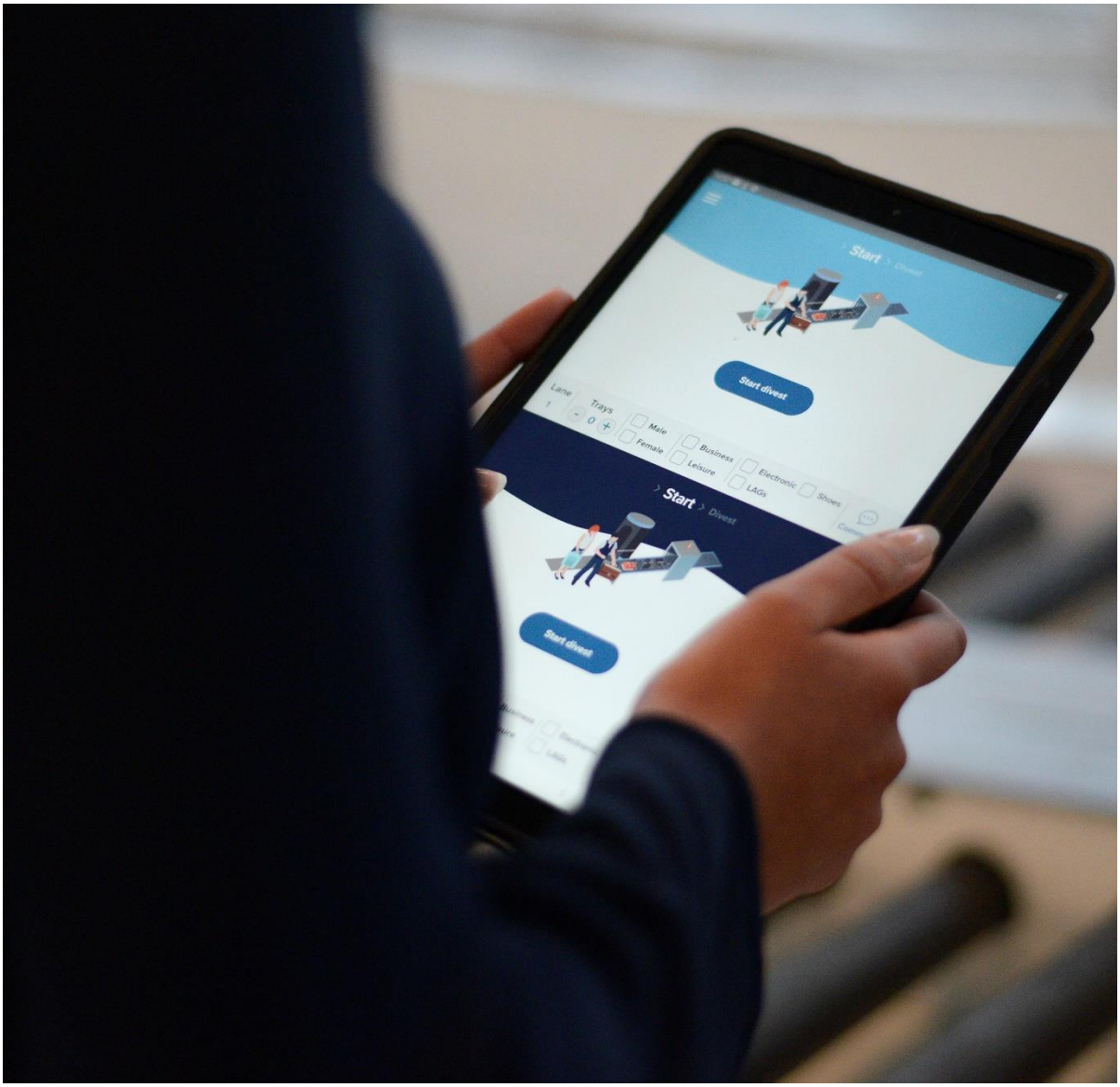
Point.FWD
aviation security consulting

Checkpoint Insight Tool

Process measurement manual

Date: 1 June 2021



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Versioning and document history

Date	Revision	Description	Modified by	App version
01-06-2021	-	First document release	J. Carpentier	2.0.0 Build 1

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Introduction

End user manual
- Introduction to the CIT SharePoint;
- CIT app download instructions;
- Step-by-step functional CIT app walkthrough.

Process measurement manual
- Best practices on CIT measurements;
- Determination of process characteristics;
- Measurement requirements.

Quick reference guide
- Frequently asked questions;
- Troubleshooting and contact;
- Important highlights.

Purpose of this document

In this manual, users can find best practices on CIT measurements, guidelines on determination of process characteristics and measurement requirements. This manual does **not** cover instructions and information on how to use the CIT app (this information can be found in the end user manual).

This manual describes how to:

- Optimally use the checkpoint measurement tool by recommending best practices on:
  - The user's position while measuring;
  - The determination of passenger characteristics;
  - Process measurements (when to start and stop); and
  - The determination of alarm types.
- Optimally use the simultaneity- and occupancy tools by recommending best practices on:
  - The user's position while measuring; and
  - The inclusion of passengers.

Location of this document

This document (and all other CIT documents) can be found on the CIT SharePoint shared with your organization. Document updates will always be shared via the CIT SharePoint.

Target group

This document is intended for all end-users working with Point FWD's Checkpoint Insight Tool.

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Abbreviations

Abbreviation	Description
BAX	Baggage
CIT	Checkpoint Insight Tool
EDS (CB)	Explosive Detection System (Cabin Baggage)
ETD	Explosive Trace Detection
LAGs	Liquids, Aerosols and Gels
PAX	Passengers
WTMD	Walk-Through Metal Detector

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Contents

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1 Checkpoint measurement tool

The checkpoint measurement tool is designed to track passenger flow and action through the complete security process, focusing on the integration with equipment components as well as security personnel in every separate step of the process.

1.1 Position

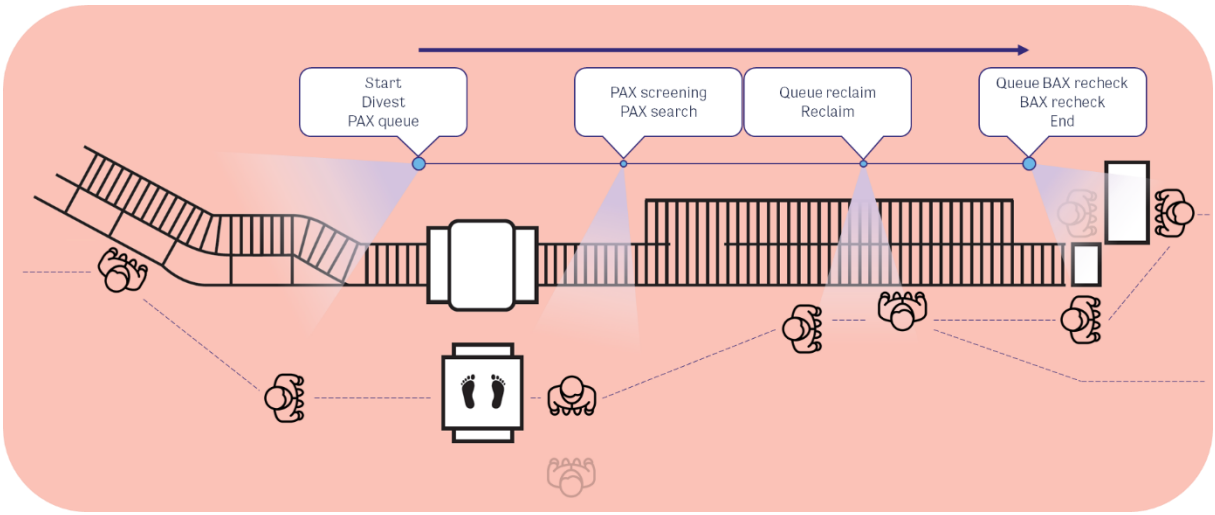
In the checkpoint measurement tool, the user tracks passengers through their security checkpoint journey. It is therefore of great importance that the user is able to follow the tracked passengers and to accurately log their actions. For this to be possible, the user must be in a position in the process from where it can observe the passengers in all process steps.

Before starting

Before starting any measurement, it is important that clear (written) agreements have been made between the measuring user and the local airport/security authority. Additionally, it is recommended that before starting a measurement shift, the measuring user informs the active security checkpoint operators of its activities.

Physical user position

Point FWD recommends adhering to the following when performing a checkpoint measurement when it comes to the physical position of the measuring user (a larger version of the figure below can be found as an appendix to this manual):



Physical user position during utilization of the checkpoint measurement tool

If possible, the user should stand on the 'inside' of the security lane (i.e. the side where security checkpoint operators are). Optimally, the user should be able to move along the lane to follow passengers. Experience learns that when starting to follow a passenger in divest, the user should be able to accurately track all steps standing next to the baggage x-ray machine. When the passenger moves through the passenger screening process (security scanner or WTMD), the user should move further towards the reclaim area, so that information shown on the passenger screening device operator screen is visible to the user, as well as the actions of the operator in case of a passenger search. During the final steps such as reclaim and baggage search, the user should move along with the passenger to the end of the lane, preferably with sight on the recheck monitors if the passenger's luggage is rejected.

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Tracking two passengers simultaneously

In case a user is simultaneously tracking two passengers, it may track two passengers which are approximately at the same stage in their checkpoint journey. This way, the user can adhere to the previously described route while being able to track both passengers. Users should keep in mind that tracking two passengers simultaneously can be challenging. It is recommended that users first master the tool by measuring one passenger at a time. When the user thinks it has gained enough experience, it can start tracking two passengers simultaneously.

1.2 Passenger characteristics determination

During each measurement, the user must determine two passenger characteristics: gender and passenger type. Both characteristics should be determined purely based on the user's observation, without interfering or communicating with the passenger.

For determining the passenger's gender, the user should pay attention to the passenger's appearance. In the CIT app, users can only select 'Male' or 'Female'.

Determination of the passenger type can be based on a selection of criteria. The following table addresses some frequent (notable) difference between business- and leisure passengers.

Characteristic	Business passenger	Leisure passenger
Travel company	Mostly travels alone (or with a small group of colleagues).	Often travels in a (larger) group (e.g. friends, family or children).
Amount of baggage	Smaller amount, only packs essentials, sometimes only a small bag (for daytrips), or has majority of baggage as (paid) hold baggage.	Larger amount, often packs clothing for a longer period and wants to save money on hold baggage.
Electronics	Often carries multiple (large) electronic devices, such as a laptop and a tablet. Sometimes marked with stickers displaying the logo of their employer.	Rarely carries multiple (large) electronic devices, apart from a mobile phone (and photo camera). Possible exception are students carrying a laptop.
Clothing	Often wears formal clothing.	Wears normal/comfortable clothing, sometimes chosen based on its destination (e.g. sandals for sunny destinations).
Familiarity with security process	Often looks more relaxed and knows what it has to do as it has gone through the security process multiple times before.	Can look more stressed and make more mistakes as it is moving through the security process.

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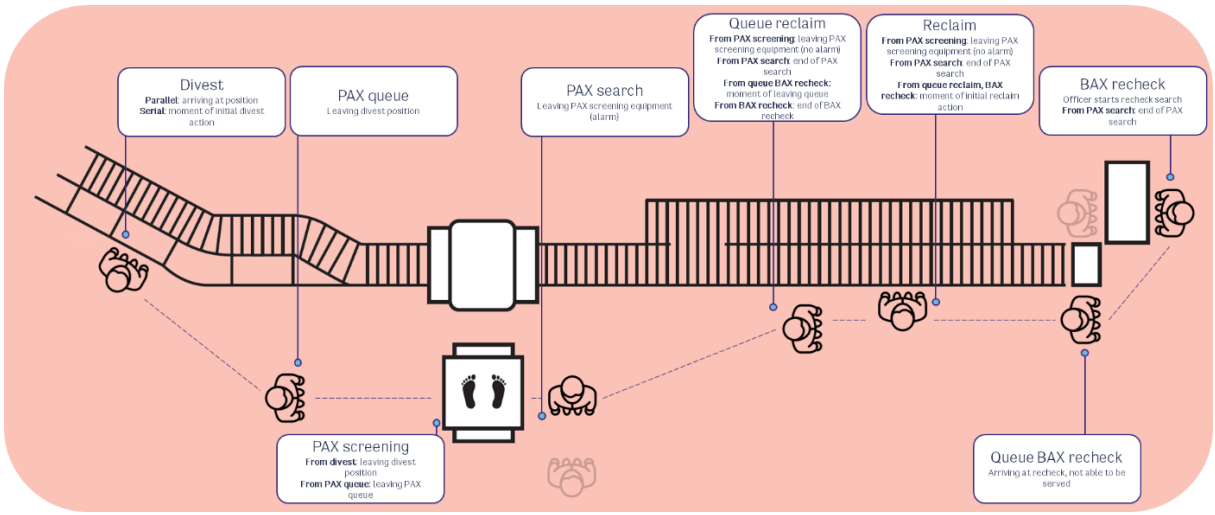
1.3 Process guidelines

In order to ensure correct data collection with the CIT app, Point FWD has composed guidelines of when all processes have their starting points. The following subparagraphs indicate for each part of the process the (exact) moment when that part starts and should be logged in the CIT app. The following figure illustrates these moments (a larger version of the figure can be found as an appendix to this manual).



Visual overview of start of each part of the security process.

1.3.1 Divest

Start

The moment the divest process step should be started depends on the selected configuration. If a security lane has a parallel divest configuration, the divest measurement starts when a passenger arrives at the divest position and thus occupies it. For serial divest configurations, the divest process should start at the moment the passenger performs its initial divest action (e.g. grabbing a tray).

Idle

When a passenger has not finished divesting, but is not actively divesting its belongings (e.g. waiting for a new tray or operator assistance), the passenger is in idle. When it continues to divest its belongings, the process resumes.

Next process

The divest process ends when the passenger has finished divesting and proceeds to either:

- PAX queue; or
- PAX screening.

1.3.2 PAX queue

Start

The PAX queue process step should be initiated at the moment a passenger leaves its divest position, and is not able to continue to the PAX screening process step, thus having to queue.

Next process

The PAX queue process ends when the passenger is allowed to enter the PAX screening equipment. From the PAX queue process there is also an option to ‘go back to divest’. This option can be used when, for example, a passengers has forgotten to divest its mobile phone and thus returns to the divest station.

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1.3.3 PAX screening

Start

The PAX screening process step can be initiated in two possible cases:

- When a passenger comes from divest and is able to directly continue to PAX screening, the PAX screening process step should be started at the moment the passenger enters the security scan area; or
- When a passenger has waited in the PAX queue before coming to the PAX screening, the PAX screening recording should start at the moment the passenger leaves the PAX queue.

Next process

The PAX screening process ends at the moment a passenger has been screened and the result is known. Based on the result, the passenger can continue to:

- PAX search, in case of a triggered alarm;
- Queue reclaim, in case no alarm was triggered but the passenger cannot continue to reclaim right away; or
- Reclaim, in case no alarm was triggered and the passenger can continue to reclaim because its belongings have already arrived at reclaim.
- From the PAX screening process, there is also an option to 'go back to PAX queue'. This option can be used when, for example, a passenger is send back by an officer because of a rescreening of another passenger, or when a passengers has forgotten to divest it mobile phone and thus returns to the divest station (via the PAX queue).

1.3.4 PAX search

Start

The PAX search process starts at the moment a passenger's scan result is visible and it is clear that an alarm was triggered.

Next process

The PAX search process ends when a passenger has been searched and is allowed to continue its checkpoint journey. It can continue to:

- Queue reclaim, in case the passenger cannot continue to reclaim right away;
- Reclaim, if the passenger can continue to reclaim; or
- BAX recheck, if a tray of the passenger has triggered an alarm and requires a recheck.

1.3.5 Queue reclaim

Start

There are multiple ways how a passenger can arrive at the queue reclaim process:

- When coming from the PAX screening process step, the queue reclaim step should be initiated when the passenger leaves the passenger screening equipment and no alarm was triggered;
- When a passenger enters the queue reclaim from the PAX search process step, the recording of the queue reclaim process step should start when the PAX search is completed and the passenger is allow to continue;
- If a passenger approaches the queue reclaim step from the queue BAX recheck, the measurement should start at the moment the passenger leaves the queue BAX recheck; or
- When a passenger enters the queue reclaim from the BAX recheck process step, the queue reclaim measurement should start at the moment the BAX recheck procedure has been completed.

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Next process
From the queue reclaim process, a passenger can continue to the following processes:

- Reclaim, when the passenger is able to continue to reclaim after queueing;
- BAX recheck, when during queueing, a passenger discovers one of its trays triggered an alarm and the passenger can continue to the recheck right away; or
- Queue BAX recheck, when during queueing, a passenger discovers that one of its trays triggered an alarm, but the passenger cannot continue to recheck right away.

1.3.6 Reclaim

Start
The reclaim process step can be entered from multiple processes:

- When a passenger enters the reclaim process step coming from the PAX screening process step, the reclaim measurement should start at the moment the passenger leaves the PAX screening equipment (and no alarm was triggered);
- When a passenger enters the reclaim process from the PAX search process step, the reclaim measurement should start at the moment the PAX search ends; or
- Coming from either the queue reclaim or BAX recheck process step, the reclaim process measurement should start at the moment the passenger performs its initial reclaim action (e.g. grabbing bag or redressing).

Idle
When a passenger has not finished reclaiming, but is not actively reclaiming its belongings (e.g. waiting for its next tray or operator assistance), the passenger is in idle. When the passenger its next tray arrives, the process resumes

Next process
From the reclaim process, the passenger can continue to:

- Queue BAX recheck, when a passenger has trays which have triggered an alarm and need to be rechecked, but it cannot continue to recheck right away; or
- BAX recheck, when a passenger has trays which have triggered an alarm and need to be rechecked, not having to queue.

1.3.7 Queue BAX recheck

Start
The queue BAX recheck process step starts when a passenger arrives at recheck, but cannot be served right away, thus having to queue.

Next process
The queue BAX recheck process ends when the passenger is served by the recheck agent. From the queue BAX recheck process, there is also an option to ‘go back to queue reclaim’. This option can be used when, for example, a passenger goes to queue BAX recheck, and then sees his tray go to reclaim, returning to the reclaim process.

1.3.8 BAX recheck

Start
The BAX recheck process step should be started at the moment the divest officer starts the recheck search. The only exception is for when a passengers enters the BAX recheck process step from the PAX search process step. In that case, the BAX recheck process step should be started when the PAX search process step ends.

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Next process
From the BAX recheck, a passenger can continue to:

- Queue reclaim, when the passenger has trays to reclaim but cannot continue to reclaim right away; or
- Reclaim, when the passenger has trays to reclaim and can continue to reclaim right away.

1.4 Alarm-, search- and resolution type determination

In the PAX search and BAX recheck process steps, the user has to select alarm-, search- and resolution types in order to continue.

In the PAX search process step, the search type can be easily determined by closely watching the security officer's actions during the process. The alarm type (only applicable if the primary screening equipment is a WTMD) can often be read from the machine by the user. Most important here is that the user stands on the correct spot, so that the output of the equipment is visible (see 1.1).

During the BAX recheck process step users should stay close to the operator, and ask questions if the alarm-, search- and resolution types are not clear. Often, users can also deduct the types from the actions taken by security officers.

1.5 Measurement representativity

Measurement schedules, plans and required quantities are project-specific and always determined in consultation between Point FWD and the (measuring) organization. It is important that when a measurement plan has been agreed upon, the measuring party adheres to the agreement. Non-adherence could result in unreliable or even unusable data. For more information on the minimum number of measurements and the consequences of the number of measurements on the data results, user should refer to the statistical ground document. This document contains clear ground rules for measurement quantity.

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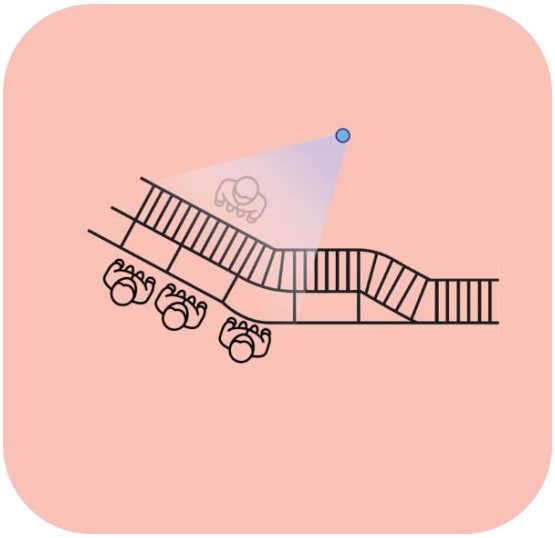
2 Simultaneity tool

The simultaneity data capture tool measures active passengers at the divest and reclaim process areas. It is designed to accurately determine process capacity.

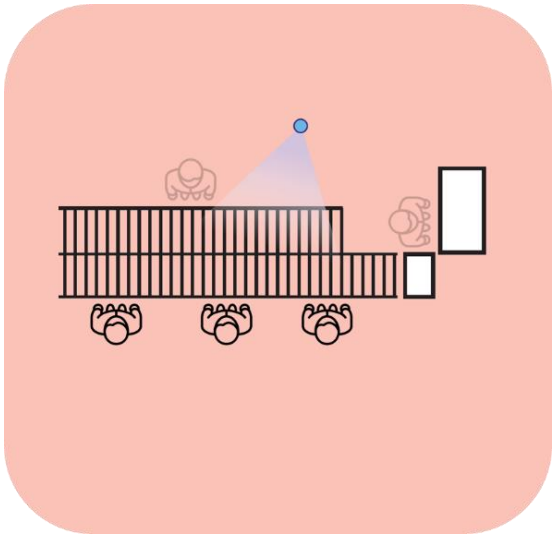
2.1 Position

When performing a simultaneity measurement, users should pick their position based on which process is being measured.

When recording a measurement for the divest process, the user should take place behind the divest officer. This way, the user will not get in the way of the officer, but will be able to oversee the entire process and accurately record the passengers in it. During a reclaim process, the user should stand behind the reclaim officer. As mentioned for the divest process, this way the user will note bother the officer while remaining able to see all actions performed by passengers.



Divest



Reclaim

2.2 Passenger inclusion

In the simultaneity tool, the user captures the number of passengers that are simultaneously present at the divest- or reclaim process. In order to accurately capture this data, it is important to determine at what exact moment a passenger should be included in a simultaneity measurement.

For both the divest- and reclaim process step simultaneity measurement, a passenger should be included from the moment it occupies a position along the security lane (depending on the process being captured). Passengers in queues should not be included in simultaneity measurements. Passengers should be excluded from the measurement again when they vacate the position they occupied. Idle passengers should be included in simultaneity measurements.

2.3 Measurement requirements

Important to note is that simultaneity measurements should only be captured during peak times (i.e. there should be a continuous supply of new passengers). Captures during off-peak times can result in less accurate analyses. Additionally, it is strongly recommended that simultaneity measurements are ten minutes long at minimum, to ensure the generated data is reliable and representative. Data can be considered reliable when the shown average during the measurement does not change with new entries.

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3 Occupancy tool

The occupancy data capture tool captures divest spot assignment in parallel security lanes. Captured data is used for calculations in terms of availability and divest occupancy levels.

3.1 Position

When performing an occupancy measurement, the user should take place behind the divest officer. This way, the user will not get in the way of the officer, but will be able to oversee the entire process and accurately record the passengers in it.

Important to note is the direction of the divest position in regards to the x-ray. In the app configuration screen, the direction can be entered. Users can choose for either “left (begin) to right (x-ray)” or “right (begin) to left (x-ray)”. The position furthest away from the x-ray should always be position number one, regardless of the orientation of the lane.

3.2 Passenger inclusion

In the occupancy tool, the user captures the occupancy of the available divest positions. In order to accurately capture this data, it is important to determine at what exact moment a passenger should be included in an occupancy measurement.

A passenger should be included from the moment it occupies a divest position. Passengers in queues should not be included in occupancy measurements. Passengers should be excluded from the measurement again when they vacate the divest position they occupied. Idle passengers should be included in occupancy measurements.

3.3 Measurement requirements

Occupancy measurements are only applicable to lanes with a parallel divest process. Important to note is that occupancy measurements should only be captured during peak times (i.e. there should be a continuous supply of new passengers). Captures during off-peak times can result in less accurate analyses. Additionally, it is strongly recommended that occupancy measurements are ten minutes long at minimum, to ensure the generated data is reliable and representative.

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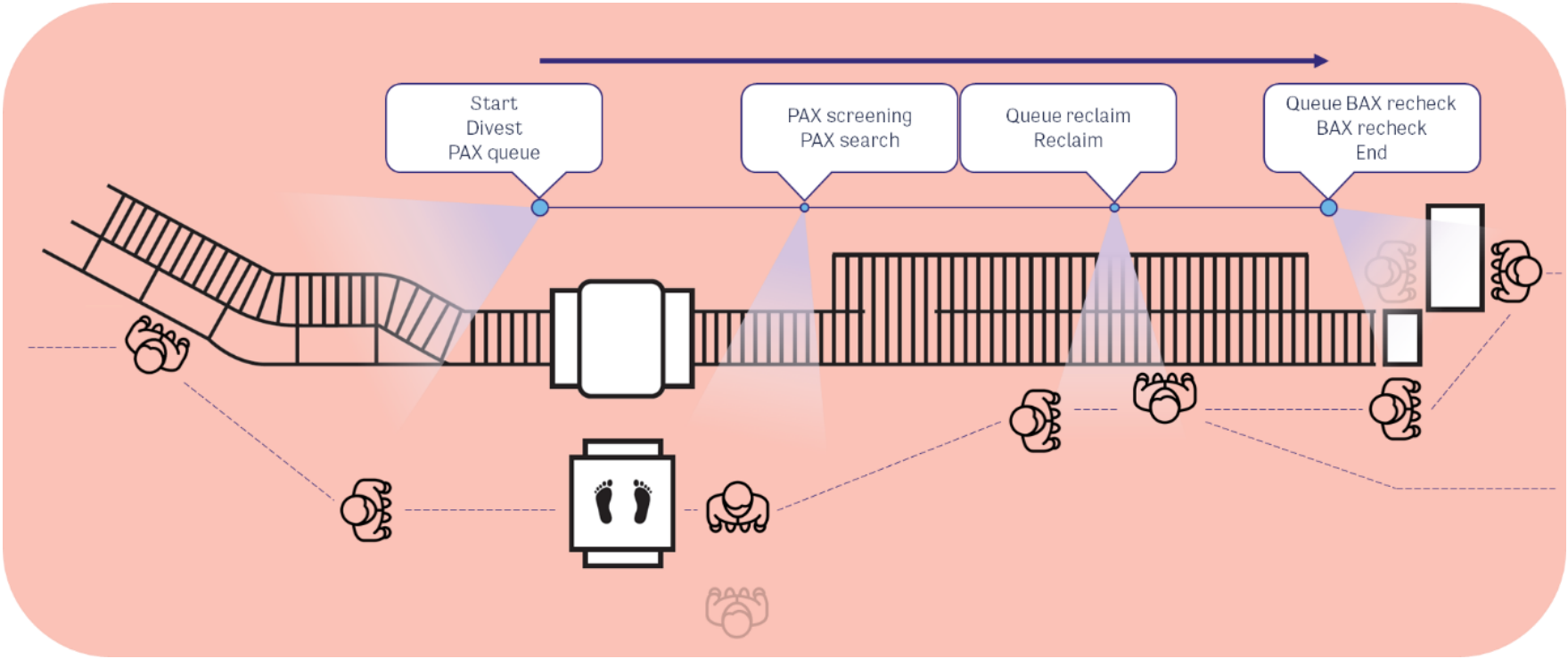
Appendix I: Physical user position during utilization of the checkpoint measurement tool



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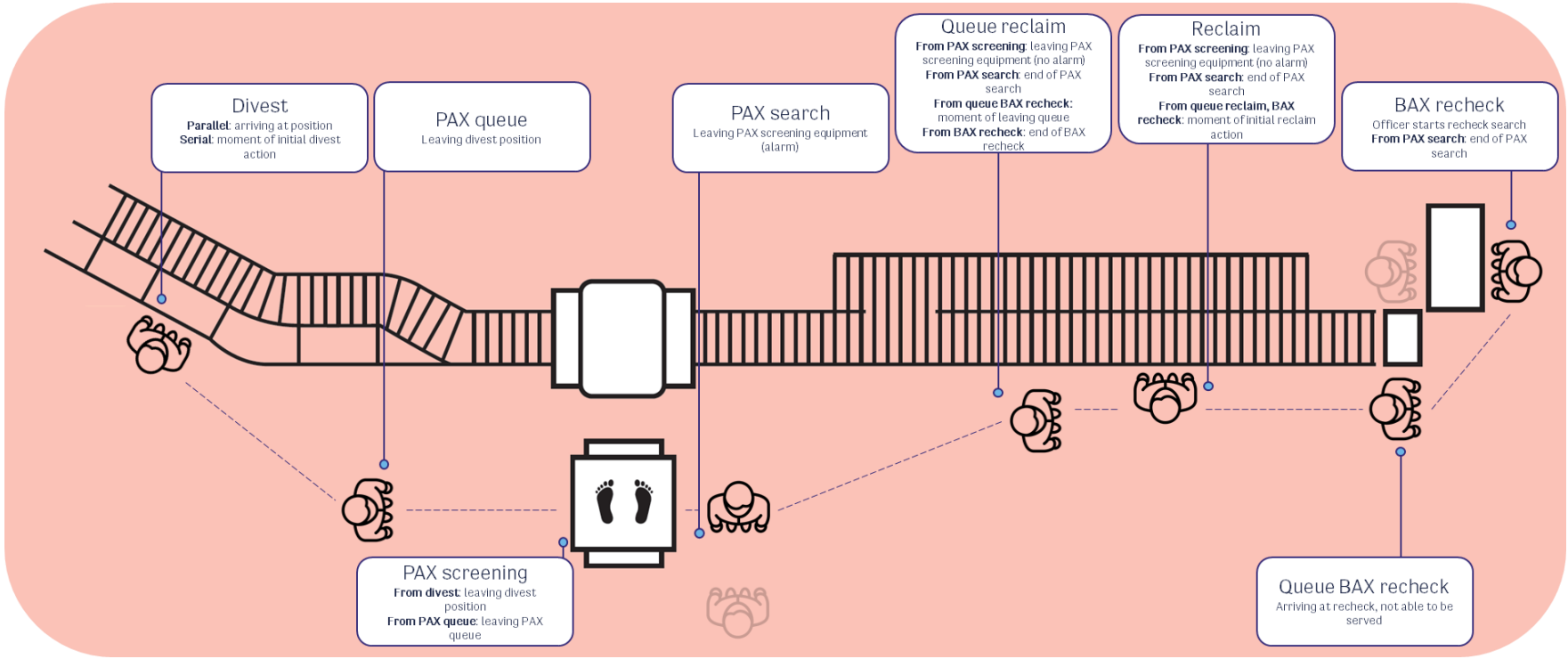
Appendix II: Visual overview of start of each part of the security process



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