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The **Frictionless Future** of **Facial Recognition**

THE NEW WAY FOR TRAVELERS TO GET FROM THEIR GATE TO DESTINATION BY USING THEIR FACE

Leather briefcase slung over her shoulder and boarding pass in her hand, Donna approaches the boarding line for another late-night flight to Tokyo. Getting to the gate was fast and pain-free, more pleasant than she'd experienced in years.

Checking her suitcase and checking in for her flight was a simple matter. She simply walked up to a kiosk, which recognized her face. At the TSA checkpoint, she encountered another kiosk that scanned her face and verified her identity—proof that she was indeed the traveler connected to her ticket.

Now, ready to board the flight, Donna hands the paper boarding pass to the attendant who, smiling politely, declines to take it. Instead, Donna's face is scanned, and she is allowed to board. She passes seamlessly into the jet way tunnel to board and soon arrives at her seat. Her book and magazines stowed in the seat pocket in front of her and her bag stored beneath the seat, she prepares for takeoff.

Once in the air, Donna slips out of her shoes, reclines her seat and pulls the sleep mask over her eyes, ready for the overnight fight that will carry her to another part of the world. The day had been a productive one, starting early in the morning and quickly moving from one task to another as she pushed to finish her work and get to the airport on time. Luckily, with her tasks complete and deadline met, she'd effortlessly negotiated the maze that the modern airport has become.

As she relaxes into her seat, she reflects back on how busy, yet surprisingly frictionless and stress-free, her day has been...

A Day in the Busy Life of One Traveler in 2020

At 5:30 that morning, the alarm on her smartphone on the bedside table starts to chime, dragging Donna from a deep sleep and into a day that stretches out before her. Lifting the phone, when she looks at it with eyes barely open, the device unlocks and she makes a decision. With a shake of her head, the phone goes to "snooze." Two snooze cycles later, Donna stumbles to the kitchen, where the coffee maker lights up with recognition and brews her favorite coffee at just the right strength to get her moving. The radio, following suit, switches on and tunes to her local NPR station.

After cleaning up the kitchen, she grabs her briefcase and the bag she packed the night before, heads out the door and into her car. A dashboard camera scans Donna's face and the recognition software adjusts the driver's seat position, again switches the radio to NPR and adjusts the volume.

It's going to be a busy day at work, so Donna stops by the local gym for a quick 30 minutes on the treadmill. She doesn't need to scan a key fob or card to enter. As soon as she arrives at the front door, the camera recognizes her face and lets her inside. Once on the treadmill, Donna puts the earbuds in, glances at the console to activate her favorite running program and the perfect music to start her day.

After the gym, she heads to work. At the garage entrance, a kiosk recognizes Donna and opens the gate. No ticket or badge needed, she easily parks her car in the garage. Another camera on the building entrance identifies Donna as an employee and admits her into the building. Once inside, the elevator knows to take her to the seventh floor, and even her office door unlocks automatically.

There are no cards to swipe or keypad codes required. It's a frictionless and secure process that makes it easier and faster to get into the building and to her desk.

In a hurry at lunchtime, she moves rapidly through the automated cafeteria checkout. The checkout lane scans the food and beverages, and Donna uses facial payment to pay the tab with just a glance. Then she's back on her way.

The long afternoon is finally done, but it's time to head to the airport for the flight that will take her to her client meeting in Tokyo the next day.

The Eyes Have It – Creating an Easy and Personalized Airport Experience

Today's airports, with their long lines and demand for security, have traditionally been a painful experience for travelers. But for Donna and others, that's no longer the case.

Once inside, Donna checks in at the kiosk that identifies her through a face scan. Besides checking her in and giving her time and flight information, the kiosk also ensures Donna is not on a security watch list. She moves to the bag drop site, where another scan matches her bag with her ticket, and she quickly gets on her way.

Security personnel no longer have to ask for IDs, compare them with the travelers and worry about security watch lists. The system is now frictionless.

Donna moves through the TSA security checkpoint more quickly than ever. Facial recognition verifies her identity, allowing her to breeze through what used to be the most frustrating step in a process full of "chokepoints."

Now entering in the main terminal, a nearby kiosk recognizes her on approach, displaying personalized gate information and even time and distance until boarding. Donna smiles, knowing she has time to relax and grab dinner before the long flight. She wanders into a store to buy her favorite magazines for the trip, then into another to replace the sweater she forgot at home.

Before Donna reaches the checkout, a store associate informs her of current promotions that might interest her, based on her purchase history and participation in the store's opt-in loyalty program. She buys the sweater at a 25 percent discount and pays for it using a secure face pay system. Personalized savings and secure checkout, all thanks to facial recognition technology.

Now ready for her flight, Donna takes advantage of all the time she's saved to relax in the airline's VIP frequent-flyer lounge. Once again, the lounge's facial recognition system identifies her and verifies her VIP membership, enabling her to enter the lounge and pay for her refreshments without worrying about cash or credit cards.

The Case for Facial Recognition Technology

Donna's story takes place in 2020, two years in the future, but the advanced recognition solutions enabling that future are here today. They create a seamless, frictionless experience for everyday citizens like Donna as they make their way through their day—especially for the travelers navigating increasingly busy airports. These technologies are in use today, and more will be reaching the market in the months and years to come.

By 2022, global revenue for facial recognition solutions is expected to hit $9.6 billion. It's no wonder that it is growing in popularity. And as we've seen, recognition technology can ease the path for people at every point of their busy day,

Facial recognition technologies are frictionless for travelers, from the moment they wake up to when they arrive at their final destination.

It gives back the precious minutes and hours that they'd ordinarily spend verifying their identities with everything from ID card scans to punching numbers into a keypad. And for businesses undergoing a digital transformation, facial recognition technologies can drive increased revenues, simplify transactions, improve operational efficiency and create a paperless environment—all of which, again, improves the customer experience.

At the same time, solutions combining surveillance cameras with facial recognition software can elevate the level of public safety and security, not just in airports, but throughout society. Enterprises and government agencies can ensure only authorized personnel have access to their facilities, while retailers and entertainment venues can secure their facilities and protect customers.

Airports are the melting pot where all these benefits come into play. In 2016, U.S. airlines carried more than 821 million passengers and demand for air travel is expected to double over the next 20 years. This will be a challenge for airports, which have to efficiently move people from one point to another, quickly and seamlessly.

At the same time, 59 percent of passengers in 2016 still used the main ticket counters when they check in – and had their IDs checked manually – even though they have the option of checking in online and through self-service kiosks. Another 18 percent checked in through a kiosk, which scans the ID, not the traveler.

Queue management is a nightmare. Five of the top 10 busiest airports in the world are in the United States, including numbers one and two in Atlanta

and Chicago. It takes an average of 8 minutes to check-in through a kiosk and 13 minutes to do so curbside. The average wait times at security checkpoints is 15 to 16 minutes, depending on the size of the airport. All of this adds to the amount of time passengers spend waiting in lines.

Facial recognition technology can sharply reduce those wait times, creating a frictionless experience for travelers from home to their final destination. Kiosks armed with the technology can scan a face, immediately verify the identity and deliver personalized information about their gate and departure. As we've seen with Donna's trip so far, the technology can:

- Make luggage drop-off a quick process
- Pave a seamless path through the security checkpoint and boarding at the gate
- Create a positive customer experience by enabling travelers to easily enter airline VIP lounges, receive discounts and coupons from stores and pay for their food and products.

It's not just an issue of traveler convenience and comfort, but also their safety.

It's not just an issue of the travelers' convenience and comfort, but also their safety. Airports are beset by threats, from terrorism to weapons coming onto the planes hidden in baggage. Security personnel must keep the passengers safe, and a large part of that requires accurate verification of the identity of the person picking up the ticket, checking the bag, moving through the security checkpoint and boarding the plane.

Facial recognition technology is also used to take the accurate identifications and compare them to government watch lists, even alerting security personnel to ensure the safety of passengers. In addition, it ensures accurate and fast verification for mandated biometric air entry and air exit programs, speeding not only airplane boarding but also the customs and immigration processes. In this way, it not only ensures the security of our borders and citizens, it makes these processes fast and hassle-free for travelers.

Touching Down After a Stress-Free, Relaxing Flight

As the plane nears its destination, Donna wakes up and stretches. The flight attendant asks if she'd like something to drink. As her beverage is delivered, she no longer even thinks of her wallet. She pays—naturally—using the on-board facial payment system.

Relaxed, she deplanes in Tokyo and once again finds a frictionless process through the airport. Donna moves into the queue for immigration and customs, where her identity is quickly and accurately verified, enabling her to speed through the line. This shaves time off the process of getting into Japan, while also protecting travelers and workers at the airport itself.

Donna now moves to the baggage claim carousel to get her luggage. Despite best efforts by the airlines, bags can be mishandled or stolen. In the United States, 21.6 million bags were mishandled in 2016, and 23 percent were damaged or stolen. Donna finds her bag and feels assured it hasn't been tampered with. Facial recognition solutions can match travelers with their bags. They can also monitor baggage claim areas through live and recorded video streams to identify people damaging or stealing luggage, reducing thefts and increasing safety and security.

Facial recognition solutions can match travelers with their bags and monitor baggage claim areas.

With the long hours of travel over, Donna arrives at her hotel and checks in via a system that, once again, quickly verifies her identity and provides her with her room number. A quick face scan unlocks the door to her room as she approaches, and facial and voice recognition technology gives her easy and seamless control of everything in the room, from the lights and temperature to the television and radio.

As Donna prepares to end her day, she once again reflects on how effortless her travel was that day. And, once again, sets the alarm on her smartphone with only a glance and a "good night" ...

Foresight is 20-20

The world is a busy place that moves quickly and often dares those in it to keep up. Daily life can become a series of obstacles – doors, lines, checkpoints – that conspire to force travelers and everyday citizens to waste precious time standing in lines or punching numbers into keypads. Advanced facial recognition solutions like NEC's NeoFace® Express and other face-based solutions can create frictionless, secure and personalized experiences in the workplace, at retailers, in restaurants and in crowded, public places like airports or entertainment venues.

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