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Content Services:

A New Way to Work

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Contents

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Introduction

Every industrial revolution has caused momentous shifts across all aspects of life—from the means of production to quality of life, from transportation to communication, from systems of commerce to systems of power. The changes are political, personal, social, economic, ideological.

Industry 1.0 introduced steam power, leading to urbanization and the creation of the middle class. Work moved from the farm to the factory. Tasks previously done by hand were mechanized, birthing entirely new industries based on large-scale manufacturing. Value creation changed from land to capital.

Electricity launched Industry 2.0, ushering in a new system of power delivery and an era of seemingly magical capabilities like refrigeration, safe lighting indoors and out, and radio communications. Workers learned to operate new electricity-based technologies, thereby reaching new heights of productivity.

The advent of the integrated circuit marks Industry 3.0, the beginning of the digital age. Computers, powerful communications technologies and the internet together accelerated automation, innovation and globalization. Work moved again, this time from the factory to the office.[1] The workplace—and the world—began to march to the drumbeat of digital.

Industry 0.0
Farmers and laborers - life was very rough

Industry 1.0
Mechanization and the introduction of steam and water power

Industry 2.0
Mass production assembly lines using electrical power

Industry 3.0
Integrated circuits, computers, satellites, communications, lasers, cloud

Industry 4.0
Physics down to the molecular level. AI, nanotechnology, biotechnology, graphene (not silicon)
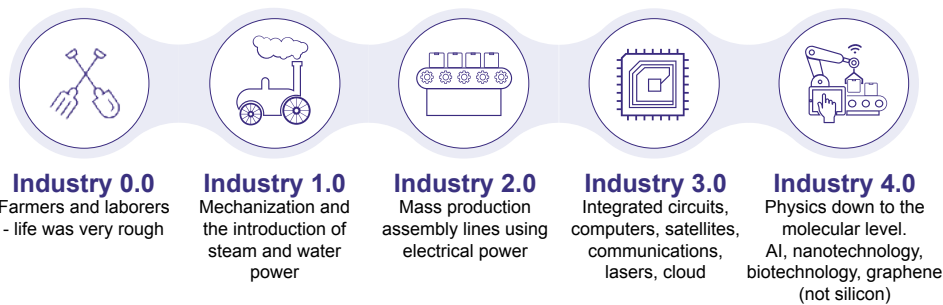
Figure 1:

The Industrial Revolutions

Throughout this history, technological advancement has progressively sped up. Just consider the recency of the third industrial revolution—many of us lived through it. Yet, we are already entering the next revolution.

We are now demonstrably in Industry 4.0, and it is incredible. It is an age of extremes. Technologies of scale, like nanotechnology, artificial intelligence and quantum computing, will define this era. Today, over half of the world's population is connected via billions of smart devices, exchanging massive amounts of data in real time.[2] The volume of information is expanding exponentially, and in turn, feeding groundbreaking technologies and business models. Within five years, 463 exabytes of data will be created *every single day*.[3] And while oil, coal and gas were the resources of past revolutions, today's most valuable resource is information. It is sitting in documents, databases and data lakes… just waiting to be tapped. Information is the new capital, and Industry 4.0 is the information age.

Industry 4.0 is changing everything: how we live, how we organize our societies and how we do business. As with the shifts from farm to factory and factory to office, the nature of work is once again moving under our feet.
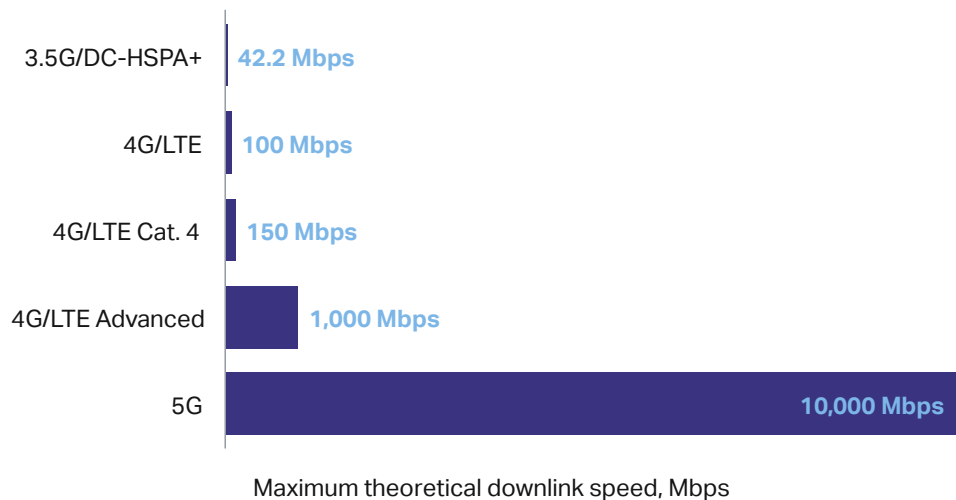
New ways to work are here, and they are not going anywhere. It is up to each company to embrace the changes and future-proof their business for the fourth industrial revolution.

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New Ways to Work

Industry 4.0 moves quickly and demands agility. Every aspect of business is changing, from internal processes to employee behavior to customer expectations. Companies that cling to the old ways of doing things will become relics themselves, left to gather dust while successful companies forge into the future. Business leaders must decide: will we be the Blockbuster or the Netflix of the fourth industrial revolution?

Companies must learn fast, adapt fast and transform faster.

New technologies are rewriting the rules. **5G** is ushering in an age of all-encompassing connectivity. It is a world that moves at the speed of machines, not humans. 5G is not just two or three times faster than the fastest 4G networks today: *it is 10 times faster*. And in many real-life cases (where cutting-edge 4G networks are not deployed), it is *100 times faster*.

Figure 2:

5G Moves at the Speed of Machines[4]

3.5G/DC-HSPA+	**42.2 Mbps**
4G/LTE	**100 Mbps**
4G/LTE Cat. 4	**150 Mbps**
4G/LTE Advanced	**1,000 Mbps**
5G	**10,000 Mbps**

Maximum theoretical downlink speed, Mbps

Source: GSMA Intelligence

The ability to transmit more data than ever will unfetter machine-to-machine communications, opening the floodgates for **Internet of Things** (IoT) devices, like autonomous vehicles, sensors, wearables and robots. Smart homes, factories and cities will seem to run effortlessly, while a torrent of information flows behind the scenes. Today's 22 billion devices are just the beginning.[5] By 2025, that number will almost double to 41.6 billion.[6]

These billions (and someday soon, trillions) of devices are becoming increasingly powerful as **edge computing** advances. They will be able to handle huge computational challenges on their own, such as real-time big data analysis or on-the-fly machine learning. When networked together in the cloud, they become even more formidable. **Cloud** is the platform where technology and information come together to spur ever-greater innovation. Combined with the **API economy**, cloud allows integration between disparate technologies and systems in a way that has never been possible before.

Interwoven with all of this is the rise of **artificial intelligence** (AI). As we augment human intelligence with artificial intelligence, the horizons of what is possible expand every day. Eighty-five percent of Americans are already using AI.[7] It is the app that figures out the best commute route, the tool that HR uses to help filter job candidates and the fraud detection system protecting everyone's bank accounts. AI can achieve incredible information processing feats when given access to machine-readable data. That is why raw data assets must be—and can be—made completely machine-readable. AI will enrich our data, our processes and our models, delivering vital insights to businesses and consumers alike.

It is an era of information, mobility and connectivity, where the IoT, the cloud and artificial intelligence are unifying to create a new technological foundation for society. The result will be a system as necessary to the functioning of our modern world as electricity.

This tsunami of technology is generating a **deluge of data** about every facet of business and life. By the end of 2019, humans accumulated over 40 zettabytes (40 trillion gigabytes) of data—that is 40 times more bytes of data in the digital universe than stars in the observable universe. And we are only getting started. In 2025— just five more years—the total amount of data in the world is forecasted to hit 175 zettabytes.[8] This is not only an unprecedented volume but a staggering speed, considering it took decades to create the first 40 zettabytes.
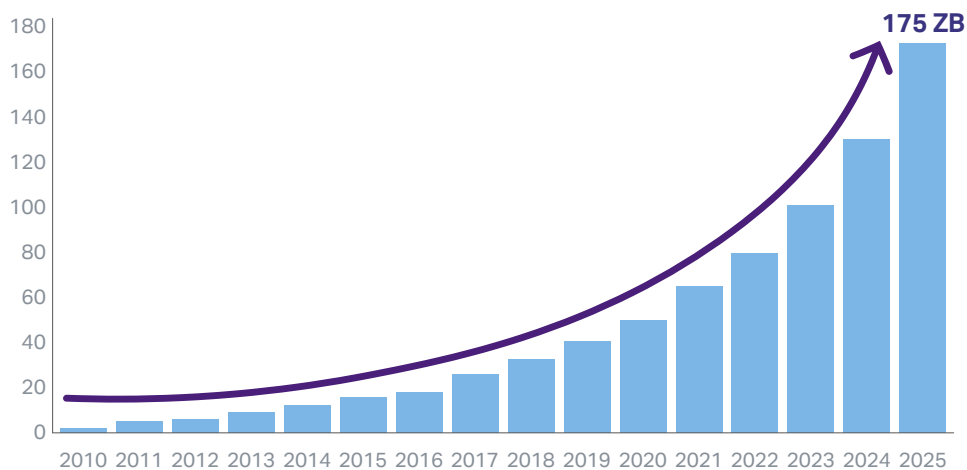

Figure 3:

Exponential Growth of Information[9]

However, organizations are not simply contending with new *volumes* of information— **information *formats* are changing**, too. The information organizations create and consume (e.g. technical specs, invoices, contracts, supply chain data, customer communication, etc.) must be managed in all of its diverse formats: documents, spreadsheets, data tables, forms, email, video, images, voice, text and more. Regardless of the form it takes, companies must be able to engage with their data in meaningful ways for it to provide business value. Unfortunately, this has proven easier said than done as formats evolve faster than many companies can keep up with.

In an effort to corral the barrage of new technologies, data volumes and formats, a host of **new regulations** like the General Data Protection Regulation (GDPR) are cropping up, converging on data security, privacy and governance. Mitigating risk and meeting these regulatory requirements is not as simple as checking a box—it calls for a holistic approach across the organization.

Meanwhile, businesses are welcoming a **new workforce**; we are at a tipping point. In the next five years, 61 million Gen Zers will enter the workforce, outnumbering both Baby Boomers and Millennials.[10] Having grown up digital with the sum of humanity's knowledge at its fingertips, this generation moves faster and innovates like no other. They expect to use the same tools in the office that they use in their leisure time, like social media, mobile connectivity, gesture-based interfaces and wearable devices.

Gen Z's arrival is only one piece of the puzzle. A still greater upheaval is on the way, as up to 800 million jobs will be filled by robots by 2030.[11]

This workforce of the future will live and breathe information, taking mobility and flexibility for granted. Supported by secure digital work identities and "anytime, anywhere" access to business tools and cloud infrastructures, employees (human or otherwise) will be unconstrained by time or space.
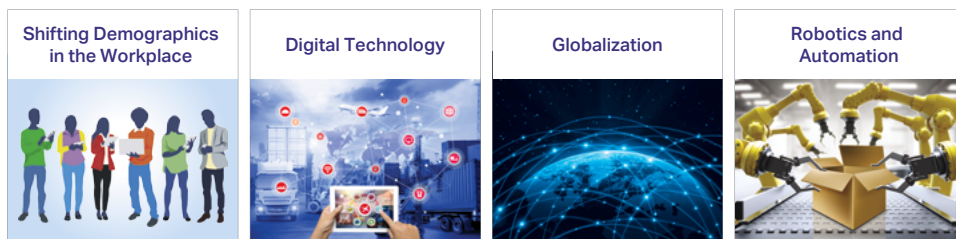

| Shifting Demographics in the Workplace | Digital Technology | Globalization | Robotics and Automation |

Figure 4:

Forces Transforming the Workforce

As a result of these seismic shifts, critical **new roles** are emerging, like the digital nomad, data scientist and data officer. It is estimated that 65% of children entering primary school today will ultimately work in jobs that are not on our radar yet.[12] Demand will rise for roles like machine-human relations designers, technology interpreters, augmented and virtual reality architects… and these are just the jobs we can foresee based on the technology available now. Many future occupations are unimaginable to us today, as flying an airplane was unimaginable to the farmers of the 1800s.

From any perspective, it is clear the composition of the workplace is transforming. It is time to rethink the way work gets done.

While daunting, this onslaught of change undeniably presents extraordinary opportunities. Businesses that adapt are finding more successes every day, using newfound capabilities to create exceptional customer experiences, achieve operational excellence, reinvent business models and unlock the Information Advantage.

An organization cannot expect adaptation to new ways of working to just "happen." It takes foresight, strategic planning and deliberate action. It takes the right Information Management (IM) technologies to navigate amid the rapid changes of the fourth industrial revolution. Among the myriad options, there is one suite of IM technologies that support new ways to work like no other—together, they are called "content services."

What Is Content Services?

A new way of working calls not only for new tools, but a new way of *thinking* about information management.

In the Information Era, information is the lifeblood of an organization. It is at the center of every business function; every task and process both use and produce it. The resulting "data exhaust" can then be leveraged to create still more value. Managing all this structured and unstructured data—capturing, accessing, analyzing, distributing and governing it—while ensuring it is readily available to the people and processes that need it, is a critical and ever-expanding mission.

It is also the key to using information to its full potential, thereby gaining a significant competitive advantage. An *information* advantage.

For much of the past decade, organizations implemented standalone ECM platforms to aggregate and manage as much information as possible. However, industry analysts, progressive organizations and leading software vendors have now recognized that the tactics behind traditional ECM are no longer enough to generate success in Industry 4.0. As the types and volumes of digital information grow exponentially, organizations are demanding new capabilities that allow them to do more with their information to improve innovation, competitive positioning, customer service and risk management.

That is where content services, a set of next generation Information Management technologies, comes in. Content services is defined by Gartner as: *"A set of services and microservices, embodied either as an integrated product suite or as separate applications that share common APIs and repositories, to exploit diverse content types and to serve multiple constituencies and numerous use cases across an organization."*[13]
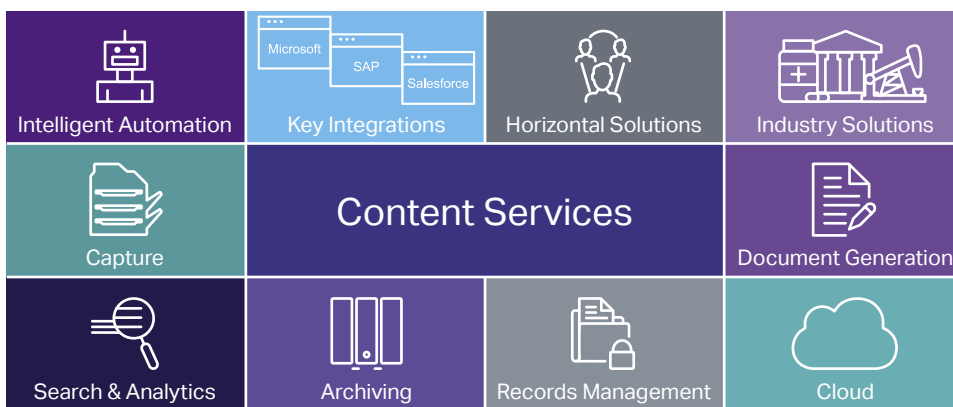
Figure 5:

Content Services—Connecting Content to Digital Business

But what does that really mean? And how does it differ from traditional ECM models?

At a basic level, content services is an extension of the methodology behind ECM. For good reason. Conventional ECM platforms have played an important role for over a decade, helping organizations organize, manage and control nascent volumes of digital content. They centered around the goal of attaining the proverbial "single source of truth" and served as critical storehouses. This high-level concept of content management remains essential; but, success in the fourth industrial revolution demands more than a single, one-size-fits-all repository.

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Content services technology builds on the strengths of ECM to further elevate information use across the organization. It is the wide-ranging backbone that connects content to the business in new and vital ways.

It involves integration at two key levels:

1. Integration with lead applications

Content services builds bridges between central content management platforms and the applications that power ERP, BPM, SCM, CRM and other critical processes. Once these applications are integrated, classification, analysis and governance policies can be applied to data as it is created. Information can also be extracted and distributed across the organization as needed.

2. Workflow-level integration

This is what allows knowledge workers to be productive with all that content and data. Information is contextualized and made instantly available through workspaces and workflows. The right information gets to the people who need it, whether they are part of widely distributed internal teams or external parties. It is also regulated and monitored through centrally defined access rules and governance policies.
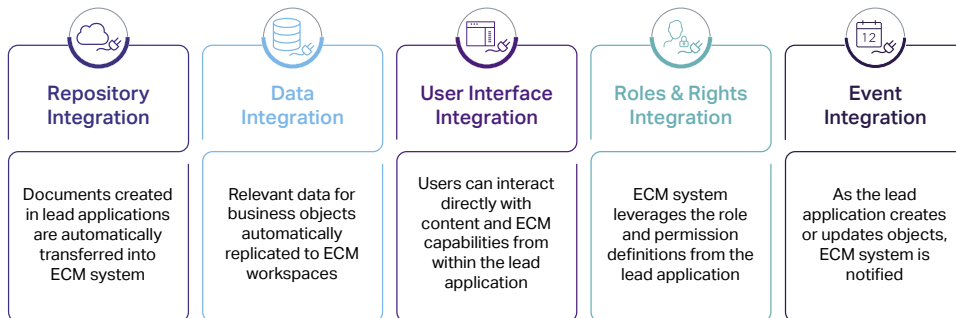
Repository Integration	Data Integration	User Interface Integration	Roles & Rights Integration	Event Integration
Documents created in lead applications are automatically transferred into ECM system	Relevant data for business objects automatically replicated to ECM workspaces	Users can interact directly with content and ECM capabilities from within the lead application	ECM system leverages the role and permission definitions from the lead application	As the lead application creates or updates objects, ECM system is notified

Figure 6:

Content Services Drives Integration

Content Services Comes in All Shapes and Sizes

As an extensive set of technologies and processes, content services implementations can take the form of a **business-wide platform**, an individual **application** focused on a specific use-case, or even utility-based **components** that add functionality to existing applications.
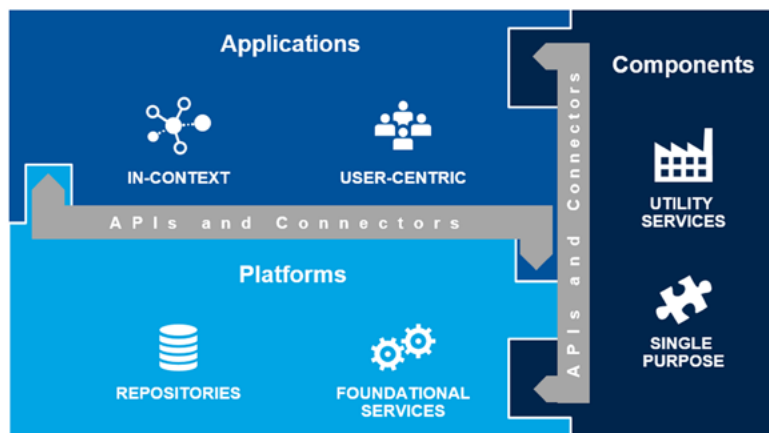
Source: Gartner (December 2016)

Figure 7:

Platforms, Applications and Components[14]

As a **platform**, content services can replace an existing ECM platform as the central system of record. A content services platform has its own repository, while also integrating with other repositories to deliver true, cross-business content lifecycle management—from capture and use to archiving and disposal. It serves as the hub for content classification and analysis, automatically applying rules regardless of where content is captured or created. Risk is mitigated, as access to all connected content—again, regardless of repository—flows through security and governance protocols defined at the central platform level.

Ultimately, a content services platform generates *context* for information, using metadata to connect dots across functional areas and create a complete picture.

The **application** and **component** levels usually focus on specific tasks or use-cases. They integrate with existing ECM/content services platforms to perform specialized functions, often involving lead applications. If an organization has identified productivity hurdles in processes as far ranging as vendor invoice management, external file sharing, document capture or numerous others, there are content services applications or components purpose-built to solve those problems. Applications can also pull together multiple components to provide end-to-end management of vertical programs, such as clinical trials in life sciences.

By design, content services applications are agile, lightweight, and simple to implement and use—encouraging an "identify-solve-pivot" strategy for tackling issues. They allow organizations to methodically build a holistic information infrastructure in easily manageable steps, quickly adding value and generating ROI.

Another way content services differs from a conventional ECM solution is how it operates. ECM platforms often stood as lead applications by themselves, necessitating business-wide adoption of rules and procedures specific to their operation. In contrast, content services works in the background, managing content lifecycles and connecting information to users with minimal surface interaction. It is light touch, from implementation to training to end use.

In fact, if content services is doing its job, many users will not even realize it is there. Employees will continue to work in the applications they have always used while content services applications deliver relevant information drawn from across the organization.

Adopting content services allows organizations to achieve the agility and productivity they struggle to attain with monolithic ECM platforms. But it is important to understand that content services do not have to replace existing ECM implementations. It is not "rip and replace." The best content services solutions are designed to integrate with existing ECM infrastructures, building on investments and enhancing their value by introducing new capabilities.

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Linde PLC

Linde is a leading industrial gases and engineering company employing 80,000 people worldwide. Linde Engineering designs and builds chemical plants, while the industrial gases business supplies industrial, medical and specialty gases to customers in more than 100 countries. The company creates, distributes and updates millions of documents, from drawings and blueprints to protocols for plant operations and maintenance logs.

To eliminate the need for rooms filled with binders of documents, Linde introduced OpenText™ Documentum™, which helped ease the paper burden and establish automated workflows to track document sharing with customers. By replacing outdated paper-based methods with proven content management, Documentum has enabled users across the globe to complete business-critical tasks with immediate access to materials via a familiar, integrated platform. The solution achieved ROI just a few years later, saving the company time and therefore, money. With an open, standards-based architecture, Documentum is the single source of information and allows Linde to customize the system to its needs. Furthermore, Documentum enables professionals to replicate content globally, a feature Linde appreciates as it has expanded business across international locations, namely India and China, over the last decade.
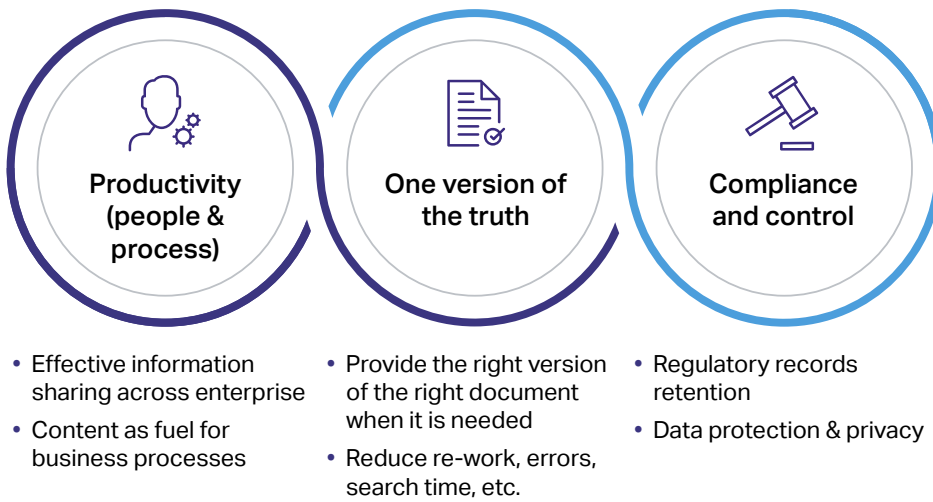
The Next Generation of Information Management Technology

Content services technology is a key component in the future of information management. Gaining the Information Advantage amid the extreme volumes and extreme volatility of Industry 4.0 means accelerating quicker and turning sharper, all while carrying more payload. Having the flexibility to instantly respond to opportunities and threats will define success.

Content services applications, built to be self-contained and dynamic, are far more adaptable to the non-stop advances in AI, analysis and automation than previous solutions. They are cloud friendly. As organizations shift to the cloud, few are ready or willing to make massive leaps with cross-business platforms. With content services, businesses can transition to cloud-based application or storage hosting at the process or function level, gaining confidence and comfort before moving on to the next. This lets organizations transition at their own pace, identifying areas of opportunity and successfully transforming in a hybrid environment.

**Productivity
(people &
process)**

**One version of
the truth**

**Compliance
and control**

- Effective information
  sharing across enterprise
- Content as fuel for
  business processes

- Provide the right version
  of the right document
  when it is needed
- Reduce re-work, errors,
  search time, etc.

- Regulatory records
  retention
- Data protection & privacy

Figure 8:

Why Organizations Adopt
Content Services

With robust content services technology running behind the scenes, businesses will be
well-prepared to embrace new ways to work.

Embracing New Ways to Work

Digital transformation permeates every corner of every organization. As the volume of information rises, so too does the pressure to do more with it. Essential business records, critical operational data and key collaborative documents are swirling everywhere now, in myriad forms, constantly morphing.

Content services empowers organizations to make better use of their information. Although this seems like a broad statement, the wide range of platforms, applications and components present infinitely variable ways to improve productivity and governance in the information age.
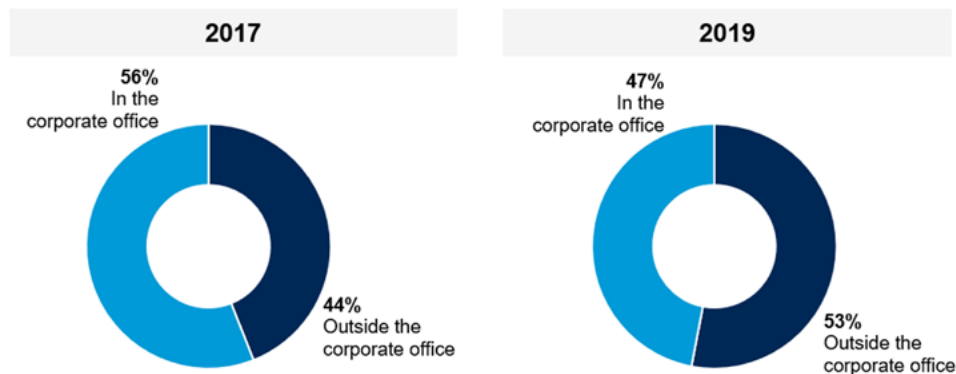
Attaining success in this hyper-digital world requires both micro and macro changes. Consider how content services supports these fundamental shifts in how we work:

Anytime, Anywhere, Any Device

Working remotely is second nature to the new workforce. Why not? They have grown up with humanity's cumulative knowledge available wherever they go. Connecting with people around the world is as easy as making small talk at the dinner table. Their consumerized applications are lightweight, intuitive and instantly responsive. To them, digital information is everywhere and everything.

These new telecommuters are known as **"digital nomads"** and they are the future of knowledge workers. They expect work environments to be dynamic and fluid. Retaining their talent means providing simple access to the information they need to do their jobs, whenever they want it, wherever they are, from whatever device they are using. All while ensuring security and compliance.

Gen Z may be the digital natives bringing change with them like a tidal wave, but established workers are not exempt from these expectations either. Everyone is going mobile, virtual. Right now, every large organization has employees working in Starbucks, hotels, airports, home offices, conference centers. The "bring your own device" (BYOD) trend is unstoppable, with two-thirds of employees using their own devices for work, and some using more than one (think cell phone, tablet, personal laptop, wearable technology…).[15]

2017 — 56% In the corporate office / 44% Outside the corporate office

2019 — 47% In the corporate office / 53% Outside the corporate office

n = 3,120 (2017) and n = 7,261 (2019)
Source: 2017 Gartner Digital Workplace Survey; 2019 Gartner Digital Workplace Survey

Figure 9:

Work Location Preferences[16]

Content services technology is the key to maximizing productivity in this new paradigm.

By connecting sources of information, content services applications facilitate a seamless flow across the business and into the mobile environments of remote workers. Unintuitive, laborious steps are eliminated as automated classification is applied to content and data as it is created. Content is accurate and timely, and everyone is working from the latest documents, regardless of location.

Phone calls, screen flips, emailed questions and convoluted database searches belong to previous generations. Fueled by content services, modern workspaces aggregate relevant information from multiple sources into one-stop dashboards, dynamically updated in real time as projects progress and information evolves.

Role-based permissions, audit trails and version controls are all centrally defined and monitored—ensuring legally defensible adherence to regulatory and compliance protocols wherever the information is accessed and used.

The world of the digital nomad is defined by agility and versatility; digital processes must be easy to tweak and tailor. Content services—containerized, cloud-based and developer friendly—are dexterous enough to thrive under these demands.

Operational Agility

Organizations continue to struggle with the fallout of the past decade's digital disruption. Control of business processes was largely decentralized among dispersed teams, locations and external partners. Specialized software applications were introduced to accomplish targeted tasks, each with their own unique data generation, consumption and storage configurations. In short, the animals got out of the zoo.

The old ways of working—unwieldy implementations necessitating convoluted workarounds to solve problems—are an unsustainable path. Forward-think must replace stop-gap.

Information architects are turning to content services to produce a seismic shift in operational excellence.

By building connections between the processes and applications generating and consuming business information, content services solutions instantly break down barriers and recentralize control.

Black Sea Trade and Development Bank

The Black Sea Trade & Development Bank (BSTDB) supports economic development and regional cooperation by providing trade and project finance, guarantees and equity participation for development projects in the private and public sectors in its 11 European member countries. BSTDB has a cumulative portfolio that includes more than 280 operations in infrastructure, energy, transport, manufacturing, telecommunications and the Financial sector.

Managing the ever-increasing volume, flow and complexity of information and documentation required to operate Bank operations, BSTDB turned to OpenText to implement the OpenText™ Content Suite platform. The prime objective of the Bank is to have a single view and monitoring capability of operations in a single place, by building an Information Management system.

The Black Sea Trade & Development Bank has supported and developed solutions from the diverse portfolio of OpenText Information Management (IM) products for more than 15 years to implement state-of-the-art solutions to meet its business needs. Its IM program delivers on its corporate strategic goals of increased productivity by automating and simplifying business processes, reducing decision times and enhancing content security and accountability. Significant business benefits include improved quality of service, reduced costs, simplified internal and external collaboration, better content accessibility via a diverse range of devices, and increased compliance with international standards.

Furthermore, system-level performance and productivity goals are attained much more quickly. When content services applications layer over existing ECM platforms, they can focus on singular use-cases or tasks that could be as broad as cross-enterprise capture or as specific as translation functionality. As a result, it is much easier for line-of-business stakeholders, IT administrators and executive sponsors to understand the scope, the expected benefit and the impact. Case-by-case integration and adoption is faster. Organizational upheaval is a thing of the past.

These applications act as interlaced building blocks that create a holistic information management program. Self-contained, quickly deployed and easily customizable, they allow organizations to shift toward content management in the cloud—in manageable, organized steps.

Most organizations are intimidated by the magnitude of wholesale cloud adoption but realize they must make some inroads. That is why the short-term future of cloud is hybrid, ranging from dedicated on-premises to multi-cloud strategies and everything in between. Every business has different realities and needs.
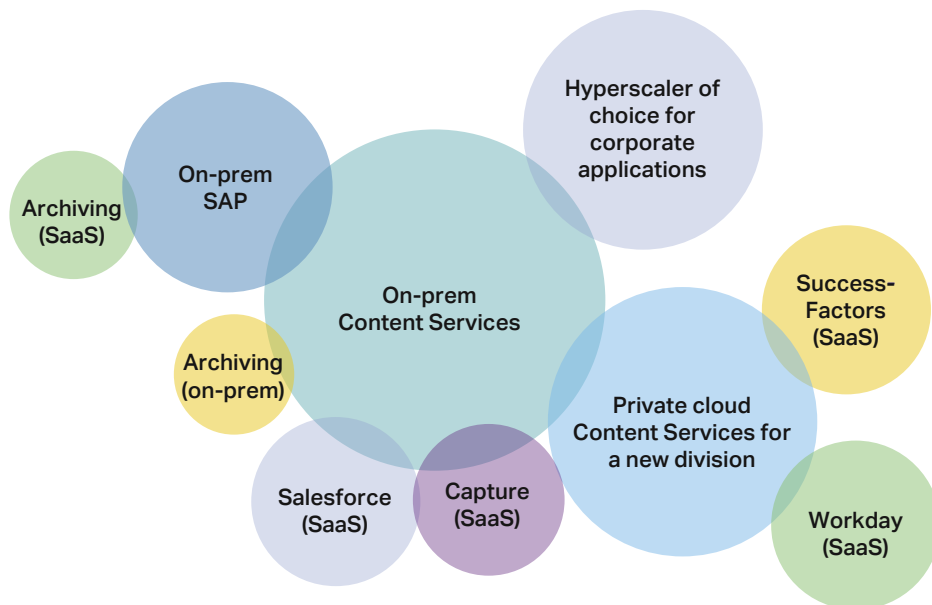
Creating an infrastructure that enables comprehensively governed information to flow where it is needed can be overwhelmingly daunting or remarkably simple—depending on how it is approached. Content services platforms and applications are designed to help ease this transition and perform their prescribed tasks in these highly variable environments.

Hello, API Economy

Gaining an Information Advantage requires speed and agility. 5G connectivity is going to make massive quantities of information immediately available to machines and people. New generations of employees and customers expect tailored experiences that let them interact faster and in more ways. The ability to develop and customize the tools that optimize all this must keep pace.

A foundational principle of content services architecture is enabling the rapid development and deployment of solutions—empowering organizations to quickly resolve problems and capitalize on opportunities.

This is playing a lead role in the API economy and with **the developer**. Integration with virtually any application or platform is either standardized out-of-the-box or easily developed. Gone are the days of resource-strapped developer teams spending months in development and staging, testing for impact across an entire business infrastructure, only to discover the scope of the project has changed by deployment.

With content services, organizations can leverage the cloud in the ways that best suit them. Platforms and applications are cloud-native but can run anywhere. Their APIs seamlessly connect across any configuration, on-premises or cloud.
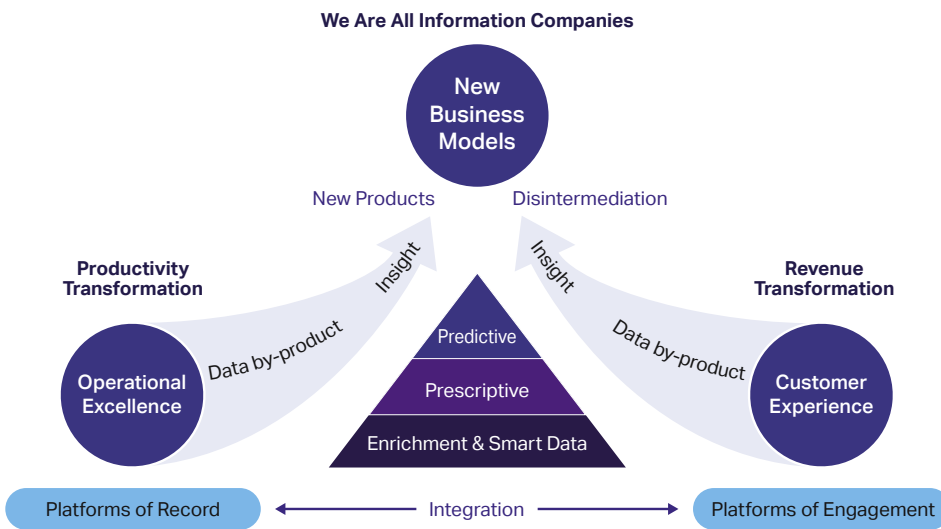
Further, IT no longer slows the process improvement chain. Ideas have always flowed faster than the ability to act on them. The low-code approach of content services simplifies new application creation and reduces time-to-solution. SDKs allow developers to ramp up and design solutions quickly. Development and implementation cycles are dramatically compressed.

That, combined with containerization on a Software-as-a-Service (SaaS) platform that vastly simplifies upgrades, means IT and developer resources are freed up for more strategic initiatives.

Extreme Data = Extreme Insights = Extreme Advantage

A critical step along the Information Advantage Value Path is the recognition that data is not a mere byproduct of processes—it is the main product. Accurate, timely analysis of that data is the key to better products, better service, more productive processes and reduced risk. But only if organizations can integrate and analyze massive quantities of diverse content and information—at scale and in context.

We Are All Information Companies

New
Business
Models

New Products   Disintermediation

Productivity Transformation   Insight   Insight   **Revenue Transformation**

Data by-product   Data by-product

Operational Excellence

Predictive

Prescriptive

Enrichment & Smart Data

Customer Experience

Platforms of Record   ← Integration →   Platforms of Engagement

Figure 11:

The Information Advantage Value Path

Content services technology has come of age in Industry 4.0, an era defined not just by *quantity* of information, but *how much value* can be extracted from it.

Content services applications are purpose-built to connect information from highly varied sources across the organization to eliminate silos, establish context and create a framework for optimal analysis. With this framework in place, the **data scientist** is enabled to make the most of content services' baked-in analytics capabilities, increasingly augmented by AI, machine learning and predictive modeling. It has never been easier to integrate powerful analytical functionality throughout the information lifecycle.

Unstructured content, perhaps the greatest challenge facing the data scientist, can now be automatically classified, tagged and transformed into machine-readable formats as it is ingested. Sentiment analysis and keyword identification are automatically performed. Structured data, often isolated and difficult to access, is now seamlessly introduced into workflows and value chains, making it readily available for analysis and reporting.

With that infrastructure in place, a self-perpetuating cycle starts to revolve. Templated actions and reporting generate new learnings, which are fed back into the cycle to produce even better insights. Working in the background to aggregate, analyze and report, content services simplifies and accelerates the engagement-to-insight process.

Like every other element of information management in the fourth industrial revolution, analytics is a journey, not a destination. Current applications of analysis and the insights produced will seem antiquated in just a few years. Using content services creates the groundwork for organizations to effortlessly unlock ever-increasing value from ever-increasing volumes of information. It is the way to not only achieve, but sustain, a true information advantage.

Governance, Risk Management and Compliance

Exponential increases in information go hand-in-hand with increased risks to that information. And consequently, the expansion of regulations meant to safeguard it.

In this new era, IoT data can have privacy implications, video footage can impact compliance and external collaboration can result in security breaches. **Data officers** must be able to identify risk, implement solutions and pivot at speeds inconceivable a few years ago. The hackers and regulators are not waiting.
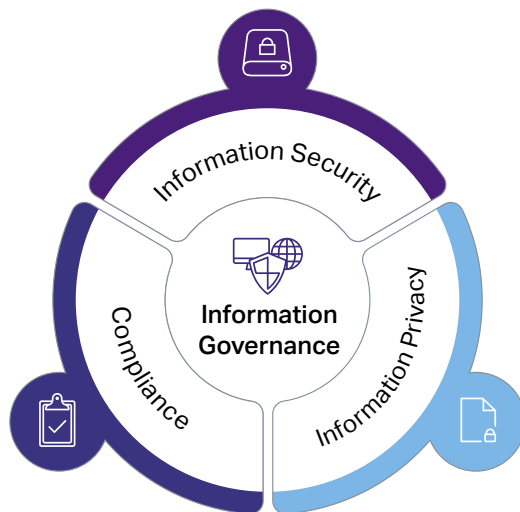

Figure 12:

Basic GRC Components

Building on the core governance principles of traditional ECM, content services platforms extend and simplify the application of security, privacy and compliance policies.

Organization-wide governance protocols are defined and managed at a central level—triggering automatic meta-tagging and classification as information is created, ingested and used. Content is safeguarded across its entire lifecycle. Meanwhile, AI and machine learning continually improve the technology's accuracy and reach.

Because many privacy regulations only apply in a certain territory, businesses need a platform to ensure the right protocols are applied to the right information, wherever it resides. It is a two-way flow: line-of-business and geographical stakeholders define and apply rules at their level, which are then fed back to the central hub and applied to all relevant information across the business.

Organizations must adopt a Zero Trust philosophy when it comes to information security. "Good enough" control is not. There is too much, moving in too many directions. Recurring headlines demonstrate the risks to brand reputations and bottom lines. A half-hearted commitment to governance does not cut it.

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Content services applications and modules extend governance capabilities beyond the boundaries of the business, controlling permissions, versioning and audit trails for information shared with partners, suppliers and even customers.

Expanding sources of information also means more types of content falling into the scope of discovery and compliance reporting. For example, social media posts can be deemed official records and may be legally admissible. They must be governed and managed within a legally defensible, records management framework. Content services technology enables that—treating it to holistic lifecycle management, including AI-fueled analysis, classification, retention and reporting.

County of Los Angeles

The County of Los Angeles is the most populous county in the U.S., with 35 departments, close to 110,000 employees and more than 1,000 facilities across nearly 4,000 square miles. Each department maintains its own personnel files and records, with most documents stored in file cabinets and spare offices, and house close to 25 million pages of paper. The storage areas are part of limited space available to departments. When storage space runs out, some departments incur off-site storage fees. As such, a uniform application of records retention policies proved challenging.

That was until the County decided to establish a central online repository of countywide personnel records with OpenText™ Documentum. This transformation helped to replace the manual process of maintaining paper files with an automated, central and trusted system of electronic employee personnel records. The County ultimately turned to OpenText to govern all aspects of content management for its integrated Electronic Personnel Digitization and Records Management system (ePR) system: OpenText™ Captiva™ Capture to digitize paper documents, OpenText™ Documentum™ xCP for business process management and OpenText™ Records Management to automate retention and disposition. The County of Los Angeles realized substantial return on investment for their ePR deployment, such as producing timely, verified audits and reliable disposition, and an estimated cost-savings of nearly $3.4 million per year.

At its core, "new ways to work" is not simply about the nitty-gritty everyday tactics of the business. It is not just booting up a new system and calling it a day. Implementing the right processes and technologies is a futile gesture unless the ways we *think* transform as well.

New Ways of Thinking

Changing how we think about the concept of information management is the single most important factor for achieving success through content services. It is also the most significant obstacle.
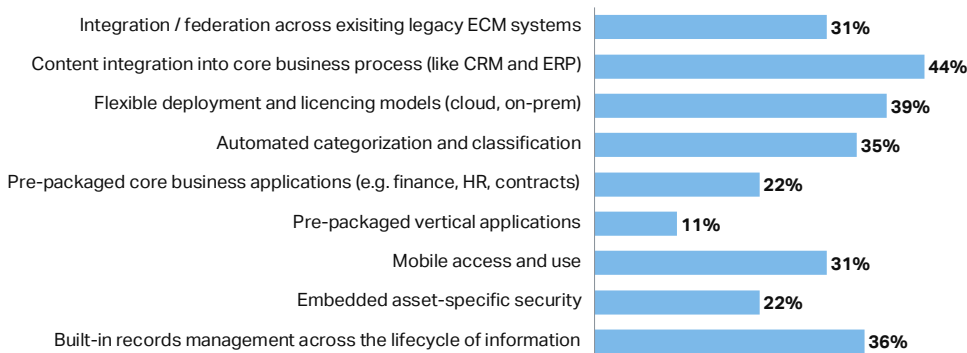
Monolithic, inflexible systems are out. Mindsets that remain constrained by the strategies and tactics of previous generations are too limiting in the information age. Digital has changed everything.

It is similar to the recalibration we have all undergone as technology has altered our personal lives. Vehicles give driving tips. Household thermostats optimize temperatures by monitoring movement. Refrigerators know when you are out of milk. Watches recommend music. Retail environments suggest items to purchase next, before you even know you want them.

Each of those advancements is the result of innovation in capturing, analyzing and acting on digital data. Rethinking the accepted ways of doing things has made our lives better.

Within the professional sphere, the possibilities for using digital data to improve productivity, service, innovation and governance are almost endless—it just takes an open mind.

Of the following kinds of capabilities in a content services platform, WHICH THREE are most important to your organization?

Capability	%
Integration / federation across exisiting legacy ECM systems	31%
Content integration into core business process (like CRM and ERP)	44%
Flexible deployment and licencing models (cloud, on-prem)	39%
Automated categorization and classification	35%
Pre-packaged core business applications (e.g. finance, HR, contracts)	22%
Pre-packaged vertical applications	11%
Mobile access and use	31%
Embedded asset-specific security	22%
Built-in records management across the lifecycle of information	36%

Source: © AIIM 2019, www.aiim.org

Figure 13:

The Many Possible Use-cases for Content Services[17]

The first step to success with content services is understanding that—while the technology offers major advances in functionality and usability—at its core, it is an evolution and extension of traditional ECM. Self-contained, task-dedicated applications can layer over an existing ECM implementation, adding value while linking together to contribute to a cumulative whole. The result is a solid information management infrastructure.

This new approach to accelerating momentum has the greatest impact if adopted in the initial stages of strategic planning. Throw out the old model of staring at a blank whiteboard and contemplating how a company-wide implementation of a new content management stack will ever be successful. History has proven that it probably will not be.

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- Not focused on making it easier to get work done
- Application and update of metadata and classifications
- Low adoption rates among employees
- Content silos and fragmentation
- Traditional ECM challenges
- Collaborative work lacks coordination and integration to related processes
- Requirement to "step outside" of business process

Approach it in a new way, starting at the needs-assessment level. Devote time to understanding the existing infrastructure and drill down to identify singular issues and opportunities within processes. Prioritize based on ease of solution, impact and ROI. There will be no shortage, but compartmentalization brings clarity.

Select one, then bring relevant leadership, users and IT to the table to scope out the "perfect world" workflow and governance. Reimagine how it *could* be, not how it has *always been*. Evaluate and collaborate with vendors to identify the best content services "building block." Assess each through the twin lenses of resolving the individual issue as well as anticipating future projects and desired integration needs.

Assess, scope, solve, move on to the next one. Think in bite-size chunks, not giant mouthfuls.

This new way of thinking about information management alleviates two of the largest obstacles that have hindered content management implementations in the past:

1. Cross-Business Governance:

With content services, information governance and control make significant gains. Protocols are centrally managed, applying the relevant compliance, security and privacy rules across the business.

This methodology plays a significant role in helping organizations as they overcome governance concerns with the cloud. Content services architecture allows for a wide variety of possible information storage, management and usage scenarios—each implemented at the individual process level. Have a use-case that requires data to be stored on-site but also want to benefit from a SaaS application? No problem. Is an application on a private cloud, while content is stored on a public cloud? Easy. Or are both the application and content on-premises, with plans to scale to a cloud storage model? Content services can be configured to accommodate any scenario.

The technology is flexible enough to adapt to new models as businesses evolve and grow. Organizations can adopt the cloud at their own pace, addressing process-specific needs and opportunities while strengthening the cloud comfort factor. And, avoiding the dreaded "all-or-nothing" option that leads to indecision and immobility.

2. Adoption:

Success is realized much more quickly. Problems are solved in a case-by-case manner, and in ways that meet the needs of the business and the users. Adoption increases

dramatically, both because users are involved in creating the solution and because content services are designed to work behind the scenes to help them do their jobs better. Many users will never actually interact with the content services application itself. Instead, they continue to use the application or interface they always have, benefiting from immediate access to relevant content and data.

Pharmascience

Pharmascience, a leading manufacturer of generic and branded drugs, produces hundreds of product families in various dosages for more than 2,000 products. Close to 1,400 Pharmascience production employees reference more than 3,700 standard operating procedure (SOP) documents to ensure quality and compliance with federal regulations. Previous paper methods to follow SOPs lacked version control, hindered processing and slowed time to market. In an environment that relies on strict precision and control, paper simply doesn't cut it. Employees would view recipes and SOPs on paper before stepping on the production floor. When reviewing SOPs, there is a need for a very precise procedure, controlled environment, well-defined security and an audit trail. More than simply replacing paper with digital documents, Pharmascience needed a reliable Enterprise Content Management solution augmented with authorization and workflow capabilities that could be integrated into existing systems.

In 2017, the pharmaceutical company established its own prescription for an effective document management solution: a central, compliant repository with integrated workflow across all users and locations. As a result, Pharmascience deployed OpenText™ Content Suite and OpenText™ Regulated Documents. Now, production employees view digital SOPs in real time. The right information can be accessed at the right time, avoiding duplication and ensuring compliance through standardized documentation of changes—crucial for adhering to CGMP (current good manufacturing practices) regulations. Pharmascience also relies on Regulated Documents to manage SOPs throughout a controlled lifecycle. Authorized access ensures security and electronic signatures simplify approvals.

The OpenText implementation ultimately resulted in easy information access, improved collaboration and version control which eliminated document duplication and delays, allowing Pharmascience to experience fewer changes and faster time-to-market. Now, Pharmascience production floor employees, who were at first reticent to change, are requesting the addition of more documents to the OpenText platform.

New ways of thinking allow businesses to surmount obstacles to implementing new technologies and embracing digital transformation. Armed with these new approaches, organizations are ready to empower two essential entities within the business, called "the Digital Business" and "the Digital Workplace".

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The Digital Business and the Digital Workplace

The Digital Era introduced a torrent of digitized content and data; however, it is in the Information Era that organizations will begin to truly make sense of it all and derive significant value. In Industry 4.0, information is every organization's most valuable asset.

To succeed in this new world, a business must be able to identify, classify and distribute information to the people and processes that need it. Beyond that, it must be able to create *context* between disparate pieces of content. Accomplishing this means forming a sophisticated ecosystem of connections. Across business systems, connections and context improve everything from decision-making to governance evaluation to analytical algorithms, and more.

Building on the well-developed strengths of ECM platforms is the most direct way to create this environment. But, in the age of extreme information, these connections must be automated, seamless and transparent. ECM—both the practice and the technology—must slide into the background to support the productivity chain, not interfere in it. Intrusive, labor-intensive steps hinder productivity.

Within the content services model, functions that manage and surface information are automatically performed behind the scenes. This preserves the interfaces users are most comfortable with as the center of activity. Information is pushed to them where and when it is most beneficial.

With this infrastructure in place, information can flow across two distinct, but intertwined, ecosystems: the **Digital Business** and the **Digital Workplace**. Each feeds off and powers the other, with content services connecting them and driving productivity and governance within the whole.

Figure 15:

Content Services Connects the Digital Business and the Digital Workplace

The Digital Business

The Digital Business is defined by structure and process. It is populated by the classic, regimented processes that support every organization. Think acronyms like ERP, SCM, CEM, CRM, HCM and more—managed by self-contained, specialized lead applications like SAP, Salesforce, Oracle, SuccessFactors and others.

Each has a defined purpose and has often stood alone, a siloed storehouse of content and data with little integration or interaction between them.

In the past, accessing and using the information housed in these platforms followed decades-old procedures. If a sales team working on a proposal in Salesforce needed supporting data from the ERP system, emails were sent, clarification phone calls made, reports emailed back and deciphered. Hopefully, the information they contained was relevant, up-to-date and interpreted correctly.

As organizations digitally transform, those age-old steps are no longer enough. There is too much information that can add value, living in a plethora of systems. Everything from the IoT to social media is generating enormous quantities of new and varied data. Manual responses are too slow and subjective. Humans are simply incapable of pursuing and processing it all.

Further, the ever-increasing assortment of specialized applications producing isolated pools of information has become a governance black hole. Information sprawl has resulted in governance policies not being applied to most of an organization's legally admissible information.
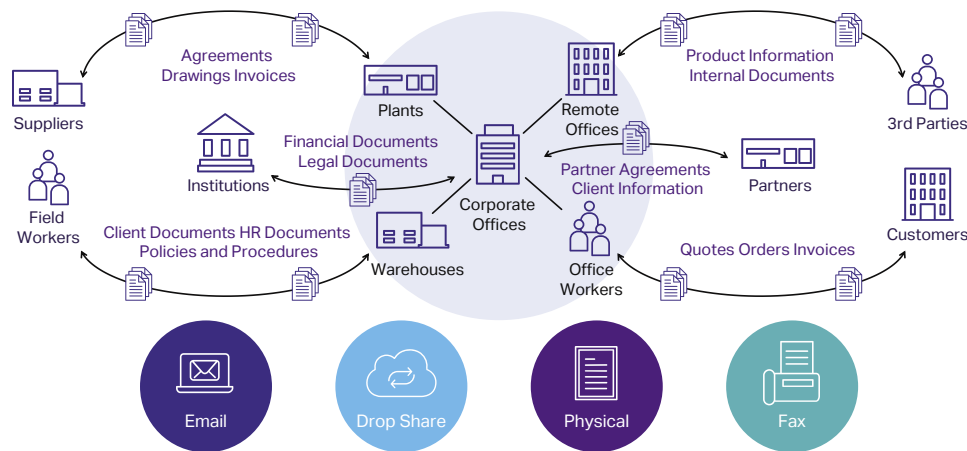

Figure 16:

Information Sprawl

Content services originated as a solution to these Digital Business problems. How could organizations connect these silos to apply lifecycle management and make the information easily available? How could it be done without disruptive, time-consuming overhauls of existing ECM systems?

Content services architecture allows businesses to achieve this in manageable, process-by-process stages. Purpose-built applications are designed to promote low-code implementation and integration, forging the essential two-way connection that brings ECM and Digital Business process together.

With that connection in place, real-time analysis can be performed. Classification and metatags are applied based on keyword, sentiment and a wide variety of other customizable variables. Organization-wide governance and lifecycle policies are automatically extended to previously isolated content and data. Changes in the regulatory environment are instantly applied, wherever the information goes. Federated compliance becomes a reality.

Each of these steps is templated and easily customizable. But they are unique to each process. A capture function scanning physical documents has different requirements than management of unstructured consumer emails. The key is automation. Not just because of the volumes of information, but also because of the possible use-cases for it. With content services, the ingestion of a specific piece of information can automatically trigger repeatable actions, such as kicking off a workflow, task assignment or cross-team case management. Conversely, the user initiation of a specific task can trigger the creation of related documents or content.

Connections create context. Cross-platform meta-tagging connects the dots and creates more complete pictures. It enables SAP data to surface in Salesforce as part of a proposal development. The users involved do not even have to search for it. Their content services-driven workflow initiates the push of related information from one system to another.

DHFL Pramerica Life Insurance Co. Ltd.

DHFL Pramerica Life Insurance Co. Ltd. (DPLI) is one of India's most progressive life insurers, offering a comprehensive suite of products to cater to the varied insurance needs of its customers. It has a focused and segmented approach to distribution and is a leader in certain niche markets, such as the armed forces, micro-financing and housing finance segments.

In a bid to ensure even more people can access the right level of life insurance quickly and easily, DPLI looked to OpenText to complete a large-scale transformation project to digitize its key business processes. This included supporting the creation of insurance policy documents and managing new insurance agents and channel partners. The OpenText deployment at DPLI includes the development of end-to-end workflows to support critical business applications, such as new business processing, receipting and collections and its channel management system. The applications extend across the company's 126 branches in India, its processing centers, contact center and head office. The solution also provides more than 120 integration touchpoints aligned with DPLI's core policy administration system (PAS), providing a seamless data exchange and near real-time information for processing and viewing. The integrated solution provides productivity gains in the company's day-to-day business processing, while also retaining operational controls, and has decreased processing costs by approximately 25–30%.

Legacy systems are a fact of life within organizations. Evolving processes necessitate new solutions. M&A activity introduces redundant platforms. IT resources are consumed maintaining seldom-accessed repositories with diminishing value but lasting risk. Specialized content services applications address these issues, dealing with obscure information configurations to enable governance and analysis; they format and retain information of value and dispose of everything else in a legally defensible manner.

The Digital Business is the source of the greatest possibilities and greatest consternation when it comes to the cloud… all those mega-platforms and their multiplying pools of data. The cost of storing and maintaining it all. The perceived risks in security and operational stability stemming from shifts to a new hosting environment.

Content services applications have matured in this transitionary period. They are cloud-native but developed with the understanding that hybrid is the reality for most organizations in the immediate future. They have the agility to adapt to any configuration of on-premises and cloud. With their process-specific focus, they allow businesses to find the balance that is right for them on a per-process basis, with the scalability to easily adapt to future business needs.
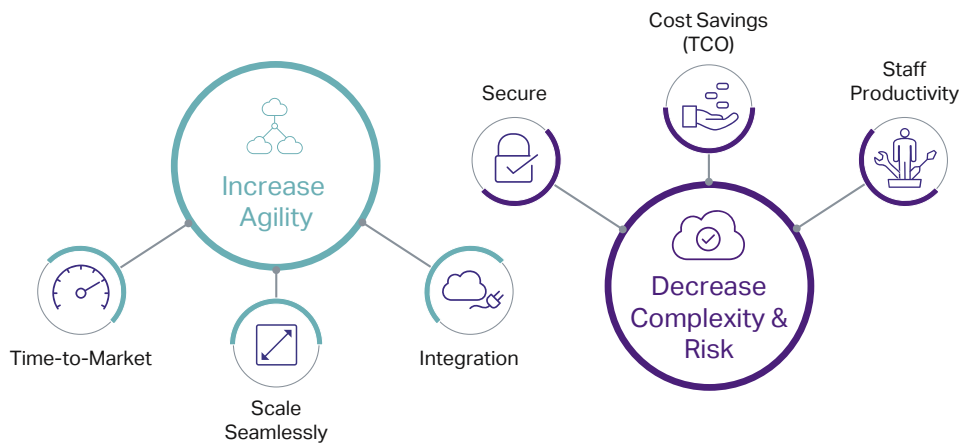

Figure 17:

Content Services in the Cloud Accelerates Innovation

Digital Workplace

If the Digital Business is about structure and repeatable processes, the Digital Workplace is ad-hoc and unstructured. It is where most knowledge workers perform at least a portion of their jobs. Where they engage with each other to generate, update and share a wide variety of content—emails, documents, presentations, videos and the list goes on.

The Digital Workplace is primarily the realm of the Microsoft Office suite, the industry standard and lead application where most Digital Workplace content is created and stored. As with the process-management applications in the Digital Business, effective content services technology integrates with and supplements, not supplants, the productivity tools employees are most familiar with in the Digital Workplace. That means underpinning collaboration and creation functionality with best-in-class governance and facilitating cross-platform information flows.

User adoption of content management always suffered in traditional ECM, primarily because the Digital Workplace was never a focus. ECM platforms were originally developed as end-stage repositories to store documents for records managers and legal departments. As such, they often added extra steps for the content creators. On top of that, it was typically a one-way information flow; efficiently searching for and retrieving stored content required proficiency beyond most users.

The strategy behind content services flips that line of thinking with the mantra that simple access to **content in context** is essential to productivity. Integrating with the processes that generate information in order to classify, manage and govern it is not enough. Making that information effortlessly available to the people who need it—in the format that is most useful to them—is the only way its ultimate value can be realized. The changing demographics and evolving work habits of the modern Digital Workplace will accept nothing less.

Red Deer County

As the third largest municipality in the province of Alberta, Red Deer County serves a population of close to 20,000 citizens. For 100 County employees, managing information used to involve cumbersome, orphaned methods for document control. While installed to scan files as digital records, the county's previous Enterprise Content Management (ECM) system proved costly and difficult to use. Red Deer County needed easier access to historical and active files. It wanted a content management system that could grow with the municipality as it modernized services, also recognizing the opportunity to move towards digital governance with efficiencies that support employee productivity and service to citizens.

With their implementation of OpenText™ Content Suite, which offers the County an integrated content services solution to build the foundation for its digital transformation, employees can more effectively manage and share information. Most County employees use OpenText™ Enterprise Connect, an alternate desktop interface that enables them to interact with Content Suite directly from Microsoft® Office or other Microsoft applications. Through OpenText™ Tempo™ Box, convenient, protected access to documents in Content Suite is extended to external contractors and others for a simple, secure way to share, file sync, access and manage information. To fulfill retention requirements, county employees previously entered—by hand—the contents of file boxes into a database. Now, Red Deer County takes advantage of the OpenText™ Physical Objects module, which supports barcode label, warehouse and circulation management.

OpenText offers the capability and capacity to support Red Deer County at all points along its path to an information governance program as well as easy, secure access to information that improves the way users create and consume information.

Content services technology allows organizations to optimize the user experience in ways that meet the demands and expectations of specific roles, users, locations and tasks. It could be access to relevant information through a customized screen within an application they already use. It could be a tailored workspace that consolidates content from various sources into a one-stop dashboard. It could be task-oriented reminders and associated content forwarded to knowledge workers, regardless of device and location.

Content services strategy also builds on the hard-won wisdom that manual processes cannot drive effective content management, especially in an unstructured environment. Users are too focused on doing their primary jobs quickly. They avoid extra steps that are deemed superfluous, such as manually tagging and filing information in an ECM repository. Data integrity suffers. Automated ingestion, classification and distribution of information—fueled by advances in AI, analysis and machine learning—is a central principle of content services.

The boundaries of the Digital Workplace are continually expanding. The concept of the enterprise firewall as a security moat is outdated. It is being regularly bridged as organizations decentralize operations, employees require remote access to sensitive information, and external partners and suppliers take more prominent roles in collaboration and creation. And, much to the chagrin of information security administrators, Gen Z is digitally savvy enough to invent ways to share and collaborate if corporate-sanctioned options are not offered.
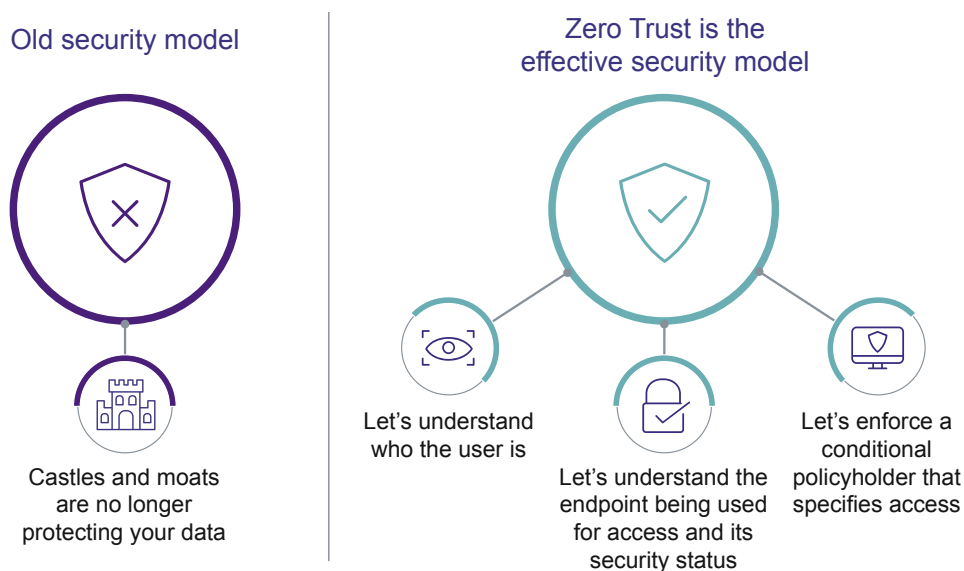
Old security model

Castles and moats are no longer protecting your data

Zero Trust is the effective security model

Let's understand who the user is

Let's understand the endpoint being used for access and its security status

Let's enforce a conditional policyholder that specifies access

Figure 18:

A Dynamic, Zero Trust Security Model

In this new information-sharing model, governance and control are obvious concerns. Security, privacy and compliance protocols must be implemented in a Zero Trust world, regardless of where information is stored or used. But there are also productivity issues to consider. Are remote collaborators working with the most recent draft? Are appropriate internal and external approvals tracked? Is the final version available to everyone who needs it?

With their purpose-built focus, content services applications overcome the shortcomings of consumerized Enterprise File Sync & Share (EFSS) products to meet governance *and* productivity demands. They are integrated extensions of the central content management platform, automatically implementing and enforcing governance rules while administering best practices in everything from version control to viewing permissions to audit trails.

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Bringing It All Together—An Example

The power of content services is best illustrated with a concrete example of how it can coordinate and accelerate a business process today. See below to discover how the technology can work within **Insurance Claims Management**, a process that includes multiple touchpoints, forms of communication and types of information:

A policyholder has a car accident. To initiate a claim, they contact the insurance company by voicemail, email, online form, chatbot or dedicated app.

A content services application scans the unstructured submission. Sentiment analysis determines the customer is quite upset they could not reach a live person via phone. In addition, text analysis flags that some customer information is missing (e.g. name, policy number, vehicle, location). By automatically cross-referencing across connected platforms, the capture technology pieces together the necessary details.

The content services application also automatically triggers the creation of a templated case management workflow containing forms pre-populated with the relevant information, links to the originating contact and recommended next steps. Enterprise-level security, privacy and compliance policies are immediately applied at the case and document level.

A notification is automatically sent with a priority designation to the appropriate customer service rep and any other pre-determined internal stakeholders. In seconds, customer service now has enough information to have an informed conversation with the policyholder and initiate the claim process.

The repair process involves multiple internal and external parties—adjustors, body shops, customer service, approvers and, of course, the customer. It involves numerous forms of media—photos, video, emails, forms, PDF work orders, phone calls.

Every action, piece of content and point of contact is tracked and digitally associated back to the case via metatags, regardless of where it is captured or stored.

A templated workspace aggregates all related information and acts as a dashboard for both internal and external parties. Completed tasks and next steps are noted. Media, documents and approval chains are viewable. Access to pieces of information is regulated by default permissions (e.g., the repair shop should never see the customer's home address).

The customer receives updates as the claim progresses and can see, at a glance, how the claim approval and repair are advancing. The body shop receives instant notification of repair approvals. Internal parties are automatically notified of due tasks.

As the claim is closed, retention, archiving and disposal policies are automatically applied. In the event legal discovery is required, every piece of information, timelines and the parties involved are instantly retrievable.

Content services is an essential pillar of the intelligent, connected and secure organization. As the business landscape continues to change, this technology will become increasingly powerful and evolve in lockstep with shifting pressures and new ways to work.

Future Ways to Work

In the coming years, our personal and work lives will change immeasurably. Much faster than they did as the internet gained prominence. More significantly than they did as mobile devices became ubiquitous.

These changes will be fueled by the incomprehensibly huge pools of new and varied information. However, since these are hopelessly overwhelming to the human brain in their raw form, transformation will be driven by two elements:

- Massive leaps in the ability to organize, extract and share value contained in those multitudes of information
- New ways to think about those insights, helping us reach new heights of operational excellence, customer service and product innovation
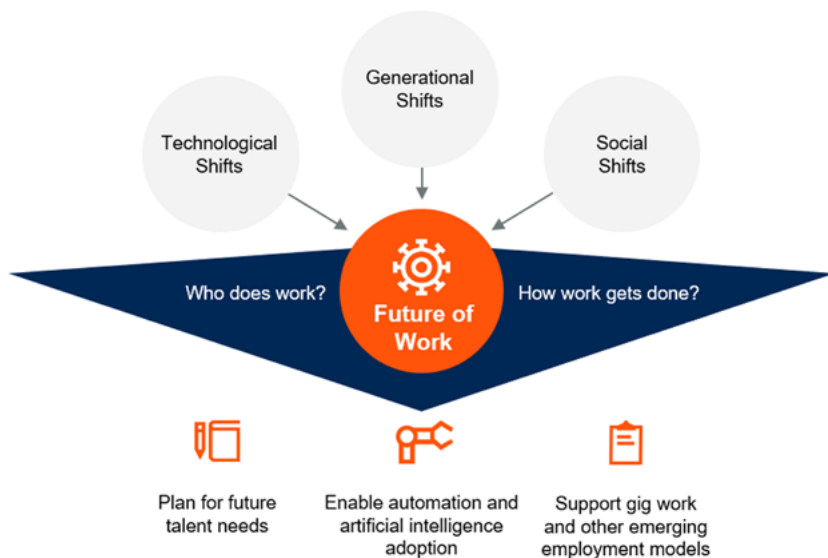
Figure 19:

The Future of Work[18]

Source: Gartner (November 2019)

Content services will be at the heart of it. The technology's collective ability to aggregate, manage and distribute information positions it as the hub of this revolutionary interconnected matrix.

The future of content services will bring even deeper integrations into business processes, enabling expanded governance and more complete context for the information generated within productivity centers like Microsoft Office, SAP, Oracle and many more.

Tomorrow is a cloud-first world. Within five years, it is safe to say virtually all workloads will be centralized and operating in the cloud—83% of enterprise workloads already are.[19] Right now, organizations have a unique opportunity to build for the future with technology that was developed *for that future*—in the cloud, content services will reach its full potential, becoming even more agile, integrated, easily deployed and highly customizable.

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Artificial intelligence and machine learning are the most exciting concepts in information management. A global market expected to be worth almost $60 billion by 2025, this is the next big technology that will change the world.[20] The impact it will have on our lives is staggering. So far, we have barely scratched the surface of what it can do to improve analytics, automation and productivity models. And it is within content services applications that many of these incredible advancements will be applied.

Content services is where the data analysis to optimize predictive maintenance will be carried out, and the automated workflows triggered. It is where sentiment analysis of unstructured content will be automatically weighed against other related data points to determine customer service priorities. It is where real-time transactional analysis will automatically initiate fraud investigations.

Content services infused with AI will power every knowledge worker's virtual assistant. Think a combination of personal workspace and chatbot—with tasks, updates, project tracking, search and insights all in one place.

Automation, combined with AI, will continue to eliminate the drudgery of repeatable tasks in many functions, freeing more time for creativity, collaboration and strategy. Everyone, from writers to warehouse workers to CEOs, will need to learn to work productively with "cobots" that will do anywhere from 30% to 70% of their previous routine tasks.[21] Organizations will gain confidence in the abilities of intelligent automation to identify, classify and report on the lifecycle management of terabytes of content and data without any human intervention.

With content services, comprehensive **information governance** and lifecycle management will permeate through the entire organization. The proverbial "single source of truth" will finally arrive, and at a magnitude no one could have originally envisioned.

The three hot points of security, privacy and compliance will remain constantly evolving objectives. Threats will continue to mutate and expand. But content services will take the lead in a legally defensible governance framework. Knowledge workers will be almost entirely relieved of manual steps and judgement calls. Automated governance, underpinned with continuous learning from AI, will control the playing field and introduce a significant new environment for analysis and insight.

Experiences—whether customer, employee or even enterprise—will become exceedingly unique. It is the "Internet of Me." What is right for a given person, team or business is not necessarily what is right for another. Containerized, low-code, cloud-based content services applications mean organizations will be able to architect, develop and implement the best environment for their customers, employees and culture.

It will synchronize with wholesale **demographic changes** in the workforce. Flexibility and scalability will be critical to meeting the needs of users who are increasingly dispersed and idiosyncratic. Access to information, wherever and whenever it is needed, will further empower the entrepreneurial employee—one able to source, analyze and act on information in ways the interdependent functional structure of previous generations could not.

The global technology infrastructure that will give organizations the ability to harvest and make sense of quantities of information that were simply unfathomable until recently is arriving. In fact, humans will be hard-pressed to keep up with the use-cases and possibilities. We are quickly arriving at the inflection point where if it can be envisioned, it can be done.

Content services is the nexus. Not merely riding this incredible wave of transformation, this technology is actually at the center of its creation and implementation. We have only scratched the surface of the new ways to work that Industry 4.0 has in store.

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OpenText Locations

AMERICAS

Canada:
- Ontario - Ottawa
- Ontario - Richmond Hill
- Ontario - Waterloo
- Quebec - Montreal

USA:
- Arizona - Scottsdale
- Arizona - Tucson
- California - Irvine
- California - Pleasanton
- California - San Mateo
- California - Santa Barbara
- Colorado - Denver
- Florida - Tallahassee
- Florida - Tampa
- Georgia - Alpharetta
- Kansas - Overland Park
- Kentucky - Lexington
- Maryland - Gaithersburg
- Massachusetts - Boston
- Michigan - Southfield
- New Jersey - Tinton Falls
- New York - Latham
- New York - New York
- New York - Rochester
- Ohio - Hilliard
- Tennessee - Brentwood
- Texas - Austin
- Texas - Dallas
- Texas - San Antonio
- Utah - Draper
- Virginia - Arlington
- Washington - Seattle

Brazil:
- São Paulo

Mexico:
- Mexico City

EMEA

Austria:
- Klagenfurt
- Wien

Czech Republic:
- Prague

Finland:
- Helsinki
- Tampere

France:
- Paris

Germany:
- Düsseldorf
- Frankfurt
- Hamburg
- Hannover
- Hürth-Efferen
- Kempten
- Konstanz
- Munich (Grasbrunn)
- Oldenburg
- Rheinbach

Ireland:
- Cork

Italy:
- Rome, IT

Netherlands:
- Amstelveen
- Hoofddorp
- Putten
- Rotterdam

Poland:
- Poznań

Russia:
- Moscow
- St. Petersburg

South Africa:
- Johannesburg

Spain:
- Barcelona
- Madrid

Sweden:
- Gothenburg
- Stockholm

Switzerland:
- Baden

United Arab Emirates:
- Dubai, UAE

United Kingdom:
- London
- Preston
- Reading
- St. Albans

APJ

Australia:
- Melbourne
- Sydney

Greater China:
- Beijing
- Guangzhou
- Hong Kong
- Shanghai

India:
- Bangalore
- Hyderabad
- New Delhi

Japan:
- Tokyo
- Osaka
- Nagoya

Korea:
- Seoul

Malaysia:
- Kuala Lumpur

New Zealand:
- Wellington

Philippines:
- Manila

Singapore:
- Singapore

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