



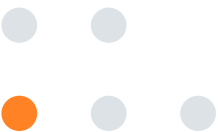
EMBEDDED AI MAKES **BORDER SECURITY** SMARTER, COMPLIANT & SECURED

Border control has come a long way over the last few decades, both in terms of its scale and complexity. Now there are new and innovative solutions in the field of data and internal processes that will be key to coping with the fresh challenges facing border security.

With **ETIAS** and **EES** coming into effect in 2023, eu-LISA provides powerful application processing tools to the member states and important EU stakeholders such as EC, EP, Dg Home, Frontex, Interpol and Europol, essentially making them future-proof.

The screening of people at border & applicants before travel is supported by a rule-based approach embedded in EES & ETIAS. This approach is the first step in the journey towards smarter analytics with the following characteristics:

- **Heavily reliant on patterns:** humans program rules into the system, and artificial intelligence makes decisions and gives a red or green light. Those patterns will change the illicit behaviour of the people travelling with bad intentions.
- Based on a set of facts and **rules needed to manipulate data.**
- **Relatively Static:** it cannot learn new patterns without human input. This makes the system less flexible to adapt to new situations and challenges.



The next step in this journey is to evolve to a **hybrid system** where the rules are complemented with **Machine learning algorithms**. 'Best of both worlds approach'

A machine-learning approach that allows continuous improvement offers many new future-proofing opportunities. A "**ModelOps**" framework offers potential in three key areas, which correspond to the aims of eu-LISA.



The first is operational responsiveness:

- The data system supports continuous management and evaluation of high-risk passengers, based on their pattern of activity, watch lists and other data.
- The system goes beyond a mere check of someone's status; it looks for patterns and makes predictions about suspected and/or illicit behaviour.
- Machine learning will support the Official during his/her evaluation process to grant access or not. The final decision taking remains a human judgement.
- Supervised machine learning leads to greater model accuracy, ensuring smooth movement of legitimate travellers; the number of false negatives and positives is reduced.
- The system allows for integrated model and dataset interoperability.



Adaptiveness makes AI more accessible:

- You don't need to be a software engineer or data scientist to work with AI.
- Existing domain experts can accelerate innovation; different layers for analytics and AI allow rapid scaling of innovation.
- The process of analytical development is demystified, and domain experts can create their own insights using low/no code capabilities and friendly user interfaces.
- Multiple types of interfaces within the environment support multiple types of users.



Transparency and ethics are paramount:

- Transparent and explainable data insights are documented, versioned and centralised.
- Decision transparency on ethics throughout the entire process.
- Integration of the European Commission's risk-based approach.

The combination of these three pillars gives shape to embedded responsible AI capabilities:

- Improving data privacy, quality, compliance and governance.
- Data-bias detection, model interpretability and bias assessment.
- Model transparency, model-bias monitoring, model governance, traceability and compliance.
- Fair decisions and decision accountability

Feel free to contact our **Border Control expert Emmanuel Jacque** by email to emmanuel.jacque@sas.com or have a talk on SAS in the EU with **Brecht Seifi**, reach out to him via email brecht.seifi@sas.com

