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HEADLESS DIGITAL SIGNAGE EXPLORED AND EXPLAINED

BUILDING CUSTOM DIGITAL SIGNAGE
SOLUTIONS USING AN API-FIRST
PLATFORM

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AN INTRODUCTION TO HEADLESS CMS

In an age of hyper-connected, data-driven workplaces, business communicators, IT teams and facility operators need messaging and notification tools that are flexible, dynamic and seamless.

Disparate, seemingly unrelated business and management systems are connected to share data, and then shape, trigger and drive on-premises communications, operations and experience.

Displays positioned around workplaces can inform, guide and manage everything from meeting room occupancy and HR notices to production KPIs and alerts. Typically, that's been done using one or several distinct software and server platforms dedicated to specific tasks and teams.

In effect, they're silo'd technologies with their own logins, user experiences and workflows.

The new, exponentially more efficient approach to managing communications across large, multi-faceted businesses involves what's called a **Headless CMS** – an emerging software platform approach that readily intermingles and works with the many other business systems inside an enterprise.

For digital signage messaging, a conventional CMS (Content Management System) is a software platform that solutions providers adopt and then learn to make work within a larger business, almost always as its own activity. That CMS is usually a "walled garden" that presents the same, generalized look, feel and user experience across all customers.

A Headless CMS, by comparison, is a management platform that has all the core engineering, underpinnings and scalability of a conventional digital signage CMS, but focuses on making inter-connectivity easy, streamlines the creation, management and distribution of messaging, and allows operators to apply their own custom-tailored user experiences.

Signagelive is a UK-based, globally-active software firm that provides scores of companies with a digital signage management software solution. Signagelive started with a more traditional CMS, but is evolving its product and services offer to include a Headless CMS option.

This white paper explores the challenges and opportunities of communicating effectively and efficiently across connected venues like workplaces and retail, and documents the advantages that are realized by using a Headless CMS.



DEFINING THE CONCEPT

With mainstream digital signage CMS platforms, customers create, describe, target, schedule and distribute content and layouts using tools that are part of the front-end software, and then they save that work to a back-end database. Content is moved around and displayed according to the scheduling and distribution layer that's built into the CMS.

A Headless CMS is a content management system that de-couples the presentation side of content (the head) from the management and delivery layer of a system (the body). With a Headless CMS, there is no presentation layer in the platform and content is displayed using data connectors and scripting. The creation and formatting of the content is done outside of the CMS, primarily with the idea that this is content that serves multiple purposes, and not just digital signage.

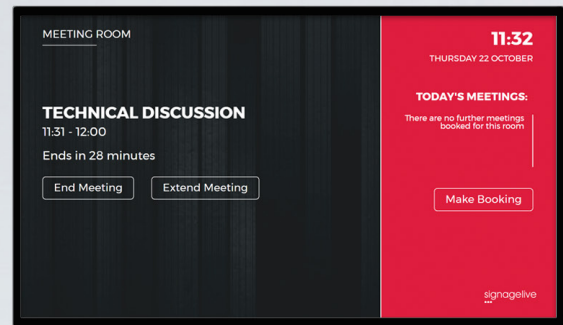
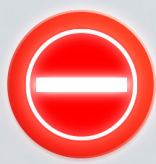
In many enterprise-level companies, there may be multiple CMS platforms required to handle multiple channels of communication, such as public-facing websites, intranets, apps and information systems. That almost always means multiple CMS platforms to pay for, learn, use, manage and support.

That set-up has also, often, meant a lot of duplicated effort and time in producing, scheduling and distributing versions of effectively the same content across all those channels. It can be highly inefficient, particularly in businesses where resources are stretched and time is precious.

A traditional digital signage CMS platform is a largely closed environment that only serves the function of managing the development and distribution of content to digital displays that are part of the signage network. They usually have directly associated playback software in the screens, or in the digital signage media players at the edges of the screen network.

In a headless environment, content and experience developers can render creative and messaging content for a wide variety of channels, and make it available in a repository. The headless digital signage CMS ingests the material and instructions it needs to push that content to screens on the network. But elements of that same material might find their way to a website or smartphone screen.

A traditional digital signage CMS usually has a well-defined user experience and set-ups specific to pre-defined and designed templates. A Headless CMS allows operators to add new end-points and different types of screens without complication. As a screen network expands and diversifies, a Headless CMS makes that simple.



HEADLESS ADVANTAGES

Using a Headless CMS - with the right content planning, processes and infrastructure in place - pieces of content can be produced once but distributed and used in multiple ways, with ease.

API POWER

Headless set-ups reflect the modern state of content development and distribution among larger companies with a variety of communications needs. An API-centric platform allows companies to be nimble, and equip their content creators and developers with the most modern, nimble tools.

APIs allow media to be ingested and distributed through a headless platform, integrating with other business platforms like digital asset management systems, or DAMs. The base idea is that the company that is producing content has that activity in hand, and just makes that content available via the APIs.

AUTOMATED MESSAGING

Because APIs are at the heart of how this works, the calls for data handled via APIs can result in messaging that is automated. For example, numbers like product and service pricing are automatically updated, and charts dynamically re-drawn, using pre-set templates and actions based on things like numeric thresholds and keywords.

Developers can easily work with multiple data sets to shape, inform and trigger messaging, and work across seemingly unrelated business systems. In real terms, a Headless CMS can be used to show dynamic pricing – based on things like out-of-stocks and overstocks – by specifying the properties for a data source.

FRAMEWORK-AGNOSTIC

Going headless means the content producers and developers within a company are framework-agnostic, meaning they're free to do the messaging and coding with their own favorite frameworks and tools.

“We're having conversations with companies that are looking to integrate our Headless CMS into digital asset management systems, It's not just about holding assets, but truly having that unified experience. It's a kind of push-once, publish-many approach. The assets are dynamic, and the platform knows which ones to choose from their system, where they need to go based on tags that they've set up in the DAM, and then the content updates across channels, including the signage screens.”

Jason Cremins, CEO, Signagelive

NIMBLE DEVELOPMENT

The developer working on that can easily flip from building something that pulls inventory levels and pricing out of a point of sale system, to visualizing the Key Performance Indicators (KPIs) coming out of a Microsoft Power BI dashboard.

A Headless CMS setup also enables the creation of custom user interfaces that either integrate into other existing business processes, or provide custom-tailored user experiences tuned to an organization's workflows, processes and nomenclature.



FUTURE PROOFED

With APIs now common across business and management systems, a digital signage network using a Headless CMS is also somewhat future-proofed. The system or device to be added on to the screen network – as a new data source, for example – will almost certainly have one or several APIs that make integration easy.

BLOAT-FREE

Most digital signage CMS platforms have been designed to serve multiple masters and needs. For special-purpose or tightly-defined digital screen projects, it's likely that a lot of what's in the user experience, and a lot of the functionality, will never be needed or used. It's bloat that gets in the way of efficiency. A Headless CMS strips out the extraneous and focuses on its core task of being a content delivery system.

OPERATING EFFICIENCIES

Going headless can lower costs and reduce workloads (remember all that automation!), lower the opportunity for error, and speed up content production and delivery. Consolidating content in a hub and using a Headless CMS could be a game-changer for many enterprise-level companies.

SECURITY

Access to the CMS is controlled by the integrator and can be dictated by internal processes meaning that companies are able to define bespoke workflows that meet their needs and not be confined to the model implemented in the traditional User interface.

A headless architecture reduces the amount of infrastructure that's internet-facing, and it makes an API the most important component. This reduces the attack surface that can be targeted, and a smaller attack surface is easier to harden against all forms of malicious activity, including DDoS.

LOW OR NO CODE

Along with working efficiently with DAMs and other established business systems, a headless CMS is ideally suited for the emerging area of low code and no code developer platforms, which enable the creation of application software through graphical user interfaces - lowering or removing the requirement for traditional computer programming.

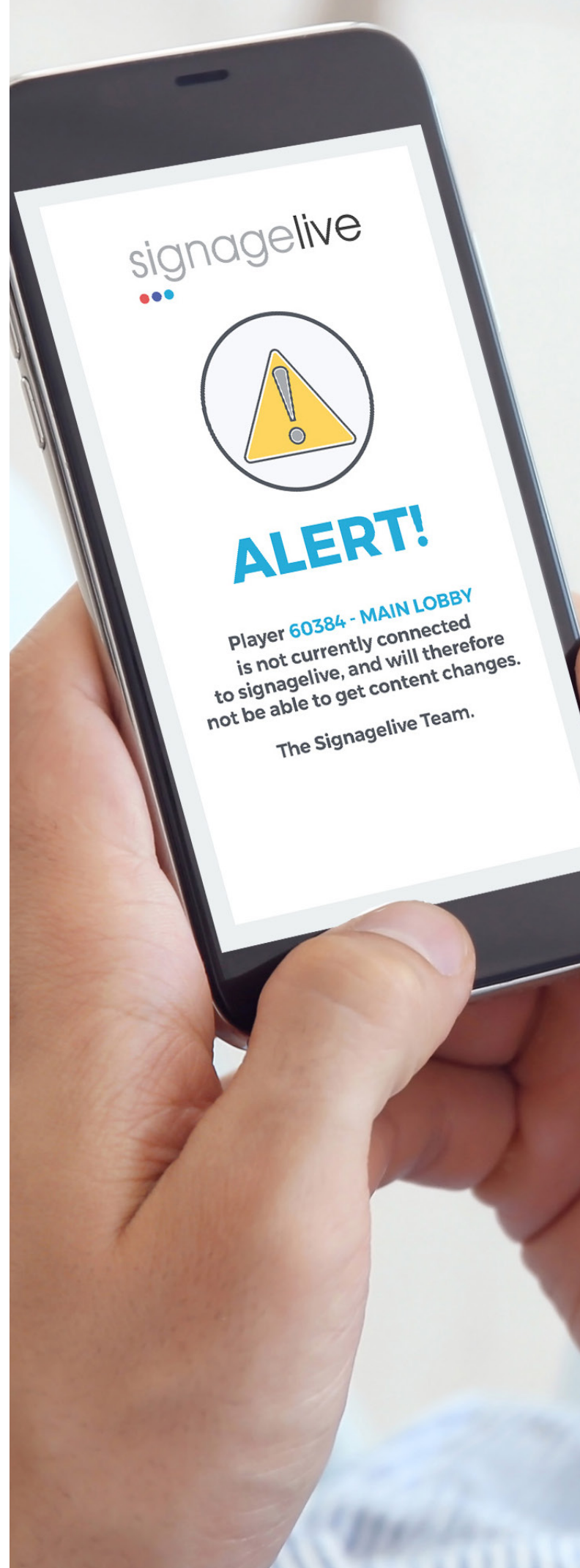
Both approaches make application development faster and easier - reducing development costs and complications, and bringing experiences to reality on accelerated timelines.

For example, Signagelive has already developed a plug-in for data-triggered content that works with the hyper-popular no-code platform Bubble.io, and the platform will also support through Bubble the Signagelive Network API. In practical terms, it is the core digital handshake that facilitates content workflows and network management. A similar integration is in the works for another no-code platform, called Appian.

Working with no or low code platforms makes it plausible to build meaningful apps in days - not weeks or months - that use plug-ins that connect to the headless CMS.

The idea is attractive to companies with teams of technical people sometimes described as community or citizen developers - staffers who would use low and no-code solutions to accomplish certain tasks that can't be done directly using their company's enterprise business systems.

For example, they may write formulae and create dynamic charts in Excel to more effectively show data coming out of the ERP platform.





HEADLESS DOWNUNDER

Based in Brisbane, Australia, digital signage solutions provider Entwined creates vibrant, engaging spaces that blend great technology with beautiful digital content. The company works with many of Australia's top retailers, councils, events and businesses.

Much of Entwined's work is data-driven, using business system APIs and content portals to largely automate things like pricing and offers, particularly in fast-changing environments like quick service restaurants and retail.

Following a deep technical audit and assessment for CMS partners, Entwined selected and started working with Signagelive in 2017, using the company as its primary digital signage CMS provider. Some clients with simple needs use the conventional Signagelive platform (the head is intact!), while Entwined also provides a Headless CMS platform, using its own tools and processes on top of it.

"Entwined operates multiple models, and we always put our customer needs first.

For simple executions, with little or no customization, the regular Signagelive front-end is more than suitable. But for large, global clients - who require custom workflows, custom dashboards, dynamic pricing or other bespoke requirements - our Headless CMS is a better option.

Our partnership with Signagelive allows us to work closely with their technical team, ensuring any innovations or requirements are roadmapped and carefully planned. We do also have full transparency with our clients, in regards to how we operate."

Cameron Hanns, Director, Entwined

Cremins says one of the big appeals of headless is how it allows Entwined to operate autonomously. Customers may only see Entwined in the user experience, and Signagelive's platform is white-labeled and out of view. Cremins says the headless handoff is so complete that his team can't see much more than how many Signagelive headless CMS software licenses Entwined has activated.

Entwined delivers its own proprietary dashboard technology to provide real-time visualisations of data, integrating with Signagelive and tools. "I see data being an important part of the future of digital signage," adds Hanns, "and we'll continue to partner with Signagelive, building on key items such as Proof of Play and other relevant API data points."

"Our headless CMS gives us flexibility to provide customization for our large corporate clients," Hanns continues. "In the real world, this includes complex permission-based models, customizable dashboards and real-time data. By leveraging Signagelive's API, we have developed unique user dashboards for our retail clients. These are permissions-based, and they deliver real-time screenshots of content and data based on connectivity."

Cameron Hanns, Director, Entwined

Hanns is excited by the marketing power, flexibility and insights enabled by going Headless. "Our clients can look at stores based on regions and delve right down to the store and screen level. The power of this platform, at a brand and marketing level, is amazing. We have created connected networks that allow brands to deliver and monitor content real-time."

IS YOUR BUSINESS READY TO BE HEADLESS?

Typical digital signage platforms are designed to be used by anyone, regardless of their technical acumen or experience. They have friendly What You See Is What You Get user experiences, and often come with pre-designed creative templates and things like functional widgets that simplify the development and management of content.

That approach makes sense for most small to medium businesses that have a narrowly-defined set of messaging needs, and limited IT and software development resources. A conventional digital signage CMS may limit what can be done with the system, and may present some inefficiencies, but it allows a company to simply manage that task but otherwise stay focused on core business needs.

Headless CMS set-ups are well-suited to organizations that have active, full-time developer and creative resources in-houses or via partnerships like creative and interactive agencies. Typically, they're producing and distributing messaging that needs to live across multiple channels – from mobile devices and wearables to websites, kiosks and video walls.

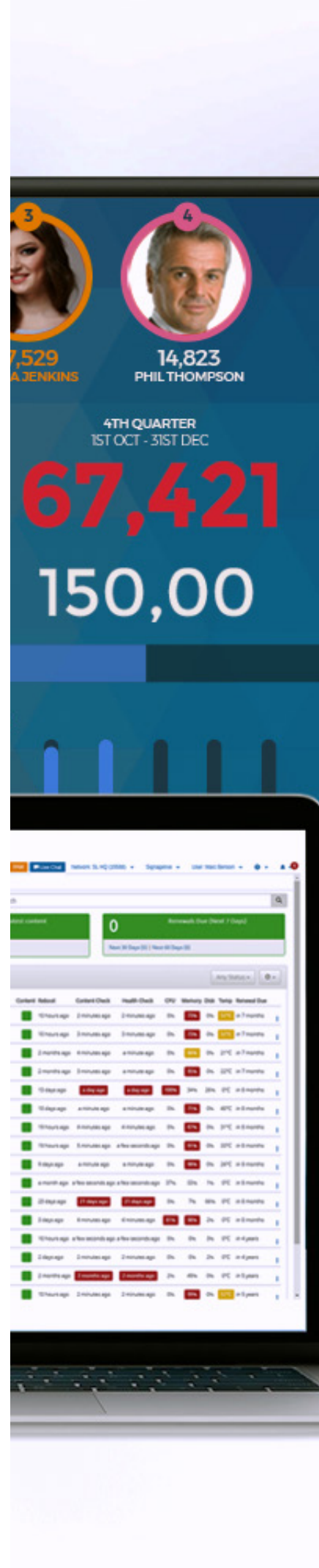
If the digital signage network is updated and managed by marketers, merchandisers or business communicators, a conventional CMS is likely a better option because of the content creation functionality and friendly, familiar interface. But if the core users are people who think in terms of RESTful APIs, json and content distribution networks, then a headless CMS not only makes sense, but would likely be welcomed and embraced.

It's also an arrangement that makes sense for the evolving breed of digital signage solutions providers operating globally, such as Entwined in Australia.

Solutions providers tend to offer turnkey services to their clients, and like to "own" the customer – being the key point of contact and indispensable to digital messaging operations.

If they use a traditional digital signage CMS, they are often just re-selling third-party software and acting as a conduit between the client and the software firm's R&D and support teams. At most, they may have a white label version of the software that hides or buries the original developer's name, or a software front-end that "wraps" around an established product.

With a headless CMS, the solutions provider can customize the look, feel and experience to the client, and change that for the next client. In the case of the Headless CMS version of Signagelive, its origins are hidden. A solutions provider uses the Signagelive infrastructure, but owns the client and experience.





GETTING STARTED

Whether your company is a services or solutions provider, providing complementary technologies, or looking as an end-user for a future-proofed solution to efficiently meet omni-channel messaging needs, Signagelive can help.

FOR FURTHER INFORMATION AND TO DISCUSS YOUR REQUIREMENTS EMAIL:
headless@signagelive.com



GLOSSARY/NEED TO KNOW

Q: WHAT IS A HEADLESS CMS?

A: A headless CMS makes it simple and easy for developers to create and deliver content anywhere, with maximum efficiency.. A headless CMS allows users to take developed and stored content and deliver it to any front end, using the tools and frameworks those developers use daily. A Headless CMS is a content management system that decouples the presentation side of content (the head) from the management and delivery layer of a system (the body). With a Headless CMS, there is no presentation layer in the platform and content is displayed using data connectors and scripting.

Q: ARE THERE RISKS OR BARRIERS?

A: Organizations that have limited or no internal developer or IT resources will be challenged to use a Headless CMS, as it is a world of coding and APIs and technical acumen. Digital signage projects led internally by marketers and business communicators are better suited to using a more conventional CMS, which Signagelive also offers. Larger organizations may choose to work with a third-party solutions provider, such as Entwined, to bridge the technical gap and manage the digital signage solution for the client.

Q: WHY GO HEADLESS?

A: Developers in larger companies who create and manage content for multiple communications platforms - often referred to as omnichannel - use headless CMS platforms because they provide the flexibility to use tools and frameworks the coders and creators are most comfortable with. They don't want to have to use different tools for different messaging tasks, such as one platform for web, another for mobile and yet another for digital signage. It's inefficient, and adds unnecessary layers of management, support and training.

Q: IS THIS THE FUTURE OF DIGITAL SIGNAGE?

A: In part. Headless CMS technology is ideally suited to a subset of enterprise-level companies that have diverse communications needs, and have either internal or contracted resources that already heavily use and leverage Web technologies.