



The Role of Dynamic Signage In the Airport Information Economy

An average of 65,338,626 people pass through each of the ten busiest airports in the United States each year. Countless thousands more arrive and depart each day as airport and airline employees. These numbers increase annually and with them, the infrastructure constraints of each airport and the expectations of each traveler and airline. Pressure is constantly mounting on airports to optimize their efficiency, enrich the experiences of their passengers, and maximize the long-term viability of their existing infrastructure. As these pressures exponentially diversify and expand, so too must the solutions airports integrate to counter these demands. As with any transportation hub, the on-site experience for customers and businesses in an airport is intimately tethered to the availability of communications. The

logistics of moving these passengers and employees through vast terminals on tight schedules can be impossibly complex but precision and pragmatism are essential for a successful experience. Such a daunting challenge requires comprehensive communication tools to ensure that processes run smoothly, safely, and on time.

The most successful airports meet this objective with dynamic digital signage, using the technology to deliver broadly applicable yet highly specific real-time information to vast groups of transitory audiences. Visible from much greater distances than traditional signage and more effective at standing out amidst a sea of distractions, dynamic signage frees passengers to behave autonomously and frees airport

administrators to focus on their own operations rather than the needs of individual passengers. Though by no means a brand new technology, dynamic signage has expanded its futureproofed functionality in airport environments as a source for electronic visual information display systems (EVIDS) content, wayfinding, art, and advertising. This white paper will delve beyond the broad, surface-level utility of dynamic signage in airport spaces to explore several more specialized purposes for which many of the world's top airports have strategically deployed their dynamic signage assets. These exemplary use cases will serve as guiding inspiration for future airports looking to use digital technology to optimize their efficiency, engagement, and infrastructure.



Dynamic Solutions For A Dynamic Environment

Bigger and Brighter EVIDS Instructs and Informs Away from the Gate

John F. Kennedy International Airport (JFK) offers a particularly apt illustration of the effectiveness of dynamic signage solutions as EVIDS. Previous solutions proved hard to see for passengers shuffling throughout the space. Limited viewing angles and distances resulted in congestion near the displays and confusion away from them. This created stress for passengers and administrators alike, the former frustrated by inadequate communication, the latter by the obstructive crowds. Large groups of frustrated people can be problematic, so the airport addressed the underlying issue by introducing a 30-foot by 10-foot double-sided curved LED display. Suspended right in the middle of the space, the enormous display outshines ambient light in the area to give passengers a nearly 360-degree view of clear flight information, eliminating any need for travelers to cluster around a specific area. The size and brightness of the display allows travelers to see flight information, weather updates, and news alerts from far distances while the curve and pixel design of the display give viewers access from a wide range of angles. Atlanta's Hartsfield-Jackson International Airport experienced similar results following the introduction of their large-format LED display outside a baggage claim area.

Dynamic Wayfinding Directs and Calms

Restricted in both the beginning and end of their stay in the airport by security lines and departure times, respectively, passengers want to move about autonomously in the free time that they do have. This preference for self-service is a trend that consumer research experts have noticed in retail customers in particular. In part due to the proliferation of servicization and omnichannel selling, consumers have developed an expectation that everything they need will be at their fingertips. When it isn't, customers sour. Dynamic signage thrives as a solution to this problem because customers can see what they need, directions, from much further



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away –not physically at their fingertips, but available immediately nonetheless. The principal mandate guiding EVIDS and wayfinding signage is clear: offer passengers what they want in ever-present excess so they can self-navigate. Then get out of the way so these passengers can enjoy the airport on their own terms while airport employees are freed to assist where they are actually needed. Whether travelers are looking for dining options, shopping areas, restrooms, or other airport facilities, the directions they need are brighter, clearer, more flexible and more visible when displayed on dynamic signage.

Vancouver International Airport came to this very conclusion when renovating their International Arrival Customs Terminal. Initial impressions matter immensely, and global travelers arriving to Canada, perhaps for the first time, are now met with the sleek, minimalist design of a 32-foot by 9-foot LED display welcoming them to Vancouver and providing them highly relevant information about how to proceed from their gate. Other airports have followed this lead and renovated their gate branding signage from the static or backlit to dynamic LED signage. These displays are visible from much greater distances and are capable of showing far more information to passengers. A static gate sign can only say the gate number. A dynamic LED wayfinding blade can show the gate number, flight number, flight destination, destination weather, boarding status, and the time all at once, changing each piece of information on the fly as new flights come and go throughout the day. With their questions answered before they even ask, travelers feel free to meander around the terminal, especially since they know other displays elsewhere will likely contain that same information should they need it again. Stress relieved, mood enhanced, and time freed, passengers will exhibit a much higher likelihood of spending money.

Enrichment Of Experience

Augmenting Information with Entertainment

The first place a traveler experiences when they arrive in a new city, the airport serves an important role in communicating and celebrating the culture of the region it services. Forgettable aesthetics divorce travelers from their travel experience and prompt equivocations between the blandness of the airport and the worthiness of its city. Travelers don't just want to be somewhere, they want to feel somewhere, so airports have a duty to create that sense of place for their customers. Dynamic digital signage can communicate culture in a more dramatic –and pragmatic– way than any other solution.

Consider “The Flower” found in Toronto Pearson Airport. The stunning LED display feature dominates a central gathering area of Terminal 1 with its beauty, transforming what once was dead space into among the most highly-trafficked locations in the entire airport. The installation serves the primary purpose of branding the airport with Ontario’s provincial symbol of the White

Trillium flower, thereby welcoming passengers into the Toronto environment and establishing a firm sense of place. That the displays also communicate flight information and weather details to busy travelers is a secondary function that gives audiences yet another reason to engage with the artwork. Other airports like Charlotte Douglas International Airport (CLT) use their LED signage exclusively for artistic purposes. The digital sculpture *Interconnected* is a pulsing visual experience that plays out on three massive LED displays in Charlotte’s Concourse A, using airport data to influence the constantly regenerating content. The installation was pioneered to be a fusion of technology, art, and design, and it reflects both the interconnected community of North Carolina’s biggest city and its technological ascendance. Both Toronto Pearson and Charlotte Douglas wanted to announce themselves as airports of the future; it’s fitting they opted against the static art of the past.

Enriching the Airport Itself

One of the most obvious benefits of dynamic signage is you can showcase a wide range of content. While most commonly used for EVIDS and wayfinding content, airports can also take advantage of their dynamic signage by selling ad space to eager retailers. In doing so, an airport accomplishes their primary goal of informing passengers while also generating revenue as well. As Rosemary Vassiliadis, the director of McCarran International Airport in Las Vegas, made clear upon their latest dynamic signage overhaul, “we decided that the return on investment opportunity was very real, which convinced us that the time was right to undertake a complete renovation of the baggage claim area advertising displays.” Today, airline travelers arriving in Las Vegas are met with a dazzling digital experience in line with the city’s reputation. Many of the airport displays mentioned throughout these pages are used for advertising messaging in addition to their passenger-focused duties, and many advertising-centric displays show a token amount of EVIDS and wayfinding data as well just to preempt frustration from travelers. This versatility increases the value of the display space and the value of the displays themselves. As Arthur D. Little wrote in a paper on the digital transformation of airports for Amadeus:

“By leveraging existing FIDS infrastructure as an additional means to drive the in-airport retail offer, airports can achieve incremental revenue growth for only a moderate investment in existing infrastructure. This would see the role of FIDS change from flight information provider to multi-faceted marking tool.”



Optimizing Your Infrastructure

According to research from the same Arthur D. Little paper mentioned earlier, executives representing airports from a broad range of sizes and complexities far and away ranked improving operational efficiency as their primary target benefit for investing in digital technology, specifically with regard to capacity enhancement. Large-scale construction efforts to expand capacity for both passengers and airlines have transformed the terminals of some of the world's largest airports. These modernization and expansion projects include O'Hare Airport's \$8.7 billion expansion, JFK's \$10 billion renovation, Los Angeles International Airport's \$14 billion overhaul, and the brand new Istanbul Airport, built at a cost of roughly \$12 billion and opened for the first time in April, 2019.

Using Dynamic Signage to Extract Value from Existing Infrastructure

While maximizing foot-traffic efficiency during a big renovation is crucial for airports undergoing these expensive expansion projects, most airports target improving foot-traffic efficiency as a way to avoid costly construction projects in the first place. Lacking the resources of the world's largest hubs, smaller airports have turned to dynamic signage as a way to boost capacity by increasing flow rather than increasing size. As has been detailed extensively throughout this piece, dynamic signage empowers passengers and employees alike to move more decisively by expanding their access to information. Beyond the brightness, size, and off-axis viewability of these displays however, another trait that makes dynamic signage such a powerful communication asset is that they can integrate seamlessly into nearly any architectural environment. Dynamic signage, again, particularly of the large-format LED variety, can be made in nearly unlimited sizes and shapes, allowing airports to affix these solutions to unusual surfaces in uncommon locations. Airports are

often cavernous spaces with creative architectures. Dynamic signage embeds into these environments painlessly, swapping the costs of a massive renovation for the comparatively paltry price of a few displays. As the Arthur D. Little paper put it, "faced with the prospect of capital-intensive expansion projects that take years to deliver, digital technologies can, at the very least be used in a tactical way to help airports extract the maximum value from their existing assets, especially by enhancing passenger flows."

Adaptable to Change in the Moment and over Time, Dynamic Signage Future-Proofs Passenger Communications

Just as airport environments change at a moment's notice, so too can dynamic signage. And just as airport must evolve over time, dynamic signage is there to facilitate this evolution and streamline flow throughout. Whether for EVIDS, experiential enrichment, or capacity maximization, dynamic signage is a necessity for any modern airport. JFK, Hartsfield-Jackson, and Vancouver each capture utility from dynamic signage as an informational tool, while Changi, Toronto Pearson, and Charlotte Douglas each use theirs primarily for artistic purposes. Stansted, along with several of the aforementioned airports, incorporated their dynamic signage solution as a way to optimize the infrastructure they had as they expanded, while countless others use this signage to expand capacity without expanding construction. Examples of each use case for dynamic signage are nearly ubiquitous to any perceptive traveler, or even imperceptive travelers for that matter. Dynamic signage is so universally powerful in airport spaces that it's nearly impossible not to notice what it's communicating. After all, that's the entire point.

