



Entry/Exit System (EES)  
Working Group on ICT Solutions for  
External Borders (sea/land) Report

26/03/2019

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# 1. Introduction

This document summarises the findings and recommendations of the Working Group on ICT Solutions for Member States (MS) with External Borders (sea/land), as mandated by the Entry/Exit System (EES) Programme Management Board.

Firstly, this document provides a summary of the Group's mandate and its composition.

Secondly, the process related to the Entry/Exit System in the context of the verification at the borders (Article 23 of dedicated EES Regulation (EU) 2017/2226)<sup>1</sup> is summarised, to better understand how the introduction of the EES impacts the process of crossing via a land and/or a sea border, including the impact the system will have on the border-crossing time in the case of a first entry.

The next sections of the document will focus on the problem statements and the elements that have been assessed from a procedural and a technical perspective.

Finally, the last section sets out the requirements for the ICT solution and makes recommendations for the next steps that Member States, in cooperation with the European Border and Coast Guard Agency (EBCGA)/Frontex, need to take in order to refine the processes, regardless of the technical solutions recommended by the working group.

The annexes introduce the Article 23 of the EES Regulation and the use cases in more detail.

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<sup>1</sup> Regulation (EU) 2017/2226 (OJ L327, 9.12.2017)

## 2. Working group mandate and composition

### 2.1. Mandate

The mandate of the Working Group has been defined by the EES Programme Management Board.

The objective of the Working Group is to facilitate the work towards a viable solution and a common architecture for the implementation of the EES at the EU external sea and land borders. The recommendations need to be compatible with the existing legal base and the associated business processes.

Given the complexities of the processes at sea and land borders, the working group was divided into two sub-groups, covering land borders and sea borders respectively.

### 2.2. Composition

The Working Group comprised as follows:

- Experts (business and technical) from Member States with external land and sea borders: BG, DE, EE, FI, EL, HR, HU, LT, LV, NO, PL, SI, SK, PT, IT, NL, BE, FR, ES, MT, SE, DK, RO;
- European Border and Coast Guard Agency (EBCGA)/Frontex representatives;
- European Commission representatives;
- eu-LISA representatives.

### 2.3. Meetings

The Working Group had five working sessions on the following dates:

- 8 November 2018 in Strasbourg,
- 3 December 2018 in Tallinn,
- 30 January 2019 in Strasbourg,
- 13 February 2019 in Tallinn,
- 13 March 2019 in Tallinn.

### 3. Border crossing – generic process

In order to fulfil the EES obligations, the following process shall be implemented for every Third Country National (TCN) entering or exiting the Schengen area:

1. Identify if the TCN is subject to EES registration or not;
2. For the TCNs subject to EES registration, the alphanumeric data shall be captured to determine the next sub process: either first entry, exit or subsequent entry;
3. Capture of biometric data either for enrolment or for verification/identification;
4. Creation of the Entry/Exit/Refusal record.

More details on how this process shall will be implemented can be found in Section 8, Annex I referring to use of data for verification at the borders and Section 9, Annex II referring to supporting use cases for Article 23.

The main concern at land and sea borders is to ensure that the biometric data is captured in optimal conditions, in order to ensure the required level of quality.

## 4. Land border processes

For the land borders, the following cases shall be investigated so as to identify which process can be applied. For that purpose, this section will first define the process and sub-process to be applied, regardless of the context, and then outline for each case identified the specific areas that shall be addressed.

The cases identified so far for the land border crossings are:

- Border crossing for pedestrians;
- Border crossings for cars and heavy goods vehicles (trucks/lorries);
- Border crossing for coaches;
- Border crossing for trains.

### 4.1. Border crossings for pedestrians

In this case, the TCN will have to go through various possible border crossing points (BCP) or border crossing infrastructures, similar to the ones in place at airports, such as: pre-registration desks/kiosks, ABC systems, Self-Service Systems or booths, where the process defined in the previous sections can be executed in optimal conditions.

### 4.2. Border crossings for cars (including trucks/lorries)

The issue that needs to be addressed for border crossings by means of a vehicle is not the filtering of travellers based on their category, as this is already the case at most border crossing points, but rather managing the length of the queue and the waiting time. Long waiting times may lead to frustration and other unpleasant situations for TCNs (discomfort for TCNs, especially elderly passengers, parents, children, infants, cases involving vulnerable persons, etc.).

In order to optimise the border checks for those travellers and, at the same time, protect their dignity as per the Regulation, the following approaches, with their associated drawbacks, have been identified:

- Pre-enrolment desk: a pre-registration desk, where all the different information (travel documents, biometrics) would be captured for each traveller. While the traveller is moving towards the border crossing line, this data would be processed and a decision taken at the last moment. However, it should be noted that this pre-registration does not exclude checks on the means of transport against relevant databases. This means that, although passengers' data would have been partially entered into the system before they reach the control lane, passengers would still have to wait for the car to be checked.
  - o The pros/cons of this approach:
    - (-) It requires additional space and the creation of such a desk. In addition, to allow biometric data to be captured in optimal conditions, travellers would be required to leave their vehicle (cars, trucks/lorries etc.). This could be considered as a serious drawback at certain BCPs with space limitations inside and outside (for stopping or parking) the BCP infrastructure;
    - (-) People having to get out of the vehicles would negatively impact passenger flow management;
    - (-) the length of the queue and the waiting time could increase as the problem is shifted from the border guard booths to the pre-enrolment desks;
    - (+) It could leave more time for processing the data.
- Mobile enrolment: border guard going up the queue of vehicles doing the verification/enrolment.
  - o The pros/cons of this approach:
    - (-) Capturing biometric data with mobile devices is not optimal from the quality perspective (see later in this document);
    - (-) Not possible to ensure 24/7 quality of the enrolment process;



- (-) It would require a strong network (wireless) to allow connectivity between the border guard on the move and the border infrastructure. In addition, encryption issues would have to be assessed;
  - (-) The security of border guards shall be assessed as they will be exposed to all the related risks when moving across the vehicle lanes within the limits of the area dedicated to the border check activities.
- Mobile pre-registration: information sent first from a personal device (travel documents, biometrics) that is self-captured for each traveller and associated to the vehicle. While the traveller is moving to the border crossing line, this data would be processed and a decision/acceptance of registration taken at the last moment by a border guard.
  - The pros/cons of this approach:
    - (+) It leaves time for the processing of the data;
    - (+) Filtering whether the TCNs (at the car or truck/lorry) are subject or not to EES registration;
    - (-) Capturing biometric data with mobile devices is not optimal quality-wise (see later in this document);
    - (-) It requires the additional creation of a web service and mobile application with strong quality restrictions and anti-fraud functionalities.
- Increase the staff allocation and perform the border checks in clusters of 5 to 10 vehicles at the same time; the length of the cluster can be adjusted during the testing phase. The increase of staff involved in border checks can be done by redistributing available staff at the same BCP or from the hierarchical BCU, mainly during peak hours.

However, in certain cases, where the land border crossing point is located in an area where it is not possible to expand the infrastructure, TCN filtering might be an issue (e.g. BCP on a road between the sea and a cliff). In that case, the equipment/systems used at the border need to support the border guard in identifying whether the TCN is subject or not to EES registration.

### 4.3. Border crossings for coaches

The following scenarios are currently in place for this process:

- Travellers remain in the coach and the border guards carry out the verifications inside the coach;
- Travellers are requested to leave the coach and the verification is done at a booth;
- Travellers send all registration data (biometrics and travel document) in advance from their own devices and the border guards verify/accept the creation of a new registration (inside the coach).

Regarding the first approach, as coaches already have a dedicated lane, in the case of several coaches arriving at the same time, the queue could be significantly longer. In that case, an on-board check is preferred.

The second approach is quite standard and is covered by the same approach as for pedestrians (see section 4.1).

The third approach can be combined with approaches one and/or two.

### 4.4. Border crossings for trains

The process for crossing the border by train is more complex.

The following solutions are currently in place at external borders:

- Checks are done before entering or when exiting the train;
- Checks are performed in the train while it is stopped or moving.

In the first solution, the constraints are that the number of entering/exiting stations is limited in order to ensure that people can be checked before entering or after exiting the train. This configuration is already in place for

the shuttle trains between the United Kingdom and the continent (France, Belgium and the Netherlands). In this case, it is important that TCNs know which kiosk they should use (i.e. a TCN going to France must use the French kiosk) unless multi-purpose kiosks can be used.

For the second solution, the issues identified so far by the Working Group are:

- The stability of the network, which is not always sufficient to allow the required data to be processed (especially when the train is in movement);
- The need for mobile devices to be used, which could lead to lower quality in data capturing;
- The light conditions may not be sufficient to take good quality photos. The mobile solution involves taking photos in poor light.

## 5. Sea border processes

For sea borders, the following cases and scenarios will be investigated to identify which process can be applied:

- Cruise vessels:
  - Two different scenarios can be envisaged:
    1. When all passengers embark/disembark at the same time
    2. When only a number of passengers embark/disembark
 In both cases, time is limited. The difference lies in the number of passengers that need to be checked, and this is a critical issue with big cruise ships (some of which are transporting more than 6 000 passengers).  
 The crew members during crew rotations have also to be taken into consideration.
- Ferries:
  - The situation is similar to that of cruise vessels when all the passengers disembark at the same time. In this case, passengers travelling on board with their cars or any other means of transport have to be taken into consideration.  
 Challenges:
    1. Ferries have to disembark the passengers and embark the new ones in limited time slots, according to agreements established between ports and carriers;
    2. Parking spaces for cars at the port.
- Cargo vessels carrying passengers:
  - The challenge is that cargo vessels moor in specific areas, which are not necessarily connected to the BCP. Sometimes cargo vessels are anchored near the port and passengers/crew use shuttle boats to reach the port.
- Yachts (pleasure boats):
  - Yacht passengers are obliged to go to the nearest BCP if they are arriving from a third country. The problem is that many marinas are located away from the nearest BCP and yacht passengers might not have planned such additional trips in advance.

Note: It is important to distinguish between 'disembarking' and 'going ashore'.

In case of 'disembarking', passengers or crewmembers will be subject to EES registration, whereas for 'going ashore', the procedures will be described in and handled by the EES handbook.

In addition, the traffic generated by those working on the ship (ship crew, but also others) shall also be considered. Most of these workers are coming from countries subject to a multiple entry visa. For these TCNs, the process to consider is the following:

- They arrive from their country of origin via an airport, where their entry should be registered in the EES;
- When embarking, their exit should be registered in the EES;
- At the end of their assignment (for example, 6 months), their entry will again be registered when they disembark;
- Finally, when they arrive at the airport to return to their country of origin, their exit should again be registered.

For yachts and cruise ships, the process applied will be further detailed in the EES Handbook.

The European Commission will analyse the scenarios described above in order to see whether the processes in the EES Handbook are sufficient or whether a change of the Schengen Borders Code<sup>2</sup> might be required to ensure the proper application of the EES.

In this context, a survey was conducted among this Working Group, to gather information from its members on how these scenarios, in particular for cruise ships, are dealt with currently. The survey results were used to conduct the current analysis.

## 5.1. Border crossings on cruise vessels

For the cruise vessels, the following scenarios have to be considered:

- All travellers are embarking/disembarking (start and end of the cruise);
- Some of the travellers are embarking/disembarking (stops);
- Rotation of crew members.

### **Travellers subject to EES registration:**

The embarking/disembarking of passengers can be handled in the same way as at a land border (using fixed or mobile equipment) depending on the available infrastructure.

### **Crew members subject to EES registration:**

Whether this additional traffic can be considered to follow the same process as a 'tourist' crossing the border will be assessed. The volume of these TCNs might be high, given that the number of workers is usually in correlation to the number of passengers. However, it should be borne in mind that this process would happen before or after the travellers embark/disembark.

The situation for crew members going ashore in accordance with point 3 of SBC Annex VII will be described in the EES Handbook, and the European Commission will analyse whether the description in the handbook is sufficient or whether changes to the Schengen Borders Code will be required. However, if the crew members are disembarking (signing-off the vessel), an entry check should be done with an EES registration. This can take place in the harbour or at the nearest Border Crossing Point.

## 5.2. Border crossings on ferries

One of the constraints in this process is the time required to leave the boat, which is dependent of the planning of the ferry timetables and of the space available in the harbour. The passenger flows can be of two (or more) types: firstly the 'incidental/occasional traveller' who does not use the ferry regularly, and secondly the 'professional/frequent traveller' – for instance a truck/lorry driver going back and forth multiple times in a month.

The process shall have to cope with the same constraints as the process at the land borders, i.e. the process defined in Sections 4.1, 4.2 and 4.3 of the current report.

The working group has already identified the following areas, which could be used to improve the process:

- Doing the verification at the border on the ferry. This solution would require an agreement between the carrier (ferry owners) and the Member States to install booths (self-service and traditional booths) on the boats themselves.
- Doing the verification before embarking. This would require the installation of booths in a non-EU

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<sup>2</sup> Regulation (EU) 2016/399 (OJ. L77/1, 23.3.2016, p.1-52)

country but would allow disembarking time constraints to be respected more easily. The same constraints as those mentioned for the train are applicable in this case.

In practice, these two proposals are difficult to implement, as:

- For short-distance trips, it will be difficult to check all the passengers during the ferry crossing;
- It will be difficult to ensure the security of the border guards in the case of an incident, as they are in a closed environment and their staff numbers might be limited;
- It is difficult to split passengers into zones for those who have already been checked and those who have not.

Separate Registered Traveller Programme (RTP) lane for trucks/lorries where drivers have been granted RTP status. Drivers ('professional travellers') travel back and forth on the same route; using the RTP system can speed up border checks for this group.

### 5.3. Border crossings on cargo and/or fishing boats

A general challenge when it comes to border checks on cargo and fishing boats is that in many cases these vessels do not dock in ports where there is a continuous presence of border control authorities/police. For instance, both Sweden and Norway have a large number of smaller ports where border crossings can take place. In many of these ports there are no physical buildings/infrastructure, and no fixed control booths or equipment. In some instances, border guards/police have to drive several hours from the nearest police district location/station to reach the port. Sometimes the vessel does not come into port at the scheduled time, making planning for border authorities difficult. Border checks, as well as vessel and crew list controls, are often carried out on the ship or in the port, outside the physical facilities.

Member States and Associated Countries have different weather conditions: in the north, temperatures can fall to below minus -30 degrees Celsius, and in the far north the days in the winter season have only few hours of daylight. In southern countries on the other hand, the heat and sunlight pose other challenges.

In general, there is a higher volume of special cases, for example the need for exceptions to processes with regard to border controls of cargo and fishing boats. The number of special cases that should be handled by defining special procedures/processes rather than by technical adjustments, needs to be discussed.

In order to perform border checks and register TCNs into the EES, apart from vessel and crew list control, the vessel's agent or master has to provide the crew and passenger lists, and the lists have to be checked against the SIS, Interpol and national databases in advance. The possibility of Member States reducing the number of ports that allow border crossings has also been suggested a measure to be further explored. Furthermore, the possibility of performing border checks on embarking/disembarking passengers and crew in nearby fixed sites, such as airports, larger ports, police stations, etc. should be explored. In such cases the ship agent or master of the ship could be required to transport travellers to the border check location.

## 6. Solutions

This section provides a short description of the possible processes that could be implemented at the land and sea border crossing points and then explains the possible technical solutions to support these processes.

The processes take into account the need to perform an enrolment or a verification of the TCN's biometrical data during the border crossing.

### 6.1. Processes

#### 6.1.1. Land borders

The conclusion of the discussion about the processes was that the solution whereby travellers have to leave their vehicle to be verified is the most appropriate for the Border Crossing Points with the required space for hosting that infrastructure. However, this will have to be studied further (see Section 7.1 of the current report). The working group will continue to assess how space constraints at land borders can be addressed, as well as the impact of these space constraints on the capacity of the BCP staff to allow proper monitoring of the passenger flow within the BCP area.

For train crossings, the working group reached the conclusion that mobile equipment is the most suitable solution. When considering what kind of ICT solution could be implemented, the constraints of the networks should be taken into account.

In order to support these processes, three categories of equipment were identified:

- Static equipment: an unmovable booth installed within the border crossing point infrastructure, comprising document readers, cameras and fingerprint capture devices.
- Mobile equipment: similar to static equipment but used in mobile infrastructures such as a truck/lorry, containers or buses. It can also be equipment carried in and deployed from suitcases or other infrastructures. Such equipment can be carried in a car and easily deployed depending on the needs. For example to cover border crossing points where the existing infrastructure cannot be expanded or in cases of seasonal peaks.
- Handheld equipment: equipment that can be carried by a border guard. Compared to mobile equipment, handheld equipment is small enough to be used on the move by a single border guard.

#### 6.1.2. Sea borders

##### Cruise vessels

The following processes have been identified regarding the sea borders.

- **Static equipment:**  
Depending on port facilities, border checks can be performed at the terminal using static booths. The number of booths must be adapted to the number of passengers that need to be checked. All cruise vessels facilitate a list of passengers/crew members at least 24 hours in advance, which can be crosschecked with national/international databases (VIS, SIS, INTERPOL, national crime records, etc.). Furthermore, if the vessel is coming from a Schengen port, the previous port must advise about any significant changes in the list, or about the presence of passengers subject to specific controls or that are not allowed to disembark. This information facilitates and speeds up all checks at the booths. No specific booths are required for this check. The same procedures and technical equipment used at airports can be applied: double booths, e-gates, self-service kiosks etc.
- **Mobile equipment:**  
When the facilities do not allow for booths to be installed, border checks can be performed at mobile booths. This is a good solution for ports with a large number of cruise vessels/passengers and for covering seasonal peaks both on land and sea borders. Mobile booths may be equipped with document examination tools at locations where there are no existing border crossing points nearby, establishing a second lane.

- **Handheld equipment:**

These devices can be used as a support or back-up for mobile and static controls when there is a high number of passengers to be checked. They are also useful for on-board checks on trains and ferries.

**Ferries**

Since all ferries operate according to a timetable and a specific route, vessels that are subject to border checks must dock only at ports provided with static/mobile booth facilities.

There will be a two-channel border control: one for pedestrians and a second one for passengers travelling by any other means of transport (car, bus, truck/lorry, van, etc.).

**Pleasure boats/yachts/fishing boats**

Many pleasure boats and fishing boats operate from and to remote marinas or secondary ports with no BCP. According to the Schengen Handbook (C(2006) 5186 final):

*'Section IV : Sea borders, 3.3 A pleasure boat coming from a third State may, exceptionally, enter a port which is not a Border crossing point. In these cases, the persons on board must notify the port authorities in order to be authorised to enter this port. The port authorities must contact the authorities in the nearest port designated as border crossing point in order to report the vessel's arrival. The declaration regarding passengers must be made by lodging the list of persons on board with the port authorities. This list must be made available to the border guards, at the latest upon arrival. Likewise, if for reasons of force majeure the pleasure boat coming from a third State has to dock in a port other than a border crossing point, the port authorities must contact the authorities in the nearest port designated as a border crossing point in order to report the vessel's presence'*

To perform border checks on remote marinas and/or fishing ports, the following technical equipment will be required:

- Mobile equipment provided with a communication system (radio and internet connection), laptop, scanner and all kinds of technical devices to check documents (lamps, magnifiers, lenses, filters, microscope, OCR and NFC readers, etc.);
- Handheld equipment.

## 6.2. Requirements for technical solutions

Based on the different areas defined in Section 4 (land border) and Section 5 (sea border) of the current report, two categories of equipment have been identified: static equipment and mobile/handheld equipment. These two categories are applicable to land and sea borders.

The following sections provide the technical specifications (requirements) for this equipment.

**Static equipment:**

In this case, the same equipment as is used at air borders can be deployed.

The equipment would need to meet the following requirements/have the following specifications:

- Able to capture four fingerprints with a nominal resolution of either 500 or 1000 ppi (with an acceptable deviation of +/- 10 ppi) with 256 grey levels and in accordance with the ANSI/NIST-ITL 1-2011 Update 2015 standard (or newer version)
- Able to capture colour facial images with a nominal resolution (in portrait mode) of a minimum of 600 pixels by 800 pixels and maximum of 1200 pixels by 1600 pixels, with a distance between the eyes of a minimum of 120 pixels and in accordance with the requirements of ISO/IEC 19794-5:2011 Frontal image type
- The camera should be able to capture photos of all individuals. It could therefore be mobile, running on rails, to allow correct alignment.
- Able to read the travel document information using an error-proof scanning mechanism and by means of Near Field Communication (NFC) to extract the data from the chip

This equipment could be deployed either at a booth or as part of a Self-Service System.

**Handheld equipment:**

The main characteristics of the handheld equipment are as follows:

- Must be battery-powered
- Must ensure the safety of the border guards, who must be able to release, for example in case of falling into the water when carrying out on-board controls at sea borders. It must also allow the border guard to move freely;
- Preferably it should be possible to store data locally in case of problems with internet connection. When the connection is /restored, the data is stored centrally and checked against the relevant registers;
- Can be used in different weather and light conditions:
  - from extreme cold (up to minus 30 degrees Celsius) to extreme heat;
  - in rain, wind, snow, sun etc.;
  - in strong sunlight, shade and darkness (no sunlight)
  - in indoor and outdoor environments;
  - on moving vessels;
- Ensures capturing biometric data with the required level of quality;
- Must be easy and quick to set up and get it ready for use (establishing the border control point);
- Ensures a secure network connection, including on board vessels, and a safe communication channel. We recommend that this device is integrated into Terrestrial Trunked Radio (TETRA), but the speed must be increased. A secondary channel (using a mobile phone connection structure like LTE, 4/5G, etc.) should be provided for remote checks where TETRA is not available.

Based on the above characteristics, the following requirements have been established:

- Battery-powered
  - high/long-life capacity (8-12 hours);
  - removable/swappable batteries and an additional set of batteries per device;
  - fast-charging;
- Small size (equivalent to a big smartphone or a small tablet)
- The following features will be integrated into these devices:
  - camera with dedicated flash<sup>3</sup> to allow the capture of colour facial images with a nominal resolution (in portrait mode) of a minimum of 600 pixels by 800 pixels and a maximum of 1200 pixels by 1600 pixels, with a distance of 120 pixels between the eyes of a minimum and in accordance with the requirements of ISO/IEC 19794-5:2011 Frontal image type
  - fingerprint scanner allowing four fingerprints to be captured, with a nominal resolution of either 500 or 1000 ppi (with an acceptable deviation of +/- 10 ppi) with 256 grey levels and in accordance with the ANSI/NIST-ITL 1-2011 Update 2015 standard (or newer version)
  - error-proof document reader (optical and NFC)
  - light-increasing feature
- Security
  - supports access control for authorised users only
  - protected against radio frequency disturbances
  - polarised screen to prevent being read by more persons than intended;
- GPS-enabled to record the exact position of the border check

---

<sup>3</sup> As a best practice, it should be ensured that a diffused lighting will be used to avoid shadows or reflections on the face or glasses.



## 7. Recommendations

The working group focused on the technical requirements for the solutions to be used at border crossing points. During that activity, the working group tackled the identified use cases per business area, the associated technical requirements and a number of processes as well as proposed an approach to be followed.

It is evident that additional work is still required on the detailed border control processes, which are, in many cases, dependent on the ICT solutions to be used. The working group therefore strongly recommends that the results set out in this document shall be used as input for further discussions, which will address extensively the detailed processes themselves and how the border authorities would be prepared to implement them prior to the EES entry into operation (EiO).

Trainings of border authority staff prior to the introduction of the EES at the borders, using the appropriate technologies, is therefore considered to be of the utmost importance. It is highly recommended that all MS shall ensure that all the above-mentioned activities are in timely manner. Training and testing plans should also be put in place, in order to mitigate the risks and prepare the border guards. Dedicated preparations enable better organisation all round to cope with the activities required after the EES EiO and ensure the smooth implementation of the EES at the EU external borders.

This activity has to be immediately addressed by the MS in cooperation with the EBCGA (Frontex). As these discussions were considered as out of the scope of the current Working Group configuration, the following sections define the areas that will be investigated further in that context. In addition, it is important that the EBCGA (Frontex) and Member States assess how business continuity at the border can be achieved from a processes point of view.

### 7.1. Land borders

The introduction of the EES will have an impact on the length of the queues and the waiting times at the borders. This is mainly due to the additional tasks that will have to be performed (mainly the enrolment of biometric data). Therefore, to ensure a smooth border-crossing experience, it is important that MS are ensuring the possibility of filtering the traveller flows.

#### 7.1.1. Pedestrians

For pedestrians, booths located in a building that allow travellers to be verified in a controlled environment are recommended. This recommendation is already in place at several border crossing points, and adapting it in accordance with the EES Regulation needs is not seen as an issue.

#### 7.1.2. Cars, trucks/lorries and coaches

The border crossing point might need to be adapted, as the recommendation is to ensure that the verification process is performed in the correct (controlled) conditions, which might require the travellers to get out of their vehicle and present themselves in front of the border guard. In order to optimise the space and time, a pre-enrolment stage could be foreseen, if the overall space available at the border crossing point allows it, or a pre-enrolment could be done by means of national application available on a mobile or a website, which allows the traveller to pre-register in advance.

Such a recommendation guarantees optimal conditions for capturing the biometric data; however, it might have a significant impact on the border.

In the event that a horizontal expansion cannot be foreseen, a vertical expansion of the booths could be considered (especially for dealing with coaches).

In order to validate the above approaches, it is recommended that a pilot project is set up at a large border crossing point to assess the impact that passengers leaving their vehicles might have on the passenger flow.

## **7.2. Sea borders**

### **7.2.1. Ferries and cruise ships**

Further investigations will be carried out to assess whether it is necessary to negotiate with carriers about the possibility of pre-registration at kiosks during the journey. This would allow speeding up the disembarking process and also ensure that information would be captured in a controlled environment.

### **7.2.1. Cargo/fishing boats**

The process of how to determine whether the TCN is subject to the EES according to the elements defined in the Schengen Borders Code will be discussed further, as seamen (TCNs) are exempted from the EES only pursuant to point 3 of Annex VII SBC (Art.6a (3)(g)(iii) SBC). This will be explained in the EES Handbook.

## **7.3. Pre-registration capabilities**

A dedicated European Commission study concluded that 'pre-registration' by repeat travellers who already have an individual file in the EES could be used to optimise the TCN flow at a Border Crossing Point, by directing the traveller to a 'fast lane'.

The study report can be obtained upon request via the European Commission.

The applicability of such an approach will be further analysed.

# 8. Annex I. Article 23: Use of data for verification at the borders

This section firstly describes the general use case for verification at the border (Article 23 of EU Regulation 2017/2226).

Specific use cases will then be described depending on the context in which they are applied (land border, sea border, TCN travelling by car, coach, train etc.).

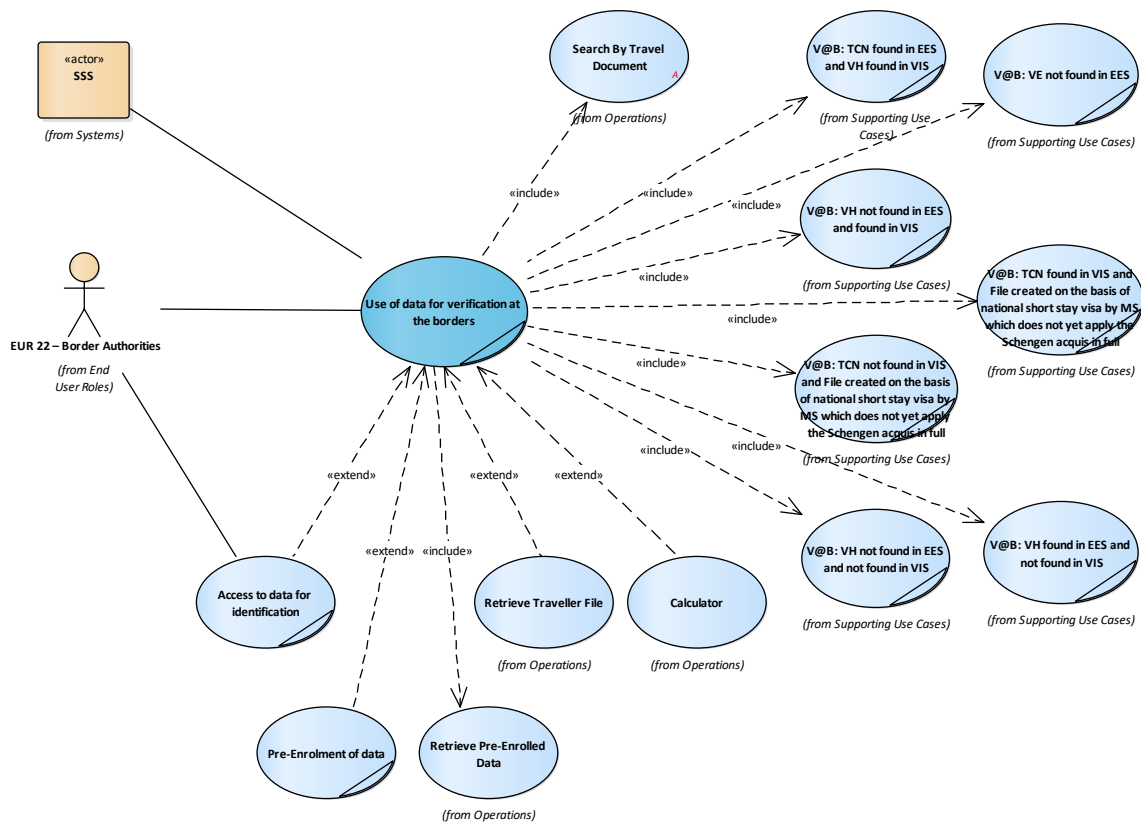


Figure 1: Use of data for verification at the borders

<b>Business Use Case name</b>	<b>Use of data for verification at the borders</b>
<b>Description</b>	<p>The objective of this use case is to implement Article 23 Use of data for verification at the borders at which the EES is operated.</p> <p><i>Border authorities shall have access to the EES for verifying the identity and previous registration of the third-country national, for updating the EES data where necessary and for consulting the data to the extent required for carrying out of border checks.</i></p>

The **green** and **red** paths indicated on the activity diagram are the paths which are expected to be followed most frequently and should be implemented as efficiently as possible:

- The **green** path represents the case where the traveller is found in the EES and their identity can be verified easily. This path would be applicable for all exits where entry was registered in the EES and for entries by frequent travellers.

- The **red** path represents the case where the traveller is not found in the EES. This path would be applicable for all travellers coming to the EU no more than once every three years.

## 8.1. Input and output

### Required information

1. Data of Responsible User who performs Business Use Case.
2. TCN travel document data.
3. TCN biometrics data (except TCNs having access to the applicable NFP).
4. Additional information about TCN:
  - visa-related data,
  - FTD-related data.
5. Specification on whether it is the entry to the EU or the exit
6. Indicator for whether VIS interoperability should be used.

### Results

1. Information about whether TCN's travel document is already registered in the EES.
2. For TCNs whose travel document was registered in the EES, the status of the biometric verification.
3. For TCNs whose travel document was not registered or who did not pass biometric verification, the status of the biometric identification.
4. For TCNs who are registered in the EES Traveller File, data including travel history, Flags and results of the Calculator.
5. When VIS interoperability is used:
  - Information about whether the TCN's visa was found in the VIS.
  - For TCNs whose visa was found in the VIS, the status of the biometric verification.
  - For TCNs whose visa was not found in the VIS or who did not pass biometric verification, the status of the biometric identification.
  - For TCNs who are registered in the VIS visa information data.

## 8.2. Scenarios

### 8.2.1. Basic path

Scenario steps:	Expected results:
1. NS collects TCN alphanumeric data from the travel document.	Data for alphanumeric search collected.
2. NS ensures that pre-enrolment data is not registered performing 'Retrieve Pre-Enrolled Data' operation.	Data is not pre-enrolled.
<b>Alternate / exception scenarios:</b>	
2a. Data was pre-enrolled by SSS.	Perform Exception scenario and go to step 'End'.
3. NS performs 'Search By Travel Document' operation with Operation Modifier Auto (in case VIS interoperability is being used) or the EES (when NS performs VIS operations directly in the VIS).	Search By Travel Document performed.
4. NS performs 'V@B: TCN Found In EES and VH Found In VIS' Use Case.	Supporting Business Use Case is performed.
<b>Alternate / exception scenarios:</b>	
4a. VE not found in EES.	Perform Alternate scenario and go to step 5.
4b. VH not found in EES and found in VIS.	Perform Alternate scenario and go to step 5.
4c. TCN not found in VIS and File created on the basis of national short stay visa by MS which does not yet apply the Schengen acquis in full.	Perform Alternate scenario and go to step 5.
4d. TCN found in VIS and File created on the basis of national short stay visa by MS which does not yet apply the Schengen acquis in full.	Perform Alternate scenario and go to step 5.
4e. VH not found in EES and not found in VIS.	Perform Alternate scenario and go to step 5.
4f. VH found in EES and not found in VIS.	Perform Alternate scenario and go to step 5.
5. If Calculator values are missing then the NS performs operation 'Calculator'.	Calculator values are received by NS.
6. NS delivers data for consultation.	Data for consultation delivered.
<b>Alternate / exception scenarios:</b>	

6a. Additional identification required.	Perform Exception scenario and go to step 5.
6b. Next page of matching Files.	Perform Exception scenario and go to step 5.
6c. Retrieve details for selected File.	Perform Exception scenario and go to step 5.
End. End of scenario.	

### 8.2.2. Additional identification required

Scenario steps:	Expected results:
1. NS performs 'Access To Data For Identification' Use Case with Operation Variant 'Use Of Data For Verification At The Borders'.	Access to data for identification performed.

End. End of scenario.

### 8.2.3. VE not found in EES

Scenario steps:	Expected results:
1. NS performs 'V@B: VE Not Found In EES' Use Case	Verification performed.

End. End of scenario.

### 8.2.4. TCN not found in VIS and File created on the basis of national short stay visa by MS which does not yet apply the Schengen acquis in full

Scenario steps:	Expected results:
1. NS performs 'V@B: TCN not found in VIS and File created on the basis of national short stay visa by MS which does not yet apply the Schengen acquis in full' Use Case.	Supporting Business Use Case is performed.

End. End of scenario.

### 8.2.5. VH not found in EES and found in VIS

Scenario steps:	Expected results:
1. NS performs 'V@B: VH not found in EES and found in VIS' Use Case.	Supporting Business Use Case is performed.

End. End of scenario.

### 8.2.6. TCN found in VIS and File created on the basis of national short stay visa by MS which does not yet apply the Schengen acquis in full

Scenario steps:	Expected results:
1. NS performs 'V@B: TCN found in VIS and File created on the basis of national short stay visa by MS which does not yet apply the Schengen acquis in full' Use Case.  End. End of scenario.	Supporting Business Use Case is performed.

### 8.2.7. VH not found in EES and not found in VIS

Scenario steps:	Expected results:
1. NS performs 'V@B: VH not found in EES and not found in VIS' Use Case.  End. End of scenario.	Supporting Business Use Case is performed.

### 8.2.8. VH found in EES and not found in VIS

Scenario steps:	Expected results:
1. NS performs 'V@B: VH found in EES and not found in VIS' Use Case.  End. End of scenario.	Supporting Business Use Case is performed.

### 8.2.9. Next page of matching Files

Scenario steps:	Expected results:
1. NS performs last search or identification operation to deliver next page of Files from operation results.  End. End of scenario.	Next page of search results is received.

### 8.2.10. Retrieve details for selected File

Scenario steps:	Expected results:
1. NS performs 'Retrieve Traveller File' operation to present selected File details for consultation.  End. End of scenario.	Selected File data retrieved.

### 8.2.11. Data was pre-enrolled by SSS

Scenario steps:	Expected results:
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1. If Pre-Enrolment is required then NS performs 'Pre-enrolment of data' business use case.

End. End of scenario.

## 8.3. Scenarios diagram

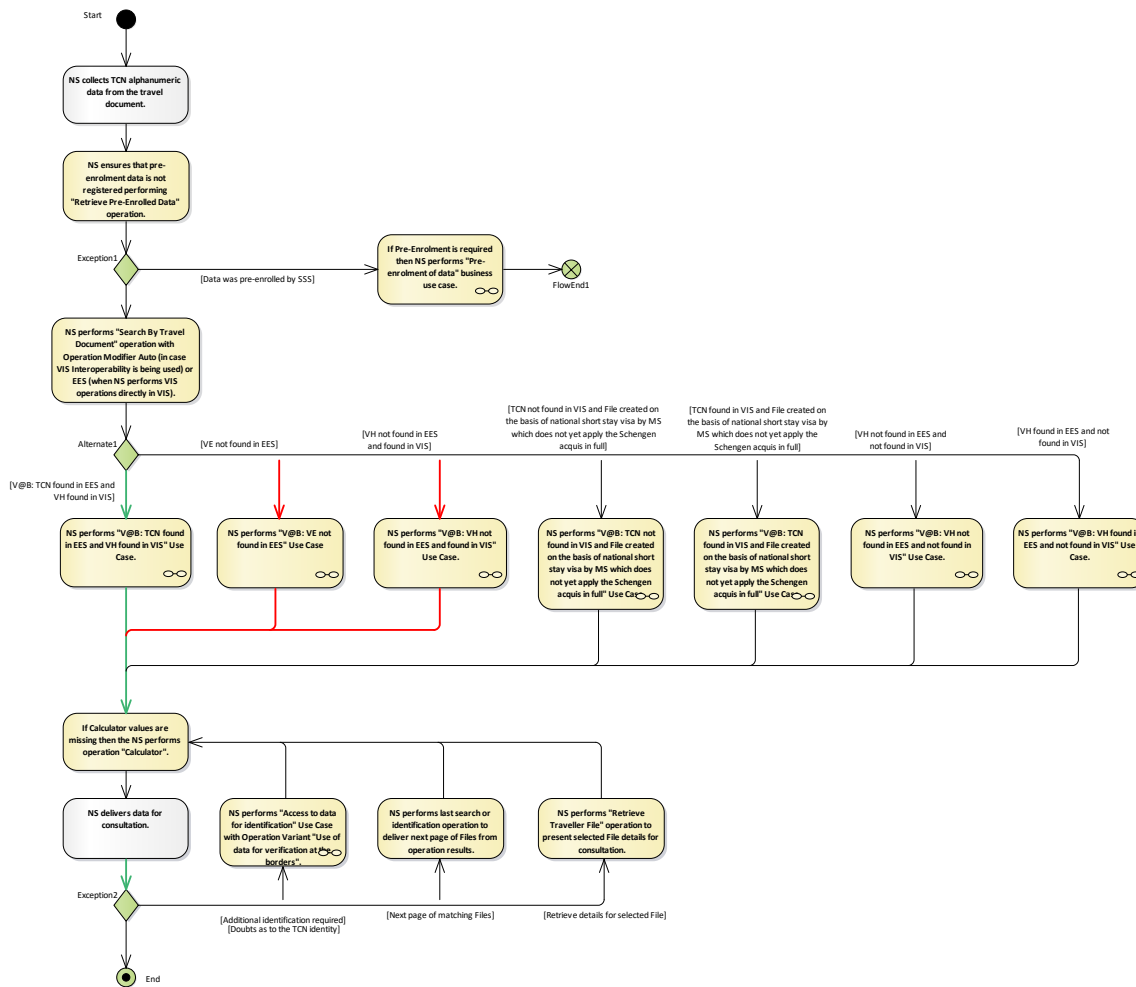


Figure 2: Use of data for verification at the borders



# 9. Annex II. Article 23: Supporting Use Cases

## 9.1. V@B: VE not found in EES

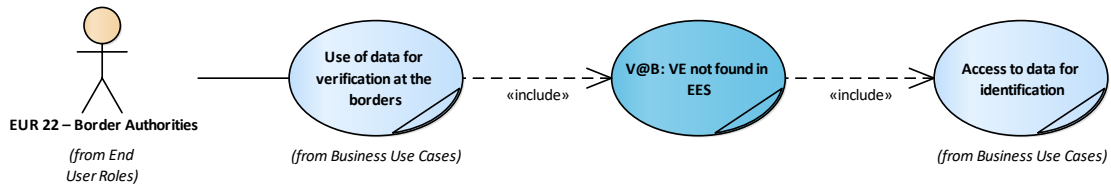


Figure 3: V@B: VE not found in EES

<b>Supporting Business Use Case name</b>	V@B: VE not found in EES
<b>Description</b>	The objective of this Supporting Use Case is to implement Article 23 Use of data for verification at the borders at which the EES is operated in case TCN is VE and was not found in EES.

### 9.1.1. Scenarios

#### 9.1.1.1. Basic path

Scenario steps:	Expected results:
1. NS performs 'Access to data for identification' Use Case.	Access to data for identification performed.
End. End of scenario.	

### 9.1.2. Scenarios diagram

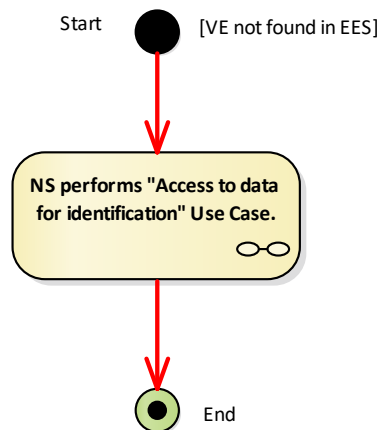


Figure 4: V@B: VE not found in EES

## 9.2. V@B: VH not found in EES and found in VIS

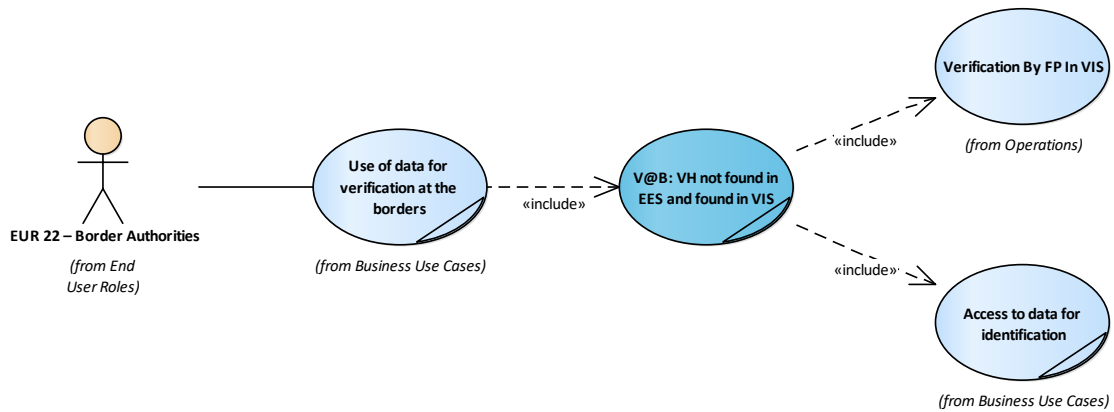


Figure 5: V@B: VH not found in EES and found in VIS

Supporting Business Use Case name	V@B: VH not found in EES and found in VIS
Description	The objective of this Supporting Use Case is to implement Article 23 Use of data for verification at the borders at which the EES is operated in case TCN is VH, was not found in EES and was found in VIS.

### 9.2.1. Scenarios

#### 9.2.1.1. Basic path

Scenario steps:	Expected results:
1. NS collects TCN fingerprints.	FP collected.
<b>Alternate / exception scenarios:</b>	
1a. TCN fingerprints not available.	Perform Alternate scenario and go to step 'End'.
2. NS performs 'Verification By FP In VIS' operation	Verification performed.
3. NS performs 'Access to data for identification' Use Case.	Identification performed.
End. End of scenario.	

### 9.2.1.2. TCN fingerprints not available

#### Scenario steps:

1. NS performs 'Access to data for identification' Use Case.

End. End of scenario.

#### Expected results:

Identification performed.

### 9.2.2. Scenarios diagram

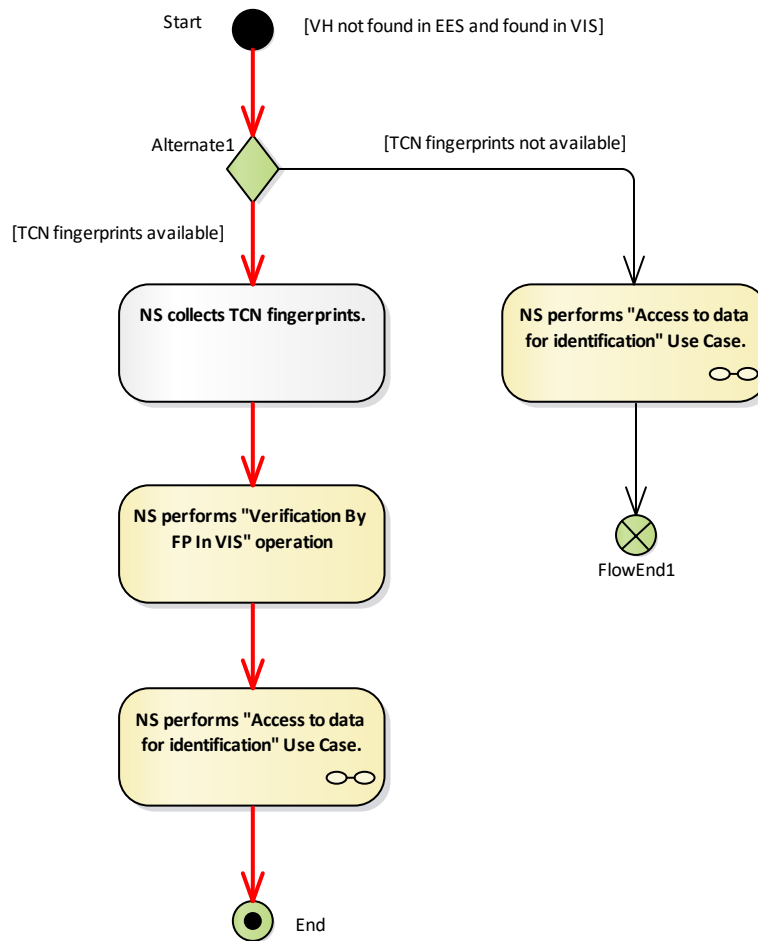


Figure 6: V@B: VH not found in EES and found in VIS

### 9.3. V@B: TCN found in VIS and File created on the basis of national short stay visa by MS which does not yet apply the Schengen acquis in full

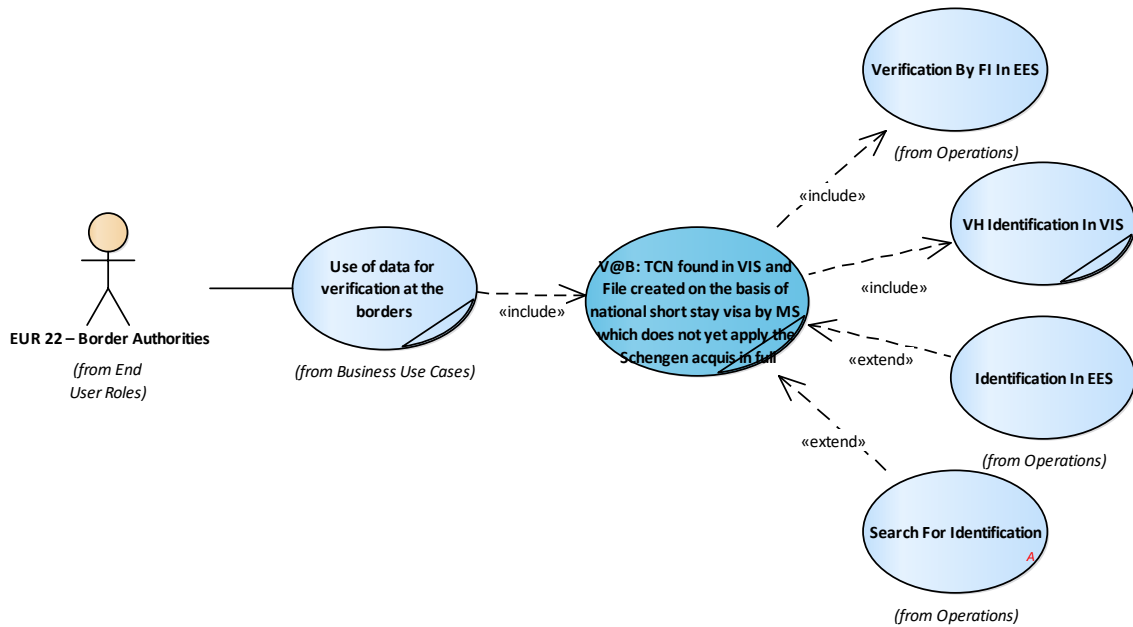


Figure 7: V@B: TCN found in VIS and File created by MS with read only VIS on the basis of national short stay visa

Supporting Business Use Case name	V@B: TCN found in VIS and File created on the basis of national short stay visa by MS which does not yet apply the Schengen acquis in full
Description	The objective of this Supporting Use Case is to implement Article 23 Use of data for verification at the borders at which the EES is operated in case TCN was found in VIS and his File was created by MS with read only VIS on the basis of national short stay visa.

#### 9.3.1. Scenarios

##### 9.3.1.1. Basic path

Scenario steps:	Expected results:
1. NS collects TCN FP and live facial image if available.	Biometric data collected.
2. NS performs ‘Verification By FI In EES’ operation.	Verification performed.
<b>Alternate / exception scenarios:</b>	
2a. FI verification failed, FP available.	Perform Exception scenario and go to step 3.

2b. FI verification failed, FP not available.

Perform Exception scenario and go to step 3.

3. NS performs 'VH identification in VIS' Use Case.

Supporting Business Use Case is performed.

End. End of scenario.

#### 9.3.1.2. No match VE FI verification and FP available

Scenario steps:	Expected results:
1. NS collects TCN fingerprints.	FP are collected.

End. End of scenario.

#### 9.3.1.3. FI verification failed, FP available

Scenario steps:	Expected results:
1. NS performs 'Identification In EES' operation.	Identification in EES operation is performed.
2. If identification in EES failed NS prepares data for 'Search For Identification' in EES.	Data for Search For Identification prepared.
3. If identification in EES failed NS performs 'Search For Identification' operation	Search For Identification operation is performed.

End. End of scenario.

#### 9.3.1.4. FI verification failed, FP not available

Scenario steps:	Expected results:
1. NS collects data for 'Search For Identification'.	Data for Search For Identification collected.
2. NS performs 'Search For Identification' operation.	Search For Identification performed.

End. End of scenario.

### 9.3.2. Scenarios diagram

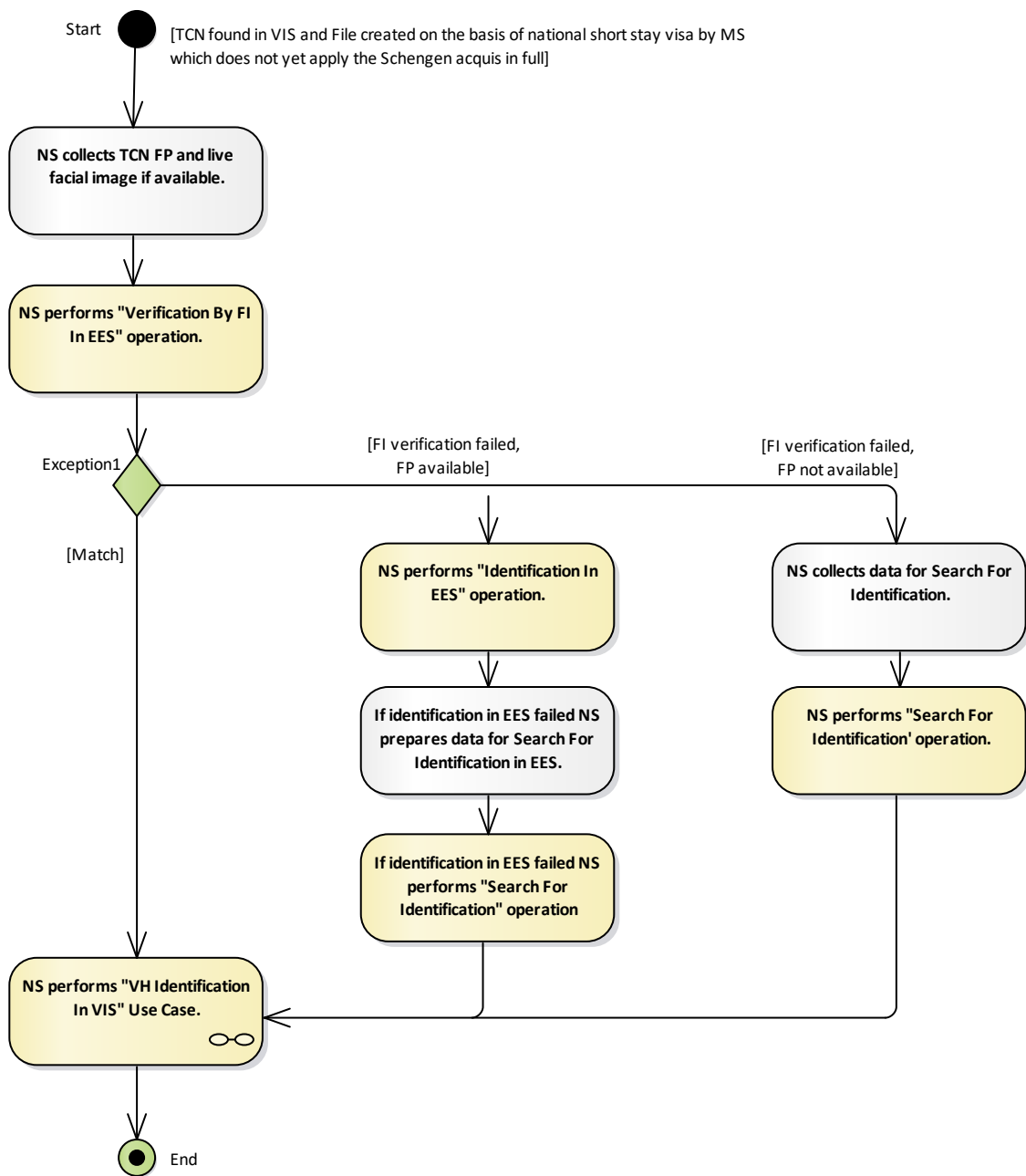


Figure 8: V@B: TCN found in VIS and File created by MS with read only VIS on the basis of national short stay visa

### 9.4. V@B: TCN not found in VIS and File created on the basis of national short stay visa by MS which does not yet apply the Schengen acquis in full

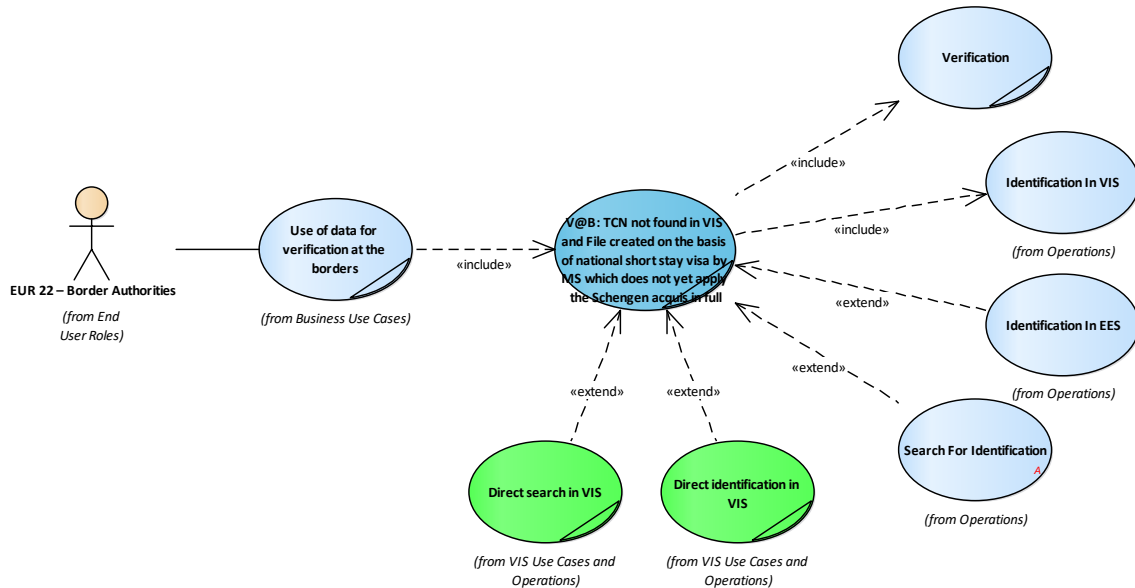


Figure 9: V@B: TCN not found in VIS and File created by MS with read only VIS on the basis of national short stay visa

<b>Supporting Business Use Case name</b>	<b>V@B: TCN not found in VIS and File created on the basis of national short stay visa by MS which does not yet apply the Schengen acquis in full</b>
<b>Description</b>	The objective of this Supporting Use Case is to implement Article 23 Use of data for verification at the borders at which the EES is operated in case TCN was not found in EES and his File was created by MS with read only VIS on the basis of national short stay visa.

### 9.4.1. Scenarios

#### 9.4.1.1. Basic path

Scenario steps:	Expected results:
1. NS collects TCN live facial image.	FI collected.
2. NS performs 'Verification' Use Case with FI for first run and FP for second run.	Verification performed.
<b>Alternate / exception scenarios:</b>	
2a. No match VE FI verification and FP available.	Perform Exception scenario and go to step 2.
3. NS collects TCN fingerprints if needed and available.	FP collected.
<b>Alternate / exception scenarios:</b>	
3a. VE verification failed and FP available.	Perform Alternate scenario and go to step 4.
3b. VE verification failed and FP not available.	Perform Alternate scenario and go to step 4.
4. NS performs 'Identification in VIS' operation.	Identification in VIS operation performed.
<b>Alternate / exception scenarios:</b>	
4a. FP not available or no VIS interoperability - Identification directly in VIS.	Perform Alternate scenario and go to step 'End'.
5. If 'Identification in VIS' failed then NS performs 'Direct Search In VIS'.	Direct search in VIS is performed.
End. End of scenario.	

#### 9.4.1.2. No match VE FI verification and FP available

Scenario steps:	Expected results:
1. NS collects TCN fingerprints.	FP are collected.
End. End of scenario.	



#### 9.4.1.3. VE verification failed and FP available

Scenario steps:	Expected results:
1. NS performs 'Identification In EES' operation.	Identification performed.
2. If 'Identification In EES' failed then NS collects data for 'Search For Identification' operation.	Data for Search For Identification collected.
3. If 'Identification In EES' failed then NS performs 'Search For Identification' operation.	Search For Identification performed.
End. End of scenario.	

#### 9.4.1.4. FP not available or no VIS interoperability - identification directly in VIS

Scenario steps:	Expected results:
1. NS performs 'Direct identification in VIS'.	Direct identification in VIS is performed.
End. End of scenario.	

#### 9.4.1.5. VE verification failed and FP not available

Scenario steps:	Expected results:
1. NS collects data for Search For Identification.	Data collected.
2. NS performs 'Search For Identification' operation.	Search For Identification performed.
End. End of scenario.	

### 9.4.2. Scenarios diagram

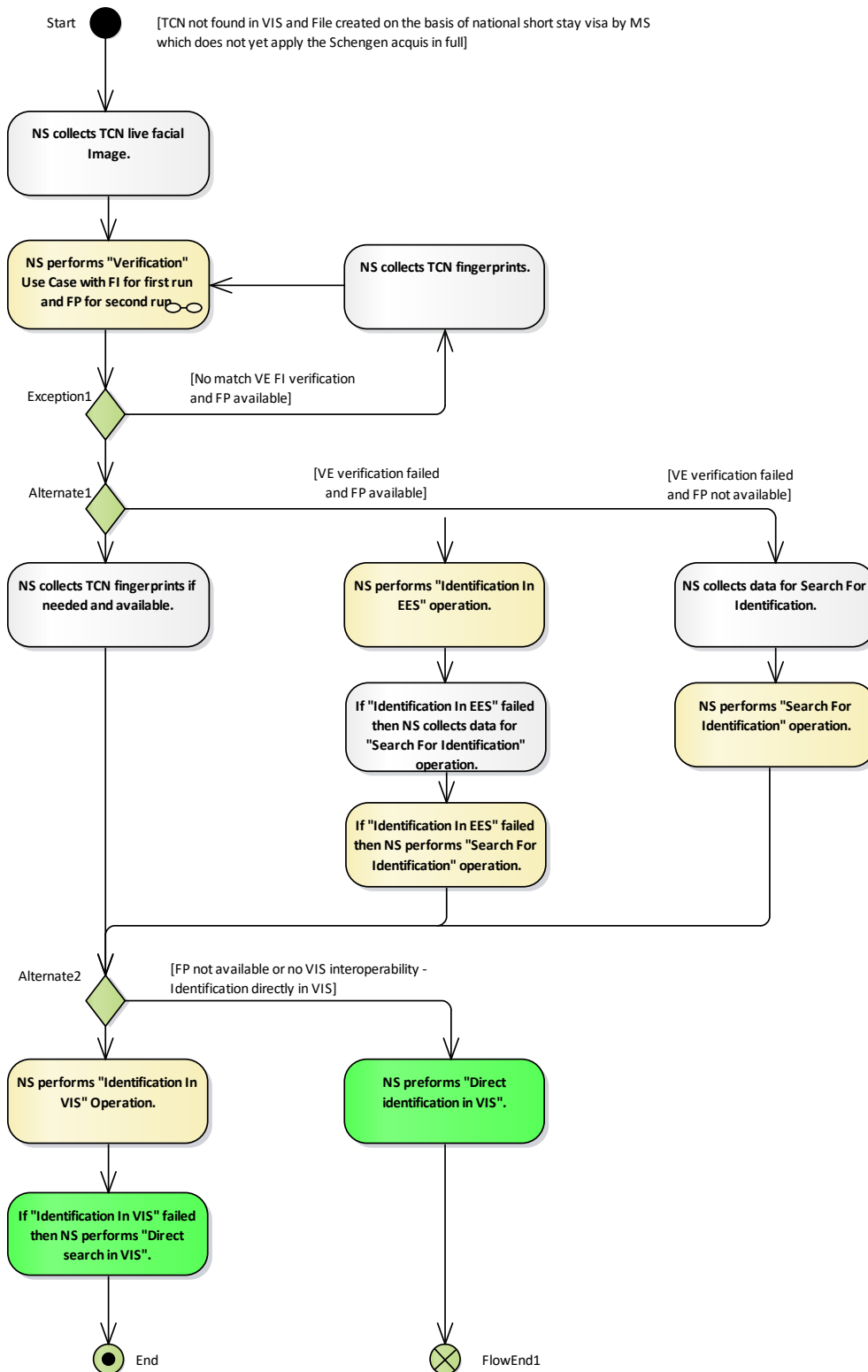


Figure 10: V@B: TCN not found in VIS and File created by MS with read only VIS on the basis of national short stay visa

## 9.5. V@B: VH not found in EES and not found in VIS

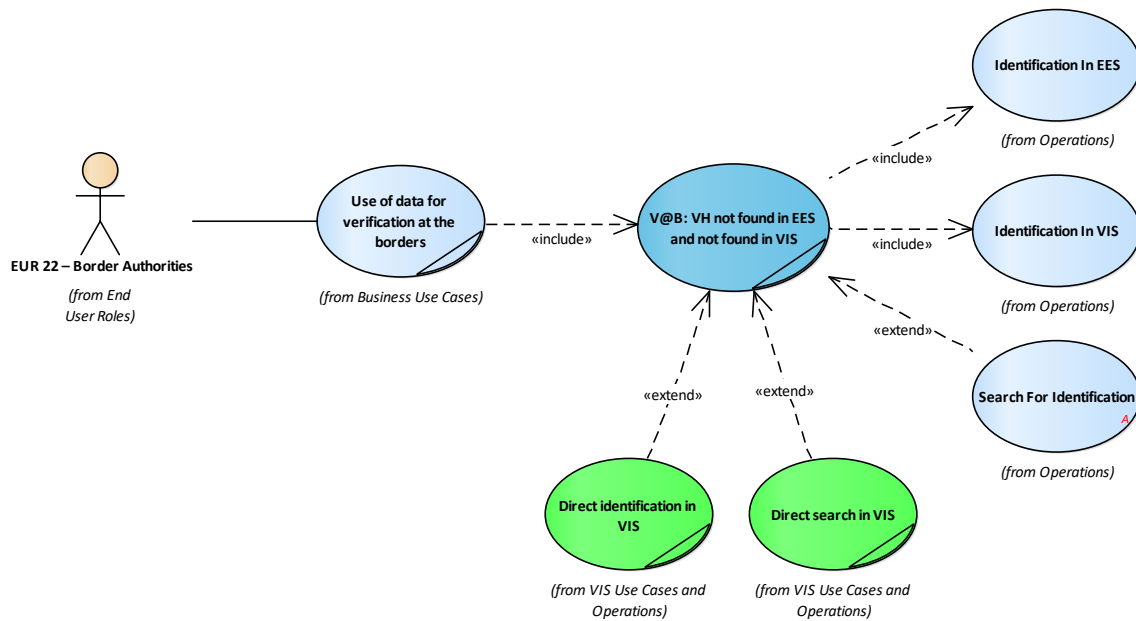


Figure 11: V@B: VH not found in EES and not found in VIS

<b>Supporting Business Use Case name</b>	<b>V@B: VH not found in EES and not found in VIS</b>
<b>Description</b>	The objective of this Supporting Use Case is to implement Article 23 Use of data for verification at the borders at which the EES is operated in case TCN is VH who was not found in EES and was not found in VIS.

### 9.5.1. Scenarios

#### 9.5.1.1. Basic path

<b>Scenario steps:</b>	<b>Expected results:</b>
1. NS collects TCN FP and live facial Image.	FI collected.
<b>Alternate / exception scenarios:</b>	
1a. FP not available or Identification failed.	Perform Exception scenario and go to step 3.
2. NS performs 'Identification In EES' operation.	Identification in EES operation is performed.
<b>Alternate / exception scenarios:</b>	

- |   |   |
|---|---|
| 2a. FP not available or Identification failed.    | Perform Exception scenario and go to step 3.  |
| 3. NS performs 'Identification In VIS' operation. | Identification in VIS operation is performed. |

**Alternate / exception scenarios:**

- |   |   |
|---|---|
| 3a. FP not available or no VIS interoperability - Identification directly in VIS. | Perform Alternate scenario and go to 'End'. |
| 4. If 'Identification In VIS' failed then NS performs 'Direct Search In VIS'.     | Direct Identification in VIS is performed.  |

End. End of scenario.

### 9.5.1.2. FP not available or identification failed

Scenario steps:	Expected results:
1. NS collects data for Search For Identification.	Data collected.
2. NS performs 'Search For Identification' operation.	Search For Identification performed.

End. End of scenario.

### 9.5.1.3. FP not available or no VIS interoperability - identification directly in VIS

Scenario steps:	Expected results:
1. NS performs 'Direct Identification In VIS'.	Direct identification in VIS is performed.

End. End of scenario.

### 9.5.2. Scenarios diagram

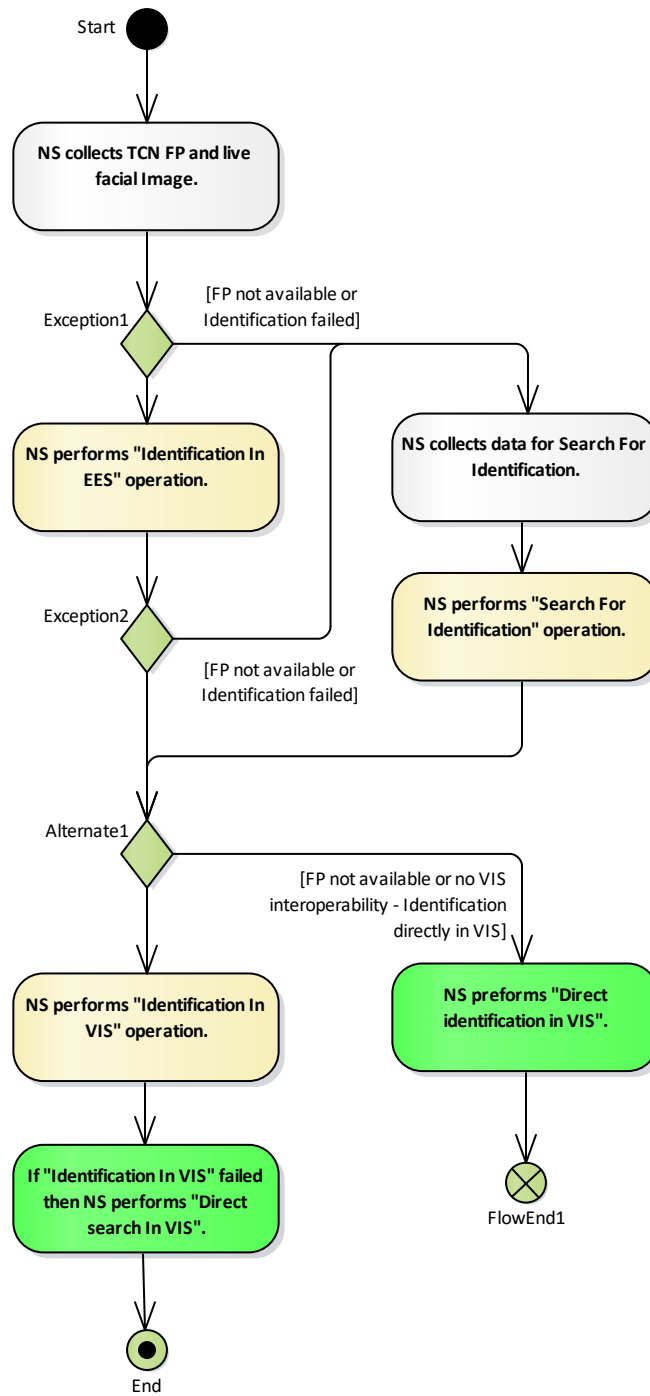


Figure 12: V@B: VH not found in EES and not found in VIS

## 9.6. V@B: VH found in EES and not found in VIS

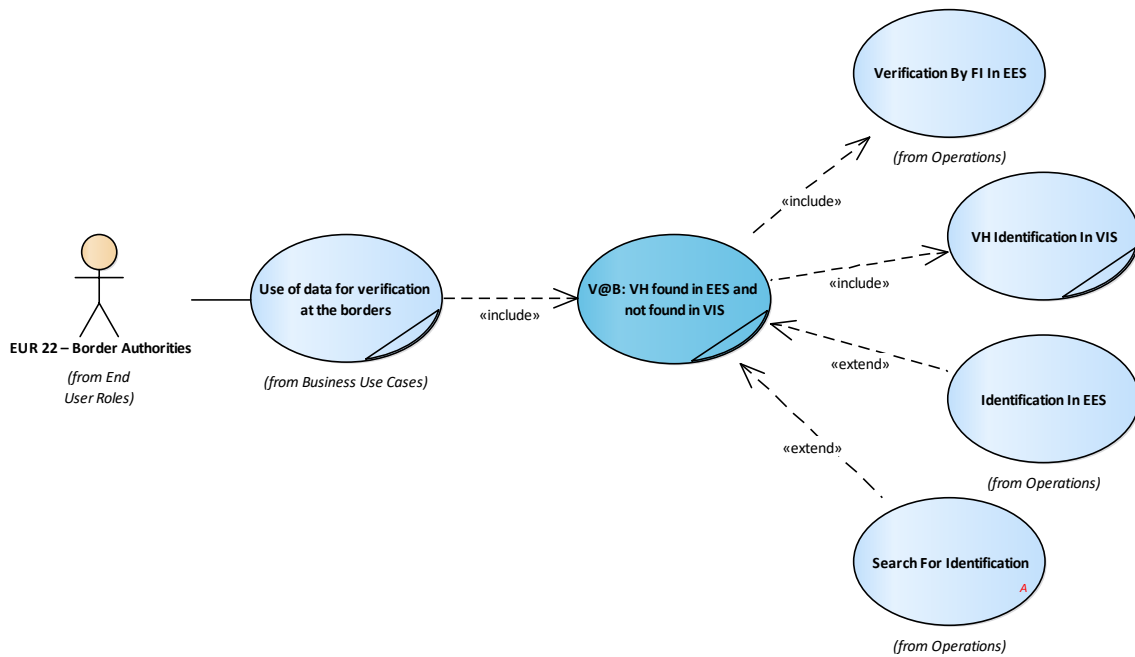


Figure 13: V@B: VH found in EES and not found in VIS

<b>Supporting Business Use Case name</b>	<b>V@B: VH found in EES and not found in VIS</b>
<b>Description</b>	The objective of this Supporting Use Case is to implement Article 23 Use of data for verification at the borders at which the EES is operated in case TCN is VH who was found in EES and was not found in VIS.

### 9.6.1. Scenarios

#### 9.6.1.1. Basic path

Scenario steps:	Expected results:
1. NS collects TCN FI and FP if possible.	FI and FP are collected.
2. NS performs ‘Verification By FI In EES’ operation.	Verification by FI in EES operation is performed.
<b>Alternate / exception scenarios:</b>	
2a. FI verification failed, FP available.	Perform Exception scenario and go to step 3.
2b. FI verification failed, FP not available.	Perform Exception scenario and go to step 3.

- |   |  |
|---|--|
| 3. NS performs 'VH identification In VIS' Use Case. | Supporting Business Use Case is performed. |
|---|--|

End. End of scenario.

#### 9.6.1.2. FI verification failed, FP available

Scenario steps:	Expected results:
1. NS performs 'Identification In EES' operation.	Identification in EES operation is performed.
2. If identification in EES failed, NS collects data for Search For Identification in EES.	Data for Search For Identification collected.
3. If identification in EES failed, NS performs 'Search For Identification' operation.	Search For Identification performed.

End. End of scenario.

#### 9.6.1.3. FI verification failed, FP not available

Scenario steps:	Expected results:
1. NS collects data for Search For Identification in EES.	Data for Search For Identification prepared.
2. NS performs 'Search For Identification' operation.	Search For Identification performed.

End. End of scenario.

### 9.6.2. Scenarios diagram

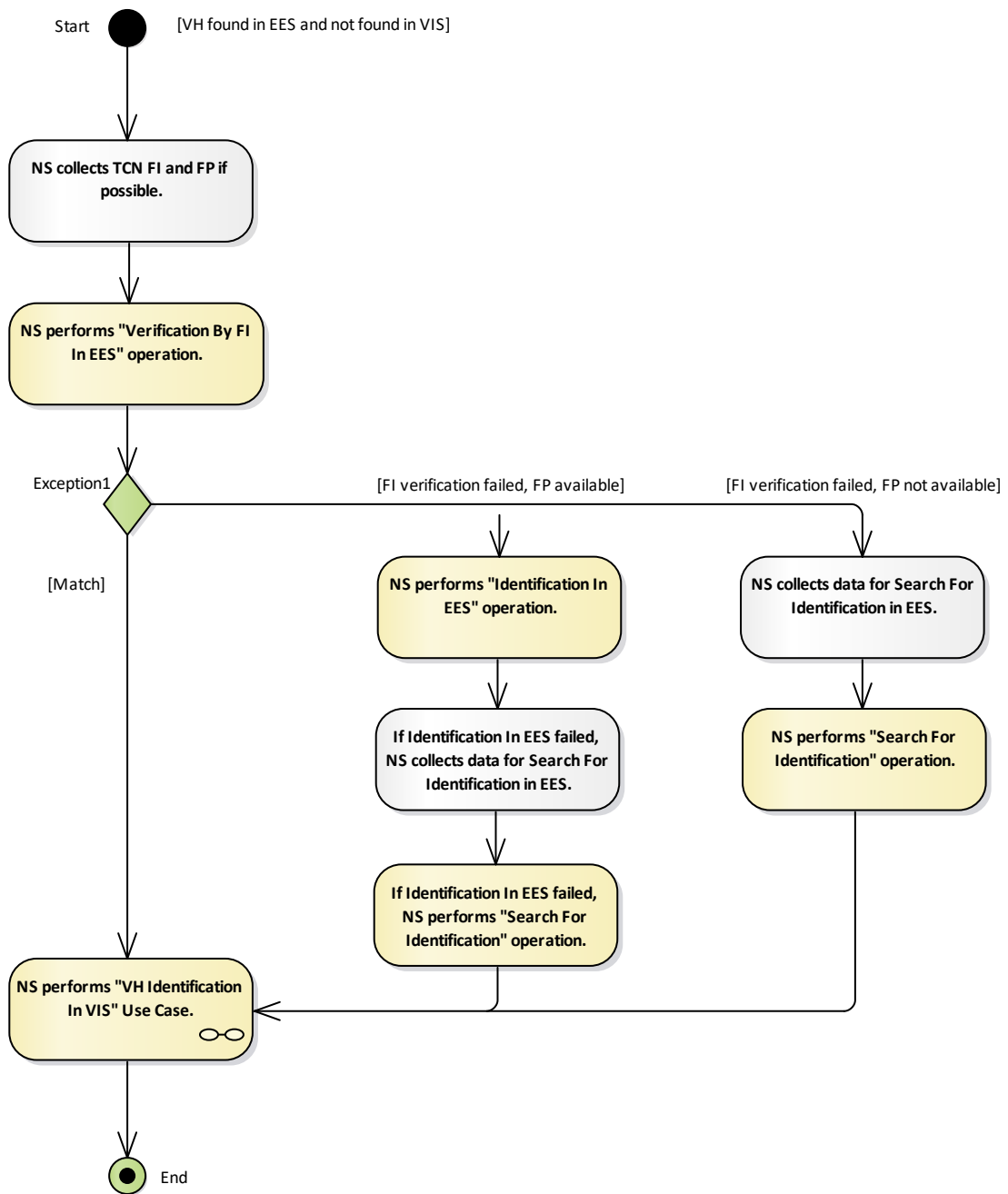


Figure 14: V@B: VH found in EES and not found in VIS



## Glossary

<b>Acronym</b>	<b>Definition</b>
BCP	Border Crossing Point
EBCGA	European Border and Coast Guard Agency (Frontex)
EES	Entry/Exit System
EiO	Entry Into Operation
FI	Facial Image
FP	Fingerprint
MS	Member State
NFC	Near Field Communication
OCR	Optical Character Recognition
PPI	Point Per Inch
RTP	Registered Traveller Programme
SBC	Schengen Borders Code
SIS II	Schengen Information System Second Generation
TETRA	Terrestrial Trunked Radio
TCN	Third Country National
V@B	Visa at the Border
VE	Visa Exempt
VH	Visa Holder
VIS	Visa Information System



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