Headless CMS Breathes New Life into "Content Anywhere"

By: Connie Moore

Content Is Everywhere and Anywhere in Today's Organization

Although pundits declare that we are immersed in a world of big data, the sheer volume and velocity at which digital content is created, consumed, updated, and stored throughout organizations is at an all-time high, validating the age-old expression *"content is king."* Content, in its many established and evolving forms, *has been* king, *is* king, and *will be* king for the foreseeable future, making it imperative to anticipate and plan new approaches to deliver the customer experience and produce, manage, and govern increasingly diversified and complex content.

Silicon Valley constantly ushers in technologies for creating new content types for various delivery channels, such as Alexa, Twitter feeds, Facebook media, YouTube clips, CCTV film, drone footage, 3-D models, wearable output, biometrics output, voice recognition content, podcasts, IM texts, and so forth. Although YouTube, Twitter, and Facebook are utterly familiar today, they were once among the cacophony of emerging technologies waiting to go viral. Even today, the next new "whatever" is jostling in the mix, vying to become the next really big, new thing.

Who can say with certainty what content challenges will arise within the next year, much less the next five years? But it is still possible to assume a certain growth rate for content in the organization and to ensure that the content management architecture is flexible, adaptive, and well-positioned to handle new challenges and scale for more content.

Planning for growth, new expectations, and greater complexity of content already taxes the imagination and skill sets of teams responsible for managing it in today's organizations. The amount of unstructured information created and disseminated throughout firms each day by employees, customers, prospects, partners, and regulatory agencies is enormous, often outstripping the abilities of marketing staff and line-of-business workers to create new content, process incoming information, and fulfill external and internal requests.

This unending deluge reinforces the fact that content can be *anywhere* and *everywhere* within organizations, constantly challenging content professionals to stay on top of the rising tide. Take content management systems (CMS), for example. Although this technology has been in use for almost two decades, older CMS solutions for websites pale in comparison to the complexity of more recent, advanced approaches.

Furthermore, the web is only one of the channels that need to be integrated with content; customer interaction channels include targeting, personalization, predictive analytics, beacons, cognitive computing, and more. Increasingly, more channels need to pull content or have content pushed through them in a coordinated, consistent way, including mobile apps, digital signs, customer communication, the contact center, and more. On top of this, web channels are often turning into sophisticated web apps or single page apps.

Today's advanced website capabilities are substantial, with numerous input streams, advanced personalization, e-commerce, product information management, globalization/localization, biometrics, and even cognitive computing. At the same time, marketing is under constant pressure to spearhead new campaigns, launch new brands, support social interaction, and be all things to all customers via the web. Is it any wonder that CMS solutions require new approaches for simplifying content production and storage, while expanding their ability to deliver a rich mix of social threads, content types, and personalized interactions? CMS systems also need to serve more channels agnostically, easily, and with greater agility. How? Enter the latest CMS approach, known as "headless CMS."

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The Headless CMS Revival – An Evolved Way to Separate Content Production and Database from Delivery

Headless CMS is the latest technology trend for empowering digital content delivery anywhere and everywhere.[1] It's a decoupled approach that separates the content's form from its delivery format. The two major components of a headless CMS architecture are content production and database, and content delivery (see Figure 1).

- **Content production and database** (or "headless" system) supports content creators and the content database. This decoupled system may be obtained from the same vendor as the delivery system or from a different one. This is possible because the content production/database system is connected to the CMS head using RESTful APIs, such as JSON.

Figure 1
"Headless" CMS Architecture
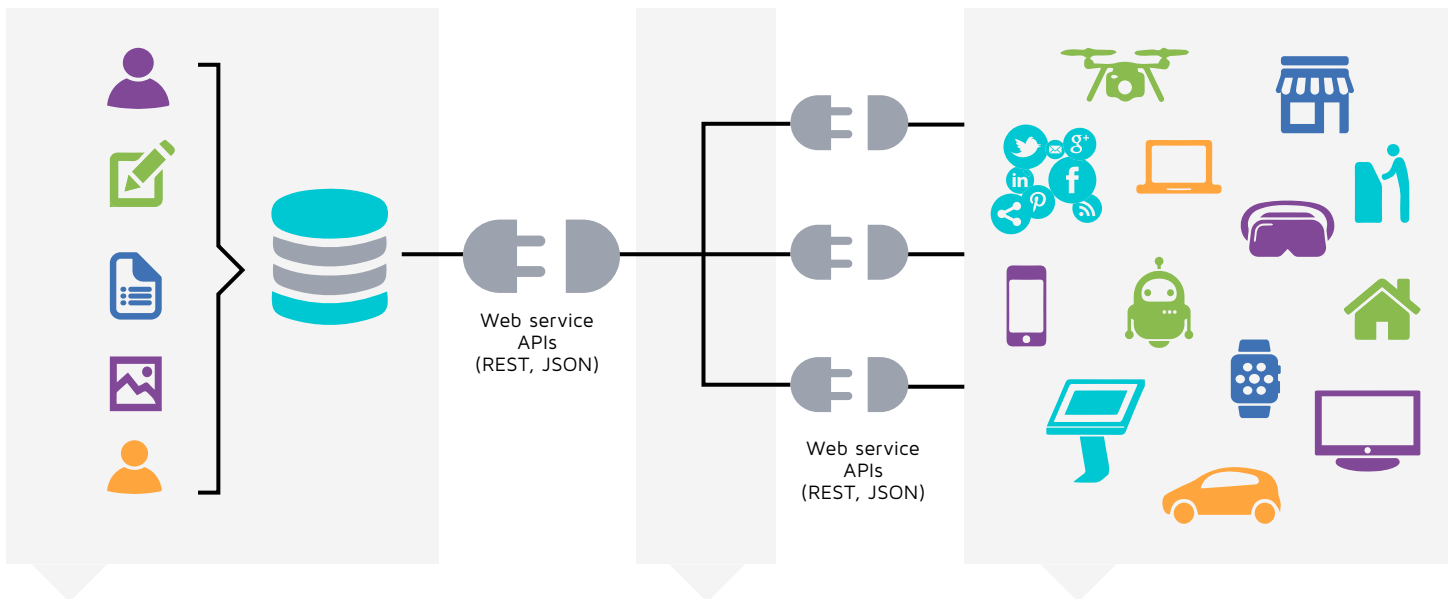
"Headless" CMS Content Production & Database

- Multiple authoring tools
- Workflow
- Content database
- Administration
- Archiving
- Reporting

"Head" Content Delivery System

- Multiple front ends
- Multiple presentation styles/formats
- Omnichannel
- Multichannel

Content Consumption

- Digital devices and channels keep expanding
- Content can come from multiple sources

- **Content delivery** (or the "head") sends content to a wide and quickly expanding range of mobile devices and other channels, without ever managing content creation or the content database. Content delivery can be powered by a portal or a custom HTML front-end system, or a mobile app, or other push channels.

Four Trends Now Drive Demand for New Content Delivery Approaches

The revival of headless technology is breathing new life into "content anywhere" because many of today's CMS solutions cannot keep pace with the increased demand for 1) a diverse mix of rich content and 2) sophisticated content delivery and large-scale, distributed systems. Changes in how content systems are architected to deliver the full spectrum and high volumes of today's content, as well as how people consume content on mobile and tethered devices, fuel the demand for headless systems. Four major trends are driving this massive shift:

- **Omnichannel and multichannel.** Businesses, governments, and nonprofits across many industries are grappling with a multichannel and omnichannel world. This has forced organizations to be more nimble in using content to differentiate their products and services and provide consistent, unforgettable customer experiences, no matter how the customer engages with the organization. Multichannel and omnichannel require an ability to support the customer seamlessly with compelling, consistent content as she moves from channel to channel and across multiple lines of business throughout the customer journey. By focusing on the delivery component of the CMS solution, marketing can deliver diverse content from multiple sources to the customer through many different channels.

- **Explosion of devices and interfaces.** The mind-boggling plethora of devices and social media interfaces that customers use to consume content is still expanding – driven by the ever-increasing demand for digital content by an information-hungry world. For example, smart cars, home devices such as Amazon's Alexa, delivery robots or drones, technology embedded in fashion items, and heads-up displays such as Google Glass or Oculus will drive the variability of content even higher. To cope and respond, marketing must anticipate the next new thing for content consumption by implementing content delivery systems capable of quickly meeting new expectations from a fickle and technology-savvy clientele.

- **Complexity of content production and distribution.** When CMSs first began, websites were fairly basic: the total content on one central site may have been less than fifty pages in support of a single brand. Now, web pages can easily reach into the thousands, with multiple brands, several lines of business, numerous distributed sites, and widely dispersed content creation teams, plus support for globalization and localization. The

inexorable trend is toward increased website complexity for content production – like single page applications – in response to greater expectations.

Some firms use headless approaches and BPM software to implement "digital supply chains" for media assets such as ads, logos, photos, videos, and content from multiple sources including ad agencies, imagery marketplaces, graphics studios, and internal staff. This process helps the firm create, re-purpose, and leverage valuable assets. Specifically, the content delivery system could repurpose photos and audio and present them via the "tip box" (a small window on the contact center software screen) to help the call center agent identify products that customers describe and then guide their conversations.

- **Heterogeneity of the corporate environment.** Today's websites are conduits for delivering substantially more information than simply serving up content – no matter how cool – from the CMS. Many content systems provide a range of information to customers, including inputs from the marketing automation system, email, social media tools, e-commerce software, product information management (PIM) catalogs, and so forth. Websites are increasingly heterogeneous, service-oriented, and deployed in the cloud, with the CMS database no longer the sole system of record for web content. This democratization of content sources compels content specialists to curate a rich mixture of content via many delivery components, often using microservices (small, independent software

modules) such as authentication, authoring, workflow, and publishing, and this is only possible with a robust CMS architecture. It helps to have a universal content delivery system capable of enabling content from many sources to flow into it and then flow out, without being tied to a specific content production and database system. This allows marketing to focus on the content delivery that customers need and crave.

Headless CMS Solutions Are Ideally Suited for Complex, Multi-site Deployments

Many organizations implementing content solutions today are on their second or even third generation of CMS products. As they continue to upgrade their content systems and add more capabilities, the deployments become increasingly advanced and quite complex to manage. In addition, many of these organizations' marketing departments are being pushed by internal champions, stakeholders, competitors, and customers to deliver a compelling experience. Before simply upgrading their existing systems, these organizations should, at a minimum, consider and evaluate a headless approach. Good fits for a headless approach would be companies with complex business, technical, and organizational requirements such as the following:

- **Diverse content from multiple sources comes into the CMS(s) for centralized website delivery.** Sources could include marketing automation systems, multiple CMS systems, e-commerce, personalization engines,

and social media. Plus, the organization may be planning to implement advanced technologies, such as biometrics and virtual reality, over the next three years.

- **Many standalone sites are being folded into a consolidated, distributed system.** Companies often move to distributed configurations over time, with a goal of using the central site for corporate information while the decentralized, distributed sites support specific business units, countries, or departments.

- **The customer can carry out multiple functions before logging in.** Businesses often offer self-service and assisted services so customers can research products, obtain purchase information, request support, and so on. Headless CMS helps support customers not just at the acquisition stage, but throughout the entire customer journey.

- **Globalization/localization software is being deployed on a large-scale basis.** Adding to the complexity, the organization is implementing standards and software to manage global assets (e.g., logos, corporate collateral) and localized assets (e.g., country-specific information in the local language and adapted to local norms).

- **Marketing is implementing multichannel,** with plans to expand to omnichannel. Currently, the multichannel strategy may focus on supporting the customer journey across multiple devices and touchpoints, such as accessing the website via laptop, mobile apps, in-store kiosk, and chat.

- **Omnichannel will be installed at some point to bridge multiple brands and lines of business** while maintaining context and consistency for the customer across all channels. This omnichannel strategy will be rolled out in phases over the next three years.

- **Volumes of content have grown enormously,** far eclipsing the organization's early websites. Now, the organization is managing high volumes of content that is created from multiple sources within and outside the organization, then managed and delivered in a multitude of owned and unowned channels.

- **Content teams are stressed out, doing too many things at once.** Team members feel like jacks-of-all-trades, bouncing from task to task in support of personalization, segmentation, search engine optimization, digital asset management, and campaign management. As the marketers' technology toolkits expand, so does the technology expertise needed to use each tool effectively. The team longs for simplicity.

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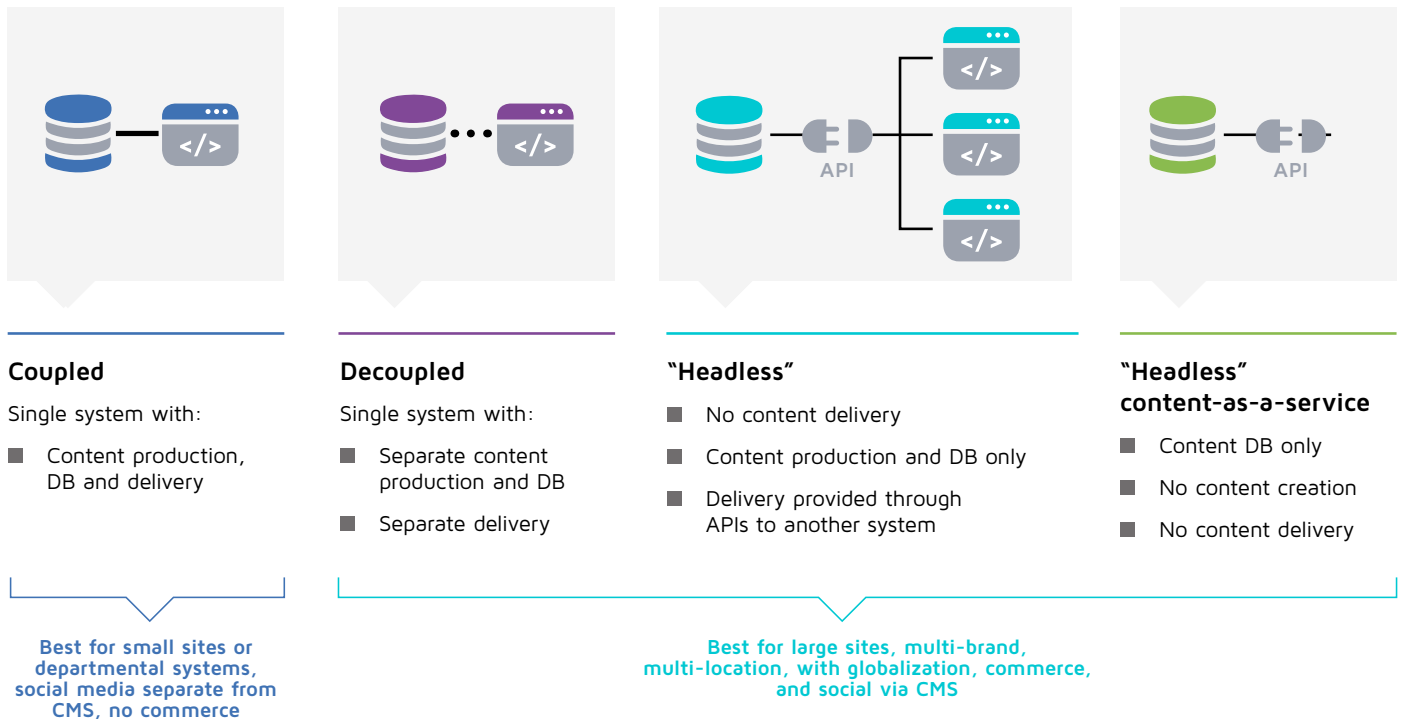
Decoupled Is the Design Point for Three CMS Architectures

Three types of CMS architectures are available in today's marketplace and are largely differentiated by how the content production/database component is coupled or decoupled from the content delivery component. These three types are known as coupled CMS, decoupled CMS, and headless CMS. A specialized type of the latter is Content as a Service (CaaS). (See Figure 2.) Which architecture to use depends upon the organization's size, content types and volume, delivery channels, degree of centralization/decentralization, and technology skill sets.

Coupled CMS uses a single, centralized repository for both content creation (or production) and delivery within the same product. The power of this approach lies in blending delivery and content production in the same package, which helps business users and marketing teams during content creation. Users get instant results from the content they create and are never out of synch with content delivery. However, it is comparatively harder to support mobile and PC renditions without creating multiple pages. The coupled approach is particularly well suited for departments in large enterprises.

Decoupled CMS separates content production and the content database from delivery within the same product. Many of today's CMS implementations

Figure 2
CMS Architectural Options

Coupled

Single system with:

- Content production, DB and delivery

Decoupled

Single system with:

- Separate content production and DB
- Separate delivery

"Headless"

- No content delivery
- Content production and DB only
- Delivery provided through APIs to another system

"Headless" content-as-a-service

- Content DB only
- No content creation
- No content delivery

TARGET MARKET

Best for small sites or departmental systems, social media separate from CMS, no commerce

Best for large sites, multi-brand, multi-location, with globalization, commerce, and social via CMS

use this approach. For firms and government agencies already dependent on these systems, they offer a vital solution with a known growth path. One downside is that they may require business users to understand coding and often require IT's support to keep running. If an organization is looking for a new CMS to manage multiple sources of content and deliver it seamlessly, a completely headless approach may be a better match, although decoupled CMS is certainly a viable option.

Headless CMS goes one step further than decoupled systems by housing the content production/database and delivery in completely different systems. As a result, it's possible to change only the delivery system or only the content production/database as needed. Omnichannel, mobile, and content complexity ushered in the headless CMS era three to four years ago. Both headless and decoupled CMSs support microservices, which break previously monolithic software into components such as personalization, segmentation, workflow, and templating. This allows firms to upgrade and load-balance different components at a varying pace, providing greater performance and resiliency overall.

Not all solutions that claim to be headless actually are; it's important to examine the ease versus difficulty of pushing content from the production component to one or more delivery systems. With a headless CMS, the APIs should work bidirectionally, and the headless system should know whether content has been consumed and if it is the most current version. Although the content production system isn't coupled with the delivery system, it should still be smart about how content is being consumed and used.

Content-as-a-Service (CaaS) is a specialized type of headless CMS that lies at the most extreme end of the decoupled spectrum and is usually cloud-based. CaaS separates content creation from both the content database and the delivery system. CaaS is a true service; content can be created anywhere and the content services can both send and receive. It's essentially a processing center that cleanses and stores content for future delivery; the content is provisioned elastically in the cloud, irrespective of where the content production tier sits. Such agility is critical for newer DevOps methodologies to meet the increasing demands of marketing and sales stakeholders. The simplicity of the solution for very complex content creation and delivery environments appeals to large enterprises needing this approach.

Headless CMS Provides Organizational and Technical Flexibility

One of the key benefits that headless CMS (including CaaS) offers is flexibility with the system implementation and ongoing operation.[2] With this completely decoupled approach, customers are not forced into a single product stack but instead have the freedom to switch out the content delivery or content production/ database components as needed – or to iterate improvements to them at different paces, particularly when using microservices. This helps to future-proof the system.

Headless CMS Caters to Diversified and Specialized Content Teams

A headless CMS architecture supports flexibility in organizing the content team. For example, many firms organize their Headless CMS staff into these groups:

- **Specialized skills teams.** Headless systems support decentralizing and specializing the content management operation, such as splitting the CMS team into smaller groups that perform specific functions instead of creating a centralized or single team that does it all. For example, content creators don't have to focus on content delivery because a separate team can manage that part of the process.

- **Content creation teams.** These teams are typically formed to iterate quickly, often using native tools and thereby creating a more elegant website through multimedia and better presentation. Editorial workflow and content creation is usually more visible, and the content creation team gains greater insight when working with writers and creative staff.

- **Content production/database specialists**. The headless component speeds implementation by streamlining and simplifying the back end, making it easy to form a separate team that focuses specifically on data delivery. This allows the content production/database staff to focus on what information is being stored and how to store it, how content will be repurposed, and how to maintain the system of record.

Headless CMS' Technical Flexibility Helps to Future-Proof Investments

The headless CMS approach also provides several important technical benefits. And while nothing is certain in today's technology markets, the benefits of a headless CMS architecture provide a high level of future-proofing of an organization's investment in CMS, including in these ways:

- **Reliability**. The headless CMS approach provides greater uptime because the content production/database configuration is a smaller system that no longer depends on the complexity of the typical coupled CMS components. In addition, the APIs – which are external to the base system – can be swapped out or modified without interfering with the headless system's base code. The use of microservices is another way headless systems provide greater performance, reliability, and resilience.

- **Syndication**. A completely decoupled delivery system is well suited for syndication and supporting multiple partners that need access to the content. With a separate content delivery architecture, it's easier for teams to create richer, more interactive, and better overall experiences delivered faster than the content developed within a coupled CMS. The content production/database system can provide content to many destinations while the content delivery system can take in content from multiple sources, including ones that are not CMSs.

- **Omnichannel, multichannel, and multi-device support.** A decoupled content delivery system offers strong support for the full continuum of multiple channels, multiple devices, multiple platforms, and heavy data exchange, such as mobile devices and digital displays in storefronts, lobbies, and restaurants, as well as new devices emerging from the internet of things (IoT).

Summary

A headless CMS architecture with a fully decoupled content production/database system and content delivery system offers many compelling benefits, particularly in evolving technical environments dealing with constantly morphing, emerging requirements from marketing and line-of-business departments. By adopting a headless CMS approach, firms can be well positioned to flexibly embrace whatever new devices, touchpoints, and software emerge. Organizations with the following needs should consider shifting to a headless CMS architecture:

- **Greater content production.** Marketing plans to spearhead new campaigns, launch new brands, or host new/emerging social interactions while continuing to support all customers via the web.

- **A shift to centralization/distribution.** Several standalone sites are being folded into a consolidated, distributed system with the central site for corporate information and distributed sites for specific business units.

- **More diverse delivery sources.** Delivery goes beyond website content to also encompass feeds from marketing automation, social tools, e-commerce, product information management, and other sources.

- **A broad range of delivery options.** Delivery can vary from a website to a portal, custom HTML front-end system, mobile app, or other option.

- **Rapidly increasing content volumes.** The organization is managing high volumes of content created from multiple sources within and outside the organization, and then managed and delivered in a multitude of owned and unowned channels.

- **Deploying multichannel or omnichannel.** The business has already started implementing multichannel or omnichannel, or plans to move in this direction in the future.

- **Integrating content with business processes.** Content delivery is integrated with business processes such as digital supply chain or customer self-service apps.

- **Rapid deployment and agility.** Sales and marketing or other business units require deployment speed and agility by provisioning content delivery in the cloud, irrespective of where content production sits.

- **Future-proofing.** The likelihood of changes makes it important to future-proof the system to make it capable of adding or modifying components as requirements morph.

- **Differing rate of change.** The business requirements dictate that the team iterate improvements to the content delivery system and content production/database at a different pace through the use of microservices.

- **Greater team productivity.** When content team members are stressed out by doing too many things at once (e.g., personalization, segmentation, search engine optimization), organizing employees into smaller specialized workgroups helps to increase their productivity and job satisfaction.

Here's the question: are you ready to go headless?

Endnotes

1 See the blog post "Headless CMS – just a fad?" http://www.digitalclaritygroup.com/headless-cms/

2 For an insightful and lively discussion about the benefits of headless CMS, see http://shoptalkshow.com/episodes/204-matt-dennewitz-jeff-eaton/

About Digital Clarity Group

Digital Clarity Group is a research-based advisory firm focused on the content, technologies, and practices that drive world-class customer experience. Global organizations depend on our insight, reports, and consulting services to help them turn digital disruption into digital advantage. As analysts, we cover the customer experience management (CEM) footprint – those organizational capabilities and competencies that impact the experience delivered to customers and prospects. In our view, the CEM footprint overlays content management, marketing automation, e-commerce, social media management, collaboration, customer relationship management, localization, and search. As consultants, we believe that education and advice leading to successful CEM is only possible by actively engaging with all participants in the CEM solutions ecosystem. In keeping with this philosophy, we work with enterprise adopters of CEM solutions, technology vendors that develop and market CEM systems and tools, and service providers who implement solutions, including systems integrators and digital agencies.

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