

Airport ImprovementTM

**New Centralized
Deicing Facility
Keeps Passengers
and Packages Moving
at Memphis Int'l**

AIRPORT STORIES INSIDE: AUS | BUF | DEN | ELP | FLL | GSP | MEM | PHL | SEA | SMF | YWG | YYZ

**Snow Ops Team at Buffalo Int'l
Tended to Pavement *and* People
During Brutal Christmas Blizzard**



Philadelphia Int'l Installs Biometric Facial Recognition at 25 Gates

BY KRISTIN V. SHAW



While biometrics initiatives had already emerged in the 1990s, the COVID-19 pandemic spurred more passengers to want additional low-touch and touch-free options. Philadelphia International Airport (PHL) took this to heart and commissioned facial recognition technology at 25 boarding gates. It all started just before the COVID crisis began, kicking off a comprehensive test run of three different systems.

It has been nearly three decades since the Illegal Immigration Reform and Immigrant Responsibility Act of 1996 mandated the development of an automated entry-exit system that would collect records of arrivals and departures of foreign nationals at U.S. airports. The terrorist attacks of September 2001 spurred a concentration on biometric technology and a stronger connection to certain law enforcement databases. Since then, the U.S. Customs and Border Protection (CBP) says it has processed more than 200 million travelers using biometric facial comparison technology. PHL is adding to that number with its 25 gates in terminals A-East and A-West and is ramping up for even more.

"Bake-Off" Style Trial

Starting in December 2019, PHL launched 45-day pilot projects with three providers—VeriScan, NEC, and SITA—to get a feel for how

the technology would work on site.

While the global health crisis triggered a pause for many airport projects early in 2020, the PHL team took advantage of the time to complete more research. With input from Faith Group, a St. Louis-based consulting firm that has provided numerous technical and security services to PHL over the past decade, a request for proposal document was created by May 2020.

PHL Chief Information Officer Allen Mehta found working with the outside consulting firm to be especially beneficial because he joined the airport's management team in September 2019 with a wealth of technology experience but no aviation industry experience.

"Having a subject matter expert to guide us through the steps really made a difference and helped us think through unique solutions," says Mehta. "Your brain could pop if you had to look at every single thing. Faith Group has been very helpful in that perspective."

After a full year navigating delays and wading through vendor feedback from the pilot programs, the airport released its request for proposals. Mehta notes that technologies have already improved since the project team first evaluated options in the initial pilots. In particular, the quality of captured images and the match ratios were not as strong as they



FACTS&FIGURES

Project: Biometric Facial Recognition System

Location: Philadelphia Int'l Airport

Key Components/Technology: Self-service FacePod kiosks

Project Scope: 50 self-service kiosks at 25 gates in Terminal A East & West

Cost: \$4 million

Timeline: Pilot program kicked off in 2019; request for proposals written in 2020 & released in 2021; contract awarded Oct. 2022; installation began in Jan. 2023

Biometrics Software: SITA/NEC

Facial Recognition System: i:Delight, from NEC

Self-Service Kiosks: FacePod, from NEC

Design Consultant: Faith Group

Project Manager/Construction Manager: Arora Engineers LLC

Key Goals/Benefits: Meeting CBP mandates; improving passenger boarding time

are today. One important factor the PHL team discovered was that overhead lighting makes a big difference: It has to be bright enough to capture clear images.

"We learned some good lessons throughout the process," says Kalpesh Trivedi, project manager with Arora Engineers. "The pause [starting in 2020] actually helped us prepare better."

Choosing Experience Over Price

Mehta and his team didn't get to visit other airports to see similar biometrics systems at work due to pandemic-related travel restrictions during the early phases of the project. However, he was able to leverage the team's wide industry network to gather more information.

"I'd call people from airports using facial recognition to see how it was going," Mehta remembers. "We had the luxury of seeing it only recently and got a quick demo at LAX."

In October 2022, PHL chose a partnership of SITA and NEC to supply the software and hardware components for its facial recognition system. Mulhern Electric Company, a local firm with a long history at PHL, led the project.

"SITA and NEC had both the experience and the ability to integrate into the common-use systems we already operate at the airport," Mehta says. "In that regard, it was a no-brainer. We didn't go just for lowest cost; we wanted experience."

NEC, one of the largest biometric solutions providers in world, has been in the biometrics game for more than 20 years, says Vice President of Advanced Recognition Systems Jason Van Sice. In 2009, NEC was recognized with top marks for its still image face recognition technology in benchmark testing of biometrics technology conducted by the U.S. National Institute of Standards and Technology. Two key metrics for the company's high ranking are a low false acceptance rate, or what NEC explains as "the percentage of imposter users identified as genuine users" and a low false rejection rate, which is the inverse measure. NEC achieved 0.1% for the first category and 2% to 4% for the second, surpassing its rivals in the marketplace.

Van Sice notes that Japan-based NEC operates in disparate industries and locations around the world, and working closely with an aviation specialist like SITA makes sense.

"We are very careful to focus on what we do well, which is why we partner with SITA," he explains. "NEC is providing thought leadership and expertise [along with the hardware]."



JASON VAN SICE

How It Works

NEC calls its facial recognition system I:Delight. Employing tall, slender devices with a vertical range of about 3 to 7 feet, PHL's biometrics hardware can be mounted to counters or on movable poles for more flexibility.

About 72 hours before a flight, airlines are required to send CBP manifest data, including the identities of passengers and crew, as well as details about planned cargo. CBP starts its vetting process for the information it has in advance, and passengers verify their passport information when they check in for the flight.

At the airport, the gate agent announces that passengers will be boarding a biometric flight, and fliers step up to the camera. Their photos are sent to CBP over high-speed internet connections, and CBP matches each photo to its gallery of verified passports, visa and available photos already on file. In less than two seconds, CBP replies to the biometric system with a unique identifier, which confirms the match. If the passenger is good to go, the camera displays a green light, and the traveler walks onto the boarding bridge.

Sherry Stein, SITA's chief technology officer for the Americas, notes that matching fingerprints used to be the most reliable mechanism for border crossings, but that has changed. "Over time, facial recognition



SHERRY STEIN

Planning and Design | Program & Construction Management Facilities Management | IT | Asset Management



Arora is proud to provide project management support for the implementation of cutting edge facial biometric technology for 25 gates in Terminals A-East and A-West at Philadelphia International Airport!

LEARN MORE AT:
[www.aroraengineers.com/
project/phl-biometric-exits](http://www.aroraengineers.com/project/phl-biometric-exits)

aroraengineers.com | Rethinking Infrastructure®

Atlanta | Baltimore | Boston | Charlotte | Chicago | Dallas | Los Angeles
Nashville | Miami | New York | Orlando | Philadelphia | St. Petersburg | San Jose



has come to the fore, largely because the technology has become more robust,” she says. “It’s also easiest to implement because it’s the matter of comparing a face to a document.”

Stein, the recipient of a 2019 Women in Biometrics Award from the Security Industry Association, explains that the rate of failure or mismatch is influenced by environmental factors such as lightning conditions or a glare on the screen, or whether a passenger is wearing a hat, for instance. However, personnel at PHL are reporting an impressive 99.5% success rate. If a mismatch occurs, the gate agent can manually check the passenger’s passport. Exit row seat assignments are an example of a situation that might require more time-consuming manual checks, because a boarding agent must check to make sure those particular passengers are aware of their responsibilities in case of an emergency.

Currently, passengers can choose to opt out of the facial recognition process. Stein notes that passengers with small children are the most likely to prefer a manual process for boarding verification.

“People love the speed and simplicity of the system so far,” Stein says. “We see a very high opt-in rate.”

Gaining Acceptance

Mehta says that the pandemic was a big challenge to the project, as well as installing the system during off hours to minimize impact on PHL’s airlines. This new technology and processes

also required the airport to explain to passengers why facial recognition will have a positive impact on their travel.

“During the proof-of-concept phase, there were a lot of concerns about privacy and how it would be used,” he recalls. “But everyone is using facial identity now; I can’t even use my phone without it. It’s part of life now. The first time around, a lot of folks were opting out. But now I’m seeing a lot of excitement, especially with kids who want to take selfies. Young people want to participate.”

PHL launched the biometric boarding process in January to bypass the holiday rush and start fresh. As of early February, the first set of 10 gates was operational; the remaining 15 gates are expected to be online by April. In total, PHL is deploying two units per gate at 25 gates. This technology is used only for international flights.

Planning, design and implementation for the project cost about \$4 million. Updated, brighter lighting is not included in that figure because it wasn’t part of the initial scope and the airport absorbed that expense in a separate budget.

Stein notes that costs for biometric boarding systems vary depending on existing infrastructure such as power access, millwork and internet connections. She reports that SITA has recorded reductions in boarding times of up to 30% at other airports, which she considers very significant.

Given the progress of biometric boarding systems, another near-term project for NEC is biometric bag drop. Van Sice

explains that these systems are of interest because they can positively and quickly affect the customer experience. Airports know that happy, relaxed passengers will spend more money in the terminal, and it behooves everyone to implement technology that helps route travelers through as expediently as possible.

“Airports are looking for ways to enable passengers to be more empowered and gain a good understanding of where they are in the process,” explains Van Sice. “For airports, it’s very helpful for passengers to know how long something will take.”

SITA’s Stein adds that future-oriented technology yields more opportunity.

“When you start to broaden the scope, other value propositions we can support include bag drop, lounge exits, pre-security and more,” she says. “We have looked at how to scale beyond just international to include domestic travel, and as the Philadelphia International Airport team chooses to grow its ambition and strategy for passenger processing, it will have the ability to do that.” ✈️



NOW TSA QUALIFIED

EXPANDING YOUR AIRPORT?

Find out why airports worldwide are choosing the R&S®QPS201 Advanced Imaging Technology

- ▶ High-definition screening
- ▶ Industry-leading throughput
- ▶ Relaxed scan pose
- ▶ Expands access for disabilities
- ▶ Optimizes checkpoint layout and space



www.rohde-schwarz.com/qps

ROHDE & SCHWARZ
Make ideas real

