Especially for you

Whether it's flight information displays (FIDs), check-in screens, holograms or advertising displays, advances in screen technology are transforming the passenger experience. Paul Sillers explores some of the latest innovations in this space.

The clack-clack-clack of split-flap flight information displays reverberating across airport concourses, shuffling alphanumerically, and eventually coalescing on the names of far-flung destinations has succumbed to the digital age.

LED screens may lack the old-world charm of their electromechanical predecessors, but they do open avenues for a broader spectrum of uses, from flight information to wayfinding, safety and security announcements, advertisements, as well as less traditional applications such as ambient and immersive experiences for passengers.

ATTENTION-SEEKERS

Hartsfield-Jackson Atlanta International Airport (ATL) recently turned to screen technology to address an escalating security concern.

In 2022, ATL caught 448 gun-toting travellers at security checkpoints. (For context, Transportation Security Administration (TSA) officers detected 6,542 firearms at US airports last year, a significant increase from the 5,972 detected in 2021.) Of the guns caught in 2022, 88% were loaded.

"The problem they have is that when somebody tries to pass through security with a gun and ammunition they need to stop everything for two hours and run extensive security checks across the airport," Gerardo Silvetti, Director at Virtual On Group, says.

"When these events happen repeatedly the airport loses a lot of time, money and resources. So they wanted to try to transmit the 'no weapons allowed' message in a different and distracting way, rather than using traditional screens."

Virtual On Group supplied ATL with holographic screens which display a three-dimensional animation of a gun. These are installed near busy security checkpoints in the airport so anyone can

Similar to a technology predicted in the 2002 film *Minority Report*, Parallel Reality displays uses multi-view pixels that can project individualised content to people viewing the screen.

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>
> Albert Ng, CEO, Misapplied Science

see them and be reminded of the airport safety requirements.

The underlying technology uses Virtual On's hologram fan, which incorporates a high-speed spinning LED light bar that renders the hardware structure virtually undetectable while creating a floating video with a 3D impression.

YOU TALKIN' TO ME?

A consideration associated with screen technology is that the public are becoming overloaded with information. But what if things could be more personalised?

Since June 2022, passengers departing from Detroit Metropolitan Airport (DMW) have been able to check their flight information via Parallel Reality displays located near the Delta Sky Club (Concourse A, McNamara Terminal).

Parallel Reality uses a multi-view pixel technology developed by Pasadena-based technologists Misapplied Science. The pixels can project millions of light rays to multiple people simultaneously looking at the same display, yet they only see their own unique, personalised content.

Albert Ng, CEO of Misapplied Science, says: "Passengers can receive their individualised flight information, wayfinding directions, and update notifications, all translated in their preferred language, naturally and intuitively without needing to look down at a small smartphone screen."

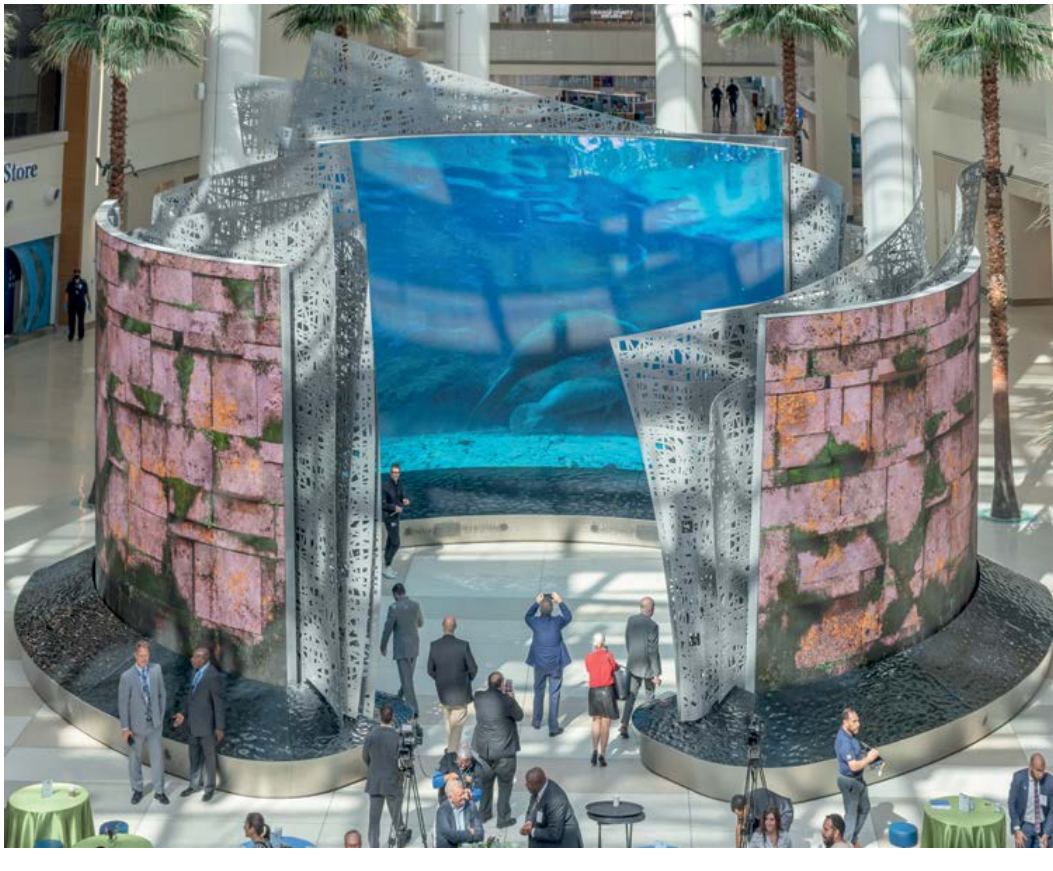
Passengers register at a dedicated kiosk by scanning their paper boarding pass, or using the FlyDelta app.

An overhead sensor detects the passenger's location and assigns a unique private zone to each individual, using anonymous non-biometric object detection (the sensor identifies each passenger as an object, without recognisable features).

As the passenger moves around, the overhead sensor shifts the passenger's private zone to their new location, allowing them to see their own personalised content.

"Passenger feedback has been very positive across all demographics,

Interactive feature: the Moment Vault at Orlando International Airport. Photo: Maxime Roux



Fourth rock: a scene from the Moment Vault at Orlando International Airport, recreating the surface of Mars, aka the Red Planet. Photo: Maxime Roux

> **"Our role was to define the identity and history of each of the works in order to create unforgettable emblems, thus defining the airport's identity"**
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indicating Parallel Reality technology to be a great solution for reducing stress and creating a seamless travel journey," adds Ng.

"We are looking forward to bringing personalised Parallel Reality experiences to more air travel passengers, as well as guests across other industries and more."

IMMERSIVE EXPERIENTIAL INSTALLATIONS

Screen technologies can also transport the passenger, emotionally speaking, before they've even reached the departure gate.

Orlando International Airport, (MCO) for example, has used a combination of immersive screen technologies, live action content, state-of-the-art CGI, machine learning, original music and 3D motion tracking technology to create interactive storytelling experiences at Orlando's new Terminal C.

Two large-scale interactive screen-based experiences were unveiled in late 2022, designed and produced by Montreal-based creative studio Gentilhomme.

The first installation, The Moment Vault, is a helical structure covered with curved high-resolution screens where up to 30 full body users' movements are "tracked in 3D in real-time and transformed into interactive silhouettes on screen, featuring scenes from Mars, fireflies, and fish". The resulting 360-degree immersive world is powered by Epic Games' UNREAL Engine.

The second feature, Windows on Orlando, is a triptych of 32-foot-high screens spanning 114 feet that creates the illusion of three windows that open up onto interchangeable photorealistic scenes, celebrating Orlando.

Gentilhomme's cinematographers shot with 12K resolution cameras at 20+ different locations within a 50-kilometre radius of the airport. These scenes are augmented with hours of original multimedia content.

"Arrival and departure from an airport is the first and last impression you have of the city you're visiting," says Gentilhomme CEO, Thibaut Duverneix. "Our role was to define the identity and history of each of the works in order to create unforgettable emblems, thus defining the airport's identity."

THE COOLING FACTOR

With billions of illuminated pixels around any airport, safety and energy consumption are considerations.

When Hamburg Airport (HAM) wanted to suspend a 4.25m x 2.40m LED screen from the ceiling, directly above the main entrance to the terminal, they appointed consultants Ben Hur to carry out the required planning.

The challenge was to devise a solution that could be operated 24/7 in a bright environment without posing a fire or safety risk, in compliance with Germany's DIN 4102-B1 – a building materials standard applicable to fire safety.

The project managers selected Sharp/NEC's FE series LED modules, which are encased in an aluminium housing with a passive cooling system.

The 'Windows on Orlando' display at Orlando International Airport. Photo: Maxime Roux

Simon Hayes, Head of Transportation, Sharp/NEC Display Solutions Europe GmbH, says this "achieves extremely good results in fire safety and fire load test, which is not possible with products made mainly from plastic or polycarbonate. What's more, aluminium is fully recyclable, contributing to the circular economy, and it also naturally dissipates heat for best longevity."

The screen was augmented with "media FIRE PROTECT" developed in a collaboration between Ben Hur and LANG AG, a system that consists of tiny fire extinguishers which self-activate as a pre-set temperature is reached or if fire is detected, discharging extinguishing agents before it can spread.

The cooling factor starves the fire of energy, and the electrical current is permanently and safely interrupted to prevent re-ignition. If a fire breaks out, only the affected panel needs to be replaced.

Digital signage installed at Hamburg Airport incorporates self-activating fire extinguishers.

In April 2023, Sharp/NEC launched its latest screen technology, NEC LED FC Series with Chip on Board (COB) technology.

This new screen brings high (20,000:1) contrast and is designed for front serviceability. It is also capable of generating brighter output, yet consumes around 40% less power compared to standard SMD LED technology.

WHAT'S NEXT?

"Looking to the future," says Sharp/NEC's Hayes, "e-ink technology is an interesting concept which can be used for a static information display such as at the departure gate. Once the content has been sent to the screen it no longer draws power until the content is required to change again. It won't be appropriate for every situation, but it can save a lot of power consumption making it financially and environmentally sustainable." ■