

SELF SERVICE BAG DROP

PROGRAMME OF REQUIREMENTS

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VERSIONS

Version	Revision description
1.0	Initial version

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1 INTRODUCTION

This 'Programme of Requirements' is part of the procurement of 'Self-service bag drop at Eindhoven Airport'. This document serves two goals:

1. Explaining the *as-is situation* at Eindhoven Airport in relation to self-service bag drop.
2. Explaining the *requirements* as applicable to the procurement.

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2 AS-IS SITUATION

This chapter describes the current situation of Eindhoven Airport, from different points of view. First the relevant facts and figures of the current operation are given. Second the physical terminal lay-out, together with the asset details are listed. Third, all software currently used in relation to Common Use are listed, together with their requirements. Fourth and last, the network topology of Eindhoven Airport is given.

2.1 RELEVANT FACTS

A list of expected figures for Eindhoven Airport can be found in Table 1 (As result of COVID-19 reference year will be 2019).

Table 1. Figures 2019

PASSENGERS	6.5 million passengers
FLIGHTS	41.000 flights
AIRLINES	10 airlines
HANDLERS	1 handler
TERMINALS	1 terminal
CONVENTIONAL CHECK-IN POSITIONS	22 positions
SELF-SERVICE BAG TAG KIOSKS	5 kiosks. <i>Still in testing phase</i>
SELF-SERVICE CHECK-IN KIOSKS (CUSS)	6 kiosks
SELF-SERVICE BAG DROP UNITS	16 retro-fit units installed at check-in positions 1-12 and 17-20

Eindhoven Airport's scheduled operational hours can be found in Table 2.

Table 2. Scheduled operational hours (Amsterdam time zone)

AIRPORT OPERATIONS	04:15h – 00:30h
AIRPORT MAINTENANCE (FIELD SERVICES)	06:00h – 21:00h
HANDLER OPERATIONS	04:30h – 23:00h
TERMINAL OPENING HOURS	04:30h – 23:00h
CHECK-IN	04:30h – 22:30h
SECURITY CHECK	05:00h – 00:00h
BOARDING	06:30h – 22:30h
DEPARTURE FLIGHTS	07:00h – 22:00h
ARRIVAL FLIGHTS	08:00h – 23:00h

2.2 DATA ANALYSIS

In addition to the facts stated in section 2.1, more detailed numbers are provided in this section. The goal of this section is to provide better understanding about the context of Eindhoven Airport, and to allow the Participant to finetune its solution.

Depending on the analysis, two datasets have been used:

- Year 2019, to avoid biased data due to the COVID-19 pandemic
- August – October 2021, to have most recent data from busy months

For asset usage (**Fout! Verwijzingsbron niet gevonden.**) only data from September 2021 has been used.

2.2.1 FLIGHT DATA

In Figure 1 the average departing flights per hour are shown. Almost all flights are operated with narrow-body aircrafts, e.g. Boeing 737-family, Airbus A320-family and Airbus A321-family.

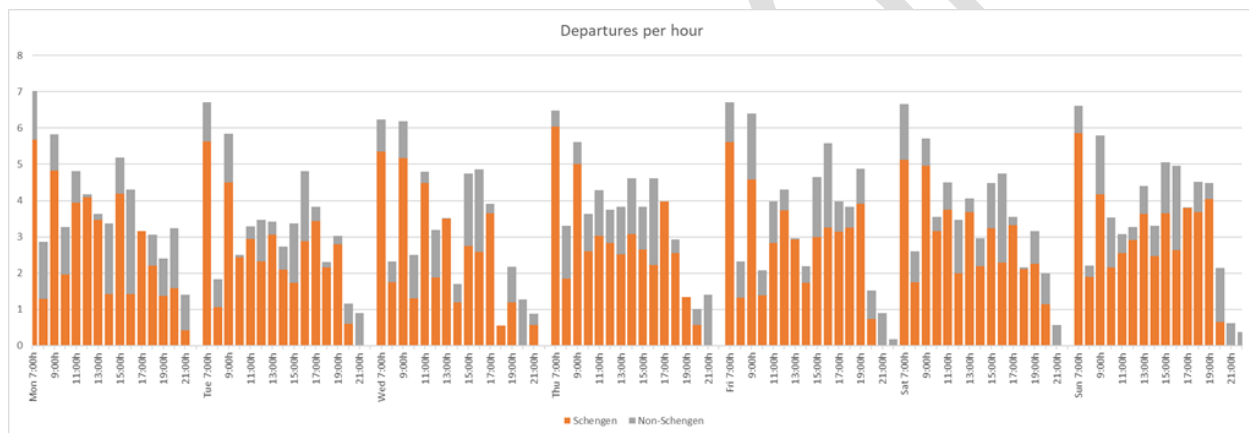


Figure 1. Average departing flights per hour (2019)

2.2.2 BAG DROP DATA

In Figure 2 you find the portion of passengers that used self-service bag drop to check-in their checked baggage. Airlines not listed in this figure did not use self-service bag drop throughout that period of time.

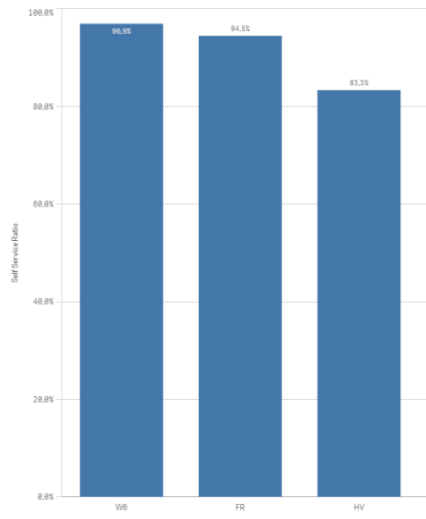


Figure 2. Self-service bag drop usage per airline

From Figure 3 it becomes clear that passengers tend to show up between -03:15h and -0:45h before scheduled departure. However, 90% of the passenger arrives between -02:15h and -01:15h.

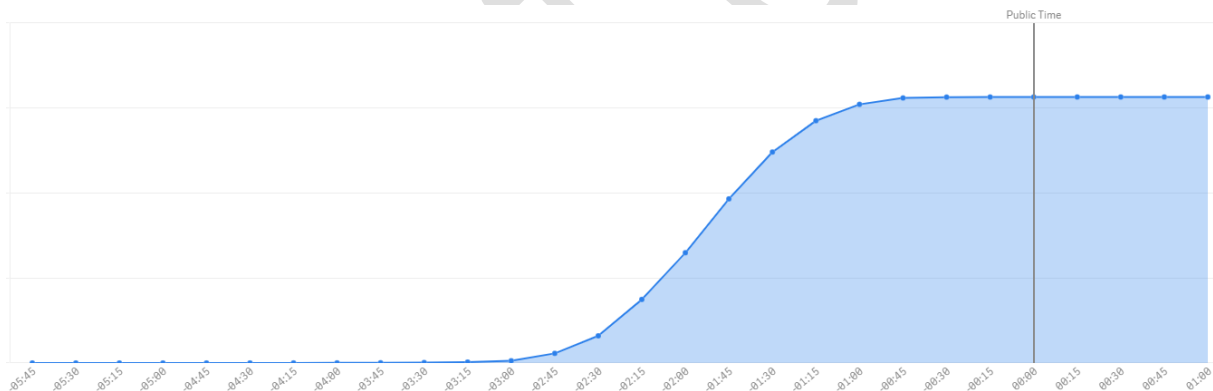


Figure 3. Passenger arrival time before STD (aug-oct 2021)

SSBD unit 1 to 12 are used by default (17-20 are only used during capacity demand peaks). As shown in Figure 4, the usage of bag drop units is uniform. Unit 11 and 12 don't have usage as these units were out-of-service.

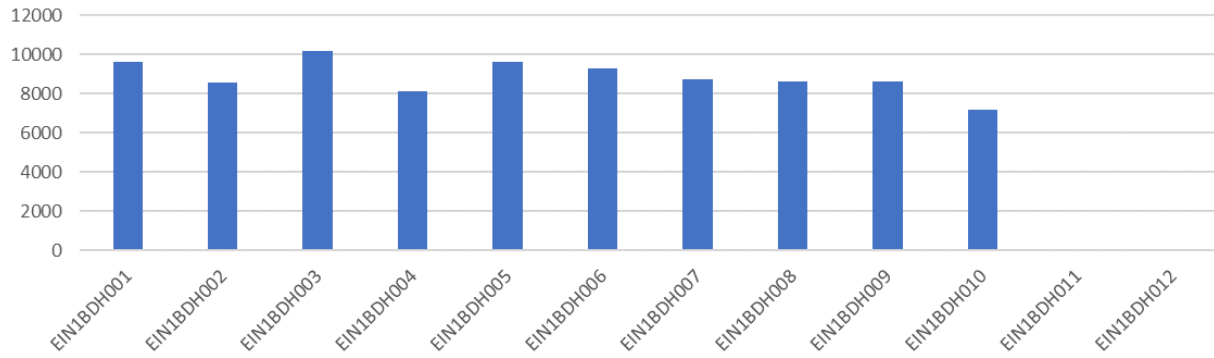


Figure 4. Bag drop events per unit (sep 2021)

2.3 TERMINAL LAYOUT

The current terminal layout can be found in. The bag drop / check-in desks are located in the highlighted area (green-bordered area).

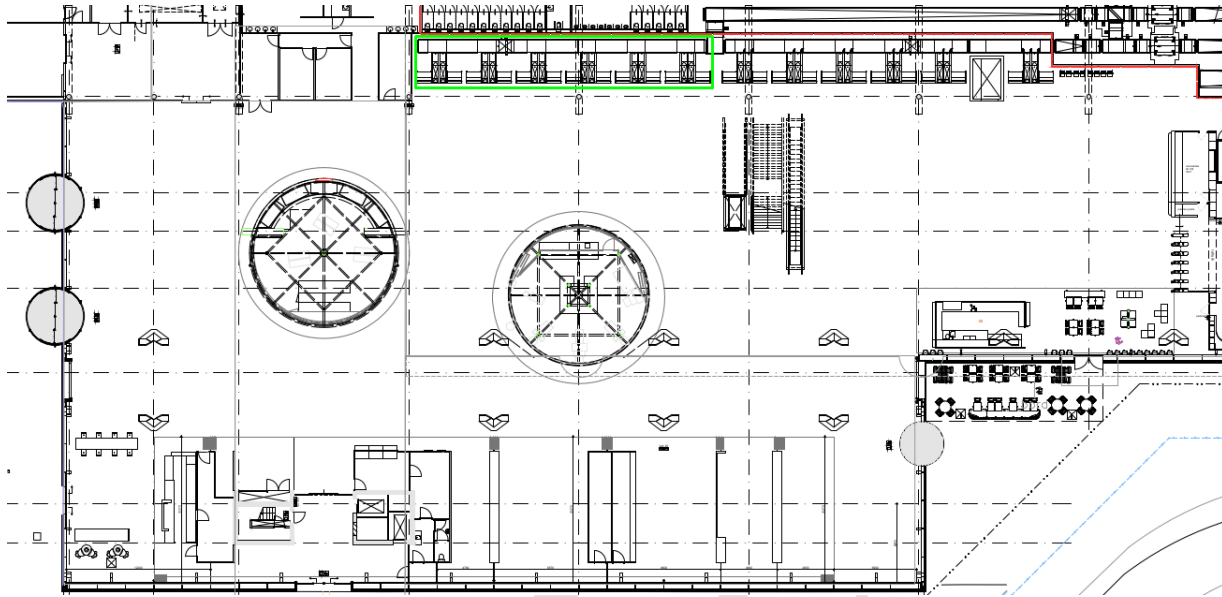


Figure 6. Terminal layout

2.3.1 CONVENTIONAL CHECK-IN DESK

Eindhoven Airport has 22 check-in desks, of which 8 are equipped with both conventional and retro-fit bag drop units. These desks can be used in a hybrid mode; either as conventional check-in desk or as self-service bag drop station.

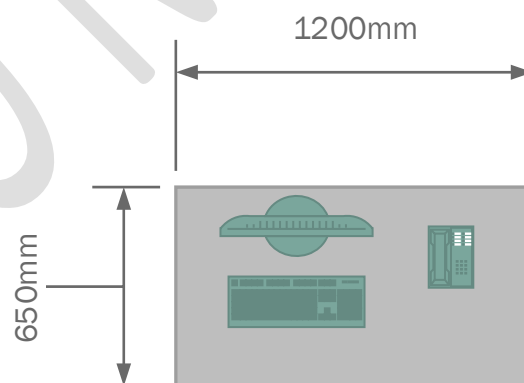


Figure 7. Dimensions of a conventional check-in desk



Figure 8. Typical lay-out of a conventional check-in desk

2.3.2 CHECK-IN KIOSK

For passengers that don't check-in online, six check-in kiosks are available for check-in. These kiosks are CUPPS/CUSS compliant and run the CUSS applications of the airlines. These kiosks are also capable of bag tag printing.

These kiosks can also be used for bag tag printing for passengers that are already checked in.

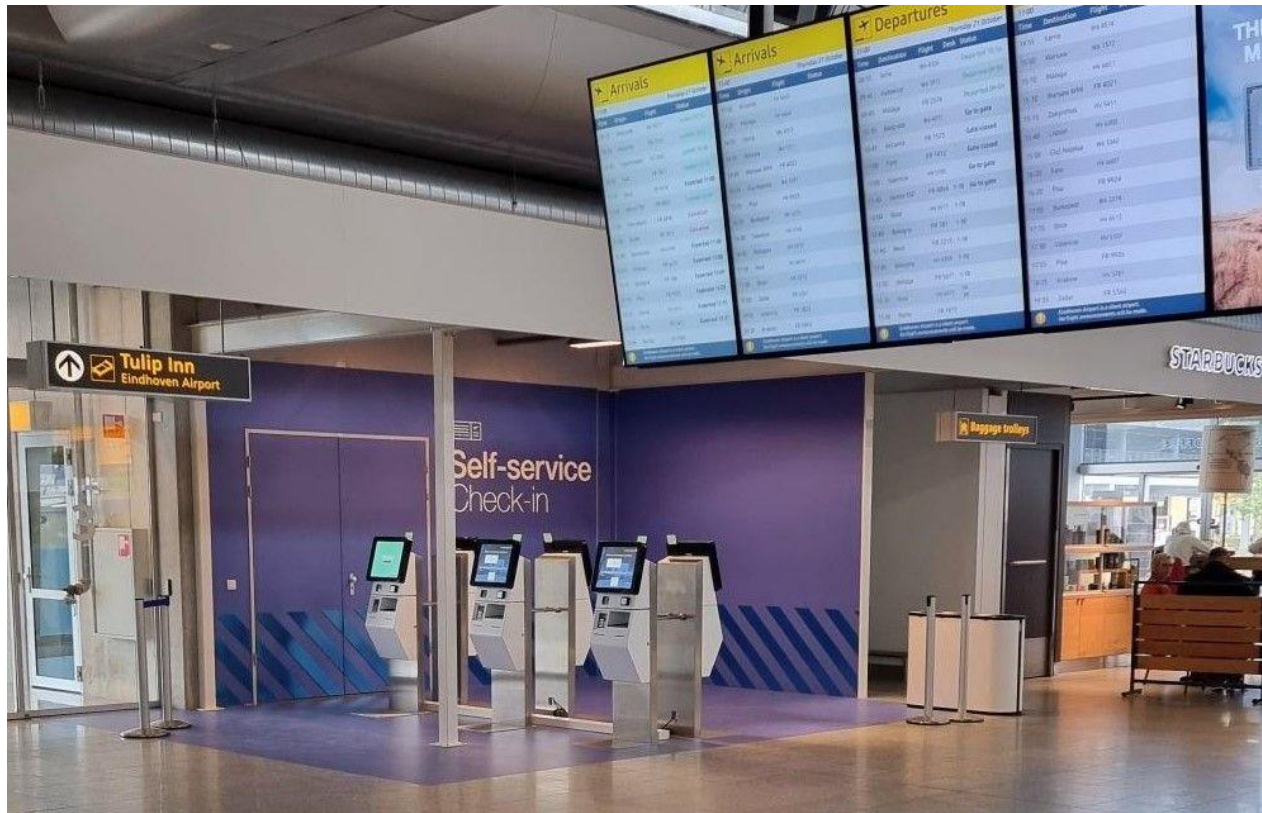


Figure 9. Self-service check-in kiosks at EIN

2.3.3 SELF-SERVICE BAG DROP UNITS

For baggage drop-off, 16 check-in positions are fitted with retro-fit self-service bag drop (SSBD) units. EANV uses SITA's Scan&Fly as a SSBD unit (former Type22). Please note that all 16 positions still have a desk position, however only 8 of these are equipped with conventional check-in equipment (see 2.3.1).



Figure 10. Self-service bag drop unit

The SSBD units are integrated into the Middleware platform of Eindhoven Airport in order to reach the airline systems (DCSs). More information in Chapter 2.4.

SCALE

Brand: Mettler

Type: IND205

CONVEYOR

Brand: Vanderlande Industries

CURRENT BAG DROP PROCESS

- The SSBD unit supports a 1-step and a 2-step bag drop process hybridly. The process is as follows:
 - a. Passenger places bag on the baggage belt.
 - b. Passenger scan boarding pass.
 - c. If there are no inactive bag tags in the passenger's PNR, the SSBD unit will create+print a bag tag.
 - i. Passengers attaches the printed bag tag
 - ii. Passengers confirm attachment of bag tag
 - iii. Bag is inserted into BHS
 - iv. Claim tag is printed
 - d. If the passenger has an inactive bag tag in its PNR, the SSBD unit will prompt to scan the bag tag.
 - i. If bag tag is found in the passenger's PNR, the passenger is asked to confirm correct attachment of the bag tag
 - ii. Bag is inserted into the BHS
 - iii. Claim tag is printed

EXCESS BAGGAGE

An important feature of the current SSBD units is the option to accept excess baggage. In case the SSBD unit detects that the bag exceeds the passenger's allowance, the SSBD unit will prompt the excess fee, to be paid by the passenger. If the passenger accepts the fee, the bag is accepted into the BHS.

The calculation of the excess fee is performed by the SSBD unit itself. A configurable list of excess fees per airline is stored on the SSBD unit locally.

EANV aims to develop an API for excess fee calculation in the future, but this is non-existent yet.

2.4 EINDHOVEN AIRPORT MIDDLEWARE PLATFORM

Eindhoven Airport runs an in-house built common use middleware platform that connects to the Departure Control Systems of all airlines operating at EIN. The platform exposes IATA-standard Common Use Web Services.

By this approach, the supplier of bag drop units:

- Does not have to integrate with multiple (bespoke) DCS interfaces of multiple airlines
- Only must integrate into one endpoint

A schematic overview of the platform is provided in Figure . The only integration required for a bag drop unit to reach the DCS, is depicted with the blue-dotted circle.

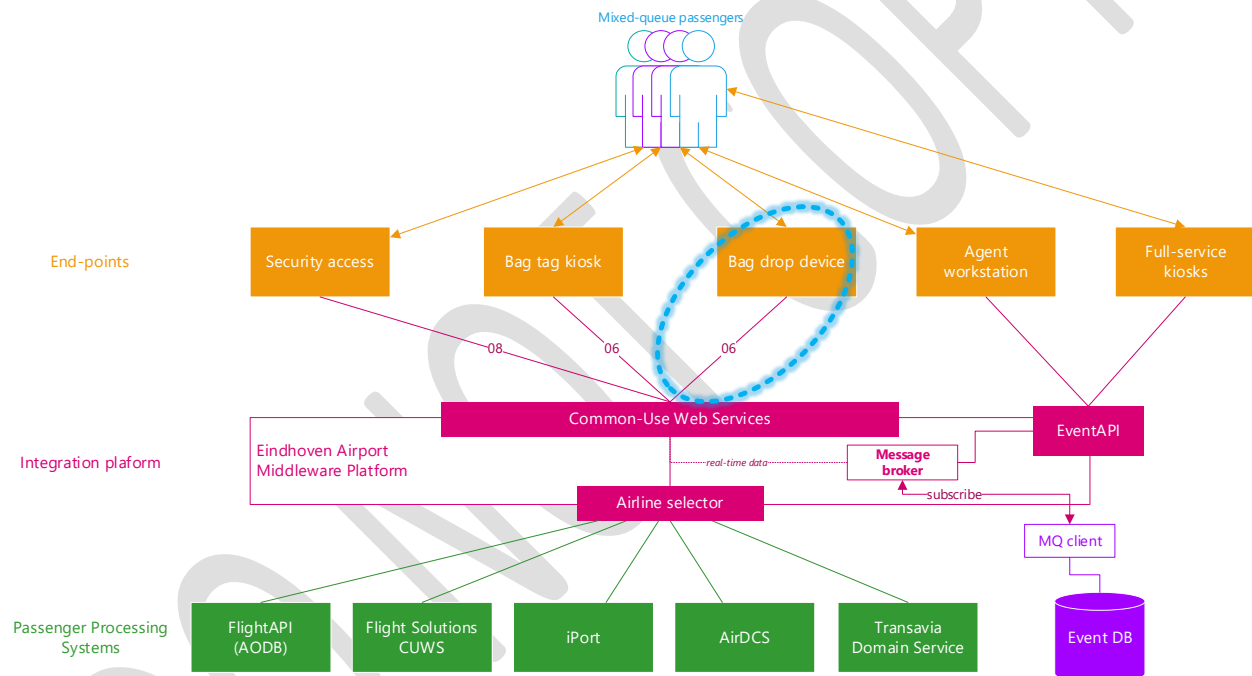


Figure 11. Schematic overview of Eindhoven Airport Middleware platform

2.5 NETWORK INFRASTRUCTURE

On the premises of EANV, all network connectivity is provided and maintained by EANV. The network is provided through secured core rooms. Core room access is managed by the IT Team of EANV. The core rooms are interconnected in a redundant setup. The network is available on the full premises of EANV, including car parks, apron, etc. EANV can provide rack space when needed.

The network provided is a Layer 3 managed network, with a maximum bandwidth of 1 Gbit/s. Please note that some network connections, e.g. check-in desks and gates, are used by both a PC and phone which limits the bandwidth to max. 100Mbit/s.

Two core rooms are equipped with an entry point for external connections (e.g. internet connection). One core room only allows copper connections (provider: KPN¹). The other core room allows for both copper (provider: KPN²) and glass-fibre (provider: Glasvezel Eindhoven³).

EANV intends to deliver network connectivity to all parties that operate at EANV's premises in order to reduce complexity and the amount of network components. A monthly fee can be charged for the use of network connectivity.

2.6 SERVER INFRASTRUCTURE

EANV has an on-premise virtualised server infrastructure. This infrastructure has a redundant, clustered setup; The cluster is architected such that hardware components can fail. Furthermore the primary cluster is mirrored/duplicated at a second core room.

EANV prefers to minimize the variety of hardware present in its core rooms. Therefore, it is preferred to minimize the amount of required server hardware in core rooms. If desired, EANV can provide one virtual machine to its supplier; The supplier is responsible for the full management of this virtual machine, including operating system management, software licenses, etc.

As described in the requirements, this virtual machine is for management purposes only. The availability of bag drop units shall not be depending on the availability of a central server.

¹ More information: <https://www.kpn.com/zakelijk/connectivity.htm>

² More information: <https://www.kpn.com/zakelijk/connectivity.htm>

³ More information: <http://www.glasvezeleindhoven.nl/>

3 REQUIREMENTS

For the procurement 'Self Service Bag Drop at Eindhoven Airport' described within this procurement, requirements have been composed.

All requirements can be found in Appendix 2.2.

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