Five Ways Audiovisual Technologies Can Benefit Transportation Hubs
What is the largest market in the world for electronic display technology? If you guessed consumer televisions, you’d be wrong. If you guessed mobile devices, such as smartphones and tablets, you’d also be wrong. As it turns out, the largest market for display technology is transportation: cars, trucks, trains, ships, subways, planes, helicopters — basically anything that moves.

That category also includes transportation hubs like airports, train stations, and cruise line docks. It also features transportation monitoring and traffic control systems. Without displays, none of these facilities could begin to function. And today’s transportation facilities are characterized by innovative AV installations that engage passengers, provide detailed schedules, weather, local news, display larger-than-life advertising, and offer insights into local history and culture along the way.

From a command and control perspective, advanced AV solutions have made those dingy old green cathode ray tubes a distant memory. Today, monitoring systems and command-and-control facilities are deploying the latest in high resolution tiled displays with a new wrinkle – interactivity. Traffic managers can now share screens, instantly re-size and tile multiple desktops, and provide faster reaction times for clearing traffic jams, managing airport congestion, and redirecting trains and planes to new tracks and gates.

Complete AV solutions also address reliability and maintenance. Many of these displays operate 24/7 and are mounted in areas not easily accessible. Managing ambient light is a challenge as today’s large, open concourses are designed to let in as much natural light as possible. That, in turn, presents problems with glare on display surfaces, something travelers won’t tolerate. Additionally, some displays require fine pixel detail to show terminal and gate layouts, track locations, connecting stations, retail stores and food courts, and restrooms.

In this paper, we’ll look at five different ways that transportation hubs are solving all these challenges by putting cutting-edge AV solutions to work today.
Case Study: McCarran International Airport
McCarran International Airport serves Las Vegas, Henderson, and surrounding communities of Clark County in southern Nevada. It is one of the busiest airports in the world, handling almost 50 million passengers in 2018. New concourses (C and D) have been added in the past decade to expand gate capacity, and these areas showcase the latest thinking in architectural design with tall ceilings, wide walkways, and several steep escalators to connect via trams and the main terminal.

Airport management was looking for captivating signage solutions to reach these millions of travelers and to generate more partnerships with advertisers, which would mean more revenue for the airport. But that’s not easy to do. How do you engage departing and arriving passengers who are rushing to board a flight or who are inattentive because of travel fatigue? How do you capture their attention for less than a minute on average as they scurry here and there?

The answer was to install the world’s largest videowall above the tram station in Terminal D and the walkway to Terminal 3, McCarran’s new international terminal that opened in June 2012. Passengers transiting the tall escalator can’t miss the display, which is made up of 100 46-inch Samsung LCD displays and measures 33 by 19 feet. In addition, the individual LCD tiles have very thin bezels, creating what appears to be a seamless image measuring 38 feet diagonally. Some passengers are even posing for selfies in front of it.

To ensure that travelers in other concourses would see the same messages, a 10-screen videowall and several three-screen videowalls, also using 46-inch LCD displays, are in concourses throughout McCarran airport. Prior to the installation of these videowalls, digital advertising was distributed in a more conventional manner among existing screens scattered throughout various areas of the airport where passengers could easily overlook them. The result? Alliance Airport Advertising estimates that this new videowall produces an additional $500,000 to $1 million in gross advertising revenue for the airport each year.

And McCarran continues to innovate with AV. This year, with its partner Lamar Advertising, the airport replaced all the static advertising banners in the Terminal 1 baggage claim with 60 bright, impactful LED displays from solution provider NanoLumens. LED signage employs arrays of densely packed lights to create ultra-thin, lightweight, energy-efficient displays that can be made in virtually any size, shape, or curvature.

The 60 new LED displays at McCarran Airport come in a variety of configurations, the largest being six soffit displays measuring 9 by 64 feet. More than two-thirds of the LED displays run up and down columns surrounding the baggage claim area or are positioned on top of the baggage carousels.
Southeastern Pennsylvania Transportation Authority (SEPTA)
If you think airport terminals are crowded, try walking through a passenger train terminal during rush hour. In addition to dodging and weaving among commuters, you’ve got to locate your departure track, find out if the train is leaving on time (or the track has been switched at the last moment), and hope you can manage all of this in about 10 minutes — the average time between when a departure track is posted and the train pulls out.

The Southeastern Pennsylvania Transportation Authority (SEPTA), which manages the nation’s sixth-largest transit system, needed a serious upgrade to its antiquated walls of cathode-ray tube displays. Those CRTs showed arrival and departure times for trains at Suburban Station, a busy transportation hub in the center of Philadelphia that handles more than 25,000 passengers per day. The new displays would require high resolution so that passengers could locate connections and outlying stations. And they had to be visible under any kind of lighting, both artificial and natural.

But there were additional requirements on the wish list. The displays had to be durable enough to survive the impact of gear such as rolling luggage, backpacks, and umbrellas, which usually requires another layer of protective glass that could create glare problems. And SEPTA wanted to add more than just departure and arrival times: Commuters would value up-to-date weather information, local news headlines, and graphical displays of congestion and delays. SEPTA also hoped to generate additional revenue by intermixing short advertising clips.

The solution was to install three videowalls of 46-inch LCD monitors. Each videowall contains 12 displays arranged in a 4x3 configuration, with all displays recessed into the mounting surface. The individual LCD tiles can produce brightness levels as high as 800 nits, two to three times that of indoor ambient light levels. Each display is fitted with an optically-bonded glass front that protects the LCD from damage in high traffic environments. The top portions of the videowalls contain SEPTA system maps, which are highly detailed, and provide status information on all trains, all at 2560-by-1440 resolution.
Birmingham (AL) Shuttlesworth International Airport
Another challenge for airport managers is how to spruce up concourse and gate environments. Travelers can spend quite a bit of time waiting for connections and delayed flights, and not all of that waiting will be in retail stores. Some connecting flights at large airports require a long walk (or ride) between gates. How do you grab the attention of a passenger on a moving walkway? Is there a way to provide any entertainment, no matter how brief the interval of time?

Unlike passengers on the McCarran escalators, those traveling between terminals don’t have much to look at. Some airports mount exhibits of artwork along concourses. Others have installed playgrounds for kids. There are even piano lounges at some airports, next to bars. All good ideas, but what if we created an unusual display layout with tiles to create a more compelling experience than simply staring at a smartphone?

That’s exactly what was done in Birmingham, Alabama at the Birmingham (AL) Shuttlesworth International Airport, where a 27-screen mosaic videowall was installed recently to provide snapshots of Alabama history.

Known as The Long March, this unique videowall depicts movement, migration, and marching from different eras in Alabama’s history, including the Civil War, the Trail of Tears, the Children’s March, the Selma Marches, football marching bands, the railroad, and migrations to the “Magic City.”

Two rows of nine LCD monitors lead to the center of the display and meld into a kaleidoscope. The kaleidoscope is tiled in the shape of a camellia, the Alabama state flower. The camellia becomes a repository of past and present motion representing the flowering that grows out of movement, mixing and melding Long March footage to create new emergent patterns, forms and colors. Travelers who encounter the piece can envision themselves as part of this mosaic symbolized through Alabama’s relationship to ‘the march’ as a form of historical progression.
Washington State Department of Transportation
When we think of highway and traffic command and control centers, we conjure images of rows of desks with people sitting silently, staring at computer monitors and occasionally at a larger wall of displays, each showing a different highway, intersection, tunnel, or bridge. That’s a lot of information to process, and it requires keeping tabs on multiple screens and the constantly changing areas of interest.

In recent years, AV hardware and software got a lot smarter. We can still build large tiled videowalls, but we now arrange multiple video tiles in any way we want on the screen, moving them around with a mouse and re-sizing individual tiles instantly. There’s no reason why video footage from cameras on lightly-traveled roads should command as much space on the screen as video of an accident during rush hour.

The Seattle metro area has expanded by leaps and bounds since the turn of the century and was the nation’s fastest-growing city from 2012 to 2013. Built in the 1960s, the Washington State Department of Transportation’s original traffic management center in Shoreline, WA, needed a significant physical and technological upgrade to meet the demands of Seattle’s growing metropolitan area.

When plans were approved to construct a brand-new building in Shoreline, the agency invested in a modular, fit-for-purpose solution that provided the necessary flexibility in light of the state’s future funding uncertainty.

The result is a giant overview videowall made up of 90 46-inch monitors with a core 3x4 configuration of 55-inch monitors (measuring 18 feet diagonally), driven by streaming video processors and presentation collaboration software.

Now, DOT operators can instantly view, manage, and share data on freeway incidents, accidents, and maintenance projects on their individual workstations or push those views to the large videowall. The center of the wall can function as a giant TV monitor or create custom perspectives as operators drag and drop images from multiple camera sources.
Airport management isn’t just about air traffic control anymore. Today’s airports need to keep track of numerous data points and video streams, ranging from security cameras to luggage carousels, ground transportation traffic patterns, local weather, maintenance crews and facilities — and, of course, passenger traffic through the airport. So much data and video demand large, tiled video displays with a great deal of interactive features.

Dubai International (DXB) in the United Arab Emirates is the world’s busiest airport for international passenger traffic, handling more than 88 million passengers a year. Dubai Airport’s new Airport Operations Control Centre (AOCC) houses several teams managing operations 24/7 and features a massive 55-screen videowall with sophisticated 4K-resolution videowall processors to switch, size, tile, and display all the incoming video sources. (It should be mentioned that all wall components using networked AV distribution have secure encryption to guard against hacking.)

The AOCC videowall centralizes an extensive volume of visuals and data, and operators can collaboratively view information for daily management and planning. The “smart” wall processor receives input from surveillance cameras and computer system displays covering dynamic flight information, passenger and baggage status, check-in and boarding information, weather, access control and other data. These diverse sources are then displayed in windows of any size, anywhere on the videowall array. The processor’s advanced features include overlapping images, window borders and titles, and pan and zoom, allowing an operator to view items of particular interest.

The wall processor’s intuitive graphical user interface (GUI) provides easy “drag and drop” selection and routing of any source. Live thumbnails of all video sources provide visual aids for managing workflow and sources can even be previewed prior to routing. Operators can choose from up to 60 preset window layouts. Access is based on user privileges that allow or restrict admittance to features, supporting multiple users with configurable levels of access.
In Summary

We’ve truly entered a golden age for AV technology. These five case studies show that large LCD displays are being configured into innovative wall shapes and sizes to advertise, inform, educate, control, and collaborate. Displays have migrated from single-screen “dumb” terminals to “smart” installations capable of processing multiple signals simultaneously. They can do this under high ambient light levels and hold up under rigorous 24/7 operation, surviving physical impacts along the way.

AV and control signals are multiplexed over secure networks, consolidating wiring. Collaboration software makes it easier for operators to communicate with each other to analyze and act on data and video through shared screens with unlimited sizing and position controls, thanks to powerful, user-friendly drag-and-drop software. And some facilities managers have actually found that less is more, re-thinking traditional digital signage concepts by replacing numerous small screens throughout terminals with strategically-placed videowalls.
About AVIXA

AVIXA™ is the Audiovisual and Integrated Experience Association, Proud Sponsor of the 91st Annual American Association of Airport Executives Conference and Exposition. AVIXA and its members aim to help transportation operators create a more successful passenger journey through the integration of compelling audiovisual experiences. AVIXA represents the $178 billion global commercial AV industry. It is the producer of InfoComm trade shows around the world and is co-owner of Integrated Systems Europe. Established in 1939, AVIXA has more than 5,400 members, including manufacturers, systems integrators, dealers and distributors, consultants, programmers, live events companies, technology managers, content producers, and multimedia professionals from more than 80 countries. AVIXA members create integrated AV experiences that deliver outcomes for end users. AVIXA is a hub for professional collaboration, information, and community, and the leading resource for AV standards, certification, training, market intelligence and thought leadership. Additional information is available at www.avixa.org and www.avixa.org/transportationAV.