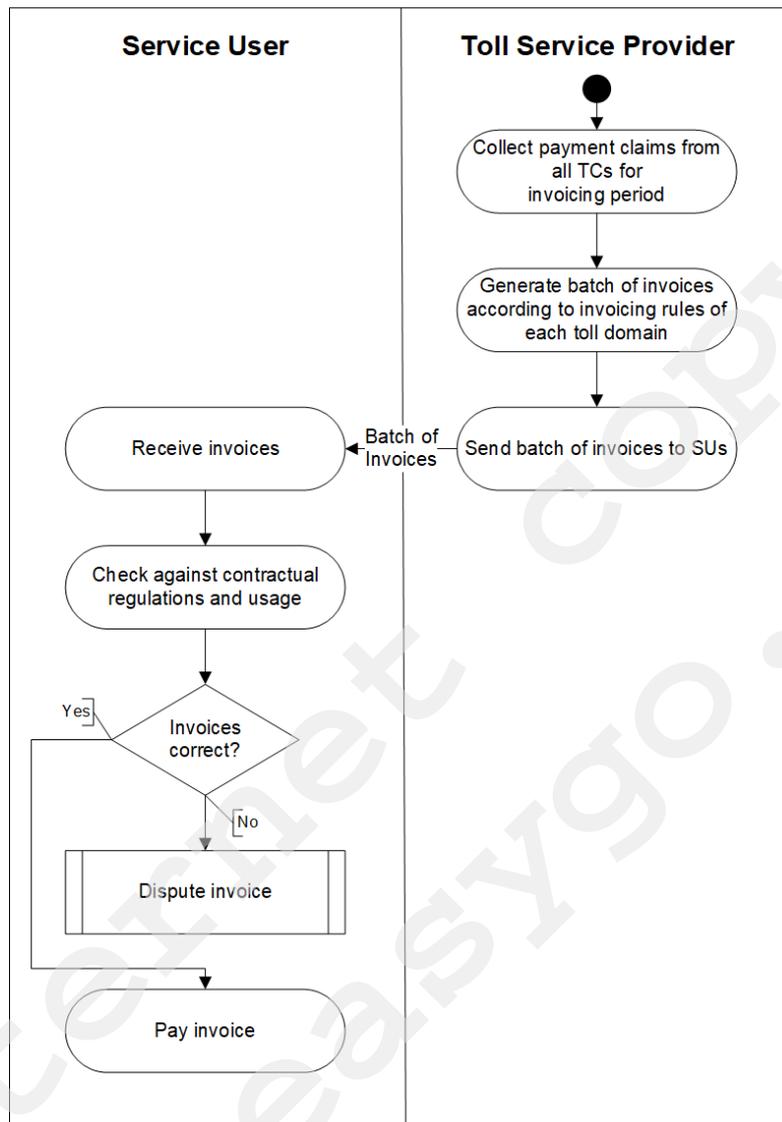
In case of non-correct financial objects, the TSP shall contact the TC to clarify the situation. The differing view on the validity of the disputed financial objects has to be sorted out bilaterally between the TC and the TSP. Possible disputing reasons are: Inconsistency of one or several data elements or non-conformance to the agreements.

### **5.5 TSP claims payment from SU for service usage**

Definition of process: The process is used by the TSP to claim payment from the SU for use of the transport services provided by the TC(s) of the toll domains used by his vehicles.

The invoicing rules within EasyGo are described in documents 303 and 304. Document 304 also includes an overview of invoicing requirements specific to each country.

The invoicing process is shown in figure 27 below:



**Figure 27 – TSP claims payment for service usage from SU**

The TSP collects payment claims from all TCs for the invoicing period, generates a batch of invoices according to the invoicing rules for each toll domain and sends the batch of invoices to the SU

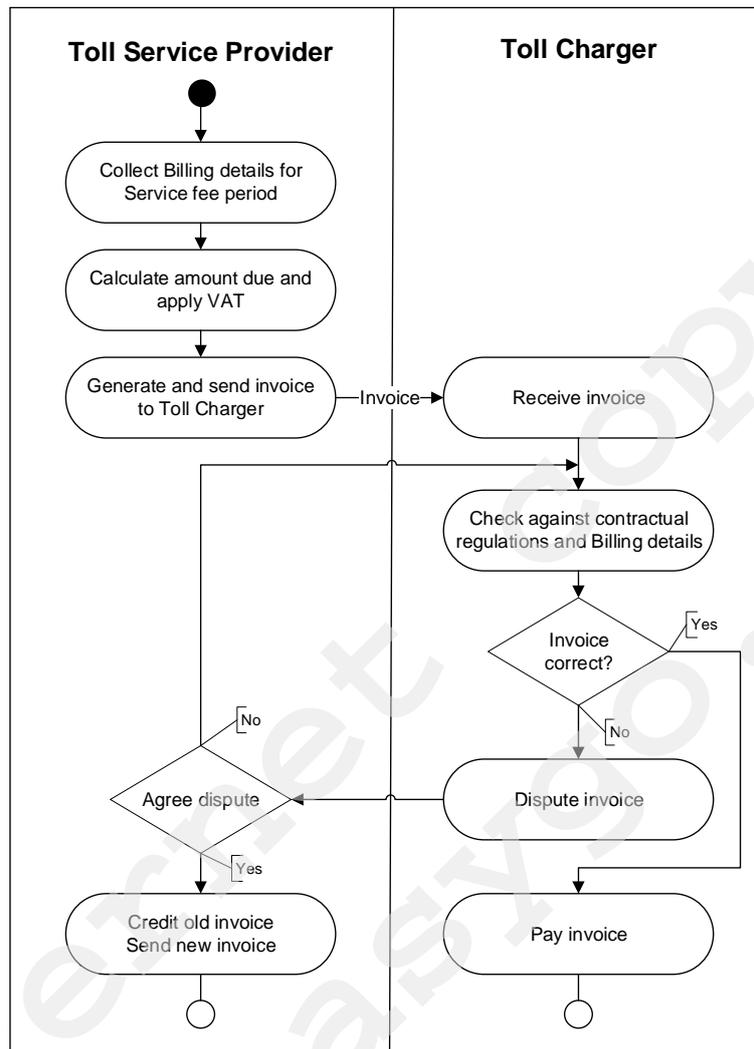
If the SU agrees with the sent batch of invoices, he accepts the claim by paying the invoice as requested by the TSP on the payment request.

If he disagrees with the invoice, he makes a complaint to the TSP. The handling of such complaints is described in chapter 5.2.4.

## **5.6 TSP claims issuer fee from TC**

Definition of process: The process is used by the TSP to invoice the agreed issuer fee to a TC for the collection of tolls on his behalf.

This process is described in detail in document 306 “Issuer fee”



**Figure 28 – TSP claims payment for issuer fee**

The TSP collects all acknowledged billing details for the issuer fee period and calculates the amount due.

The TSP then applies its local VAT to the amount due and generates and sends an invoice for his services to the TC, who checks it against the contractual obligations. If the TC is able to validate the invoice, he acknowledges it by paying it. If he disagrees to the invoice, he shall dispute it.

If the dispute is found to be true, this shall lead to the cancelling of the wrong invoice and the generation of a new invoice.

There is no data interface needed for this process, as the invoice is sent either electronically or on paper and any dispute will be handled by e-mail or in writing.

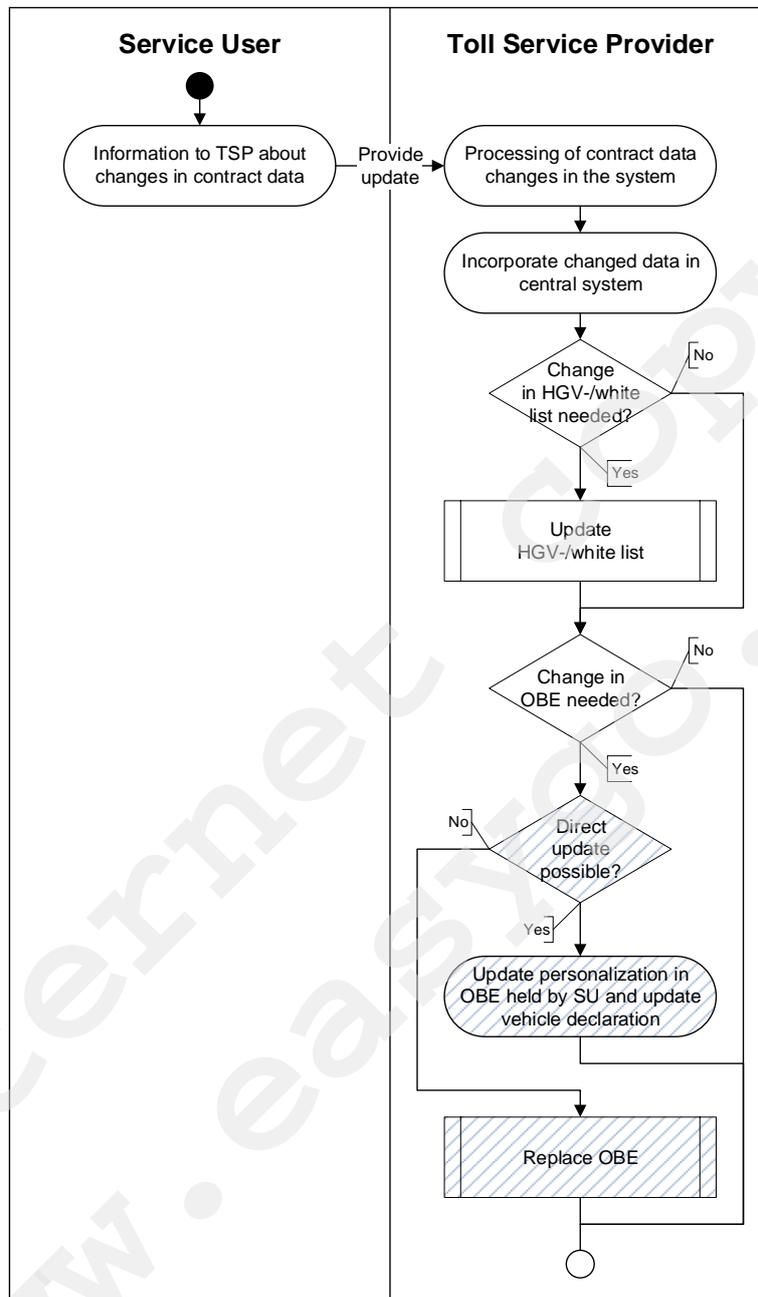
If a TC allows SUs to enter into local agreements based on the use of an OBE issued to the SU by his TSP, the TSP may add an agreed amount per OBE to the invoice. TCs are

obliged to report such use of OBEs to issuing TSPs as a basis for calculation. (See chapter 4.5.3 “Local contracts with EasyGo TCs” and document 306)

If the amount on the invoice is higher than 60 EUR, an invoice will be generated. If the amount due is less than 60 EUR, no invoice will be generated and the issuer fee period extended by another month unless it is the 30<sup>th</sup> of June or the 31<sup>st</sup> of December, when an invoice has to be generated regardless of the amount due. This rule helps to reduce the number of “small” invoices to the smaller TCs with few transactions.

### **5.7 Change contract data**

Definition of process: The process is used whenever a SU needs to update his contract data.



**Figure 29 - Change of contract relevant data**

The SU has to inform the TSP about any changes.

The TSP updates these data in his central system.

If the change of contract data includes information which needs to be updated in the HGV-/white list (e.g. a license plate change), the TSP shall include these changes in the next HGV-/white list to be distributed (see chapter 4.6.2 “Update and distribute HGV-/white list”).

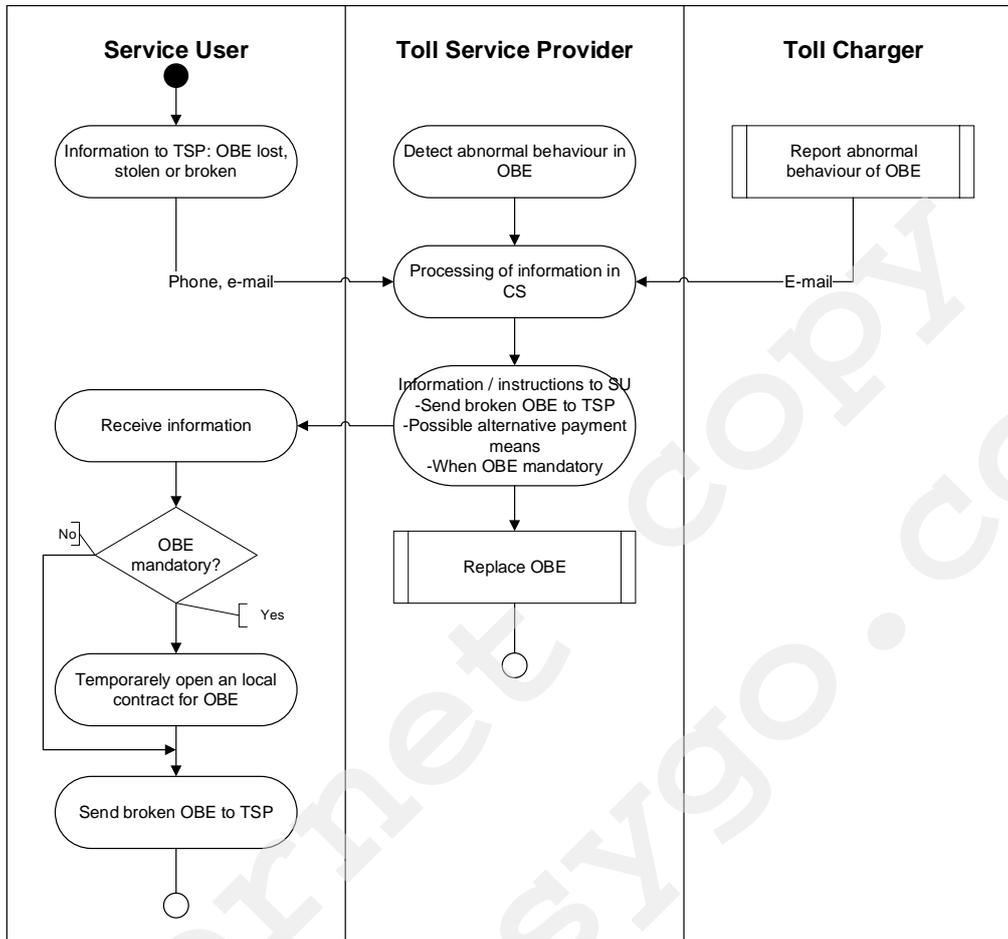
If the change of contract data includes information which needs to be updated inside an OBE (valid for EasyGo+), this is done as described below. These changes have to be incorporated by a cooperation of SU and TSP.

- If possible, the SU can stop at a POS where the OBE can be updated and he can receive an updated vehicle declaration. The HGV-/white list must be updated accordingly.
- If this is not possible, the TSP must replace the OBE with a new one. The old OBE shall be removed from the HGV-/white list and put on the Exception list. The SU must return the old OBE to the TSP.
- The TSP may put the old OBE on the Exception list after he has received the first transaction (Billing detail) from the new OBE, to prevent any unwanted transactions from the old OBE. This is up to his decision.
- After the return of the old OBE the TSP shall remove all entries for the old OBE from the Exception list and the HGV-/white list.

### **5.8 Exchange OBE**

Definition of process: The TSP may exchange any OBE upon request from the SU or the TC or on his (TSPs) own request (e.g. a broken, lost or stolen OBE or an OBE with irregular behaviour is reported to the issuing TSP)

It may also be necessary to replace the OBE when a SU makes changes in contract data.



**Figure 30 - Report broken, lost or stolen OBE**

During normal operation, all toll transactions (Billing details) provided by a TC to a TSP will be invoiced to the SU. If an OBE is lost or stolen, the responsibility for any toll transactions from this OBE may change according to the applicable law:

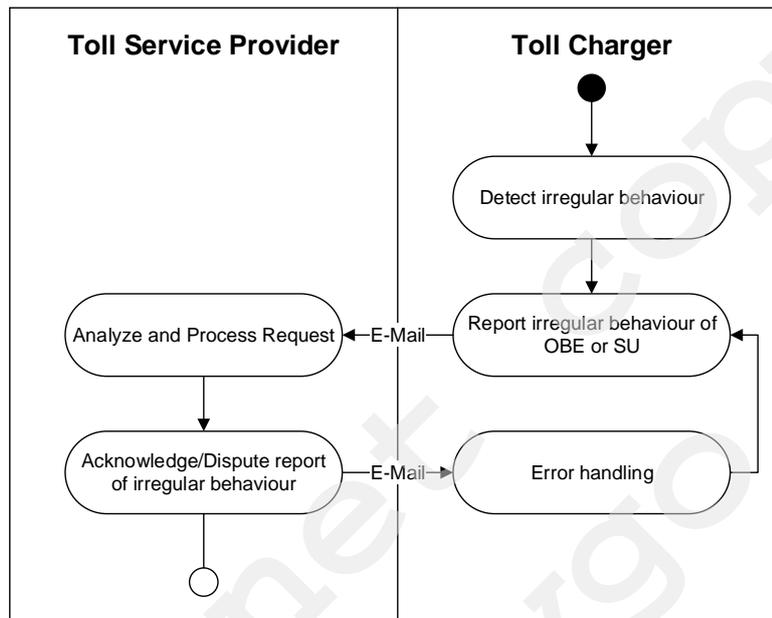
- A SU with a contract according to Austrian law is held responsible for any toll transactions of an OBE until he informs his TSP about the loss or theft.
- A SU with a contract according to Danish, Swedish or Norwegian law is not held liable for any transactions after the date when he reported the theft of the OBE/vehicle to the police. A time lag may occur where the TSP has still to fulfil his payment guarantee to the TC if the SU only reports a stolen OBE to the police but not to the TSP.

Since the Exception list is transferred at a given time schedule, there may be an interval between the change of liability from the SU to the TSP and the moment the OBE is blocked at the TC(s). The responsibility for any toll transactions in this interval lies with the TSP.

The TSP shall inform / instruct the SU on how to act to avoid consequences related to the situation.

The SU has to send any broken OBE to the TSP after the block was activated.

### 5.8.1 Report and monitor irregular behaviour



**Figure 31 - Report irregular behaviour**

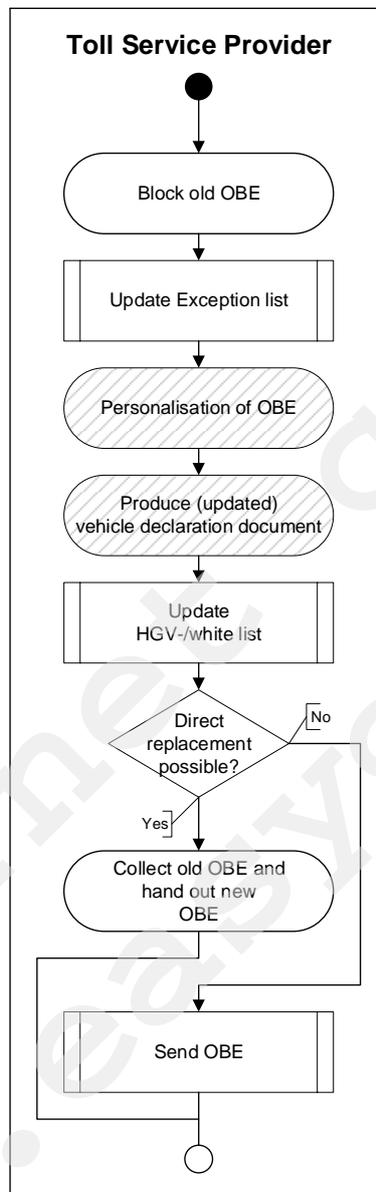
The TC may report any OBE to the issuing TSP and request its blocking if he detects irregular behaviour. This is especially important, when the performance of an OBE can incur financial losses for the TC. The TSP should monitor the performance of the OBEs in the same manner. Irregular behaviour may be due to non-conformant behaviour of the SU or of an OBE or other reasons.

Based upon the contract with the SU the TSP has to analyse and process the request and has to decide whether the provided information about an irregular behaviour is valid and acknowledge or dispute the request from the TC to include it in the Exception list.

If the reported irregular behaviour of an OBE or a SU using an OBE (e.g. broken, lost or stolen) issued by the TSP is found to be true, then the OBE(s) of the SU has to be added to the Exception list to prevent any possible financial loss to the TC.

This reporting of irregular behaviour may be done by e-mail or any other appropriate means.

## 5.8.2 Replace OBE



**Figure 32 - Replace OBE**

If the TSP was informed of the irregular behaviour of an OBE (e.g. broken, bad quality ...) by the TC or by a SU, he has to block the reported OBE and put it on the Exception list within two calendar days to prevent any (further) financial losses to the TC or SU and replace it.

After updating the Exception list, a replacement OBE must be provided.

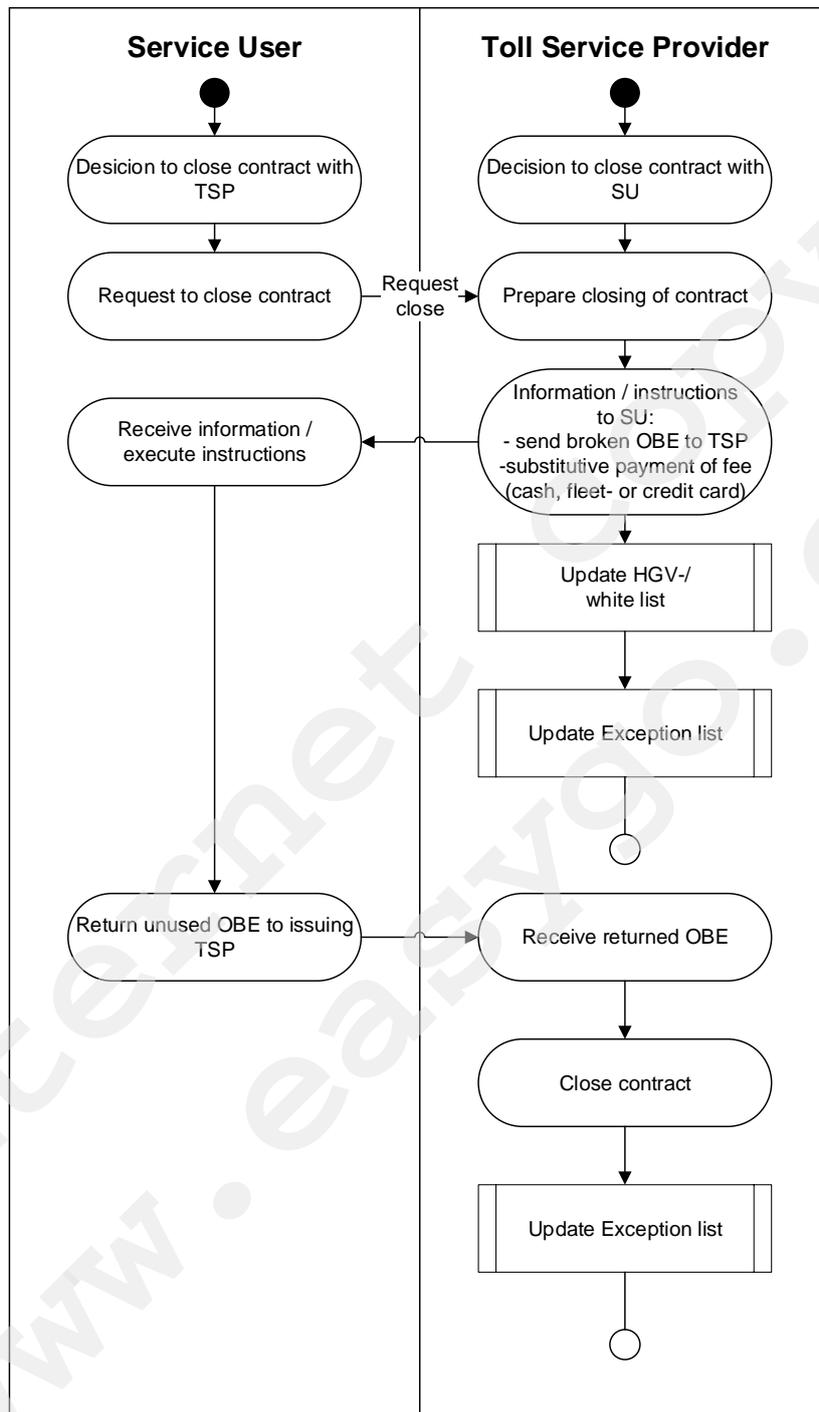
The replacement OBE has to be included in the HGV-/white list (see chapter 4.6.2 “Update and distribute HGV-/white list”).

If the replacement of the OBE requires an update to the OBE (valid for EasyGo+), the SU can, if possible, stop at a POS where the OBE can be updated, and he can receive an updated vehicle declaration. The HGV-/white list must be updated accordingly.

If this is not possible, the TSP must replace the OBE with a new one. The old OBE shall be removed from the HGV-/white list and put on the Exception list. The SU must return the old OBE to the TSP.

### **5.9 Close SU contract**

Definition of process: The process is initiated, whenever a SU decides to close a contract with a TSP or the TSP decides to close a contract with a SU.



**Figure 33 - Closing of SU contract**

After the TSP decides to or is informed by the SU to close the contract, he takes all necessary preparations in his systems (e.g. information in his back-office system, setting his user billing system to collect any outstanding debt) to close the contract.

Not all TSPs require that the SU shall return the OBE.

The following actions are optional:

- The TSP shall inform his SU about any actions to be taken as a result of the closing of the contract and to return any OBE(s) he was issued.
- Additionally, the TSP shall put the identifiers of the OBE(s) to return on the Exception list and remove them from the HGV-/white list.
- After the TSP receives the OBE(s) from the SU the contract is closed. In a final step, the TSP shall remove the identifiers for the returned OBE(s) from the Exception list.

If the OBE is not returned it needs to remain on the Exception list until expiry date of the PAN or until it is no longer on the AIT list.

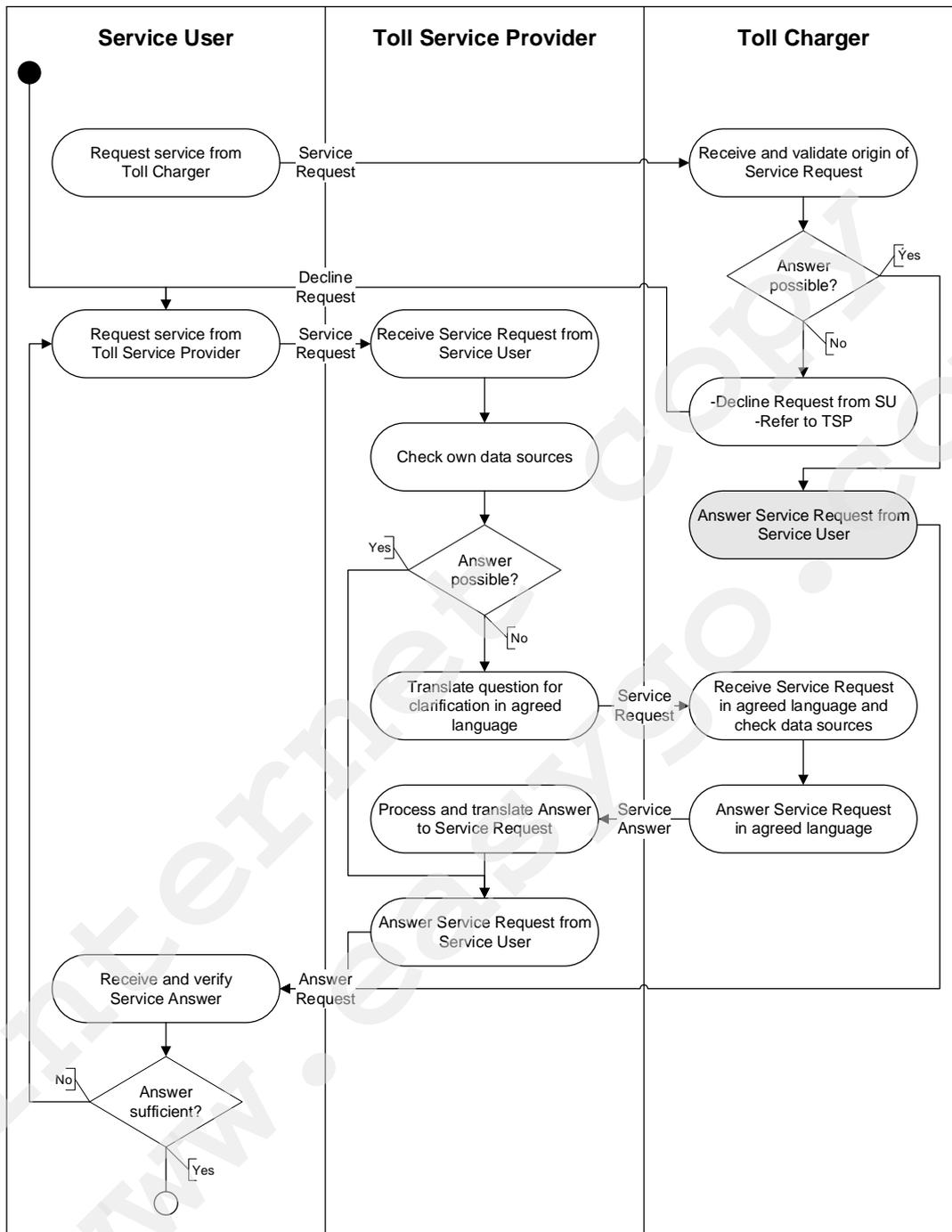
### **5.10 Handle customer relations**

Definition of process: The process is initiated by the SU whenever he has an inquiry, a question or a complaint regarding the toll service.

This inquiry, question or complaint may regard the tolling within any toll domain operated by any TC, the invoicing or any contractual relation between the SU and the TSP.

Document 302 describes the principles regarding handling of customer inquiries including requirements to anonymity, time limits and procedures when SU complaints are accepted.

The handling of a SU complaint regarding an invoice is described in detail in chapter 5.2.4.



**Figure 34 - Handle customer relations**

The normal procedure is that the SU contacts the TSP with any inquiry, question or complaint. If, however, the SU contacts a TC directly, the TC has to check the validity of the inquiry. If the inquiry does not target a local issue (i.e. information about the toll domain, enforcement ...) the TC may decline the inquiry by the SU to avoid wrong or misleading answers. Due to the setup of the toll service the TC typically does not know

the SU and has no knowledge about the contract details between the SU and the TSP. If he is able to answer the SU's inquiry, he may do so.

If the TC is not able or does not wish to answer the SU's inquiry, he may decline the inquiry from the SU and direct him to his TSP.

The SU may contact his TSP, who will try to answer the question by using his own data sources (e.g. billing details provided by the TCs, contract details ...). If the TSP is not able to answer the question of the SU through his own data sources, he may relate the inquiry to the proper TC for further analysis. By doing so he has to translate the inquiry to a language agreed between TSP and TC (e.g. SU asks in Norwegian, TSP translates the inquiry to English to ask a TC not able to understand Norwegian).

The storage of information about transactions differ from country to country depending on local legislation. This has no consequence in respect of the ability of the SU to make an inquiry, but only as to which party shall make a first assessment of the inquiry after the SU has addressed it to the TSP. Any SU may forward any inquiry to the TSP at any time. The handling of the inquiry then depends on a time-bar provision defined for each TC by his national legislation, which may limit the handling of inquiries.

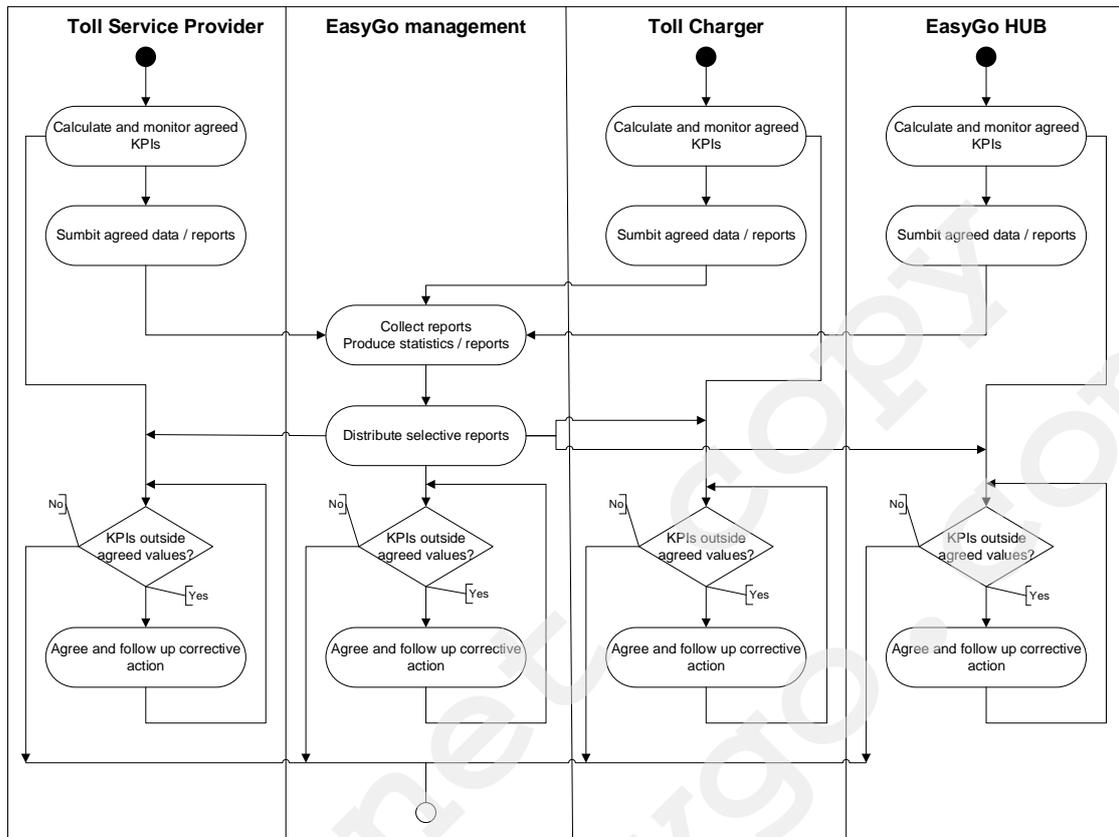
If an inquiry is forwarded to the TC, he shall try to answer the related question and reports the answer back to the TSP within the time frame defined in Annex 3.7 (Quality system). The TSP will translate the answer back to the language agreed between TSP and SU and submit the answer to the SU.

If the SU deems the answer sufficient, the process ends. If not, he needs to reformulate his service request to get a sufficient answer. This will be treated as a new service request.

### **5.11 KPI-management**

Definition of process: Reporting and analysis of quality data from TCs, TSPs and the EGH.

The detailed quality reporting and follow up is described in Annex 3.7 "*EasyGo quality system*".



**Figure 35 - KPI management**

Each TC and TSP shall, based on their internal monitoring as well as reports from EM, identify KPIs outside agreed values. This can be KPIs related to other actors (A TC detects low quality of OBEs from one TSP) or internally (A TC detects low quality in his RSE).

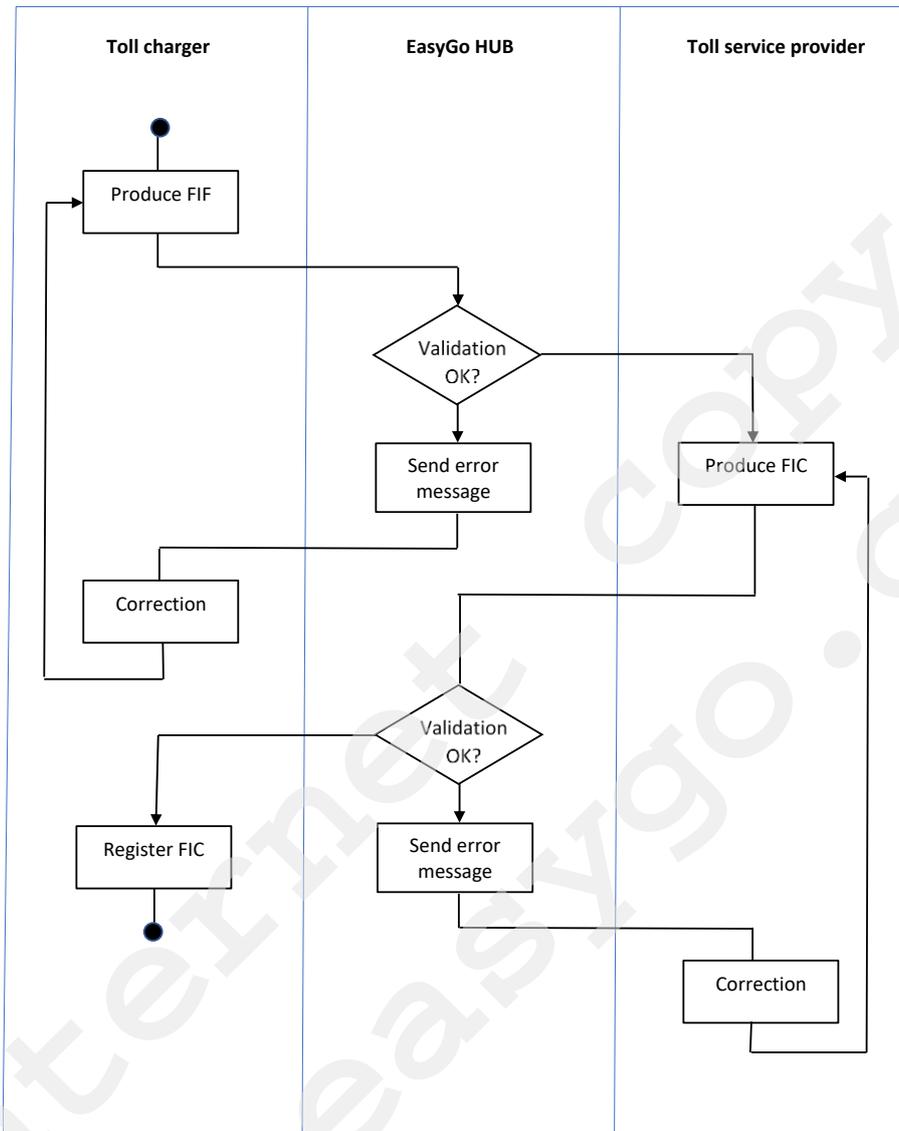
EM analyses the data and produces statistics and reports that are distributed (selectively) to the TSPs, TCs as well as the ESC.

When KPIs outside agreed value are detected the TC, TSP or EM shall propose corrective actions to be agreed between the parties involved and follow up and report progress until the KPI is within agreed values.

### **5.12 TC generates financial information files (FIF)**

Definition of process: The intention of the FIF / FIC is to allow TCs and TSPs to exchange financial information additional to what is included in the TIF and TIC files. As an example, the FIF may include discounts where the discount is not given per transaction.

Figure xx below describes the handling of the Financial Information File (FIF) between originator, EasyGo HUB and recipient.



**Figure 36 – Financial information file exchange**

The following rules shall be applied during production:

- A TC may produce a FIF if agreed with a TSP and upload it on the EasyGo HUB
- The FIF shall be produced according to the format version defined in document 203
- The body record in this file may to a large degree be filled as agreed bilaterally between TC and TSP.
- The content of the body record shall adhere to the format agreed with the addressed TSP
- The EasyGo HUB shall validate each received FIF according to the general validation rules for the EasyGo HUB described in document 201

Any breach of these rules has a rejection of the whole FIF as a consequence.

The EasyGo HUB shall provide the FIF according to schedule for data exchange (see document 201 chapter 5).

The TSP shall produce a FIF confirmation file (FIC) based on the result of the validation and process it according to document 201 chapter 3.

FIF and FIC files are deleted according to rules in document 201.

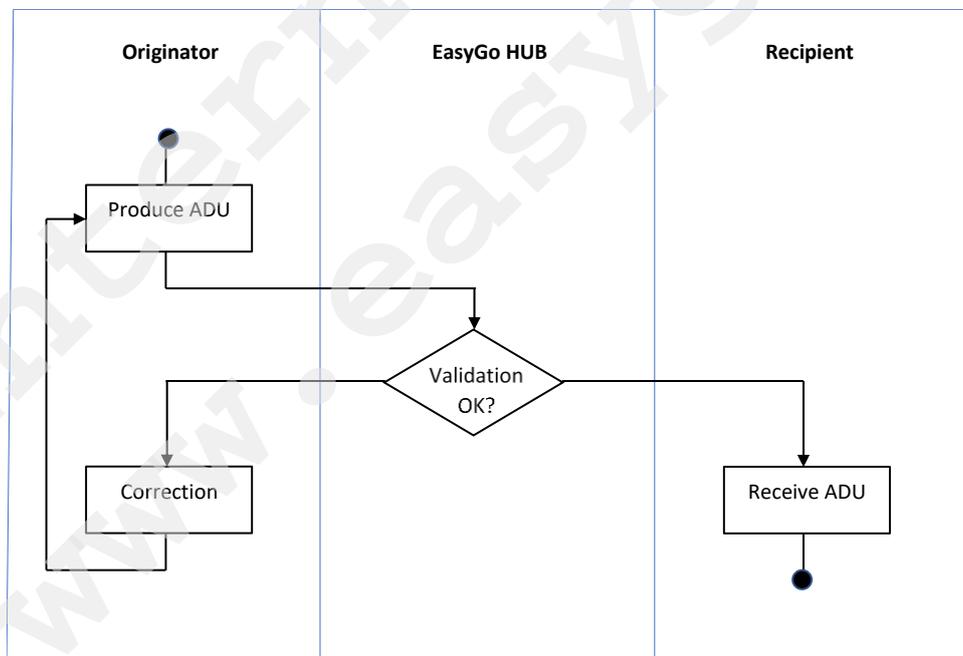
### 5.13 Application Data Unit (ADU)

Definition of process: The ADU enables TCs and TSPs to exchange data between themselves without the content being checked by the EasyGo HUB.

There is a need for additional data exchange in addition to the specified data files. This additional data exchange is primarily based on email. An example of such additional data exchange is the reporting of quality data as specified by document 307 “EasyGo quality system”. The ADU option will be able to replace some of the data being exchanged via email.

These ADU data files are intended to support data exchange between TCs and TSPs in support of the requirements of EN ISO 12855:2015 and CEN/TS 16986:2016 + AC:2017.

Figure xx below describes the principle handling of the application data unit files (ADU) between originator, EasyGo HUB and recipient.



**Figure 37 – ADU file exchange**

The validation performed by the EasyGo HUB will only look at the file name. The following rules shall be applied during production where the EasyGo HUB will perform the following validations:

1. Duplicate check of filename
2. Valid originating actor
3. Valid receiving actor
4. Structure of filename

In case a file does not pass the validation, it is placed in the "Reject" folder of the sender/originator. It may be considered to send an email from the EasyGo HUB to the originator if such errors are detected. This is currently not done.

Note that EasyGo HUB has no requirements to the content of the file and therefore no description of the content in the file like header, body and footer.

Allowing generic files to flow through the EasyGo HUB could represent a potential security issue, since the files could contain information which may not be in accordance with GDPR. To ensure that the EasyGo HUB fulfils the GDPR, it is required that all files sent through the EasyGo HUB, containing sensitive information, must be encrypted.

Agreements regarding encryption and decryption must be agreed bilaterally between the two parties following the principles described in document 205 "Key distribution".

For data exchange between TCs and TSPs using the ADU file exchange, the EasyGo HUB shall not store data unless the data is addressed to the EasyGo HUB. This may be relevant in the future regarding i.e. `_efcContextData`.

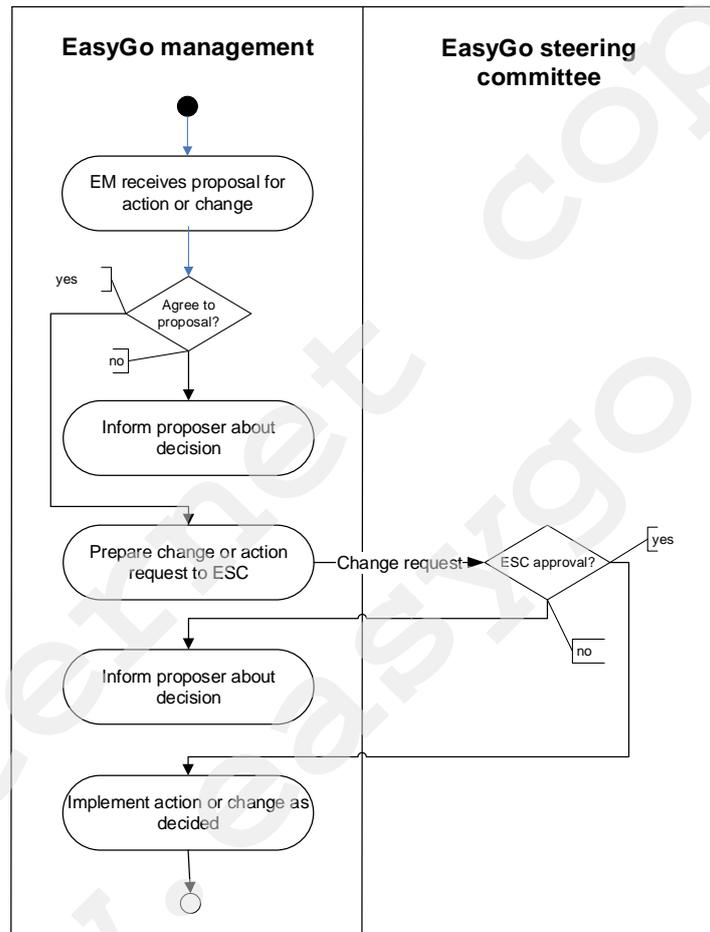
Detailed information about the ADU file exchange can be found in document 201 and in chapter 2.12 in document 203.

## 6 Change management

The following processes are needed when changes are required.

### 6.1 Action requests and change requests

Definition of process: Handling of proposals for change to any part of EasyGo including, infrastructure, principles of operation, documents etc. as well as changes based on new or changed local legislation



**Figure 38 - Handle change requests**

If anyone in the EIM or other actors proposes a change to the EasyGo service (documentation, technical solution etc.) EM will study the proposal and if agreed will make a change request to the ESC for approval.

A change request is a formal proposal from EM to ESC describing the action / change, the pros and cons of the proposal and the costs and timeline.

The action / change request shall be approved by the ESC before being implemented. The proposer shall be informed about the decision.

## 6.2 New equipment and updates by TC, TSP or in EasyGo infrastructure

Definition of process: The process is used when one of the existing TCs, TSPs, EGH or EIM announces that it intends to implement new equipment and/or functionality.

### 6.2.1 General process

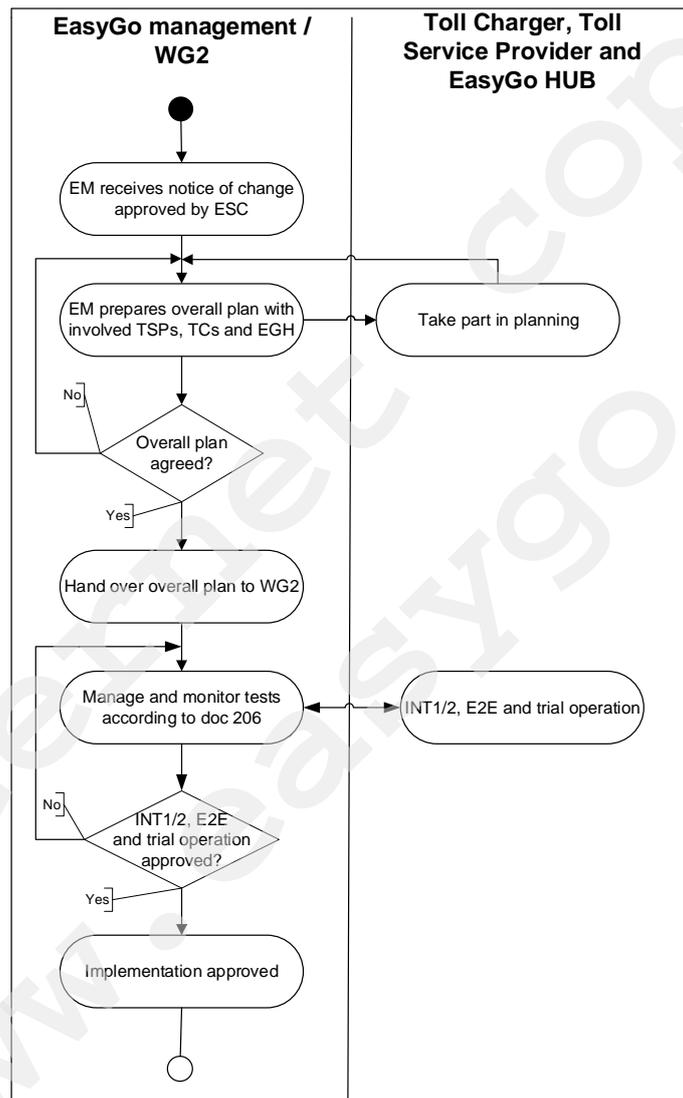


Figure 39 - New equipment and updates

After a decision to implement new equipment or a change or update existing systems, a plan needs to be prepared to ensure that the implementation is carried out according to agreed procedures in EasyGo and that the new implementation is integrated with EasyGo infrastructure in a satisfactory manner.

In principle, a change to CS, RSE, OBE or EGH needs to be approved by the ESC before implementation. If a change is mandated by legislation in one country, however, EasyGo will have to comply but should request and approve a plan for implementation.

A TSP does not have to gain approval from the ESC before introducing a new/changed OBE as long as the OBE is certified and goes through the normal suitability for use tests.

Document 206 includes overall check lists for new TCs, new TSPs, new types of OBEs as well as system changes. These check lists show the step by step process from information about the “event” until final approval of implementation.

## 6.2.2 Test procedures and approval criteria

Definition of process: In several processes, for example 4.1, 4.2 and 6.2, references are made to testing and approval of tests. This chapter gives an overview of which types of “events” that require testing and how these events differ with regards to test requirements.

The table below shows the main types of events that require testing and where detailed test procedures and approval criteria’s can be found.

	Event	Test procedures	Approval criteria’s
1	Inclusion of new EasyGo TCs and TSPs	Overall check list in document 206 Detailed test procedures for CS in document 207 Detailed test procedures for RSE in document 202-G	Defined by documents 206, 207 and 202-G
2	Inclusion of new external TCs and TSPs	Overall check list in document 206 Detailed test procedures for CS in document 207 Detailed test procedures for OBE in document 202-E and 202-F	Defined by documents 206, 207, 202-E and 202-F
3	Introduction of new OBEs by EasyGo TSPs	Test procedures need to differentiate between the following alternatives:  A. New type of OBEs not currently in use in EasyGo  B. New batch of OBEs already used by the same TSP, but changes in firmware (by supplier), new personalisation procedures (by TSP) or other changes  C. New batch of OBEs already used by another TSP  D. New batch of OBEs already used by the same TSP  Test procedures defined by: Overall check list in document 206	Defined by documents 206, 202-E and 202-F

		Detailed test procedures for OBE in documents 202-E and 202-F  The tests will differ for EasyGo basic OBEs compared to EasyGo+ OBEs, with the first being a sub-set of the second.	
4	Introduction of new OBEs by external TSPs		
5	Changes by TC, TSP or EIM/EGH	Test procedures defined by:  Document 403 process 6.2 and  Detailed test procedures for CS in document 207  Detailed test procedures for OBE in documents 202-E and 202-F  Detailed test procedures for RSE in document 202-G  ..depending of the change	Agreed case by case
6	A TC or TSP terminates operation, withdraws from the EasyGo service or no longer uses the EGH	See check lists chapter 6.3	All points on the checklist verified and approved by the organisation leaving as well as EM/WG2.

Table 3 - Main test events

### 6.3 Termination of operation by TC or TSP

Definition of process: When a TC or TSP terminates operation, or decides to leave the EasyGo cooperation, it must be ensured that all obligations are fulfilled, and conditions met as described in the JVA or TSPA respectively.

The following check lists show what needs to be done and who is responsible for each activity.

#### 6.3.1 EasyGo TC

Check list when a general party or a limited party terminates operation or participation in EasyGo service:

Function	Time	Responsible
<b>Decision</b>		
<ul style="list-style-type: none"> <li>Decision for an exit of the TC</li> <li>Define time schedule</li> </ul>	D -180	TC
<b>Information</b>		
<ul style="list-style-type: none"> <li>Information to EasyGo SC</li> </ul>	D -180	TC
<ul style="list-style-type: none"> <li>EasyGo SC informs about the decision on the intranet and easygo.com</li> </ul>	D -180	ESC

<ul style="list-style-type: none"> <li>Issue general information about termination of the Service #1</li> </ul>	D -150	TC
<ul style="list-style-type: none"> <li>Issue general information about termination of the Service #2</li> </ul>	D -90	TC
<ul style="list-style-type: none"> <li>Issue general information about termination of the Service #3</li> </ul>	D -30	TC
<b>END of regular operation / time of leaving EasyGo</b>		
<ul style="list-style-type: none"> <li>TC deactivates RSE or stops sending transactions to the EasyGo</li> </ul>	D 0	TC
<ul style="list-style-type: none"> <li>The TC shall continue to answer requests from EasyGo TSPs or from SUs directly for a period after the termination of operation</li> </ul>	until D+180	TC
<ul style="list-style-type: none"> <li>TC is removed from intranet, easygo.com and other references</li> </ul>	D +181	EM
<b>Update Parameter Tables (delete TC)</b>		
<ul style="list-style-type: none"> <li>EGH eliminate the TC entries from the ACT</li> </ul>	D +181	EGH

**Table 4 – Check list termination of operation by TC**

An external TC must agree its termination with the EasyGo TSP(s) with whom it has (an) agreement(s). General information about the termination is independent of EasyGo, but EasyGo must be informed when to remove the external TC from the ACT.

The check list and the dates used in table 4 should be regarded as examples. The actions and dates shall be set when the termination of a TC is being planned in detail. See also documents 201 and 203 on this issue.

### 6.3.2 EasyGo TSP

Check list

Function	Time	Responsible
<b>Decision</b>		
<ul style="list-style-type: none"> <li>Decision for an exit of the TSP</li> <li>Define time schedule</li> </ul>	D -180	TSP
<b>Information</b>		
<ul style="list-style-type: none"> <li>Information to EasyGo SC</li> </ul>	D -180	TSP
<ul style="list-style-type: none"> <li>TSP permits no new contracts with SU</li> </ul>	D -150	TSP
<ul style="list-style-type: none"> <li>Customer related information about termination of the Service #1</li> </ul>	D -150	TSP
<ul style="list-style-type: none"> <li>Customer related information about termination of the Service #2</li> </ul>	D -90	TSP
<ul style="list-style-type: none"> <li>Customer related information about termination of the Service #3</li> </ul>	D -30	TSP
<b>Update the Validity list of Service Users</b>		
The TSP shall upload the "local" validity lists to the EasyGo HUB <ul style="list-style-type: none"> <li>NAT (including all not returned OBE)</li> </ul>	D -1	TSP

<ul style="list-style-type: none"> <li>HGV (empty - without OBEs)</li> </ul> NAT list includes all OBEs which have not been returned according Time Schedule for data exchange (Annex 2.1, Chapter 5)		
<b>END of regular Operation</b>	D 0	
TSP must upload updated local AIT	D 0	
TSP shall upload the "local" validity lists to the EasyGo HUB <ul style="list-style-type: none"> <li>NAT (including all not returned OBE)</li> <li>HGV (without OBE)</li> </ul>	D 0 to D 180 daily (if there are changes)	TSP
In order to allow the exchange of the TIF of SUs (before end of regular service day D 0) – e.g. for delayed generated TIF, refunds and/or to handle a claim the following must be done:		
<ul style="list-style-type: none"> <li>TC can upload TIF to the TSP</li> </ul>	D 0 - D 180	TC
<ul style="list-style-type: none"> <li>TSP shall accept TIF by sending TIC</li> </ul>	D 0 – D 180	TSP
<b>Update Parameter Tables (delete TSP)</b>		
<ul style="list-style-type: none"> <li>EGH eliminate the TSP entries from the AIT</li> </ul>	D +181 (or tbd)	EGH
<ul style="list-style-type: none"> <li>TC update AIT in RSE</li> </ul>	D +181 (or tbd)	TC
<ul style="list-style-type: none"> <li>EGH eliminate the TSP entries from the ACT</li> </ul>	D +181 (or tbd)	EGH

**Table 5 – Check list termination of operation by TSP**

An external TSP must agree its termination with the EasyGo TC(s) with whom it has (an) agreement(s). General information about the termination is independent of EasyGo, but EasyGo must be informed when to remove the external TSP from the ACT.

It is possible to enter a future end date for the TSP in the EGH. Not all TCs, however, have the ability to read this end date.

The check list and the dates used in table 5 should be regarded as examples. The actions and dates shall be set when the termination of a TSP is being planned in detail. See also documents 201 and 203 on this issue.

## 7 Appendices

### 7.1 Appendix 1 – Text to be moved to document 301

The following text has until now been included in this document as part of process “Change contract data”. It has been decided to move (parts of) this text to document 301 “Minimum set of clauses”. Until the text is included in a revised version of document 301, it remains in this document as an appendix (below).

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In addition to the regular process “Change contract data” there are the following exception cases to be regarded:

- Sale of a vehicle while keeping the license plate
  - If a vehicle is sold and the original owner keeps his license plate and his OBE to mount it on a new vehicle, neither the TC nor the TSP is affected.
  - In EasyGo+, if the SU needs to update any personalisation data for the new vehicle (e.g. EURO emission category) he has to return the old OBE and request a new one or have the personalisation data updated in his OBE.

The new owner of the vehicle has to register a new license plate and OBE anyway.

- Sale of a vehicle with the license plate while keeping the OBE

If a vehicle is sold together with the license plate and the original owner keeps his OBE to mount it on a new vehicle, the TC and TSP will see this as a change of license plate in an existing OBE.

For EasyGo+ this requires an update of the personalisation data in the OBE and the SU has to return the old OBE and request a new one or have the personalisation data updated in the OBE he kept according to the process described in chapter 5.6 “Change contract data”.

The new owner of the vehicle and the license plate has to register a new OBE. This is seen by the TC the same way as a change of the TSP, if the new owner of the truck has a transaction before the license plate of the old OBE is changed as described above. He now sees a different OBE for a given license plate on the interoperable whitelist.

The TC is fully unaware of the change of SUs behind the license plate since he has no contact with the SU. The original TSP may know of the condition if the SU informed him of the sale of his vehicle but may also be unaware of it.

- Sale of a vehicle with the license plate and the OBE
  - If a vehicle is sold together with the license plate and the OBE the original owner has to have his OBE blocked to avoid paying for the usage of the new owner. Therefore, such a scenario does not make any sense, since the

blocked OBE needs either to be updated or returned to the issuing TSP the new owner may not even know.

- Renting of a vehicle while keeping the OBE
  - If a SU returns a rented vehicle he has an OBE for and keeps this OBE, this license plate shows up in the whitelist until he puts it into a new vehicle with a different license plate and has it updated.  
  
Any new renter of the same vehicle needs to get a new OBE which will appear to the TC again as a switch of TSPs.
- Renting of a vehicle with return of the OBE
  - In this case the SU returns his OBE when he returns the rented vehicle. The TSP will block the OBE with a reason code showing the termination of the contract. Any new renter can register his OBE and it will appear like a new contract on the whitelist to the TC.
- Subcontracted vehicle
  - When a vehicle is subcontracted on regular basis for another company, this vehicle will have to have an OBE of this other company to ensure that any applicable volume discount is granted to this other company. This requires that this vehicle is registered for the company it is subcontracted to.

If the vehicle is also used for the owner in parallel, it will result in two permanent OBE issued to one vehicle. This has to be either through two TSPs or one TSP and a local contract.

Additional clarification: When a SU enters into a new contract with a new TSP, should he be informed by the TSP of the possible consequences if he does not cancel existing contract(s)?