AIRPORTS COUNCIL INTERNATIONAL

THE NEW PASSENGER EXPERIENCE:

DIGITALISATION AND AUTOMATION AT EUROPEAN AIRPORTS

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EXECUTIVE SUMMARY

This document, developed by the ACI EUROPE Task Force on the Passenger Experience, examines the impact of digitalisation and automation on the airport passenger journey. It highlights both the opportunities these technologies bring – in terms of efficiency, convenience, and personalisation – and the challenges they pose regarding accessibility, trust, and inclusivity.

KEY FINDINGS

- Digitalisation and automation are now present at all stages of the passenger journey, from check-in and security to boarding, connections, arrivals, and information services. Examples include self-service kiosks, automated baggage drops, biometric-enabled e-Gates, interactive information totems, and mobile applications.
- The ACI EUROPE Survey on the impact of automation and digitalisation on the passenger experience, carried out in 2024, shows that while 73% of passengers are confident using digital services, 11% lack confidence or actively avoid them, with older passengers disproportionately affected. Passengers identified three main barriers to adoption: data privacy concerns (40%), accessibility issues (27%), and complexity of use (19%).
- Despite these concerns, most passengers welcome digitalisation when staff assistance is available and when technologies are simple and intuitive to use.

KEY RECOMMENDATIONS

- Ensure inclusivity by designing digital tools and automated processes that are accessible to all passengers, including PRMs, older travellers, passengers with different cultural, linguistic and religious backgrounds, families, and those with limited digital literacy.
- Balance technology with the human touch: staff should be present to guide, reassure, and assist passengers at key stress points such as security, border control, and baggage claim.
- Develop contingency and backup plans to manage system failures, connectivity issues, or device loss, ensuring continuity of service for passengers.
- Promote trust by safeguarding data privacy, ensuring transparency in the use of biometrics, and communicating clearly about how personal data is stored, used and minimised[1].
- Provide multi-channel access to information (digital totems, apps, websites, WhatsApp, staffed counters) so that passengers can choose their preferred method of interaction.

CONCLUSION

Digitalisation and automation present a major opportunity to enhance the passenger experience. Their success, however, depends on embedding accessibility, inclusivity, trust, and human support into every stage of deployment. By following these principles, airports can deliver a seamless, safe, and passenger-centric journey for all travellers.

[1] Data is minimised by collecting only the data that is absolutely necessary for a specific purpose, retaining it only for as long as it is needed, and deleting or anonymising it securely afterward. This principle is implemented by limiting data collection to what is essential, restricting access to data, and ensuring that data shared between teams is minimal and specific to the task at hand. Techniques like masking, tokenisation, and encryption are also used to protect data by removing or hiding personally identifiable information.

INTRODUCTION

The shift toward self-service and digital transformation – an ongoing long-term trend – has revolutionised the passenger experience. Tasks traditionally handled by service providers are now increasingly performed by passengers themselves, presenting challenges – especially for individuals who face barriers due to age, disability, language, or cultural differences – and opportunities, in terms of efficiency and convenience.

Digitalisation and automation have been mainly driven by airport operators and their stakeholders to optimise processes, increase efficiency and enhance the passenger experience. Passengers had to adapt to this new reality, but not all are aware of its benefits nor are they confident with technology.

To better assess the impact of digitalisation and automation, it is necessary to understand the passengers' point of view and level of satisfaction vis-à-vis the automated journey, identify issues and deploy corrective measures.

To that purpose, the Task Force on the Passenger Experience[2], acting under the umbrella of the ACI EUROPE Facilitation & Customer Services Committee, designed the Survey on the impact of automation and digitalisation on the passenger experience (hereinafter "the Survey"), assessing the passengers' level of satisfaction when using digitalised and automated options at key airport touchpoints, collecting their feedback, suggestions and direct comments on the airport experience.

[2] The Task Force on the Passenger Experience is composed of the following members: Federico Bonaudi (ACI EUROPE), Andreas Kokiousis, Liza Strongy & Maria Kapralou (Athens International Airport), Benedetto Viola, Delphine Hornez & Sofia Morrone (SEA Milano), Benjamin Moreno (Airport Gurus), Christof Kontogiannis (Koln Airport), Christoph Korherr & Pia Matkovits (Vienna Airport), Emanuel Wang, Sandrine Trochu, Nicolas Phan & Jerome Brugnago (Idemia), Ira Fernandez Lazaro (Dusseldorf Airport), Everita Strelca & Michael Connolly (Skywise solutions), Fabiola Pfauser & Swapnal Kulkarni-Chouhan (Munich Airport), Ida Myrvold & Jostein Wikromteland (Avinor), Jean-Luc Portier (Geneva Airport), Maria Zervoudi (Fraport Greece), Mieke Schouwink (Eindhoven Airport), Océane Moings, Pauline Givernaud & Laurence Bottega (Groupe ADP), Roland Boehm & Falko Schwarz (Berlin Airport), Sebastian Rhein, Alexander Schäfer & Thomas Kirner (Fraport), Sophie Vanderveken & Laurence Vanhove (Brussels Airport), Sophie Dalmasso & Marianne Pecorari (Aéroports de la Côte d'Azur), Torsten Hentschel (TH Airport Consulting), Magdalena Anerud (Swedavia), Massimiliano Malerba (Sita), Laura Carmela Mastrogiacomo & Elena Selva (Bologna Airport), Ton Oosterwijk (Servicetec), Kristīne Ozoliņa (Riga Airport), Thekla Georgiou & Yiannis Harpas (Hermes Airports), Ivan Navarro Garcia, Raquel Blanco Martin, Roberto Martín Davara & Roberto Caso Donadei (Aena), Mark De Laurentiis (ENAC), Hilal Kahraman (IGA), Hristomir Kutsarov (Sofia Airport), Catherine Ballester (Aeroporti di Roma)

The Survey was conducted in 21 European airports[3], on a voluntary basis, through a standardised questionnaire filled out directly by passengers at the departure gate, for a total of nearly 3,000 passengers.

The Survey results revealed that, although 73% of passengers feel confident using digital or online services, 11% either lack confidence or avoid using such services altogether. Consequently, the deployment of digital technologies may risk excluding up to 11% of the passenger population: 8% who are not confident, and 3% who actively avoid using digital tools.

When asked about the main barrier to wider adoption of digital and online services, 40% of passengers indicate a lack of trust, concerns regarding how personal information will be stored or unwillingness to share more private data. 27% of survey respondents cite accessibility concerns as a key barrier to broader adoption of digital services and 19% of them find the use of technology complex and difficult.

In order to guarantee the success of digitalisation and automation towards a seamless and enjoyable experience for all passengers, their concerns, needs and expectations expressed through the Survey have to be considered: technology should be accessible and inclusive, trustful, user-friendly and balanced with a human touch.

This document aims at raising Airport Managing Bodies' attention on the impact of digitalisation and automation on the passenger experience, adopting the passenger perspective and proposing recommendations and practical solutions.

- **Section I** describes and analyses the impact of digitalisation and automation on the passenger experience, illustrating through examples the variety of digital options at different airports, and presenting the main results of the Survey.
- **Section II** provides guidance on how to ensure that digital technologies are inclusive and accessible.
- **Section III** addresses the main passengers' concerns and barriers to further digitalisation and proposes key principles to ensure the successful development of digitalisation and automation.
- **Section IV** analyses and proposes practical solutions at key touchpoints of the passenger journey.
- **Section V** presents the Conclusions.
- **Annex I** summarises the practical recommendations.
- **Annex II** is dedicated to the description of airports' best practices.

[3] AGP, ALC, AMS, ATH, BCN, BER, BRU, FCO, FRA, LIN, LPA, LYS, MAD, MUC, MXP, NCE, PMI, RIX, RMO, SOF, VIE

I.
THE IMPACT OF DIGITALISATION AND AUTOMATION ON THE PASSENGER EXPERIENCE

1. DEFINITIONS

Digitalisation

Digitalisation is "the adaptation of a system, process to be operated with the use of computers and the Internet... without a physical presence"[4]. Digitalisation means also the absence of paper and documents, transformed into files.

In an airport context, digitalisation refers to the integration of digital technologies into airport operations, processes, and services to enhance efficiency, and the overall passenger experience. This includes converting traditional, manual procedures – such as check-in, security, boarding, and wayfinding – into automated or digitally supported processes through self-service kiosks, mobile apps, e-gates, digital signage, and real-time notifications.

From the passenger experience point of view, digitalisation implies that passengers are active, perform some tasks by themselves (in theory, there is no need for staff assistance from the service provider), at an off-site location from home/hotel (example, online check-in) or on site at the airport (self-service kiosks, e-gates.). To that purpose, the passenger needs to have a certain equipment (computer, smartphone) and connection to the Internet.

For passengers, digitalisation means faster, more predictable journeys, easier access to information, personalised services, and greater autonomy, while also enabling airports to optimise resources, manage flows, and improve communication. Essentially, it transforms the airport from a largely physical environment into an interconnected digital ecosystem that supports seamless, safe, and passenger-centric travel.

Automation

Automation is the use of technology, machinery, software, or processes to perform tasks with minimal or no human intervention, often replacing human input with automated systems to achieve outcomes more efficiently. This substitution of human labour with machines, digital tools, and software aims to streamline processes, reduce costs, improve consistency, and enable humans to focus on higher-value activities.

In an airport context, automation refers to the deployment of technology and systems that perform routine tasks with minimal human intervention, directly shaping the passenger experience. This includes self-service check-in kiosks, automated baggage drops, e-gates at border control, biometric verification, and boarding gates that scan digital passes.

For passengers, automation means faster, more predictable, and less stressful journeys, as queues are reduced, processes are simplified, and staff can focus on assisting those who need extra support. Beyond efficiency, automation also enhances safety and consistency, while enabling personalised and touchless services that improve comfort, accessibility, and overall satisfaction throughout the airport journey.

[4] Oxford Dictionary

2. INTRODUCTION: THE CURRENT SITUATION

As part of a global trend, digitalisation and automation at European airports are in a stage of steady growth, driven by the need to improve operational efficiency, reduce delays, and enhance the passenger experience. This includes technologies like biometrics and AI enabling contactless, self-service options for check-in, security, and boarding, creating a more efficient and seamless passenger journey.

Airports are also leveraging mobile apps and interactive kiosks for navigation and real-time updates, while advanced baggage systems and smarter security screening streamline operations.

While adoption varies, the overall trend is towards Industry 4.0 technologies[5] to enhance operational efficiency, improve passenger satisfaction, and prepare for future challenges like post-pandemic contactless needs.

From a passenger's point of view, this entails a significant change: tasks previously performed by staff now require a passenger's active participation and a certain knowledge and confidence in using digital or automated devices.

The description below provides non-exhaustive examples of these trends, focusing on key touchpoints of the passenger journey.

[5] Industry 4.0 technologies like Artificial Intelligence (AI), Internet of Things (IoT), biometrics, and contactless solutions are enhancing the EU airport passenger experience by offering personalised services, faster processing through biometric identification, contactless check-in, and digital wayfinding. These technologies enable real-time data analysis, automated operations, and enhanced security, leading to more efficient, convenient, and personalised travel for passengers.

3. EXAMPLES OF THE USE OF DIGITALISATION AND AUTOMATION AT KEY TOUCHPOINTS

CHECK-IN

Off-airport check-in

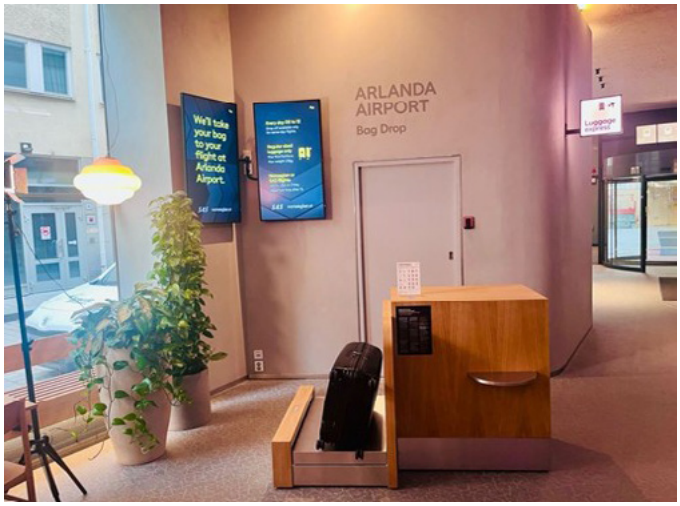
Off-airport check-in is a process that allows passengers to check in for their flight and sometimes drop off their luggage at a location away from the airport, such as a hotel, multimodal terminal, or dedicated facility. This service offers a convenient, time-saving experience by avoiding queues.

Off-airport check-in options, offered in airports like Stockholm Arlanda, Oslo or Vienna, are fully digital and automated.

Passengers taking the Arlanda Express train at Stockholm central station can self-check-in at the station, provided that they are travelling with SAS or Norwegian. By checking-in at the central station and receiving boarding passes and bag tags, passengers can simply drop-off their luggage at the baggage drop-off area at Arlanda (which is either a self-bag drop or a bag drop manned counter) and proceed through security.

At Oslo Airport, off-site check-in is available at the Airport Express train stations: passengers have the option to use self-service kiosks to issue boarding passes and bag printing and drop their bag without staff assisting or the need to use a traditional staffed check-in desk.

Passengers travelling to Vienna Airport with the City Airport Train can conveniently check-in and drop off their bags at the Wien Mitte train station using self-service kiosks. This service is available from 24 hours to 75 minutes before departure, and staff are available for assistance. As of 2025, this service is available for 11 airlines including Austrian Airlines, Wizz and Lufthansa.



SELF BAG DROP AT STOCKHOLM TRAIN STATION (ARLANDA EXPRESS)

SELF-CHECK-IN KIOSK AT VIENNA CENTRAL RAILWAY STATION

Airport Check-in

At most airports, together with traditional staffed check-in and bag drop counters, self-service check-in issue boarding passes and, for some, also baggage tags. To check-in luggage, procedures vary: full-self-service kiosks that issue bag tags and provide the belt where passengers place their luggage, are available at some airports, while in other airports, passengers drop it at a manned bag drop counter.

Berlin Airport has installed more than 120 self-service check-in kiosks which run the applications of multiple airlines. Passengers can use them to issue their boarding pass and bag tag (step 1). They then proceed to 1 of 52 common-use bag drop counters for baggage drop-off (step 2). Floorwalkers are available to assist with any issues at both steps.

In Terminal 2, at Berlin Airport, a new generation of self-service kiosks has been installed for step 1. These kiosks also weigh baggage and allow passengers to pay overweight luggage fees directly at the machine, eliminating the need to proceed to a manned counter. Passengers operate the kiosk through the airline's app, with no distributed control system (DCS) connection required.

Berlin Airport promotes a common-use approach to self-service check-in and is working to convince most airlines to implement self-service procedures for check-in. This approach has significantly reduced waiting times and freed up check-in capacity for other airlines.

SELF-SERVICE CHECK-IN KIOSKS AT BERLIN BRANDENBURG WILLY BRANDT AIRPORT TERMINAL 1

At Frankfurt Airport, the baggage check-in process consists of three steps. In Step 1, passengers must have their boarding pass, either printed or on a mobile device. Passengers who have not checked in digitally before arriving at the airport can use a self-service kiosk to obtain their boarding pass and register their baggage (Step 2), where bag tags are printed with staff assistance available. Passengers then proceed to the Baggage Interface & Receipt Printer, place their bags on the conveyor belt, and confirm the weight and transport details. Once confirmed, the baggage is transported, and a baggage receipt is printed (Step 3). From the passenger's perspective, these three steps require active participation to complete the entire process.

SELF-CHECK-IN KIOSK AT FRANKFURT AM MAIN AIRPORT

BAGGAGE INTERFACE & RECEIPT PRINT AT FRANKFURT AM MAIN AIRPORT

At Eindhoven Airport, self-service bag drop is available at 12 Drop & Go desks, with staff available to assist. Checked-in passengers flying with Transavia, Ryanair, TUI, or Wizzair can print their bag tags and drop off their baggage themselves.

SELF-SERVICE BAGGAGE DROP OFF AT EINDHOVEN AIRPORT

SELF-SERVICE CHECK-IN KIOSK AT VISBY AIRPORT

At Stockholm Arlanda Airport, passengers follow a two-step process. In Step 1, they can check in at self-service kiosks, which issue both the boarding pass and bag tag. In Step 2, they drop off their bags at the bag drop counter. Passengers with special baggage must first go to the airline's check-in counter, where they will receive a label and instructions on where to hand in their special baggage.

Enter your airline company and booking reference. Follow the instructions.

Your boarding card and baggage tag(s) are printed once you're done.

Remove the baggage receipt and save it. Attach a baggage tag to all bags.

SELF-SERVICE CHECK-IN KIOSK AT STOCKHOLM ARLANDA AIRPORT – CHECK-IN INSTRUCTIONS

SELF-SERVICE BAG AT OSLO GARDERMOEN AIRPORT

SELF-SERVICE BAGGAGE DROP OFF COUNTERS AT VIENNA AIRPORT

Vienna Airport operates a two-step common-use Self Bag Drop zone in Terminal 1, available to passengers travelling with Ryanair, Wizz Air, Eurowings, and Norwegian. In Step 1, passengers can print their bag tag at a kiosk before proceeding to Step 2, where they simply scan the bag tag and drop their baggage at a self-service counter. Staff are available to assist passengers when needed.

In addition, Terminal 3 hosts a dedicated Self Bag Drop area for Austrian Airlines and other Lufthansa Group carriers, following the same principles. For operational flexibility, all self-bag drop counters at Vienna Airport are hybrid and can be operated manually in case of irregular operations.

In total, Vienna Airport operates 53 tagging kiosks for Step 1 and 36 self-bag drop counters for Step 2.

SECURITY CONTROL

European airports are gradually introducing more automation at security checkpoints, with automated tray return systems, remote screening of X-ray images, and touchless access gates to security areas. The most visible change is the deployment of new 3D/CT cabin baggage scanners, which allow liquids and laptops to remain in bags – although rule inconsistencies and certification delays mean passengers still face different procedures at different airports. Overall, these technologies are designed to make security faster, less intrusive, and more predictable, but for now the benefits may be uneven and sometimes confusing for travellers.

Access to the security area is generally automated, through the deployment of e-gates where passengers need to scan their boarding card, either paper or mobile version. In general, airports provide counters for dedicated access of PRMs and families.

At Berlin Airport, biometric technology is used at security control to expedite passenger screening. Facial recognition systems verify travellers' identities quickly and accurately, enabling a smoother and contactless security process while maintaining high safety standards.

SECURITY CONTROL AT ROME FIUMICINO AIRPORT

E-GATES TO ACCESS AT THE SECURITY AREA AT OSLO GARDERMOEN AIRPORT

E-GATES TO ACCESS AT THE SECURITY AREA AT STOCKHOLM ARLANDA AIRPORT

BORDER CONTROL

European Member States[6] and airports have increasingly deployed Automated Border Control (ABC) systems featuring e-gates, biometric verification, and mobile pre-registration tools. These technologies accelerate identity checks and help reduce queueing for certain nationalities.

The Entry/Exit System (EES) introduced new biometric requirements for all third-country nationals, meaning that first-time crossings may take longer and risk creating bottlenecks unless supported by effective passenger communication, adequate staffing, and seamless integration of automated solutions.

ENTRY EXIT SYSTEM KIOSKS AT ROME FIUMICINO AIRPORT

At most airports, ABC gates are available for EU/EEA citizens as well as for certain third-country nationals. These gates operate alongside manual booths for passengers who are not eligible to use the automated lanes. Staff are present to guide passengers according to their citizenship. However, at some airports – such as Stockholm Arlanda and Eindhoven – Automated Border Control is not yet available.

AUTOMATED BORDER CONTROL GATE AT ALICANTE-ELCHE AIRPORT

[6] In the EU, individual Member States are directly responsible for managing their own borders, including guarding them and processing travellers at Border Crossing Points. National authorities are responsible for carrying out checks and using the information systems provided by the EU to manage their external borders.

WAYFINDING AND INFORMATION

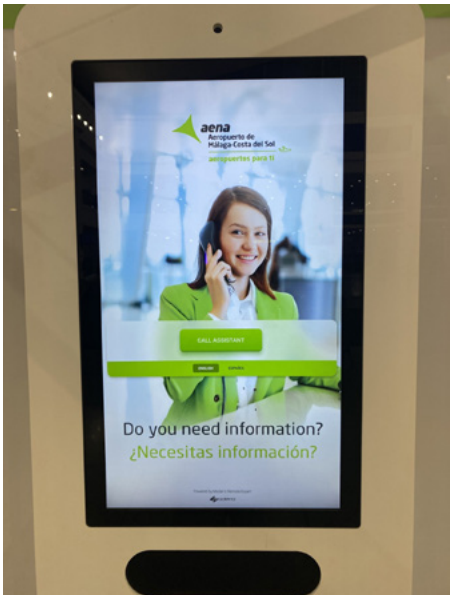
Wayfinding is a crucial element of the passenger experience and can be a major source of stress if not properly addressed. These services are becoming increasingly digital and personalised, with widespread use of dynamic signage, real-time flight updates, and multilingual mobile apps. Many airports now offer interactive kiosks, digital maps, and push notifications to guide travellers through terminals, while some deploy sensors and AI tools to predict waiting times at security or border control. These innovations aim to reduce stress, improve orientation, and give passengers greater control over their journey – though consistency and accessibility still vary across airports.

Beyond signage designed to orient passengers, information is provided through staffed counters, Flight Information Display Systems (FIDS), LED walls, digital information totems, and other channels such as website chatbots, WhatsApp, and airport mobile applications.

As an example, passengers travelling through Alicante Airport can consult Aena's website, where videos are available showing each touchpoint of the passenger journey for individuals with Autism Spectrum Disorder (ASD), helping to reduce stress once at the airport.

Different approaches exist regarding the balance between staffed and digital information. At Amsterdam Schiphol Airport, manned counters have been replaced by digital information totems. These come in two types: one allows passengers to interact with a remote agent (via call or video call), while the other requires passengers to navigate autonomously to find the information they need. Overall, digital information totems are generally seen as a complement to staffed counters rather than a full replacement. The future is likely to move toward hybrid models, where digital totems handle routine queries while human staff manage more complex issues.

DIGITAL INFORMATION TOTEM AT MILAN-MALPENSA AIRPORT



DIGITAL INFORMATION TOTEM AT MALAGA-COSTA DEL SOL AIRPORT

DIGITAL INFORMATION TOTEM AT MADRID-BARAJAS AIRPORT

DWELL TIME, FOOD & BEVERAGE, RETAIL AND ENTERTAINMENT

European airports are increasingly leveraging digitalisation to make dwell-time more engaging and convenient. Many terminals now offer mobile ordering and payment for food and retail, "click-and-collect" shopping, and digital loyalty programmes, while some are experimenting with personalisation through airport apps. Enhanced Wi-Fi, streaming services, and charging stations support entertainment, alongside innovative concepts such as immersive lounges and cultural showcases. Playgrounds can also be fully automated, allowing passengers or children to use the facilities independently. These developments aim to transform waiting time into a more seamless and enjoyable part of the journey, though availability and sophistication vary widely across airports.

For example, Vienna Airport operates an Entertainment Gate covering 350 m², featuring three distinct zones: a kids' area with a two-storey playground, a sports viewing zone, and a gaming zone in collaboration with Nintendo.

TOTEM TO CHOOSE THE MENU AT STOCKHOLM ARLANDA AIRPORT

ENTERTAINMENT GATE AT VIENNA AIRPORT

BOARDING

Boarding at European airports is becoming more automated and streamlined through the rollout of biometric-enabled gates, digital boarding pass scanning, and automated access controls at gates. These tools speed up the process, reduce manual document checks, and limit queuing, while also freeing staff to focus on assisting families or passengers needing extra support. However, adoption is uneven, and travellers may still encounter a mix of traditional manual checks and automated gates depending on the airport and airline.

BOARDING GATE AT BARCELONA EL PRAT AIRPORT

BOARDING GATE AT ROME FIUMICINO AIRPORT

CONNECTIONS

From a passenger experience perspective, connections at European airports are increasingly supported by digital tools that guide travellers through complex transfer processes. Real-time wayfinding via apps and smart signage helps passengers navigate between terminals, while some airports provide personalised notifications on gate changes or estimated walking times. Automation at security and border control within transfer zones also helps reduce stress for connecting passengers. Still, the experience varies greatly between hubs, with larger airports investing more heavily in digital assistance and smaller ones relying on traditional signage and staff support.

Many airports offer, beyond manned transfer desks, self-service check-in for boarding pass printing. For instance, at FRA, staffed transfer desks are available for passengers who want to interact with staff as well as self-transfer desks for passengers with digital affinity.

ARRIVALS

Arrivals are also becoming more automated, especially at baggage claim. In addition to traditional staffed lost & found counters, many airports now provide self-service totems where passengers can file missing baggage declarations on their own, speeding up the process and reducing queues. Digital notifications and tracking tools offered through airline or airport apps increasingly keep travellers updated on baggage status, making the arrival experience more transparent and less stressful – though the level of automation still differs significantly between airports.

4. ACI EUROPE SURVEY ON THE IMPACT OF DIGITALISATION AND AUTOMATION ON THE PASSENGER EXPERIENCE

As indicated in the introduction, a customer satisfaction survey at departure was designed to assess the passengers' level of satisfaction when using digitalised and automated options at key airport touchpoints, and to collect their feedback, suggestions and direct comments on their airport journey.

Main results of the Survey highlight that:

- A majority of passengers adapted to digitalisation and seemed to be happy with it while the analysis of open comments shows another picture.
- A high proportion of passengers, 73%, are confident in using digital or online products and services, with 11%, not confident or avoiding using digital or online products and services (in particular over 65 years old). The younger the passenger, the more confident they are in using digital or online products and services.
- The analysis of open comments and suggestions reveals that many passengers are willing to interact with human beings and indicate that digitalisation risks excluding older or fragile passengers. There is still the need for staff to assist/reassure them in the use of digital services.
- Passengers indicate that the main barrier to further digitalisation is the lack of trust in technology (failure, loss of mobile phone) and that services are not accessible to all, in particular older people and those not familiar with digital tools. The complexity of use is also an important barrier.
- Suggestions to increase digitalisation go in the same direction: some passengers still need staff assistance and human relations, while others advocate for more digitalisation, in particular using it for more real-time information. Technology is complex and does not always work well. There are data privacy concerns (sharing personal information, how the information is stored and managed) for 19% of passengers.

2. TOWARDS AN ACCESSIBLE AND INCLUSIVE TECHNOLOGY

1. INTRODUCTION: PASSENGER CONCERNS, NEEDS AND EXPECTATIONS

As mentioned in the previous section, the Survey revealed concerns that the deployment of digital technologies may exclude up to 11% of the passenger population – 8% of passengers who expressed a lack of confidence and 3% actively avoiding using digital tools. This includes a significant 39% of respondents over the age of 65.

Additionally, 27% of respondents cited accessibility concerns as a key barrier to broader adoption of digital services. Analysis of open-ended responses further highlighted passenger concerns about being left behind, with many expressing fears of exclusion and a strong preference for maintaining human interaction.

This section aims to address these issues by raising awareness among Airport Managing Bodies and providing guidance on how to ensure that digital technologies are inclusive and accessible. It also proposes also practical solutions to support passengers at risk of exclusion. Operational solutions at key touchpoints are addressed in Section IV.

In the short term, the focus should be on assessing the current state of accessibility and inclusivity, identifying gaps, and recommending mitigation measures. Looking ahead, the implementation of the European Accessibility Act is significantly reshaping infrastructure accessibility across the sector. The ACI EUROPE Inclusion Charter constitutes a call to action for airports across Europe to foster inclusivity in their operations, services, and interactions, moving beyond accessibility to ensure that everyone enjoys an equitable and dignified experience.

2. DEFINITIONS

2.1. Inclusivity

Inclusivity is defined as "the fact of including all types of people, things, or ideas and treating them all fairly and equally"[7]. In the airport environment, this means that the technology and digitalisation deployed at key touchpoints of the passenger journey must cater to, and include, all categories of passengers.

The first step is therefore to identify the groups of passengers who may be at risk of exclusion due to increasing digitalisation and automation.

People at risk of exclusion:

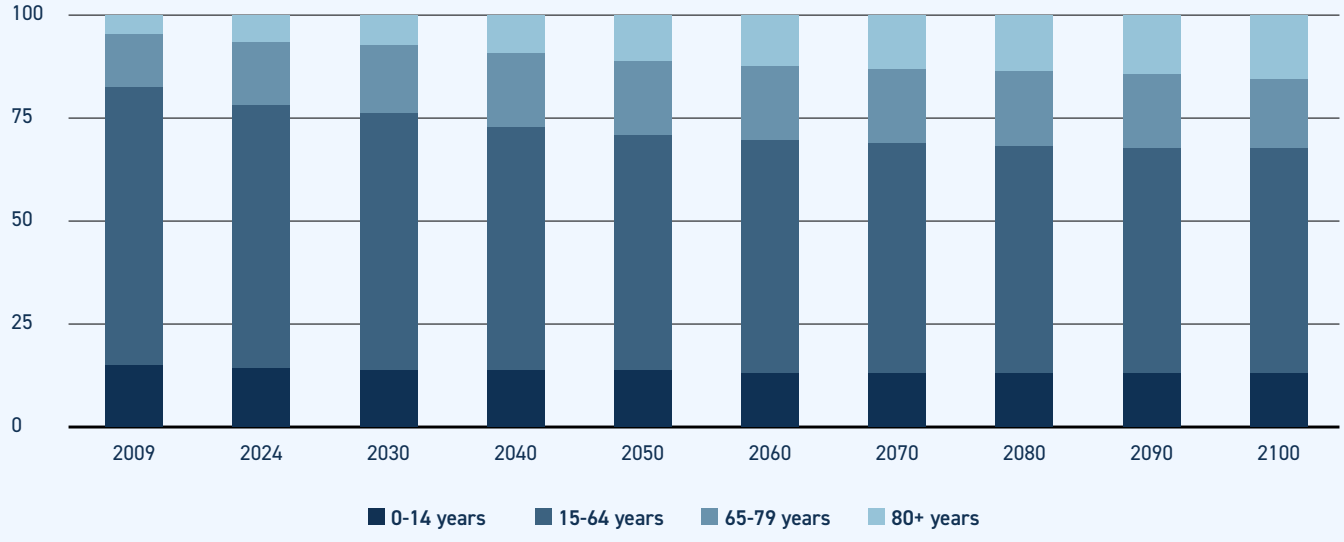
Passengers at risk include a wide range of individuals with temporary or permanent disabilities, passengers with reduced mobility, and those with sensory or cognitive impairments, including non-visible disabilities.

Age, cultural background, and linguistic barriers can also create obstacles to using digital airport services, especially for those who do not possess or fully understand modern technology. Passengers travelling with young children may face difficulties if they need additional assistance to use certain technologies. In many cases, children below a certain age are excluded from biometric processes, which can also affect accompanying adults.

Passengers vulnerable to discrimination may face exclusion due to ethnicity (for example, higher biometric identification error rates related to skin tone), religion (when the face is fully or partially covered), or nationality (if certain passport types or nationalities are excluded from automated systems).

According to Eurostat projections, population ageing is a long-term trend that began several decades ago in Europe. Baby boomers are now reaching retirement age, and the proportion of very old individuals is increasing faster than any other age group: the share of the EU population aged 80 and over is expected to rise from 6.1% in 2024 to 15.3% by 2100.

Population structure by major age groups, EU, 2009-2100
(% of total population)



Note: 2024: provisional/estimated. 2030-2100: projections (EUROPOP2023).
Source: Eurostat (online data codes: demo_pjanind and proj_23np)

eurostat

[7] Cambridge Dictionary

Looking ahead, the challenges related to technology may become less about willingness (as digital natives become the majority) and more about physical and cognitive factors – such as reduced eyesight or difficulty processing large amounts of information quickly. The growing speed of information flow is already contributing to increased mental strain for some individuals.

Although future generations will generally be more comfortable with technology, its rapid evolution means there will always be people who feel less confident or proficient compared to younger users. Families and certain individuals may also face exclusion – for instance, being unable to use some digital or self-service options such as Automated Border Control. Addressing these gaps is particularly important to ensure smooth operations, especially with the implementation of the Entry/Exit System (EES).

Ultimately, the goal should be to continuously minimise the number of people who are unable or unwilling to use airport technologies, ensuring that inclusivity remains at the core of digital transformation.

2.2. Accessibility

According to the United Nations, accessibility means ensuring that persons with disabilities have equal access to the physical environment, transportation, information and communications, and other facilities and services open to the public. This is crucial for them to exercise all human rights and fundamental freedoms and to participate fully and equally in society. Accessibility is achieved by removing barriers that hinder people with disabilities from engaging in everyday life and by providing information and services in accessible formats.

In an airport environment, accessibility intersects closely with automation and digitalisation. Automated systems – like self-service check-in kiosks, baggage drop, e-gates, and mobile boarding passes – can greatly enhance independence for passengers with disabilities if designed inclusively, for example with tactile buttons, screen readers, voice guidance, adjustable counters, and intuitive interfaces. Digital tools such as mobile apps, real-time wayfinding, and notifications can help passengers navigate terminals, plan transfers, and access services without relying on constant staff assistance. Conversely, poorly designed automation can create new barriers if it ignores diverse accessibility needs, so inclusive digitalisation requires deliberate attention to Universal Design principles, alternative options, and staff support to ensure that technology empowers all passengers equally.

2.3. Digital assets

An airport's digital assets encompass a wide range of tools designed to inform, guide, and streamline the passenger journey. These include the official website, which provides essential travel information and services; Flight Information Display Systems (FIDS) and interactive information totems, offering real-time updates and wayfinding support; biometric systems and e-gates, enabling faster and more secure passenger flows; and QR codes and digital travel documents, which facilitate touchless check-in, boarding, and access to airport services.

Mobile applications and personalised notifications help passengers navigate terminals and manage their journey efficiently, while self-service kiosks support check-in, baggage drop, and retail purchases. Additional digital assets include dynamic signage for retail, dining, and wayfinding; Wi-Fi portals; loyalty programmes; passenger feedback platforms; and digital assistance tools that improve accessibility, such as screen readers or hearing loop integration.

Together, these elements form an integrated digital ecosystem that enhances seamlessness and comfort, reduces waiting times, improves the overall passenger experience, and embeds accessibility, personalisation, and real-time support throughout the airport journey.

3. SCOPE

We assume that, in the short term, digital and self-service assets may not be fully accessible to all categories of passengers. Therefore, mitigation measures should be deployed at key touchpoints, as referred to in Section IV.

In the mid-term, there will be technical solutions to upgrade the infrastructure and services and make them inclusive and accessible to all categories of passengers, in particular, in line with the European Accessibility Act.

This section will cover:

- the core principles that should guide airports towards more accessible and inclusive infrastructure and services, with a focus on digital assets and self-service and digital services,
- the governance measures Airport Managing Bodies should put in place to ensure an accessible and inclusive journey.

4. THE PILLARS OF INCLUSION AND ACCESSIBILITY

4.1. ACI EUROPE Inclusion Charter

The ACI EUROPE Inclusion Charter sets out the pillars of inclusion and accessibility. In particular, "As an industry association, ACI EUROPE is committed to championing airports as inclusive environments that welcome and serve all passengers, regardless of their origin, ethnicity, culture, religion, abilities, gender, sexual orientation, age, or other individual characteristics. This Charter is a call to action for airports across Europe to foster inclusivity in their operations, services, and interactions, moving beyond accessibility to ensure that everyone enjoys an equitable and dignified experience".

The core principles of the charter are: inclusive design, accessibility, cultural sensitivity, gender equality and inclusion of all identities, sustainability, customer centrism and collaboration.

In order to ensure a barrier-free approach, it is essential that the airport infrastructure be projected from the beginning according to Inclusive design principles by:

- Adopting the principles of "Universal Design" or "Design for All" (EN17161:2019), developed by CEN (European Committee for Standardisation).
- Integrating those principles at key touchpoints such as surface access, check-in counters, security checkpoints, border crossing points, boarding gates, restrooms, seating zones, lounges, service facilities, and commercial areas.
- Adopting Universal signage, intuitive navigation systems, as wayfinding is of the utmost importance for the passenger experience,
- Guaranteeing user-friendly technologies, such as multilingual information displays and tools that accommodate sensory, physical and cognitive diversity,
- Fair recognition: ensuring that biometric and digital systems function reliably across different facial features, skin tones and religious attire, preventing disproportionate misreads.

The accessibility should be ideally guaranteed to all abilities (multilingual services, dietary accommodations, prayer rooms...).

Cultural sensitivity should be taken into account when projecting or designing infrastructure and services as well as gender equality, inclusion of all identities, and support for diverse families and families with children. Attention to these principles should be achieved through a commitment to ensure workforce diversity as well as establishing a strong culture through sensitivity training.

Solutions to ensure cultural inclusivity in digital tools can include:

- Multilingual Access: offering multiple language options in all digital tools and communications,
- Cultural Awareness: providing prayer rooms, quiet zones, and culturally appropriate services in digital platforms,
- Anonymous Reporting: enabling digital tools for passengers to discreetly report discrimination,
- Visuals: using clear visuals and, if there is doubt, multiple visual icons in all digital tools.

Gender equality and the inclusion of all identities in digital tools can:

- Allow for gender-neutral titles, flexible family options, and diverse representation in graphic design (for example icons).
- Respect preferred names and gender identities in booking and digital systems.

The aspiration of sustainability for all should be taken into account by implementing environmentally-friendly premises and processes.

The customer-centric principle should be applied to guarantee that the experience is based on the passenger's needs and is evolving in line with their feedback. This implies collaborating with PRM associations, cultural, minority and religious associations and providing strong feedback mechanisms. In particular, the improvement actions should be data-driven and guided through the measurement of passenger satisfaction, including surveys and constant feedback as well as establishing KPIs to measure each step of the passenger journey. Benchmarks with other airports or other industries should identify best practices to be implemented for the benefit of customers.

Last but not least, collaboration with stakeholders is key to ensure a seamless and efficient passenger journey, through the commitment of all operators.

4.2. Governance measures for Airport Managing Bodies to ensure an accessible and inclusive journey

To ensure accessibility and inclusivity, Airport Managing Bodies (AMB) should adopt the following governance measures:

High-level commitment
- Issue a formal declaration on accessibility and inclusion.
- Define clear goals through policies and action plans.
- Assign responsibility within the organisational structure (dedicated function or committee).

Passenger engagement
- Conduct regular surveys on demographics and satisfaction levels,
- Establish two-way feedback mechanisms (complaints, suggestions, consultations),
- Capture experiences of exclusion (e.g. through anonymous reporting tools) linked to language barriers, accent bias, religious attire, or appearance, as these factors directly affect the ability to use digital services on equal terms,
- Involve disability associations and persons with lived experience from the pre-design phase onwards,
- Ensure accessibility requirements are embedded in tendering processes for infrastructure and services.

Independent assessment
- Use external expertise to evaluate accessibility and inclusivity,
- Cover digital assets (apps, websites, digital totems, etc.) and all categories of disabilities.

Continuous monitoring
- Regularly assess the accessibility of the airport's premises.
- Address challenges faced by passengers with disabilities as well as older passengers and others less familiar with digital solutions.

Culture and training
- Foster an airport-wide culture of accessibility and inclusivity.
- Provide awareness-raising and continuous training.
- Staff training should include cultural sensitivity and anti-discrimination modules to ensure respectful treatment of passengers regardless of appearance, ethnic background, language, or religion.
- Tailor training to different staff profiles (administrative, customer-facing, PRM assistance).
- Encourage staff involvement in innovation processes.

3. BARRIERS TO FURTHER DIGITALISATION & AUTOMATION

1. INTRODUCTION: PASSENGER CONCERNS, NEEDS AND EXPECTATIONS

As we noted earlier, the Survey found that when passengers were asked about the main barriers to wider adoption of digital and online services, 40% cited a lack of trust, concerns over how personal information is stored, or reluctance to share sensitive data. Additionally, 27% feared that the services might not be accessible, while 19% found the technology complex or difficult to use.

The analysis of passengers' verbatims confirms a lack of trust and confidence with technology, concerns about system failures, fear of data theft, device failure, breakdowns, battery and connection concerns, complexity and technology-related issues i.e. systems not working well.

At the same time, automation and digitalisation open new opportunities to enhance the passenger experience, putting at passengers' disposal a vast array of tools for real time information and personalisation.

2. SCOPE

To analyse the barriers and benefits of increasing digitalisation and automation, it is important to consider several differentiating factors.

The first factor concerns the level of passenger involvement in a given process or service – specifically, whether participation is active or passive. For example, the provision of information through notifications requires minimal passenger involvement beyond their attention (e.g. viewing FIDS screens or receiving a mobile notification), or moderate participation (e.g. downloading a QR code or searching for information on an app or website). By contrast, self-service processes require active passenger participation, as travellers must complete the task themselves (e.g. using a self-service kiosk, vending machine, or digital food-ordering system).

The second factor relates to the amount of personal information and data required to complete a process. For information services and notifications, passengers generally do not need to share personal data – except, in some cases, geolocation. In contrast, biometric processes involve sharing personal identity data with an authority or service provider in exchange for a more seamless experience. Similarly, passengers seeking a tailored or personalised journey may be more willing to share additional data.

A third factor is the level of confidence with technology, which can vary according to social and cultural background, age, or specific needs (e.g. disabilities).

Finally, it is important to note that passengers do not always have the option to choose whether or not to use digital or automated services. For instance, some airlines allow online check-in but still require passengers to present themselves at a check-in counter, thereby reducing the potential benefits of digitalisation in creating a seamless experience.

For all these reasons, it is necessary to segment the analysis, taking into account the factors mentioned above. The main barriers identified at key touchpoints of the passenger journey, along with practical solutions to address them, are described in Section IV.

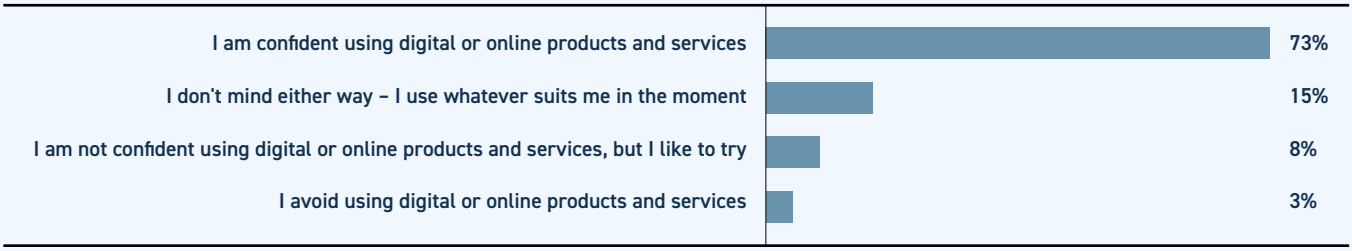
3. IDENTIFYING THE BARRIERS TO FURTHER DIGITALISATION & AUTOMATION

Highlights from the Survey

The Survey reveals that 73% of passengers interviewed are confident using digital or online products and services, while 15% are neutral and will simply choose the most convenient option – representing a total of 88% of potential digital users. This is a high proportion, yet still insufficient to support a fully digitalised journey, particularly given that 11% of passengers remain reluctant to use technology. This indicates clear room for improvement in terms of digital adoption. Airport Managing Bodies should take this into account before moving toward a fully digital experience.

The majority of passengers, 73%, are confident in using digital or online products and services, with 8% not confident and 3% avoiding using digital or online products and services

In general, how do you feel about using digital and online products and services? (n=2951)



Source: ACI EUROPE Survey on the Impact of Digitalisation and Automation on the Passenger Experience

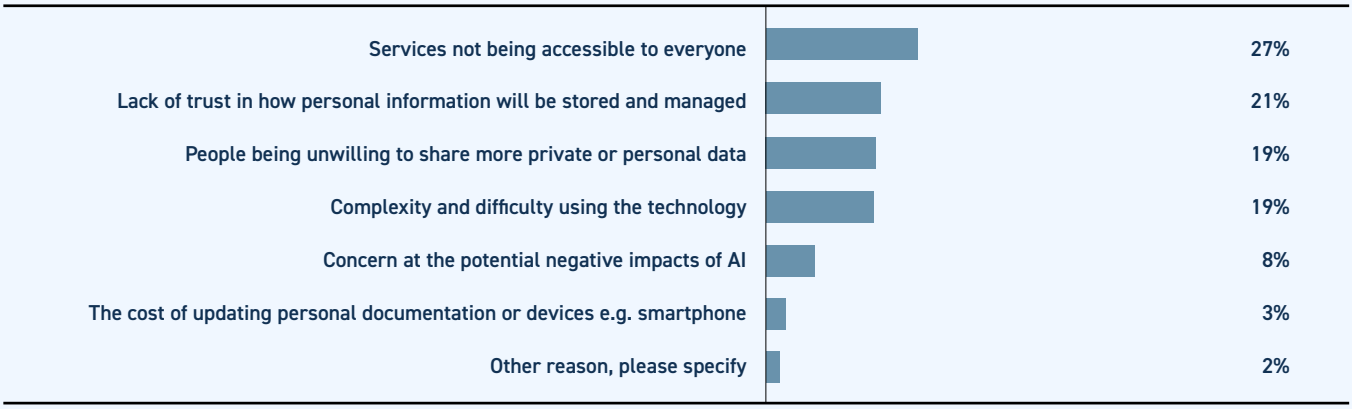
According to the Survey, the main barriers to further digitalisation are:

- Data privacy concerns (40%)
- Limited accessibility of services (27%)
- Complexity of technology use (19%)

In addition, 34% of respondents cited other barriers such as technology failure, system blackouts, loss of a smartphone, or running out of battery.

The main barrier to wider adoption and use of digital and online services is that these services are not accessible to everyone. A lack of trust in how personal information is stored and managed, as well as concerns about sharing personal information, are also significant barriers for 21% and 19% of passengers, respectively.

Thinking about the future, in your opinion, what will be the main barrier to wider adoption/usage of digital and online services? (n=2944)



Source: ACI EUROPE Survey on the Impact of Digitalisation and Automation on the Passenger Experience

It appears that data privacy concerns primarily relate to future biometric processes, which are still in the pilot phase and largely managed by airports or their private partners. In contrast, existing biometric solutions operated by public – such as Automated Border Control – are generally well accepted and appreciated by passengers. The Survey also shows that passengers who have enrolled in biometric programmes are convinced of their benefits and value the seamless experience they provide, often placing less emphasis on privacy concerns.

The complexity of using technology is particularly evident in the hold baggage check-in process, where passengers often require guidance.

All findings related to "barriers to further digitalisation" must be interpreted in light of different passenger personas and their varying levels of confidence or acceptance of technology – such as older travellers versus digital natives, passengers with disabilities, families with young children, and occasional travellers. Airports should therefore offer alternative solutions to digital and automated services to accommodate these groups and address their specific needs.

Furthermore, the analysis of survey verbatims shows that a significant number of passengers prefer human interaction over machine interfaces. This highlights the need to balance technology with human touch, ensuring that staff remain visible and accessible throughout the journey. Human presence plays a key role in reassuring passengers and can transform stressful travel moments into positive experiences, creating what passengers often describe as "magic moments."

Digitalisation and automation are most effective when accompanied by human support to guide and reassure passengers.

Finally, the lack of trust in technology – driven by risks such as system failures or blackouts – must also be addressed. These incidents underscore the fragility and vulnerability that can arise from over-reliance on technology. Airports should therefore develop alternative options, contingency plans, and robust backup systems to reduce dependence and maintain passenger confidence in all circumstances.

Main barrier to wider adoption/usage of digital and online services - other reasons

Source: ACI EUROPE Survey on the Impact of Digitalisation and Automation on the Passenger Experience

4. KEY PRINCIPLES FOR FURTHER AIRPORT DIGITALISATION AND AUTOMATION

Successful deployment of digital and automated products and services requires understanding the passenger and designing solutions that are accessible, inclusive, and user-friendly. This section first addresses the identification of passenger personas and their level of confidence with technology and presents guiding principles for airport management.

4.1. Understanding and Assessing Passenger Confidence with Technology

To ensure technology and digital assets are accessible to all, airports must understand different passenger categories, particularly those who may face challenges due to disabilities, age, social or cultural background, or language barriers. These demographic categories and passenger personas influence how confident and comfortable passengers feel when using digital tools.
Traditional methods – such as customer satisfaction surveys and passenger persona studies – provide valuable insights into traveller behaviour and appreciation of digitalisation, while highlighting areas requiring special attention. However, these approaches may not fully capture passenger attitudes or behaviours toward technology, so additional surveys and studies are recommended to monitor evolving perceptions of rapidly developing digital and self-service options.

Within the ACI EUROPE Task Force on the Passenger Experience, a workshop held at Düsseldorf Airport proposed a categorisation of passengers based on confidence with technology, creating five groups: 100%, 75%, 50%, 25%, and 0% confident. Confidence and acceptance of technology vary due to objective factors (age, gender, disabilities), personal traits (pragmatic, cautious, time-conscious), and lifestyle characteristics (single, couple, family).

Understanding these factors is essential when deploying new technologies and digital assets, ensuring that alternatives are available for passengers unable to use or fully benefit from them. This comprehensive understanding allows airports to tailor digital solutions and support for all passengers.

4.2. Familiarising Passengers with the Airport Environment

Most passengers are occasional travellers, not fully familiar with airport processes. In the context of increasing self-service, it is crucial to provide clear information in advance. Ideally, this should be communicated by airlines – who remain the main point of contact for passengers – and supported by airport information channels such as websites, which can feature short videos, virtual walkthroughs, and clear, easy-to-read step-by-step guides.

4.3. Balancing Technology and Human Touch

To ensure the success of digitalisation, a smooth transition must be planned so passengers can adapt gradually to these major changes. As digitalisation and automation require passengers to actively perform tasks once handled by staff, it is vital that airports deploy personnel to assist passengers in using new technologies.

This also means that airport staff must receive continuous training to confidently explain and support the use of digital tools. When assistance cannot be guaranteed – for instance, at self-service check-in points – there should always remain a manual alternative, such as a staffed check-in counter.
Staff also play an essential role in reassuring passengers who may feel anxious or stressed during their journey. Training should therefore include empathy and communication skills to handle diverse situations.

The shift from service provider to self-service creates an opportunity to redefine staff roles – from performing manual tasks to acting as airport ambassadors, enhancing the passenger experience ("less manual tasks, more smile"). Employees who once worked behind counters can now become floorwalkers, proactively engaging with and guiding passengers.

Ultimately, the key principle is to find the right balance between technology and human touch.

4.4. Addressing Privacy Concerns in Sharing Personal Data

One major concern expressed in the Survey relates to data privacy. This concern varies depending on the process involved. Some services – such as flight information or notifications – require little to no personal data sharing, apart from possible geolocation. Others, such as biometric processes, involve sharing personal identity data in exchange for a smoother, more seamless experience.

To maintain trust, it is essential that passengers give explicit consent, understand where and how their data is stored, and are provided with clear options for managing their data. Transparency is fundamental: passengers must know who has access to their information and for what purpose.

Biometric solutions must adhere to the principles of privacy by design and by default – including data minimisation, end-to-end encryption, strict storage policies, and automatic deletion after processing – ensuring full compliance with GDPR and other relevant legislation.

Methods for data collection, retention, management and minimisation should undergo regular review and monitoring.

4.5. Developing Contingency Plans

While technology, digitalisation, and automation create opportunities for a seamless journey, they also introduce new vulnerabilities. In case of system failures, blackouts, or individual challenges (e.g. a lost or broken smartphone, or a dead battery), Airport Management Bodies should have backup plans and alternative options in place to prevent disruptions and ensure operational continuity.

4.6. Offering Alternative Choices

To adopt a genuinely passenger-centric approach, the deployment of digital and self-service solutions should not only reflect airport or airline priorities but also the needs and expectations of passengers.

Travellers should have the option to use the communication channels they are most comfortable with – such as chatbots, WhatsApp, QR codes, or other tools. When passengers interact through channels they naturally prefer, the experience becomes easier, more intuitive, and more satisfying.

4.7. Providing User-Friendly and Comfortable Solutions

Digital and automated solutions should always be designed with the passenger in mind. They should meet the following requirements:

- Be easy to use, intuitive, and self-explanatory.
- Be well-signposted, visible, and located along the natural passenger flow through terminals.
- Require minimal steps and limited touchscreen interaction (e.g. scanning a boarding pass to print a bag tag).
- Be accessible online through direct links from airline websites during online check-in.
- Require the fewest possible clicks to complete each process.
- Be ergonomically designed to ensure accessibility and efficiency for all users.
- Provide sufficient space for queuing, approach, and use to ensure comfort.
- Offer a pleasant environment through the use of materials, colours, lighting, and sound that enhance passenger well-being.
- Be reliably available, with staff support during off-peak periods and minimal downtime for maintenance.

4.8. Promoting the Benefits of Digitalisation

As noted earlier, digitalisation offers many opportunities and benefits for passengers – particularly in delivering real-time information and greater convenience. However, since not all passengers fully trust or embrace technology, awareness and promotion campaigns can play a key role in reducing reluctance and increasing adoption.

Such campaigns should highlight the tangible benefits of digitalisation – showing how it leads to a safer, faster, and more personalised journey, while ensuring that human support remains an integral part of the experience.

4.
ANALYSIS & PRACTICAL SOLUTIONS AT KEY TOUCHPOINTS OF THE PASSENGER JOURNEY

1. INTRODUCTION

In this section we will analyse the hurdles encountered by the different categories of passengers at key touchpoints and propose:

- Mitigation measures for the short term, and
- Improvements for the mid-long term to ensure inclusivity and accessibility and remove barriers to further digitalisation.

Airport best practices are also referred to and described in Annex II.

2. ANALYSIS AND SOLUTIONS AT KEY TOUCHPOINTS TO ENABLE INCLUSIVE, ACCESSIBLE TECHNOLOGY AND FURTHER DIGITALISATION

PREPARATION OF TRAVEL

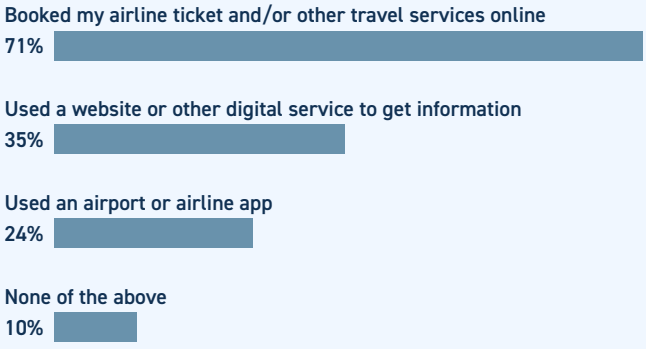
Analysis

Preparing for travel is a critical step where passengers gain familiarity with the airport experience and build confidence in using digital tools. Ensuring that digital and online resources are inclusive is essential, particularly for passengers with disabilities or limited digital skills.

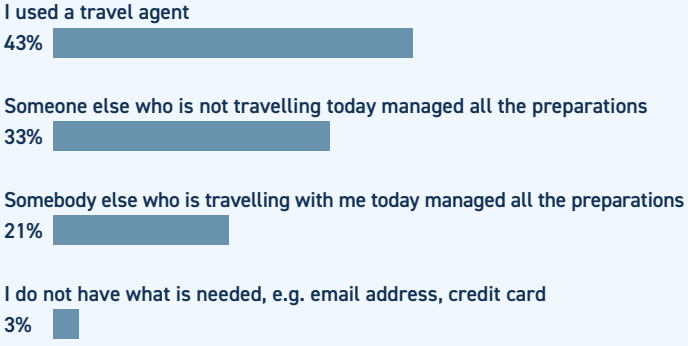
According to the ACI EUROPE Survey, 10% of passengers did not prepare their travel themselves. Among these, 43% relied on a travel agent and 33% received assistance from someone who was not travelling with them, indicating that this group may encounter difficulties using airport technology and digital assets.

Conversely, the majority of passengers used websites to prepare for their journey: 71% booked tickets and other services online, 35% searched for information on airline or airport websites, and 24% used airport-specific websites.

In preparing for your trip, which of the following did you do personally/yourself? (n=2952)



You answered 'none of the above'. What is the main reason for this? (n=318)



Source: ACI EUROPE Survey on the Impact of Digitalisation and Automation on the Passenger Experience

Practical solutions

Preparation of travel is a key enabler for passengers to gain knowledge, confidence, and reduce stress upon arrival at the airport. For passengers with disabilities, particularly those with non-visible ones, it is important to provide advance access to information about airport facilities and services.

Airports should clearly communicate the availability and location of specific facilities, such as:

- Adult changing rooms
- Quiet rooms
- Ostomate facilities
- Podotactile paths
- Assistance call points

These facilities should be easily accessible on the airport website.

For passengers with reduced mobility (PRMs), booking assistance in advance is critical to ensure a seamless journey. Technology can enhance this process:

- Well-designed websites may offer a "one-click" solution to request assistance.
- Airports are increasingly developing mobile apps with features to request and manage assistance.
- Innovative solutions such as the Transreport App (UK) allow travellers to log in, set up a profile, and book assistance for their entire journey in advance. This information is shared with relevant airport staff, allowing services to be tailored to passenger needs.

The extensive use of websites for travel preparation represents an opportunity for Airport Managing Bodies to convey key information about airport processes. Passengers less confident with technology would particularly benefit from:

- Short videos or virtual passenger journey simulations.
- Step-by-step guidance for self-service kiosks, e-gates, security, Automated Border Control, and eligibility rules.
- Alternative options for passengers travelling with children or other specific needs.

Accessibility requirements for websites and apps:

- Compliance with Web Content Accessibility Guidelines (WCAG) and harmonised European Standard EN301549,
- Alternative formats and adaptive features for specific disabilities, such as vision adjustments or text-to-speech,
- Direct links from airline websites during booking or online check-in to reduce extra navigation steps, Simplified navigation with single points of entry, for example, icons or menus tailored for passengers with disabilities or families.

CHECK-IN

Analysis

Check-in represents one of the first key airport interactions, and passengers' experiences here often shape their perception of the entire journey. As digitalisation increases, maintaining inclusivity at this stage is essential.

Airlines often guide passengers toward preferred check-in methods, which may limit passenger choice. For example, some passengers who completed online check-in still had to present themselves at the counter for additional formalities. Certain airlines restrict self-service check-in: at Berlin Airport, Lufthansa pre-checks eligibility before passengers enter the queue, while Ryanair charges for airport check-in to discourage use of staffed counters.

According to the Survey:

- 70% of passengers performed online check-in.
- 23% still used traditional staffed counters (39% among passengers over 75).
- 97% of online check-in users were satisfied with the experience.

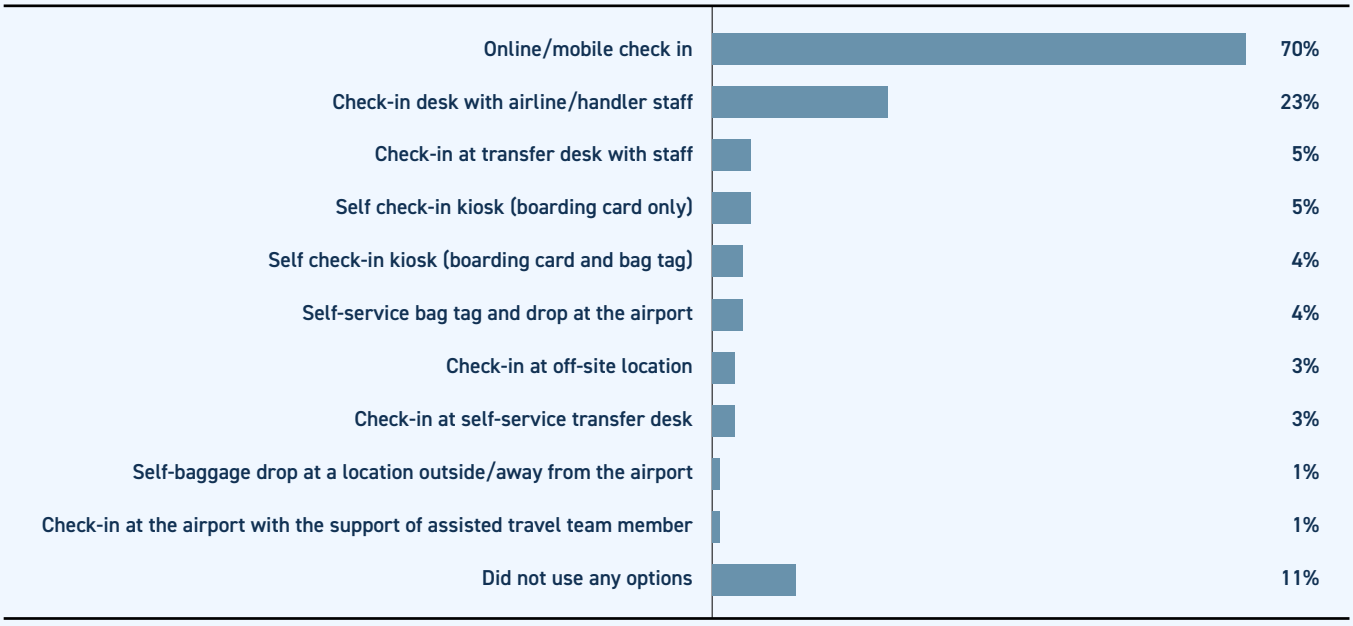
Online check-in is widely used and generally appreciated, allowing passengers to arrive at the airport "already prepared." However, some airlines require additional on-site formalities, limiting the seamlessness of the digital process.

Self-service check-in kiosks are less used, with the main difficulty arising when passengers need to check-in hold baggage. Only 4% of surveyed passengers used self-bag drop, of which 5% reported a poor experience. Staff assistance was key to positive experiences.

Bag drop processes are often perceived as complex and time-consuming, involving multiple steps such as scanning a QR code, weighing luggage, printing bag tags, and placing baggage on the belt. The presence of staff to assist and reassure passengers is essential during this high stress touchpoint.

70% have checked in online or via a mobile phone with 23% checking in at a check-in desk with airline/handler staff

Checking in for your flight, which of the following options did you use? (n=2950)



Source: ACI EUROPE Survey on the Impact of Digitalisation and Automation on the Passenger Experience

Practical Solutions

Accessibility and inclusion

- Staff should assist passengers in using self-service check-in and bag-drop options, while also familiarising them with the use of digital tools.
- Self-service kiosks should be accessible, with features like adjustable height, voice commands, text-to-speech, and touchscreen accessibility.
- Traditional check-in counters should remain available for older passengers, PRMs, families with young children, and others at risk of exclusion.

Easing the process

- Encourage online check-in and minimise airport-level constraints.
- Allow passengers to perform check-in well ahead of their travel day.
- Consider automated check-in 24 hours before departure for passengers who have not checked in online,
- Simplify airline websites to improve usability and intuitive navigation.
- Improve self-service bag-drop kiosks to make them easier and more intuitive, complemented by staff assistance.

SECURITY CONTROL

Analysis

Security control is a potentially stressful point in the journey, and digitalisation must be implemented in ways that do not compromise accessibility or comfort while complying with security requirements. The presence of staff and clear procedures remain essential to an inclusive experience.

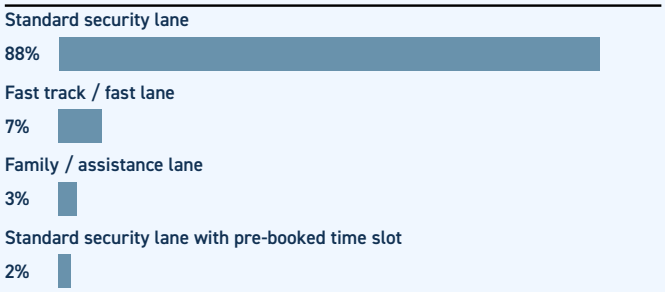
The Survey shows that:

- 88% of passengers used standard security lanes.
- 12% were assisted at e-gates (20% for over 75, 29% for under 16).
- 96% satisfaction among e-gate users; dissatisfaction often linked to lack of staff or difficulties using the technology.

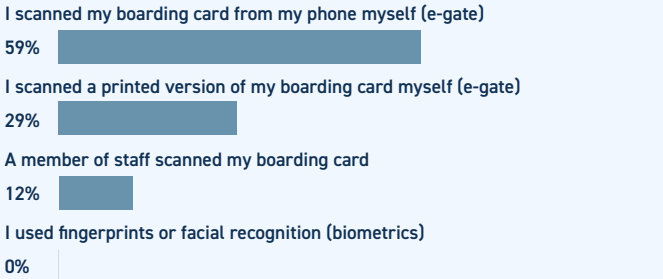
Practical Solutions

- Maintain dedicated lanes for PRMs, families, elderly, and pregnant passengers.
- Ensure staff presence at all e-gate areas for reassurance and guidance.
- Deploy advanced screening technologies to reduce intrusive checks (e.g., liquids and electronics remain in bags).

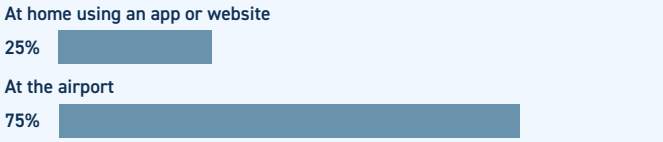
Where did you proceed through security screening? (n=2865)



How did you access the security screening area? (n=2865)



How did you register or enrol your biometric details? (n=12)



Source: ACI EUROPE Survey on the Impact of Digitalisation and Automation on the Passenger Experience

BORDER CONTROL

Analysis

Border control is a critical procedural and emotional touchpoint, as passengers seek the reassurance of smooth processing and privacy. Balancing efficiency with accessibility is vital.

Survey results:

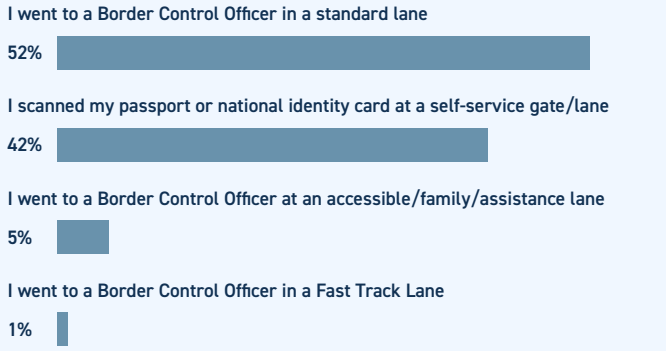
- 52% used traditional booths; 42% used Automated Border Control (ABC).
- ABC is highly rated; traditional booths report dissatisfaction due to waiting times and staff courtesy.
- Older passengers (over 75) and families benefit from dedicated accessible lanes.
- No significant data privacy concerns for ABC, as it reads information directly from passports.

Practical Solutions

- Redesign ABC gates to accommodate wheelchairs and enable multi-passenger processing (e.g., simultaneous biometric capture).
- Maintain dedicated lanes and staff support for older passengers, PRMs, and families.
- Expand ABC access to a broader range of nationalities, ensuring fair biometrics (minimising demographic differentials).
- Adapt Entry/Exit System self-service kiosks to be accessible for PRMs and compliant with the legislation in force.

52% used the standard/staffed border control lane with 42% using the self-service border control gate/lane

In border/passport control, which of the following options did you use today? (n=918)



Source: ACI EUROPE Survey on the Impact of Digitalisation and Automation on the Passenger Experience

BOARDING

Analysis

Boarding is often the culmination of all previous touchpoints, combining digital, operational, and interpersonal elements. Maintaining inclusivity and human oversight at this stage supports both efficiency and reassurance.

Survey results:

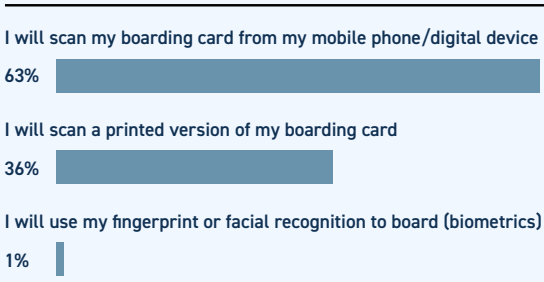
- 63% of passengers use mobile boarding passes; 36% use printed versions.
- Identity reconciliation and flow management mean human oversight remains crucial, especially for PRMs, families, and older passengers.

Practical Solutions

- Encourage biometric and digital boarding for efficiency.
- Maintain staff oversight to manage flow and provide reassurance.

63% scanned their boarding card from their mobile phone or other digital device with 36% scanned a printed version

Which of the following will you do when you are boarding the aircraft? (n=2946)



Source: ACI EUROPE Survey on the Impact of Digitalisation and Automation on the Passenger Experience

INFORMATION, WAYFINDING AND COMMUNICATION

Access to clear, inclusive, and reliable information is central to passenger confidence. Technology can help personalise information delivery while ensuring inclusivity for passengers with diverse needs.
Survey insights highlight that digital tools such as signage, FIDS, totems, and chatbots reduce stress and improve navigation. However, PRMs, elderly passengers, families, and those with hidden disabilities require additional support.

Analysis

- Information is essential for all passengers and reduces stress at key touchpoints.
- Signage, FIDS, digital totems, and floorwalkers provide guidance.
- PRMs, older passengers, families, and passengers with language or hidden disabilities need additional support.
- Digital channels (apps, QR codes, chatbots, WhatsApp, totems) offer personalisation while ensuring inclusivity.

Practical Solutions

- Provide accessible, multilingual, and simplified digital tools.
- Offer family-focused services (Family Navigation Mode, Advance Needs Registration, digital distractions).
- Include tactile wayfinding, video relay services, and indoor navigation apps for visually impaired or mobility-restricted passengers.
- Multi-channel feedback collection should be inclusive and easy to access.
- The following additional actions can support passengers with disabilities:
  - » Mandatory informative messages to passengers, provided according to "easy reading" principles, considered as an additional language of communication.
  - » Digital information totems should be accessible to different categories of disabilities.
  - » Simplified interfaces such as applications designed for easy, one-handed use with clear visuals.
  - » Multilingual access: offering multiple language options in all digital tools and communications.

Navigation solutions

- Deploy indoor navigation apps and mobile devices with voice guidance or haptic/tactile feedback to assist visually impaired passengers.
- Integrate airport beacons with Wi-Fi to provide accurate passenger location.
- Enable navigation tools to create customisable routes that avoid obstacles and prioritise accessible pathways, including lifts and ramps.
- Ensure digital maps clearly highlight all accessible facilities, such as restrooms, changing places, elevators, ramps, accessible escalators, service animal relief areas, assistance counters, and information desks.
- Support passengers with reduced mobility (PRMs) to move autonomously within the terminal.
- Provide multiple information channels (app/QR code, chatbot, WhatsApp, Signal, email, SMS, Internet, digital information totems, staffed counters) to allow passengers to choose their preferred method.
- Implement multichannel feedback tools with quick, targeted features to gather input from passengers at risk of exclusion.
- Ensure all information is delivered in a processable format (e.g., via API) so airlines, as the primary passenger contact, can integrate it seamlessly into their channels.

CONNECTIONS

Analysis

Transfers and connections are among the most stressful moments in a passenger journey due to tight timings and unfamiliar environments. Digital tools and staff support play a key role in maintaining accessibility and calm.

Practical Solutions

- Self-service transfer desks for boarding pass printing.
- Floorwalkers at key orientation points to assist passengers less confident with technology.

ARRIVALS

Analysis

The arrivals process often combines fatigue with uncertainty around passport control and baggage delivery. Ensuring smooth communication and visible support at this stage is essential to end the journey positively.

Practical Solutions

- Maintain staffed lost & found counters.
- Notify passengers of lost/delayed baggage via SMS/ WhatsApp.
- Automate claims and baggage tracking using AI and biometrics.
- Maintain staff support at vending machines for ground transportation; implement simple tap-and-go systems for ease of use.

5. CONCLUSIONS

Digitalisation and automation are no longer optional add-ons in the airport environment; they have become central drivers of transformation across all stages of the passenger journey. From check-in and security to border control, boarding, and arrivals, technology is reshaping processes, redefining the passenger experience, and enabling airports to achieve greater efficiency, resilience, and competitiveness. The evidence from the Survey confirms that a majority of passengers recognise and value these benefits – particularly when digital tools are intuitive, reliable, and supported by a visible staff presence.

However, the Survey also highlights persistent barriers that must be addressed to ensure that the digital transformation does not come at the expense of inclusivity and trust. Concerns around data privacy, accessibility, and complexity of use – combined with the risk of excluding older travellers, passengers with reduced mobility, and those with limited digital literacy – remain significant. Moreover, while many passengers welcome the speed and convenience of automated processes, they also express a clear preference for retaining the human dimension of air travel, particularly at stress points such as security, border control, and baggage claim.

For Airport Managing Bodies, this underlines the importance of adopting a balanced approach to implementation. Digitalisation should be deployed according to the principles of Universal Design, inclusivity, and accessibility, ensuring that all categories of passengers can benefit from the efficiencies and conveniences it brings. Staff must continue to be visible, trained, and empowered to guide, reassure, and support passengers – turning the "human touch" into a complement to automation rather than its substitute.

Another critical consideration is resilience. As reliance on digital systems increases, airports must anticipate potential vulnerabilities – from system failures and connectivity disruptions to device loss or power shortages on the passenger side. Robust contingency planning and alternative options are essential to maintain continuity of service and avoid disruptions that could undermine passenger trust in automation.

Finally, the success of digitalisation will depend on transparent communication and active trust-building with passengers. Clear explanations of how personal data is used and safeguarded, visible reassurances about privacy protections, and opportunities for passengers to choose their preferred channels of interaction – digital or human – are key to fostering acceptance. At the same time, airports should continue to innovate by leveraging digital tools for personalisation and real-time information, ensuring that passengers feel informed, empowered, and in control throughout their journey.

In conclusion, digitalisation and automation offer a unique opportunity to transform the European airport experience into one that is more seamless, efficient, and tailored to individual needs. Yet their long-term success will rely on airports embedding inclusivity, accessibility, and trust at the heart of this transformation. By balancing technology with human engagement, planning for resilience, and communicating openly with passengers, airports can ensure that the digital journey truly serves all travellers – enhancing satisfaction, reducing stress, and reinforcing Europe's airports as global leaders in passenger experience.

ANNEX 1: SUMMARY OF PRACTICAL RECOMMENDATIONS

TABLE 1. GENERAL RECOMMENDATIONS FOR AIRPORT MANAGING BODIES

TOPIC	AREA	RECOMMENDATIONS
PILLARS OF INCLUSION & ACCESSIBILITY	**Governance measures**	Declaration of inclusion and accessibility
		Policy of accessibility
		Accessibility function in the organisation chart
	Airport culture	Training and sensitisation on inclusivity & accessibility
	Understanding the needs and expectations of passengers	Passengers surveys on a regular basis
		Two-way mechanism to collect passenger feedback
		Multi channel feedback mechanism and collaboration between stakeholders (airlines/airports API...)
		Collaboration with Passengers with Reduced Mobility and Passengers with Disabilities' associations and persons with lived experience of disability
		Taking into account Passengers with Disabilities' needs in the pre-design, design phase and testing the facilities prior to implementation
		Design the infrastructure according to the principles of Universal Design
		Including in the tendering process the needs of Passengers with disabilities and taking into account the different categories of Disabilities
		Carrying out an accessibility assessment of infrastructure and facilities, particularly digital assets, with the support of Universal Design experts
	Inclusion	Multilingual Access: offering multiple language options in all digital tools and communications
		Cultural Awareness: providing prayer rooms, quiet zones, and culturally appropriate services in digital platforms
		Anonymous Reporting: enabling digital tools for passengers to discreetly report discrimination
		Using clear visuals and, if there is doubt, multiple visual icons in all digital tools
		Allowing gender-neutral titles, flexible family options, and diverse representation in graphical design (for example icons)
		Preferred names and gender identities in booking and digital systems
	Identifying the personas & assessing the level of confidence of passengers with technology	Carrying out surveys to assess the satisfaction in using digital/ self-service assets (ref: ACI EUROPE Survey)
		Identifying the different categories of passengers at your airport, according to their level of confidence with technology
BALANCING TECHNOLOGY WITH HUMAN TOUCH	**Staff**	Training staff to use digital options
		Deploying staff to assist passengers in using the technology
		Redefining the role of staff towards ambassadorship
DEVELOPING CONTINGENCY PLANS/ALTERNATIVE OPTIONS	**Contingency**	Developing back-up plans, alternative solutions in case of black-out

TABLE 2. SPECIFIC RECOMMENDATIONS AT TOUCHPOINTS OF THE PASSENGER JOURNEY

TOPIC/ TOUCHPOINTS	AREA	TARGETED PASSENGERS	RECOMMENDATIONS
PREPARATION OF TRAVEL	**Experiencing the airport in advance**	PRMs	Offering passengers the opportunity to experience in advance their journey (in particular for non-visible disabilities)
	Website	All	Communicating on the website videos/information on the different processes and how to use digital options
	Website	PRMs	Publishing accessible facilities on websites (adult changing room, quiet rooms etc) and their location
			Guaranteeing website accessibility and compliance with international references such as the Web Content Accessible Guidelines (WCAG) and the harmonised European Standard EN301549. Provide alternative formats
			Offering easy solutions to book PRM assistance
	Online check-in	All	Airlines should avoid sending passengers already online checked to check-in counter
			Airlines should allow passengers to perform check-in well ahead of their travel day
			Easing the check-in online on the airline website
	Communication tools	All	Communicating with passengers through their preferred channels
			Providing information to airlines in an easy processable way (for example API)
CHECK-IN	**Check-in counters**	PRMs, families	Maintaining check-in counters for some categories
		PRMs	Providing accessible check-in counters
	Self-service check-in kiosks	All	Providing staff assistance to use self-service kiosks
			Implementing accessible self-service check-in solutions
	Self-service bag drop		Intuitive hold baggage check-in
SECURITY CONTROL	**Dedicated lanes**	PRMs, families	Maintaining dedicated lanes for PRMs, families
	Staff assistance	All	Providing staff assistance at e-gate security access area
BORDER CONTROL	**Staff assistance**	All	Providing staff assistance at Automated Border Control
	Broad use	All	Enlarging the use of Automated Border Control to more citizens and to families
	Accessibility	PRMs	Making Automated Border Control accessible to wheelchair users
	Accessibility	PRMs	Making Entry-Exit System kiosks accessible
	Accessibility	All	Fair biometrics i.e., ensuring that facial recognition systems are tested for fairness across skin tones

BOARDING	**Accessibility**	PRMs	Biometrics and automated boarding gates to be accessible
			Maintaining taff due to the reconciliation process and to facilitate the embarkation of PRMs & families
INFORMATION & WAY-FINDING	**Accessibility**	PRMs	Mandatory informative messages provided according to "easy reading" principles
			Digital information totems as well as website accessibility for different categories of disabilities
			Multilingual access: offering multiple language options in all digital tools and communications
			Feedback tools: including quick, targeted feedback features to gather input from specific passenger groups who are at risk of exclusion.
			Simplified interfaces such as applications designed for easy, one-handed use with clear visuals
		Families	Family navigation mode that includes baby-friendly routes and family amenities in airport apps
			Allowing families to prebook services like free buggies, special assistance or access to priority lanes
			Digital distractions providing age-appropriate content in apps or screens for young children
CONNECTIONS	**Staff assistance**	All	Combining self check-in transfer desks with staff assistance with staffed desks
ARRIVALS	**Staff assistance**	All	Maintaining a minimum number of lost and found staffed counters
			Simple tap & pay systems for bus & train ticketing, with credit cards
			Minimum number of assistance staff to help passengers use the ground transportation ticket vending machines

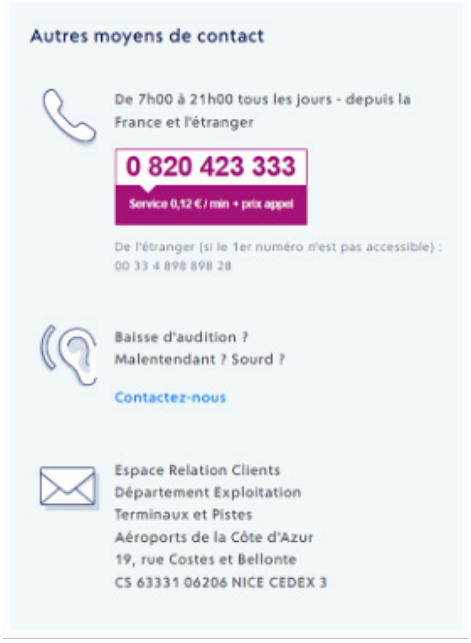
ANNEX 2: CASE STUDIES

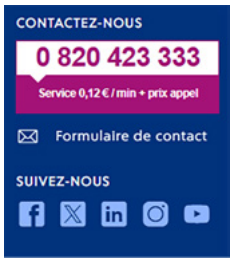
CASE STUDY

AEROPORTS DE LA COTE D'AZUR

AÉROPORTS DE LA CÔTE D'AZUR
INTERPRETATION ACCESSIBILITY FOR DEAF AND HARD-OF-HEARING PEOPLE

TOPIC	Inclusivity/accessibility. This service enables deaf or hard-of-hearing customers to contact Nice Airport's call centre directly by telephone from the device of their choice (PC, tablet, smartphone, etc.).
PERIOD OF REFERENCE	The interpretation service is available at Nice Airport call center since 2017.
GOALS	The objective is to enable deaf and hard-of-hearing persons to access airport and aeronautical information, in accordance with French Law 2016-1321.
TARGETED POPULATION	PRMs and especially for deaf and hard-of-hearing persons.
PROJECT MANAGEMENT	The project was coordinated by the Customers Relationship and Quality of Service Department.
DESCRIPTION	A phone platform has been set up, tailored to everyone's needs. By calling this phone number, passengers get in touch with operators that speak sign language or provide written transcription, in French. The service is available from 8:30 a.m. to 7:00 p.m. except on weekends (only Saturday mornings).
BENEFITS	Deaf and hard-of-hearing people get, as other passengers, access to all the information they need for their travel, according to their communication mode, thus guaranteeing their integration and inclusion.
CONTACT	**Laurence Hugon** PRM Assistance Manager Business Unit Opérations et Développement Compagnies Aéroports de la Côte d'Azur Tél : +33 (0)6 80 93 87 53 Laurence.hugon@cote-azur.aeroport.fr





CASE STUDY

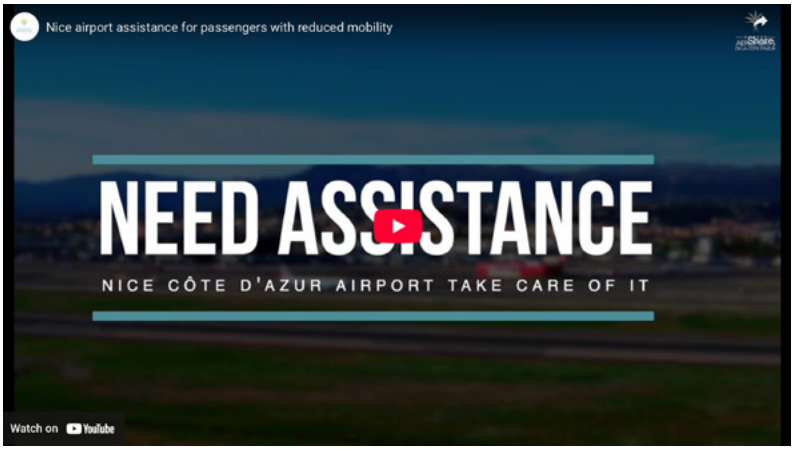
AÉROPORTS DE LA CÔTE D'AZUR: SIGNAGE AND SPECIAL LANES FOR PASSENGERS WITH REDUCED MOBILITY AT SECURITY CONTROL

TOPIC	Inclusivity/accessibility E-gates to access security, accessibility
PERIOD OF REFERENCE	The project has been deployed to support the use of already installed e-gates in the security area.
GOALS	The objective is to ease the access of Passengers with Reduced Mobility at e-gates in the security area, in order to guarantee that automation does not create additional barriers for Passengers with Reduced Mobility and Passengers with Disabilities.
TARGETED POPULATION	Passengers with Reduced Mobility and Passengers with Disabilities
PROJECT MANAGEMENT	The project was coordinated by the Customers Relationship and Quality of Service Department.
DESCRIPTION	Hostesses are present at the security checkpoint to welcome passengers and direct them. A notice is displayed at the e-gates to tell PRM passengers to inform the hostess of any need for assistance. If they do, the hostess directs passengers to the lanes specifically dedicated to PRMs.
BENEFITS	Access to the security checkpoint is easier for PRM passengers, which helps to remove the barriers to digitalisation and improve the customer experience. More generally, the presence of hostesses facilitates the passage of all passengers to the e-gates and contributes to making the journey more fluid.
CONTACT	**Marianne Pecorari** Customer Experience Manager Département Relations Clients et Qualité de Service Customers Relationships and Quality of Service Department 19, Rue Costes et Bellonte CS 63331 - 06206 NICE cedex 3 Phone : + 33 (0)4 93 21 40 11 – Mobile phone : +33 (0)6 74 88 82 71 Marianne.pecorari@cote-azur.aeroport.fr http://www.nice.aeroport.fr

CASE STUDY

AÉROPORTS DE LA CÔTE D'AZUR: **VIDEO DEDICATED TO PASSENGERS WITH REDUCED MOBILITY**

TOPIC	Inclusivity/accessibility
PERIOD OF REFERENCE	The project was implemented on the occasion of the redesign of our website's homepage.
GOALS	The objective is to provide information in advance to passengers with reduced mobility and passengers with disabilities so that they can familiarise in advance with the airport and enjoy the airport experience without stress. The aim is to inform and reassure passengers and accompanying persons and to guarantee that the airport is accessible to anyone, with or without PRM assistance requests. The video is a testimony of Nice Airport's commitment towards accessibility.
TARGETED POPULATION	Persons with reduced mobility/passengers with disabilities and their accompanying person(s).
PROJECT MANAGEMENT	The project was coordinated by the Customers Relationship and Quality of Service Department.
DESCRIPTION	The video, available on Nice Airport website, highlights how PRM assistance is provided and the services that Nice Airport offers to support its passengers. It is available in French, English and in sign language.
BENEFITS	Having the opportunity to see in advance how will happen the passenger assistance, and what will be the steps at the different touchpoints, the passenger can familiarise themselves with the airport and feel more confident on the day of their travel.
CONTACT	**Laurence Hugon** PRM Assistance Manager Business Unit Opérations et Développement Compagnies Aéroports de la Côte d'Azur Tél : +33 (0)6 80 93 87 53 Laurence.hugon@cote-azur.aeroport.fr



CASE STUDY

BERLIN AIRPORT:
FULLY AI BASED CALL CENTER

BER FLUGHAFEN BERLIN BRANDENBURG

TOPIC	24/7 high quality passenger information. How AI can enhance the passenger information: 24/7 high quality passenger information. The initiative focuses on improving passenger information. The new AI-powered call center replaces the limited 8 a.m. – 8 p.m., staffed hotline and now delivers high-quality, multilingual support – anytime, anywhere, 24/7.
PERIOD OF REFERENCE	The AI call center was launched in February 2025.
GOALS	The main purpose of the project was to provide passengers with reliable, high-quality information that is always available. Additionally, we aimed to reduce the effort required to update information by creating an easy-to-use interface, allowing different departments to manage updates independently. This ensures that new information is available to passengers without delay.
TARGETED POPULATION	Passengers and visitors of Berlin Airport
PROJECT MANAGEMENT	The project was managed by Berlin Airport managing bodies: staff members from various departments (Information & Technology, Passenger Services, Communications, and Commercial)
DESCRIPTION	• The AI call center is available 24/7 via phone. The number is published across various channels (website, app, Google, etc.) • The AI agent was set up with a local startup focusing on conversation AI (2 months from kick-off to go live) • Anonymous transcripts of every call to ensure high data quality and to train the AI agent with feedback from Berlin Airport departments. • Easy-to-use content management system accessible to multiple departments across the company, allowing independent updates of information. • No waiting time for passengers • Direct integration with Airport Operational Database (AODB) to ensure live flight information • Berlin Airport expects approximately 100,000 calls per year
BENEFITS	The former hotline did not consistently deliver high-quality service and was not available 24/7. Our goal was to provide reliable, high-quality information in multiple languages at all times. Now, various airport departments can instantly update information directly in the call center's content management system – eliminating the need for briefing documents and manual information sharing with agents. The AI-powered call center also enables us to support additional languages without hiring agents with specific language skills. The high user satisfaction rate proves that the call center has been significantly upgraded.
CONTACT	**Robert Lange**, Expert: IT Projects Robert.lange@berlin-airport.de

CASE STUDY

BERLIN AIRPORT:
INTERACTIVE MAP FOR ACCESSIBLE ROUTING

BER FLUGHAFEN BERLIN BRANDENBURG

TOPIC	Ease of wayfinding / accessible routing across the airport. BER implemented a digital airport map with positioning and routing inside the airport terminals in 2020. The map features an "avoid stairs" option and has a link to our waiting time measurement (security and passport control) as well as the elevator health check system to ensure the fastest route to the destination.
PERIOD OF REFERENCE	The map was launched in 2020 and is an ongoing project.
GOALS	The main purpose of the project was to provide an easy-to-use airport map that enhances wayfinding and allows passengers to choose accessible routes.
TARGETED POPULATION	Passengers and visitors of Berlin Airport
PROJECT MANAGEMENT	The project was managed by Berlin Airport managing bodies: staff members from various departments (Information & Technology, Passenger Services, Operations, Communications, and Commercial)
DESCRIPTION	• Implementation of the interactive map in 2020, with ongoing updates and improvements. • Positioning and routing based on Wi-Fi triangulation and Bluetooth signals. • "Avoid stairs" function to ensure accessible routing throughout the airport. • Interface with waiting time measurement and the elevator health check system to provide the fastest route using only elevators and moving walkways that are operational. • The map is available on the airport website and app. • Continuous improvement of the map by implementing new features, such as couponing. • Available in several languages. • Walking distances and time to destination are displayed.
BENEFITS	The map supports easy and accessible wayfinding at BER Airport, including accurate positioning, walking distances, and estimated travel times.
CONTACT	**Franziska Peters**, Expert: Digital Products Franziska.peters@berlin-airport.de **Falko Schwarz**, Senior Manager Passenger Experience Falko.schwarz@berlin-airport.de

CASE STUDY

CHANGI AIRPORT
AUTOMATED BORDER CONTROL SYSTEM, PART OF ICA'S NEW CLEARANCE CONCEPT (NCC)

TOPIC	Smart, automated border clearance experience for all travellers, including PRMs and families
PERIOD OF REFERENCE	• Project start: 2023 • Project phase one roll-out: 2024 • Ongoing project
GOALS	The objective is to create a seamless travel experience for all visitors while maintaining Singapore's position as a safe and welcoming gateway to the world.
TARGETED POPULATION	All travellers, including PRMs and families through dedicated, tailored lanes.
PROJECT MANAGEMENT	The project was managed by Singapore's Immigration and Checkpoints Authority (ICA), the Home Team Science and Technology Agency (HTX) and Changi Airport Group.
DESCRIPTION	Part of Singapore's digital transformation, Automated Border Control gates (ABC) will enable 95 percent of all travellers to clear immigration via automated lanes, without the need to present their passports, expecting to reduce immigration clearance time by about 40%.
BENEFITS	The main benefits are listed below: • Contactless and hygienic border clearance experience based on cutting-edge facial and iris recognition technology • No need to scan the identity document more than once (your biometrics is your identity) • Reduced waiting times and less queuing: immigration clearance time will decrease by about 40%
CONTACT	**Jerome Brunago,** Biz Dev & Sales Director Western Europe IDEMIA Travel & Transport, +33 (0)6 88 08 66 23, jerome.brugnago@idemia.com **Eugene Cheong,** Senior Manager ICA Immigration & Checkpoints Authority, Future Ops & Transformation (Passenger) Operations Division, Eugene_cheong@ica.gov.sg

CASE STUDY

ENAC:
AUTISM, TRAVELLING THROUGH THE AIRPORT AND ONBOARD

TOPIC	Accessibility/inclusivity The initiative focuses on enhancing the passenger experience of persons with Autism. All touchpoints of the entire journey (from airport to aircraft and destination) are included.
PERIOD OF REFERENCE	First launched as a pilot project on 23 November 2015 at Bari airport with the support of the Airport Management Body "Società di Gestione Aeroporti di Puglia", it was extended to all Italian airports through Assaeroporti (the Italian association of Airport Managing Bodies). In 2022, the Italian airline, ITA Airways joined the project as the first and perhaps the only airline in the world to have implemented such a program for autistic passengers. ITA Airways allows autistic people to experience a real flight simulation in a simulator at Rome Fiumicino Airport, enabling them to test in advance the feeling of flight.
GOALS	To provide advice to accompanying persons to help autistic children and adults to experience their journey with greater confidence, by allowing them to visit the airport in advance, with a procedure developed by ENAC in coordination with all the airport managing bodies. The objective is that air travel becomes more inclusive, possible, accessible, and always available for all passengers.
TARGETED POPULATION	Persons with Autism
PROJECT MANAGEMENT	ENAC, Assaeroporti, airlines (in particular ITA Airways).
DESCRIPTION	The autism protocol consists of an official standard procedure adopted and shared by all stakeholders and offers: • An early visit of the airport, dedicated assistance the day of the flight, specific communication on the website, and the guarantee that People (staff) have the sensitivity and skills to deploy the right attitude to them and make their journey as smooth and pleasant as possible, • Dedicated "waiting rooms" where autistic passengers and their families can wait for the flight in a comfortable environment decorated with furnishings and colours suitable for autistic people • A leaflet providing full information and guidance
BENEFITS	The visit day, the PRM assistance staff meet the families and tell about the airport, showing the apron and the aircraft from the window and arriving till the security control. All that happens the D-day of travel is duly explained. It is recommended to ask for assistance the travel day. Families having taken part in preliminary visits were very enthusiastic and gave positive feedback on both the visit and the travel. The visits within the autism protocol should increase in the future through additional information to raise awareness on these opportunities to travel.
CONTACT	**Mark de Laurentiis**, Protection of Passengers Rights at E.N.A.C. - Ente Nazionale per l'Aviazione Civile (Italian Civil Aviation Authority) | m.delaurentiis@enac.gov.it Hidden disabilities - ADR ASSISTANCE - Aeroporti di Roma Progetto Enac Autismo - Anche io volo

CASE STUDY

Istanbul Airport

ISTANBUL AIRPORT
DIGITAL INFORMATION KIOSK WITH SIGN LANGUAGE SERVICE AND VIDEO CALL CENTER INITIATIVE

TOPIC	Accessible communication and digital solutions for deaf passengers: digital information kiosks & video call centres
PERIOD OF REFERENCE	2021– ongoing project
GOALS	**Main Purpose** To ensure equal and independent access to information for deaf passengers who communicate exclusively through sign language, enabling them to navigate the airport environment confidently and autonomously. **1. Enhance Independence and Inclusion** Empower deaf passengers to access airport services and information autonomously, without reliance on intermediaries. Integrate visual and sign language communication tools seamlessly throughout the passenger journey to promote independent and inclusive travel experiences. **2. Eliminate Communication Barriers** Ensure that deaf passengers can communicate directly with airport representatives at any time by providing 24/7 access to assistance through deaf agents or CODA (Children of Deaf Adults) who are fluent in sign language. This approach guarantees that passengers receive timely, accurate, and empathetic support regarding their journey, services, or procedures. **3. Employment & Representation** Advance the recruitment, development, and promotion of people with disabilities across all departments – especially customer-facing and communication roles – to improve service, model inclusion, and inspire broader workforce participation.
TARGETED POPULATION	Deaf passengers, specifically users of Turkish Sign Language or International Sign Language
PROJECT MANAGEMENT	**Coordinator:** Customer Experience **Partners:** Technology providers, iGA IST Systems & iGA Terminal Operation Passenger Services
DESCRIPTION	**Digital Information Kiosks** • 23 digital information kiosks are deployed throughout the terminal to serve all passengers. • Functions include ticket scanning, gate and flight information, and on-terminal navigation assistance. • Each kiosk offers real-time visual–audio assistance with language options: Turkish, English, Chinese, and Turkish Sign Language / International Sign. • Selecting the sign language icon initiates a live call with deaf employees or CODA (Children of Deaf Adults) staff for direct sign-language support. **Video Call Center** • A 24/7 video call center, accessible via the iGA Istanbul Airport website and mobile application, provides sign-language assistance to passengers before, during, and after their airport journey – wherever they are.
BENEFITS	**Passengers** • Fewer communication barriers and faster access to information. • Greater comfort, safety, and independence throughout the journey. **Staff** • Employment of deaf employees, raising accessibility awareness across teams. • Stronger competencies in assistance, guidance, and problem resolution. • Higher motivation and engagement following İGA Academy's inclusion of sign language in the language compensation program. **Airport & Stakeholders** • Higher accessibility standards aligned with national and international best practices. • Increased customer satisfaction and loyalty. • Greater recognition and visibility at national and international levels.
PHOTOS/VIDEOS	https://www.istairport.com/en/flights/airport-guides/iga-cares-accessibility/accessibility/sign-language/?locale=en https://youtu.be/OxxluYJe8ec?si=ntqm8PGi8b_Hdqn2 https://youtu.be/oMQ1gEjuiw0?si=VWFEVeL-z6i7oPSx
CONTACT	**Hilal Kahraman**, Experience Design and Segment Management Assistant Manager Hilal.kahraman@igairport.aero

CASE STUDY

ISTANBUL AIRPORT
MY ROUTE

Istanbul Airport

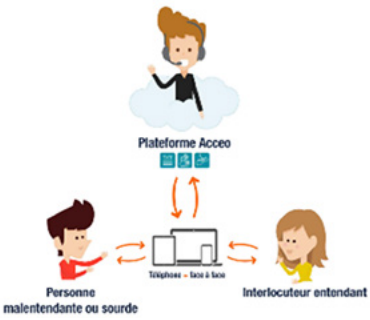
TOPIC	Wayfinding and independent travel support for visually impaired passengers – positioning, voice guidance
PERIOD OF REFERENCE	2020 – ongoing project
GOALS	**Main Purpose** Enable blind and low-vision passengers to locate themselves and navigate the terminal independently, safely, and confidently. **Objectives** 1. **Deliver Safe, Accurate Wayfinding** Provide turn-by-turn voice guidance and precise location cues from entry to gate, ensuring reliable, accessible navigation to any desired point. 2. **Enable Independent Use** Design the journey so passengers can self-locate, plan routes, and re-route without external assistance, including in complex areas (security, retail, transfers). 3. **Reduce Reliance on Staff Assistance** Minimise reliance on assistance services that can inadvertently limit passengers' freedom to use airport amenities (e.g., restaurants, retail, lounges), ensuring they can access all services independently.
TARGETED POPULATION	Passengers who are blind or visually impaired
PROJECT MANAGEMENT	**Coordinator:** Customer Experience **Partners:** Technology provider, iGA IST Systems, iGA Terminal Operation Passenger Services, blind people for testing.
DESCRIPTION	My Route is an indoor navigation and voice-guidance feature within the iGA Istanbul Airport mobile app. Blind and low-vision passengers can search any location in the terminal and, using VoiceOver/ TalkBack, receive step-by-step, turn-by-turn directions – with the option to explore nearby points of interest. When needed, passengers can connect to the 24/7 video call center for visual analysis support via the phone's camera.
BENEFITS	**Passengers** • Greater confidence and independence during wayfinding • Lower stress and fear of getting lost, thanks to reliable guidance • Improved access to airport services and amenities, enjoyed independently **Staff** • Enhanced capability to support visually-impaired passengers effectively • Higher impact in customer service and problem resolution **Airport & Stakeholders** • Innovative accessibility service integrated into the digital ecosystem • Stronger brand reputation for inclusion and universal design • Higher satisfaction among disabled passengers and improved airport accessibility performance • Increased revenue in commercial areas due to easier independent access and dwell time
PHOTOS/VIDEOS	https://youtu.be/w0pi-fAPF-s?si=i_Tyido9KcmxcfNp
CONTACT	**Hilal Kahraman**, Experience Design and Segment Management Assistant Manager Hilal.kahraman@igairport.aero

CASE STUDY

PARIS AÉROPORT

ACCEO: A MOBILE APP FOR DEAF OR HARD-OF-HEARING PEOPLE

TOPIC	Accessibility. Wayfinding and information. A solution for deaf or hard-of-hearing people for face-to-face communication. It can be used on smartphones, tablets, and computers. Several modes of communication are available: Instant Speech Transcription and Video Interpretation in French Sign Language.
PERIOD OF REFERENCE	July 2025 – now
GOALS	The objective is to communicate with deaf or hard-of-hearing people. ADP employees can call a person from ACCEO on their phone or tablet to translate their sayings in Instant Speech Transcription or in Video Interpretation in French Sign Language; the person from ACCEO will be an intermediary and will oralise the French Sign Language to the hearing people.
TARGETED POPULATION	Deaf or hard-of-hearing people
PROJECT MANAGEMENT	Accessibility Team (Operations division)
DESCRIPTION	3 ways of communication + 1 Artificial Intelligence mode which works 24/7 The passenger has the choice of the way of communication; they can also upload the app on their phone. It is used by the employees of the airport and people from Assistance. ADP performed training and awareness courses about deafness and the use of ACCEO.
BENEFITS	It helps the deaf or hard-of-hearing person to travel with more serenity and to be understood by the airport employees with respect.
CONTACT	**Laurence Bottega**, Head of Service Policy General Operations Department – Facilitation Division, Laurence.Bottega@adp.fr ; **Pauline Givernaud,** Assistance Policy Manager - Services for People with Disabilities, Pauline.Givernaud@adp.fr ; **Océane Moings**, Accessibility Expert, PWD/PRM, Oceane.Moings@adp.fr | Groupe ADP.



CASE STUDY

PARIS AÉROPORT
MESSAGES IN INTERNATIONAL SIGN LANGUAGE

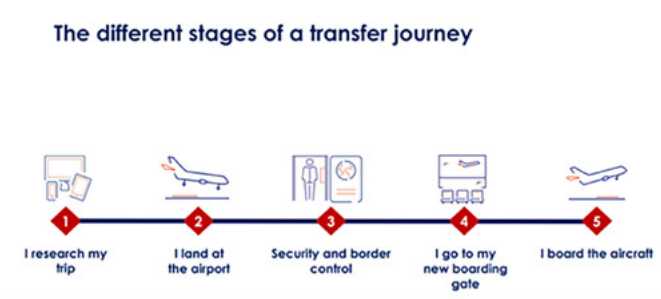
TOPIC	Accessibility. Wayfinding and information. Messages in International Sign Language broadcast in the airport.
PERIOD OF REFERENCE	From 2024 to now (with the intention to develop other messages).
GOALS	The objective is to welcome every passenger.
TARGETED POPULATION	Deaf or hard-of-hearing people.
PROJECT MANAGEMENT	Accessibility Team (Operations division)
DESCRIPTION	The messages appear in the airport to welcome our passengers: Messages in International Sign Language (ISL) appear on some of our terminal screens. We display several messages as "Have a good trip. See you soon at our airports", "Welcome to Paris-Charles de Gaulle" or "Welcome to Paris-Orly".
BENEFITS	Every passenger can feel welcomed thanks to this initiative; it raises awareness among passengers and staff.
CONTACT	**Laurence Bottega**, Head of Service Policy General Operations Department – Facilitation Division, Laurence.Bottega@adp.fr ; **Pauline Givernaud,** Assistance Policy Manager - Services for People with Disabilities, Pauline.Givernaud@adp.fr ; **Océane Moings**, Accessibility Expert, PWD/PRM, Oceane.Moings@adp.fr | Groupe ADP.

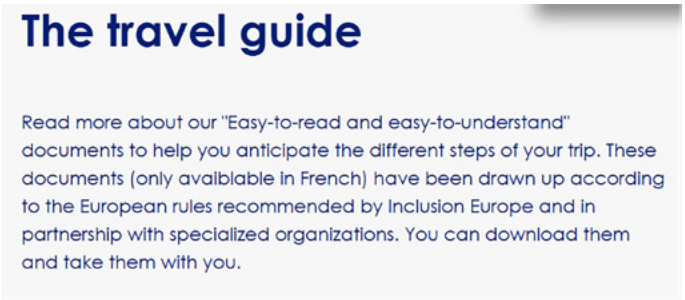
CASE STUDY

PARIS AÉROPORT

TRAVEL GUIDES "EASY-TO-READ / TO-UNDERSTAND"

TOPIC	Preparation of travel. Guides to facilitate the journey
PERIOD OF REFERENCE	Paris Aéroport worked on this topic in 2024 before the Olympics and Paralympics Games. Currently used, see ADP: link It's the first key topic of ADP's Accessibility Road Map.
GOALS	The objective is to provide detailed information on the available services so that people can better understand the stages of their journey according to their trip (departures, arrivals, connecting flights).
TARGETED POPULATION	Persons with Autism, seniors, travellers for the first time, people who cannot read.
PROJECT MANAGEMENT	Accessibility Team (Operations division)
DESCRIPTION	The guides **"Easy-to-read and easy-to-understand"** are documents specially designed to make travel easier for people with disabilities. They describe every step from the house to the airport (example for the departure: I research my trip, I arrive at the airport, I check in at the airport, Security and border control, I go to the boarding gate, I board the aircraft). These guides help reassure passengers. They involve translating standard language into language that is accessible and understandable to everyone (simplified text, pictograms, typography with adapted colours). They were validated by the associations. The simplified text can be understood by people with intellectual disabilities, as well as those who are visually impaired or people travelling for the first time who need some landmarks to navigate the airport. The guides are available on our website both in English and in French: English: Airport Assistance for PRM Travellers – Paris Aéroport French: Assistance PMR (Handicap) à l'Aéroport – Paris Aéroport List of our guides: departure, arrival, connecting flight.
BENEFITS	It helps the passengers to travel by themselves. It reduces the stress and allows anticipation. They can print them and have them during their journey.
CONTACT	**Laurence Bottega**, Head of Service Policy General Operations Department – Facilitation Division, Laurence.Bottega@adp.fr ; **Pauline Givernaud,** Assistance Policy Manager - Services for People with Disabilities, Pauline.Givernaud@adp.fr ; **Océane Moings**, Accessibility Expert, PWD/PRM, Oceane.Moings@adp.fr | Groupe ADP.



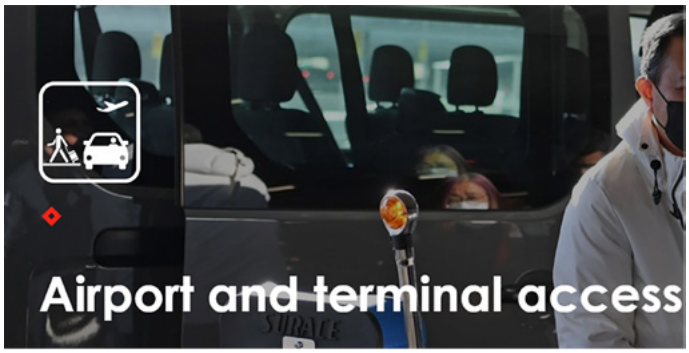


CASE STUDY

PARIS AÉROPORT

THE ORGANISATION OF THE ACCESSIBILITY PAGE OF ADP WEBSITE

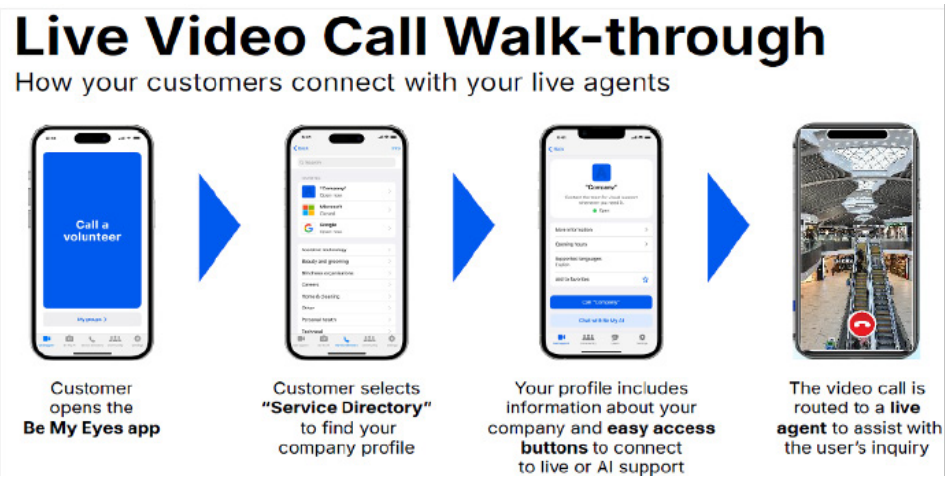
TOPIC	Preparation of travel. The organisation of the accessibility page of our website which lets appear first the autonomous services and then the Assistance Services.
PERIOD OF REFERENCE	Constantly updated since December 2019.
GOALS	The objective is to highlight the services which lets the passenger travel by themselves instead of proposing the Assistance Services first. It allows passengers to choose whether or not to use Assistance services. It offers Assistance as a choice rather than an obligation and it allows communication about the services, in order to reassure passengers.
TARGETED POPULATION	For every passenger, hidden disability, PRM...
PROJECT MANAGEMENT	Accessibility Team (Operations division)
DESCRIPTION	A highlight of the autonomous materials that can be used, for instance the self-service wheelchairs, then the Mobility Assistance Service appears. The possibility of "making your own way to the boarding gate" priority queuing, accessible services. It mentions the Priority Access, Mobility Assistance Counters, Special Needs...
BENEFITS	Helping the passengers before their journey, makes them feel reassured and gives them more autonomy.
CONTACT	**Laurence Bottega**, Head of Service Policy General Operations Department – Facilitation Division, Laurence.Bottega@adp.fr ; **Pauline Givernaud,** Assistance Policy Manager - Services for People with Disabilities, Pauline.Givernaud@adp.fr ; **Océane Moings**, Accessibility Expert, PWD/PRM, Oceane.Moings@adp.fr | Groupe ADP.



CASE STUDY

ROME FIUMICINO AIRPORT
BE MY EYES SERVICE

TOPIC	Inclusivity/accessibility. How technology and human touch can combine to enhance the passenger experience. Wayfinding and independent travel support for blind and visually impaired passengers.
PERIOD OF REFERENCE	Implemented in March 2025
GOALS	As a testament of ADR's commitment to guarantee accessibility and inclusion of all passengers, Fiumicino and Ciampino airports, the two airports managed by ADR, have achieved in 2025 the ACI Accessibility Enhancement Accreditation Level 3: the highest level of maturity in accessibility. With this specific initiative, the goal is to enable passengers to use Be My Eyes – a well-known application among people with visual impairments – so that they can be guided inside the airport by an ADR agent through a video call, allowing them to move around Fiumicino Airport independently, safely, and with confidence.
TARGETED POPULATION	Passengers who are blind or visually impaired.
PROJECT MANAGEMENT	Coordinator: Quality & Customer Experience Partner: Danish company «Be My Eyes».
DESCRIPTION	The agreement between Aeroporti di Roma and Be My Eyes has included the integration of the Service Connect™ platform, a feature accessible directly through the Be My Eyes app. Thanks to this integration, passengers with visual impairments can benefit from a personalised assistance service provided by dedicated ADR staff – rather than volunteers, as in the standard use of the app – at any time during their journey through Fiumicino Airport. Passengers can activate, directly, a video call with an ADR information agent who provides remote guidance to the passenger, through a camera on the passengers' smartphone, guiding him physically to his point of interest.
BENEFITS	Blind and visually impaired passengers can orientate at Fiumicino Airport independently, being guided by an ADR agent from remote, which provides them reassurance as, in this initiative, there is human touch combined with technology. Passengers can reach their point of interest and enjoy the airport services. The airport's reputation for being committed to guaranteeing inclusion and accessibility to its passengers is reinforced.
CONTACT	**Graziella Farfaglia**, Aeroporti di Roma, External Affairs, Sustainability & Destination Management Sustainability graziella.farfaglia@adr.it **Sara Lichinchi**, Aeroporti di Roma, Project Manager Quality & Customer Experience sara.lichinchi@adr.it



CASE STUDY

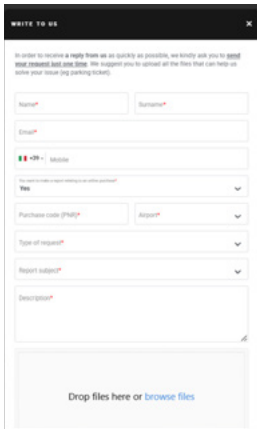
ROME FIUMICINO AIRPORT
GOODMAPS INDOOR NAVIGATION

TOPIC	Wayfinding & accessibility.
PERIOD OF REFERENCE	Following GoodMaps' selection in the Airports for Innovation (A4I) contest under the 'Seamless Travel Experience' category, GoodMaps is developing a pilot project with Aeroporti di Roma (ADR) at Fiumicino Airport's Terminal 1. The initiative, carried out within the airport's Innovation Hub, spans nearly all entire landside and airside areas for both arrivals and departures, providing a comprehensive testing environment. The proof of concept began in July 2025 and will continue through March 2026, demonstrating how advanced digital navigation and positioning technologies can enhance the passenger journey and create a more inclusive, seamless travel experience.
GOALS	The objective is to deliver accurate, accessible navigation for every traveller, tailored to their needs, in an airport environment where signage may be confusing, GPS may be unreliable indoors and passengers may feel overwhelmed.
TARGETED POPULATION	• International visitors facing language barriers • Families traveling with children or extra luggage • Older adults seeking reassurance while traveling • Passengers requiring step-free or accessible routes • Travellers who are blind or have low vision or are deaf or hard-of-hearing • Anyone who finds travel anxiety-inducing
PROJECT MANAGEMENT	Aeroporti di Roma (ADR) & GoodMaps, working at Rome Fiumicino Innovation Hub in Terminal 1 with ADR Innovation team.
DESCRIPTION	The initiative uses the GoodMaps' app and is currently tested as a proof of concept at Rome Fiumicino Airport's Terminal 1, within the Schengen area. The pilot zone has been mapped in high detail using advanced LiDAR scanning. After downloading the app – available for iOS or Android – passengers receive guidance through spoken directions, text commands, gentle vibrations or augmented reality arrows. Directions can be provided in the user's own language, with options for step-free routes and compatibility with screen readers. The app determines the passenger's location and guides them, step-by-step, with a precision of up to 30 centimetres. All information must be regularly updated.
BENEFITS	Using a familiar smartphone-based interface, passengers who need assistance can preview their airport journey in advance, gaining confidence and peace of mind before traveling. Real-time positioning allows them to know their exact location, enhancing spatial awareness, autonomy, and safety throughout their trip. This approach makes wayfinding clearer and more intuitive, fostering a more inclusive and accessible travel experience for passengers with disabilities.
PHOTOS/VIDEOS	LiDAR mapping process video User route demonstration videos
CONTACT	**Giovanni Gennaro**, Head of Innovation, giovanni.gennaro@adr.it **Anna Repici**, Innovation Hub Assistant, Aeroporti di Roma, anna.repici@adr.it **Neil Barnfather**, CCO, GoodMaps, neil.barnfather@goodmaps.com

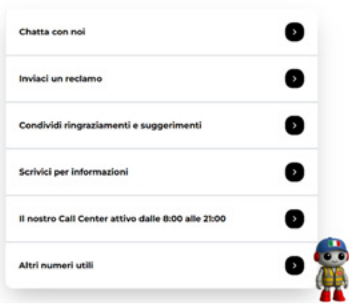
CASE STUDY

SEA MILAN AIRPORTS
AI INTEGRATION FOR CUSTOMER CARE

TOPIC	During a period of rising passenger volumes and especially the rapid growth of the e-commerce channel, we've leveraged AI to maintain a high standard of digital customer service, demonstrating how digitalisation can transform and enhance the customer experience.
PERIOD OF REFERENCE	Following a proof of concept that allowed us to test the new functionality, the project has been online since May 2025 and is still active.
GOALS	The project aims to enhance efficiency and maintain high service standards in managing the increasing volume of customer requests received. These requests relate to the Milan Airports Shop eCommerce platform, which provides travel services such as parking at Linate, Malpensa, and Bergamo, VIP lounges, Fast Track, and baggage wrapping. The initiative addresses rising demand resulting from passenger growth and greater adoption of online booking.
TARGETED POPULATION	The initiative has two key targets. Externally, it serves passengers who purchase services via the Milan Airports Shop and seek support. Internally, it aims to equip the Customer Care team with effective tools to enhance performance, optimise processes, and better manage their workload.
PROJECT MANAGEMENT	The project was driven by close collaboration between the Digital Channels and ICT teams, who collected insights and feedback from Customer Care with the support of the Innovation unit.
DESCRIPTION	Requests for information or support related to products and services essential for travel are submitted via the eCommerce website Milan Airports Shop. These are automatically routed to SEA's Customer Relationship Management (CRM) system, where a dedicated dashboard supports efficient management by the team. To handle a high volume of requests (ranging from 1,000 to 1,500 per month), an AI-powered solution was integrated into the CRM to pre-screen incoming messages. The AI analyses and enriches each request using four key parameters: 1. Topic classification (across about 30 predefined categories). Request clustering has become a central feature, enabling proactive task allocation and more precise interventions. 2. Short summary that also provides automatic translation, enabling multilingual support. 3. Sentiment analysis (positive, neutral, or negative). 4. Priority levels are assigned based on flight dates and customisations tailored to the specific needs of our business. This structured data allows for faster response times, better workload distribution among agents, and more targeted handling of requests.
BENEFITS	The main benefits are listed below: • **Reduction in processing time** of requests • **Focus of operators** on value-added activities and critical assistance • **Automatic routing** of passengers' requests to the dedicated team based on topics • **Real-time responses** and reduced waiting times in case of urgent matters (change of flight schedule or entry errors) • **Insights** derived from the data analysis have contributed to continuous improvements in the eCommerce experience, helping identify and address user pain points during navigation.
CONTACT	**Arrigo Santini**, Head of Digital Channels & Customer Care, arrigo.santini@seamilano.eu



ECCO TUTTI I NOSTRI CANALI, PER CONTATTARCI O RICEVERE INFORMAZIONI



In the CRM, four columns have been added with information provided by the AI to support customer care agents in responding more effectively.

CASE STUDY

SEA MILAN AIRPORTS
DIGITAL QUEUE

TOPIC	How technology can enhance the passenger experience at security control
PERIOD OF REFERENCE	Linate (LIN): 2024 (Phase 1) - June 2025 (Phase 2) Malpensa (MXP), Terminal 2: September 2025 - March 2026
GOALS	The objectives are to: • minimize waiting times and walking distances by dynamically guiding passengers to the most efficient security lanes. • optimize machines load and avoid bottlenecks using real-time data. • support airport staff with live monitoring tools and reduce the presence of facilitators. • improve the overall passenger experience.
TARGETED POPULATION	All passengers departing from Linate & Malpensa airports (Terminal 2).
PROJECT MANAGEMENT	The project was managed by the following units: Innovation, Maintenance, Operations, Information and Communication Technology, Planning and Control, Supply Chain.
DESCRIPTION	**Phase 1 – initial implementation** • Upon reaching the end of the queue (snake) of security filters, passengers are guided by a monitor that displays the most efficient security checkpoint to proceed to. • The core of the system is a proprietary algorithm that collects data from multiple sensors installed throughout the security area. This algorithm analyses real-time crowd density and automatically directs passengers to the least crowded and fastest checkpoint, improving flow and reducing waiting times. **Phase 2 - enhancements introduced in June 2025** • Installation of automated gates to adjust the queue layout based on the number of people in the area. During low traffic periods, these gates shorten the walking distance to the security lines, making the process quicker and more efficient. • Proximity sensors were installed at each undressing station (where passengers prepare for screening). These sensors allow the system to monitor the status of each sub-segment of the security lines, providing valuable data to the operations team for real-time management and optimisation.
BENEFITS	The main benefits are listed below: • Potential reduction of 16 hours per day in staff facilitation at security checkpoints, without compromising passenger service quality. • 6% potential increase in queue management system. • 12% improvement in line occupancy balancing, ensuring a more even distribution across security lanes.
CONTACT	**Maddalena Spreafico**, Innovation Manager, maddalena.spreafico@seamilano.eu

CASE STUDY

SEA MILAN AIRPORTS

SMART CHECK-IN/SELF-BAG DROPS AT MILAN MALPENSA, TERMINAL 2

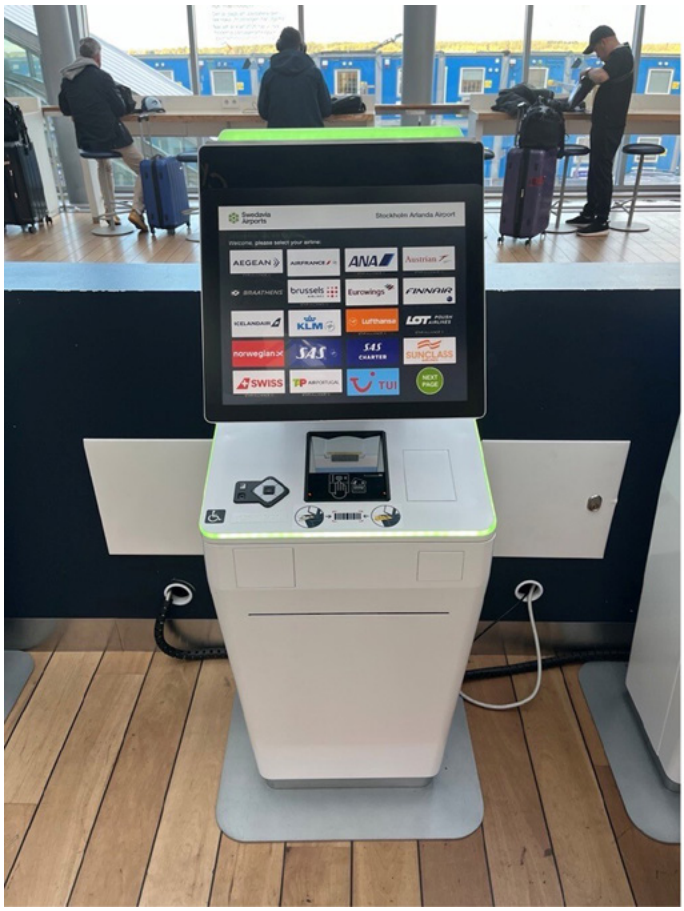
TOPIC	How digitalisation can enhance the customer experience through smart check–in.
PERIOD OF REFERENCE	From 2023.
GOALS	The objective is to provide a smoother, faster, and more autonomous check-in process.
TARGETED POPULATION	All EasyJet passengers departing from Malpensa (MXP) Terminal 2.
PROJECT MANAGEMENT	The project was managed by: • Information, Communication & Technology, Infrastructure, Maintenance Operations, Supply Chain • EasyJet • Technology vendor (SITA IPS) • Cloud services provider (AWS) • Handlers
DESCRIPTION	The self-bag drop system at Milan Malpensa Terminal 2 is one step and fully automated: passengers scan their boarding pass at the kiosk, receive a baggage tag to apply themselves, and place their baggage on the integrated scale. The system checks the weight and dimensions and, if everything is correct, the baggage is automatically sent to the BHS. The process is guided by visual and intuitive instructions, requires no direct assistance, and provides a fast and autonomous experience. Between 2024 and 2025, this system recorded a significant improvement in passenger satisfaction. This result was made possible by a series of coordinated interventions: • **Dedicated facilitators:** In the initial phase, SEA requested EasyJet a ratio of 1 facilitator for every 4 kiosks. Their presence was essential for supporting customers in the process. Now, the optimal ratio for the specific configuration in T2 is 1 facilitator for every 5 kiosks. Plus, there is a host that manages the queue and balances the load between kiosks. • **Dynamic configuration:** The number of open kiosks is dynamically adjusted according to the passengers' flow with strategic closure of the most remote kiosks during low traffic hours to ensure the optimal monitoring of central ones. • **Technical adjustments:** Some issues related to label reading and baggage positioning were resolved, making some hardware and software changes to the readers and arches. • **Communication strategy:** EasyJet realised video tutorials and SEA created graphics on the kiosks to guide passengers in the self-check-in process.
BENEFITS	The main benefits are listed below: • **Reduced waiting times:** faster processing significantly reduced waiting time. • **Better staff allocation:** fewer resources required compared to manual check-in. Staff can supervise multiple kiosks simultaneously and focus on passengers needing assistance. • **Higher throughput:** more passengers can be processed in the same amount of time, increasing overall throughput. • **Higher customer satisfaction:** there has been an increase in passenger satisfaction due to the acceleration and simplification of the check-in process.
CONTACT	**Rebecca Mangano**, Terminal Manager, rebecca.mangano@seamilano.eu

CASE STUDY

STOCKHOLM ARLANDA AIRPORT: **ACCESSIBLE SELF-SERVICE CHECK-IN KIOSKS**

Swedavia Airports

TOPIC	Accessibility for PRMs
PERIOD OF REFERENCE	Ongoing project
GOALS	To make technology and self-service easier and more inclusive for PRMs when they need to check-in at our airport.
TARGETED POPULATION	PRMs
PROJECT MANAGEMENT	Process management at Arlanda Airport, PRM team
DESCRIPTION	The airport is equipped with self-service kiosks adapted for PRM in terms of height and also equipped with hearing loop functionality.
BENEFITS	PRMs can use autonomously the self-service check-in kiosk that issues the boarding card. Staff are present in case passengers need help.
PHOTOS/VIDEO	Swedavia's website provides all instructions for passengers to make them travel ready, according to their needs. Please consult the following links where you will find information on how PRM assistance works, in particular through a video and frequently asked questions in particular the "6 tips for you who's travelling". For PRM: Special assistance | Stockholm Arlanda Airport Link to the video: Assistance service – this is how it works For all passengers: Frequently asked questions | Stockholm Arlanda Airport
CONTACT	**Magdalena Anerud**, Market Analyst at Swedavia, Magdalena.anerud@swedavia.se

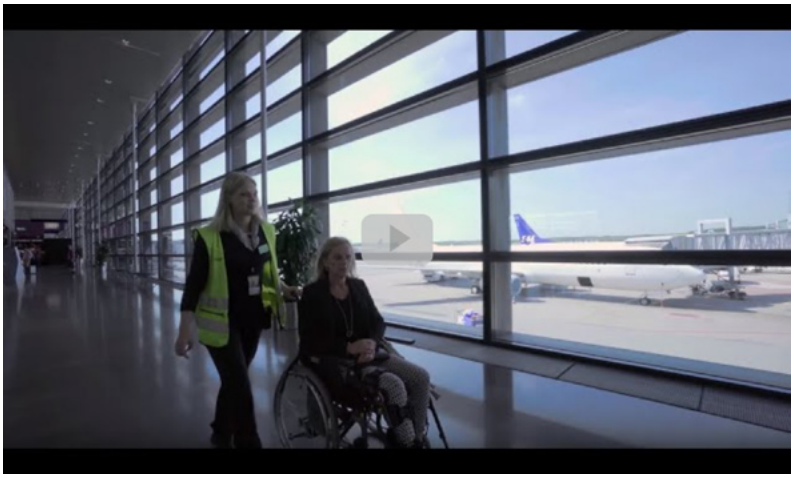


CASE STUDY

STOCKHOLM ARLANDA AIRPORT: **PREPARATION BEFORE THE JOURNEY**

Swedavia Airports

TOPIC	Inclusivity for PRMs and information in advance to all passengers so that they can be prepared and enjoy the experience with confidence.
PERIOD OF REFERENCE	Ongoing project
GOALS	The objective is to make it easier and less stressful for passengers, in particular for PRMs to travel from our airport. If they are well prepared, they should be calmer and more secure at the airport.
TARGETED POPULATION	All passengers, with a focus on PRMs.
PROJECT MANAGEMENT	Process management at Arlanda Airport, PRM team
DESCRIPTION	Preparations before the journey – we provide videos showing the process for PRM, from arrival at the airport to boarding the aircraft. We also offer the possibility of a pre-visit before the journey if desired. Tips are provided to all passengers, through the website.
BENEFITS	Benefits for PRM passengers: they are better prepared when arriving at the airport for their trip. It also benefits airport staff as PRM passengers are more prepared and calmer. The benefits are also for passengers in general who, having information in advance, can feel more confident and enjoy the travel experience.
PHOTOS/VIDEO	Swedavia's website provides all instructions for passengers to make them travel ready, according to their needs. Please consult the following links where you will find information on how PRM assistance works, in particular through a video and frequently asked questions in particular the "6 tips for you who's travelling". For PRM: Special assistance | Stockholm Arlanda Airport Link to the video: Assistance service – this is how it works For all passengers: Frequently asked questions | Stockholm Arlanda Airport
CONTACT	**Magdalena Anerud**, Market Analyst at Swedavia, Magdalena.anerud@swedavia.se



CASE STUDY

STOCKHOLM ARLANDA AIRPORT: **SEPARATED SECURITY SCREENING FOR PASSENGERS WITH REDUCED MOBILITY**

TOPIC	Accessibility for PRMs
PERIOD OF REFERENCE	Ongoing project
GOALS	The objective is to make it easier, calmer and less stressful for our PRM passengers to go through security screening.
TARGETED POPULATION	Passengers with Reduced Mobility (PRMs)
PROJECT MANAGEMENT	Process management at Arlanda Airport, PRM team
DESCRIPTION	Security screening – we provide access to a completely separate security control dedicated exclusively to assisted PRM.
BENEFITS	Benefits the PRM passengers as security control becomes less stressful.
CONTACT	**Magdalena Anerud**, Market Analyst at Swedavia, Magdalena.anerud@swedavia.se

CASE STUDY

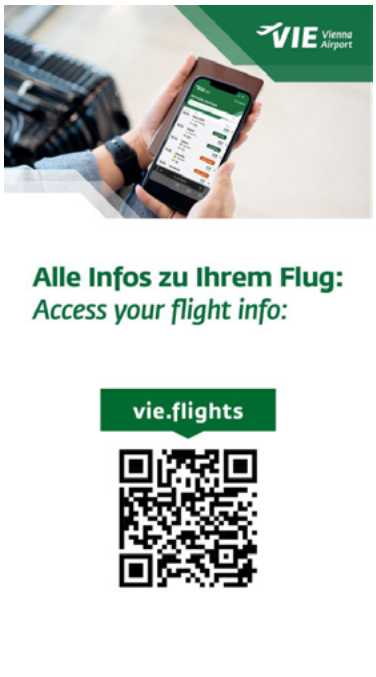
VIENNA AIRPORT
AIRA APPLICATION

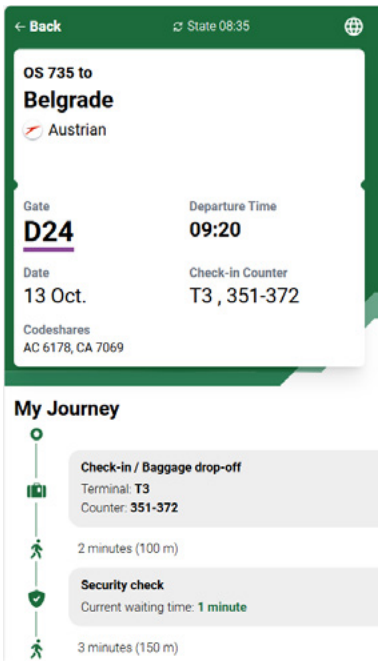
TOPIC	Accessibility
PERIOD OF REFERENCE	The Aira app has been implemented at Vienna Airport in August 2023, and has been available to passengers ever since. Vienna Airport was the first airport in Europe to introduce this app.
GOALS	The goal of the Aira app at Vienna Airport is to provide a tool for passengers with visual impairments that enables them to navigate the airport independently.
TARGETED POPULATION	Passengers with visual impairments
PROJECT MANAGEMENT	Aira & Vienna Airport
DESCRIPTION	By starting a video call though the Aira app, passengers with visual impairments are connected to trained human agents. The Aira agents act as visual interpreters and guide passengers through the Airport – thus enabling them to navigate independently without the need for a mobility service. The Aira app is free of charge for passengers at Vienna Airport – the free offer is automatically applied for the entire location, no discount code needed.
BENEFITS	Aira provides increased independence for passengers with visual impairments.
CONTACT	**Pia Matkovits, MA,** Passenger Experience & Infrastructure Management, Vienna Airport p.matkovits@viennaairport.com

CASE STUDY

VIENNA AIRPORT
VIE.FLIGHTS

TOPIC	Digitalisation/Seamless Travel This tool aims to provide an online version of Flight Information Display System (FIDS) for mobile devices.
PERIOD OF REFERENCE	VIE.flights was first introduced in June 2024 for departures and expanded in June 2025 to include arrivals as well as notifications via WhatsApp. VIE.flights is an ongoing project that is being improved and expanded on an annual basis.
GOALS	VIE.flights was introduced to provide a mobile FIDS for passengers without the need for downloading an app. The goal was to provide all the information of a FIDS screen and proactively inform passengers about updates on their flights – to completely eliminate the need to check on FIDS screens repeatedly. Information is a key tool for providing a stress-free and relaxed experience.
TARGETED POPULATION	Passengers at the airport in general, no specific subgroups
PROJECT MANAGEMENT	Vienna Airport
DESCRIPTION	All FIDS screens display a QR code and link which enables passengers to access the VIE.flights site – a mobile website. There, passengers can search their flight and get information on their flight. In addition to the information displayed on FIDS screens, users are also shown an itinerary including live waiting times at security check and passport control, as well as walking distances in meters and minutes between their touchpoints. Just like FIDS, VIE.flights always displays the latest flight status by automatically refreshing the information every minute. Passengers can also subscribe to flight updates via push notifications and WhatsApp. Furthermore, passengers with visual impairments can use the assistive technology of their mobile devices to access flight information in a different format than on a FIDS screen.
BENEFITS	By enabling passengers to access flight information from their mobile devices, Vienna Airport is facilitating a more comfortable and relaxed experience for passengers. Moreover, proactively informing passengers about status changes reduces stress and uncertainties from a lack of information. For passengers with visual impairments, VIE.flights is more accessible than a FIDS screen.
CONTACT	**Pia Matkovits, MA,** Passenger Experience & Infrastructure Management, Vienna Airport p.matkovits@viennaairport.com





AIRPORTS COUNCIL INTERNATIONAL

ACI EUROPE is the European region of Airports Council International (ACI), the only professional association of airport operators.

ACI EUROPE (Airports Council International) represents over 600 airports in 55 countries. Our members facilitate over 95% of commercial air traffic in Europe. Air transport supports 14 million jobs, generating €851 billion in European economic activity (5% of GDP). In response to the Climate Emergency, in June 2019 our members committed to achieving Net Zero carbon emissions for operations under their control by 2050, without offsetting.

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EVERY FLIGHT BEGINS AT THE AIRPORT.