End-to-End Test Report

Deliverable 14.2

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1.1	26-06-2018	Added executive summary.

Executive Summary

The initial objective of deliverable D14.2, the End-to-End Test Report, was to report the results of the end-to-end tests. The results in this report focus solely on the end-to-end test results of the German pilot, since the other end-to-end tests were performed internally by the public transport operators/authorities.

Over the course of three days from the 31st of July until the 2nd of August, the end-to-end test was performed in Aachen at the premises of AVV. Tests were performed by the test analyst, following the test script that was developed and agreed upon beforehand.

The end-to-end test identified 26 issues in the systems, of which most were solved on the spot. Based on these results, the involved parties were confident to continue the roll-out of the systems. The tests also improved the overall quality of the pilots, and limited the number of issues that would affect the pilot participants directly and impact the evaluation of the pilot.

Table of Contents

1 Introduction

This deliverable is described in the Grant Agreement as part of work package 14 and referenced as: 14.2 End-to-End Test Report.

To ensure the quality of the account-based ticketing system before the commencement of the pilot, end-to-end tests were performed on the system. For the German systems, an end-to-end test was performed by UL in Aachen between the 31st of July and the 2nd of August. This document reports on this end-to-end test.

1.1 Scope

This document provides an overview of the end-to-end test that was performed in Aachen. Initially, the results and the issues were reported directly with all the stakeholders via e-mail. This document is a reflection of the results that were shared. Because of the historical nature of this report, no conclusions are included.

1.2 Intended audience

This document is intended for anyone interested in the work that was done during the end-to-end test in Aachen and the results achieved during this test.

1.3 Document structure

Besides this introductory chapter, this document contains two additional chapters:
- An overview of the tests, including an architecture overview of all the components included in the end-to-end test, the relevant use cases, the test scope and the overall approach.
- The results of the tests, including which tests were executed and their verdict and the issues that were uncovered.

2 Overview

2.1 Approach

Over the course of three days from the 31st of July until the 2nd of August, the end-to-end test was performed in Aachen at the premises of AVV. To perform the test, all system components were either available on-site (such as the validator, inspection device) or running in the cloud.

Tests were performed by the test analyst, following the predefined test script that was agreed upon beforehand. To perform the test cases, cards were provided by AVV and an Android an iPhone were used to test the mobile application.

During the tests, all system suppliers were on-site as well, ensuring that issues could be analyzed quickly and, in some situations, fixed on the spot. After the test, several follow up calls were fix outstanding issues.

A complete overview of the test plan for the German part of the pilot and how the end-to-end test fits inside the overall test process can be found in the ETC DE Pilot Test Plan [22].

2.2 Architecture overview

For a treatment of the hub architecture of the ETC project, the reader is referred to the Hub Design document [6]. Figure 1 shows an overview of the system architecture used in the German pilot. The main components/systems are shown, together with the relevant APIs and the accountable parties for testing. Note that the parties that are accountable for testing, responsible for testing and the suppliers of the systems can be different entities, which will be treated in the following chapter.
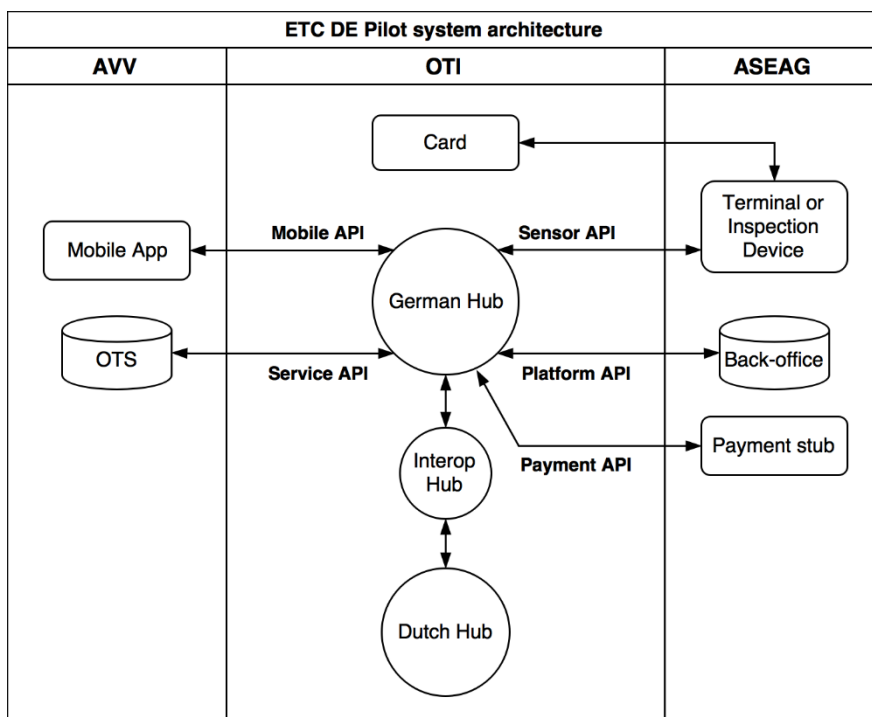
Figure 1 Overview of German pilot architecture. The three columns depict the parties accountable for the systems show in the columns.

2.2.1 Card

The cards are smart cards with the Generic Secure Token (GST) [7]. The GST is currently specified for Java Card with Open Platform (JCOP). The GST applet loaded on the German cards has been functionally tested before [8]. In the scope of the German pilot, only the personalization of the card will be tested according to the Generic Secure Token v2.1 Personalisation Specification [9].

The German cards contain both a VDV application and the GST applet, while the Dutch cards only contain the GST applet.

2.2.2 Terminal and inspection device

The Secure Token Acceptance Sensor (STAS) - Behavior and Interface Specification [10] specifies functionality to be included in validation terminals to enable them to support ETC for travel. The STAS specification covers the following areas:
- Generic terminal behaviour
- Commands and responses between STAS and GST
- Commands and responses between STAS and Hub

In the implementation of this pilot, both the terminal and inspection device only use a whitelist for authorization; no other local risk management is used.

For validation (check-in) in the vehicle with the onboard unit, additionally a communication box (LTE) and terminal is needed. For inspection a mobile hand held will be used.

2.2.3 Hub

The Hub, also called Ecospace Core[1], is a central back-office system, to which all terminals, inspection devices, back-office systems, online services and mobile apps can connect [6]. The Hub provides the following APIs:

- Sensor API [11]: interface for field devices to upload transactions and download lists. In this pilot connected to the terminals and inspection devices;
- Mobile API [12]: interface for mobile apps facilitating account creation, and retrieving v-receipts. In this pilot connected to an app that provides an overview of v-receipts;
- Platform API [13]: interface to the Identity Management Platform (IMP), which in this pilot consists of the ASEAG back-office systems;
- Service API [14]: interface for services such as fare calculation, ticketing systems and other travel related multifunctional services. In this pilot connected to the Online Ticket Stock (OTS). A specification of the specific API implementation of the OTS supplier Cubic can be found in reference [16];
- Payment API [15]: interface for payment methods. In this pilot the payment functionality is simulated by a stub, with clearing performed manually.

The Hub supports access through APIs according to both version 2 and version 3 of the API specifications. The system is interoperable; components may use different API versions simultaneously. Further documentation on the APIs can be found at the links [17] and [18].

2.2.4 ASEAG Back-office (Platform)

The ASEAG back-office fulfills the role of the Identity Management Platform (IMP), which handles account creation with facilities for binding tokens and services to an account, leading to the registration of tokens on the whitelists. It connects to the Platform API [13].

2.2.5 OTS

The Online Ticket Stock (OTS) is responsible for storing the tickets and connects to the Hub via the Service API [14]. In this pilot, the OTS issues daily tickets and line-specific tickets and verifies whether travelers have a valid travel right.

2.2.6 Mobile app

In the current pilot the mobile app can retrieve and show an overview of Dutch and German v-receipts to the end user. The functionality of connecting the mobile app to an account must be further defined, but is expected to be available for this pilot. It connects to the Hub via the Mobile API [12].

2.2.7 Payment stub Germany

In the current pilot the payment will be simulated using a payment stub provided by OTI/42Tech. This stub is not used for clearing, only to provide an end-point for the payment API.

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[1] In documentation the Hub is either referred to as the combination of the Ecospace Core and the APIs, or as part of the Ecospace core, together with the IMP, XAN, ticker and APIs. In this document the Hub comprises all systems behind its APIs.

2.2.8 Dutch system

Interaction with the Dutch Hub and connected systems takes place through the Interop Hub. In this pilot two functionalities are relevant for the Dutch-German interoperability:

- Service Trigger Responses (STRs) & v-receipts: the STR for Dutch travelers is sent to the Dutch Hub by the German Hub. The Dutch Hub processes the STR, and amends this with the payment response (from the Dutch payment method) to create a v-receipt. All v-receipts of Dutch travelers traveling in Germany are collected in the Dutch ticker and are also sent back to the German Hub for clearing. Conversely, all STRs of German travelers traveling in the Netherlands are sent to the German Hub.
- Clearing & Settlement between PTOs: Once all foreign v-receipts are collected, clearing and settlement can be performed. In this pilot it will be performed manually using Excel sheets.

2.3 Use cases

The tests for the German pilot are derived from a number of use cases, which are based on the general use cases in the Pilot Design Document [2] and further discussions. The ETC Test and Evaluation Plan [19] for the German pilot also treats the use cases. The use cases that are relevant for the German pilot are the following:

Registration:
- Registration of German traveler with ASEAG (out of test scope);
- Addition of GST of German account to whitelist;
- Addition of GST of Dutch account to whitelist;
- Transfer of whitelist to terminal/inspection device.

Travel:
- Presentation of card to terminal by traveler;
- Purchase of ticket;
- Validation of existing ticket.

Inspection:
- Validation of existing ticket of German or Dutch traveler.

Mobile:
- Connection of mobile app to account via security code for binding of chip cards;
- Access of mobile v-receipts in mobile app by German traveler.

Payment:
- Retrieval of v-receipts for invoicing and clearing & settlement;
- Payment for a German traveling in the Dutch system (based on manual clearing, out of test scope);
- Payment for Dutch traveler traveling in the German system (based on manual clearing, out of test scope).

Termination:
- Termination of German account;
- Addition of GST of German account to blacklist.

Figure 2 shows the systems or components that are required to execute these use cases.

Group	Use case	Card	Terminal	Inspection device	ASEAG Back-office	OTS	App	Hub/Ecospace Core	Dutch card	Dutch systems	German traveler	Dutch traveler
Registration	Addition of GST of German account to whitelist				■		■				■	
Registration	Addition of GST of Dutch account to whitelist						■			■		■
Registration	Transfer of whitelist to terminal/inspection device		■	■			■					
Travel	Presentation of card to terminal by traveler	■	■				■				■	
Travel	Purchase of ticket				■		■					
Travel	Validation of existing ticket		■				■					
Inspection	Validation of ticket	■		■			■				■	
Mobile	Connection of mobile app to account				■		■					
Mobile	Access of mobile v-receipts in app						■					
Payment	Retrieval of v-receipts for invoicing and clearing				■		■					
Termination	Termination of German account				■							
Termination	Addition of GST of German account to blacklist				■		■				■	

Figure 2 Mapping between use cases in the German pilot and the required systems/components. The grey squares indicate that this component is required for the use case.

2.4   Test scope

The scope of the tests described in the test plan is as follows:
- Functionality related to the use cases in scope (see section 2.3).

Out of scope are:
- Non-functional tests;
- Functionality not directly related to the ETC pilot, including:
  - VDV support;
  - Monitoring and control;
- Use cases out of scope (see section 2.3).

2.5   Test environment

For the E2E test, the terminal, inspection device, card and app were available at AVV in Aachen. The other systems resided in the cloud.

3 Results

3.1 Summary

An overview of the test results at the end of the end-to-end test session can be found in the table below.

Section	OK	NOK	N/A	Total
Registration	1	1	0	2
Travel	19	0	5	24
Inspection	10	0	3	13
Mobile	6	2	2	10
Payment	0	1	0	1
Total	**36**	**4**	**10**	**50**

3.2 Executed tests

These subsections provide a description of all the test cases of the end-to-end test and includes the verdict achieved during the test.

3.2.1 Registration

ID	E2E_Reg_001
Description	Verify that an account can be subscribed to the OTS and the token can be added to the whitelist of a terminal.
Verdict	OK
Comment	Acts as precondition, failed the first day (issue 1) but was made working

ID	E2E_Reg_005
Description	Verify that an account can be unsubscribed to the OTS and the token can be removed from the whitelist of a terminal.
Verdict	NOK
Comment	Token cannot be removed from the whitelist via the Platform API (issue 24)

3.2.2 Travel

ID	E2E_Tra_001
Description	Verify token is accepted by the terminal at check-in when the token is on the whitelist.
Verdict	OK
Comment	

ID	E2E_Tra_002

Description	Verify token is declined by the terminal when the token is not on the whitelist.
Verdict	OK
Comment	

ID	E2E_Tra_004
Description	Verify that a day ticket is purchased after check-in when it is the first time in any bus except line 44.
Verdict	OK
Comment	

ID	E2E_Tra_011
Description	Verify that only one day ticket is purchased when the first check-in occurs at 3:05 and the second check-in at 2:55 the next day in any bus except line 44.
Verdict	OK
Comment	

ID	E2E_Tra_012
Description	Verify that only one day ticket is purchased when the first check-in occurs at 0:05 and the second check-in at 23:55 the same day in any bus except line 44.
Verdict	OK
Comment	

ID	E2E_Tra_013
Description	Verify that only one day ticket is purchased when the first check-in occurs at 0:05 and the second check-in at 2:55 the next day in any bus except line 44.
Verdict	OK
Comment	

ID	E2E_Tra_014
Description	Verify that two day tickets are purchased when the first check-in occurs at 23:55 and the second check-in at 3:05 the next day in any bus except line 44 and a bus with nightline-service.
Verdict	OK
Comment	

ID	E2E_Tra_015

Description	Verify that two day tickets are purchased when the first check-in occurs at 2:55 and the second check-in at 3:05 the next day in any bus except line 44 and a bus with nightline-service.
Verdict	OK
Comment	

ID	E2E_Tra_016
Description	Verify that only one day ticket is purchased when the first check-in occurs at 0:05 in any bus except line 44 and the second check-in occurs at 4:04 the next day in a bus with nightline-service.
Verdict	N/A
Comment	

ID	E2E_Tra_017
Description	Verify that two day tickets are purchased when the first check-in occurs at 23:55 in any bus except line 44 and the second check-in occurs at 4:14 the next day in a bus with nightline-service.
Verdict	N/A
Comment	

ID	E2E_Tra_018
Description	Verify that only one day ticket is purchased when the first check-in occurs at 0:05 in any non-nightline-service bus except line 44 and the second check-in occurs at 4:04 the next day in a bus with nightline-service.
Verdict	N/A
Comment	

ID	E2E_Tra_021
Description	Verify that only one day ticket is purchased after three or more check-ins on the same day in any bus except line 44.
Verdict	OK
Comment	

ID	E2E_Tra_031
Description	Verify that only one day ticket is purchased after multiple check-ins on the same day in any bus except line 44, when the service trigger messages arrive on different days.
Verdict	OK
Comment	To be done at the end of the day

ID	E2E_Tra_032

Description	Verify that only one day ticket is purchased after multiple check-ins on the same day in any bus except line 44, when the service trigger messages arrive out of order.
Verdict	OK
Comment	

ID	E2E_Tra_033
Description	Verify that only one day ticket is purchased when the first check-in is at 23:55, the second one at 0:05 and the service trigger message of the first check-in arrives later than the second.
Verdict	N/A
Comment	For this testcase no check-ins must occur after 0:05 until 3:00 the next day.

ID	E2E_Tra_041
Description	Verify that a day ticket is purchased after check-in in any bus except line 44 within 180 minutes form a check-in on line 44.
Verdict	OK
Comment	

ID	E2E_Tra_051
Description	Verify that only one day ticket is purchased when the first check-in occurs in any bus except line 44, the second check-in on line 44 and the third check-in again in any bus except line 44, with all check-ins on the same day.
Verdict	OK
Comment	

ID	E2E_Tra_042
Description	Verify that a fixed price ticket is purchased after check-in on line 44 when no fixed price ticket for the same direction has been purchased in the past 180 minutes.
Verdict	OK
Comment	

ID	E2E_Tra_043
Description	Verify that only one fixed price ticket is purchased after multiple check-ins on line 44 in the same direction within a time span of 180 minutes.
Verdict	OK
Comment	

ID	E2E_Tra_044

Description	Verify that a fixed price ticket is purchased after check-in on line 44 when a day ticket is already purchased that day.
Verdict	OK
Comment	

ID	E2E_Tra_045
Description	Verify that a fixed price ticket is purchased after check-in on line 44 when a fixed price ticket for the other direction has been purchased in the past 180 minutes.
Verdict	OK
Comment	First got a responsevalue=-1

ID	E2E_Tra_046
Description	Verify that two fixed price tickets are purchased when the first check-in occurs at 9:00, the second check-in at 11:55 and the third at 12:05 on the same direction of line 44.
Verdict	OK
Comment	

ID	E2E_Tra_047
Description	Verify that only one fixed price ticket is purchased when two check-ins on the same direction of line 44 occur within 180 minutes, but the first service trigger message arrives later than the second.
Verdict	N/A
Comment	Probably similar issue as 33

ID	E2E_Tra_048
Description	Verify that only one fixed price ticket is purchased when two check-ins on the same direction of line 44 occur within 180 minutes, but the second service trigger message arrives more than 180 minutes later than the first service trigger message.
Verdict	OK
Comment	

3.2.3 Inspection

ID	E2E_Ins_001a
Description	Verify that the inspection device shows a purchased day ticket.
Verdict	OK
Comment	See issue #7, token used: 6.073-30.060.006-2, 6.073-30.060.023-7 (run2)

ID	E2E_Ins_001b

Description	Verify that the inspection device does not show a purchased day ticket on line 44
Verdict	OK
Comment	6.073-30.060.023-7

ID	E2E_Ins_002a
Description	Verify that the inspection device shows a purchased fixed price ticket when on line 44 in the correct direction.
Verdict	OK
Comment	token used: 6.073-30.060.004-7

ID	E2E_Ins_002b
Description	Verify that the inspection device does not show a purchased fixed price ticket when not on line 44
Verdict	OK
Comment	token used: 6.073-30.060.004-7

ID	E2E_Ins_002c
Description	Verify that the inspection device does not show a purchased fixed price ticket when on line 44 in the other direction
Verdict	OK
Comment	token used: 6.073-30.060.004-7

ID	E2E_Ins_003
Description	Verify that the inspection device does not show any tickets when no tickets are purchased.
Verdict	OK
Comment	token used: 6.073-30.060.022-9

ID	E2E_Ins_004
Description	Verify that the inspection device shows both a purchased day ticket and multiple fixed price tickets.
Verdict	N/A
Comment	token used: 6.073-30.060.022-9

ID	E2E_Ins_011
Description	Verify that the inspection device shows a valid day ticket purchased at 0:05 the previous day when inspection takes place at 2:55 in any bus except line 44 and a bus with nightline-service.
Verdict	OK
Comment	

ID	E2E_Ins_012
Description	Verify that the inspection device does not show a day ticket purchased at 23:55 the previous day when inspection takes place at 3:05 in any bus except line 44 and a bus with nightline-service.
Verdict	OK
Comment	

ID	E2E_Ins_013
Description	Verify that the inspection device shows a valid day ticket purchased at 0:05 the previous day when inspection takes place at 4:04 in a bus with nightline-service.
Verdict	N/A
Comment	

ID	E2E_Ins_014
Description	Verify that the inspection device does not show a day ticket purchased at 23:55 the previous day when inspection takes place at 4:19 in a bus with nightline-service.
Verdict	N/A
Comment	

ID	E2E_Ins_015
Description	Verify that the inspection device does not show a fixed price ticket when no check-in at line 44 has occurred within the last 180 minutes.
Verdict	OK
Comment	token used: 6.073-30.060.004-7

ID	E2E_Ins_021
Description	Verify that the inspection device shows "Karte nicht gültig!" (= Card not valid) when the token is not on the whitelist.
Verdict	OK
Comment	

3.2.4 Mobile

ID	E2E_Mob_001
Description	Verify that an app account can be created and a token can be bound.
Verdict	OK
Comment	

ID	E2E_Mob_002
Description	Verify that an app account cannot be created when an e-mail address is already in use.

Verdict	OK
Comment	

ID	E2E_Mob_003
Description	Verify that a token can only be bound to one app account.
Verdict	NOK
Comment	Token can be bound to multiple accounts but only the owner can see the ticker feed

ID	E2E_Mob_004
Description	Verify that it is possible to see the token history before the token was bound.
Verdict	OK
Comment	Also not the history between creating account in the app and binding token

ID	E2E_Mob_011
Description	Verify that the mobile app shows a notification after a check-in.
Verdict	N/A
Comment	notifications are not yet supported (issue 22)

ID	E2E_Mob_012
Description	Verify that the mobile app shows a purchase of a day ticket with the correct information.
Verdict	OK
Comment	missing operator (issue 17, fixed), incorrect time in details (issue 21, fixed)

ID	E2E_Mob_013
Description	Verify that the mobile app shows a purchase of a fixed price ticket with the correct information.
Verdict	NOK
Comment	missing operator (issue 17, fixed), incorrect time in details (issue 21), incorrect price

ID	E2E_Mob_014
Description	Verify that the mobile app shows a check-in with an existing ticket with the correct information.
Verdict	OK
Comment	missing operator (issue 17, fixed), incorrect time in details (issue 21, fixed)

ID	E2E_Mob_015
Description	Verify that the mobile app shows an inspection with the correct information.
Verdict	OK
Comment	incorrect time in details (issue 21, fixed), same icon for succesful/failed inspection (issue 23, fixed)

ID	E2E_Mob_016
Description	Verify that the mobile app shows a notification after an inspection.
Verdict	N/A
Comment	notifications are not yet supported (issue 22)

3.2.5 Payment

ID	E2E_Pay_001
Description	Verify that AVV can retrieve all v-receipts with correct data.
Verdict	NOK
Comment	Unable to retrieve the v-receipts (issue 4)

3.3 Issues

The table below describes all the issues that were uncovered during the tests in Aachen.

ID	Description	Resolution	Status	Severity (for pilot)
1	Terminal does not see an updated whitelist	The service ID was configured incorrectly to 23, which was the test service, it has been set to 22	Closed	
2	Terminal receives a response with response value -1	This was a one-time issue, as a result of connectivity issues.	Closed	
3	OTS does not support Nightlife services	AVV agrees that this will not be included to the pilot	Closed	
4	ASEAG back-office does not retrieve any V-receipts	1. Timestamp wasn't set correctly, since it should indicate the time after which the V-receipts need to be (instead it was set to the current time) 2. The request is correctly received and a response is sent, but something is not working correctly at the ASEAG back-office. The list is received correctly and analysed correctly, but the V-Receipt details call for a specific V-	Open	Blocking

ID	Description	Resolution	Status	Severity (for pilot)
		Receipt fails (most work) **Action point: STS will fix this issue, the test case will be tested on the test session on the 14th of August** Update 08-14: The ASEAG back-office is able to import the list, but the products are not on the ASEAG product list yet, which prevents the import to work completely. Action point: STS will implement the product on the product list and keep everyone informed about the status of this issue.		
5	ASEAG back-office gives an internal error when registering a token	Logs show an internal issue, fixed by STS	Closed	
6	V-receipt shows status 'failed' in hub	Vincent requests a log, may be related to issue #4/5. Closed as duplicate of issue 4.	Closed	
7	Inspection device doesn't recognize the product	Different numbers are used 1232 (fixed price) and 432 (daily ticket), should be 50028 (daily ticket) and 50029 (fixed price). Configuration change at the inspection device	Closed	
8	Inspection device shows relation number 815	AVV agrees to change the number to 1000 in the OTS and the following changes in the inspection device: "relation" will be changed to "raum" (zone) and will be directly translated to 'area of the city of Aachen' on the inspection device	Closed	
9	Name of the product is called "Tagesticket stadt Aachen" and "Einzelfahrt Linie 44" in the inspection device	Name of the products is changed to "ETC Tagesticket Stadt Aachen" and "ETC Einzelfahrt Linie 44" in the inspection device	Closed	
10	Fixed price ticket not shown when inspection device is set to line 44 in the right direction	Line number and organization number were switched around. Fixed in inspection device	Closed	

ID	Description	Resolution	Status	Severity (for pilot)
11	OTS only returns the tickets that are valid for the line that is currently being used	Testcases added (E2E_Ins_001a, b, 002a, b, c), one test case put to not applicable E2E_Ins_004	Closed	
12	Inspection device shows 'Start: Haltestelle 0'	AVV agrees on the following: Since the OTS only returns tickets which are valid (line 44 & right direction), it is not necessary to show the starting position. Instead, the inspection device will only show a green tick	Closed	
13	The mobile app shows previous transactions, before the card was bound	AVV agrees on the following: Since the security code prevents unauthorized access to the account, complete history is ok. Test case E2E_Mob_004 changed to reflect this	Closed	
14	The mobile app allows a card to be linked to multiple mobile apps	Ticker feed is not shown, account is not longer useful (since it is not possible to add a new card either). Related to issue 20. This requires a change request from Roel. This will be implemented in the hub and the app. **Action point: 42Tech will implement necessary functionality at the Hub side and in the mobile application. The test case will be tested on the test session on the 14th of August.** Update 08-14: The mobile app and the back-end have implemented the required functionality. This has been tested (see attached screenshot for the result)	Closed	Minor
15	The direction used in the terminal and the inspection device are not aligned	The problem will be solved in the OTS, which will link the different types of direction to each other (Auswarts, Einwarts, Hin, Zuruck). In the end the inspection device is aligned with the terminal	Closed	
16	The time in the terminal and the inspection device were	Inspection device was set to automatically incorporate Daylight savings time	Closed	

ID	Description	Resolution	Status	Severity (for pilot)
	not aligned because of different timezones			
17	The mobile app shows the operator as empty	Fixed in the mobile app	Closed	
18	The mobile app shows the service as Cubic but should be ASEAG	Fixed in the mobile app	Closed	
19	The OTS returns the ticket when it is slightly past expiry date	OK, inspection device still shows the ticket is no longer valid	Closed	
20	The mobile app doesn't show the ticker	With token 6073 30 060 000 5, because it was already owned by someone else. 42Tech wants to make it so that it will not allow binding tokens that are already owned by someone. Related to issue 14. Agreed with AVV that this is expected behavior	Closed	
21	The mobile app shows the incorrect time when going to details	Fixed in the mobile app	Closed	
22	The mobile app doesn't show any notifications yet	This is not yet supported by 42Tech. This is agreed upon with AVV	Closed	
23	The mobile app shows the same icon for inspection succesful and inspection failed	Implemented in the app and OTS that a different icon is displayed when the inspection failed	Closed	
24	The ASEAG back-office is not able to remove the token from the whitelist	The ASEAG back-office uses a request to put the token on the blacklist, but this does not remove the token from the whitelist. There is no platform API call to remove the token from the whitelist. This requires a change from Roel. **Action point: 42Tech will implement necessary functionality at the Hub side and will share the specifications with STS (message structure and Hub behavior). STS will implement necessary functionality in the ASEAG back-office. The test case will be tested on the test session on the 14th of August.**	Open	Major

ID	Description	Resolution	Status	Severity (for pilot)
		Update 08-14: STS has implemented the unsubscribe call in v1 of the Platform API. However, the signature is not calculated correctly yet. During the call Vincent could confirm that the 'property action' should not be included. Action point: STS will implement the correct signature algorithm and keep everyone informed about the status of this issue.		
25	In the production environment, the terminal does not fill in the value of the "LinieKA" correctly in the trigger message	This seems to be an issue with the board computer, which is different in the (2.15) than in the test setting. **Action point: IVU and ASEAG need to find a solution and keep everyone informed.** Update 08-14: IVU and ASEAG have a meeting planned to discuss the rollout plan for the update to the ticket vending machine in the busses.	Open	Blocking
26	The mobile app shows the incorrect price for the fixed price ticket (2,00 instead of 2,80)	**Action point: 42Tech to implement a fix that will use the price in the V-receipt for display. UL will test this issue as soon as an update is released (together with IVU), but will be tested as well on the test session on the 14th of August.** Update 08-14: In addition to the test by UL and IVU, it was confirmed by Dominik that the update also fixed any incorrect price displays retroactively. Vincent mentioned that it was likely caused by some incorrect type casting.	Open	Blocking

References

Ref.	Title	Author	Status	Version	Date
[1]	Grant Agreement-636126-ETC-4	ETC			2016/04/12
[2]	Pilot Design Plan (D10.1)	OTI	Final	1.0	2015/10/18
[3]	Project Plan Pilots (D10.2)	OTI	Final	1.0	2016/05/19
[4]	Master Test Plan	UL	Final	1.0	2016/06/09
[5]	milestones & deliverables.pdf	OTI			2015/07/09
[6]	Hub Design for ETC Platform	42Tech		2.0	2015/10/14
[7]	Generic Secure Token v2.1 Application Specification	OTI	Final	4.2.4	2016/03/16
[8]	GSTv2.1 Functional Test Report	UL	Final	1.0	2015/12/15
[9]	Generic Secure Token v2.1 Personalisation Specification - GP compliant platforms	OTI	Final	2.1.6	2016/09/09
[10]	Secure Token Acceptance Sensor - Behavior and Interface Specification	OTI	Final draft	1.26	2016/09/16
[11]	ETC Sensor API – Interface Specification	OTI	Final draft	2.0	2016/04/24
[12]	ETC Mobile API – Interface Specification	OTI	Draft	2.0	2016/04/04
[13]	ETC Platform API – Interface Specification	OTI	Final draft	0.87	2016/04/08
[14]	ETC Service APIs – Interface Specification	OTI	Final draft	2.1	2016/04/07
[15]	ETC Payment API – Interface Specification	OTI	Draft	2.0	2016/04/04
[16]	PVS und OTS – Pflichtenheft – PH 05-04 Schnittstelle OTS ETC-Adapter	Cubic		1.0	2017/02/15
[17]	42tech.atlassian.net/wiki/display/ 42ESR	42Tech			
[18]	oti-test-dehub.westeurope. cloudapp.azure.com (e.g. /Platform)	42Tech			
[19]	ETC (636126) Test and Evaluation Plan	UL	Final draft	0.81	2017/03/21
[20]	20170217 DE Pilot Test Planning.xlsx	UL			2017/02/17
[21]	Integration Test Results Template.xlsx	UL		0.1	2016/12/22
[22]	ETC DE Pilot Test Plan	UL		1.00	2017/06/12