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**Data exchange for ticket check and
after sales operations with electronic information
(barcodes, other security certificates)
(This leaflet is to be published only in English)**



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Summary

A ticket contains information about the contract between the customer(s) and the carrier(s). This ticket can hold additional information, indicating a modification of the contract (or its status). E.g. when a train staff member marks the ticket as being used, he puts a stamp or a punch on it.

If the ticket can be physically copied or reprinted (e.g. home-printed tickets) or if there is no physical ticket at all (paperless mechanisms, sms-tickets, ...), printing a stamp or punching a hole is useless. In that case, an electronic equivalent has to be defined. These electronic equivalents are messages, containing all necessary information to be shared with all necessary parties.

This standard defines the necessary data in the messages, in case of:

- a ticket check (ticket is used or partially used),
- an endorsement/annotation (if the carrier was not able to fulfil a part of the contract),
- an after sales operation (when the ticket is cancelled/modified at a desk).

Since some data can be optional, bilateral agreements have to be made, defining which info of the list, defined in the standard as being optional, needs to be shared.

1 - Introduction

1.1 - Extra info put on tickets following UIC Leaflet 918-2 (after the ticket was issued)

An ATB-ticket (see [List of abbreviations - page 27](#)) (classic paper ticket) contains information about the contract between one or more customers and one or more carriers, printed by the issuer/distributor (see [Glossary - page 28](#)). This contract - or the status of it - can be modified before, during or after the trip.

All extra information that is linked to modifications of the status of the contract (check, endorsement, ...), will be printed or written on this ticket. This is done to inform all concerned parties about these modifications.

There are 3 actions that generate extra information to print on the ticket: Ticket check, endorsement/annotation (see [Glossary - page 28](#)) or after sales operations.

1.2 - Ticket Check

When a paper ticket (e.g. an ATB-ticket) is checked, (ticket) clippers or punches are used to obliterate this ticket by marking it as used (stamp, hole, see GTV-CIT, Working Manual I - see Bibliography - [page 30](#)).

In fact, the punch that is put on or in the ticket by the clipper can contain train number, date of obliteration (see [Glossary - page 28](#)) and/or some other information. This information is very important for the further controls during the journey and after sales operations: the condition for refund is that the ticket hasn't been used or has been used only partially. Refund will be given only if the ticket doesn't contain any marks of obliteration at all or only up to the point where the passenger (see [Glossary - page 28](#)) interrupted his/her journey definitively. A compensation for a delay of a train depends often on the possibility to prove the presence on that train by obliteration mark.

Furthermore, certain after-sales operations (see [Glossary - page 28](#)) (e.g. refunding) can only be executed by the issuer (under the commercial agreements between RU acting as carrier and/or distributor) with specific conditions. As mentioned, paper tickets will only be refunded if there is proof of non-usage (no obliteration, punch or only as far as the journey has been executed). For home-printed tickets, also the GTV-CIT foresees that IRTHP-tickets (see [List of abbreviations - page 27](#)) are to be punched like traditional paper tickets, the fact remains that such tickets can be copied or reprinted easily.

1.3 - Endorsements and annotations

In case of an endorsement when a passenger presents a traditional paper ticket (e.g. ATB), the railway undertaking staff member puts information about the endorsement on the ticket (e.g. train was cancelled, no seat available, ...).

The same is done in case the train staff member wants to share information with his/her colleagues about the passenger/trip/ticket combination (e.g. because of delays on our railway system, the passenger was allowed to take this specific train without paying a supplement).

1.4 - After Sales Operations

A traditional ticket on which after sales operations are conducted (e.g. refunding), will be either kept at the desk (in case of a cancellation) or void (in case of issuing a boarding pass) and returned to the passenger, together with an extra ticket. This extra ticket is only valid if presented, together with the original one.

1.5 - Problems with this extra info in case of home-printed tickets or paperless ticketing

For tickets issued following the *UIC Leaflet 918-3* (see [Bibliography - page 30](#)) or paperless tickets (e-tickets - see [Glossary - page 28](#)), punching, printing, writing are actions that, if conducted on such tickets, are not very useful since a home-printed ticket can be easily reprinted, and a paperless ticket is dematerialised by definition. So something similar must be created to cover the basic need to exchange information between RUs about a check, an endorsement or an aftersales operation on home-printed or paperless tickets.

This mechanism can also be useful for tickets, following the *UIC Leaflet 918-2, annexe C* (see [Bibliography - page 30](#)) (2D-barcode - see [List of abbreviations - page 27](#) on ATB tickets), as it is possible to collect the info of the ticket in an automated way from the barcode. In this way, statistics about usage of the tickets, about fraud, ... can be easily generated. The advantage of using the 2D barcode on the *UIC Leaflet 918-2* based ticket is that the security elements are no longer only in the paper that is used, but also in data on a server, making it almost impossible to undo the punch of a ticket.

The only solution in case of tickets where the contract can be multiplied easily (e.g. home-printed tickets, e-tickets on different data media, RFID- or NFC-tickets - see [List of abbreviations - page 27](#), ...) or that are dematerialised (paperless ticketing) is to store somewhere some data concerning the ticket, allowing authorized people to check or modify the status of the ticket via standard electronic messages to the distributor and all concerned TCOs (see [List of abbreviations - page 27](#)). These messages, generated during each operation that is conducted on the ticket, should contain all relevant information of the concerned operation.

In any case, to create such messages, the ticket should be read or, in case of a dematerialised ticket (see [Glossary - page 28](#)), downloaded from a server or from a list on a portable device of the train staff member, since this is the only way to generate the right info about distributor code, distributor reference, ... of the ticket.

2 - Standardisation Work: overview of all actions to be covered

2.1 - Home-printed and paperless tickets

Tickets issued according to the *UIC Leaflet 918-3* or the *UIC Leaflet 918-2, Annexe C*, contain a lot of information that can be easily read with an appropriate device (e.g. a barcode scanner).

The latter ones, i.e. traditional paper tickets with 2D-barcodes (see [List of abbreviations - page 27](#)), will remain unchanged, unless stated otherwise in bi- or multilateral agreements.

This standard concentrates on ticket control and after sales procedures for IRTHP and all types of e-tickets, including the manifest on list (MoL) (see [Glossary - page 28](#)), which is a *UIC Leaflet 918-3* CKC-type (see [List of abbreviations - page 27](#)) of ticket.

The information collected during the control and in the case of after sales action can be used to generate automatically a lot of additional information (based on the data stored in the electronic information area of the ticket).

The ticket information stored e.g. in one of the barcodes or in a central database record, can be memorised in a ticket controlling device when doing the check on board of a train. This information can be combined with additional information about the time/date this check was carried out, the train where the ticket was checked, as well as the actions the staff member of the TCO did when checking with or without an additional operation on the data this ticket. In a second step, the TCO can centralise this information by collecting the data from the devices and, as a third step, send the specific information to the appropriate carrier and distributor. It could do all in one step in real-time during the check, using e.g. mobile phone technology.

In case of an endorsement, the information to be exchanged is the same information that the train staff member would write down on a traditional ticket in case of the same endorsement with a traditional paper ticket.

If the customer wants a proof that the endorsement has been made, since he/she has no more the writing on paper, a possibility could be that it can be printed from the internet, at a desk, or directly by the train manager device.

The exchange of the data concerning this information should be standardised (made with standard "building bricks"), to avoid that for every combination TCO/distributor a new kind of message as well as handling procedures are to be developed. The messages will be defined in bi- or multilateral agreements between distributor(s) and TCO(s), since their content (which building bricks that are used) depends strongly on the conditions of use of the tickets (refundable or not, exchangeable or not, ...). The data that is exchanged also depends very much on the hardware used to check the tickets: online connection or not, sophisticated bar-code scanner or not, etc.).

A list of standard "building bricks" will be defined in the leaflet, giving the RUs the possibility to combine them, according to their technical possibilities and commercial needs.

2.2 - Action 1: Electronic Ticket check by a TCO

When a passenger is travelling, using a home-printed ticket, an ATB-ticket with a barcode, an e-ticket (see Glossary - page 28), or another kind of paperless ticket, these tickets hold digital information.

When a TCO staff member checks the ticket, an electronic equivalent of the punch's information made by a clipper for paper tickets will be generated. This e-nip contains among others the electronic data of the ticket as well as the time/place the check took place and the action the staff member conducted (in most cases, the action will be "ticket checked - OK").

As this combined information (ticket data + data on action(s) taken) are useful for the distributor (RU) and issuer which delivered the data or/and sold the ticket, a mechanism has to be foreseen to exchange the data between the TCO and the distributor/issuer/other TCO and carriers. This is important especially in case of fraud, when using a closed system (see Glossary - page 28) (a system where the whole life-cycle of the ticket is stored, giving the possibility at every moment to know the exact status of the contract. A system where one can not retrieve from the system if the ticket has been used and if so, where and when, is an open system - see Glossary - page 28). If the ticket is dematerialised, so that a punch is worthless, the system should be closed if the tickets can be exchangeable or refundable), for any after sales operation, e.g. refund, exchange, annulations/re-booking, compensation and refund in case of delays, etc., the list of necessary elements to be exchanged as well as their structure has to be foreseen, too.

(Today, using paper tickets, this data exchange is done by the passenger him-/herself, as he/she holds the ticket all the time, this ticket contains the additional information and this ticket is the evidence of his/her contract and its entire or partial execution.)

If a TCO checks a passenger without a valid ticket, with a tampered or a counterfeit ticket, or with a ticket which doesn't cover the actual journey undertaken, it is useful to distribute this information also to the other TCOs involved in the contract of carriage (see Glossary - page 28) so that they too can take more appropriate action in case of recidivism.

2.3 - Action 2: Electronic endorsements and other annotations (by TCO or by Issuer)

The more the use of IRTHP and e-ticketing is extended the more the need of electronic endorsements will arise. Whilst in IRTHP, something still can be written on the paper, for pure e-tickets and contracts of carriage as Manifest on List (MoL) a link to the initial data elements has to be foreseen in the data file in the hand of the passenger or in the file stored in the database of the distributor.

In this perspective, this standard also foresees the messages to be exchanged for endorsements. They are laid down in CIT's Passenger Traffic Manual (GTV-CIT), Working sheet I and concern the following situations:

- the passenger/A passenger (in case of a group) abandons journey before travelling - this is described in "after sales operations" and the cancellation is done at an issuing office (e.g. in the station of departure);
- the passenger/A passenger (in case of a group) abandons journey during trip;
- a ticket is not used from station X to station Y;
- the passenger(s) travelled in class/service category U from station X to station Y.

The information that is sent about the endorsement, does not give any rights to the passenger. A refund will only be accepted if all conditions are fulfilled.

Annotations are messages, linked to a specific ticket, going from one TCO to another TCO. On a paper ticket, this info is written on the ticket itself by a TCO, and will be read by the other TCOs while performing the check, or by the after sales department of an RU performing a refund, an exchange, a delay compensation.

2.4 - Action 3: Electronic After Sales Operations

When staff at the after sales department, either in a station or in a back office, has to take any action concerning the contract of carriage evidenced on the ticket, an electronic equivalent of the action taken on a paper ticket will be generated. The electronic data of this action (type of action) on the ticket as well as the time/place of action and the staff member will be generated.

As this combined information (ticket data + data on action(s) taken by the issuer) are useful for the distributor (RU), carrier and TCOs, which distributed the ticket, or carries or carried the passenger or which controls the passenger, a mechanism has to be foreseen to exchange the data between the issuer and the distributor/issuer/carriers/other TCO. This is important especially in case of fraud, when using a closed system, for any TCO or after sales operation, e.g. refund, exchange, annulations/re-booking, compensation and refund in case of delays, etc. The list of data and the structure of the data to be exchanged has to be foreseen, too.

(Today, using paper tickets, this data exchange is done by the passenger him/herself, as he/she holds the ticket all the time, this ticket contains the additional information and this ticket is the evidence of his/her contract and its entire or partial execution.)

If an issuer finds a passenger with a counterfeit or tampered with ticket, it is useful to distribute this information also to the other concerned parties: the distributor, carriers and the TCOs involved in the contract of carriage so that they are kept informed and also can take appropriate action in case of recidivism.

3 - Actions on tickets which should generate messages - detailed list

3.1 - Ticket Check

Ticket is checked and is...

"Valid and used" or "Not valid; reason X (codified list of reasons)."

The TCO staff member can...

- *put a material punch on IRTHP or/and an electronic one in the ticket (electronically, on the server);*
- *not put a nip at all;*
- *leave a message for his/her colleagues (for this, the message "annotation" will be used).*

If there was a problem with a ticket, the train staff member can alternatively...

- *not recognise a ticket and sell a new ticket;*
- *recognise a ticket (this means that there was a problem with the ticket, but the train staff member lets the passenger travel anyway - e.g. stranger not knowing he/she had to obliterate the ticket, ...);*
- *recognise a ticket with upgrade, e.g. to a higher class/service category;*
- *not recognise a ticket, sell a new ticket with an additional surcharge for fraud;*
- *not recognise and transfer the passenger and the ticket to a customer service or to the rail Police;*
- *decide to retain the ticket (in case of falsified ticket);*
- *decide to exclude the passenger from carriage (in some specific cases).*

If a supplementary ticket and/or a fine can't be paid by the passenger on the train, the TCO staff collects extra information about the passenger according to the instructions of the TCO (e.g. name, address, etc.).