

## **BIOMETRIC TECHNOLOGIES AT AIRPORTS**

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*An overview of modern biometric technologies implemented in airports around the world. Determination of advantages and disadvantages of using human biometric data for border control. Comparison of service quality before and after the introduction of biometrics. Identification of risks and security guarantees.*

Development of airports is closely linked to digital technologies, which are used to improve customer service and speed up processes. One of the most interesting technology is biometrics. That is the system of citizens recognition by biological and behavioral characteristics of person. Biometrics include fingerprints, DNA, retina, face, voice. Different tools, devices, storage mechanisms are used to read data, each with different implications [1]. The use of biometrics at airports will significantly increase the level of security of both passengers and airlines, ensure the security and reliability of border control.

Any biometric characteristics can be used in human recognition if they have the following factors:

1. universality - a characteristic common to all people;
2. difference - a characteristic that has a unique prove in a single person;
3. constancy - the characteristic is invariable during life, or changes insignificantly;
4. collectability - the characteristic can be quantified.

The main benefits for passengers and airlines are the acceleration of the boarding process. For example, the use of SITA's biometric solution at Istanbul Airport has reduced the amount of time spent on boarding by 30% [2]. Another example is Beijing Capital Airport, where SITA Smart Path helps check in more than 400 passengers in less than 20 minutes. During a pandemic, the advantage is to reduce contact between airport staff and passengers, which increases security and reduces the number of infections. There are signs that the pandemic may be advancing biometric acceptance. In its recently released 2021 passenger survey, the International Air

Transport Association found that 73 percent of passengers are willing to share their biometric data to improve airport processes, up from 46 percent in 2019 [3].

Resulting in the analyzed benefits of biometrics we can highlight the following:

- we can choose between different options: face, iris, fingerprint, face recognition even works with PPE masks;
- continuous passenger stream minimizes queues and thus helps to eliminate infection risks;
- your face becomes your ticket à minimizes physical interactions with potentially contaminated surfaces such as self-service equipment;
- less personal contact between airport staff and passengers thanks to self-service solutions;
- helps identify security gaps and reacting immediately to stricter safety standards.

Let's consider how biometric technologies affect processes at airports. The first stage is before arriving at the airport. Many airports use mobile check-in. Passengers scan their faces with their own smartphones, which allows them to register online and save tickets on their phones. In addition, passengers are assigned biometric markers that are tied to their suitcases. This facilitates the process of transferring suitcases because there is no need for labels. At the airport, electronic tickets are used to authenticate the identity of the passenger during each check-in at the airport.

The second stage is at the airport. The main biometric technology at this stage is eGates, which compares the passport and the passenger's face for identification. In addition, biometric data facilitates the process of identity verification during travel at the airport.

The third stage is after the flight. As personal information is provided on displays at the airport, bags can be picked up with an individual "token". These speeds up the boarding process and reduces queues at the airport, which significantly improves the quality of passenger service.

The images below are proof that modern boarding methods significantly reduce contact between staff and passengers, as well as reduce the number of queues, which speeds up the process.

## Border control

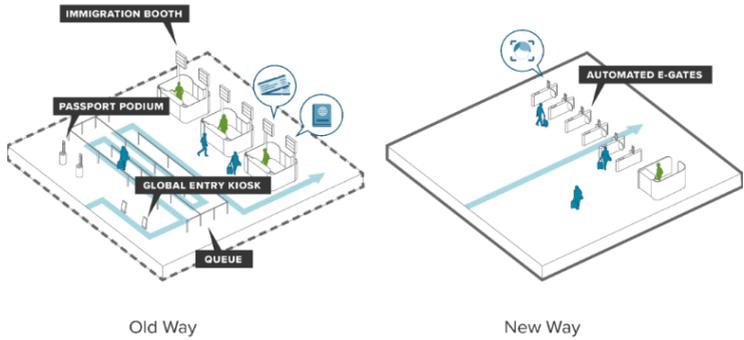


Figure 1. Comparison of old and new technologies of border control [1]

## Check-in

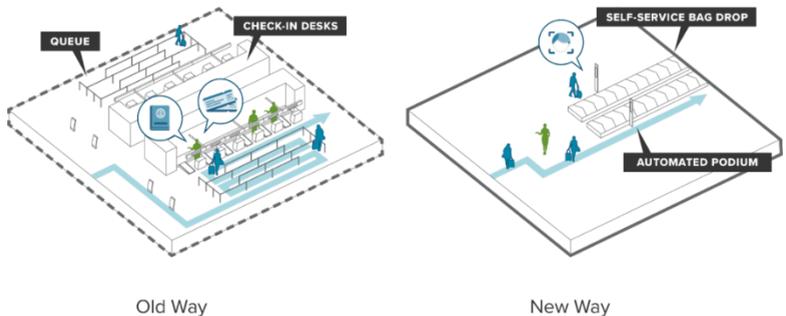


Figure 2. Comparison of old and new check-in technologies [1]

Currently, a large number of companies are working on the introduction of biometric technologies, one of them is SITA. It is an international company that provides IT and telecommunications services in the field of air transport. SITA recently signed an agreement with NEC Corporation and Star Alliance which allow passengers to use their own biometric data to identify participants at

airports. SITA's common infrastructure for the SITA biometric system is already available at more than 460 airports around the world [2].

Border officers typically have 12 seconds to decide whether the traveller is allowed to cross the border [4]. Such time limitations emphasise the need for automated processing to facilitate the clearance of passengers while also maintaining high-security levels. The majority of current airport security processes are based on biographic measures involving matching an individual's passport information. The advanced passenger information received by CBP (Customs and Border Protection) is checked against lists including no-fly lists, active wants, terrorist screening database and others.

To further strengthen security measures, incorporating biometrics alongside biographic measures can provide an advanced level of security that is both faster and efficient. Biometrics involve capturing an identifier of the passenger and matching it against a database to verify identity, including many biographic elements.

It can be concluded that the use of human biometric data for control reduces queues and speeds up the process of border control. In addition, it reduces the risk of infection during a pandemic, as it reduces the number of contacts between passengers and airport staff, and between passengers themselves. However, during the use of these technologies, certain problems have been identified, such as facial recognition. The low match rate was the result of several factors, both user and system related.

### **References:**

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