

Process Monitoring of EES at Salzburg Airport with Isarsoft



**Salzburg
Airport**
— W.A. MOZART —



ISARSOFT

Challenge: Introduction of EES

Since April 2026, the Entry/Exit System (EES) has been mandatorily operational across all air, land, and sea external borders of the Schengen area. The EES fundamentally digitalizes border crossings: for all affected third-country nationals, a digital and biometric registration is strictly required upon first entry. The process requires scanning passports and fingerprints, as well as capturing a facial photo of the traveler. Additionally, passengers must answer questions at self-service kiosks regarding the purpose of their trip, length of stay, accommodation details, provide financial information, and present a return or onward ticket. The entire process must be completely redone every three years. Simply put: the system replaces traditional, manual passport stamps with a centralized digital database and biometric data collection.

For airports, this represents a structural transformation of passenger processing. After landing, travelers must now complete a two-step process consisting of initial registration at a self-service terminal, followed by a border check with an officer at the counter.

Impact of EES on operational workflows

EES introduces massive operational and financial challenges, especially for regional airports like Salzburg Airport. Because the new rules apply exclusively to third-country nationals, EU and non-EU citizens must go through separate checkpoints. This splits passenger flows and worsens existing bottlenecks:

- **Space constraints in terminals:**
Small airports often have tight check-in and passport control areas. Setting up new self-service kiosks demands space that is simply scarce.
- **The "bottleneck effect":**
Passengers at regional airports often arrive in concentrated waves e.g., a fully loaded flight from

London. If processing times jump from ~30 seconds to several minutes per person for most passengers, queues quickly back up onto the apron or into corridors.

- **High investment costs:**

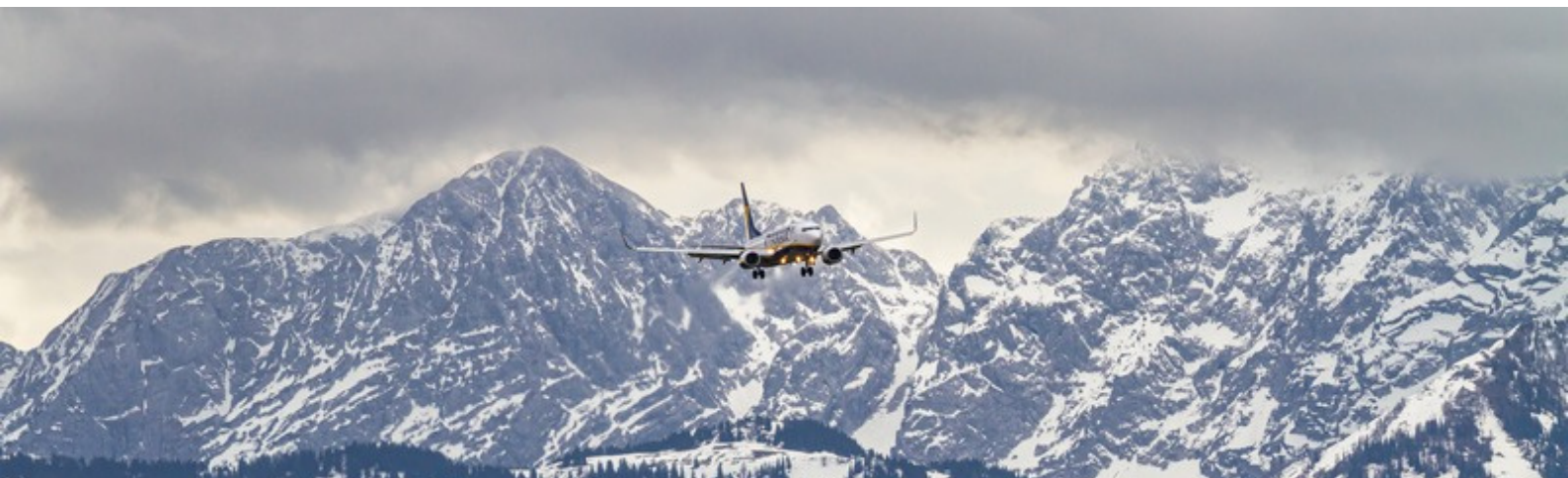
Acquiring hardware and adapting IT infrastructure ties up substantial financial resources, which is a noticeable budget strain for smaller airports.

- **Staffing costs:**

Although the kiosks are "self-service," passengers typically need extensive assistance during initial registration. Regional airports often have to assign ground staff to help passengers scan documents, freeing up federal police officers at the counters.

- **Flight delays:**

Processing delays caused by technical issues, language barriers, or system outages directly cause schedule delays. If processing takes too long, airlines risk missing arrival slots at destination airports.



The „winter-peak“ at Salzburg Airport

Seasonal traffic amplifies EES challenges at Salzburg Airport. During winter, the airport becomes a key hub for international ski tourism. To manage the massive influx of non-EU passengers, particularly from the UK, the airport opens Amadeus Terminal 2 every winter as an additional handling area.

In this peak scenario, strict EES mandates meet severely limited space, which is an operational challenge nearly impossible to manage without intelligent, data-driven control.

The solution: process monitoring with Isarsoft Perception

To streamline complex EES workflows and handle the winter peak, Alexander Münch, Head of IT at Salzburg Airport, sought a reliable, automated solution. Following market research and unsatisfactory tests with other systems, Isarsoft approached the airport and impressed them with their software's performance and rapid deployment.

During the 2025/2026 winter season, the AI-powered video analytics platform delivered strong results. The software accurately tracks passenger counts from transfer bus drop-offs to post-border control points. Queue dwell times, categorized by EU and non-EU status, are automatically logged and linked to the corresponding flight number. This provides data-driven capacity management, reducing wait times and allowing proactive deployment of ground staff.

Technological innovation: privacy-compliant Re-Identification (Re-ID)

Advanced Re-ID technology forms the foundation of these precise analytics. This method continuously tracks passenger flows across multiple camera streams. The system recognizes individuals based purely on visual traits (such as clothing color combinations) in full compliance with privacy laws without capturing personal or biometric identifiers that could reveal identities.

The flexible integration of Isarsoft Perception highlights Salzburg Airport's forward-thinking approach, ensuring EES compliance without compromising the passenger experience while strengthening operational resilience.

Implementation

Isarsoft Perception targets four critical stages of arrival and border control to ensure seamless passenger management:

EES process at Salzburg Airport monitored with Isarsoft Perception

Bus arrival at terminal



Terminal



Analytics



- Detection of flight number on bus
- Checking flight number against flight plan
- Counting passengers and matching passenger group with flight number

- Re-Identifying passengers when entering the terminal
- Re-Identifying passengers after immigration process

- Calculation of average dwell time in terminal split by EU- and Non-EU citizens and flight numbers

1. Capture (OCR & Bus Detection):

Upon arrival at the terminal, the system automatically detects the flight number displayed on transfer buses using Optical Character Recognition (OCR).

2. Initialization (Passenger Assignment):

The system accurately counts disembarking passengers and links the group directly to their flight via the captured flight number.

3. Recognition (Re-ID):

Using privacy-compliant Re-ID, passengers are anonymously tracked across multiple camera streams as they enter and exit the border control area.

4. Analysis (Process KPIs):

The software calculates exact average terminal dwell times, segmented by flight number as well as EU

and non-EU status.

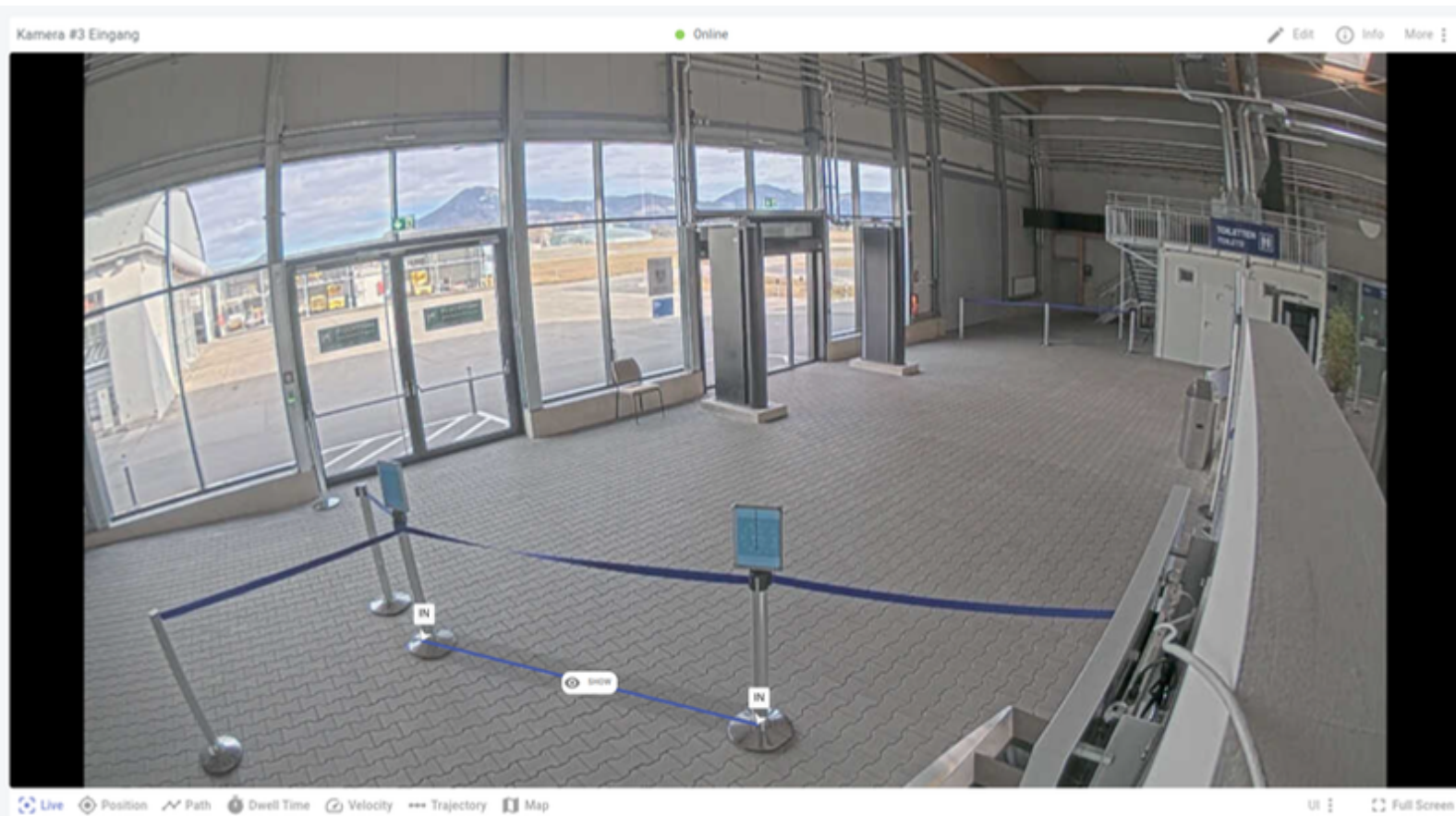
Continuous project optimization and fine-tuning

Working closely with Salzburg Airport, the Isarsoft team continuously refined system configuration during rollout to maximize detection accuracy and mapping precision (matching passengers to flights and EU status).

Optimizations focused on two core areas:

1. Improving flight number recognition and bus passenger counting

- **Flight schedule cross-referencing:**
Bus flight number recognition was cross-checked against real-time flight schedules to validate data.
- **Capture timing optimization:**
Image and data capture triggers were refined to minimize motion blur.
- **Counting line calibration:**
Virtual counting lines in camera views were precisely adjusted against real bus stopping positions.
- **Exception management:**
Automated routines were built to handle edge cases, such as buses displaying missing or incorrect flight numbers.



Video view from the additional camera.

2. Optimizing Re-Identification

- **Camera Expansion:**
An additional camera was strategically added to improve differentiation between EU and non-EU

citizens.

- **Occlusion reduction:**

Isarsoft analyzed dense passenger crowds ("occlusions") to train the software to recognize individuals even when briefly obscured by other travelers.

- **Angle-independent feature extraction:**

AI-driven feature extraction was refined to work accurately even from angled, non-frontal camera views.

Results

With Isarsoft Perception, Salzburg Airport established an accurate baseline for process times throughout the arrival zone. Using these real-time insights, management can make informed operational decisions:

- **Predictive staffing:**

Projected wait times enable data-driven scheduling for security and ground staff.

- **Optimized flow management:**

Bottlenecks and overcrowding in Amadeus Terminal 2 can be identified and addressed early.

- **Enhanced passenger satisfaction:**

Eliminating bottlenecks noticeably shortens queue times.

- **Strategic route analysis:**

Linking EU and non-EU passenger flows to specific flight routes provides insights for long-term capacity planning.

- **Seamless compliance:**

Strict European EES requirements are met through fully automated, audit-proof processes.

Head of IT Alexander Münch led strategic procurement and operational rollout at Salzburg Airport. He summarized the project's success:



The anonymized capture of passenger wait times in the EES process with Isarsoft allows us at Salzburg Airport to measure and deeply understand processing times in detail. We use the resulting Re-ID data specifically for in-depth analysis and continuous optimization of all arrival workflows.

Alexander Münch, Leiter IT



Münch also emphasized project agility. The extraordinary speed and flexibility with which the Isarsoft team approached the project set new standards. After a record time of just four weeks, the system was delivering its first business-relevant results.



How airports worldwide benefit from EES video analytics

The rollout at Salzburg Airport shows how video analytics software turns EES compliance challenges into measurable advantages. Key benefits of Isarsoft Perception include:

1. **Cost efficiency via existing infrastructure:**

The software integrates with existing airport security cameras, cutting capital expenditure and accelerating time-to-market.



Evaluation is based on anonymized data and uses our existing camera infrastructure, keeping implementation effort low.

Alexander Münch, Leiter IT



1. **Automation over manual effort:**

Replaces error-prone manual sampling, e.g., clipboard monitoring, with continuous, fully automated process monitoring.

2. **Advanced real-time analytics:**

Management receives precise real-time data on passenger flows and dwell times to resolve immediate bottlenecks and guide long-term capacity decisions.

3. **100% GDPR-compliant analytics:**

Re-ID technology tracks flows across terminals without storing biometric or personal data. Isarsoft confirms full GDPR compliance under legitimate interest processing.

Technology comparison: video analytics vs. sensor solutions

Comparing AI video analytics with traditional hardware sensors highlights clear operational advantages. While video analytics leverages existing security camera networks, sensor-based solutions require new hardware, complex mounting, and additional wiring. Sensors also struggle with multi-stage processes like EES, often requiring parallel third-party software tools.

A direct comparison at Salzburg Airport - based on an estimated 16 sensors needed for complete coverage - breaks down as follows:

	Sensors	Isarsoft Perception
Costs	High Significant expense for hardware, mounting, and wiring.	Low (~1/3 cost): Leverages existing camera infrastructure; no new hardware purchases required.
Timeframe	Lengthy (> 6 months): Extensive construction, IT integration, and physical installation.	Fast (< 1 month): Pure software integration allows rapid deployment.
Process coverage	Incomplete: Cannot perform optical text/flight number recognition on buses; creates data silos.	End-to-End: Tracks flow from bus arrival (including OCR flight number scanning) through the terminal.
Passenger Re-ID	Limited: Tracking across zones is technically difficult or prohibitively expensive with sensors.	Precise via Re-ID: Privacy-compliant tracking of passenger groups across multiple touchpoints.



Future developments at Salzburg Airport

Salzburg Airport is embarking on its largest infrastructure overhaul in recent history. Following ~1.8 million passengers handled in 2025, the terminal layout is being redesigned. The main terminal and Amadeus Terminal 2 will merge into a single continuous complex, with official construction scheduled for early 2027.

Deputy Governor Stefan Schnöll highlighted the necessity of efficient infrastructure as a vital lifeline for regional business and tourism. Upgrades are necessary because aging structures struggle to accommodate spatial and technical demands imposed by regulatory mandates like the EES. The smooth launch of the 2025/26 winter season - managed seamlessly despite peak ski tourism traffic using Isarsoft Perception - demonstrated the airport's operational readiness. Technological innovations are now anchored as a core digital component of the upcoming terminal expansion.

About Salzburg Airport

Salzburg Airport is a modern regional hub, creating local jobs and driving economic growth and regional tourism.

Contact: [Salzburg Airport](#)

About Isarsoft

Founded in Munich in 2019, Isarsoft specializes in AI-powered video analytics, unlocking value from existing security camera networks. Known for reliability, flexibility, and ease of integration, Isarsoft helps organizations optimize operations, enhance safety, and elevate customer satisfaction. Its portfolio covers over 10 use cases including people counting, queue management, object detection, flow analysis, and demographics across retail, aviation, public transit, urban planning, logistics, and cultural venues.

Contact: [Isarsoft](#)

Images courtesy of Salzburg Airport.

