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LTU Nationwide GNSS Tolling System

EETS Integration Guide

Doc No. 30006

Version 2.0

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Overview of changes.

No.	Version	Status	Date	Contributor	Type of the change
1	0.1	Draft	17.4.2026	Paul Litzinger	First Version
2	1.0	Released	20.04.2026	Paul Litzinger	Released version
3	1.1	Released	12.06.2026	Paul Litzinger	Updated based on comments from TSPs
4	1.2	Released	03.09.2026	Paul Litzinger	- EL ADU section with new timings and additional requirements - ACK ADU additional requirements - LTU configuration with correction of structure for referencing BDs in PCs to be aligned with openAPI specification. - General Data exchange additional requirements for compressed transmiision - General considerations - need for refresh tokens was removed, lifetime of access token updated to 15 minutes
5	2.0	Released	11.09.2026	PMO	2nd released version

Table 1 Overview of changes

Reference to the status, versions and data classification.

Status:

Draft	the document is being processed
Released	the document has been checked and released, it can only be modified if the version number is updated.
Obsolete	the document is not valid anymore

Versions:

0.1, 0.2	draft versions
1.0	first released version with the status “Released“
1.1, 1.2, etc.	draft versions, that supplement version 1.0

Internal

2.0	second released version with the status “Released”
Data classification	
Public	No restriction
Internal	Restricted to internal and external Kapsch employees
Confidential	Restricted to selected active directory and/or sharepoint groups (default)
Secret	Restricted to selected employees, server encryption needed

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1 Purpose

This document describes requirements and considerations for EETS Integration, as well as the data objects exchanged between the toll charger and the TSP based on the EFC (Electronic Fee Collection) toolbox standard ISO 12855. The EETS TSPs integrate with the solution based on "Electronic fee collection — Information exchange between service provision and toll charging" ISO 12855:2025(en) standard and corresponding "Electronic fee collection — System architecture for vehicle-related tolling Part 3: Data dictionary" ISO/TS 17573-3:2021 standard. The base ASN.1 specifications are available under [ISO 12855 ASN.1](#) and [ISO 17575 ASN.1](#). Since there is no corresponding released profile ISO 16986 version available at the time of writing this document, the solution aligns on the available draft version. Right to change is reserved.

The document provides a general description of the solution and its configurations. Project specific configurations overrule general aspects and will be defined during the integration process.

2 Data exchange

The data objects described in this chapter are exchanged between the following two entities:

- Toll Charger (TC), and
- Toll Service Provider (TSP) - also referred to as EETS TSP

The solution distinguishes between two message flows:

- incoming: a request is sent from EETS TSP to the TC
- outgoing: a request is sent from the TC to any EETS TSP

In line with the ISO standard, the data are exchanged based on Info Exchange Messages which contains APCI and ADU Information.

2.1 Message Exchange

The messages are exchanged using via a HTTP Webservice which exposes an endpoint to which sendAPDU messages are transmitted using the POST method. In line with the ISO 12855 standard, the root object for message exchange is the "infoExchange" object. This object, which is also called Application Protocol Data Unit, contains:

- a single occurrence of Application Protocol Control Information (APCI) object, including information about the sender, receiver, identifier, etc
- one or more Application Data Unit (ADU) objects of the same type.

The following ADUs are supported for automatic exchange via the EETS interface. Details on data objects, formats and value range restrictions are available in the interface specification.

Application Data Object	Direction	Originator	Exchange Mechanism
Exception Lists ADU	incoming	EETS TSP	HTTP Webservice
Toll Declarations ADU	incoming	EETS TSP	
Billing Details ADU	outgoing	TC	
Payment Claims ADU	outgoing	TC	
Acknowledgement ADUs	incoming	EETS TSP	
	outgoing	TC	

Table 2 Data Exchanged

To establish trust between the TC and EETS TSP solution, a trust object ADU needs to be exchanged. This exchange is done manually. Other needed data objects or information that is exchanged manually are userDetails and EFC context data.

The following diagram illustrates the high level message exchange process, including the sending of a message and the asynchronous acknowledgement response. The flow depicted shows an example where the TC receives a message and answers with an acknowledgement ADU, a typical example is the Toll Declaration ADU.

Internal

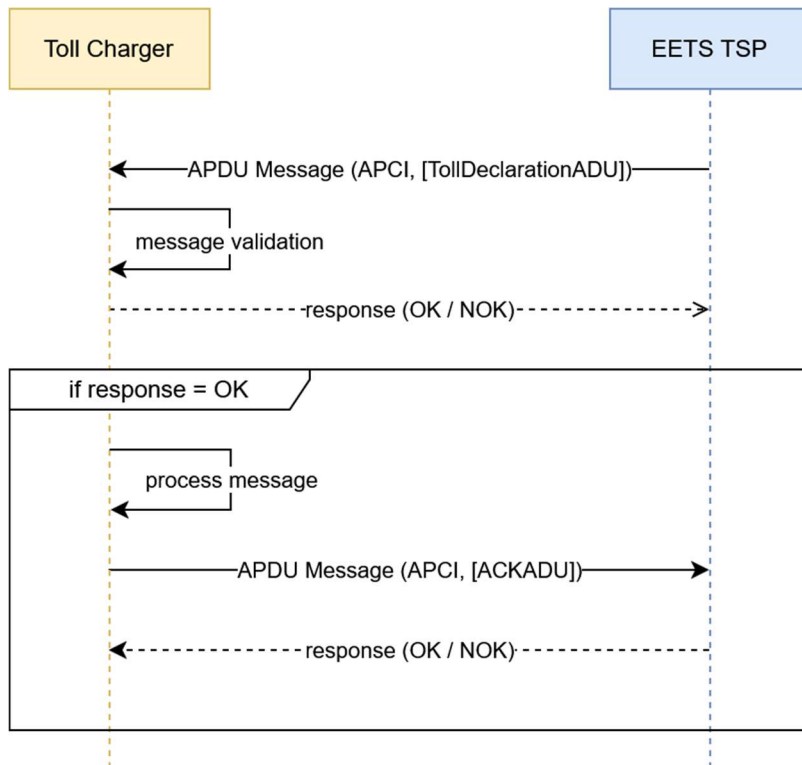


Figure 1 EETS High Level Message Exchange

As depicted, only messages passing message validation process successfully will be further processed by the solution. Therefore, successful transmission of the data is not sufficient for the originator to conclude that the data-sets are correct according to all business rules and have been accepted by the recipient. The technical acceptance process which is executed asynchronously may detect the violation of a business rule and result in the rejection of the data. Depending on the result of the process, the asynchronous acknowledgement (ACK) ADU will signal business acceptance or rejection of the message. The acknowledgement ADU transmitted in this process contains specific information in case technical errors or warnings have occurred during the processing for the data.

2.1.1 General message considerations

- The solution uses JSON Encoding Rules (JER)
- The messages exchanged shall be transmitted compressed using gzip.
- All reported times are interpreted in generalized time and in UTC +/- 0. The required format is "YYYYMMDDHHmmssZ".
- In case of a transmission error (e.g.: TSP system is unavailable) the systems retry to send the message. In case the message cannot be delivered for an extended period of time, the receiving entity shall be informed and further steps shall be mutually agreed.

The following chapters describe the different Application Data Unit types in detail.

2.2 Toll declaration

This section describes the process and requirements for Toll Declaration exchange.

2.2.1 Business Context

The collection process uses a GNSS device to record the location information. A GNSS device is a single device, capable of recording GNSS location information and transmitting them to the central tolling system. The GNSS device is mounted inside a toll liable vehicle to record the vehicles movement. The GNSS device records the locations (i.e., GNSS positions) of the vehicle according to defined and configurable frequency - *position storing interval* - (e.g., every 5 seconds) when inside the charging relevant area - *toll domain area* . For each position, the GNSS device records the following information to fulfill solutions needs:

- longitude,
- latitude,
- altitude (optional),
- date and time, and
- the following quality parameters:
 - speed
 - course
 - horizontal accuracy

Optionally, the devices may implement a stand still filter, to prevent the collection of position clouds in congestion situations or while the vehicle is waiting at a red light. The collected location information is enriched with charging relevant vehicle attributes and aggregated according to the defined and configurable aggregation period - *position reporting frequency* - (e.g., 5 minutes). The *charging relevant vehicle attributes* are a toll domain specific set and may vary between toll domains based on the used tariff table. Amongst others, the solution supports the following typical attributes:

- Vehicle class: according to Vehicle registration documents
- Vehicle axles: tractor and trailer axles according to vehicle registration documents and current vehicle train configuration
- Vehicle weight limits: according to vehicle registration documents
- Euro class: according to vehicle registration document
- CO2 emission class: according to the EU scheme of CO2 emission classes based on vehicle registration documents

To identify the vehicle and the device used for collection, the packaged position data are attributed with following identifiers:

- License plate number: the country code and LPN according to vehicle registration documents
- Device identifier: the unique identifier of the the GNSS device used to record the location information, composed of provider, manufacturer and equipment identifier

The resulting position package is transmitted to the central tolling system for the detection of the use of toll liable roads and the calculation of the related toll charges.

2.2.2 Communication Process

The charging process starts with the collection of position packages by the OBE as previously described. Those position packages are received from OBEs by their contracted EETS TSP. The EETS TSP generates *Toll Declaration ADUs* and transmits them to the TC. The solution receives Toll Declaration ADUs (TD ADUs), packaged in Info Exchange messages in the agreed aggregation level (*maximum number of TD ADUs*), from accredited EETS TSP. After successful syntactical and semantic validation of the TD ADUs, the solution response with an asynchronous Acknowledgement ADU (ACK ADU), confirming the reception and successful processing of all provided TD ADUs. In case errors are encountered during validation, the solution rejects individual TD ADUs with a meaningful error code. The validations performed include but are not limited to:

- Syntactical correctness (Error code: apduNotOk)
- Syntactical correctness on TD ADU (Error code: apduNotOk)
- Duplicate transmission of TS ADUs (Error code: tollDeclarationDuplicateTollDeclarationRejected)

Internal errors can be caused by too large messages (e.g.: list of TD ADUs in a request was outside agreed value range). Only successfully acknowledge TD ADUs will be subject to charge evaluation. The exchange follows the communication and timings as defined in ISO 16986.

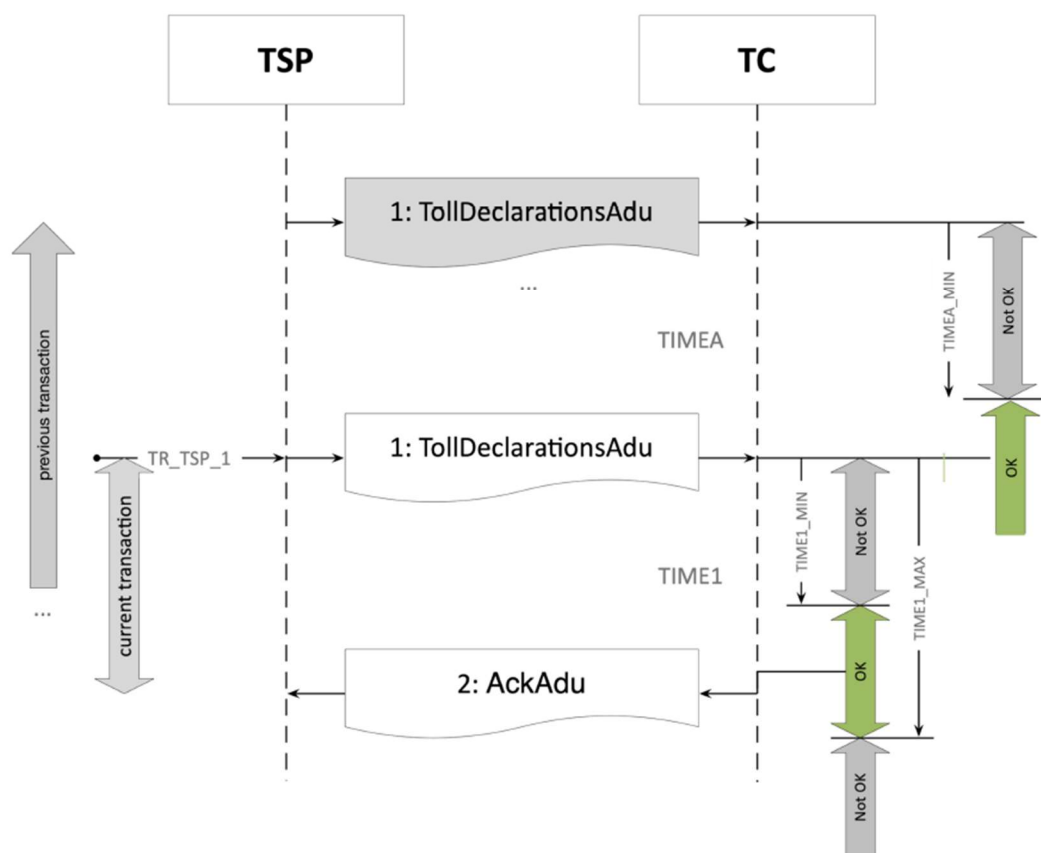


Figure 2 ISO 16986 timing definitions for tolldeclaration transaction

With following timings:

Trigger/Timing	Meaning	Default
TR_TSP_1	A TSP may initiate a TOLLDECLARATION_SECT transaction at any time after TIMEA_MIN.	
TIMEA_MIN	The minimum time between the sending of two TollDeclarationAdus in two consecutive TOLLDECLARATION_SECT transactions.	Default = 0 seconds to allow for list of TD ADUs
TIME1_MIN	The minimum time required by the TC to acknowledge the received toll declaration by sending an ACK ADU.	Default = 0 seconds to allow of immediate rejection in syntax error case
TIME1_MAX	The maximum time allowed to the TC to acknowledge the received toll declaration by sending an ACK ADU.	Default = 48 h. To take into account operational procedures in case of maintenance or unplanned downtime. In normal operations the response should be within a few (10) seconds.

Table 3 Toll Declaration Timings

2.2.3 Additional Requirements

- Toll Declaration ADUs shall be transmitted in chronological order for each OBE. This means that, for a given OBU, a Toll Declaration ADU (TD1) must be acknowledged before a subsequent Toll Declaration ADU (TD2) is sent. Furthermore, all positions contained in TD1 shall have timestamps earlier than the positions contained in TD2.
- Every transmitted and positively acknowledged TD ADU is subject to charging. The solution does not evaluate the corresponding user exception list entry.
- An APDU containing TD ADUs, which is fully or partially rejected by an ACK ADU must not be re-sent. It is expected that the EETS TSP creates a new APDU containing corrected TD ADUs to allow processing.
- Processing of Toll Declaration data containing future GNSS time stamps is not supported. Such TDs will be acknowledged by the solution and silently discarded by the map matching process.
- The solution adheres to the data minimization principle. The solution receives as input vehicle characteristics. Only charging relevant vehicle characteristics are needed by the solution to process the charge. However the ISO 12855 standard structure demands the transmission of no charging relevant vehicle characteristics. For example: data object Axles requires the transmission of axle height, tire type, tractor and trailer axles. For a toll domain not all information included in the axles object is required, for example only tractor and trailer axles could be rating relevant. The solution expects to receive all mandatory fields but ignores values that are not charging relevant.

2.3 Billing details

This section describes the process and requirements for Billing Details exchange.

2.3.1 Business Context

The solution identifies tolled road usage for the received TD ADUs using a map matching process employing a gap closing algorithm. The resulted charges are grouped into single aggregated tariff classes, which are the base for Billing Detail creation. The Billing Details are created by the solution on user level and based on a configurable aggregation interval (*billing detail aggregation period*). During aggregation, the solution groups all detected charge objects into single tariff class sessions. In case a use is subject to different tariff classes within the billing detail aggregation period, the system will create one billing detail per distinct tariff class. A billing detail contains the following information for each user:

- Period: the begin and end equal to billing detail aggregation period
- Billing detail amount
- Identified tariff
- Vehicle description
- External costs
- Array of used sections with corresponding identifiers and used distance

The Billing Details are issued on user level and as such they are the base for user invoicing. The Billing Details are expected to be accepted or rejected by the EETS TSP. Only accepted Billing Details will be further processed. In case of Billing Detail rejection, an operations process is followed. During bilateral discussion and after reaching an agreement a new billing detail will be issued with corrected amount and referencing the billing detail subject to initial rejection.

2.3.1.1 Handling of rejected Billing Details

To support the operational handling of rejected Billing Details, the solution allows the creation of a new Billing Details by an authorized agent based on an existing Billing Detail.

The process offers three possibilities for managing negatively acknowledged BDs:

2.3.1.1.1 Option: Resend Billing Detail

This option is primarily intended for cases where a Billing Detail was negatively acknowledged due to a timeout or another technical issue on the TSP side.

In this case, the Billing Detail is re-sent unchanged, except for the assignment of a new Billing Detail identifier.

2.3.1.1.2 Option: Adjust Billing Detail

This option is primarily intended for cases where the TSP reports a claim or issue concerning the content of the Billing Detail and where bilateral clarification results in an agreed correction.

In this case, the solution uses a dedicated Billing Detail structure intended for the registration of adjustments. The adjusted Billing Detail uses the *fee text detail* option instead of the original usage list entry for sectioned roads. It shall contain the original Billing Details Identifier as a reference.

The new BD contains an agreed amount and free text detail information reflecting the agreement. The BD will be sent in the next suitable sending time slot. It is expected that BDs of such type are not rejected by TSPs.

2.3.1.1.3 Option: No action needed

If the outcome of the bilateral clarification is that no new Billing Detail is required, no correction is created and no further action is initiated.

The following diagram visualizes the process.

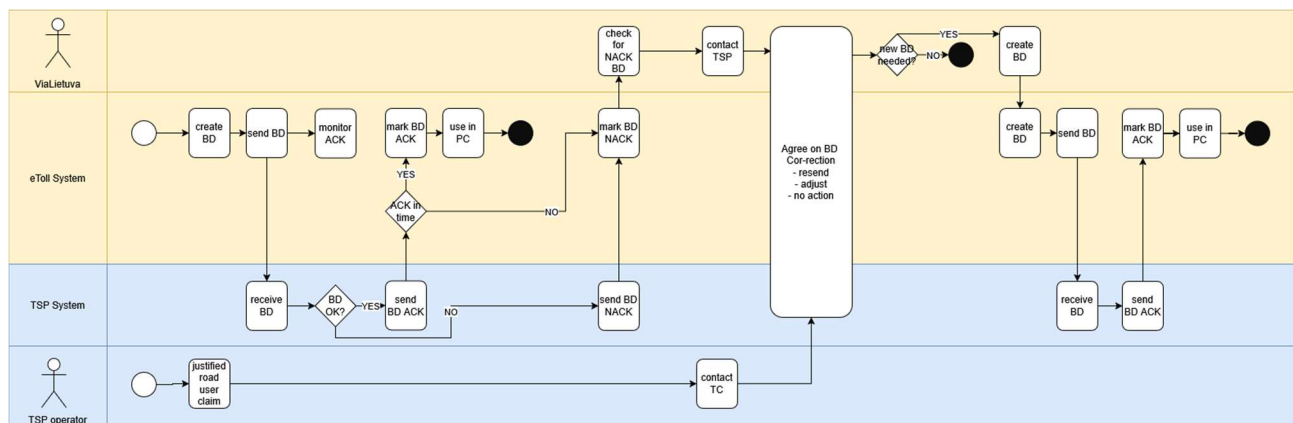


Figure 3 EETS BD adjustment process

2.3.2 Communication Process

The created Billing Details are sent to the EETS TSP as Billing Details ADU upon completion. The EETS TSP validates the Billing Details and signals acceptance or rejection in ACK ADUs. Only positively accepted Billing Details will be subject to further processing. Rejected Billing Details are reported to the operations team and are clarified with EETS TSP. In case of rejection of a BillingDetail, the TSP informs the reason of the rejection. Irrespective of the reason, the Billing Detail is considered rejected and needs to be clarified with the TSP. The following reasons and related codes are supported by the solution:

- billingDetailsIssuerIdRejected: code 700
- billingDetailsRejected: code 701
- billingDetailsTollContextOperatorMismatch: code 702
- billingDetailsTollContextOperatorRejected: code 703
- billingDetailsUserIdRejected: code 704
- billingDetailsPeriodRejected: code 705
- billingDetailsAmountRejected: code 706
- billingDetailsUserIdLpnMissing: code 719

- billingDetailsUserIdLpnNotResponsible: code 720
- billingDetailsUserIdObeldMissing: code 724
- billingDetailsPeriodMissing: code 730
- billingDetailsContentDuplicat: code 735

The following reason codes are **not** supported by the solution.

- billingDetailsContextNameRejected: code 707
- billingDetailsAppliedUserClassRejected: code 708
- billingDetailsAppliedLocalVehicleClassRejected: code 709
- billingDetailsAppliedTimeClassRejected: code 710
- billingDetailsEntryTimeRejected: code 711
- billingDetailsEntryChargeObjectRejected: code 712
- billingDetailsEntryLocationClassRejected: code 713
- billingDetailsExitChargeObjectRejected: code 714
- billingDetailsExitTimeRejected: code 715
- billingDetailsReferenceRejected: code 716
- billingDetailsExitLocationClassRejected: code 717
- billingDetailsBillingDetailsInfoNotSupported: code 718
- billingDetailsUserIdPanMissing: code 721
- billingDetailsUserIdPanNotValid: code 722
- billingDetailsUserIdPanNotAllowed: code 723
- billingDetailsUserIdEfcContextMarkMissing: code 725
- billingDetailsUserIdEfcContextMarkNotAllowed: code 726
- billingDetailsPaymentMeansIgnored: code 727
- billingDetailsRelatedBillingDetailsUnknown: code 728
- billingDetailsRelatedBillingDetailsInfoNotSupported: code 729
- billingDetailsAmountIgnored: code 731
- billingDetailsRefTollDeclarationIgnored: code 732
- billingDetailsRefTollDeclarationUnknown: code 733
- billingDetailsRefTollDeclarationIdNotSupported: code 734

The exchange follows the triggers and timing as defined in ISO 16986

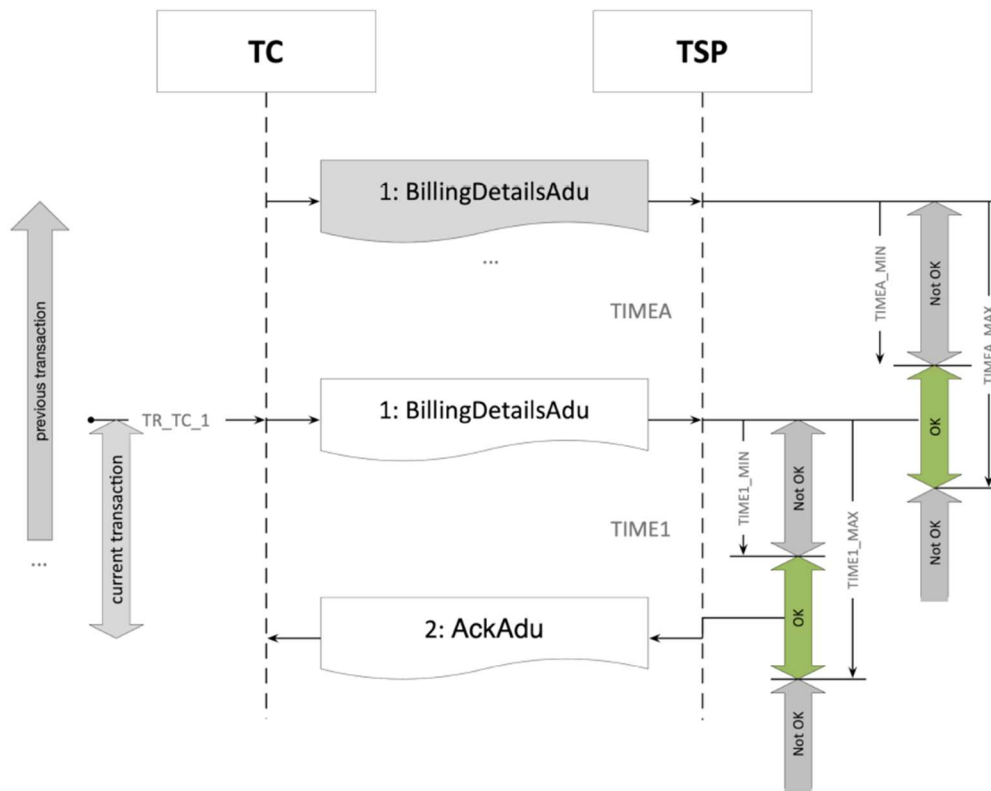


Figure 4 Billing Details Exchange

With the following configurable timings

Trigger/Timing	Meaning	Default
TR_TC_1	A TC shall initiate a BILLINGDETAILS_TC at any time in the interval between TIMEA_MIN and TIMEA_MAX.	according to grouping time, default BD creation starts at 01:00:00 covering the charges of the previous period.
TIMEA	The time between the sending of two BillingDetailsAdus in two consecutive BILLINGDETAILS_TC transactions.	Default = 0 seconds, to allow list of BD ADUs
TIMEA_MIN	The time between the sending of two BillingDetailsAdus in two consecutive BILLINGDETAILS_TC transactions.	Default = 0 seconds, to allow list of BD ADUs
TIMEA_MAX	The maximum time for sending of two BillingDetailsAdus in two consecutive BILLINGDETAILS_TC transactions	Default = 24 hours, to allow for interfering of operations due to planned or unplanned interruptions
TIME1_MIN	The minimum time required by the TSP to acknowledge the BillingDetailsAdu by sending an AckAdu.	Default = 0 seconds, to allow of immediate rejection in syntax error case

Trigger/Timing	Meaning	Default
TIME1_MAX	The maximum time allowed to the TSP to acknowledge the BillingDetailsAdu by sending an AckAdu.	Default = 6 hours, to ensure that the processing of AckAdu can be completed before the next cycle

Table 4 Billing Details Timings

Billing Detail which are not acknowledged within the agreed timings are considered as rejected by the solution. Delayed transmission of ACK ADUs are rejected by the solution.

2.3.3 Additional Requirements

The solution adheres to data minimization principle. This means that only charging relevant vehicle characteristics will be returned in the Billing Details vehicle description. All other fields demanded mandatory by the standard will include default values as defined in the configuration section.

2.4 Payment claims

This section describes the process and requirements for Payment Claims exchange.

2.4.1 Business Context

The final stage of the EETS charging process is to issue Payment Claims. Similar to Billing details which group usage statements, the solution groups Billing Details into Payment Claims on a configurable periodicity. Only positively acknowledged Billing Details will be grouped. The grouping is subject to configurable business rules, such as grouping by time, grouping by maximum number of Billing Details, etc.

The following grouping is default:

- *payment claim aggregation period*: default 30 days (1st day of the month at 00:00:00 to last day of the month at 23:59:59) (global configurable value)
- *maximum number of billing details*: default 5000 (global configurable value) to restrict the maximum size of a payment claim

As payment claims are not grouped on user level, they contain the following minimum information:

- total amount
- aggregation start and end
- referencing the acknowledged billing details as ReferencedAduIdentifier.

In general, it is not expected that Payment Claims are rejected, as they include only acknowledged Billing Details. In case of Payment Claim rejection, an operations process is followed. During bilateral discussion and after reaching an agreement, a new Payment Claim will be issued with the corrected amount and referencing the payment claim subject to initial rejection.

All positively acknowledged Payment Claims will be subject to payment by the EETS TSP.

2.4.1.1 Handling of rejected Payment Claims

For Payment Claims the process of managing rejected Payment Claims is similar to Billing Details. Like BD process the PC claim process will result in the creation of a new PC. The solution supports agent with sufficient rights in the management of new Payment Claims.

The process offers three possibilities for managing negatively acknowledged PCs:

2.4.1.1.1 Option: Resend PC

This option is primarily used in case the PC were not acknowledged due to time out of the TSP. In this option the PC is re-sent unaltered but with a new PC identifier.

2.4.1.1.2 Option: Create PC

The solution manages an audit trail to trace manual BD and PC creation process. The solution ensures that any newly created Billing Detail (BD) or Payment Claim (PC), is based on an existing BD or PC and maintains a internal reference to the originating BD/PC.

This option is primarily intended for cases where the TSP reports a claim or issue concerning the content of the Payment Claim and where bilateral clarification results in an agreed correction.

In this case, the solution uses a dedicated Payment Claim structure intended for the registration of adjustments. The adjusted Payment Claim uses the *paymentClaimDetails* structure.

The new PC contains an agreed amount and paymentDetailText reflecting the agreement. The PC will be sent in the next suitable sending time slot. It is expected that PCs of such type are not rejected by TSPs.

2.4.1.1.3 Option: No action needed

If the outcome of the bilateral clarification is that no new PC is required, no correction is created and no further action is initiated.

The following diagram visualizes the process.

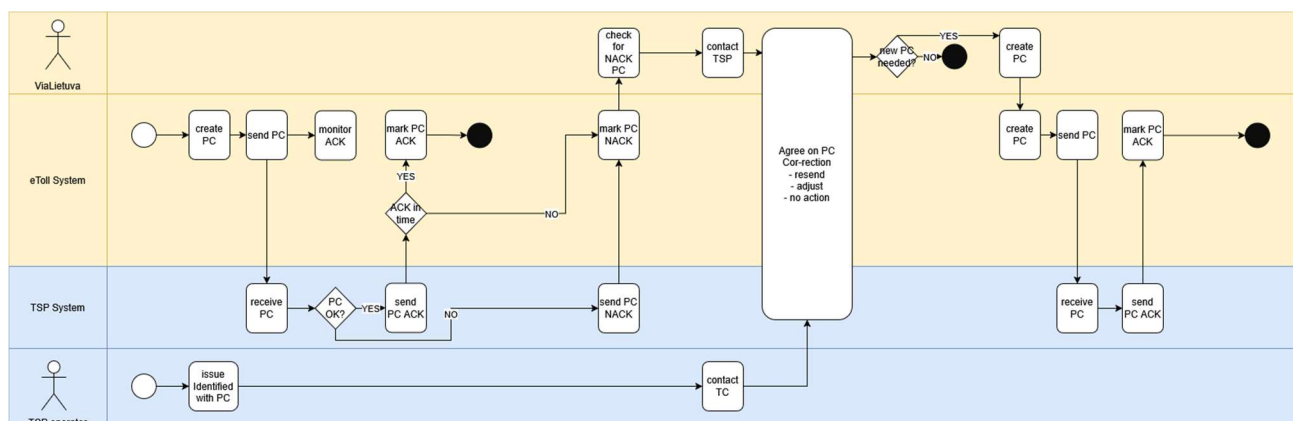


Figure 5 EETS PC adjustment

2.4.2 Communication Process

The created Payment Claims are sent to the relevant EETS TSP as Payment Claims ADU in the agreed frequency and aggregation. The EETS TSP validates the Payment Claims and signals acceptance or rejection in ACK ADUs. Only positively accepted Payment Claims will be subject to further processing (invoice generation, etc). Rejected Payment Claims are reported to the operations team and are clarified with EETS TSP. The timings presented are considered configurations and might change according to the needs of the solution, for example due to performance considerations. It is expected that the TSP solution can adapt to the changes required. Payment Claims which are not acknowledged within the agreed timings are considered as rejected by the solution. Delayed transmission of ACK ADUs are rejected by the solution.

In case of rejection of a Payment Claim, the TSP informs the reason of the rejection. Irrespective of the reason, the Payment Claim is considered as rejected and needs to be clarified with the TSP. The following reasons are supported by the solution:

- claimRejectedByTsp: code 800
- paymentClaimIdRejected: code 802
- paymentClaimStartDateTimeRejected: code 803
- paymentClaimEndDateTimeRejected: code 804
- paymentClaimUserIdRejected: code 805
- paymentClaimPaymentClaimAmountRejected: code 806
- paymentClaimPaymentClaimStatusRejected: code 807
- paymentClaimTypeOfContentRejected: code 808
- paymentClaimEndDateTimeMissing: code 809
- paymentClaimStartAndEndDateTimeInvalid: code 810
- paymentClaimUserIdMismatch: code 812
- paymentClaimUserIdUnknown: code 813
- paymentClaimUserIdBlocked: code 814
- paymentClaimUserIdNotSupported: code 815
- paymentClaimUserIdMissingForCreditNote: code 816
- paymentClaimPaymentClaimAmountMismatch: code 817
- paymentClaimPaymentClaimStatusNotSupported: code 818
- paymentClaimTypeOfContentMissing: code 819
- paymentClaimTypeOfContentNotSupported: code 820
- paymentClaimReferenceDetailListMismatch: code 822
- paymentClaimDetailsPaymentDetailTypeMissing: code 828
- paymentClaimDetailsPaymentDetailTypeNotSupported: code 829
- paymentClaimDetailsPaymentDetailTextMissing: code 830
- paymentClaimDetailsPaymentDetailQuantityMissing: code 831
- paymentClaimDetailsPaymentDetailQuantityNotSupported: code 832

- paymentClaimDetailsPaymentDetailDiscountMissing: code 833
- paymentClaimDetailsPaymentDetailBasicAmountMissing: code 834
- paymentClaimDetailsPaymentDetailBasicAmountMismatch: code 835
- paymentClaimDetailsPaymentDetailAmountExclVatMissing: code 836
- paymentClaimDetailsPaymentDetailAmountExclVatMismatch: code 837
- paymentClaimDetailsPaymentDetailAmountTotalMissing: code 838
- paymentClaimDetailsPaymentDetailAmountTotalMismatch: code 839

The following reason codes are **not** supported by the solution.

- paymentClaimUserIdMissingForClaim: code 811
- paymentClaimReferenceDetailListMissing: code 821
- paymentClaimReferenceDetailListIgnored: code 823
- paymentClaimPaymentReferenceIgnored: code 824
- paymentClaimPaymentClaimDetailsIgnored: code 825
- paymentClaimDetailsPaymentDetailCodeIgnored: code 826
- paymentClaimDetailsPaymentDetailNumberIgnored: code 827

The exchange follows the communication and timings as defined in ISO 16986

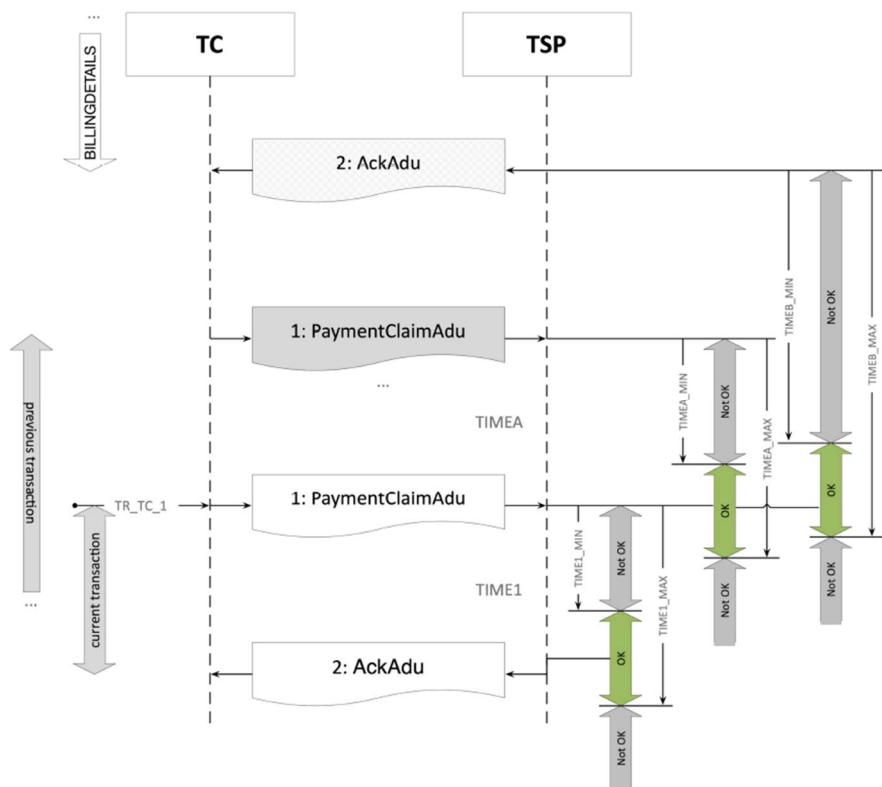


Figure 6 Payment Claims Exchange

With the following timings:

Internal

Trigger/Timing	Meaning	Default
TR_TC_1	A PAYMENTCLAIM transaction shall be initiated within the intersection of the time interval between TIMEA_MIN and TIMEA_MAX with the time interval between TIMEB_MIN and TIMEB_MAX.	The payment Claim will be sent within a configurable time period of the grouping interval (e.g. every 14 days) according to grouping time, default PC creation starts at 01:00:00 covering the charges of the previous period
TIMEA_MIN	The minimum time between the sending of two PaymentClaimAdu in two consecutive PAYMENTCLAIM transactions	Default = 0 seconds, to enable sending a list of Payment Claims
TIMEA_MAX	The maximum time between the sending of two PaymentClaimAdu in two consecutive PAYMENTCLAIM transactions	Default = 20 days, to account for outages and clarifications of not acknowledged Billing details
TIMEB_MIN	The minimum time between the sending of a PaymentClaimAdu in a PAYMENTCLAIM transaction and AckAdu in the corresponding BILLINGDETAILS transaction.	Default = 0 min, to enable same day issuing of Payment Claims
TIMEB_MAX	The maximum time between the sending of a PaymentClaimAdu in a PAYMENTCLAIM transaction and AckAdu in the BILLINGDETAILS transaction transferring a BillingDetailsAdu referenced in the PaymentClaimAdu.	Default = 20 days, to account for outages and clarifications of not acknowledged Billing details
TIME1_MIN	The minimum time required to acknowledge the received PaymentClaimAdu in a PAYMENTCLAIM transaction.	Default = 0 seconds, to allow of immediate rejection in syntax error case
TIME1_MAX	The maximum time required to acknowledge the received PaymentClaimAdu in a PAYMENTCLAIM transaction.	Default = 6 hours, to ensure that the processing of AckAdu can be completed before the next cycle

Table 5 Payment Claims Timings

2.4.3 Additional Requirements

No additional requirements

2.5 Exception lists

This section describes the process and requirements for Billing Details exchange.

2.5.1 Business Context

EETS TSP lists are used to support the enforcement process or to identify EETS TSPs which shall be notified in case a business process demands a notification. TSP lists are exchanged in accordance with the ISO12855:2025 message structure. Due to the expected list size of TSP Lists, full lists are only exchanged during night times. The system supports the following list types:

- Access list: A list containing all users the TSP has a contract with and for which the TSP guarantees toll payment. The LPN is a mandatory data field in this list. The access list needs to be accessible for business process.
- Block list: A list containing all users the TSP has a contract with, but for which the guarantee for toll payment has temporarily been suspended. The LPN is a mandatory data field in this list. A user can only be removed from a block list explicitly (not via adding to the access list).

Block and access list are not mutually exclusive. The system supports only full list exchange. To limit the size of the lists, only the following minimal information is exchanged:

- list type
- list version: needs to be incremented, is unique in combination with list type
- list validity start
- for each list entry:
 - License Plate Number
 - Obe identifier
 - Payment Means (mandatory due to profile)
 - reason:
 - for access lists only following reasons are supported.
 - 8: userOnAccessList
 - 34: accessListChangedLicencePlate
 - 35: accessListChangedObu
 - for block lists only following reasons are supported:
 - 0: not to be disclosed

A user on a list is considered to be on the list until the user is removed from the list at the next possible list exchange.

2.5.2 Communication Process

The list exchange process starts with the exchange Exception List (EL) ADUs compiled by the EETS TSP. The system receives Exception List ADUs packaged in Info Exchange messages transmitted at agreed time window (*full exception list exchange window*) and at agreed triggers for each supported list type (*access list exchange trigger*, *block list exchange trigger*) from accredited EETS TSP. Due to the expected EL size, the system only allows the transmission of one EL ADU within an Info Exchange message. Additionally, EL ADUs are discriminated by exception list type. Only one EL type can be exchanged at a time (for example Access Full List or Block Full List). After successful syntactical and semantic validation of the EL ADUs, the system response with an asynchronous Acknowledgement ADU confirming the reception and processing of the EL ADU. In case of errors encountered during validation, the system rejects the EL ADU with a meaningful error code.

Internal

The validations performed include but are not limited to:

- syntax error (apduNotOk)
- syntax error on EL ADU (apduNotOk)
- exception list type rejected, rejection reason code 401

Only successfully acknowledge EL ADUs will be subject to charge evaluation. The exchange follows the communication and timings as defined in ISO 16986.

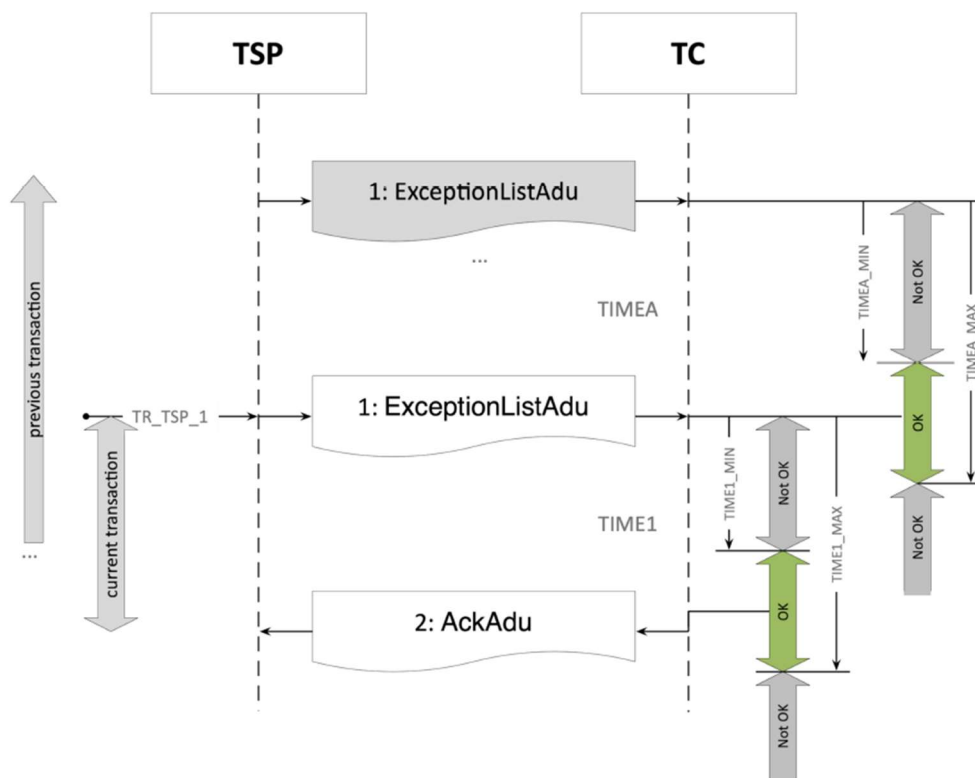


Figure 7 Exception List Exchange

The following timings are specified according to the Interoperability Profile

Trigger/Timing	Meaning	Default
TR_TSP_1	This trigger shall be initiated within the time interval defined by TIMEA_MIN and TIMEA_MAX.	access list exchange trigger: once daily at agreed time e.g.: daily at 2:10 (local time) block list exchange trigger: once daily at agreed time, e.g.: daily at 2:00 (local time)
TIMEA_MIN	The minimum time between sending of two ExceptionListAdus in two consecutive EXCEPTIONSLIST transactions	Default = 10 minutes
TIMEA_MAX	The maximum time allowed between sending an ExceptionListAdu in two	Default = 48 hours, constraint by the <i>full exception list exchange window</i>

Trigger/Timing	Meaning	Default
	consecutive EXCEPTIONLIST transactions.	To take into account operational issues during sending at trigger time.
TIME1_MIN	The minimum time required to acknowledge the provided ExceptionListAdu by sending an AckAdu.	Default = 0 seconds to allow of immediate rejection in syntax error case
TIME1_MAX	The maximum time allowed to acknowledge the provided ExceptionListAdu by sending an AckAdu.	Default = 48 h. To take into account operational procedures in case of maintenance or unplanned downtime. In normal operations the response should be within a few (10) seconds.

Table 6 Exception List Timings

2.5.3 Error Handling

- In case of transmission error the TSP shall retry sending the corresponding list.
- In case of rejected APDU the transmission is stopped and re-sending is executed according to bilateral agreement. The resend may happen at different times than the agreed trigger.

2.5.4 Additional Requirements

- In case a user is on the block list, the EETS TSP shall not send Toll Declaration ADUs for this user as long as the user is on the block list.
- In case a user is on the access list, the EETS TSP is expected to send Toll Declaration ADUs, unless the user is included in the block list as well.
- The solution expects that each entry on a list is already valid, thus validity start shall indicate validity at time of transmission.
- In case a not expected reason is provided as reason code, the system assumes that the reason code is erroneous but accepts the list entry.
- The EETS TSP is responsible to keep the lists up to date in accordance with trigger (once daily).
- The solution does not support chunking of full lists

2.6 Acknowledgements

This section describes the process and requirements for Acknowledgement exchange.

2.6.1 Business Context

The solution exchanges Acknowledgements (ACK) ADUs in order to complete a business process. The ACK ADUs contain the business information about the acceptance or rejection of the referenced ADU. The ACK ADU is can be used to signal complete acceptance or rejection of an entire APDU or to inform only individual ADU(s) rejection, providing additional reasons. In general the following logic holds:

Field	Value and Usage
apduAckCode	• If the apduAckCode is apduOk, and the issues structure is omitted, or transported empty, then all ADUs are accepted. • If the apduAckCode is apduOK, but the issues structure is present, and it contains issues, then the issues listed with an issueCode are rejected. • If the apduAckCode is not apduOK then the whole message is rejected, including all of its ADUs.
issues	this object identifies the specific ADU identifiers in case of partial rejection.
issueCode	Must be set to one of the values as supported in the corresponding business context

2.6.2 Communication Process

The communication of Ack ADUs can be triggered by both parties, TC and EETS TSP. Whoever creates the ACK ADUs sends it immediately to the receiving entity. In line with ISO 16986 profile no timings or trigger restrictions are specified.

2.6.3 Additional Requirements

- The solution expects to receive asynchronous ACK messages. The TSP shall not send in synchronous HTTP response the corresponding ACK ADU.
- TC and TSP solution may send only one ACK ADU in a message, array of ACK ADUs in an info exchange is not supported.
- the TC solution may send a synchronous ACK messages in case of unprocessable content.

3 General Requirements, Obligations and Considerations

This section describes general requirements and obligations that EETS TSPs are expected to fulfill as well as considerations EETS TSPs need to take into account.

3.1 Security Aspects

The following table gives an overview of the layered security setup:

Layer	What It Protects	When It Protects	Why It Matters
TLS	Transport confidentiality & integrity	During every request	Prevents eavesdropping and tampering in transit
OAuth 2.0 + ClientId + Client Secret	Client authentication	When requesting tokens	Ensures only trusted clients can obtain JWTs
JWT Access Token	Authorization & identity	On every API call	Enforces permissions and validates caller identity
Payload Signing	Message integrity	On every signed request	Ensures payload cannot be altered without detection

Table 7 Layered Security Architecture

When a client interacts with the system, security is enforced in layered stages. Each mechanism protects a different part of the communication flow. TLS provides encrypted transport so data cannot be intercepted or modified in transit. The identity verification step happens when the client presents its client Id and secret to the OAuth 2.0 token endpoint, proving it is an authorized application and receiving a short-lived JWT in return. The JWT then becomes the client's access token for executing business needs. JWT being validated on every request to ensure the caller is authenticated and authorized. JWTs expire quickly to limit exposure. Finally, payload signing adds message-level integrity: the client signs the request body with its private key, and the system verifies the signature using the corresponding public key, ensuring the payload itself has not been altered. Together, these layers form a defense-in-depth model that secures the transport, authenticates the client, authorizes each request, maintains long-lived sessions safely, and guarantees that the payload remains intact.

- **TLS** Protects the *transport channel* by encrypting data in transit and ensuring the client is talking to the legitimate server. It prevents eavesdropping and tampering during transmission but does not authenticate the client or authorize API access.
- **OAuth 2.0 + clientId and secret** Protects the *token issuance stage*. The API key identifies the client application and allows it to obtain a JWT. This ensures only registered and trusted clients can request tokens.
- **JWT Access Token** Protects *each API request*. The JWT carries identity and authorization claims and is validated by your API gateway or backend on every call. It ensures the caller is authenticated and allowed to perform the requested action.

- **Payload Signing** Protects *message integrity*. The client signs the payload with its private key, and the server verifies the signature using the client's public key. This ensures the payload has not been altered, even if the transport layer is secure.

The following diagram gives an overview of the security setup.

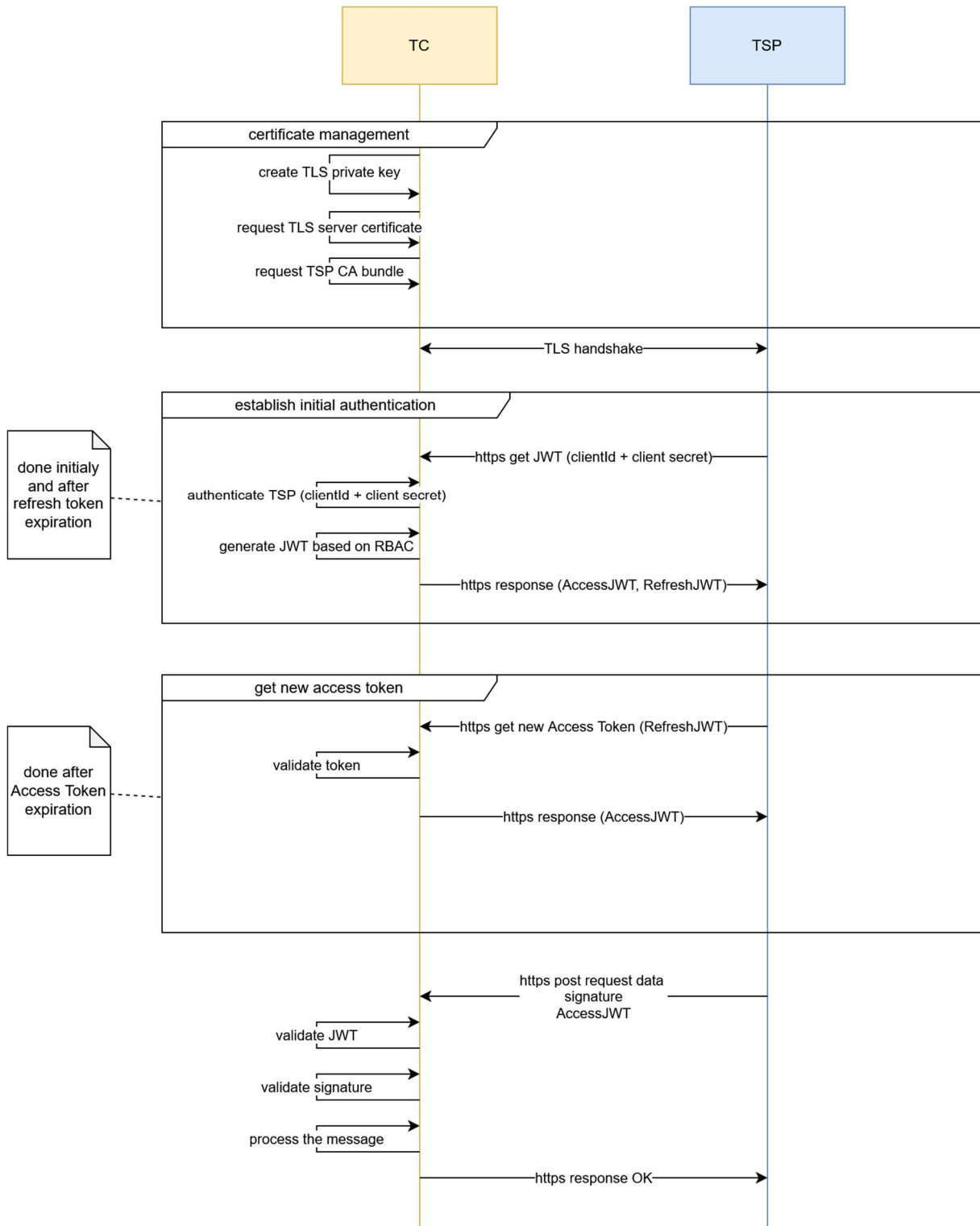


Figure 8 Security Communication Flow

The selected security architecture represents a state of the art architecture for IT systems. In case new threats are discovered or other requirements require the update of the security schemes the clients are obliged to support the updated scheme.

3.1.1 Trust object exchange

The system establishes initial trust by issuing TSP and TC signing and communication certificates and client credentials. Exchange of trust objects is manual and will be done between TC and EETS TSP security officers.

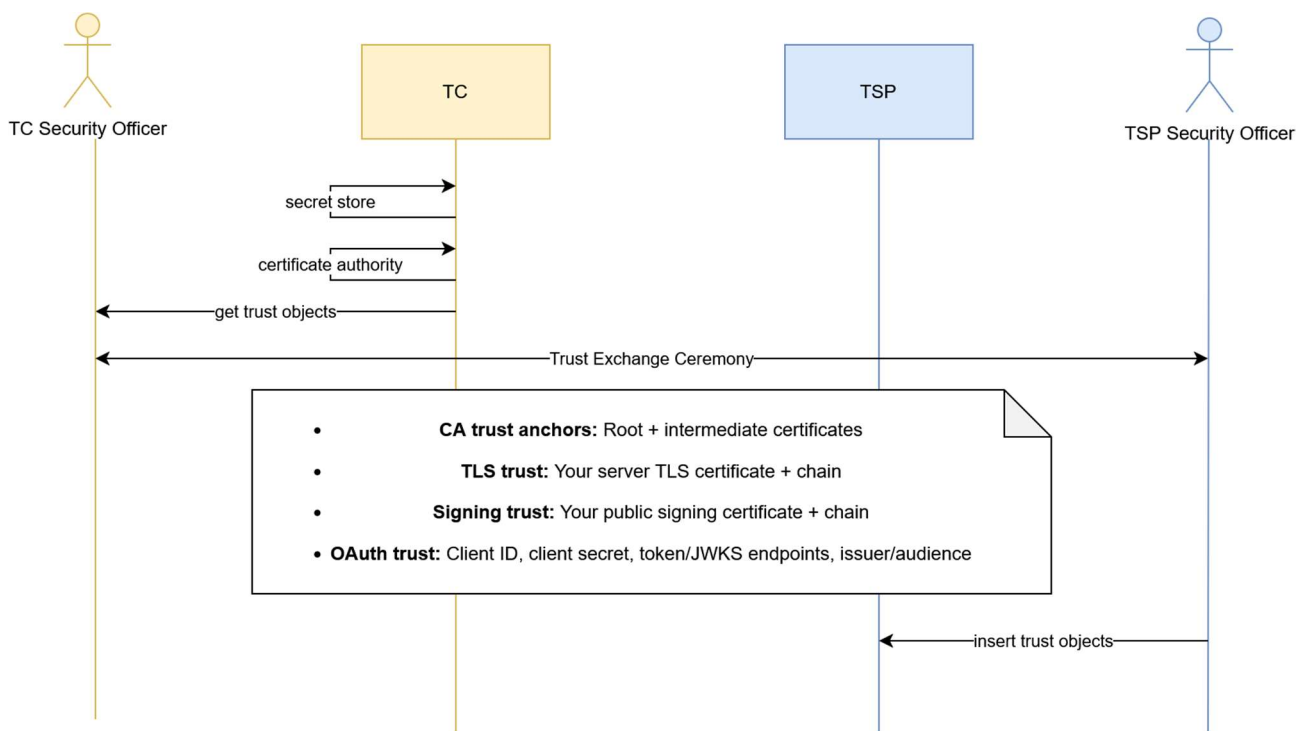


Figure 9 Trust Object Exchange

3.2 Privacy

- The EETS Provider shall ensure compliance with current Directive 95/46/EC (General Data Protection Regulation) and Directive 2002/58/EC concerning the processing of personal data and the protection of privacy and future regulations.
- The EETS Provider shall ensure that the data processed under this contract are hosted within the European Union or any other country having a compliance agreement with the EU.
- The EETS Provider supports the Toll Charger and other Authorities in the fulfillment of Data Protection Legislation.

3.3 General Requirements

The timings and other configurations mentioned are considered configurations and might change according to the needs of the system, for example due to performance considerations. It is expected that TSP solution can adapt to changes required. The system adheres to data minimization principle, meaning it is intended to not collect more data than needed. This requirement may be in contradiction with the ISO 16986 and ISO 12855 standards prescribing mandatory fields, not required by the system. This circumstance is especially prominent in the exchange of vehicle description data. As such the system may receive data from EETS TSP to comply to the standard but may discard them if not needed and in return provide only default values.

EETS TSPs are responsible for the correctness of the vehicle characteristics provided in the course of the data exchange.

4 Configurations and Definitions

This section manages the configuration and definitions applicable to the project.

4.1 Specific configurations

4.1.1 APCI Object

4.1.1.1 Example Message APCI Structure

The following table gives an overview of the APCI object structure used, ordered alphabetically.

APCI	Description
aidIdentifier	Application Identifier specifying the ISO 12855 protocol version
apduDate	APDU creation timestamp in GeneralizedTime format
apduIdentifier	Unique APDU message identifier assigned by the originator for message tracking and acknowledgement correlation
apduOriginator	Entity that created the APDU content (toll charger or toll service provider)
.countryCode	country code of the apduOriginator
.providerIdentifier	provider identifier of the apduOriginator
informationRecipientId	Entity responsible for processing the APDU content (toll charger or toll service provider)
.countryCode	country code of the informationRecipient
.providerIdentifier	provider identifier of the informationRecipient
informationSenderId	Entity physically transmitting the APDU message (may differ from originator in intermediary scenarios)
.countryCode	country code of the information sender
.providerIdentifier	provider identifier of the information sender
inResponseToApduId	Optional reference to a previous APDU identifier. Used in Ack ADUs
.apduIdentifier	dentifier of the related APDU message being referenced. Used in Ack ADUs
.apduOriginator	Originator of the related APDU message being referenced. Used in Ack ADUs
.countryCode	country code of the apdu originator. Used in Ack ADUs
.providerIdentifier	provider identifier of the apdu originator. Used in Ack ADUs

Table 8 EETS APCI object

4.1.2 Toll Declaration

4.1.2.1 Configurations

Configuration option	Value	Owner
<i>position storing interval</i>	1 position every 10 seconds	EETS TSP
<i>position reporting frequency</i>	every 10 minutes	EETS TSP
<i>toll domain area</i>	the country border of Lithuania extended by a 250 meter corridor	EETS TSP
<i>Toll Declaration ADUs</i>	contains list of positions based on position storing interval and position reporting frequency.	EETS TSP
	Comment: Prescribed configuration is expected content. It is acknowledged that depending on driving situation, stand still, or end of a trip the number of positions inside a TD may be reduced or position storing intervals may be skipped.	
<i>maximum number of TD ADUs</i>	50	EETS TSP
<i>charging relevant vehicle attributes</i>	Vehicle Description ○ specificCharacteristics ▪ descriptiveCharacteristics ▪ engineCharacteristics ▪ environmentalCharacteristics ◆ euroValue ▪ futureCharacteristics ◆ co2Class ○ vehicleAxles ▪ vehicleAxlesNumber ◆ numberOfAxles ○ tractorAxles ○ vehicleClass ○ weightLimits	EETS TSP

Configuration option	Value	Owner
	▪ vehicleTrainMaximumWeight	

Table 9 EETS TD configurations

4.1.2.2 Example Message Structure

The following table gives an overview of the TD ADU message structure, ordered alphabetically.

TollDeclarationADU.	Description
[0].actionCode	used to specify the action of the sender. Value 0 (send) is allowed
[0].actionRequest	the required action to perform. Value 5 (process) is allowed.
[0].adulIdentifier	the unique identifier of the adu
[0].chargeReport	charge report object to inform charge data. only 1 item is allowed
[0].chargeReportCounter	incremental enumeration of the charge report per Obe
[0].obeld	obe identifier object
.equipmentObuld	unique equipmentId for a manufacturer and customer, according to ISO 15509, 1+4 Bytes, first byte length
.manufacturerId	identifier of the manufacturer of the device
[0].paymentMeans	the object to inform about the payment means
.paymentMeansExpiryDate	expiry date of the payment means
.day	expiry date of the payment means, day of expiry
.month	expiry date of the payment means, month of expiry
.year	expiry date of the payment means, year of expiry
.paymentMeansUsageControl	TSP specific usage control of the payment means
.personalAccountNumber	personal account number of the payment means.
[0].serviceProviderContract	TSP contract identifier of the user in questions
.contextVersion	TSP specific usage, not interpreted by the solution
.contractProvider	TSP identifier
.countryCode	country code of the TSP as accredited
.providerIdentifier	provider identifier of the TSP as accredited
.typeOfContract	TSP specific usage, not interpreted by the solution

TollDeclarationADU.	Description
[0].tollContextOperator	operator of the Toll Charger
.countryCode	country code of the toll charger, fixed to LT
.providerIdentifier	provider identifier of the toll charger, fixed to (To Be Defined)
[0].usageStatementList	list of usage statements
[0].listOfRawUsageData	list of raw usage data
.rawDataList	list of positions and meta information
[0].additionalGnssData	GNSS meta information required to accurately map match, includes information such as speed, course, etc.
[0].measuredPosition	details on the location measured by GNSS chip
.altitude	altitude of the measured location
.latitude	latitude of the measured location
.longitude	longitude of the measured location
[0].timeWhenMeasured	UTC time when the measured location was recorded
.vehicleDescription	information about the vehicle characteristics
.specificCharacteristics	object to inform specific characteristics
.descriptiveCharacteristics	descriptive characteristics used to inform about agricultural use or not
.engineCharacteristics	fuel / engine type used by the vehicle, e.g.: hydrogen, battery
.environmentalCharacteristics	object to inform environmental characteristics
.euroValue	euro value of the vehicle, "no entry" in case not available or not known
.futureCharacteristics	object to inform future characteristics
.co2Class	co2 emission class of the vehicle, "no entry" in case not available or not known
.vehicleAxles	object to inform vehicle axles
.vehicleAxlesNumber	
.numberOfAxles	
.tractorAxles	number of tractor axles, needs to be 2 or higher.
.vehicleClass	vehicle class indicating the UNECE vehicle category as defined in ISO 15509

TollDeclarationADU.	Description
.weightLimits	object to inform weight limits
.vehicleTrainMaximumWeight	the maximum permissible weight of the whole vehicle train (including trailer)
[0].tollContextOperator	operator of the Toll Charger
.countryCode	country code of the toll charger, fixed to LT
.providerIdentifier	provider identifier of the toll charger, fixed to (To Be Defined)
[0].usageStatementId	unique identifier of the usage statement within the CR
[0].vehicleLpNr	license plate number object
.alphabetIndicator	alphabet indicator used to transmit the LPN. value utf8 is required
.countryCode	two letter country code identifying the country the vehicle is registered in.
.licencePlateNumber	plain text license plate number following restrictions apply: latin characters are allowed A to Z and numbers 0 to 9, no special characters, blanks, hyphens, etc are allowed minimum length 1 maximum length 10
[0].tollDeclarationId	Unique toll declaration identifier within the issuing toll service provider
.declarationId	Unique declaration number within the issuing toll service provider
.issuerId	Toll service provider identifier issuing this toll declaration
.countryCode	country code of the TSP as accredited
.providerIdentifier	provider identifier of the TSP as accredited

Table 10 EETS TD object

4.1.3 Billing Detail

4.1.3.1 Configurations

Configuration option	Value	Owner	Comment
<i>billing detail aggregation period</i>	every 24 h	TC	

Table 11 EETS BD configurations

4.1.3.2 Example Message Structure

The following table gives an overview of the BD ADU message structure, ordered alphabetically.

BillingDetailsADU.	Description
[0].actionCode	It is used to specify the intended action associated with the billingdetail. Only send is allowed
[0].adulIdentifier	the identifier of the billing detail
[0].billingDetailsAmount	information on the billing details amount
.paymentFeeAmount	the total amount of the biling detail
.paymentFeeUnit	the unit of the billing details amount in currency and unit e.g.; EUR in Cents
[0].period	information on the period covered by the Billing Detail.
[0].period.beginOfPeriod	the begin of the period covered by the BD
[0].period.endOfPeriod	the end of the period covered by the BD
[0].tollContextOperator	the toll charger identifier
.countryCode	the country code of the toll charger
.providerIdentifier	the provider identifier of the toll charger
[0].usage	information on the usage
.tollContextName	the name of the toll context, string configuration
.usageList	entry of a usage statement
[0].usageListEntry	information on a usage list entry, contains either forSectionedRoads element or freeTextDetail element
.forSectionedRoads	information on usage for a sectioned road
.appliedLocalVehicleClass	information on the local vehicle class used
.appliedLocalVehicleClassId	the local vehicle class of the vehicle subject to charge

BillingDetailsADU.					Description
				.appliedTariffTableVersion	information on the tariff table version used
				.appliedTimeClass	information of the time class used
				.appliedTimeClassId	the time class identifier applied during rating
				.appliedUserClass	information of the user class identified
				.appliedUserClassId	fixed value to 0 until more business logic is available
				.howManyTimes	how often each section was used fixed value set to 1
				.usageDistance	information on the distance driven/applied
				.distanceUnit	the unit of the distance covered, e.g.: kilometers
				.distanceValue	the total distance covered by the charge object
				.usageExternalCosts	the external cost entry
				[0].externalCostType	the type of the external costs, currently supported is Co2 (4).
				[0].externalCostValue	information on the external cost fee
				.paymentFeeAmount	the fee of the external costs, a share of the overall costs
				.paymentFeeUnit	the unit of the external cost fee e.g.: EUR in Cents
				.usedSections	
				[0].appliedLocationClass	information on the location class used
				.appliedLocationClassId	the location class of the road belonging to the detected charge object
				[0].usedChargeObjectId	
				.chargeObjectDesignation	the identifier of the detected charge object
				.vehicleDescription	information about the vehicle characteristics
				.specificCharacteristics	object to inform specific characteristics
				.descriptiveCharacteristics	descriptive characteristics used to inform about agricultural use or not
				.engineCharacteristics	fuel / engine type used by the vehicle, e.g.: hydrogen, battery
				.environmentalCharacteristics	object to inform environmental characteristics
				.euroValue	euro value of the vehicle, "no entry" in case not available or not known

BillingDetailsADU.				Description
			.futureCharacteristics	object to inform future characteristics
			.co2Class	co2 emission class of the vehicle, "no entry" in case not available or not known
			.vehicleAxles	object to inform vehicle axles
			.vehicleAxlesNumber	
			.numberOfAxles	
			.tractorAxles	number of tractor axles, needs to be 2 or higher.
			.vehicleClass	vehicle class indicating the UNECE vehicle category as defined in ISO 15509
			.weightLimits	object to inform weight limits
			.vehicleTrainMaximumWeight	the maximum permissible weight of the whole vehicle train (including trailer)
			.freeTextDetail	object only used according to bilateral agreement for needed adjustments
			.textDetail	
			.textLanguage	language of the text, default 1 - english
			.text	free text detail as set by the agent e.g.: refBDId, as per agreed on 1.1.2027
			.usageExternalCosts	
			.[0]externalCostType	the type of the external costs, currently supported is Co2 (4).
			.[0]externalCostValue	information on the external cost fee
			.paymentFeeAmount	the fee of the external costs, a share of the overall costs
			.paymentFeeUnit	the unit of the external cost fee e.g.: EUR in Cents
			[0].userId	information on the user
			.licencePlateNumber	information on the licenseplate number
			.alphabetIndicator	the alphabet indicator, should always be UTF-8
			.countryCode	country code of the license plate
			.licencePlateNumber	plain text license plate number following restrictions apply:

BillingDetailsADU.		Description
		latin characters are allowed A to Z and numbers 0 to 9, no special characters, blanks, hyphens, etc are allowed minimum length 1 maximum length 10
	.obeld	Identifier of the device
	.equipmentObuld	unique equipmentId for a manufacturer and customer, according to ISO 15509, 1+4 Bytes, first byte length
	.manufacturerId	identifier of the manufacturer of the device

Table 12 EETS BD object

Payment Claim Configurations

Configuration option	Value	Owner	Comment
payment claim aggregation period	every 14 days	TC	
maximum number of billing details	5000	TC	

Table 13 EETS PC configurations

4.1.3.3 Example Message Structure

The following table gives an overview of the PC ADU message structure, ordered alphabetically.

PaymentClaimADU.		Description
	[0].actionCode	It is used to specify the intended action associated with the payment claim. Only send is allowed
	[0].adulIdentifier	identifier of the payment claim
	[0].endDateTime	the end of the period the payment claim belongs to
	[0].paymentClaimAmount	information on the amount of the payment claim
	.paymentFeeAmount	the amount of the payment claim without VAT
	.paymentFeeUnit	the currency and unit e.g.: EUR in Cents
	[0].paymentClaimStatus	the status of the payment claim, first version if created, amended version if resent after a change
	[0].paymentClaimDetails	object only used in case of adjustment
	. paymentDetailText	free text as bilaterally agreed, should contain original PC ID as a reference

PaymentClaimADU.	Description
[0].referenceDetailsList	array of ADUs referenced
[0].referencedBillingDetailsInfo	list of referenced billing details
[0].issuerId	issuer identifier
.countryCode	country code of the issuer
.providerIdentifier	provider identifier of the issuer
.billingDetailsNum	the BD identifier referenced.
[0].startDateTime	the begin of the payment claim aggregation period
[0].typeOfContent	the type of content of the payment claim, will be 0 – toll or 2 - tollCredit

Table 14 EETS PC object

4.1.4 Exception List Configurations

Configuration option	Value	Owner	Comment
full exception list exchange window	daily between 01:00 and 04:00	EETS TSP	Mutally agreed between both parties.
access list exchange trigger	once daily at agreed time e.g.: daily at 02:00 (local time)	EETS TSP	Mutally agreed between both parties.
block list exchange trigger	once daily at agreed time e.g.: daily at 02:10 (local time)	EETS TSP	Mutally agreed between both parties.

Table 15 EETS EL configurations

4.1.4.1 Example Message Structure

The following table gives an overview of the EL ADU message structure, ordered alphabetically.

ExceptionListADU.	Description
[0].actionCode	used to specify the action of the sender. Value 0 (send) is allowed
[0].actionRequest	the required action to perform. Value 5 (process) is allowed.
[0].aduIdentifier	the unique identifier of the adu
[0].exceptionListEntries	object to inform the entries of the exception list
[0].actionRequested	Requested action for this exception entry (3 = accept, 4 = removeObe)

ExceptionListADU.	Description
[0].reasonCode	List of reason codes explaining why the user is on this exception list • 0 = notToBeDisclosed, • 8 = userOnAccessList, • 34 = accessListChangedLicencePlate, • 35 = accessListChangedObu
[0].userId	information on the user
.licencePlateNumber	information on the licenseplate number
.alphabetIndicator	the alphabet indicator, should always be UTF-8
.countryCode	country code of the license plate
.licencePlateNumber	plain text license plate number following restrictions apply: latin characters are allowed A to Z and numbers 0 to 9, no special characters, blanks, hyphens, etc are allowed minimum length 1 maximum length 10
.obeld	Identifier of the device
.equipmentObuld	unique equipmentId for a manufacturer and customer, according to ISO 15509, 1+4 Bytes, first byte length
.manufacturerId	identifier of the manufacturer of the device
.pan	personal account number of the payment means.
[0].exceptionListType	Exception list category blockListFull (1), accessListFull (2)
[0].exceptionListVersion	Sequential version number incremented with each exception list update
[0].exceptionValidityStart	Date and time when this exception list becomes valid (GeneralizedTime format per ASN.1)

Table 16 EETS EL object

4.1.5 Acknowledgement Configurations

no specific configurations for acknowledgements exist

4.1.5.1 Example Message ACK ADU Structure

The following table gives an overview of the ACK ADU object structure, ordered alphabetically.

AcknowledgementADU.	Description
[0].actionCode	used to specify the action of the sender. Value 0 (send) is allowed
[0].actionRequest	the required action to perform. Value 5 (process) is allowed.
[0].apduAckCode	APDU-level acknowledgement status, if apduAckCode = 2 it indicates acceptance (full or partial depending on issue structure) if apduAckCode = !2 indicates rejection
[0].apduIdentifier	APDU message identifier being acknowledged
[0].issues	Details on issues, only used in case of apduAckCode = 1.
[0].issueAdulIdentifier	ADU identifier of the ADU containing this issue
[0].issueLocation	XPath expression or field path identifying the location of the issue within the ADU
[0].issueContent	Detailed description of the issue found.
[0].issueCode	issue codes as defined in the interface specification.

Table 17 EETS ACK object

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