



WHITE PAPER

Next-Generation Video Walls LCD Video Wall Technology

Welcome to the new world of digital video displays. Now wherever we go, high-impact video walls and display technology are everywhere: airports and transportation hubs, museums, retail stores, malls, corporate lobbies, restaurants, schools and universities, office collaboration spaces and more.

What's driving this proliferation of display technology in public spaces as well as work environments and entertainment venues? It's a combination of better AV equipment performance, smaller footprints, and lower prices. Add the explosion of creativity in advertising and brand building coupled with the allure of the interactive digital experience – the digital image is now everywhere people work, shop, travel, play, are educated, entertained and live.

As prices have come down and video wall displays have become more user- friendly, there has never been a better time to add messaging, branding, or productivity-enhancing video walls to your space. But there has also never been so much confusion about which products to choose. There are many possible pitfalls for the inexperienced, so it's crucial to understand the right questions to ask when selecting a new video wall system.

Video Walls Take Off



Clarity Matrix LCD Video Wall (12x2) at The Advisory Board Company's conference center in Washington, DC.

The video wall market continues to evolve with more uses now dictated by new technology features, including deployment in collaborative work spaces. Just 10 to 15 years ago many video wall purchases were made for show, essentially to draw customers in and impress them with cool technology or just to show video eye candy to customers or employees.

Since then video walls have been introduced for more utilitarian and collaborative uses. People are utilizing this technology for what it was really designed to offer - to visualize data in a larger format more effectively. This is seen in traditional video wall applications and it is also seen in the proliferation of corporate collaborative spaces, including huddle spaces - the new buzzword for spaces within an office where staff can more informally meet and strategize.

Where these collaboration rooms once relied on a video projector to share information and data, now state-of-the-art video walls allow for a more cost-effective, collaborative experience.

There is also a surge in digital signage as the desire grows for high-impact signage for branding and interactive functions, wayfinding in public spaces, digital menu boards, and placement of any video and high-resolution graphics in places where digital imagery was not feasible previously. This can be seen in environments across the board including corporate lobbies, museums, schools and universities, even moving trains and buses. Digital signage is now everywhere and its gone way beyond signage.

Why is a video wall display system particularly ideal for all those multiple scenarios? It's a high-impact, affordable solution providing the right performance level for the right price. It allows for multiple budget levels - allowing the user to scale the technology for the targeted purpose and stay within budget while leaving room for future expansion of the system.

Overview of Video Wall Solutions

Like any technology choice, the most daunting challenge is defining the right solution for a particular application. Video wall display technology often gets lumped into a generic category of AV with specs that are hard to decipher. However, it's not difficult to understand the essential features of the different types of video walls and to be able to distinguish between them.

Rear Projection Video Walls

A well-known and mature video wall technology is Rear Projection. These are video cubes that stack to create a video wall. This technology's biggest advantage has been its seamlessness (the lack of large bezels or borders between the individual tiled screens that make up the video wall). With a distance between adjacent video wall displays (bezel) of less than one millimeter, the effect of a virtually seamless array continues to be this technology's strong point. With the latest in LED-illuminated DLP® technology, today's rear projection displays offer good color performance with saturated colors in play. It also benefits from a very long life. It's not uncommon to get 10 years of operation from the initial displays. Rear Projection displays also perform well with static content, never exhibiting image retention artifacts.



Planar's Clarity® LED3 Series is a complete line of LED-illuminated rear projection video wall displays.

The disadvantages of Rear Projection technology include its physical depth. Being two feet or more deep, the displays are large and bulky compared to other video wall technologies. The added size and weight can translate to higher installation costs and the need for more physical space to install a video wall.

In terms of applications, Rear Projection video walls — and today's models — are expensive — are mainly selected for venues with specific needs and large budgets, such as professional visualization in control rooms for the military or utilities. Due to changing technology, currently many Rear Projection video wall systems are being replaced by newer, LCD video wall display technology.

Direct-View LED Video Walls

Direct-View LED video walls are also available and now fine-pitch, high-resolution LED video walls are being used for indoor environments. Note that in this technology LED refers to the actual display which is made of many LED pixels. Do not confuse these LED video walls with the new-generation LCD video wall displays that are typically LED-backlit. Many people refer to LCD video wall displays that have LED-backlit panels as LED but this is technically incorrect. Even if an LCD display is "LED-backlit" (light source for the LCD display is LED arrays behind the LCD layer), it indeed is still an LCD video wall display.



The Planar® DirectLight™ LED Video Wall System is a family of seamless, ultra-fine pitch direct view LED video walls.

With LED video walls, the image is made of up LED pixels on the front of the display that are directly viewed. A major advantages of LED video walls are that they deliver seamless video walls — one large image without seams or bezels. Brightness and color performance factors are very good, as is the viewing angle.

Overall, LED video walls offer good lifetime performance. The cost of fine-pitch LED video walls (about 4mm pixel pitch or less) is very high for the highest resolutions.

The highest resolution direct-view LED video walls do not approach the pixel density of LCD displays and are less than ideal when the viewer is close to the video wall, which is common for many indoor applications in general, or for “interactive” or touch-screen applications. In fact, interactive touch with direct-view LED video walls, even using the finest pitch, is a less than optimal visual experience. Despite good brightness factor, seamless image and other features, direct-view LED video walls are less versatile across applications than LCD video walls.

LCD Video Walls

The huge popularity of LCD video wall displays is apparent everywhere. LCD video walls can be seen in almost every type of application today. With bezel sizes continuing to decrease, LCD video wall technology adoption continues to expand, migrating into applications that previously have been limited to Rear Projection or LED technology.

The LCD video wall price point is the most affordable of the three video wall technologies. The lifetime of an LCD-based video wall system is in the five to seven year expectation range and adequate for most installations. The acronym to know here is TCO, or total cost of ownership. TCO is defined not just by a video wall system’s initial purchase and installation costs but also ongoing operation and maintenance costs. LCD video walls excel in TCO calculations. LCD video walls are less expensive at the initial purchase. Power consumption for LCD video walls is lower than with other technologies and ongoing maintenance is the simplest of any of the three technologies. This means one thing— a much better TCO calculation with LCD video walls.

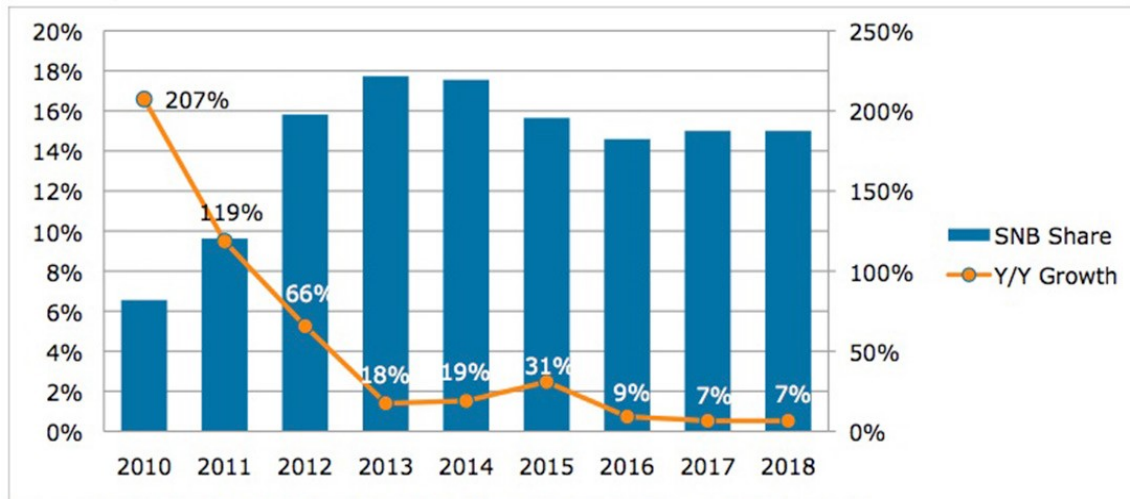
With LCD video wall bezel sizes continuing to reduce (some bezels now less than 2mm) it is now possible to create a more seamless field or true wall of video without distracting borders (large bezels) on each LCD display within a video wall. Customers can now create a high-impact, near seamless video wall with LCD technology.

Other advantages of LCD video walls include excellent visual performance in terms of brightness, contrast and viewing angles, as well as a thin profile and depth and high resolution.



The next-generation Clarity® Matrix™ LCD Video Wall System delivers a new level of visual performance.

Worldwide LCD Public Display Super Narrow Bezel Growth (Actual & Forecast)



Source : DisplaySearch DisplaySearch Quarterly FPD Public Display Shipment and Forecast Report

The continued improvements with super narrow bezel (SNB) LCD displays and bezels less than 2mm have led to significant adoption of LCD video wall technology in recent years. DisplaySearch recently reported these smaller bezel LCD displays are taking over the commercial video wall market.

Critical Features of an LCD Video Wall System

Here are some of the core features to look for when selecting and installing an LCD video wall solution:

Range of Offerings: When you choose your brand of LCD video wall, choose a display provider that offers a complete range of sizes and brightness levels. One display size will not fit all applications. There are also different brightness levels for different displays — brighter ones (about 2000 nits) for high ambient light environments, while less bright models can work well in darker environments. A major video wall supplier will provide options in a variety of LCD displays that can be easily tiled to create a video wall.

Thin Profile: The days of an LCD display or video wall sticking out from the wall by eight inches or a foot are over. Look for models that are less than four inches of depth to the wall. When installed the video wall is elegant and close to the wall or support. (Remember the Americans with Disability Act (ADA) requirements are strict about protrusion of an LCD display or video wall from a wall — your video wall vendor should have experts on staff available to explain ADA requirements).

Thin Bezel: The bezel is the line or contour between each individual screen in a video wall. Make sure your LCD video wall can come in a small bezel configuration. The latest LCD video displays have bezels of less than 2mm.

Interactivity: In both public spaces and in collaborative work spaces, more interactive video walls are being used. Make sure your video wall provider understands interactive applications and can scale your video wall system for interactivity where and when needed.

Off-Board Electronics and Power Supplies: Professionally engineered LCD video wall solutions are designed to take heat, complexity, and certain components out from behind the LCD display and move those elements to a remote, centrally located, easily accessible and rack-mounted system. Make sure your LCD video wall solution has this capability.

Integrated Mounting: If your LCD video wall solution has integrated mounting capabilities, you may be able to eliminate the added cost of using a third-party mounting system to mount the video wall to the building wall or support.

Protective Glass: Look for a video walls made up of LCD displays with optically bonded glass for added ruggedness and durability. This is especially important for public venue installations.

Making the Right Technology Choice

When looking for a video wall solution, the seemingly large number of brands and choices can seem confusing. But as with any sophisticated technology, look at the market and engineering leaders and use those as your benchmark.

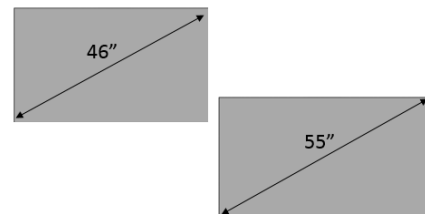
More importantly, ask yourself — do you want a product from a manufacturer that constantly confuses the specifications, marketing, and distribution of their own consumer TV and commercial LCD display lines? Some large manufacturers of LCD displays and LCD video walls displays mix and switch out consumer-grade (a lesser grade) and commercial grade components, marketing consumer-grade displays into commercial AV — with mixed results.

Planar Systems is a specialty display manufacturer with over 30 years of experience in commercial display solutions including LCD displays and video wall solutions. Any customer or AV integrator than specifies Planar products for a commercial installation will never be left wondering if they're really using consumer TV technology in an application requiring pure commercial-grade display reliability, ruggedness, and scalability.

With the above criteria and reviewing the checklist in this White Paper, there is no better choice than Planar's Clarity Matrix LCD Video Wall System. Why?

Range of Sizes and Brightness Levels:

Planar's Clarity Matrix LCD Video Wall System— a true video wall system made up of tiled displays is available with 46" or 55" LCD displays and a range of brightness options.



Thin Profile:

Clarity Matrix LCD video walls from Planar are less than 4" deep from the wall or support. This provides not only a clean and elegant profile for your video wall, but also ensures that your video wall will be ADA-compliant, eliminating the need to retrofit your system later for ADA-compliance.



Thin Bezel:

Clarity Matrix 46" and 55" LCD video wall displays set a new benchmark with a tiled bezel width (the space between images on the video wall) as small as 3.7mm (0.15"), perfect for video walls that require a visually seamless wall of images.



Protective Glass:

Clarity Matrix LCD video walls are available with Planar® ERO™ (Extended Ruggedness and Optics™), an optically-bonded glass surface, lending a level of protection that is well-suited for installations in public spaces where increased ruggedness and durability is critical. Planar’s ERO technology also provides a nearly seamless touch surface for interactive touch video walls.



Left: Display without ERO protection. Right: Display featuring Planar’s ERO technology

Interactivity:

Planar’s Clarity® Matrix™ MultiTouch model is a turnkey interactive LCD video wall solution with up to 32 touch points and allows multiple users to simultaneously interact with the video wall.



Integrated Mounting:

With the Planar® EasyAxis™ Mounting System, Clarity Matrix LCD video walls have an installed depth of less than 3.7"— the thinnest in the industry — and ensures perfect panel-to-panel alignment. This eliminates the need for a third-party vendor mount and results in a thin profile, ADA- compliant, perfectly aligned LCD video wall.



Off-Board Electronics and Power Supply:

Clarity Matrix LCD video walls feature an off-board electronics and power supply design that benefits both systems integrators and end-users. Off-board electronics and power supplies take heat, complexity, and unreliability from behind the LCD display and place it in a centrally located, easily accessible rack-mounted system — electronics can be housed in an equipment room for optimized cooling, monitoring, and servicing. Clarity Matrix Quad Controller modules drive long distance video through Cat 6 cables to the video wall. Clarity Matrix Power Supply modules enable long-distance power, eliminating the need (and expense) for power outlets behind the displays as well as redundant power supply options. This unique design ensures Clarity Matrix LCD video walls deliver 24/7 performance and minimal installation space. With fewer failure points in Clarity Matrix's off-board architecture, Planar has the highest meantime to failure in the industry and offers 24/7 support.



About Planar

Planar, a Leyard company, is a global leader in display and digital signage technology, providing premier solutions for the world's most demanding environments. Retailers, educational institutions, government agencies, businesses, utilities and energy firms, and home theater enthusiasts all depend on Planar to provide superior performance when image experience is of the highest importance. Planar video walls, large format LCD displays, interactive touch screen monitors and many other solutions are used by the world's leading organizations in applications ranging from digital signage to simulation and from interactive kiosks to large-scale data visualization.