Industry Roundtable
October 2022 - Report

EES, ETIAS and Carriers
Getting Ready for the Entry into Operation

11-12 October 2022 | Tallinn, Estonia & Online

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Welcome and introduction

Krum Garkov, Executive Director, eu-LISA

Mr Krum Garkov, Executive Director of eu-LISA, welcomed the participants of the 16th edition of the eu-LISA Industry Roundtable. The Agency has been organising these industry roundtable events from the very first years of its existence, growing both in size and scope – from around 50 participants in the beginning to over 500 today, representing not only industry but also EU institutions, Member State authorities, academia and NGOs.

The reason behind the effort of the Agency in organising such events is clear: **effective collaboration with the industry is essential for eu-LISA to fulfil its mandate.** This edition focuses on carriers and their indispensable role in ensuring the successful entry into operation of EES and ETIAS. Mr Garkov emphasised that the objective is to strengthen links with the carrier community, a relatively new addition to the Agency's core group of stakeholders, and jointly explore how to better support carriers with the implementation of these two new IT systems.

The Executive Director also highlighted the importance of **continuing with the digital transformation of Schengen,** spearheaded by eu-LISA. Among the reasons to encourage this digital transformation, Mr Garkov emphasised the importance of travel and tourism for the EU's economy, as well as the migratory crisis created by conflicts outside our external borders, such as the recent invasion of Ukraine by Russia. In this regard, the launch of the EES and ETIAS, and ensuring the interoperability of all JHA information systems will contribute to making Europe safer, while also guaranteeing its principles of freedom and justice for all citizens.

However, digital transformation is not only about technology, but mainly about changing the ways we use technology. Therefore, the active engagement and collaboration of all stakeholders – eu-LISA, Member States, European Commission, other Agencies and the industry – are essential for the success of this ambitious project. Mr Garkov continued his opening remarks stating that **what is needed today are capacity building and end-to-end solutions that integrate technology with the redesign of business processes.** In this regard, carriers play a key role in the correct and successful deployment of EES and ETIAS.

In closing, Mr Garkov stated that despite it being the last Industry Roundtable under his leadership, eu-LISA will continue expanding its role as the facilitator of a dialogue between the EU Member States, institutions and the industry, and will continue to support the EU Member States and Institutions in their objective of keeping Europe stronger and safer.

Welcome from the Czech Presidency of the Council of the EU

Mr Vít Rakušan, Minister of the Interior, Ministry of the Interior of the Czech Republic

Mr Vít Rakušan, in a pre-recorded video, welcomed the participants of the eu-LISA Industry Roundtable on behalf of the Czech government, currently holding the Presidency of the Council of the EU. He began his speech underscoring the importance of this year's topic, given that the entry into operation of the EES and ETIAS is probably **the most challenging project undertaken in the history of Schengen cooperation** thus far. The successful delivery of this project is of utmost importance following the migratory crisis that we have witnessed over the last few years, combined with security threats around the EU's external borders.

Mr Rakušan mentioned the aftermath of Russia's invasion of Ukraine as underscoring the importance of the contribution EES and ETIAS will make to the functioning of Schengen system, ensuring the EU's security and providing the tools for rapid and effective response to threats.

The Minister continued his speech by emphasising the great effort that has already been made by all parties involved – the Commission, eu-LISA, the Member States, and carriers – to launch these two new systems. However, there are still issues to be faced in the final part of the project. The Czech Presidency is well aware that the entry into operation of EES and ETIAS is an extremely challenging task and as such, this Industry Roundtable offers an excellent opportunity to answer any pending questions. Mr Rakušan concluded his speech by wishing all participants fruitful and inspirating discussions.

Session I
11 October 2022

Setting the Scene:
Legal Framework and Updates

Chair: **Mr Theofanis Syrigos**, *Senior IT Officer – HoS Business Relations Management, eu-LISA*

EES and ETIAS – Legal Base and its Impact on Carriers

Mr Fernando Otero Arceo, Policy Officer, European Commission, Directorate-General for Migration and Home Affairs (DG HOME)

Mr Otero Arceo opened his presentation with an overview of the legal base regulating the two new JHA information systems:

1. The Entry/Exit System (EES) will record and store electronically the date, time and place of entry and exit of all third-country nationals (TCN) crossing the EU's external borders. Additionally, it will also calculate the duration of their authorised stay and will issue alerts upon the expiry of authorised stay in the EU;

2. The European Travel Information and Authorisation System (ETIAS) is intended for authorising travellers from visa-exempt countries for short stays in the EU.

These systems will concern the following groups of travellers:

- EES: all TCNs, regardless of whether they are visa-exempt or not. All TCNs must be registered in EES when entering/leaving the Schengen Area for a short stay;
- ETIAS: only visa-exempt TCNs, who must register their travel both in EES and ETIAS when travelling to the Schengen Area.

These new regulations will also affect air and sea carriers, as well as international carriers transporting people overland by coach. With the entry into operation of EES and ETIAS, carriers will be responsible for verifying, prior to boarding, whether:

- travellers holding a short-stay visa, issued for one or two entries, have already used the number of entries authorised by their visa;

- travellers subject to the ETIAS authorisation requirement are in possession of a valid travel authorisation.

As Mr Otero Arceo explained, in order to fulfil these obligations, prior to boarding, carriers must automatically query both EES and ETIAS carrier interfaces made available to them by eu-LISA.

These checks must be carried out at the earliest 48 hours prior to the scheduled time of departure. In response to their queries, carriers will receive an answer of either "OK" or "NOT OK" for the specific traveller to travel to the designated Member State.

In order to use the carrier interface made available by eu-LISA, carriers will have to pre-register themselves to be granted access to the system-to-system interface and a web interface, through an application for mobile devices.

The registration process for the carrier interface was launched in September 2021. Mr Otero Arceo underscored the importance of registration, as carriers will be held responsible if a traveller is refused entry at the Schengen borders, i.e. if a carrier allows the boarding of travellers without querying the EES/ETIAS Carrier Interface, and if this traveller is then refused entry at the borders, the carrier will be liable for ensuring their return. In addition, carriers may also incur penalties in such cases.

Mr Otero Arceo concluded his presentation by clarifying two frequently asked questions:

- EU citizens are exempt from EES and ETIAS requirements, they are applicable only to TCNs;
- checks on TCN status shall be performed only when crossing the external borders of Schengen, but NOT for internal travel within the Schengen Area.

Carrier Interface: Who / how?

Who?

Air and sea carriers, as well as international carriers transporting groups overland by coach.

How?

Prior to boarding, carriers have the obligation to verify whether travelers holding a short-stay visa, issued for one or two entries, have already used the number of entries authorized by their visa.

When ETIAS enters into operation the carriers shall also have the obligation to verify that travelers, subject to the travel authorization requirement, are in possession of a valid travel authorization. Carriers shall submit the query, both for EES and ETIAS, through the carrier interface.

EES and ETIAS EiO – Practical Implementation: Actors and Interactions

Ms Athanasia Papavasileiou, IT Officer – Business Relations Management, eu-LISA

Ms Athanasia Papavasileiou provided an overview of the practical implementation of the EES and ETIAS regulations, affecting multiple actors: TCN travellers, border crossing point operators, Member States (border, visa, immigration, law enforcement authorities), eu-LISA, the European Commission, Europol, Frontex, and even Interpol.

All these actors have a role in the overarching **travel workflow** that can be summarised as follows:

STEP 1. TCN travellers (non-EU national): Visa or ETIAS request. The TCN travelling to Schengen and is subject to EES/ETIAS, must apply either for a short-stay visa or ETIAS;

STEP 2. Member States: Visa or ETIAS approval. The Member State authorities examine the traveller's visa or ETIAS application and, if approved, the traveller receives an authorisation to enter the Schengen Area;

STEP 3. TCN travellers: Planning of short stays. After receiving the authorisation and checking the remaining authorised stay using the online verification tool, the TCN traveller plans a new short stay visit, the ticket to travel is issued and he proceeds to do the check-in;

STEP 4. Carriers: Checking in travellers. All carriers, when receiving a check-in request from a TCN traveller, must submit this request to the carrier interface to verify that the traveller is in possession of a valid visa or ETIAS authorisation. After all travel documents are verified, the carrier may depart with the authorised passengers;

STEP 5. Member States: Checks at border crossing points (BCP). At the border crossing point to the Schengen Area, TCN travellers must pre-enrol their data at self-service kiosks (if it is their first time visiting Schengen), the border authorities check their visa or ETIAS status, create or update the EES file, and verify the correct registration of biometrics and other required data. In case of flags or if further checks are needed (e.g., alert from another JHA systems, such as SIS), the traveller can proceed to a second line of inspection;

STEP 6. Member States: Entry into Schengen. Depending on the outcome of step 5, the TCN travellers are accepted and registered in EES (no stamp required), or they are refused entry and the carrier is responsible for returning the traveller to the place of origin.

Ms Papavasileiou continued her presentation explaining the different activities that need to be performed by the different actors involved in the process, in order to complete the travel workflow described above.

- **Member States, BCP operators, the Commission, Frontex and Europol:**
  - preparation of all BCP for registration of biometrics and use of EES/ETIAS;
  - enhancement of capacity at all BCP;
  - collaboration with the carriers and exchange of expertise to ensure optimum travel flow experience for travellers;
  - setting up the ENUs for the ETIAS entry into operation;
  - preparation of information campaigns;
  - Frontex and Europol preparations for connection to the systems.
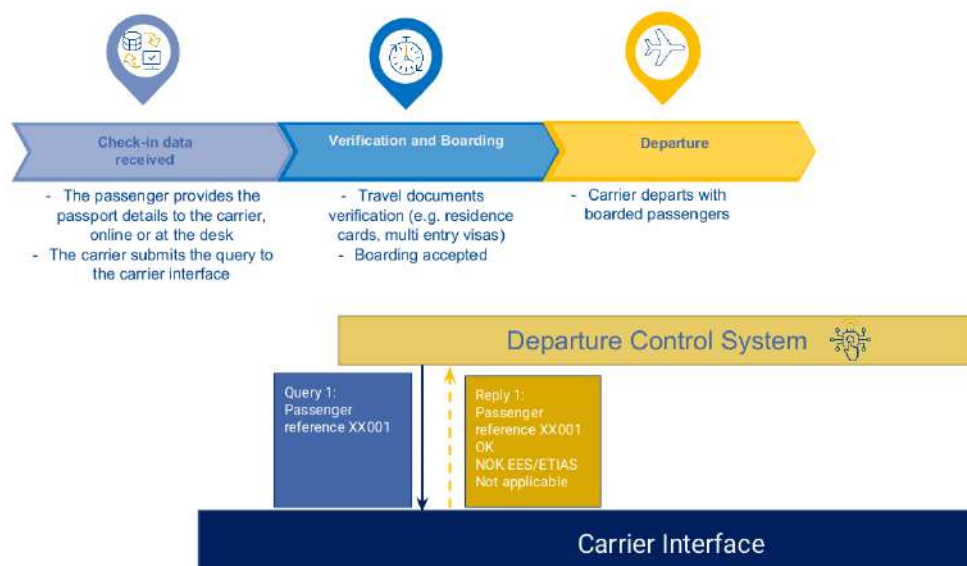
- **Carriers and service providers:**
  - contribution to the discussions on the legal base, the implementation, and the future standard operating procedures – clarifications on all levels;
  - registration for the authentication scheme;
  - implementation in accordance with the technical guidelines;
  - connectivity setup in case of system-to-system communication;
  - compliance testing and systems certification;
  - training of staff (where applicable).

- **eu-LISA:**
  - establishing communication with all actors in order to coordinate activities;
  - support the Commission, the Agencies and the Member States in the development of the secondary legal base;
  - Working Group with Carriers is the forum to interact with the carrier community and gain insight of their processes;
  - support Member States with connectivity to EES/ETIAS;
  - support the carrier registration process, communicate with SPOCs to advance preparations, work with registered service providers;
  - prepare technical guidelines, ICDs, mock-ups, test documentation, and other material for the Member States and the carriers;
  - analyse, develop, test and prepare transition into operation of EES/ETIAS;
  - prepare onboarding and support online tool for carriers.

In conclusion, Ms Papavasileiou highlighted the three key success factors:

- collaboration between all actors on all levels;
- knowledge sharing;
- systems interoperability.

EES and ETIAS Seen from the Perspective of Frontex

Mr Jorge Silva Rodrigues, Project Officer – ETIAS Central Unit Division, Frontex

Session I of the Industry Roundtable was closed by Mr Jorge Silva Rodrigues who outlined the role Frontex will play in the entry into operation of the EES and ETIAS. Frontex will be specifically involved in the deployment of ETIAS and has established a special department – the ETIAS Central Unit (ECU) – fully dedicated to ETIAS operations. The ECU's main tasks are:

- verifying hits between the applications from travellers and databases connected to ETIAS;
- indicating the responsible Member State for manual processing of applications;
- ensuring that verifications are performed;
- managing risk indicators and screening rules;
- facilitating consultations between Member States, when necessary;
- notifying carriers in cases of problems with ETIAS;
- providing support to carriers through a ticketing tool and an emergency phone line 24/7;
- providing support to travellers during their application process.

Currently, Frontex is preparing for the ETIAS entry into operation by:

- recruiting of staff for the ECU;
- onboarding and training of the new staff;
- preparing the 24/7 shifts schedule;
- setting up new operational processes and procedures;
- supporting Member States with the deployment of their ETIAS National Units;
- participating in relevant working groups.

Mr Silva Rodrigues closed his presentation with a brief description of the different tasks that will be fulfilled by the ECU in the near future to ensure the successful deployment of both ETIAS and the EES:

- preparing for the testing of relevant tools;
- rehearsing operational procedures;
- supporting carriers starting from the entry into operation of the EES;
- providing support to travellers after the entry into operation of ETIAS.

Carriers' registration and traveller verification
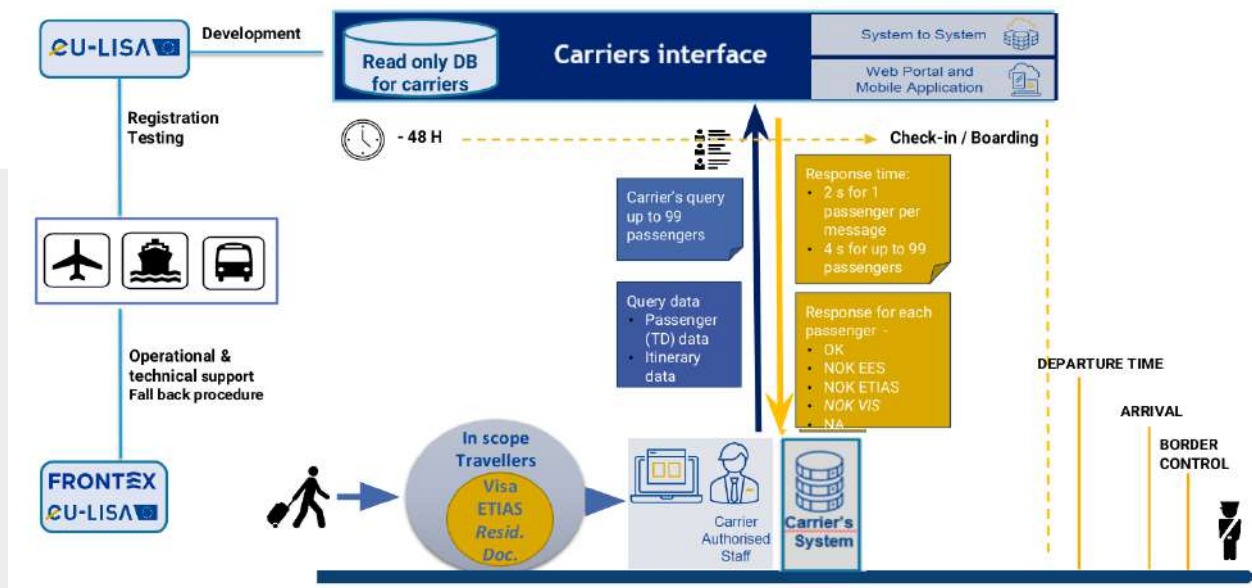
Session II
11 October 2022

Setting the Scene:
The Carrier's Perspective

*Chair: **Ms Lamiaa Albert**, Senior IT Officer, eu-LISA*

Implementation of the EES in the Conditions of the Czech Republic in Terms of Cooperation with Air Carriers and Airport Operators

Colonel Milan Frydrych, Head of National Coordination Centre, Czech Directorate of Foreign Police Service

Session II of the Industry Roundtable was opened with a keynote by Colonel Milan Frydrych from the Czech Directorate of the Foreign Police Service, presenting an overview of how the Czech Republic is preparing for the integration of EES and ETIAS with the country's **border control infrastructure** (BCI). For successful integration of these new IT systems, the Czech Republic has deployed a flexible architecture allowing for further extensions at airports and land border BCPs, if necessary. At the core of the Czech BCP system is the border control server that facilitates communication with the central database, and stores created or modified files that are produced during border checks. The server receives input data via the KODOX system that operates fingerprint and document scanners, and it also communicates with the self-service registration kiosk and the e-gate.

The process at BCPs starts by reading the traveller's MRD[1] on their identity document, usually alphanumeric. If TCN status is detected during data evaluation, a query is sent to the server to check if a TCN file has already been created on the pre-registration self-service system. If not, it queries the central EES to check if there is an existing file on the TCN traveller. After the response and the actions performed, a folder with the requested records is created (or updated) and stored on the server, and sent to the central EES.

The search process can also be triggered by biometric identification, where the initial search can be done using biometric cameras to verify that the person does not have a file created on the self-service system, in which case, the alphanumeric data is uploaded and the process continues as described above.

For example, the Prague airport hosts **17 automated border control (ABC) gates,** which will all be integrated into the EES. The pre-requisite for using these gates is prior enrolment at the self-service kiosks at the entrance to the airport. This way, the gates will be used only for verification of border control results, with the operator being able to intervene and interrupt the automatic process at any time. In order to use these gates as efficiently as possible, the Czech authorities require the supplier to allow them to change the terms of use of the gates. This will allow the authorities to change the number of gates by each category of passenger (i.e. TCN, Schengen citizen, national citizen), as well as changing the conditions of use within each category.

The Czech authorities believe that with the entry into operation of the EES and ETIAS, to ensure success, the entire process should be **automated to the maximum degree.** In the Czech Republic, this automation will primarily concern the Prague airport, which handles 90% of all air traffic in the country. To that end, the airport has installed 58 self-service kiosks, as well as 34 assisted counters for TCN, and also 17 ABC gates.

Since the EES Regulation adds new requirements to the

Coordination with airport operators

- selection of suitable premises for the location of the SSS,
- modification of the premises
- provision of network and data connectivity,
- providing support to passengers,
- optimizing passenger flows,
- responding to increases in passenger waiting times.

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[1] Machine-Readable Data

checks on TCN travellers, but does not abolish any of the original ones, it extends the time needed to check a traveller, and the automated process, is intended to minimise this additional time as much as possible. To that end, the Czech Republic will initially adopt the following **traveller flow scheme**: passengers decide themselves whether to use the fully automatic process with the self-service kiosk and the ABC gate, or go to one of the assisted counters.

To implement this strategy, the Czech Republic has conducted tests with non-trained participants to map out the process at the kiosk, incl. filling out the national border control questionnaire. Tests indicated that the average check-in time per person at the kiosk was 89 seconds, which was subsequently used as input data for modelling passenger flows and estimating the duration of the entire border control process.

Colonel Frydrych highlighted that close cooperation with BCP operators is crucial for the successful implementation of the EES project. In their case, it was first necessary to identify the possibilities at individual airports, to set up passenger flows, and to find suitable locations for self-service kiosks (including data and electricity connections).

Subsequently, the airport operators had to make the necessary structural modifications and cooperate in connecting individual segments. In addition, it was necessary to conclude a formal agreement and conduct training for the operator's staff to assist passengers in operating the self-service kiosks and to direct passenger flows to the various check-in points.

In conclusion, Colonel Frydrych summarised their cooperation with carriers, which was carried out mainly by the Ministry of Transport through their regular meetings with carriers operating in the Czech Republic. The focus was on explaining their new obligations arising from the EES Regulation, and a brief overview has been published on the ministry's website, including links to further info on the Commission's and eu-LISA websites.

Pre-travel Verification and Digitalization of Processes

Mr Christopher Hornek, ICAO Annex 9 Expert, International Civil Aviation Organization (ICAO)

In the second presentation of session II, Mr Christopher Hornek from ICAO provided an overview of the benefits of **Advance Passenger Information** (API) offered to EES, ETIAS and to international air travel in general. In essence, API comprises biographical data about passengers, plus information concerning specific flights, as well as routing information shared with border control agencies. This data is generated during the airline check-in process by the Departure Control System (DCS). The API may apply to arriving and departing flights, or in some cases, even for overflights.

Mr Hornek indicated how this use of personal identity data can lead to:

• faster processing of bona-fide travellers;
• improvement of people's perception of security;
• improvement of border security;
• more effective handling of irregular migration.

Mr Hornek went on to explain that API data transmission can be implemented in two different modes:

• **batch API:** where all the personal details of all passengers are transmitted at once after flight closure on flight level;
• **interactive API (iAPI):** a new form of API where passenger details are transmitted in real-time during check-in, on a per passenger basis.

Although more costly to implement, iAPI is becoming a priority for countries that are able to process incoming API data and scan their border control system instantaneously, while also responding to the aircraft operator in real time. Mr Hornek highlighted that **iAPI brings clear added value,** compared to the batch mode, as it allows countries to vet watchlists, compare border control records and other information before the passenger departs.

Mr Hornek went on to explain that the use of iAPI should lead to a considerable decrease in penalties and inadmissible passengers as it provides passenger clearance for entry already before departure. In addition to the border control benefits, iAPI systems also enhance aviation security since countries can deny the printing of a boarding passes, thereby prohibiting access to the aircraft itself, and even to the sterile area of an airport for a particular traveller. Additionally, iAPI provides avenues for pre-travel verification and facilitates the automation of border control clearance process.

Similar to other presenters, Mr Hornek stressed the importance of **cooperation.** The effective use of iAPI requires interagency cooperation at the national border management level. The overarching concept of a robust iAPI system is the communication of a traveller's passport information by the aircraft operator to national authorities of the destination country. The country of destination then uses this travel document data, as a starting point to conduct comprehensive pre-travel verification checks against multiple databases of border control records, visa and electronic travel authorization databases, aviation security watchlists and public health portals. Increasingly, iAPI response messages will provide aircraft operators with

Batch API

• Pax details transmitted after flight closure on flight level
• Government intervention before departure unlikely
• Enhances border security
• Enables checks against watchlists
• *Pre-travel checks remain credential based*

Interactive API

• Pax details transmitted in real-time during check-in on per passenger basis
• State intervention is immediate, CUSRES required
• Reduces inadmissible persons
• Enhances aviation security
• *Pre-travel verification can be systems based (+passport)*

real-time directives from destination country authorities, either for approval or denial to board, or with specific instructions on each passenger.

Accordingly, **iAPI can provide tangible benefits to national authorities and aircraft operators** in the process of identifying inadmissible passengers, whether they are related to immigration or public health, including cost avoidance for detention and return. This includes admission refusals due to immigration or other law enforcement records, i.e. aspects that the aircraft operator is unable to identify during pre- departure document checks. What is more, individuals presenting a threat to aviation security can be identified before departure, resulting in the avoidance of potential security-related incidents within airport facilities or in aircraft cabins.

Mr Hornek highlighted another **critical point – data quality.** Many countries are automating their border clearance processes to enhance travel facilitation. API data, and in particular, travel document data, received in advance of arrival (batch mode), or already pre-departure (iAPI mode), assists with clearance procedures. A critical element of the API message consists of the data contained in the machine-readable zone/travel documents (MRZ/MRTD).

In many cases travel document data included in the API message is collected by aircraft operators or their agents through a swipe of the MRZ of a travel document. Traditionally, this data was collected at the airport check-in desk, but with the growing share of online check-in, the passengers typically enter this data manually. Since many countries insist on high-quality data travel documents and aircraft operators are required to conduct document checks before boarding, a swipe at the airport is still usually employed, also with a view to enhancing API travel document data quality. Mr Hornek concluded with explaining how enhanced automated solutions for travel document data entry, addressing data quality during web check-ins, are already employed and will grow in importance in the coming years.

Impact of the EES and ETIAS on Cruise Operations

Ms Marie-Caroline Laurent, Director General, Cruise Lines International Association (CLIA)

The next presentation of Session II was delivered by Ms Marie-Caroline Laurent representing the cruise industry. To start, she gave a brief overview of the cruise industry to give an idea of the importance and the impact that the EES and ETIAS will have on the cruise industry. CLIA comprises 57 cruise lines, with 350 vessels worldwide (from less than 100 passengers up to 7000) that carry annually almost 30 million travellers (pre-pandemic figure). Europe is their second largest destination (just after the Caribbean), with 246 vessels, over 300 destinations and 7.7 million passengers.

Passenger data is:

- collected through a website or dedicated app, incl. document capture;
- received on average between 3 months and up to 60 minutes prior to the scheduled departure;
- verified, on average, between 4-5 hours prior to boarding;
- sent to destination port up to 24 hours in advance of arrival, incl. crew information;
- submitted via the Maritime Single Window, which does not support the interactive API capability (see the previous presentation in Session II by Mr Hornek, ICAO).

In this context, the entry into operation of the EES/ETIAS is expected to pose some serious challenges to the cruise industry, and Ms Laurent concluded her presentation by raising a number of important questions:

- when/where will the EES passenger recording/ registration take place, taking into consideration the number of passengers on vessels, the impact on first entry point homeports, and the status of transit stops outside the Schengen Area?
- how will the EES registration of passengers be accomplished?
- what will be the required resources at ports to deal with the passengers in vessels that are 10 times the size of an Airbus A380?
- how will TCNs and EU citizens be separated?
- could the EES enrolment take place during the voyage (through an app or a dedicated kiosk on the vessel)?
- given that passenger check-ins can range from 3 months in advance to 60 minutes prior to departure, when will the carrier have to do the passenger checks using the EES/ETIAS carrier interface?
- will this check of passengers be repeated every time a vessel touches a Schengen port during the voyage?
- would it be possible to integrate the EES/ETIAS processes with the already existing maritime reporting obligations?

EES and ETIAS implementation key challenges

Entry and Exit recording and passenger registration:
- When/Where?
  - Considering impact on homeports, on first entry points and status of transit stops outside of Schengen
- How?
  - Resources at ports: number of border guards / kiosks?
  - Segregation of TCN and EU citizens?
  - Consider EES enrollment during the voyage – kiosk or app?

Verification of carrier gateway :
- Timing for verification?
  - Timing for check-in can differ from 3 months up to 60 min.
  - Every time touching a Schengen port during the voyage?
- Consider ETIAS application during the voyage ?
- Integration with Maritime reporting obligations

EES/ETIAS – The Air Carriers' Perspective

Ms Nuria Fermoso, Senior Manager – Passenger Facilitation - Europe, International Air Transport Association (IATA)

Session II was closed by a presentation by IATA, representing the air carrier industry with regard to the EES/ETIAS entry into operation. Ms Nuria Fermoso explained that the **air carrier industry envisions a simplified, efficient, secure and seamless end-to-end journey using the OneID proposed by IATA.**

The two key enables for the process are:

• **digitalisation of admissibility in advance of travel;**
• **contactless travel through biometric identification.**

According to Ms Fermoso, this vision is compatible with the EES/ETIAS, which will be the most impactful electronic travel systems (ETS) implemented worldwide. IATA supports and is in favour of implementing both systems, believing that in order for such an ambitious project to succeed, it is absolutely key to have in place:

• **a strong standardisation process;**
• **communication with the general public.**

Ms Fermoso also detailed the most important risk factors that may prevent the EES/ETIAS from achieving their full potential, according to IATA.

Pre-departure risks:

• not all immigration checks/travellers are in the scope of the EES/ETIAS;
• responses to carriers lack sufficient granularity; support to carriers when dealing with travellers.

On arrival risks:

• potential lack of efficient readiness in terms of processes and resources at BCPs;
• lack of off-airport enrolment for TCNs before departure (long queues).

From the perspective of air carriers, there are certain important actions that need to be performed in order to be ready for the EES/ETIAS entry into operation. In particular, Ms Fermoso highlighted:

• connecting the airline systems to the EES/ETIAS Carrier Interface;
• adapting their operational process to the new requirements;
• adapting of online services;
• training of staff to use the new IT systems and processes;
• updating and expanding their customer communication channels to face an increased level of enquiries by travellers.

Given the risks outlined above, and the tasks that need to be performed by airlines, Ms Fermoso closed her presentation by presenting IATA's view of efficient implementation of the new systems:

Pre-departure:

• enhance the communication/resources available to carriers during the IT setup process;
• expand of the type of visas in scope to be advanced at the EES/ETIAS entry into operation;
• 24/7 phone support to carriers once the systems are live.

On arrival:

• efficient border control procedures;
• effective deployment of resources at BCPs,
• EU app for TCNs to enrol at the airport and on departure, ready for the entry into operation,
• secure a "low travelling season" timeline for the EES/ETIAS entry into operation.

The efficient implementation

PRE-DEPARTURE

Carriers

• Enhance communication /resources available to carriers during the IT setup process
• Expansion of the type of visas in scope to be advanced at the EiO
• 24/7 phone support to carriers once the system is live

ON ARRIVAL

Schengen Border Crossing Points

• Efficient border control procedures
• Effective deployment of resources at border crossing points
• EU App for TCN to enroll at the airport and on departure, ready for the EiO
• Secure a "low season" timeline for the EiO
• Minimum Connecting Times shall be respected

Session III
12 October 2022

Operational Pilot Projects
in Air Passenger Transport

Chair: **Dr Javier Galbally**, *Senior Capability Building Officer, eu-LISA*

Digital Travel Credential (DTC) for Boarding and Border Crossing Processes: A Pilot Project in the Netherlands

Mr Jeroen de Graaf, Program Director of Borders and Security, Dutch Ministry of Justice and Security

Mr Jeroen de Graaf from the Dutch Ministry of Justice and Security provided an overview of a pilot project on **digital travel credentials (DTC)** that is being prepared in the Netherlands.

Digitalisation of travel documents provides a number of benefits for passengers, airports, airlines and border authorities by:

• facilitating travel processes, i.e., faster and smoother travel experience and reduced congestion;
• addressing staff shortages by redirecting resources and improving efficiency; and
• enhancing security by performing advance checks, and responding to threats and crime.

DTC is a digital representation of the traveller's identity, intended to temporarily or permanently replace a conventional passport. DTC has two components:

1. **virtual** component: digital representation of the holder's identity derived from the passport (including facial biometric stored in the passport), that can be submitted for verification prior to travel;
2. **physical component:** a device carrying the DTC (such as a smartphone or token) to present the DTC at the border crossing point.

There are three types of DTCs:

1. **self-derived** (DTC-1);
2. **authority derived** (DTC-2);
3. **authority issued** (DTC-3).

The Pilot Project. The DTC used in the pilot project will be based on the ICAO DTC standard (DTC-1) and will be issued as a derivative of an existing electronic machine-readable travel document (eMRTD), in compliance with Council Regulation (EC) 2252/2004 on standards for security features and biometrics in passports, and travel documents issued by Member States. As such, the project is expected to provide valuable insights on using DTCs to facilitate border crossing processes. The project will entail the following steps:

1. derivation of a DTC-1 via a mobile app;

2. using the DTC-1 in the context of boarding an aircraft:

• prior self-enrolment for biometric boarding of a KLM Flight;
• biometric boarding of a KLM flight using a Tap&Go Facility with physical passport;

3. using the DTC-1 in the context of border-crossing:

• enrolment for biometric border crossing before departure;
• pre-assessment & entry questionnaires;
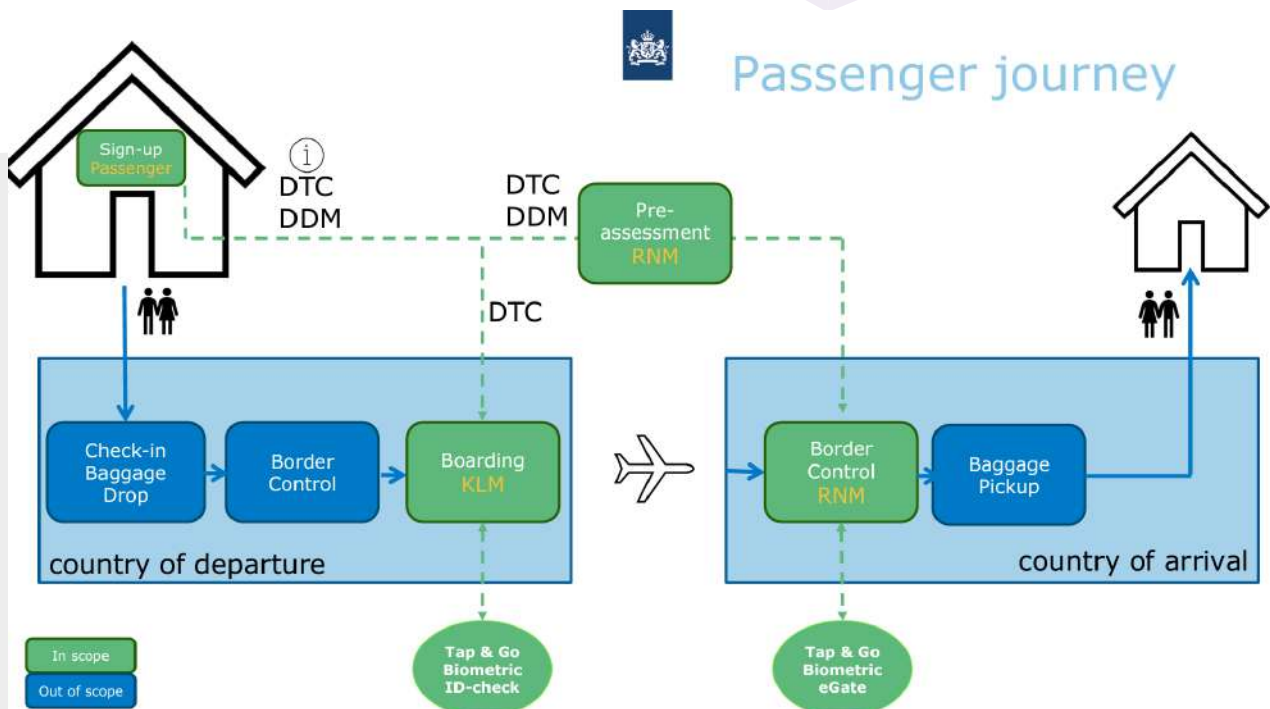
- border-crossing at Schiphol airport using a Tap&Go Facility with a physical passport.

In addition, the project will perform a data protection impact assessment (DPIA), as well as checking compliance with other relevant legislation.

The outcomes, deliverables and best practices of this pilot project will be documented in a final report for the European Commission, and proactively shared with partner organisations and relevant fora such as EU Travel Facilitation Working Group, the ICAO TAG/TRIP (International Civil Aviation Organization, Technical Advisory Group on the Traveller Identification Programme), and International Air Transport Association (IATA).

Risk-based Security: From Theory to Practise. Comparison of Rule-based vs Risk-based Security Policies Using the iCrowd Simulator[1]

Dr Stelios Thomopoulos, Director of Research, National Centre of Scientific Research 'Demokritos', Greece

Dr Stelios Thomopoulos, Director of Research at NCSR Demokritos, shared insights on risk-based security policies, drawing on the work of a number of EU-funded research projects: FLYSEC[2], TRESSPASS[3], D4FLY[4], SAFETY4RAILS[5]. The iCrowd simulator, developed by the National Centre for Scientific Research 'Demokritos', is a general-purpose agent-based modelling platform aiming to provide an abstract, domain-agnostic simulation framework, and was pivotal in all of the aforementioned projects.

Today, **less than 5% of travellers represent a threat** to the security screening process at airports. At the same time, random enhanced checks apply equally to all travellers and may lead at times to poor user experience and increased delays. The **risk-based security concept framework** offers a solution for this challenge. The framework combines information, knowledge and intent of travellers; assesses risks; and applies security screening procedures according to the risks.

The application of risk-based security screening procedures can **speed up the security screening process,** offering a more pleasant experience to travellers, while maintaining the required level of security. Several additional components are added to the process to achieve a classification of travellers. Using the live simulation engine iCrowd, it is possible to provide a detailed quantitative evaluation of the performance of a risk-based system. Based on the simulations, this approach is fit to handle 1 to 3 times higher flowrates of passengers than current rule-based systems. However, increasing delays must be controlled and maintained explicitly.

In essence, risk-based systems are a promising strategy to improve the effectiveness and efficiency of the border crossing process. However, it is a complex process and should adhere to GDPR rules.

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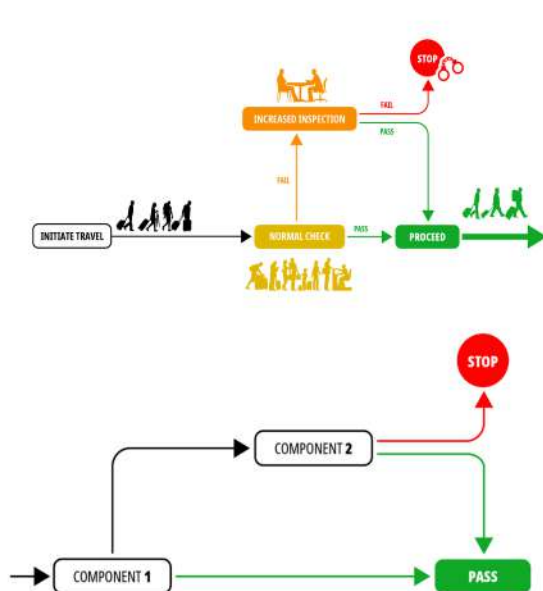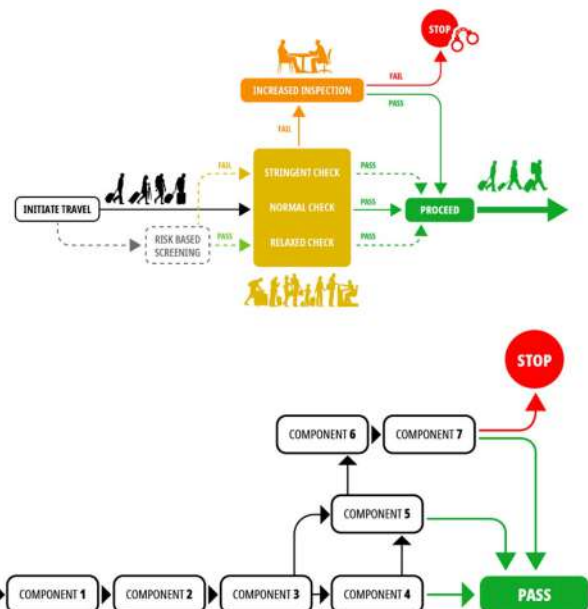
[1] The iCrowd Simulator was initially designed and developed in the context of the total airport security system project TASS for simulating an emergency crowd evacuation at an airport. safety4rails.eu/2022/06/29/a-crowd-simulation-tool-for-improving-security-and-resilience-in-the-railway-sector

[2] The FLYSEC project addressed the European Union's research priority for improving the aviation security chain and aligned with the roadmap and recommendations reflected within the IATA/ACI Smart Security programme. FLYSEC facilitates the three main principles specified in Smart Security: strengthened security, increased operational efficiency and improved passenger experience. fly-sec.eu/about.html

[3] The TRESSPASS project aims to develop a single cohesive risk-based border management concept, incl. screening and alert system for travellers and luggage. tresspass.eu/The-project

[4] The D4FLY project – Detecting Document frauD and iDentity on the fly – focuses on enhancing the quality and efficiency of identity verification at border crossings in all modalities: land, air, and sea by providing faster and more secure border control solutions. d4fly.eu

[5] The SAFETY4RAILS project explores the methods and systems to increase the safety and recovery of track-based inter-city railway and intra-city metro transportation. safety4rails.eu/

SITA's Digital Travel Journey Verifiable Credentials

Mr Michael Zureik, Senior Digital Identity Architect, SITA (Société Internationale de Télécommunications Aéronautiques)

Mr Michael Zureik from SITA, the world's leading specialist in air transport communications and IT, gave insights on SITA's **self-sovereign identity or SSI-based verified digital travel credential solution.**

In border management, governments aim to balance the need to control threats whilst promoting open borders.

According to Mr Zureik, this balance can be achieved with digital travel that enables travellers to securely share their travel information prior to departure. Identity information can be digitised by scanning it from a smartphone and then sharing the information with carriers and competent authorities. The vision includes a fully integrated process from receiving authorisation, identification and pre-clearance from immigration authorities, as well as facial recognition capabilities. Identifying travellers earlier in the journey will lead to a more efficient process, and the traveller will enjoy a more seamless journey. However, it is essential that travellers have a right to own and control their digital identity. To that end, a trust network must be established to preserve privacy, ensure consent-based sharing, and allow selective disclosure. SITA has tested these principles in pilot project conducted in Aruba, a small constituent country of the Kingdom of the Netherlands, where SITA Lab has been

working with the local government to demonstrate how a **trust network** can support digital travel that entails:

- preservation of privacy;
- consent-based sharing;
- selective disclosure; and
- W3C[1] verifiable credentials.

The pilot projects in Aruba successfully demonstrated that:

- digital wallets are ready for travel;
- trust networks can meet the needs for industry, government, and travellers;
- integrating with government infrastructure can be easy;
- airlines can leverage existing secure messaging networks to simplify compliance obligations;
- reduction in fraud and data quality issues can be mitigated;
- attractive value proposition for the tourism industry, etc.

In closing, Mr Zureik acknowledged that the goal of all travellers going through a 100% seamless border procedure will remain an ideal. However, SSI-based technology offers the potential for a large share of passengers to enjoy a better travel experience at airports.

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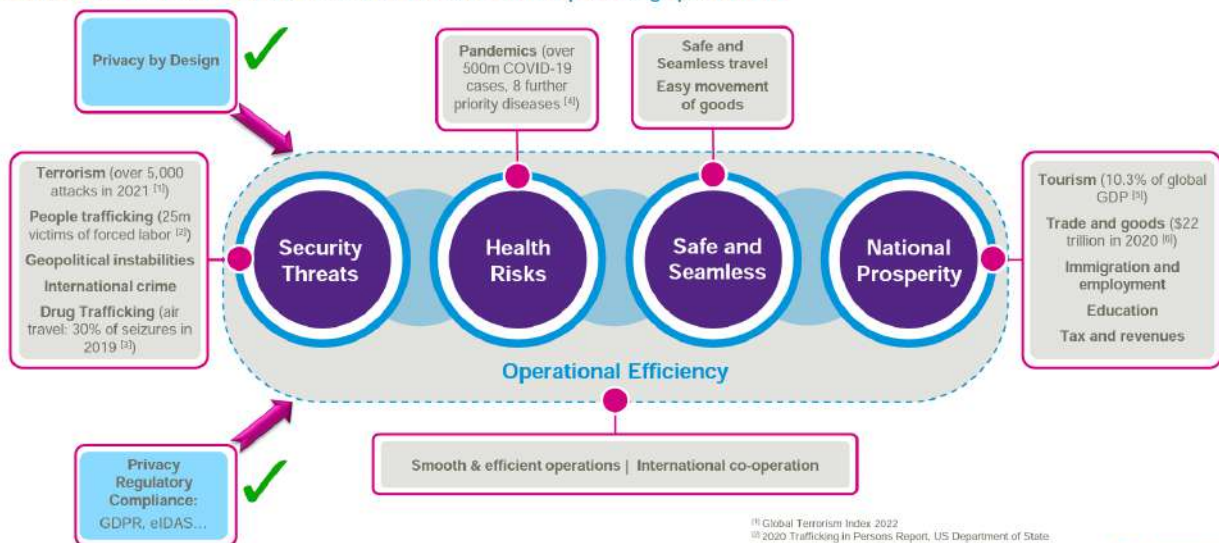
[1] W3C, the "Worldwide Web Consortium", is an international community where member organizations, a full-time staff, and the public work together to develop web standards. Verifiable credentials are tamper-evident credentials which have authorship that can be cryptographically verified. For more, visit w3.org, and w3.org/vc-data-model/ (from ICAO)

Integration of EES/ETIAS Checks in Altéa Departure Control System (DCS)

Mr Shankar Gnanasekharan, Product Expert, AMADEUS

Mr Shankar Gnanasekharan from AMADEUS, one of the top ten travel technology companies in the world, shared insights on the ongoing EES/ETIAS implementation from the perspective of IT service providers.

The current **pre-boarding process,** prior to the EES/ETIAS entry into operation, comprises the collection of the passenger's travel document at check-in and its transmission to the competent government agency for verification from a security and immigration perspective. Based on the reply, the boarding process will proceed.

This procedure will change with the implementation of the EES/ETIAS, both from a procedural and technical perspectives. The EES and ETIAS focus on a specific subset of travellers: short-stay or multiple-entry visa holders and visa-exempt third-country nationals, but not EU nationals or holders of EU residence permits. As a result, IT software providers will face certain challenges, as travellers falling under the EES/ETIAS cannot be identified automatically.

eu-LISA resolved this issue by allowing to query all travellers, resulting in a negative status when a certain identity is not in the scope of the EES/ETIAS. Although this constitutes a major improvement, some shortcomings remain, such as:

- decline in self-service check-in success rate;
- decline in InterAirline Through Check-in (IATCI)[1] success rate;
- increase in the number of overrides to be performed at the airport.
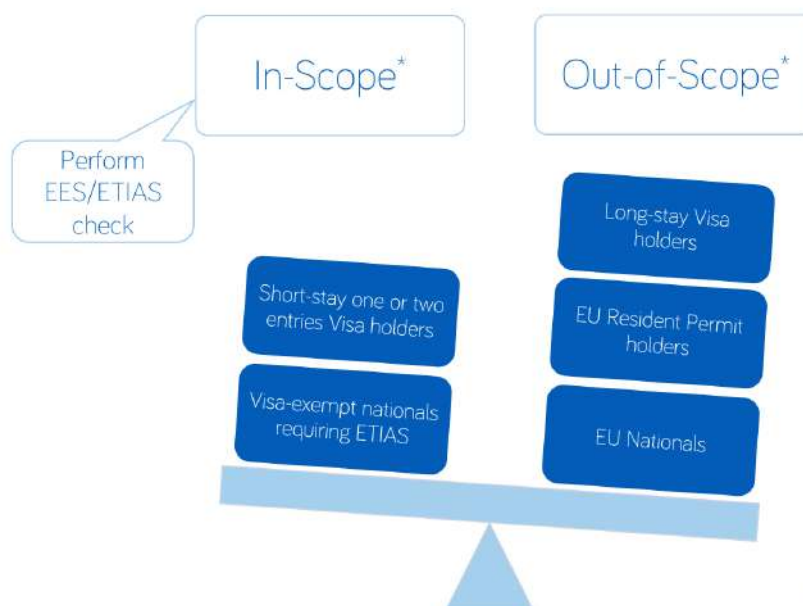
These shortcomings can be partially addressed by the following technical mitigation measures:

- allow self-service check-in despite negative status;
- industry recommendation to allow IATCI despite negative status;
- automatic override based on entry of certain documents, e.g. residence permit.

Mr Gnanasekharan stressed that technical mitigation alone will not be sufficient, as manual checks and override are still anticipated for significant volume of travellers, adding pressure to the for the operators. An additional measure that could help seamless airport operations is the increase in the scope of Carrier Interface to cover all types of visas and resident permits.

EES/ETIAS Checks
Difference from standard iAPI – The Scope

In-Scope* — Perform EES/ETIAS check: Short-stay one or two entries Visa holders; Visa-exempt nationals requiring ETIAS

Out-of-Scope*: Long-stay Visa holders; EU Resident Permit holders; EU Nationals

* Not an exhaustive list

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[1] InterAirline Through Check-In (IATCI) Implementation Group is an industry interest group including airlines, system/software providers and handling agents/operators involved in development, implementation and usage of interairline through check-in functionality. iatci.com

Session IV
12 October 2022

Operational Pilot Projects in Sea and Land Passenger Transport

Chair: **Dr Javier Galbally**, *Senior Capability Building Officer, eu-LISA*

Risks and Solutions: Views of the Maritime Industry Regarding the Deployment of the Entry/Exit System

Mr Marius Dejarnac, Policy Advisor on Shipping & Trade, European Community Shipowners' Associations (ECSA)

Mr Dejarnac from ECSA presented the views of the maritime industry regarding the deployment of the EES, which may pose a number of challenges for the operators. First, it may lead to congestion at seaports, because with the entry into operation of the EES, embarking and disembarking of passengers is expected to take more time than it does now (at least in the beginning). It may be especially challenging for smaller ports that cannot expand their infrastructure for additional equipment, e.g. EES enrolment kiosks and booths. This may also be challenging for ferry ships, especially when disembarking passengers with their vehicles. It could lead to long queues starting inside the ferries, delaying their departure to the next destination, and increasing operational costs for operators. Those costs will be covered by the increased ticket prices for travellers, and as a consequence, might hinder the competitiveness of the maritime industry (vis-à-vis the rail industry).

Mr Dejarnac presented several ideas to tackle these challenges. For example, launching a pilot project to identify congestion risks and draw lessons on how to ensure traffic fluidity at seaports. In addition, a transitional period with partial implementation of the EES is also recommended to understand its impact on passenger operations at seaports.

Expectations of shipowners

- Ensuring traffic fluidity

- Transitional period

- Ensuring fair competition

Vehicle and Traveller Management

Mr Csaba Nagy-Amigo, Director Business Development, Adaptive Recognition

Mr Csaba Nagy-Amigo from Adaptive Recognition, shared his insights on the management of traffic at land border crossing points. Border control officers deal with multiple tasks, such as recognising fake IDs, suspicious vehicles and smugglers, while sitting in a small booth all day long. The presented **"Free-Flow System" for investigation and prevention** can assist border guards in analysing huge amounts of data, and provide indications of suspicious activities at border crossing points. This **technology can read licence plates, identify models and colours of the vehicles, and count the number of people in the vehicle.**

Artificial intelligence can analyse data and provide border guards with valuable information, for example, in cases where the same licence plate is used on different vehicles, or in cases where the same vehicle:

- enters the EU every week with four persons and leaves with only one person on board;
- crosses the EU borders frequently but with different drivers behind the wheel;
- enters the EU always at the same border crossing point, but keeps leaving through different border points.

In these cases, the technology could **alert border guards of potential suspicious activity** and recommend conducting a check. In essence, the "Free-Flow System" can assist border guards in **focusing on high-value tasks of identifying suspicious activities,** while ensuring a steady flow of traffic at the border crossing points.

"Free-Flow System" is currently being tested in Denmark and Germany and is expected to be in operation in more than 100 lanes at land border crossing points.

The H2020 Project SMILE: SMart mobILity at the European Land Borders

Dr Georgios Stavropoulos, Research Associate, Centre for Research and Technology Hellas (CERTH)

Dr Stavropoulos from CERTH presented the findings of the Horizon 2020 project SMILE – SMart mobILity at the European Land Borders[1]. The project's aim was to provide a set of **affordable and easy-to-install modules** to support the needs of the EU's land border infrastructure without sacrificing security.

The project workflow was based on the concept of **'pre-registration':**

- similarly to air-travel check-in, travelers provide their information (i.e. documents, biometrics, travel plans, ETA, etc.) prior to their arrival at the border crossing point;
- background checks are performed offline: the SMILE system collects information from national and international databases (e.g., EES, ETIAS, VIS, SIS etc.) and runs a risk analysis on the travelers;
- if no alerts are given, the travelers are allowed to go through the fast lane, where they are required to provide final identification.

As reported by end-users, communication delays between various systems can significantly increase waiting times – the tested pre-registration application improves on this point.

Similar approach was tested with lorries. In case of tourist buses, passengers are treated as a group, instead of as individuals, to improve the traffic flows at the borders. Based on the expected traffic, the SMILE platform can also suggest the best arrival time period to the border crossing point, thereby improving the traffic flow and reducing waiting times.

In the framework of SMILE, two pilot projects were conducted at land border crossing points in 2019 and 2020 in Nadlac (Romanian – Hungarian border) and Ruse (Bulgarian – Romanian border), with 221 and 136 participants, respectively. Although greatly impacted by COVID-19 restrictions at the time, both projects showed promising results for document scanning and facial biometric checks, receiving mainly positive feedback from participants.

Ultimately, the project:

- delivered a palette of **low-cost technological solutions** that make the management of land border control points less resource-intensive, while contributing to traveller convenience without sacrificing security;
- explored the capabilities of **smart mobile devices in biometric control** for low-cost but secure and trusted authentication, embedding their exploitation as a part of a **multimodal biometric verification process** that complements existing approaches.
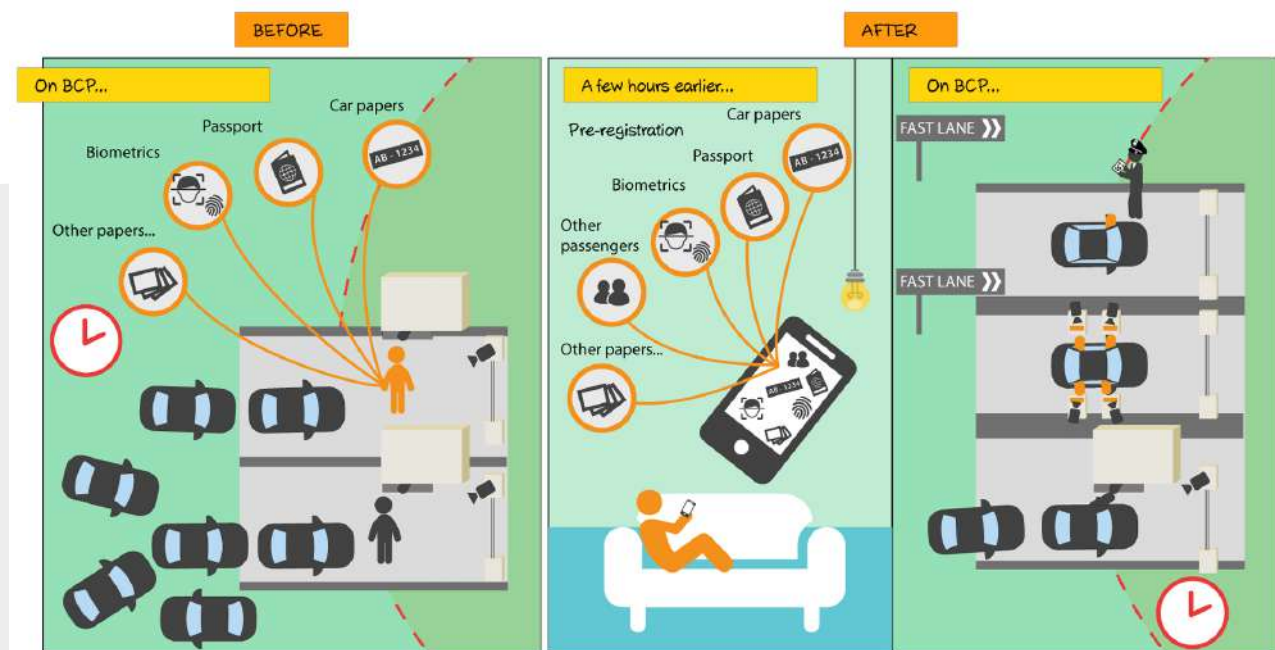
[1] SMILE - SMart mobILity at the European land borders smile-h2020.eu

Innovative Land/Sea Border Technologies to Optimize Passenger Flow in Vehicles

Mr Pascal Janer, Vice President of Sales and Business Development in Europe, IN Groupe
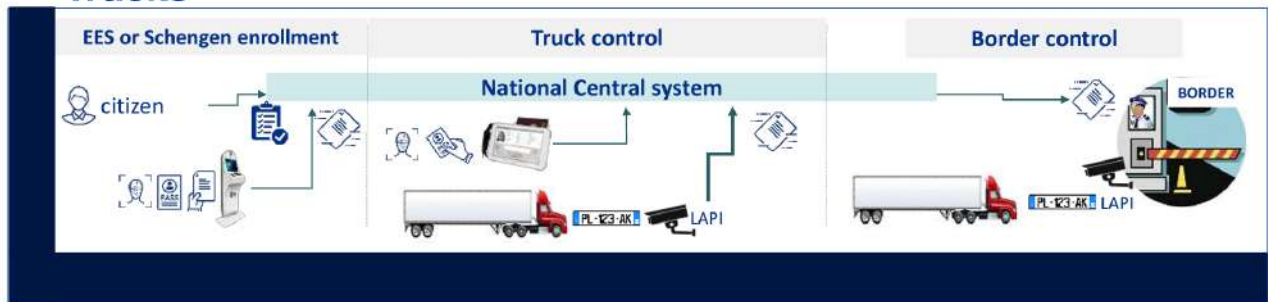
Mr Janer presented technological solutions for border management, developed by IN Groupe. These included high-quality biometric enrolment and control devices, anti-spoofing technology, touch-free and holographic EES kiosks, and others. For example, **contactless fingerprint scanners** provide full contactless usage with high resolution performance and encrypted data for user authentication, capturing 4 fingers in less than 3 seconds in a single swipe. These scanners are easy to integrate in various use cases, e.g. desks, kiosks, gates, border check points, etc.

Technologies to optimise passenger flow in vehicles. Mr Janer also presented the proof-of-concept project that focused on trucks and was conducted at the land border crossing point between France and UK, which is crossed, on average, by 1,300 trucks daily. The project tested the usability of a **tablet that enables biometric enrolment without exiting the truck.** A supervising agent was present to ensure that all passengers in the truck enrol their data in the tablet, which is automatically disinfected after each use. The proof-of-concept project showed that this solution helps reduce traffic congestion at the border crossing point. A similar proof-of-concept project will be conducted with cars to test if biometric enrolment without the need to exit a car will improve the flow of traffic at land border crossing points.

Session V
12 October 2022

Industry Solutions for Air, Sea and Land Passenger Transport to Support the EiO of EES and ETIAS

Chair: **Dr Javier Galbally**, *Senior Capability Building Officer, eu-LISA*

eu-LISA and its Support to Carriers: Current and Future Actions

Ms Viola Soranzo, EES/ETIAS Web Services Project Manager, eu-LISA

Ms Viola Soranzo opened the presentation with an overview of eu-LISA's current and future actions to support carriers in the implementation of the EES and ETIAS. To that end, the Agency offers the EES/ETIAS Web Services, enabling the carriers to connect to the EES and ETIAS systems. The EES/ETIAS Web Services include the **following three interfaces: (1) system-to-system, (2) web browser, and (3) mobile app.** The project is in the development phase and the system is currently being tested. Depending on the type of interface used, there are **two different work streams:**

1. **online interface** for web browsers (and mobile apps), where registrations for carriers have been open since September 2021, and soon, a testing environment will also be provided;

2. **system-to-system interface,** which is currently in the pre-conformance testing (pre-CT) phase fo the carriers to test connection and exchange data with the EES and ETIAS.

The Agency is working closely with the **Working Group for Carriers,** an informal coordination body comprising eu-LISA, the European Commission, Frontex and carrier associations. Thus far, 15 meetings have taken place, together with carrier associations and registered carriers. In addition, eu-LISA has set up a dedicated website for carriers[1]. Furthermore, eu-LISA organises informal awareness sessions, and technical/awareness meetings focusing on specific challenges related to the EES and ETIAS.

After May 2023 – the expected entry into operation of the EES – new carriers will still be able to register, undergo pre-conformance testing and conformance testing, as well as use the eu-LISA test environment to train their staff.

As with carrier registration, eu-LISA will also be responsible for deregistering carriers who cease their operations in the Schengen Area, who have not used the interface for at least one year, no longer fulfil the conditions of the regulations or have breached the provisions of the regulation, the security requirements established by eu-LISA or the technical guidelines. In cases where a carrier does not meet one of the

requirements, they will be informed one month in advance of pending deregistration to allow carriers to provide written comments and address the situation. In case of security concerns, eu-LISA has the right to disconnect carriers immediately. Ms Soranzo closed her presentation with an outline of the process for carrier onboarding using an automated support tool.
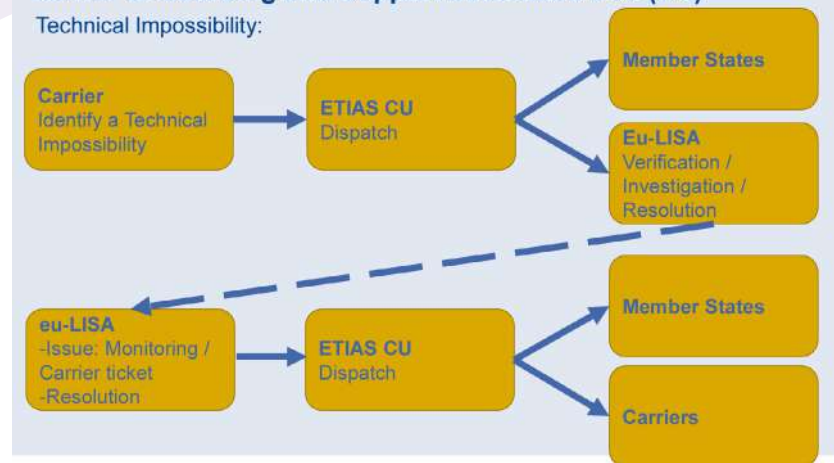
Q&A:

The first question focused on the support team at eu-LISA. Considering that check-in starts 3 hours before departure, which provides limited time for checks, how will eu-LISA provide support in those situations?

Ms Soranzo explained that a web-form will be available for technical support. However, technical support will not be able to override the reply from the carrier interface. If the TCN believes that there is an issue, there will be additional tools to verify whether there is an issue with the validity of travel authorisation. However, the Data Central Unit will not be able to support the TCN.

The second question focused on supporting passengers in cases when travel bookings are made in advance of travel, whereas visa/ETIAS can be issued immediately before departure, which may create issues.

In such cases, eu-LISA cannot provide support, as the Agency relies on the existing processes. Travellers will need to contact the embassy directly to verify the validity of their visas.

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[1] eu-LISA Working Group for Carriers

Leverage eu-LISA's Border Management Expertise with Analytics and AI

Mr Brecht Seifi, Technical Account Manager, SAS Institute
Mr Emmanuel Jacque, F&SI Global Head for Defense and National Security, SAS Institute

Mr Jacque from the US-based multinational developer of analytics software, opened the presentation with the statement that the two main challenges in border management today are scale and complexity. These challenges are particularly pronounced in the Schengen Area with over 42,000 kilometres of coastline, 9,000 kilometres of land borders, 1,800 land and sea border crossing points, and over 500 million border crossings per annum. These challenges are exacerbated during times of crisis, such as the war in Ukraine and the ensuing influx of refugees. The way to deal with these challenges is through risk assessment, with the ultimate aim to improve effectiveness and efficiency.

SAS has developed **analytical solutions** to improve effectiveness and efficiency of border management. In particular, SAS analytical solutions are used in **risk assessment,** in order to identify potential cases that must be targeted, e.g. passengers, parcels, containers, etc. For example, during the refugee crisis, data integration and analytical solutions were used in order to improve resource allocation.

Next, speakers outlined the **two different approaches to using analytics and AI in risk management,** with a particular focus on fraud detection in banking. In a traditional rules-based approach, known fraud patterns are encoded into the software as rules. The main disadvantage of rules-based systems is that they can't learn new patterns and update rules autonomously. In such cases machine learning approaches are more useful, as they provide for a possibility of continuous and even autonomous improvement. Although machine learning approaches have advanced significantly, hybrid approaches are still preferable in order to reach best performance.

Although artificial intelligence can help leverage existing domain expertise, leveraging domain expertise with AI requires the following:

- democratising AI (bringing it closer to the end-user);
- operationalising;
- ensuring transparency and ethics.

Democratisation, in turn, requires different approaches for different users:

- visual interface for drag and drop;
- programming interface for those who feel at ease with programming.

Mr Seifi then presented an overview of how data integration and advanced analytics solutions could benefit eu-LISA and Member States authorities by presenting an overview of a Model Ops environment. He stressed the importance of continuous assessment of model accuracy in order to reduce the number of false positives and false negatives.
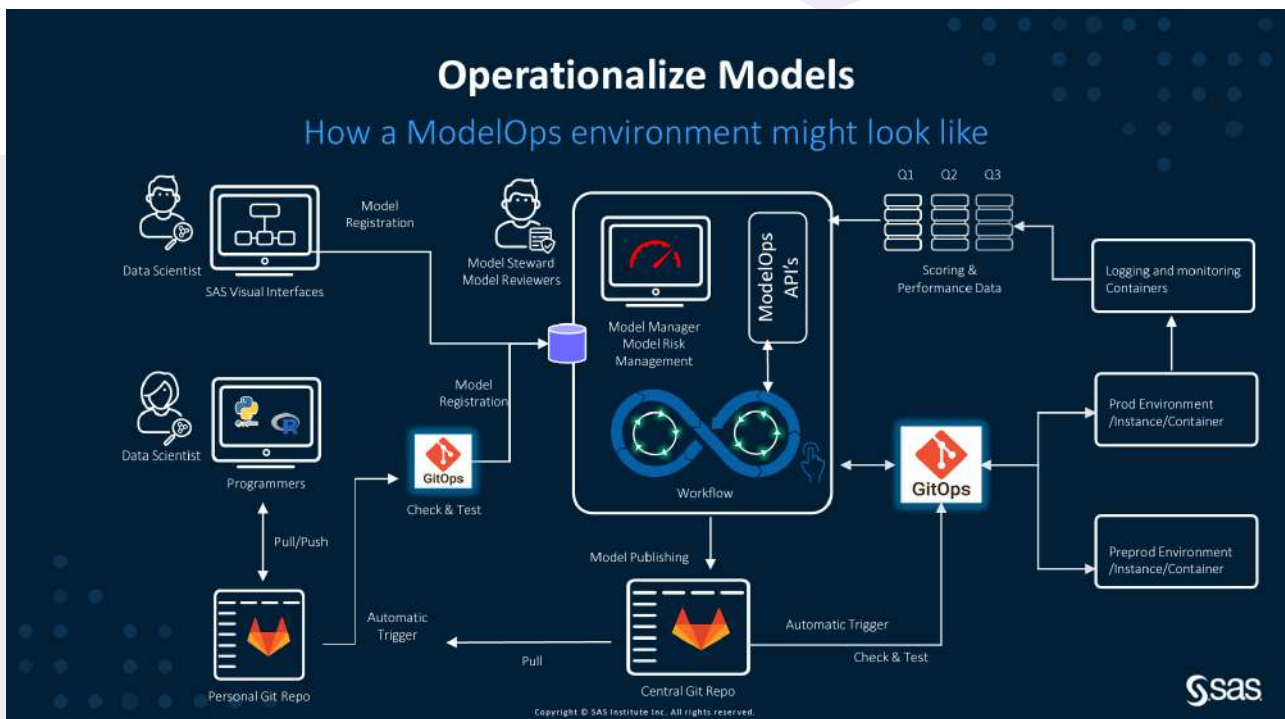
In closing the presentation, Mr Seifi emphasised the importance of transparency and ethics in the development of AI solutions, particularly in sensitive areas such as border management, internal security and migration. To that end, embedding responsible AI capabilities requires investing effort across all areas, including data privacy, model interpretability and bias detection, model transparency, as well as model governance and traceability.
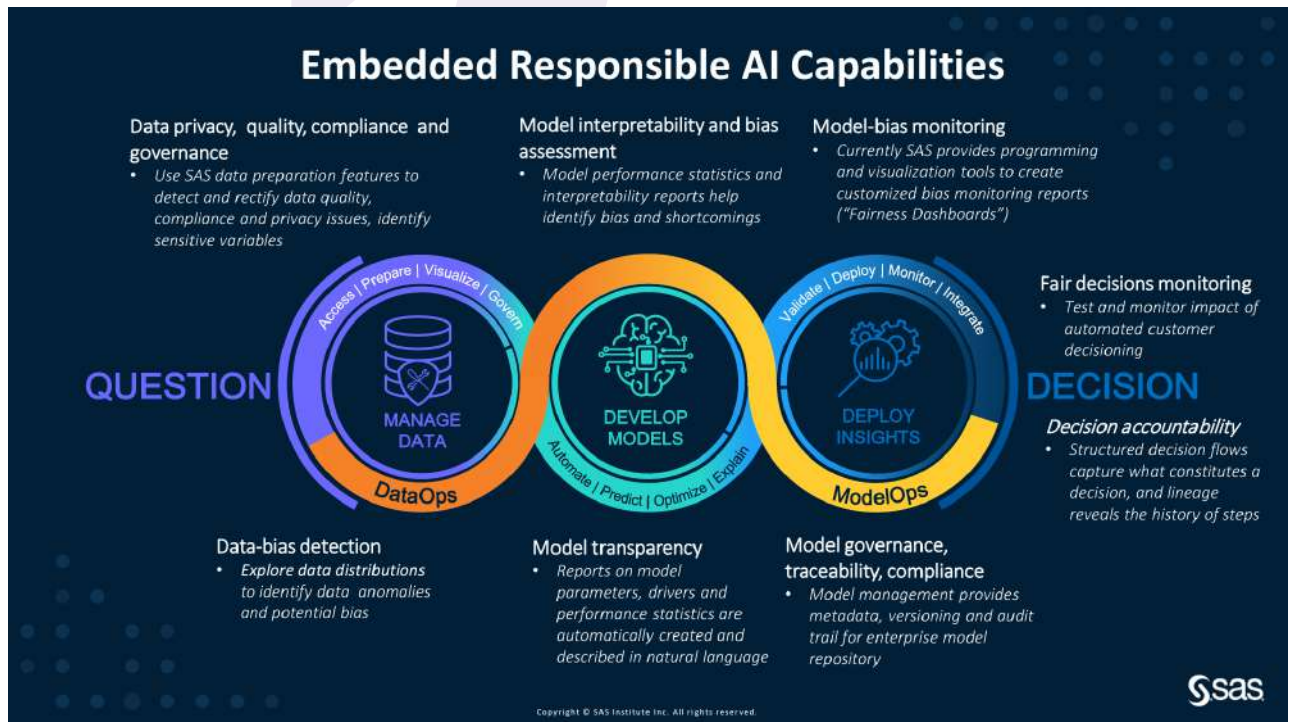
EES/ETIAS: Biometrics APIs and Next Generation of Travel Verification Services

Mr Carl Gohringer, Director Europe, PARAVISION

In his intervention, Mr Gohringer focused on the future vision of the EES/ETIAS as a government-backed biometrics-enabled traveller verification system for border crossing. He opened the presentation with an overview of the Traveller Verification Service (TVS) deployed by the U.S. Customs and Border Protection (CBP), which uses facial recognition technology for biometric identification.

In the United States, airlines are already integrating their systems with the TVS to ensure seamless traveller's experience. One of the important aspects to understand here is that airlines don't want to deal with biometric data themselves – they prefer to interact with the government-operated systems. This is partly due to data security constraints.

Despite the fact that many countries have already deployed the Advance Passenger Information System (APIS), there are still challenges with the TVS, including the lack of visitor biometrics databases and lack of standards and certification to process digital identity. Application Programming Interfaces (APIs) enabling biometric identification can enable the use of TVS by way of an airline app using digital travel credential for identification. Such solutions are relevant not only for air travel, but also for land border crossing points.

Mr Gohringer continued his presentation with an overview of an **ideal TVS architecture**, which incorporates all relevant services and systems (i.e. government systems, airport and airline services) within one overarching traveller identity verification architecture. The use of biometrics APIs and Digital Travel Credentials (DTCs) in the context of traveller verification services addresses the following challenges:

- meets government and airline/airport security requirements;
- better experience throughout the passenger journey;
- TVS easily adaptable for airlines and airports without concerns for managing passenger biometrics;
- government agency onboarding with or without visitor data to provide TVS services.

Mr Gohringer continued the presentation with an overview of the approach taken by PARAVISION to **biometric gallery management.** In particular, this approach can be characterised by:

- a flexible architecture that caters to large-scale gallery searches and smaller targeted segmented galleries or datasets;
- extensive API to support multiple applications and use cases;
- smaller targeted gallery matching through dataset management APIs and large-scale gallery matching with user-defined pre-filtering capabilities;
- automatic/API-driven elastic resource allocation using Kubernetes platform to ensure high-performance search capabilities;
- high availability and high concurrency transaction processing.
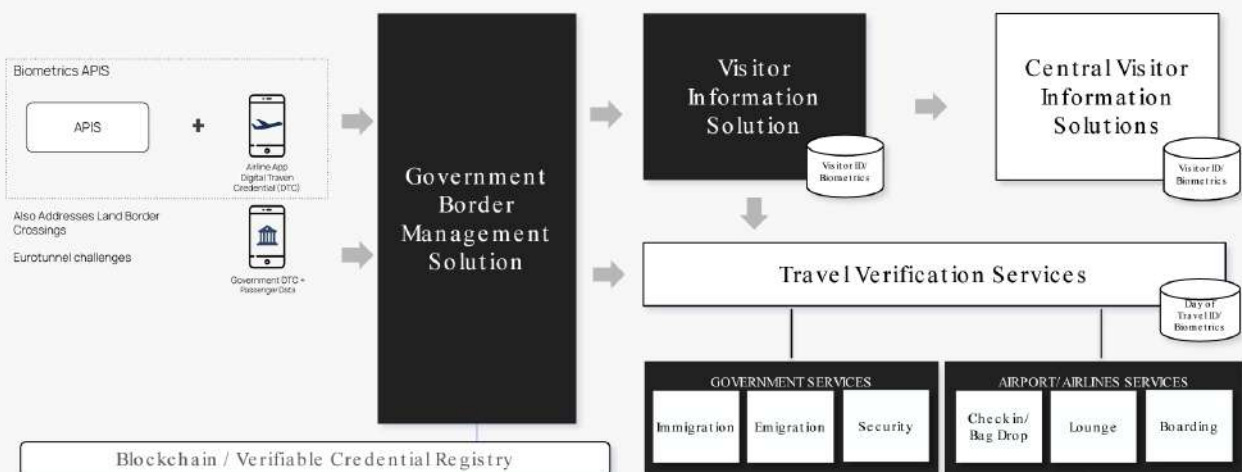
In closing, Mr Gohringer mentioned that according to the 2021 IATA Global Passenger Survey, 88% of passengers are willing to share their immigration data prior to travel. Nevertheless, it is important to ensure high levels of security, privacy and equity, especially when it comes to processing sensitive passenger data, such as biometrics.

One option is to have passengers provide consent when submitting data to allow for specific processing. It is also important to deliver unbiased services to passengers of all ethnicities and special needs.

Decentralised Digital Identity in the Context of ETIAS, EES, and Beyond

Mr Daniel Bachenheimer, Digital Identity Innovations Technology Lead, Accenture

Opening the presentation, Mr Berkheimer explained different types of **identity management** architectures: centralised, federated, and decentralised digital identity (self-sovereign identity). Focusing on decentralised identity, he outlined the key principles of the **decentralised approach to identity management:**

1. allows the subject to be in possession and control of verifiable identity attributes from one or more issuers;
2. enables the subject to securely and selectively disclose required information in a privacy respecting manner with informed consent, including zero knowledge proofs;
3. allows an issuer to revoke the verifiable identity attributes they have issued;
4. allows to cryptographically verify identity attributes without a single, centralised authority;
5. no identity information is stored on a ledger; only public key information is stored on the ledger.

In recent years, a number of entities have been advancing decentralised identity applications and standards. For example, Trust over IP Foundation, proposed a technology and a governance stack to ensure digital identity verification over internet protocol using decentralised identity issuance architecture.

The Known Traveller Digital Identity and the IATA One ID focused on the use of decentralised digital identity in the context of travel, to facilitate seamless and contactless travel processes throughout the passenger journey (although covering only parts of the journey).

Mr Bachenheimer continued the presentation with an overview of **relevant standards** in the context of decentralised identity management. These include the ICAO standards focusing on machine-readable travel documents (MRTD). The recent technical report published by ICAO focuses on Type 1 of Digital Travel Credentials, namely the DTC bound to an electronic MRTD. In this case the traveller must be in position of the physical eMRTD for verification purposes when travelling. It is important to note, that in addition to eMRTD, ICAO has been discussing other decentralised digital identity capabilities, such as electronic travel stamps, electronic visas and the possibility to add additional biometrics after the issuance of an eMRTD. However, these additional capabilities have not been operationalised.

In addition, Mr Bachenheimer provided an overview of the **revised eIDAS framework (eIDAS 2.0),** recently announced by the Commission and includes the possibility of a **Digital Identity Wallet.** One of the key potential advantages of the Digital Identity Wallet is that it will meet the requirements for high level of assurance, mandating two-factor authentication.

DECENTRALIZED DIGITAL IDENTITY

https://trustoverip.org/wp-content/toip-model/
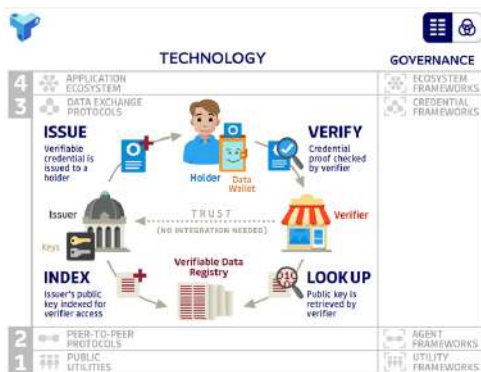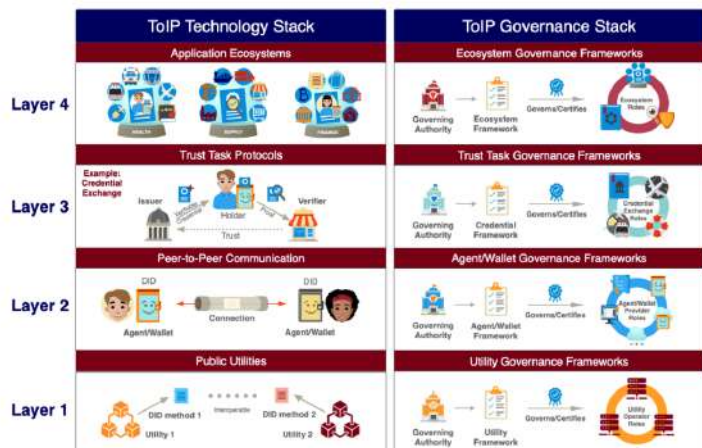
Focusing on the specific challenges of using decentralised digital identity in the context of the EES, Mr Bachenheimer explained, that to meet the EES requirements, eMRTD would need to be digitised along with the capture of live facial image under supervision, which can be done either at a consular office, a dedicated registration desk, by an authorised third party or using a remote enrolment solution with supervision. A digital identity wallet could be used at both air and land or sea border crossing points, and in addition to the digital copy of the eMRTD, it could also hold all other relevant credentials, such as the EES/ETIAS credentials, airline credentials (PNR, frequent flier information), entry/exit stamp credentials, health pass credentials, etc.

Artificial Intelligence for Solving EES and ETIAS Challenges

Mr Amr el Rahwan, Senior Solution Architect, WCC Group

Mr el Rahwan focused on the issue of **multiple legitimate or fraudulent identities,** which is one of the key challenges for Member State authorities. The EU's JHA information systems managed by eu-LISA foresee components for multiple-identity detection for new enrolments in the systems containing identity data as well as in ETIAS, focusing specifically on third-country nationals, as well as some EU citizens whose data is registered in SIS. Multiple-identity detection in the context of national ETIAS, and other relevant national databases containing identity data, is under the responsibility of national authorities. At Member State level there is a wide variety of systems ranging from passport issuance systems, visa and passenger information, biometric and biographical data in law enforcement databases, etc.

Tackling identity fraud is possible using both biographic and biometric data. In the context of biographical data, it is important to distinguish between names that may belong to the same person from the clearly different names, especially when transcribing names from languages using different scripture, such as Arabic, where depending on the country of origin, the same name – Amr – can be spelled differently, although potentially belonging to the same person. Knowledge-based AI in combination with biometrics can be helpful in identifying possible cases of identity fraud.

As an example, Mr el Rahwan presented domain-specific application of artificial intelligence for data mapping across API, PNR with the EES, ETIAS, SIS and VIS. Mapping can be done across different data groups and data elements. Mapping can also be done for passenger name details, address details, contact phone number, travel document data, vehicle registration and biometric data. A cognitive AI

application, such as a recommendation engine, built on top of the data mapping system can help provide additional actionable information, including information about travel itinerary, carriers and possible departure arrival times, which may be used for further action by law enforcement authorities.

Closing the presentation Mr el Rahwan provided an overview of possible AI tools that could be used for detection of multiple identities and identity fraud including natural language processing, named entity recognition, as well as biometric recognition (face or fingerprint).

EU Systems	Member States	AI Algorithms
MID supported by Artificial Intelligence can solve the multiple identity & fraud Challenges of EES & ETIAS	National-MID supported by Artificial Intelligence will solve the Member States challenges of citizens and resident TCNs	Knowledge-Base, Domain-Specific, and Cognitive AI can reduce the false positives, save resources, and facilitate seamless travel

Closing of the Industry Roundtable

Mr Luca Tagliaretti, Deputy Executive Director, eu-LISA

In his closing remarks, Mr Luca Tagliaretti, the Deputy Executive Director of eu-LISA, acknowledged the many excellent presentations and discussions that highlighted some of the challenges that need to be addressed before the EES/ETIAS entry into operation. Mr Tagliaretti said that the concerns and constructive questions posed by the carrier associations, service providers and other contributors are undoubtedly important to take into account, in order to find suitable solutions that will ensure the success of these new systems.

In addition, it will be also important to look at the innovative solutions presented by the industry that can contribute to making this process as smooth and seamless as possible. The insightful presentations from the Member States demonstrated the need for coordination and collaboration among multiple stakeholders to ensure the successful implementation of the EES and ETIAS – between different government departments, airport and seaport operators, carriers, technology providers and passengers.

The discussions underscored the complexity of the challenges that we are all facing, while also demonstrating that with the right mindset, willingness and cooperation, we will be able to overcome those challenges together.

Mr Tagliaretti emphasised that no matter how well we prepare for the EES/ETIAS entry into operation, there will necessarily be a steep learning curve. In that respect, the event provided a possibility to identify the areas in which we are still lagging behind, while also provided technological solutions to address those challenges.

As we get closer the EES/ETIAS entry into operation, the more intense the upcoming months will be, considering the increased pace of system testing, re-designing business processes at the border crossing points, addressing any new challenges that may arise, and sharing further knowledge about successful use cases and pilot projects. The ongoing close cooperation between all parties involved, such as the EU institutions, Member States, and the carriers from all industries, will be critical.

Concluding his remarks, Mr Tagliaretti thanked the Czech Presidency of the Council of the EU for the fruitful cooperation in the organisation of this event, and reiterated eu-LISA's commitment to support all stakeholders in our common effort to ensure safe and seamless travel in Europe.

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