White paper:

The ultimate guide to digital signage content management systems

SAMSUNG

Introduction

Over the last decade digital signage has evolved into a mainstream communication medium. Looking at it from the top down it can be categorized as ad based, information based, or both, but in all applications, there are commonalities. Digital signage requires a display and mount, a media player, and content to be displayed. The other common denominator is the content management system aka the CMS. This is where the work of digital signage is done, and it controls the entire process.

Content management systems can be compared to air traffic control operations at an airport. The air traffic controllers need to know where planes are from start to finish. This includes where they are on the ground, when they need to get in line to leave, their flight plan, destination, and all the specifics i.e. types of aircraft, occupants, and payloads. The airport system must scale up and down based on the conditions they are confronted with. A full featured digital signage CMS does much the same thing. It is the software that controls the content much as an air traffic controller controls incoming and outgoing flights and air travel overall.

Content is created in different types and formats (i.e. images, data, video, etc.) Once inside the CMS it is sent at pre-determined times and destinations to a media player for playback based on a precisely controlled schedule. Like air traffic control, a good CMS tracks the type, scheduling, transport, arrival, and departure of content and gets continuous feedback on its status.

As air traffic control is obviously mission-critical, a similar claim of criticality can be made in the control of content in a digital signage network. This mainstream communication medium is increasing becoming fundamental to business operations for all types of applications. Digital signage is increasingly central to how organizations communicate — both internally and externally to the outside world.

This white paper explores the key characteristics and components of a digital signage CMS, the variety of options available and the many ways they are being used to meet business needs. This paper will help you prioritize so you are better informed in choosing the optimal CMS technology set for your own visual messaging requirements.

Defining a digital signage CMS

At its core, a digital signage CMS is software that allows operators to easily and efficiently put visual messaging on the right screens, in the right places, according to schedules or even based on real-time conditions at each physical location.

A full-featured CMS enables operators to:

- Upload, test and use videos and other creative content developed by third-party agencies and partners;

- Use pre-designed templates, layout tools and, in some cases, built-in creative tools to develop content;

- Assign descriptive data attributes to each media asset, device and installed location, as well as the characteristics of the location, like postal codes and store types — making the ongoing job of programming content efficient and accurate;

- Monitor technical issues with deployed equipment, like screens and media players, via device management tools, allowing for remote troubleshooting and remedies that minimize outages and tightly control operating costs;

- Analyze system performance via reporting and insights tools, enabling operators to confirm messaging was played as planned.

Most contemporary CMS platforms are managed using a web browser as the user interface, whether the core platform software is installed on local servers or operating in the cloud. In cloud arrangements, the operator's screen network is walled off from other digital signage networks (that may be on the same server system) with assigned user rights and passwords.

That means one or a handful of people may have "super-user" access that gives them full control of every operating element of the network. At the opposite end, local managers may only be able to update a single message at their location and have limited editing rights.

A CMS platform is a system of different software modules — some core to operations, others optional add-ons that broaden functionality. Software is written for server management, databases, storage and file distribution. Many platforms also offer some degree of content creation capability, often through pre-designed templates or content apps and widgets.

There is also software written for the "players" — the devices that drive the smooth playback of messaging on screens, no matter where they are located. Those players can be separate devices, like PCs, but networks are increasingly using "smart" displays that have media playback hardware built inside the screen.

Digital signage CMS software is marketed and delivered in two main ways:

1. Some end users — usually large companies like banks or governments — have enterprise contracts that allow them to install and run the CMS software and services on their own network, usually due to a need to minimize security risks. An on-premise solution may also relate to a desire to buy the software using capital budget funds instead of renting it as an operating budget line item.

2. Both large scale enterprises and small businesses with limited IT resources dedicated to their signage increasingly opt for cloud-based Software as a Service (SaaS) subscriptions that make the CMS provider responsible for hosting and managing the central technology. End users subscribe to the service and are granted a license that may be monthly, annual or for another defined term. The base idea is similar to mobile phone contracts: You may own the phone, but you rent access to the system the phone runs on.

A kaleidoscope of options

Technology advancements, led by cloud computing and the widening capabilities of web browsers, have lowered the barrier to entry hurdle for any software company looking to develop and market a digital signage CMS.

Counts vary, but there are at minimum hundreds — and possibly thousands — of CMS software options being marketed globally. They run the spectrum from rich, robust and well-established platforms to bare-bones "apps" that load on set top boxes and smart TVs to do the basics of playing a series of videos or still images in a defined loop.

While there are seemingly endless options, the 80:20 rule is very much in play in digital signage: 80 percent of the active software licenses reflect 20 percent of the companies in the marketplace.

Increasingly, companies have tried to differentiate themselves by focusing their research and development resources on a vertical market. Some digital signage CMS companies, for instance, focus heavily on the quick service restaurant (QSR) sector, higher education or workplace communications.

Fitting the CMS to purpose

Many factors shape decision-making when end users and their solution partners source a digital signage CMS. Budget is usually a factor, and larger organizations may have tight criteria for technical issues like hardware partners, operating systems (OSs) or security standards. They may also mandate that the CMS be cloud-only or on-premise.

Beyond these considerations, the key to software selection is asking and answering a set of W questions — who, what, where, when, why — and their cousin how. It's a simple but critical exercise that will give planners and decision makers clarity on what they really need, rather than being swayed by price, marketing or relationships.

Let's break that down:

Why?
Why is a digital signage network being considered? Why now? Why not print? Why not mobile-only? Keep asking why; it will sharpen your business case. For example, wayfinding screens at key decision points at mall, office complex or healthcare campus may solve a big problem with visitors getting lost or misdirected.

Who?
Who will "own" the digital signage network? It might be an individual or department. Knowing the answer will help you decide on cloud or on-premise, as well as requirements for managed services and ongoing support. The bottom line is someone needs to "own" the network, as a digital signage project can start with a lot of enthusiasm but end up orphaned if no one's dedicated to it.

What?
What messages, content mix and durations make sense? Knowing the type, format and amount of your content makes it much easier to select appropriate software and hardware. For example, if your content mix will use 4K video, that may rule out hardware that doesn't support Ultra HD resolution. Different users need different capabilities, like QSR's that need to change menus through a day to focus and speed ordering, which boosts sales. Another operator, such as an airport authority or airline, may need robust data integration to automate everything on screens, from flight and gate information to boarding procedures.

Where?
Where do the screens need to go? Where are the positions that would most benefit from effective, changeable messaging? Waiting areas? Entrances? Employee break rooms? If your company has multiple locations, would they all benefit? If so, are the optimal positions the same for all locations, or different for each? There are many examples of screens installed where there was available wall space, as opposed to where they'd have the greatest impact and solve communications problems.

When?
When do the screens need to be operating? Timelines should be established for all aspects of deployment. A screen network that will be live more than 16 hours a day needs displays that can reliably meet demands much greater than those of conventional TVs, that are only engineered to be on a few hours a day.

How?
How will this network be managed? Will all aspects be handled internally, or will some tasks be outsourced to managed services providers? Many organizations, wanting to stay focused, outsource much of their digital signage work.

Making displays smart

A digital signage network's core components are the display and media player, and the CMS software platform – which involves the central management software and the player software installed on each playback device at the "edges" of a network.

For many years, those playback devices were consumer or industrial versions of personal computers, and CMS software companies tended to focus on one or a handful of specific PCs that it recommended and supported. Keeping that PC list short allowed software developers to stay current with changing components and OS revisions, and reduced the amount of custom work needed to get its software to "work" on new, previously unfamiliar devices.

In the past six years, a very different approach pioneered by Samsung has steadily taken over from PCs. Samsung's Smart Signage Platform puts a powerful media playback device inside its SoC-embedded LFDs, pre-loaded with an operating system and both open and ready to be adapted for use by CMS software developers.

This realizes at least three key benefits:

1. An embedded media player negates the need for an external media player, which can cost anywhere from $250 to $1,250.

2. The all-in-one design, which includes Wi-Fi and onboard storage, reduces components to a display and a single power cable, speeding up installation and reducing start-up labor costs.

3. Solution providers using smart signage report a huge drop in field service calls, as some of the most common and costly field service issues are for things like loose cables. When you just need one power cord, that's no longer an issue.

The net result is lowered capital and operating costs impacting the TCO. This is realized through the time it takes for digital signage to shift from a cost to a net-positive benefit through indicators like increased sales.

Three-in-one solution bundle

Total Cost of Ownership (TCO) is a key driver in making technology choices. That calculation starts with capital costs, but operating costs are also a big factor. Most digital signage network operators crave an overall solution that is easy to activate, learn and manage.

Using a simplified "matched set" — bundled hardware and software components from the same provider — is one way to minimize time and resource demands. These matched sets are bundled with pre-installed software that's been optimized specifically for that playback and display hardware.

When the various components come from different vendors, who may or may not be technology partners, there can often be finger-pointing when technical problems develop. The media player people say the problem is with the software. The display people say its's the media player hardware. And so on.

Meanwhile, the user just wants the problem to go away.

Samsung offers what is, effectively, a full solution bundle with its Smart Signage displays — in a variety of lines and screen sizes — that matches components and minimizes issues. Samsung's own long-running CMS software, MagicINFO, is tuned to the System on Chip playback hardware that's embedded in the display, and configured to work flawlessly with the screen. The result: technical problems are far less likely, and if issues do arise, the support teams know all the components, and don't need to seek help and collaboration from third-party vendors.

Cost comparison

	Samsung		Leading Competitor	
Hardware Cost	**Part**	**MSRP**	**Part**	**MSRP**
LFD	55" Display	$2,321.00	55" Display	$2,438.00
Player	SoC Embedded	$0	OPS PC Media Player	$1,319.00
Mount (Chief)	MTM1U	$202.00	MTM1U	$202.00
Cables (C2G)	27145	$22.99	27145	$22.99
Installation Software Cost	LFD Install & Configuration	$100.00	LFD / Media Player Install & Configuration	$200.00
Server License	N/A (Free)	$0	Competitor Server	$1,461.00
Player License	BW-MIP70PA	$525.00	On Premise Player License	$599.00
User Training	N/A (Included)	$0	Single User Certification	$339.00
Upfront Cost Total	**$3,170.99**		**$6,580.99**	
Electricity (Annual)	10 hours/day (108w)	$39.42	10 hours/day (125w & 60w)	$67.53
Support Visits (Annual)	N/A (Remote Management)	$0	2 onsite visits @ 3 hours each	$600.00
Support and Maintenance (Annual)	BW-MIM70PA	$120.00	Support and Maintenance	$290.00
Ongoing Cost Total	**$159.42**		**$957.53**	
Grand Total	**$3,330.41**		**$7,538.52**	

Samsung is $4,208.11 less for a single 55-inch device with fully-embedded content management system suite.

The 'magic' of maturity

While many media playback and display technology companies have "dabbled" with entry-level CMS software, Samsung has been developing and steadily refining its MagicINFO software suite since 2008.

First marketed as a small-business solution, MagicINFO has matured into a multicomponent solution that's now being used by businesses and organizations of all sizes.

Its price, features and scalability match favorably with the top independent CMS options on the market, but a Samsung solution presents none of the business risks inherent with small software companies that wholly depend on licensing revenues.

There are three key elements to a MagicINFO solution:

1. MagicINFO Author is the software toolset used directly by end users or their contracted service providers to create content that's then scheduled and pushed to networked digital signage displays.

Author includes a library of professionally designed, business-ready content templates, icons and images. The library makes it easy for businesses of any size to quickly develop material for screens — without the cost, complications or delays associated with using outside creative help. Thanks to these templates, users don't need to have a creative background to develop great-looking material.

The software also includes a set of pre-scripted widgets that automate content, such as ZIP code-specific weather conditions and forecasts. Author is also optimized to support third-party creative in a variety of formats — from images and video to PhotoShop files and Microsoft 365 documents.

Creating and keeping content fresh on digital signage networks is a steady but important job. Networks can languish and lose their relevance if on-screen content grows stale, but using third parties to produce new content can turn into a network's largest operating expense. Great templates, widgets and other tools make it possible to keep displays interesting without exceeding operating budgets.

2. MagicINFO Server is that air traffic control center of a digital signage network. It's the toolset used to target, schedule and push out content to one, 100 or 1,000-plus players and screens.

With Server, each piece of media, each location and each screen can be data-tagged with its key characteristics. This makes it possible — and fast — to schedule a specific piece of content to appear only in relevant locations.

Without data tagging, scheduling a network to show certain media files at certain locations at certain times is a tedious,

error-prone full-time job. Using Server's data tagging, that work can be smooth, hyper-accurate and largely automated.

Server also contains all of MagicINFO's robust device management tools — arguably the most important features of a good digital signage CMS. Server's monitoring dashboard provides users a real-time overview of the status of each device deployed in a network, as well as statistics and data analysis that shows trends and warns of any developing issues, such as unreliable connectivity.
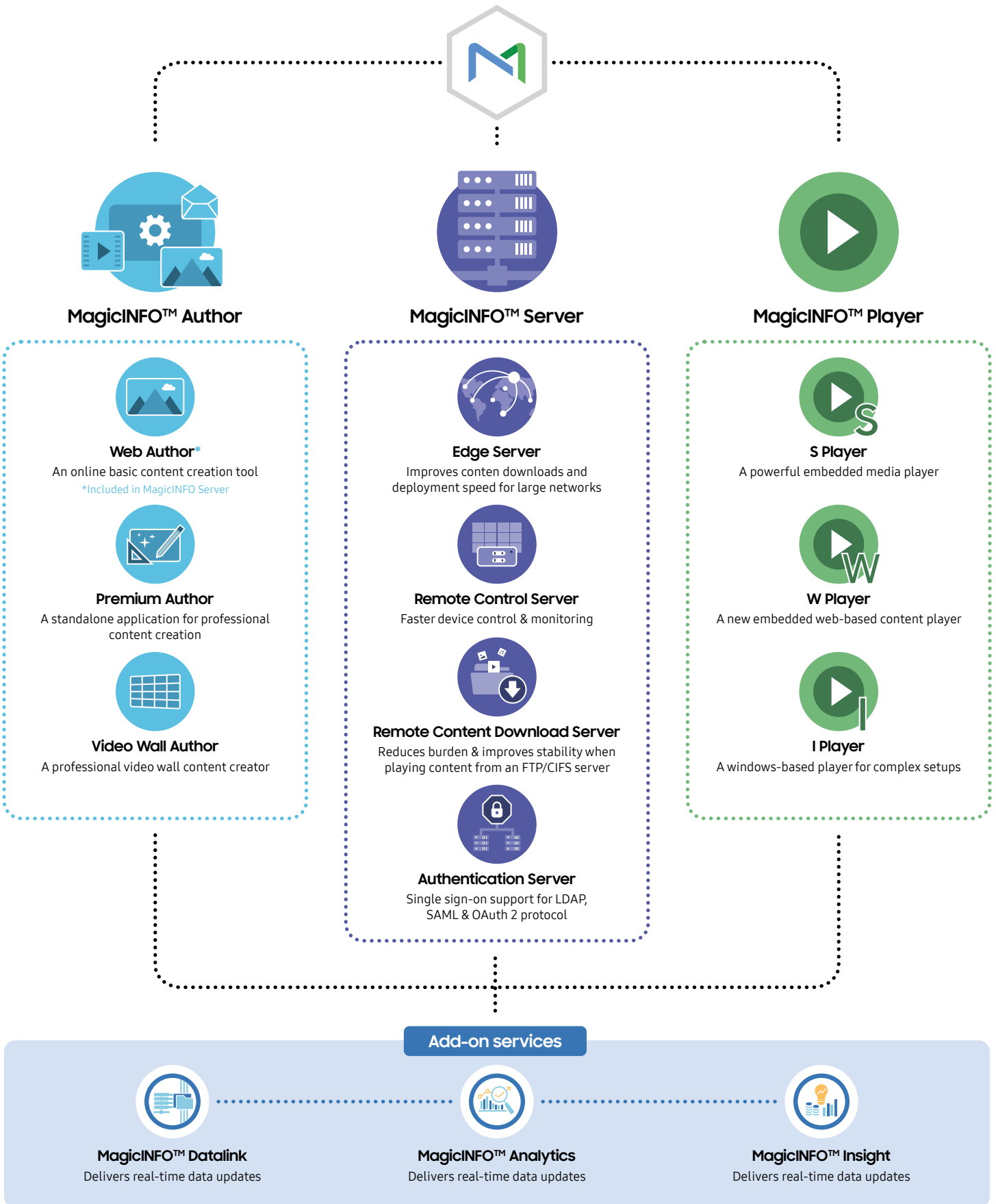
Monitoring tools provide steady warning and error information for more than 30 software processes and more than 40 hardware components, from connectivity to storage and graphics.

All of that is critically important to minimize outages and maximize screen uptimes, as well as dramatically reduce costly field service calls. With the right remote management and troubleshooting tools, rolling a truck becomes the exception as opposed to the expensive rule when issues develop at a screen network's off-site locations.

3. MagicINFO Player is designed specifically for Samsung's system-on-chip (SoC) Smart Signage display lineup. It's a native (built-to-purpose) player application, whereas most third-party CMS platforms market player software originally developed for devices like PCs and commercial set-top boxes.

Often, those adapted versions are truncated — players that technically work on smart displays, but only offer all the features on other devices like PCs.

Player handles smooth playout of scheduled media files, logs activity and steadily checks in with the mothership Server to provide analytics, such as proof that files played where and where as designed, and pick up any new instructions or media files.

MagicINFO™ Author

Web Author*
An online basic content creation tool
*Included in MagicINFO Server

Premium Author
A standalone application for professional content creation

Video Wall Author
A professional video wall content creator

MagicINFO™ Server

Edge Server
Improves conten downloads and deployment speed for large networks

Remote Control Server
Faster device control & monitoring

Remote Content Download Server
Reduces burden & improves stability when playing content from an FTP/CIFS server

Authentication Server
Single sign-on support for LDAP, SAML & OAuth 2 protocol

MagicINFO™ Player

S Player
A powerful embedded media player

W Player
A new embedded web-based content player

I Player
A windows-based player for complex setups

Add-on services

MagicINFO™ Datalink
Delivers real-time data updates

MagicINFO™ Analytics
Delivers real-time data updates

MagicINFO™ Insight
Delivers real-time data updates

Putting a CMS to work

The rationale for using digital signage is steadily evolving. Digital signage was rare in most business environments a decade ago but is now common. Increasing prevalence helps fuel adoption rates as decision makers start to see it everywhere and recognize the business impact.

The most active early adopter has been the QSR industry, which replaced the poster menus at order counters with digital versions that could change by time of day and run specials to influence incremental impulse orders. Now the QSR industry has heavily invested in outdoor digital displays in the business-critical drive-thru lanes and is looking at additional displays for emerging consumer demands like mobile and curbside pickup notice screens.

Business communicators have been investing heavily in digital signage as a new, more effective means of reaching staff in both white- and blue-collar environments. Strategies like employee email campaigns and intranet sites have limited effect, but digital signage in areas as diverse as customer contact centers and warehouses has messaging that's always on and easy to notice.

Vertical markets such as retail, higher education, hotels, sports venues and healthcare are all using digital signage to get information in front of their target audience at the right moments.

Signage has an amplified importance — now more than ever — as effective communication is critical not only to the health of customers and staff, but also to business. Rapid shifts in how people shop and what items are available or out of stock are most effectively relayed by prominent, highly visible displays.

Digital signage is also well-established as a tool to:

- Create and elevate experiences, setting the mood and tone for locations like flagship retailers

- Make communications instant by changing messaging in seconds or minutes instead of days or even weeks with print methods

- Modifying behaviors, through everything from managing line-ups and guiding people to influencing impulse buys and driving loyalty initiatives through on-screen calls to action

Making an informed CMS decision

The digital signage CMS software options available to end users may initially seem boundless, but realistically, the pool of viable options is much smaller. Many options won't meet user needs. Some present unacceptable business risks due to the size or state of the vendor or the technology choices being marketed.

Many — even most — digital signage solutions represent a variety of components and services pulled together from different manufacturers. So there's something to be said for solutions like MagicINFO that are simple and seamless to use and compelling to view.

An informed selection will owe to knowing what's needed, understanding the cost, TCO and ROI implications and finding a vendor that offers you stability and security in uncertain times.

Learn more about Samsung's MagicINFO solution

Learn more: samsung.com/magicinfo | insights.samsung.com | 1-866-SAM4BIZ

Follow us: ▶ youtube.com/samsungbizusa | 🐦 @samsungbizusa

SAMSUNG