



# DATA EXCELLENCE IN HEALTHCARE: The Role of Connected Content

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SECTION 1

# Data Excellence Underlies the Future of Healthcare

# What is Top of Mind for Healthcare Providers?



## Health IT Evolution

- ▶ Recalibrating toward next-generational clinical documentation and revenue cycle management (RCM), digital patient experience
- ▶ Data proliferation (volume, variety, velocity, and value)
- ▶ System, regional and nationwide interoperability
- ▶ Cybersecurity and resilience



## Digital Era Challenges

- ▶ Pre-existing challenges (aging populations, chronic conditions, value-based care, cost pressures, shifting regulatory environment)
- ▶ Emerging challenges (resiliency, COVID-19 variants, vaccine management, talent shortages, rise of consumerism, cyberthreats)



## Next-Gen Emergence

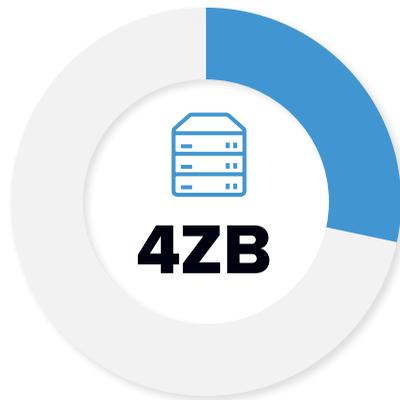
- ▶ Disruption redefined
- ▶ Cloud-based platforms, and ecosystems (next-gen EHR/RCM, medical imaging transformation)
- ▶ Emerging technologies and interoperability standards (IoT, AI/ML/DL, RPA, FHIR, cybersecurity, AR/VR, blockchain)



## Intelligence in Action

- ▶ Shift from “data-rich” to “data-driven”
- ▶ Better aggregation, integration and orchestration of data to improve outcomes (CQASE)
- ▶ Data excellence
- ▶ Future of work

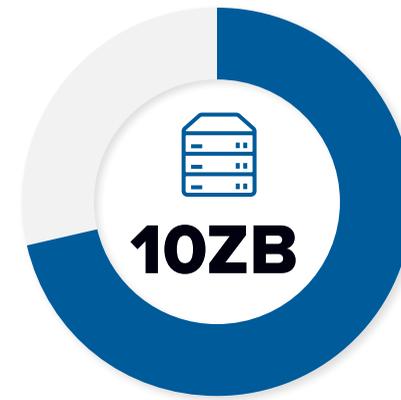
# The Current State of Data in Healthcare



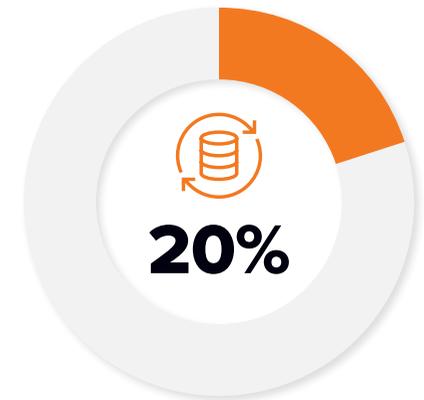
of data in healthcare  
by **2022**



Average amount of  
data that healthcare  
organizations currently  
manage



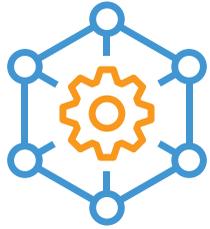
of data in healthcare  
by **2025**



longer retention rate  
of data in healthcare  
versus other industries

Source: IDC's *Data Readiness Condition (DATCON) Index*, 2021

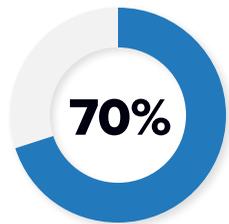
# Towards an End State of Data Excellence



According to IDC, **data excellence marks the endeavor to harmonize and treat “data as an asset,”** with particular attention given to data management and quality toward enabling inimitable technological capabilities and organizational differentiation.



Achieving data excellence in healthcare requires that **structured and unstructured data as well as clinical and non-clinical content be seamlessly integrated** with interoperability to improve access exchange and utilization of health information with new and lasting efficiencies in workflows.



IDC predicts that **“by 2023, 70% of healthcare organizations’ attempts to scale value-based care models will fail unless they invest in data-driven governance, operations, and organizational infrastructure”** — further emphasizing the importance of data excellence.

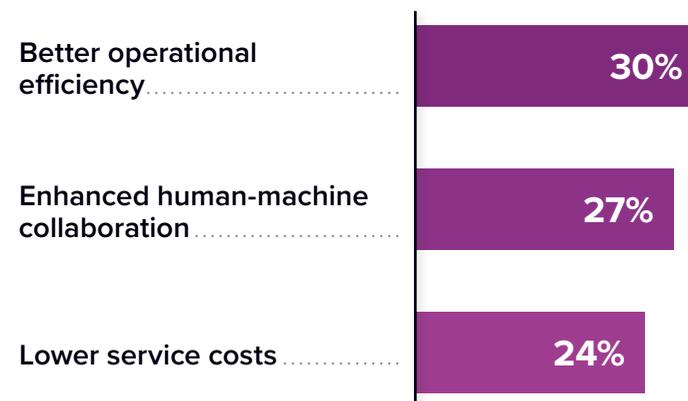
Source: IDC's *FutureScape — Worldwide Healthcare Industry 2022 Predictions*

# Digital Transformation in Healthcare

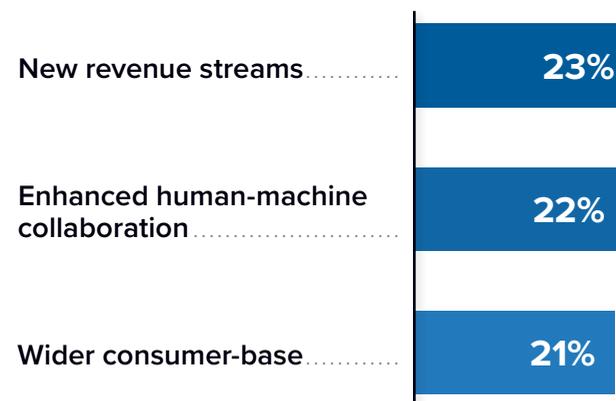
IDC defines digital transformation (DX) in healthcare as the application of 3rd Platform-related technologies (cloud, big data, mobile and social networking) along with innovation accelerators (AI, IoT, augmented/virtual reality, robotics, 3D printing, next-generation security) to fundamentally improve all aspects of care by making it more proximate, accessible, intelligent, personalized, and autonomous.

Disruption is generating a new focus on digital resiliency in addition to a renewed focus on growth as part of healthcare enterprise strategy. **Digitally determined healthcare organizations are driven to undertake DX through the following priorities:**

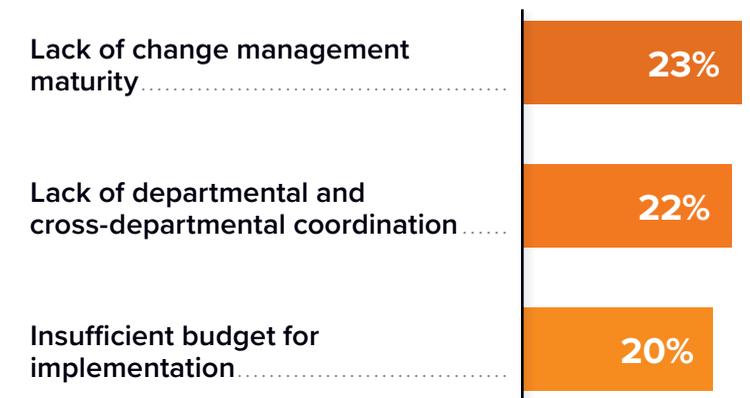
## SHORT-TERM:



## LONG-TERM:

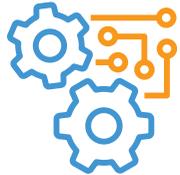


## Top three challenges for advancing DX indicated by healthcare institutions:



Source: IDC's *Digital Transformation (DX) Executive Sentiment Survey 2021*, May 2021

# Data Excellence Will Justify Digital Transformation

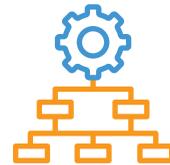


Healthcare providers are digitally transforming more than ever before, with **31.34%** of organizations having reported accelerating their DX efforts and **58.91%** reporting DX as being on the same path as before the COVID-19 pandemic.



**However, many providers are drowning in data they are collecting but not using.**

Healthcare DX seems to be happening at a broader scale and faster pace than the ability for organizations to both manage and leverage data needed to fulfill the promise of better care delivery. In addition, the volumes of patient data that originate outside of hospitals and health systems, often delivered in unstructured formats, are not easily classified and integrated for care decisions.



**Healthcare providers also tend to focus more on structured data and its proximity than on the value of all data available to them (clinical, non-clinical, structured, and unstructured) and its utility.**

A key reason is that silos exist as a result of imaging devices and health IT solutions commissioned by different units, separate departments and facilities, and across disparate systems over time leading to “rich islands” of isolated data instead of a “richer ocean” of meaningful data.

**To achieve data excellence, providers must utilize platform technology to transform “rich islands” of isolated data into a “rich ocean” of meaningful data.**

Source: IDC's 2021 Industry IT & Communications Survey, June 2021

# Future Goals for Healthcare Providers

Providers need to find new ways to shift from “data rich” to “data driven” via integrated IT initiatives that can improve access to non-clinical and unstructured clinical data alongside interoperability to improve care.

These are the top three health provider goals to address future challenges. Data underlies all goals:



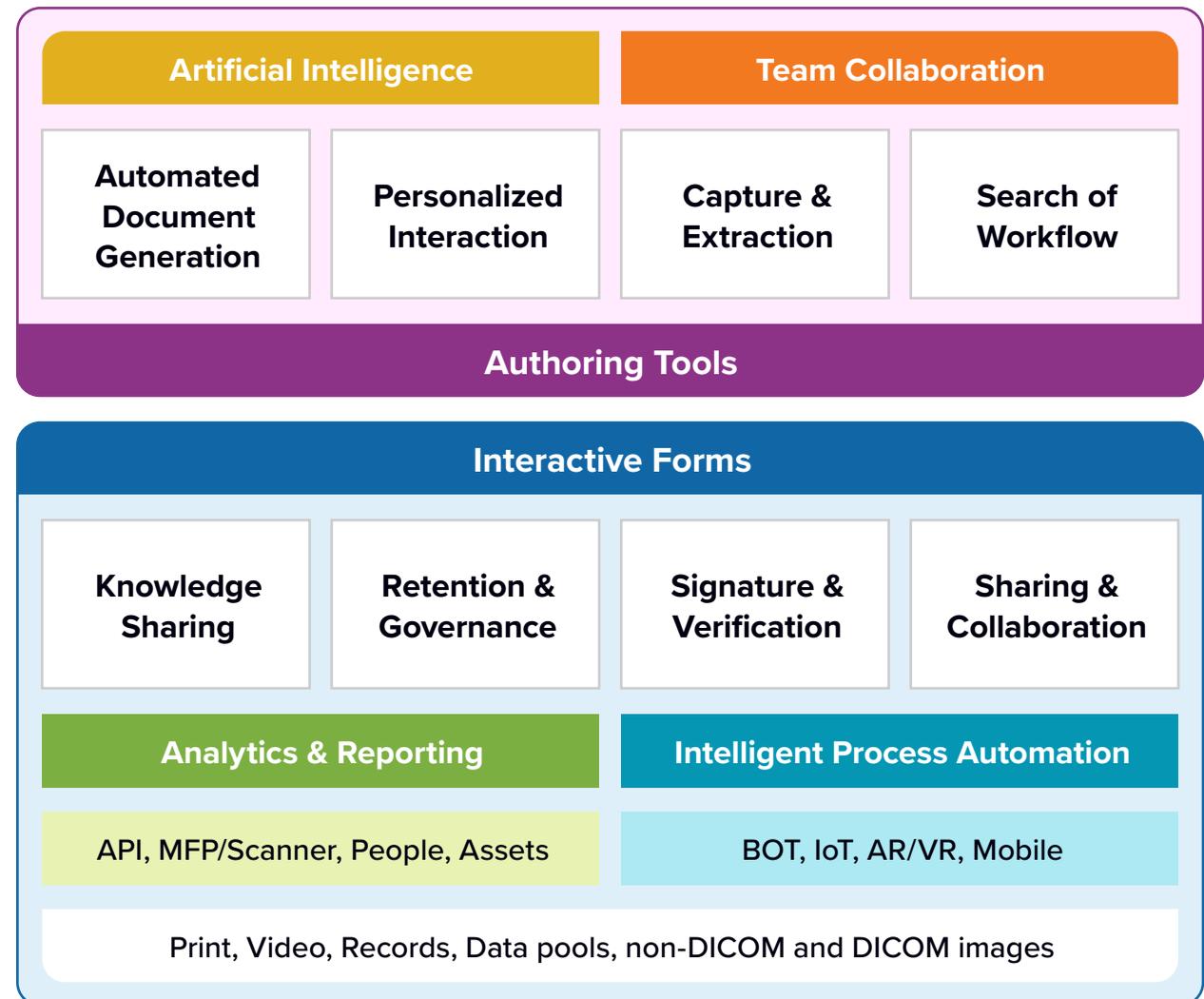
Source: IDC's 2021 Industry IT & Communications Survey, June 2021

SECTION 2

# Enabling and Accelerating Data Excellence with Connected Content

# Connected Content Workflows and Use Cases

- ▶ **Enterprise content strategies** include the rapidly evolving digital content services to capture, manage, process and secure business, clinical and imaging content, records and knowledge.
- ▶ **Document applications** enable users to create, author, edit, and publish content, including spreadsheets, text documents and presentations. Applications include office suites, forms, surveys, eSignature, diagramming, eLearning and document generation software.
- ▶ **Capture applications** convert unstructured data to structured information that can be passed to another enterprise application and/or consumed by a downstream task or process.
- ▶ **Content sharing and collaboration** applications enable users to store, synchronize, and share file-based content and folders across designated devices, people, and applications.
- ▶ **Enterprise content management** provides a foundation for regulatory compliance in context of automating content-centric business processes and clinical/imaging data, establishing a complete system of record.



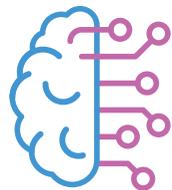
# Making the Case for Connected Content



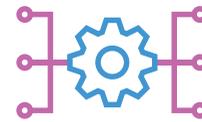
IDC predicts that by 2025, **80% of the total global datasphere will be in the form of unstructured data**, which will grow to 144.3 zettabytes.<sup>1</sup>



**Up to 80%** of clinically relevant healthcare data exists **outside the EHR as unstructured and non-clinical data**.

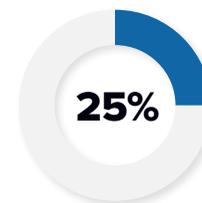


There cannot be true empathy without intelligence, and **data beyond the EHR can shed much light on critical factors for providers** that can impact patient outcomes and the business of care as much, if not more, than structured data can — making it too great an opportunity to miss.



Organizations need to **use DX to connect clinically relevant information** across the healthcare enterprise from the following sources:

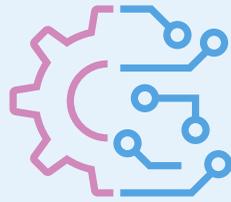
- ▶ Business content
- ▶ Financial and claims data
- ▶ Medical imaging data and content
- ▶ Medical device data
- ▶ Interoperability of patient data from external providers
- ▶ Social determinants of health data
- ▶ Patient-generated health data
- ▶ Real-world data and evidence
- ▶ Research and academic data
- ▶ Consumer data



**25%** of healthcare organizations indicated that **leadership and commitment of top management as well as people with technology skills are necessary for successful DX** to occur in order to drive data excellence in a digital-first health IT strategy.<sup>2</sup>

Source: <sup>1</sup>. Worldwide Global DataSphere and Global StorageSphere Structured and Unstructured Data Forecast, 2021–2025, July 2021. <sup>2</sup>. IDC's Digital Transformation (DX) Executive Sentiment Survey 2021, May 2021

# Benefits of Connected Content



## Digitize manual processes

Transitioning to cloud content management improves business continuity, especially in light of process gaps exposed during the COVID-19 pandemic. Examples include business functions such as accounts payable, invoice processing and sales order processing.



## Improve content accessibility

Difficulty finding the information needed to perform job-specific tasks was one of the key drivers for organizations to digitize document workflows. Employees and external stakeholders need secure access to data and information independent of their location or device to perform work tasks and collaborate across people and processes.

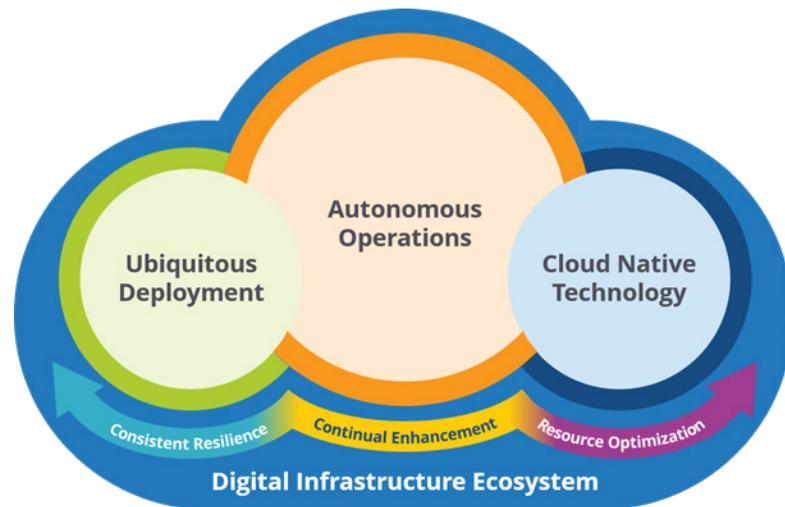


## Unlock value and insight

Data is a key enabler for customer engagement as organizations harness valuable business insights to deliver real-time and personalized experiences. Customer experience investments drive 5X the return. Providing structured, unstructured, and medical imaging data to drive workflow automation solutions allows for AI utilization to assist in generating powerful insights from content workflows.

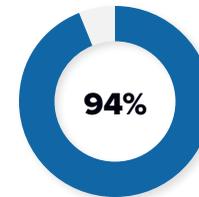
n = 700, Source: IDC's *US Enterprise Content Strategies — Use Cases Survey*, December 2020. n = 791, Source: IDC's *Future Enterprise Resiliency & Spending Survey*, July 2021. IDC's *Barriers to Digital Experience Investments Survey*, November 2021

# Adopting a Digital Infrastructure for Connected Content



Digital infrastructure extends beyond the traditional on-premises, datacenter-centric model where the organization owns and operates the entire technology environment, to one where processing and data can reside anywhere, whether on-premises, in an external cloud platform operated by a partner or at the edge.

Cloud has become a critical element of a digital infrastructure deployment strategy in healthcare:



of healthcare providers are **using private cloud** to support production workloads and services.

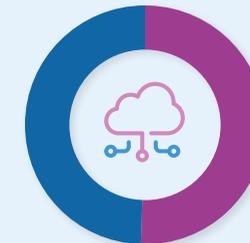


of healthcare providers are **using public cloud**.



of healthcare providers are **planning to adopt public and private cloud** within the next 12 months.

**49.5%** of healthcare providers are using hybrid cloud environments.

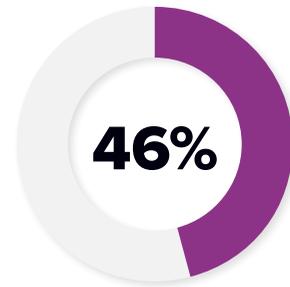


**50.5%** of healthcare providers are **planning on using hybrid cloud environments** in the next 12 months.

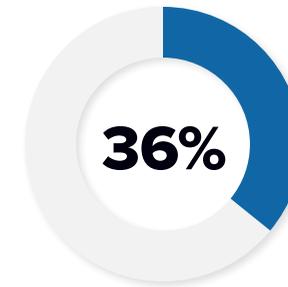
Source: IDC's *CloudPath Survey*, May 2021

# Connected Content and Analytics

The adoption of digital infrastructures, hybrid environments, and multi cloud architectures means that different application and data tiers may reside in different physical locations, and security and data confidentiality requirements may dictate the use of multiple physical clouds.



of enterprises cite **“better integration of data sources and analytics to improve business insight”** as their top outcome from the organization’s digital infrastructure resiliency efforts over the next 24 months.<sup>1</sup>



of healthcare providers are **already using the cloud to better integrate data sources and analytics** to improve business insights while **22%** plan to move to the cloud to do this in the next 24 months.<sup>2</sup>

Source: 1. IDC's Future Enterprise Resiliency & Spending Survey (Wave 4), May 2021. 2. IDC's CloudPath Survey, May 2021

# Enabling Advanced Analytics with Connected Content



Advanced analytics, in particular its subset AI, shows vast potential to transform healthcare but requires the right data infrastructure where effective connected content becomes vital.



AI-enabled clinical and operational use cases range from automated classification of external clinical data, AI-assisted diagnosis, predictive care, medical imaging analytics, conversational chatbots, virtual triage, care automation, symptom checkers, prescription auditing, population health, intelligent capacity planning and supply chain management.

Source: IDC's *Industry AI Path-2021*, May 2021

According to IDC, the top five drivers for healthcare providers to use AI include:



1. Improve productivity
2. Improve consumer experience
3. Increase quality of service/s
4. Speed new service development
5. Increase competitive advantage

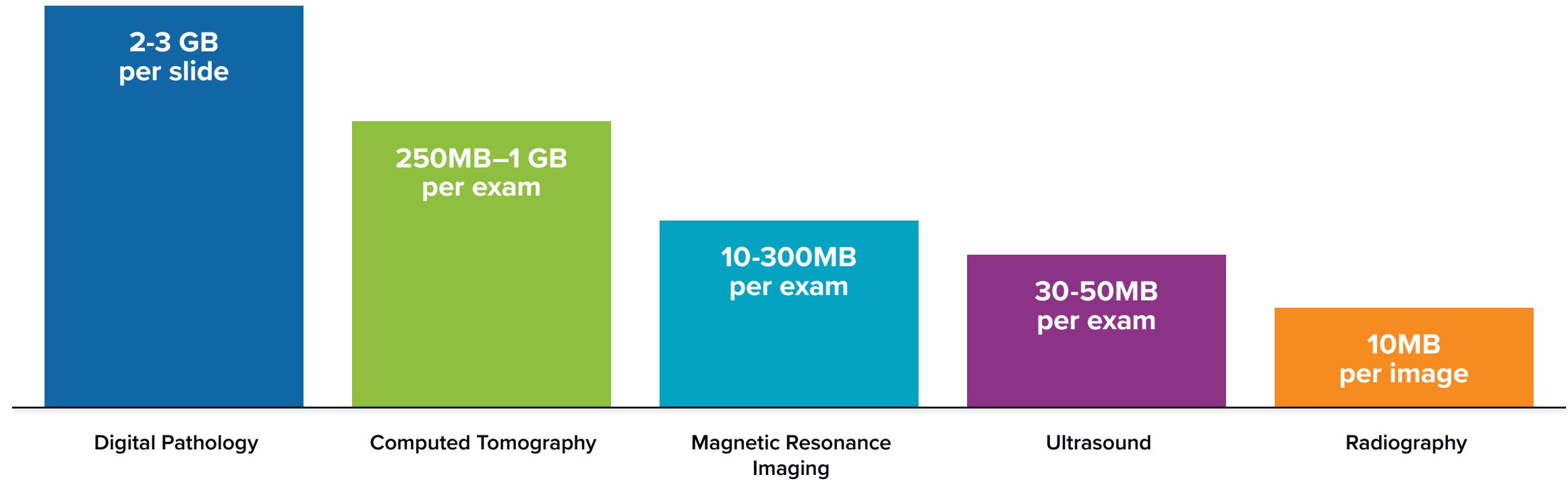
**65%**  
of healthcare providers are using or plan to use external third-party vendors as their primary development approach for AI applications.



**35%**  
use in-house or off-the-shelf AI applications.

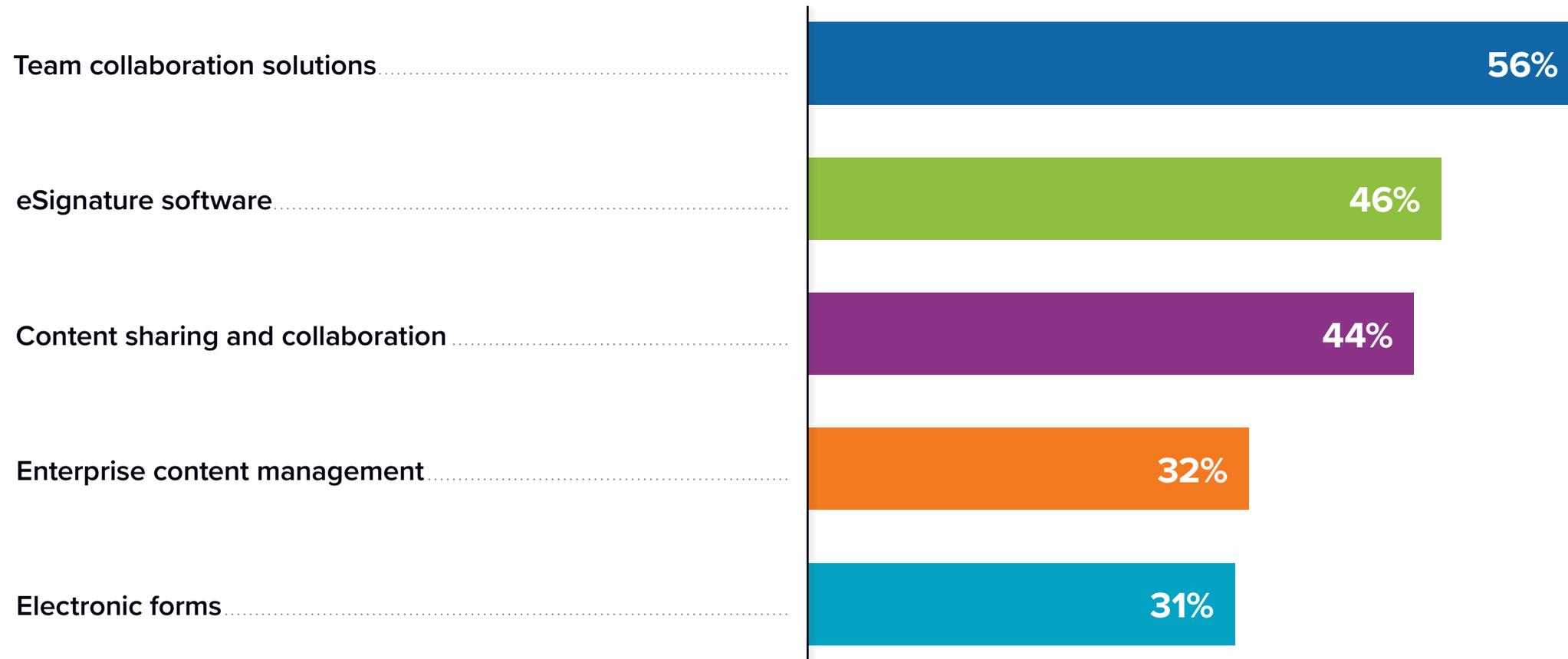
# Connected Content and Enterprise Imaging

Enterprise imaging consolidates medical imaging data, content, systems, and infrastructure commissioned over time across different units, departments, facilities, and “-ologies” to bridge the gaps between EHRs, PACS, VNA, RIS, devices, and DICOM, DICOM (DIMSE), DICOMweb, non-DICOM, PAM, WIC, SWF, MHD-I, XDS\*, CARD IEO, HL7, FHIR, JPEG, MPEG, PDF, and RAW data.



# Connected Content and the Future of Work

## Organizational Investments to Enable Workforce Technology Parity



n = 670, Source: IDC's COVID-19 Impact on IT Spending Survey (Wave 10, August 2020)

SECTION 3

# Parting Thoughts on Connected Content for Healthcare

# Strategic Considerations



Only small proportions of unstructured clinical data and non-clinical content, estimated at less than 10%, are being used in clinical decision making currently, but awareness regarding the value and benefits of such data is on the increase.



Evidence-based practices guiding providers on how to connect unstructured clinical data and non-clinical content are still in their early days, especially in consideration of patient demographics, populations, and conditions that would benefit most.



Clinical trustworthiness, reliability, and credibility of certain types of unstructured data and non-clinical content (e.g., patient-generated health data) are still being explored, but studies point to the value of unstructured content and benefits of incorporating social determinants of health, longitudinal health records, and real-world evidence for better outcomes.



Reimbursement for the utilization of unstructured data and non-clinical content is also at an early stage, but more guidelines are being published and incentive-based program initiatives are being introduced (e.g., Centers for Medicare and Medicaid Services reimbursement model on the use of patient-generated health data in remote patient monitoring).



The move to the cloud to manage unstructured data and non-clinical content may be a heavy lift considering the petabyte (PB) levels of data involved but vendors have matured extensively in managed service offerings to offset any costs and risks.

# Next Steps

Connected content offers a way forward for healthcare providers to deliver better healthcare services and improve outcomes. Clinically-relevant information from non-clinical and unstructured sources of data can impact many aspects of provider operations be it experience, growth, efficiency, productivity, resiliency, security, and compliance.

- 1 Rally the C-suite, clinical, and operational leadership around an impetus to shift from data rich to data driven
- 2 Formulate a connected content mission as part of the broader vision and strategy for DX and data-driven governance
- 3 Execute tactics and objectives to increase organizational maturity on the utilization of connected content and medical imaging, such as through use of a content services platform
- 4 Drive utilization of connected content by enabling access to all sources of patient content within the workflow
- 5 Identify silos that can be streamlined internally and ways to connect content externally from disparate systems
- 6 Adhere to protocols that proactively promote and ensure connected content consistency, quality, reliability, and integrity
- 7 Implement policies and training that meet connected content compliance and regulatory standards without compromise
- 8 Deploy privacy and security measures that ensure connected content is always secure, protected, and resilient
- 9 Advance continuous learning and improvement methods that drive connected content value and utilization over time

# About the Analyst



## **Mutaz Shegewi**

Research Director, IDC Health Insights

Mutaz Shegewi leads the provider research practice at IDC Health Insights covering topics of most relevance to healthcare provider organizations looking to digitally transform and become more digitally native than their competition. Mutaz advises the executive, clinical, and technical leadership of the world's foremost health information technology supplier and buyer organizations by producing data-driven research and thought-leadership insights that help to navigate strategic challenges in health information technology and transform complexity to clarity in decision-making that would decrease costs, enhance quality, optimize access, improve patient safety, and champion patient experience. Mutaz is passionate about strengthening healthcare systems through the dynamic interrelations between technology, patients, and providers by combining industry, professional, academic, technical and global expertise in healthcare, policy, business, management, research, consulting, and medicine.

[More about Mutaz Shegewi](#)

# Message from the Sponsor

Hyland Healthcare provides connected healthcare solutions that harness unstructured content at all corners of the enterprise and link it to core clinical and business applications such as electronic medical records (EMR) and enterprise resource planning (ERP) systems. Hyland Healthcare offers a full suite of content services and enterprise imaging tools, bringing documents, medical images and other clinically rich data to the healthcare stakeholders that need it most. This comprehensive view of patient information accelerates business processes, streamlines clinical workflows and improves clinical decision making.

**For more information, visit [www.hyland.com/healthcare](http://www.hyland.com/healthcare)**

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