IDC TECHNOLOGY SPOTLIGHT

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**Component content management systems can help deliver on impactful business objectives — agility, governance, and artificial intelligence readiness — as organizations make the shift to knowledge management and intelligent content services.**

# The Future of Knowledge Management: Agile, Governed, and AI-Ready Componentized Content Services

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## Component Content Management: A Proven Paradigm in Intelligent Content Services

While technology has changed the world, the way that companies manage information has inherently stayed the same. The advent of near-ubiquitous connectivity among applications and machines has resulted in a data deluge that will fundamentally alter the landscape of content management. From mobile devices to intelligent machines, the volume and sophistication of data have surpassed the human ability to manage it with outdated methods of collection, processing, storage, retrieval, and analysis. The opportunity afforded by the advent of artificial intelligence (AI) has stimulated the market to search for a better way to capture, classify, and analyze this data in its journey to digital transformation (DX). The paradigm of document-based information management has proven to be a challenge in finding, reusing, protecting, and extracting value from data in real time. Legacy systems may struggle with fragmented information curated from new intelligent machines and an inability to feed AI-based continuous learning systems. Dynamically assembled atomic content is the future, and a component content management system (CCMS) has the potential to deliver on impactful business objectives — agility, governance, and AI readiness — in a shift to knowledge management and intelligent content services.

### AT A GLANCE

#### KEY STATS

$33.5 million is spent annually searching for but not finding information

At least once per day, 16.5% of workers recreate content that already exists.

#### KEY TAKEAWAY

Component content management is critical to delivering an AI-enabled knowledge management system that finds, reuses, and extracts value from data in real time.

## How Does Component Content Management Differ from Document Management or Enterprise Content Management?

Content management systems have evolved over the years to include document management, enterprise content management, and component content management with the following characteristics:

- **Document management** applications can manage, store, and track article or document containers for uploading, processing, and sharing business documentation.

- **Enterprise content management** systems are often document based to collect, organize, deliver, and archive an organization's content and assets for use in decision making and adherence to regulatory compliance.
- **Component content management** systems organize content at a granular level, often utilizing a defined taxonomy. Instead of managing content page by page, a CCMS takes words, phrases, or component objects and stores them only once in a central repository as the official trusted data source for maximum content reuse, dynamic assembly, effective translation, and variable publishing.

The use of AI applied to content management systems has become a differentiating factor in recent years. A CCMS approach to content management can be a bridge to building an AI-ready organization where document-based systems have fallen short.

As AI and machine learning (ML) have become more accessible and affordable, companies have found new uses for the technologies, including knowledge discovery, automatic metadata generation, intelligent document classification, and optimization of content-intensive processes. A February 2021 IDC survey found that 55% of organizations are using AI-assisted technology to automate or augment select employee tasks, processes, and decision making. Another 19% of organizations have achieved a well-balanced use of AI technology across most activities and tasks. The future enterprise will adopt AI-enabled content services and data intelligence to interpret, share, and reuse knowledge across the business. Cognitive technology can mimic human intelligence at scale and with precision, which frees employees from repetitive tasks so that they cans focus on higher-value collaboration with their peers.

## *Why Document-Based Systems Are Ineffective for Intelligent Knowledge Management*

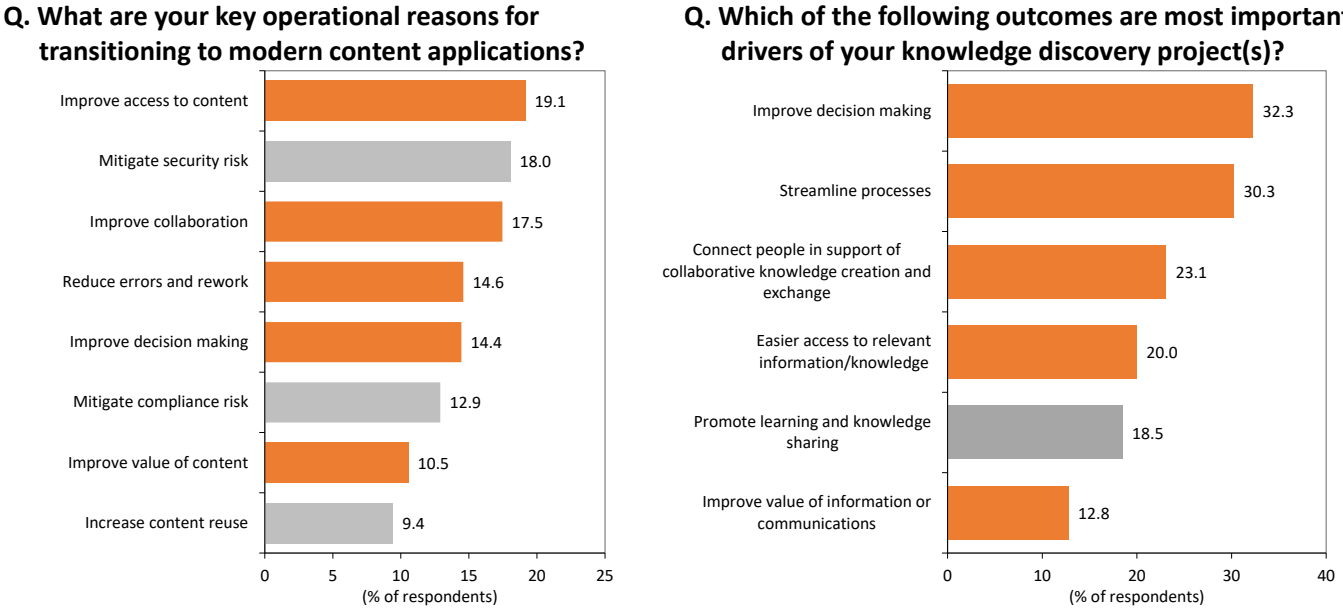
Organizations are battling an increase in the amount of discrete data being generated and the need to process content requests faster. Some DX initiatives seek to replace archaic document-based systems with modern AI-ready agile CMS applications that promote a self-service and collaborative work environment. More than a decade ago, high-tech and manufacturing industries had already recognized the need for granular dynamic control of their content and set forth to modernize their highly complex publication processes with a component content management approach, allowing them to easily deploy AI services today. Industries such as financial services, life sciences, and professional services only recently discovered these benefits and have now begun to replace ineffective PDF and Microsoft Word-based processes with a future-proof and AI-ready component content approach.

Homegrown or proprietary content and document management systems are unwieldy and make it difficult to find and change individual elements of a monolithic document on the fly. For example, an insurance company needed to update the down payment amount in its policies and found it took six people searching for a week to find and replace 26 instances across its 35,000-document library — only to later discover more instances that were synonymous derivatives.
IDC estimates an enterprise of 1,000 knowledge workers wastes $33.5 million annually searching for but not finding information. These workers also waste time combining data from multiple repositories and reformatting data; at least once per day, 16.5% of workers will create a new information asset only to learn that a similar asset already exists.

Corporate knowledge scattered across multiple silos can also introduce security and compliance risk because each system in the document value chain has its own policy, vocabulary, and classification. According to IDC's July 2019 *Cloud Content Management User Needs and Strategies Survey*, 19% of organizations cited the need to improve access to content and 17.5% sought to improve collaboration (see Figure 1). The global events of 2020 found organizations

reprioritizing their investments and shifting their content-related business outcomes in context of knowledge discovery. According to IDC's December 2020 *Artificial Intelligence Adoption Survey,* almost one-third of respondents reported that improved decision making (up from 14% in 2019) and streamlining processes are the top drivers of their knowledge discovery projects (see Figure 1). Additionally, 23% of users indicated that they find it difficult to collaborate across departments or outside their organization and 20% said they want to improve content accessibility.

FIGURE 1: ***Operational Drivers of Modern Content Applications Versus Knowledge Discovery Projects***




*Source: IDC's Cloud Content Management User Needs and Strategies Survey, July 2019 (n = 700) and IDC's Artificial Intelligence Adoption Survey, December 2020 (n = 195)*

Ineffective operational efficiency segues into the limited ability of document-based systems to immediately leverage digital innovations in machine learning or semantic and intelligent processing in the context of knowledge sharing. In IDC's June 2021 *Future Enterprise Resiliency and Spending Survey,* knowledge management and information sharing across knowledge bases and content delivery applications ranked second in importance when designing an enterprise intelligence strategy. Traditional document management technologies lack the scalability of a componentized taxonomy architecture to accommodate the advanced intelligent processing for images, videos, and other complex content.

## *A Forward Look at Intelligent Content Services*

The rapidly changing demands in data intelligence have led to a rise in content services platforms that provide granular handling of complex business use cases. According to IDC's October 2020 *COVID-19 Impact on IT Spending Survey*, 32% of respondents expected to increase IT spending on content applications in 2021. By February 2021, that percentage jumped 14 points to 46% of organizations increasing their investment in content applications with a need for agile access to reusable content in real time.

Midway through 2021, spending on content applications remains a high priority: 14% of organizations are budgeting a 10–20% increase and 5% of organizations are targeting a 20% increase. To address this rising need for content access and agility, intelligent content services from a CCMS can be the catalyst for a flexible topic-centric knowledge library that is augmented

with AI to surface contextualized insights proactively within the flow of business. Advancements in semantic AI can provide humanlike responses from machines and systems. In other words, translating a human intent to a tangible useful result is now a possibility.

## Gaining Agility

Agile methodologies have moved beyond IT into other strategic business areas to remain competitive and exploit changing market conditions. IDC data shows that more than one-third of organizations will use technology to make business operations more resilient, create better engagement with their customers, and better leverage data for improved decision making. Legacy archives are a black box that potentially hold valuable and useful information, if only the information could be located, discovered, and used. A CCMS can facilitate agile knowledge discovery and reuse. For example, a healthcare organization used a CCMS to avoid rewriting content that already existed and quickly expanded critical information with confidence in that information's accuracy and data governance protections. Before February 2020, there was only one SARS topic in the library. By October 2020, there were eight COVID-19-related topics, encompassing 277 study summaries that would be 300+ pages long if they were printed. Another company that componentized its training materials was able to reduce the number of pages in a student guide from 600 to 200 by removing duplicate content. Leveraging adaptive content from a CCMS resulted in higher employee productivity and more efficient processing and delivery of information.

## Addressing Governance

As the need to leverage data escalates, so does the need for data governance. In addition to complying with updated regulations, such as the General Data Protection Regulation (GDPR) or the European Union Medical Device Regulations (EU MDR), organizations must adapt data practices for the new challenges in data trust and privacy. According to 2021 IDC survey research, 49% of organizations reported that compliance (regulatory, data policies, security) is a topic of discussion at board meetings — with 67% of organizations identifying regulatory compliance as an initiative that is important to being perceived as trustworthy in the market. In particular, the financial services, insurance, legal, and life sciences industries require high levels of governance of the policies, procedures, and product information they maintain. Sharing or quoting the wrong information from a document management system that houses out-of-date policies or multiple answers to the same question could result in hefty fines. A CCMS would have one source of truth to identify and limit access to sensitive data components. With metadata generated every time data is captured at a source, accessed by users, or augmented for operational or strategic decision making, it is easier to audit data risk and the history of changes to the data.

## Knowledge for AI Readiness

Automation of data discovery using ML, trained by people and metadata, is the future of gathering data intelligence. Knowledge bases are required for conversational AI applications to "understand" context. The knowledge base organizes multiple subjects as entities linked together for the AI machine to find answers to questions or ambiguous references. Building these knowledge bases can be facilitated by a CCMS that supports content at a granular level. Knowledge graphs and relationship correlation can be derived from properly maintained data.

According to IDC's May 2020 *Analytics, AI, and RPA Services Survey*, the largest percentage of analytics, AI, and RPA services buyers said they had already deployed knowledge graphs (36%), with another 14% piloting knowledge graphs to help manage relationships between data elements. The value of an enterprise taxonomy expands when it is connected to a semantic knowledge graph, allowing users to semantically tag the most relevant content for deep linking, contextual searching, and accurate reuse in multiple forms, languages, and channels. Further, data quality and consistency are standardized with a governed taxonomy and automatic classification behind it.

With a component-based content repository, innovation accelerators such as virtual assistants, conversational interfaces, and knowledge-base creation become possible. IDC estimates worldwide spend for conversational AI tools and technologies will grow from $2.2 billion in 2020 to $7.9 billion in 2025. IDC predicts that this growth will be driven partly by the fact that 20% of all AI solutions will combine deep learning with symbolic methods to create robust humanlike decision making by 2026. A CCMS can help improve confidence in data science and analytical results. Poorly formed, messy data cannot optimize the learning models. Componentized, enriched content can be used to train ML algorithms to classify, locate, translate, and serve up content components autonomously. AI can then augment experiences built from multiple components and perspectives to create insights, improve communications, and personalize each interaction.

## Considering a CCMS from RWS

Tridion Docs is a CCMS that enables organizations to create, deliver, and manage in-depth quality content and documentation at the topic level rather than the page level. It also offers granular control over content in terms of usage, governance, and delivery. Tridion Docs Dynamic Experience Delivery offers an out-of-the-box documentation portal built on responsive, adaptive web technologies and a microservices architecture. Combined with Tridion Sites, it can provide a destination for delivery of structured content alongside other types of information to be used in adaptive knowledge hubs and self-service channels.

Tridion Docs offers organizations a method to observe strict corporate and regulatory compliance and remain agile in managing complex rules, policies, procedures, or product information at scale and in multiple languages. It integrates with RWS' translation management systems, enabling translations directly from the platform and offering automatic use of existing translations based on exact matches.

Tridion Docs customers span financial services, life sciences, legal, business services, automotive, industrial manufacturing, and high tech. It helps organizations streamline their global content supply chains from content creation to translation and delivery. The company has scaled effectively with its customers' growing use of content and provided a stable architecture to expand into new uses of AI and ML. Customers have benefited from RWS' investment in semantic AI and knowledge graphs to provide natural language search recommendations and ideas-based navigation.

The product is designed to provide agile intelligent content capabilities while protecting the governance of the data. Users can create content, assign tasks, assemble content dynamically, manage versions, track changes, provide collaborative reviews, add multimedia, and apply workflows to content. Content authors can use a familiar Microsoft Word–like authoring environment that is browser based to ensure democratized work processes are supported. Additionally, the Tridion Docs enterprise collaboration framework is a controlled, team-based environment, enabling reviewers to submit feedback to authors in an in-context editing environment. An actionable dashboard allows authors to see an overview of feedback and immediately access the topics they need to update.

RWS is one of the few vendors to offer a native CCMS that can be deployed at scale across a distributed organization. Its ability to combine natural language processing with entity and relationship extraction to automatically classify, create, and apply precise metadata to each information asset is beneficial when considering AI/ML projects. RWS' approach to adaptive content embraces a semantic vocabulary to deliver content in various formats to multiple channels such as voice interfaces and knowledge bots.

### Challenges

The barriers to CCMS adoption predominantly lie in the historical lack of easy-to-use tools, rendering the solutions suitable only for highly skilled technical publication teams. Complex authoring tools can exclude the keepers of knowledge — subject matter experts (SMEs) — from contributing to the knowledge base.

Enterprises that want to be truly digital and AI ready need to rethink content creation, review, and publishing tasks by letting go of the paradigm of creating "documents." Instead, they must prepare to use typographic formatting as a means of applying structure to text. Adopting a component content approach involves a fundamental shift in mindset among content owners that requires proper change management. Such a change also entails looking at content holistically across the organization, defining a content strategy, and investing in new tools that support structured content authoring for SMEs.

Legacy content conversion and strategic content mapping to a CCMS can help enterprises make the leap to intelligent component-based content services. Adopting new CCMS-based processes and technologies can yield benefits, but it's a step that not every organization may be ready to take.

## Conclusion

As legacy document management systems slow their innovation releases or disappear altogether, organizations looking for a new content publishing system or a data architecture that is AI-friendly may discover potential benefits in the new paradigm of a CCMS. The ability to manage precise information and metadata within the guidelines of a standard taxonomy is at the heart of a CCMS.

Budding intelligent content services tout the ability to discover data in a timely manner with semantic search capabilities while managing the shifts in information governance and adopting automation and ML into the mainstream. It is a lofty goal for many organizations to implement these intelligent content services when large amounts of intellectual capital and value are locked away in documents across file shares or legacy data stores that are not being used to their fullest potential. IDC believes that there is opportunity in using a CCMS to bring agility, governance, and AI readiness to an organization tasked with improving overall productivity and knowledge reuse in a world challenged by managing the growing data deluge.

# About the Analyst

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Marci Maddox is the Research Director for IDC's Digital Experience Management Software program, responsible for research related to persuasive content and interactive media that drives relevant, personalized, and engaging multichannel experiences. Marci's core research coverage includes creative tools, website software, customer communications, and digital asset management and video platform solutions.

## MESSAGE FROM THE SPONSOR

### About RWS

RWS (LON:RWS) is the global leader in content management and translation technology and services. Ninety of the top 100 global companies work with RWS.

Tridion Docs provides streamlined end-to-end component content management. It includes easy web-based authoring, reviewing, versioning, translation, and publication management, underpinned by the DITA XML standard. As a true collaborative environment with a familiar Microsoft Word-style interface, subject matter experts (SMEs) in your organization can contribute their knowledge. Authors and reviewers can work simultaneously in the same document providing comments to each other, tracking and merging changes.

Tridion Docs supports global enterprise use cases including single sourcing, product documentation, learning and training, policies and procedures, and efficient translations with delivery to multiple end points such as documents, PDFs, knowledge portals, websites, apps, chatbots, and IoT devices.

To learn more visit https://www.rws.com/tridion-docs.

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