European Entry-Exit System

NIST International Face Performance Conference, 27th October 2020

Agenda

European Union Agency for the Operational Management of Large-Scale IT Systems in the Area of Freedom, Security and Justice (eu-LISA)

1. eu-LISA
2. European Entry-Exit System (EES)
3. Interoperability and secure borders
4. Shared Biometric Matching Service (sBMS)

eu-LISA

European Union Agency for the Operational Management of Large-Scale IT Systems in the Area of Freedom, Security and Justice (eu-LISA)

- **European Union Agency for the Operational Management of Large-Scale IT Systems in the Area of Freedom, Security and Justice**

- Established in 2011, started operations on 01/12/2012
- Agency's mandate was reinforced with Regulation (EU) 2018/1726

- Headquarters: Tallinn (Estonia)
- Operations: Strasbourg (France)
- Backup site: Sankt-Johann im Pongau (Austria)
- Liaison office: Brussels (Belgium)

- 243 statutory staff, 10 seconded national experts
- At least 370 posts planned by 2022

Europe's Schengen Area

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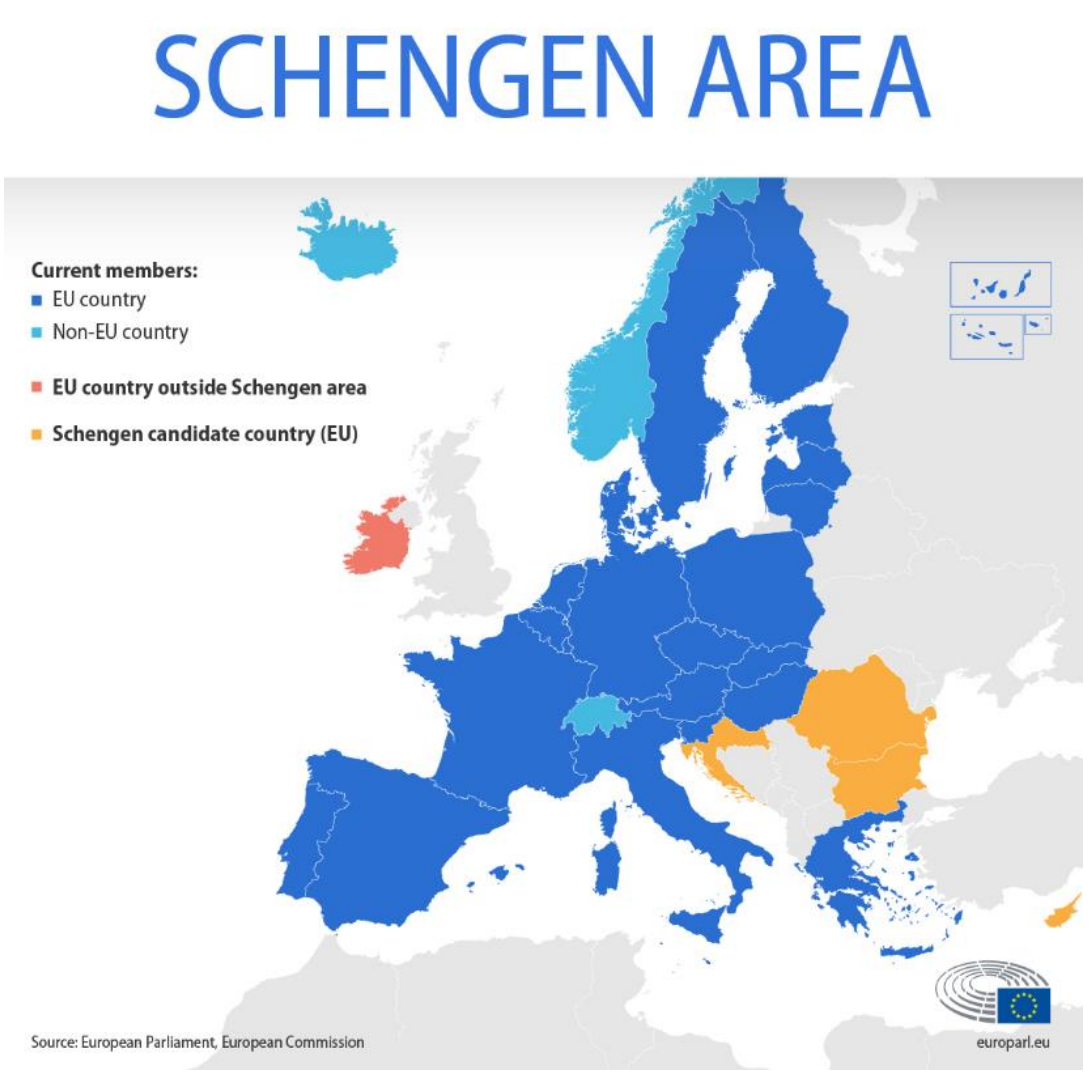
- Schengen Agreement **signed on 14 June 1985** by **five** of the ten member states of the then European Economic Community

- The Schengen Area includes **26 countries** (22 are EU member states), with a population of **~420 million people**

- Core part of EU law, and all EU member states which have not already joined the Schengen Area are legally obliged to do so when technical requirements have been met.



Europe's Schengen Area – internal borders

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- Security checks
  - can legally be carried out at ports and airports

- Police checks can be conducted if they:
  - are not involved in border control activities
  - are based on general police information and experience regarding possible threats to public security and aim, in particular, to combat cross-border crime
  - are executed in a manner clearly distinct from systematic checks on persons at the external borders
  - are carried out on the basis of spot-checks

Lifting internal, strengthening external border control!

eu-LISA – System portfolio

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Visa Information System (VIS)

~80 M visa applications

~70 M FP sets

All time high peak: 139 K operations/hour

Schengen Information System (SIS II)

~93 M alerts

>14K queries/day

~ 2.5K hits/month

~ 280 K FP sets

European Dactyloscopy Database (EURODAC)

~5.6 M asylum applications

~ 145K irregular border crossings

~5.6 M FP sets

INTEROPERABILITY

Entry-Exit System (EES)

European Criminal Records Information System (ECRIS-TCN)

European Travel Information and Authorization System (ETIAS)

European Entry-Exit system

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To whom will it apply?

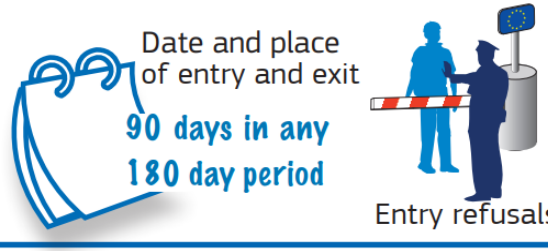
to non-EU nationals, visa-required and visa-exempt travellers in the Schengen area.

How will the system work?

EES will collect:

Identity

EES will record:



Entry refusals

EES will replace:

Who is using EES data?

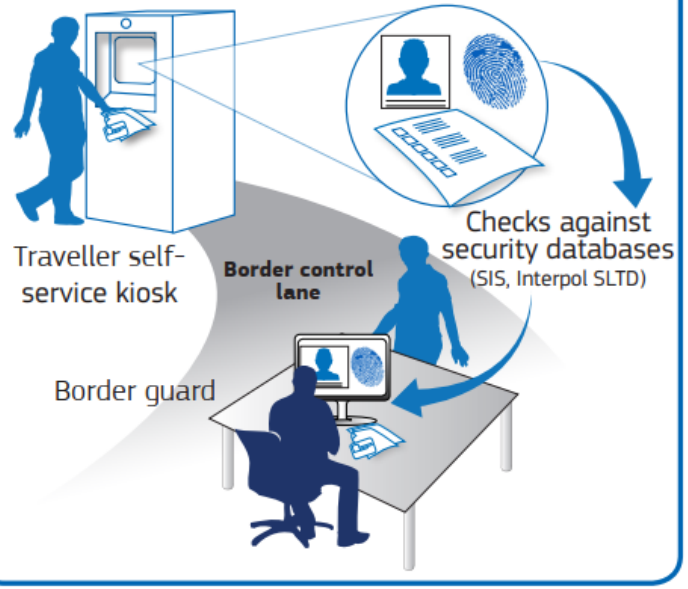
The **competent Member State authorities**

Border guards

Consular officers dealing with visas

Border crossing facilitation

for all non-EU nationals



Source: https://ec.europa.eu/home-affairs/what-we-do/policies/borders-and-visas/smart-borders/ees_en

European Entry-Exit System

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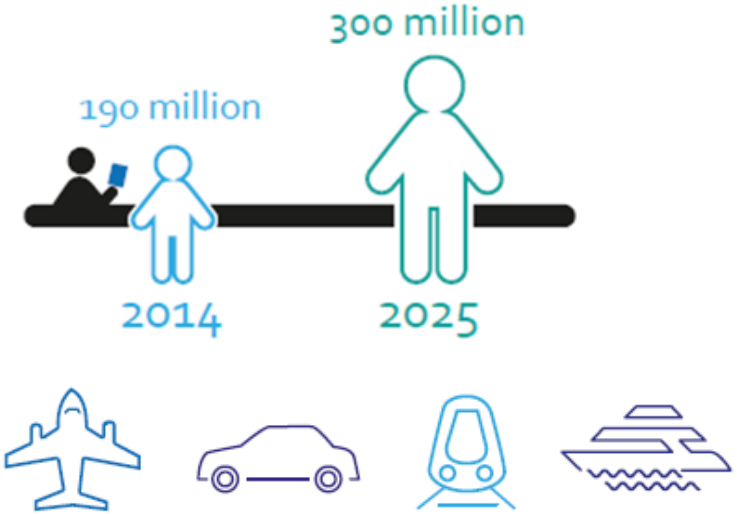
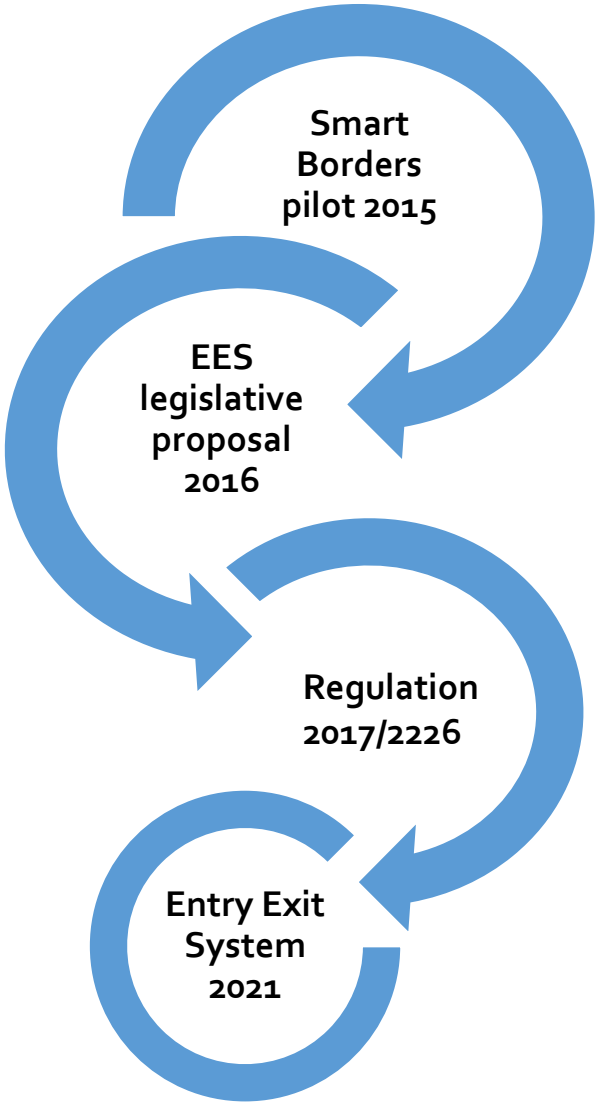
Annual forecast of border crossings (*)



Introduce **biometric technology** at all types of borders and **register entry** and **exit electronically**



EES Regulation 2017/2226 entered into force on 29 December 2017

EES development and operational management entrusted to **eu-LISA**

(*) European Commission, Technical Study on Smart Borders, 2014, ISBN 978-92-79-41798-6

Main purposes of EES

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- Enhance the efficiency of border checks
- Effective management of authorised short-stays
- Assist in the identification of third country nationals
- Automation of border checks
- Allow for the identification and detection of overstayers
- Information about authorized stay

- Support migration policy making
- Reinforce internal security
- Support increased load at the Schengen borders

Main actors of EES

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- **Border authorities**
  - Consult the EES data in order to ensure that the traveller history is created and kept updated.
- **Immigration authorities**
  - Consult the EES data in order to verify the identity of the third-country national, or to check whether the conditions for entry and/or stay are fulfilled
- **Visa authorities**
  - Consult the EES data from VIS in order to adopt decisions on visa application
- **Designated authorities (Law Enforcement)**
  - Consult the EES data in order to prevent, detect and investigate terrorist offences or other serious criminal offences

Entry & exit workflow at the border

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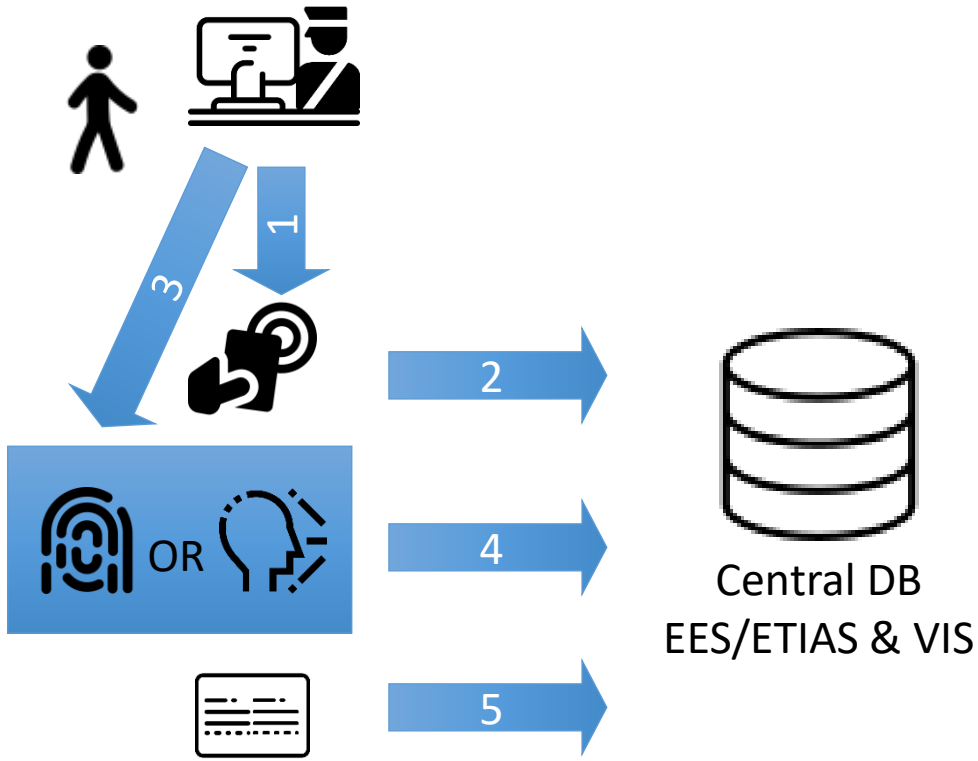
Third-country national already registered



1. Scan MRZ
2. Search
3. Capture one biometric modality
4. Biometric verification
5. If match Interview, creation Entry, Exit, Refusal record

Entry & exit workflow at the border

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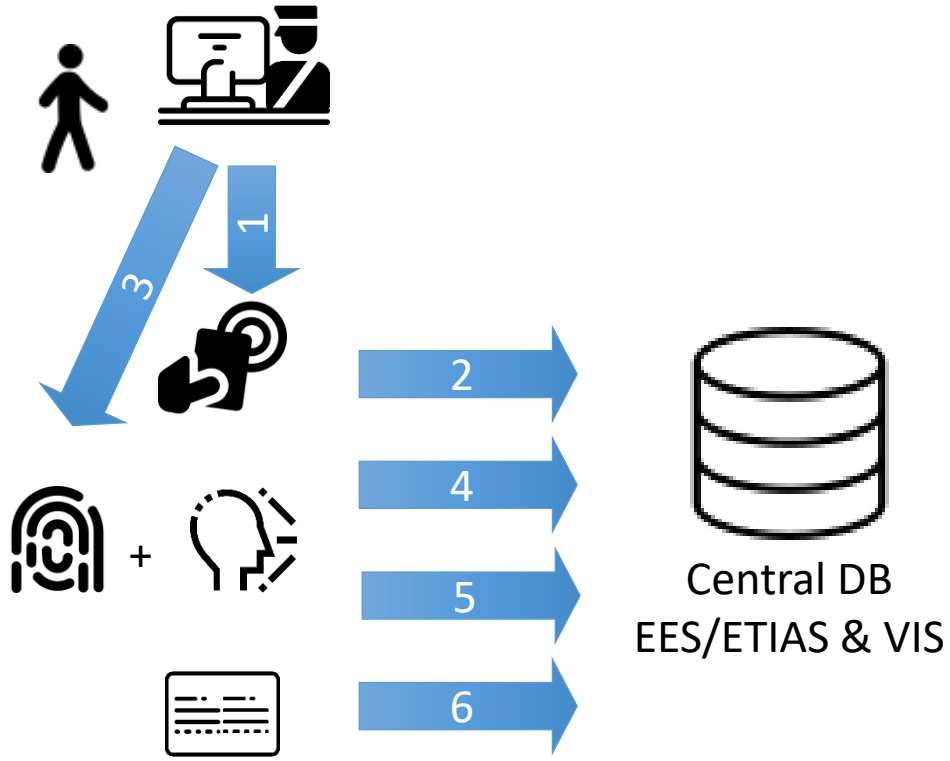
Third country national not yet registered



1. Scan MRZ
2. Search
3. Capture both biometric modalities
4. Biometric Identification
5. Enrolment
6. Interview, creation Entry, Exit, Refusal record

Biometrics in EES

Data quality check

EES

VIS

sBMS (EES + VIS)

Low quality EES data can be updated later !

- 0-FTE configuration
- 1:1 and 1:N operations: within one of the galleries (EES or VIS)
- FMR, FNMR, FPIR, FNIR: targets defined by the legal base
- accuracy measured centrally on actual data captured
- multi-modal fusion

NIST

Result/Error/ Warning

Facial Images

- Min 600x800 px (in portrait mode)
- Max 1200x1600 px
- Min 120 px between eyes
- ISO/IEC 19794-5:2011 Frontal image type

Fingerprints

- 4 fingers
- 500 or 1000 ppi
- 256 grey levels

- Data capture
- Segmentation, sequence check, uniqueness check, **biometric data quality check**
- Creation of data container(s) (ANSI/NIST-ITL 1-2011: Update 2015)
- Validation of data container(s)
- Submission to EES

Interoperability

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Interoperability components' go-live step-by-step; to be finalised by the end of 2023

- **European search portal** – a one-stop shop carrying out a simultaneous search of multiple EU information systems, in line with the users' access rights.

- **Shared biometric matching service** – a tool cross-checking biometric data (fingerprints and facial images) and detecting links between information on the same person in different EU information systems.

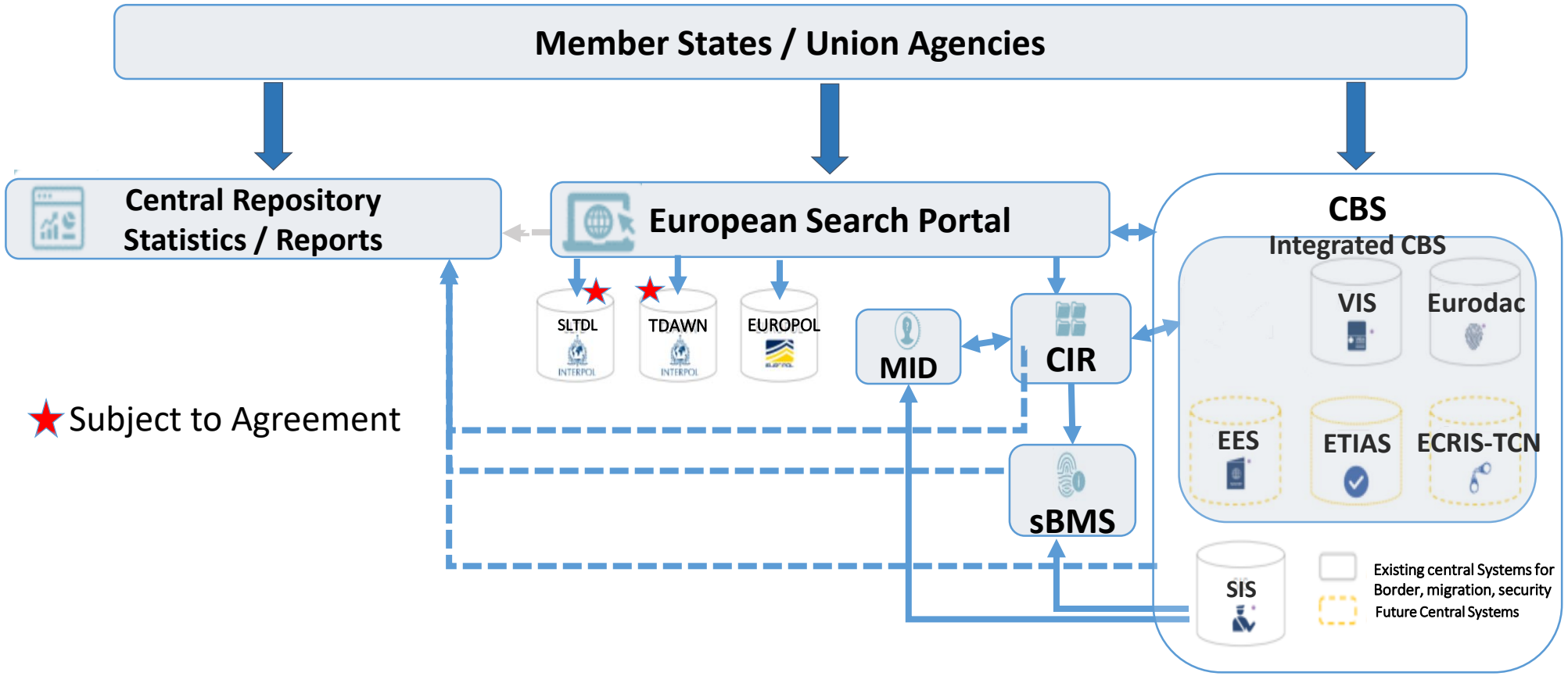
- **Common identity repository** – a shared container of biographical and biometric information, such as name and date of birth, stored in relevant systems about non-EU citizens.

- **Multiple identity detector** - automatic alert system detecting multiple or fraudulent identities.

Central Repository for Reporting and Statistics

- Increases the effectiveness of **identity checks** and reduces the number of **multiple identities**
- Gives **faster access to data in IT-systems**
- Ensures that border guards and police officers have access to the right information **whenever and wherever they need it** to perform their duties

Future interoperability architecture



(1) **Regulation (EU) 2019/817** - framework for interoperability between EU information systems in the field of borders and visa
(2) **Regulation (EU) 2019/818** - framework for interoperability between EU information systems in the field of police and judicial cooperation, asylum and migration

Shared Biometric Matching Service

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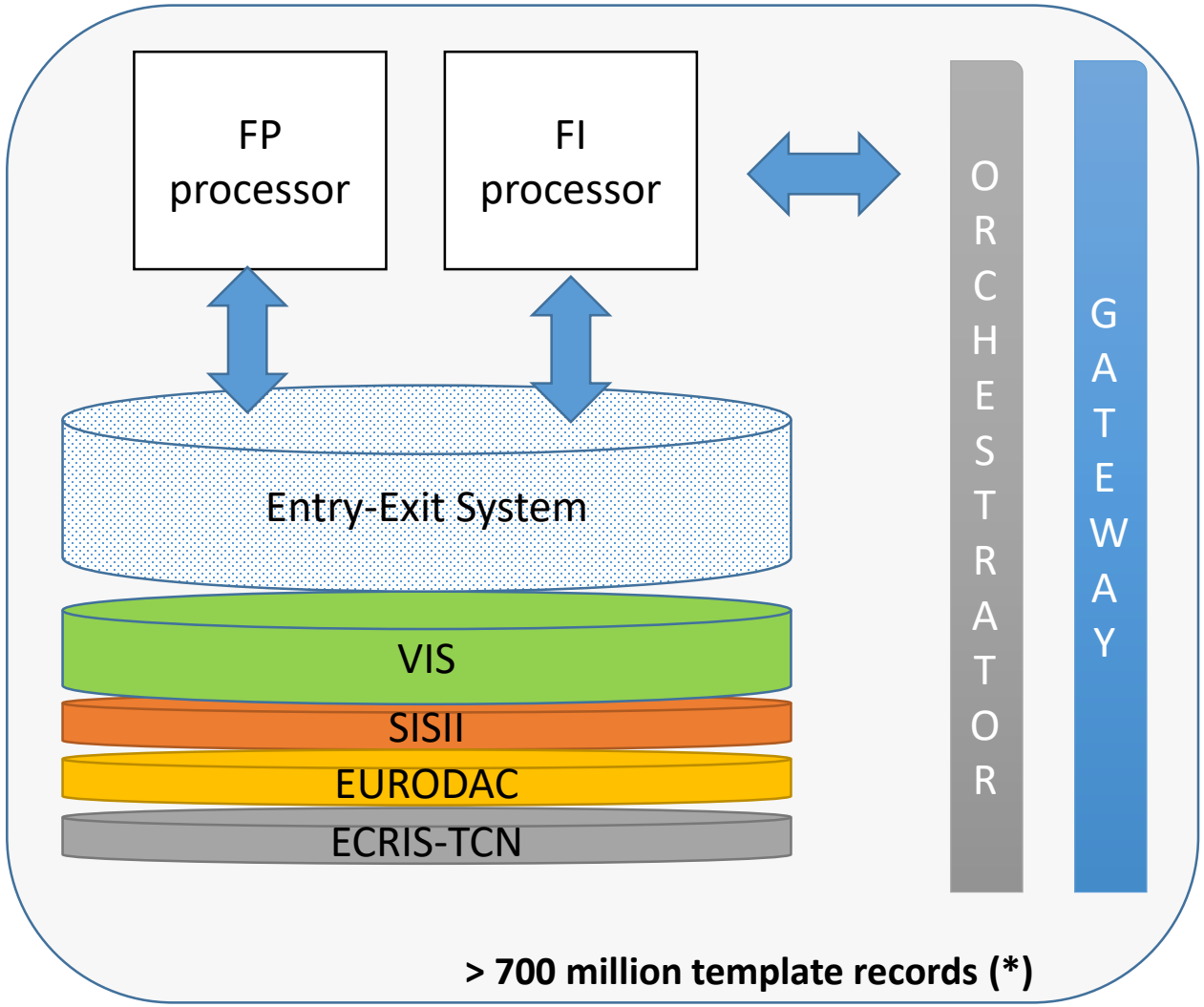

Entry-Exit System
4-print flat, live FI

Visa Information System
10-print flat, FI

Schengen Information System
10-print flat, 10-print rolled, latent prints (*), FI

EURODAC
10-print flat, 10-print rolled, FI

ECRIS-TCN
10-print flat, FI

Main challenges for sBMS

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Data quality

- FP and FI legacy data
- Variety of data capture devices and technics
- Timing issue for recapture
- Non-harmonized data quality, different thresholds per business domain
- Different failure to enrol rates (FTE)
- FI - no age limit in EES for children

Response times

- Different SLA per business domain
- Different SLA per transaction

Availability

- 99.995% EES BMS (priority 1)
- Smooth data migration from the legacy systems

Data containers

- Different NIST containers per system, conversions are needed

Accuracy

- Different thresholds per business domain and/or use-case (FMR, FNMR, FPIR, FNIR)
- Measurement of overall sBMS accuracy
- Measurement of accuracy per business domain
- Measurement of accuracy per specific interoperability use case
- Potential bias across domains
- Accuracy testing (GDPR constraints)

Thank you for your attention!

cab@eulisa.europa.eu
www.eulisa.europa.eu

@eulisa_agency @agencyeulisa euLISAagency company/eu-lisa