SAMSUNG

White Paper:

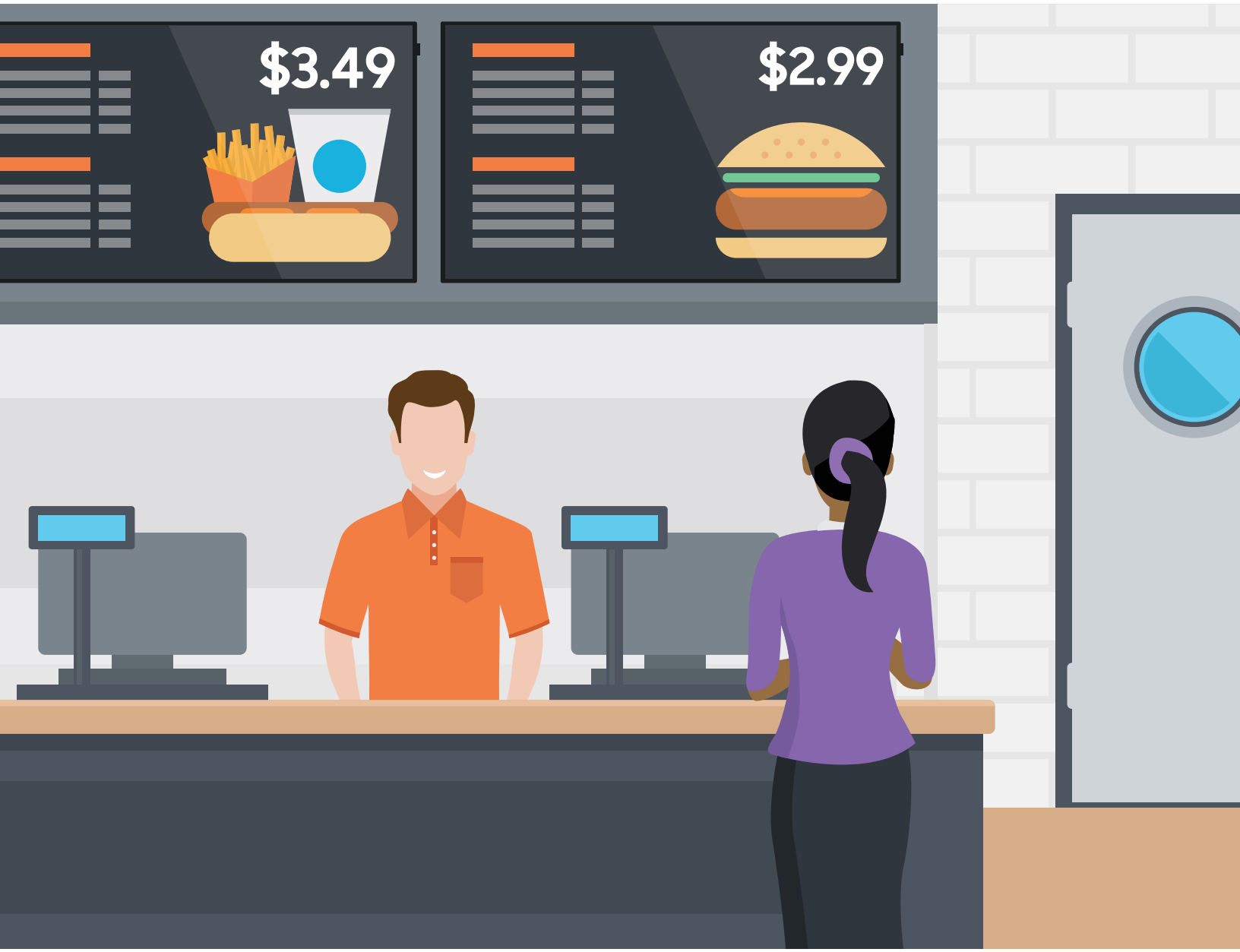
Digital Signage 101: The Beginner's Guide to a Successful Digital Signage Project

Introduction

Putting together a successful digital signage network hinges on making the right decisions and avoiding the roadblocks and potholes that make for slow, bumpy journeys.

Getting and absorbing some good advice at the start will help you plot a much straighter and smoother course.

In this white paper, we'll provide a set of basics — let's call it Digital Signage 101 — that will prepare you to plan and execute an effective digital signage deployment for your organization. We'll start with the preliminary thinking, and then get into the some of the key technical issues to learn and address.



The Big Why

Why are you, your bosses, or your organization thinking about deploying a digital signage network?

That is the biggest key to getting the whole thing right — because if you don't know where you're going and what you want to see at the other end, you're lost before you start.

What are the objectives of the network? Avoid vague slogans like "introducing a Wow Factor" or "elevating the experience." While those concepts might be elements of your decision-making, they are difficult to quantify and should never be an endgame in themselves.

Instead, specifically identify the problem that needs solving, and sort through whether digital signage is the technology and tactic that will address it most effectively.

The quick service restaurant industry has been an effective early adopter of digital signage. Many QSR chains have converted their printed menu signs to digital because doing so made sense from a business perspective.

For those establishments, it boiled down to the technology resolving a few substantial problems:

· Regularly changing out printed menu signs for seasonal updates, new menu options and price changes took time, and costs added up

· Human factors such as supply and demand meant what was on those signs was occasionally wrong or out of date

· Printed signs had no efficient way of dealing with limited-time deals or time-of-day options such as breakfast menus that expired at 11 a.m.

"Why?" is the biggest key to getting this whole thing right - because if you don't know where you are going and what you want to see and happen at the other end, you're lost before you start.

Going digital fixed all that, and the ability to highlight new items and specials has also been shown to increase overall sales at many franchises. And in that business, even a small percentage can be monumental to the bottom line.

For retail, the central mission may be to attract customers and close more sales with targeted advertising. In manufacturing and operational environments, it may be to reach staffers who are otherwise unavailable, with no desk or email.

In healthcare and on corporate and higher education campuses, it may be to help people find buildings, offices or clinics, or to keep patients, students, employees or visitors apprised of the latest news and updates.

In airports, bus stations and government offices, digital signs might solve a big customer service issue simply by letting people know how long they'll be waiting to clear security, for instance, or get to a service counter.

Once you have a clear objective, you're in good shape to start thinking about some other Ws.

What, Where, When and Who

There are many questions to ask and answer for each of these, but here's a sample to get you thinking past the Why.

The answers to all of these questions should define and shape the capital and operating budgets of your deployment.

What

What does the digital signage content look like that will address the core problem(s)? Is it video, or automated HTML5 content based on real-time data? What's the frequency with which it needs to be replaced or revised? What content management software capabilities are needed to make that programming happen? What's the digital display canvas that best suits the need — individual LCD screens? A larger videowall? A kiosk?

Where

Where is the best position for screens, based on who the target audience is and when they need to see it? If it's employees, is that a break area or on the work floor? If retail, where do customers tend to dwell? Where are they seeking answers and making snap decisions that can be influenced? Don't just place the screens where there happens to be available wall space — unless that also happens to be the optimal position to meet objectives. Also, will the ambient lighting conditions in that location require the use of high-brightness displays?

When

When will the audience see the screens? Does the time of day they are viewing affect content choices? Also consider the timeframe of the deployment: When does this network need to be in place? And if it is a large network with multiple locations, does the timing involve tests, beta sites and full rollout?

Who

Who is the viewing audience? What do you want them to see and why is that important to them? Also — and this is very important — who owns the network, in terms of budget and operations? Establish early in your planning who the stakeholders are, and get them involved. Resolve before any real decisions are made who, or which department, is responsible for fully planning, rolling out and then managing the project. You will also want to determine long-term if this is a project fully managed in-house, or outsourced to service providers to orchestrate everything from hosting servers and scheduling content to remotely managing devices and troubleshooting in the field.

Making Solid Technology Decisions

Technology choices for digital signage networks are often made too early in the process, before decision-makers have a full grasp of what they want to do, what that looks like in terms of content programming and the desired visual impact, and how they want to operate.

Most industry veterans have stories about networks and videowalls put in place by companies who were then stumped by what kinds of content to put on the screens, and how and why they needed to keep that content steadily refreshed.

Here are the key components of a network, bearing in mind that many technology providers may offer multiple components, while others have only one element.

Screens

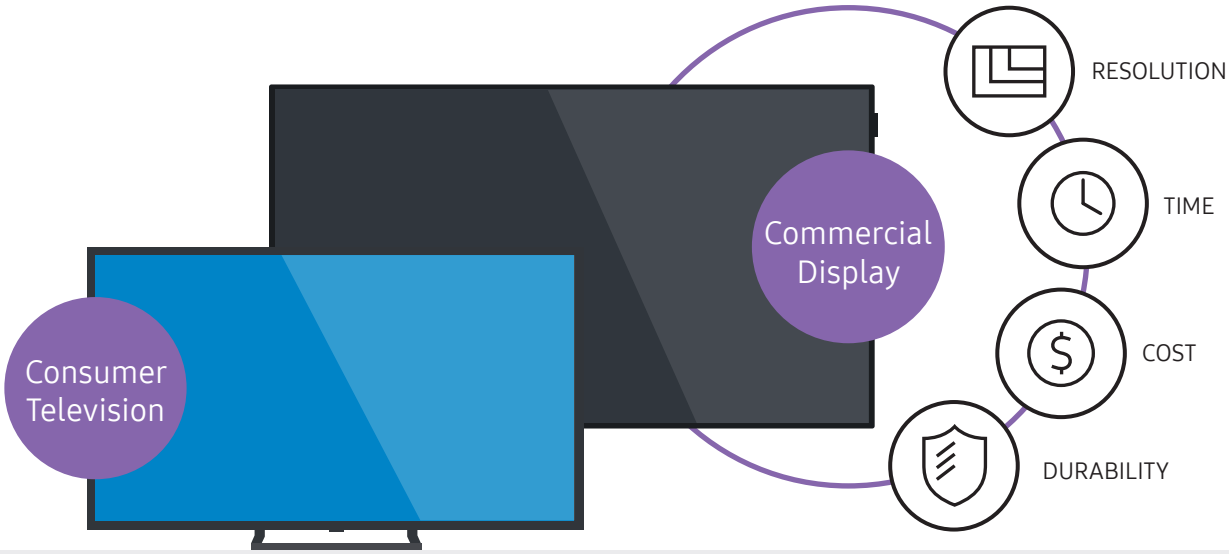
Flat panel digital signage displays — predominantly LCDs — look very much like TVs, and share much of the same engineering DNA, but they are fundamentally different. Commercial displays are strongly recommended for any digital signage deployment, because they are designed for use 16 or even 24 hours a day, seven days a week. TVs are built and rated for a few hours of use per day. TVs are also not designed to invert into portrait modes (they won't cool properly) and lack the connectors and rugged design of commercial displays. Commercial displays almost always cost more than TVs of the same size, but they're built to last and will save you money in the long run.

Commercial LCD displays can be grouped in clusters to form videowalls. Displays for use in videowalls have particularly slim frames, known in the industry as bezels. Those bezels are the physical separators between each display in the videowall, creating gridlines. Through the years, bezels have narrowed dramatically, but they remain and will likely not fully disappear because of the fundamental design of LCD displays.

Those seams are one of the core drivers in a shift in digital signage to LED display modules, with can be tiled together in groupings that have no visibly evident seams. LED modules also do not have the restraints posed by rectangular LCD displays — meaning LED videowalls do not have to be scaled rectangles. Some LED products can even be curved.

Another key difference between LCDs and LEDs is their display resolution. An LCD can easily pack all the 3840 by 2160 pixels needed to realize Ultra High Definition (UHD) resolution into one 55-in. screen. To do that with even a fine pixel pitch LED module would involve a much bigger physical footprint. For example, a videowall using Samsung IF series 2.5mm LED modules would need 20 of them across to realize UHD, with each module having 192 light pixels across.

What that means in practical terms is, if someone wants to do 4K content on an LED screen, that's a screen that may fill a whole wall of a store or office lobby. Learn more about direct-view LED.



Media Players

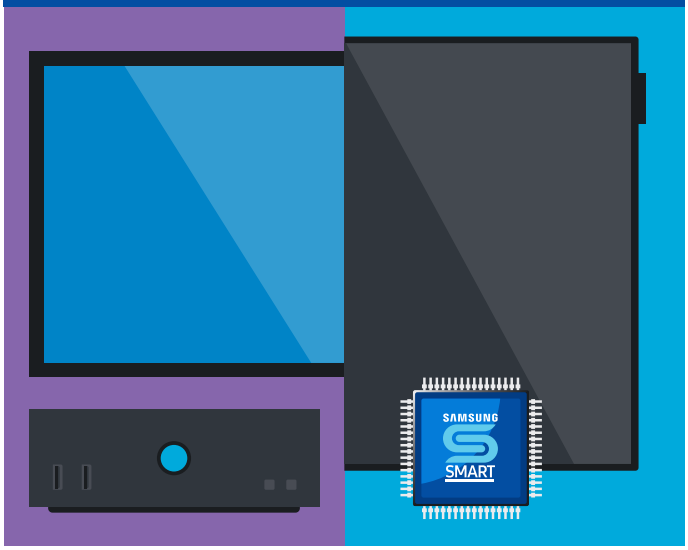
Content for screens has historically been provided by external media players, but things are changing on that front as well.

For most of its existence, digital signage has been powered by small personal computers — ideally industrial-grade PCs with low-cost components. Most of these PCs run either Windows or some version of the open-source Linux operating system, and have player software installed from a content management software provider (see page X).

More recently, special purpose media players have come on the scene — devices that were either built for the specific task of playing back digital signage media, or adapted/-co-opted to serve as signage players. For the latter, set-back boxes that interface directly with the displays and manage the transmission of content have been successfully used as players (though early companies to implement these devices suffered through a lot of trial and error to find reliable hardware and supplier partners).

At the same time as set-back boxes started being used, commercial display companies, led by Samsung, have introduced flat panel screens that ship with embedded

External Media Player vs. Embedded System-on-Chip



media players. These System-on-Chip (SoC) players — also known as Smart Signage — eliminate the upfront capital cost of external players, simplify installations (because there are far fewer cables and connectors) and minimize outages in the field, which are costly to resolve. The early iterations of smart displays had limited processing power and did not support advanced applications like touch, but today, smart SoC displays have become widely regarded as equals in power and capability to many external player options, and scores of software companies support SoC displays.

Content Management Software

Globally, there are hundreds, if not thousands, of software companies that have developed and are in some way marketing content management system (CMS) platforms for digital signage. Of those, perhaps 50 to 100 have the quality, customer base, experience and support capability to offer credible management solutions.

The great majority of these companies offer solutions that leverage cloud services and the web, and their software is sold and used on a month-by-month subscription basis. This is generally described as Software as a Service (SaaS), and how users pay has many similarities to subscription services like smartphone plans. You pay a set fee every month, and the entire infrastructure, service and support is handled by the provider.

A much smaller percentage sell software that end users install on their own servers and on desktop PCs or other devices to manage the network.

Choosing the right software solution traces back to objectives, to how IT wants to operate the network and the specific programming it demands. For example, some software platforms are tuned to specific use-cases like retail or advertising. Some are very good at driving videowalls. Others are very good at integrating and using live data.

If you're hoping to contain capital costs by using SoC displays, be aware that not all CMS providers support them, and that support can vary by display company. Samsung has the largest ecosystem of CMS providers with solutions for smart displays.

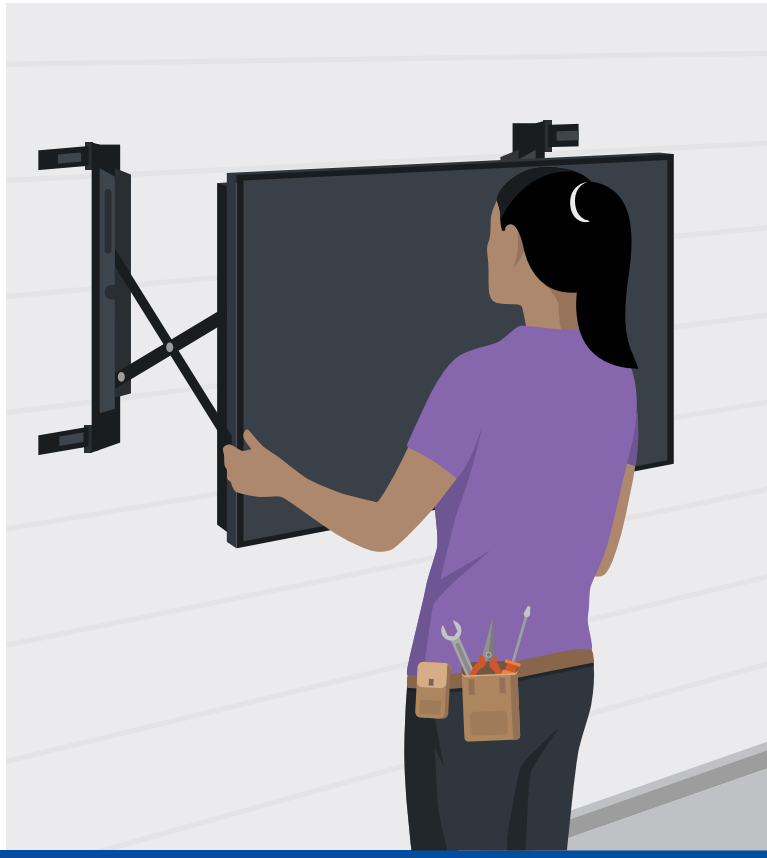
Supporting Infrastructure

Mounting systems are an often forgotten but important element in most installations. These are commercial versions of the mounting bracketry that consumers use to attach flat panel displays to walls.

The commercial versions are better engineered, with precision adjustments, greater strength and the ability to enable special functions like easy rear-servicing, quick releases and scissor systems that enable heavy displays to be pulled out from walls and then pushed back in.

There are also important and equally forgotten elements in more sophisticated deployments like videowalls and large footprint installations, such as factories. These include specialty devices that serve important functions like splitting signals to run across the structured cabling in buildings. These are generally hardware solutions that are specified and implemented by solutions providers and systems integrators.

While some display companies deliver products with touch capabilities already built in, the majority are added after the fact. There are several hardware and software companies that specialize in delivering everything from very simple to very sophisticated touch experiences.



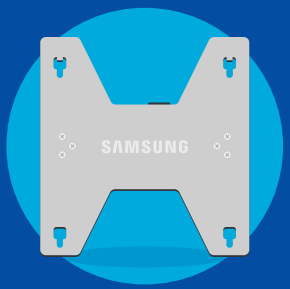
The Ecosystem

The core players in the digital signage ecosystem are:

Display providers

Software companies

Media player manufacturers



Infrastructure hardware companies

Services

AV systems integrators

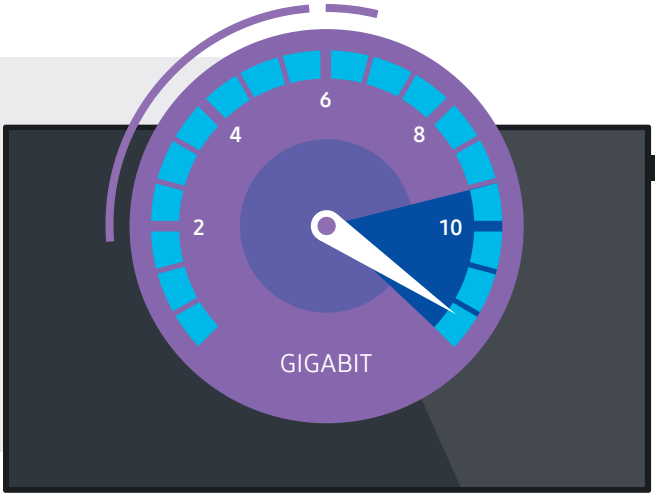
These include both local and national providers capable of deploying and in some cases managing and monitoring networks.

Solutions providers

Typically, these are smaller companies who can assist clients with initial ideation, creative design, project management, procurement, smaller scale deployment and ongoing management.

Installation firms

These are often used by both AV systems integrators and solutions providers to handle larger-scale rollouts in multiple locations, as well as field servicing post-installation.



Connectivity

Bandwidth availability and network controls have improved and advanced to a point where running a digital signage network off the existing local or wide area network is possible, and does not impair other work done on networks, or create security vulnerabilities. However, wireless telecom speeds and costs also make it possible to speedily establish nationwide signage networks running on 4G and higher cellular data networks.

Research and analytics

A variety of companies that have tools — some driven by artificial intelligence, some by more conventional data gathering and processing means — to measure everything from the dynamics of a venue to audience composition.

Subscription content

Numerous companies offer fee-based subscriptions to raw or (usually) packaged content, such as news, sports, weather and entertainment. This content helps populate programming, giving viewers reasons to look repeatedly.

Creative services

Many companies across the ecosystem — notably solutions providers and many CMS software firms — offer creative services. They have in-house design capabilities to develop original programming such as promotional messages for customers. There are not many “pure-play” creative agencies focused on the signage ecosystem, and larger companies such as banks often assign that work to their existing creative agencies.

Drawing the Eye

Screens only attract viewers if what is on those screens is relevant, interesting and, ideally, visually compelling.

Many new organizations rolling out digital signage for the first time make a couple of key mistakes:

They copy what they have seen in vendor demos or in other venues, using the software's capability to assign content to multiple zones on a screen. They undervalue the importance of content, and don't assign the resources or budget to keep it fresh and interesting.

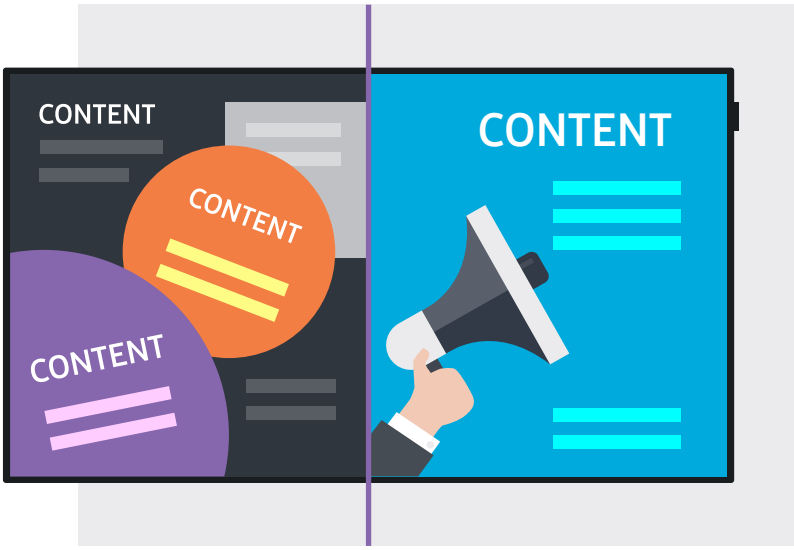
Visually busy screens with multiple zones, though still common, rarely make sense. Video analytics testing shows most viewers look at screens for a span of a few seconds, and that's not enough time to read and absorb all the messaging. The best practice is to declutter screen designs and ensure the visually dominant message aligns with objectives, and can be read and remembered as easily as billboard advertising messages along roadways.

Many networks are launched with great enthusiasm and effective creative production, but languish because the ongoing operation of the network — including regularly refreshed content — was not budgeted. In the same vein, every network needs a content champion who is regularly looking for and thinking about messaging, and how to optimize the investment in the screen or screens.

Going Interactive

Consumer engagement is a big focus for touchscreen-based digital signage projects. Touch applications are being used to improve the experience of office and mall directories, wayfinding in large footprint facilities like airports and office campuses, and as "endless aisle" information stations in stores, letting shoppers discover and even order items not stocked in that physical location.

Interactivity is also enabled through tools such as sensors. There are multiple ways, for example, to trigger content on adjacent screens in a shop when a consumer lifts up an item like a shoe or cosmetic bottle.



The Essential Secret to Saving Costs - and Headaches

CMS software systems are marketed mainly on their ability to create and schedule appealing content to target audiences, but industry veterans who spend their time specifying and running complicated, dispersed digital signage networks know the really important consideration is how the platform handles remote device management.

These are the software tools that enable digital signage network operators to monitor what is happening with all of the devices that drive a network — principally the media players, but also the displays and connectivity.

Good device management tools allow operators to be alerted to developing problems, and ideally resolve them before outages occur. When there are outages, the best tools allow most problems to be remedied from an operator desktop.

Without solid device management, network owner/operators will incur the costs of field service calls that may not require anything more than a screen being turned back on or a media player being rebooted. Those service calls can cost hundreds of dollars, and the accumulated bills deeply burden a network.

Budget Considerations

"How much will all this cost?"

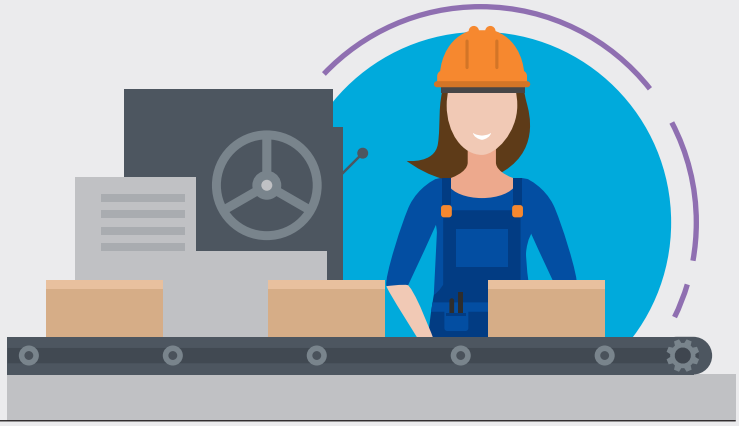
That question will come up from the C-suite, and it's important for the people developing a digital signage project to have solid answers. Costs are directly tied to the type of technology being used, the breadth of programming content, the speed and complexity of the installed locations and numerous other variables.

Learn about the Cost Benefits of Smart Signage

A budget breaks down in two ways:

1 Capital Costs

There are line items for displays, media players (if required) and mounts, as well as devices for signals and cabling, and in some cases for software and central servers. Some departments may budget in other setup factors like installation labor and any electrical work needed to bring dedicated power to the equipment.



2 Operating Costs

These are the ongoing costs for running a network. The most common line items break down as:

- Monthly SaaS fees (which usually include support)
- Connectivity (if not already in place)
- Internal staffing costs to maintain a network
- Creative production costs
- Subscription content costs
- Field service break/fix costs
- Optional outsourced turnkey services for activities such as content scheduling and distribution, as well as network monitoring and troubleshooting

The Big Gotchas

Anyone doing something new wishes they'd known about a few "gotchas" that they could have avoided, if only someone experienced had filled them in. There are many, but here are some of the biggest pitfalls:

Future-Proofing

Don't base technology choices on what you need now. Base them on what you will be doing with it for a three- to five-year operating window. Perhaps 4K content is rare now, but will you want 2K screens three years out, when 4K is what your marketing partners have and want to show?

Warranties and Support

Understand from your key hardware suppliers — like display manufacturers — how their warranties and support systems work. When there's a problem, what will happen? With lower-cost options, probably very little. With a mission-critical project like digital menus or airport displays, delays are huge problems that need speedy remedies.

Wrong Content

When it comes to what's on screens, think drive-by billboards and short-term attention spans. Too much information on screens means your key messages might be missed. Messaging should be kept short; the 30 and 60-second messages that are staples in TV generally don't work in digital signage. They're way too long.

Moving Parts

Solid-state devices tend to cost more, but the absence of moving parts almost always raises the reliability level for a network. Saving $100 by choosing a device with a spinning hard drive or fan may cost $400 down the road for a service call, and hundreds more for a replacement device.

Open Platforms

Does your chosen software platform play nice with other systems? Look for software platforms that have Application Programmer Interfaces (APIs) that will allow your system to work with and use data and triggers from other systems that can make your content dynamic and hyper-relevant.

Environmental Dynamics

The biggest foe for many outdoor and window-facing digital displays is the sun's light and warming rays. Daylight creates glare that overpowers visuals on screens, and those displays can be useless if no one can see what's on them. There are specially designed high brightness displays that successfully cut through direct sun. Also make sure you factor in the need to control temperatures on the screens from the full midday heat load of the sun, particularly for screens in street-level windows and in outdoor enclosures.

Subject-Matter Knowledge

There is value in working with software companies, as well as deployment firms, that know and have experience in your vertical market. If you're a bank, for example, they should understand network security, types of common messaging, and the security sensitivities around issues like installations and servicing in branches.

Summing it Up

Technology is just the enabler for digital signage networks. People don't look at screens simply because someone put them up. The novelty of flat panel displays — even big LED displays — has passed.

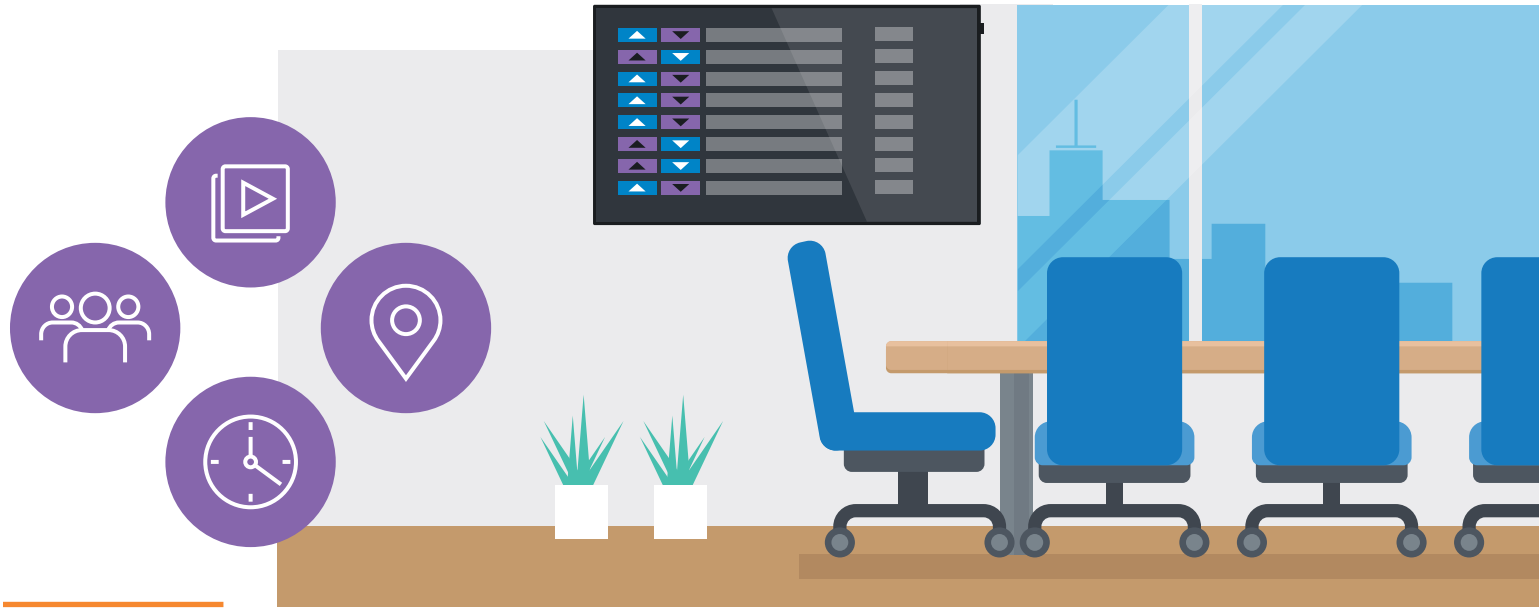
What's really important and critical to the success of a network is:

- Clear objectives
- A proper plan that addresses all the W questions
- Technology partners who understand your vertical business, and who have the right tools, experiences and personnel for your needs
- A content programming model aligned with your objectives
- Proper resource and budget allocations
- Tools and benchmarks to measure success

because even if it looks good, and runs smoothly, there is no clear way to assess whether all the efforts and all the investment are working. When that happens, and it's time for refreshing the technology, the budget requests are opposed or denied.

It can be quite simple to do. Have sales or other key performance indicators from before and after a network went live, and show results and trends. Measure customer satisfaction levels. In places where people had to go to information desks to seek directions, did the number of inquiries at those desks go down when wayfinding kiosks?

Those tangible measures are key to ensuring long-term success.



Learn more: Digital Signage Solutions from Samsung.