

Adoption Trends

Artificial Intelligence & Machine Learning

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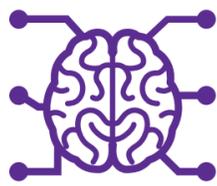


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AI/ML Essentials



Types of AI/ML algorithms



Artificial intelligence is a branch of computer science that aims at creating intelligent technology capable of replicating human learning and problem-solving skills. Machine learning and deep learning are widely considered to be sub-sets of the wider artificial intelligence field.



ML

Machine learning is an early application of AI, providing computer systems with the capability to learn from data without being programmed. Machine learning algorithms can find patterns in data and make predictions and decisions independently on the basis of them.



DL

Deep learning is a further development of ML based on artificial neural networks modeled to mimic neurons' interconnections in the human brain. This network can “learn from its mistakes” by applying different weightings to different input streams based on their contributions to getting the right answer.



RL

Reinforcement learning is the newest area of AI, using a system of rewards and punishments to train the algorithms. As opposed to unsupervised learning models, RL algorithms' objective is to maximize their long-term gains by maximizing the rewards and minimizing the punishments they receive.

In this report, AI refers to any of ML, DL, and RL techniques.

Sources: IABM, UCLA

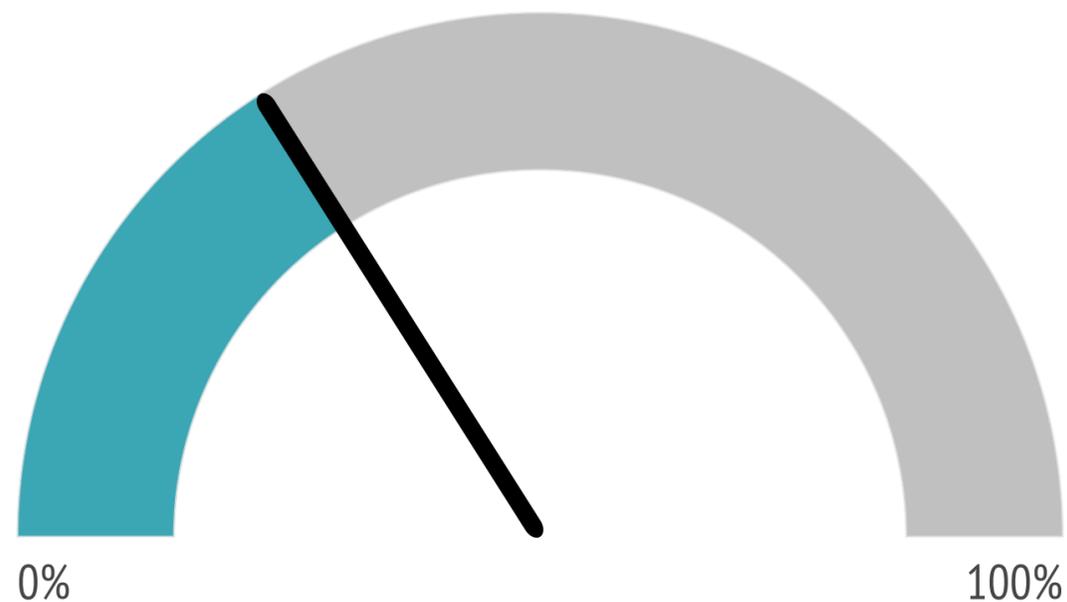


AI/ML Adoption Tracker

Adoption by Broadcast & Media Industry

According to IABM's [Media Tech Business Tracker](#), 32% of broadcast and media companies have already deployed AI/ML technology. Most end-users (56%) plan to deploy AI/ML in the next few years. The adoption of AI/ML technology is enabled by the growing cloud adoption rate, which reached 51% in 2022.

AI/ML adoption by Broadcast & Media industry



It's certainly more than we were doing it [AI/ML business] two years ago. It tends to not be the first thing that a customer does [it's more like the second focus]. The **first** thing on many customers' roadmaps is actually **migrating to the cloud**, getting their content there, and moving their supply chains. After they've done that initial work, then the **AI tools** are really an **optimization cycle**.

Simon Eldridge, Chief Product Officer, SDVI

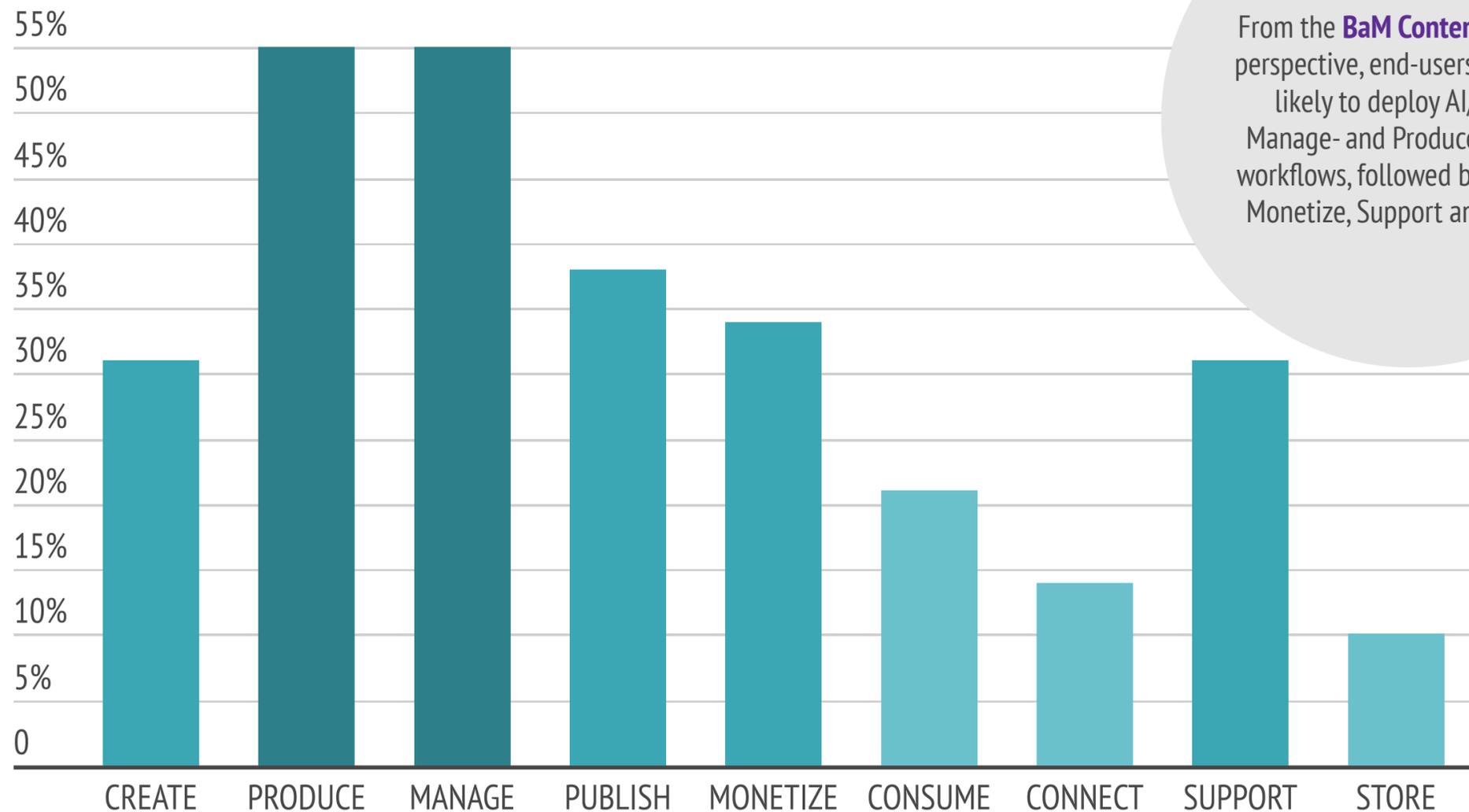
Sources: IABM, streamingmedia.com

AI/ML Adoption Tracker

Adoption by Broadcast & Media Industry



AI/ML application by content chain



From the **BaM Content Chain®** perspective, end-users are most likely to deploy AI/ML in Manage- and Produce-related workflows, followed by Publish, Monetize, Support and Create.



*Due to increasingly **data-driven** media production, the need for content-based **automated metadata generation** is also increasing. As AI-based analyzers are becoming commonplace in media workflows, we have moved from a position where we had relatively small amounts of metadata that we trusted, to a situation where we have **huge amounts of metadata** but have varying degrees of confidence about the **accuracy** of that data. Managing these confidence thresholds is key to the usefulness of the metadata.*

Karsten Schragmann, Head of Product Management, Vidispine

Sources: IABM, IBC365, newscaststudio.com, SDVI

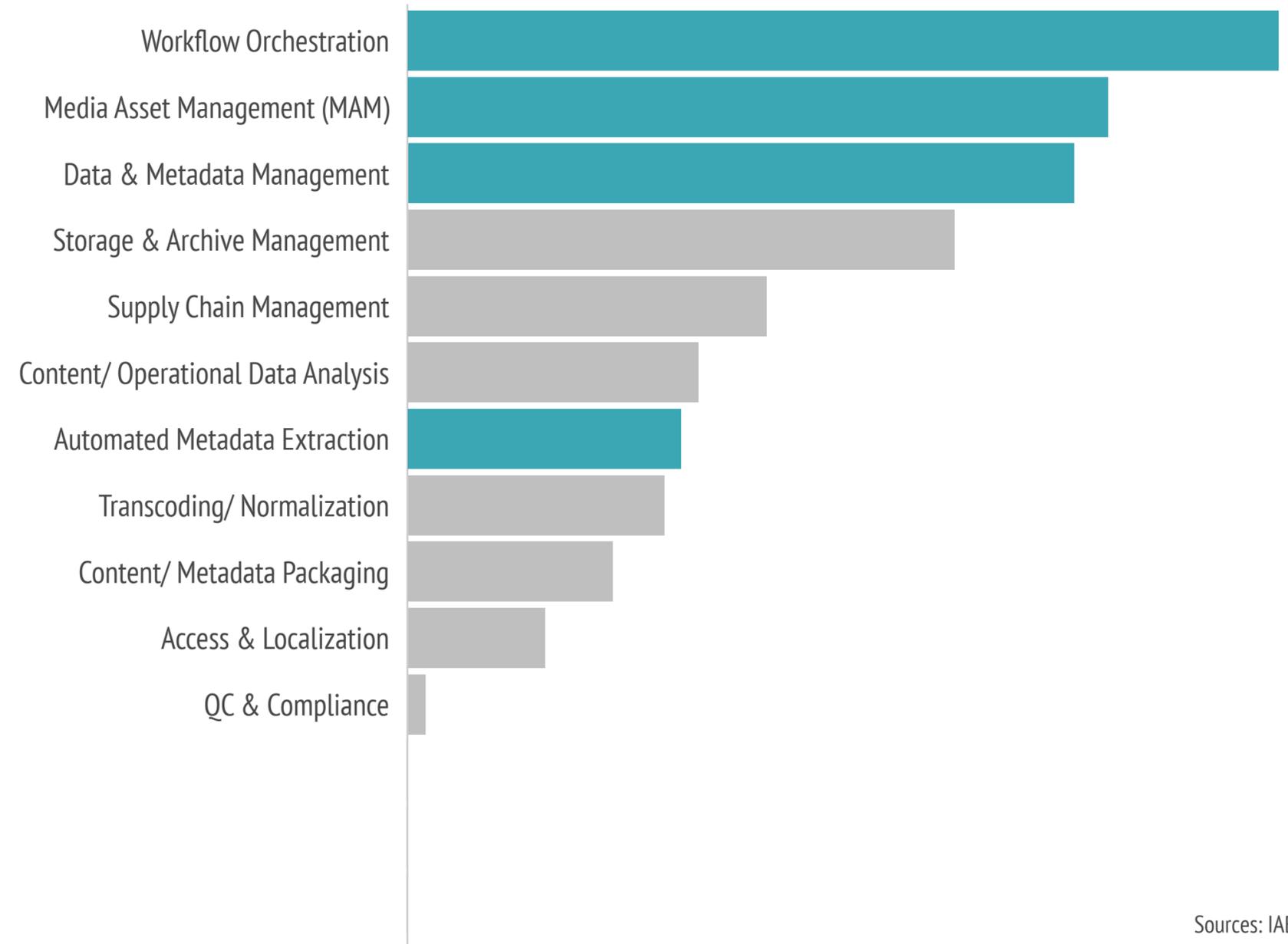


AI/ML Adoption Tracker

Adoption by Broadcast & Media Industry

The COVID-19 pandemic accelerated media companies' move to the cloud, making a wide range of new AI/ML tools available, helping in automating workflows, and improving efficiency - both crucial aspects when managing explosive growth of data volumes. Most AI/ML use cases in content management systems are to automate routine tasks such as metadata tagging, image recognition, audio/video recognition, and speech-to-text. Moreover, as media businesses continue to enter new markets and launch their streaming services in new language territories, AI/ML tools can automate (post-) production processes significantly, as well as improve content distribution (OTT/VOD, linear playout).

Investment outlook managing content by end-users



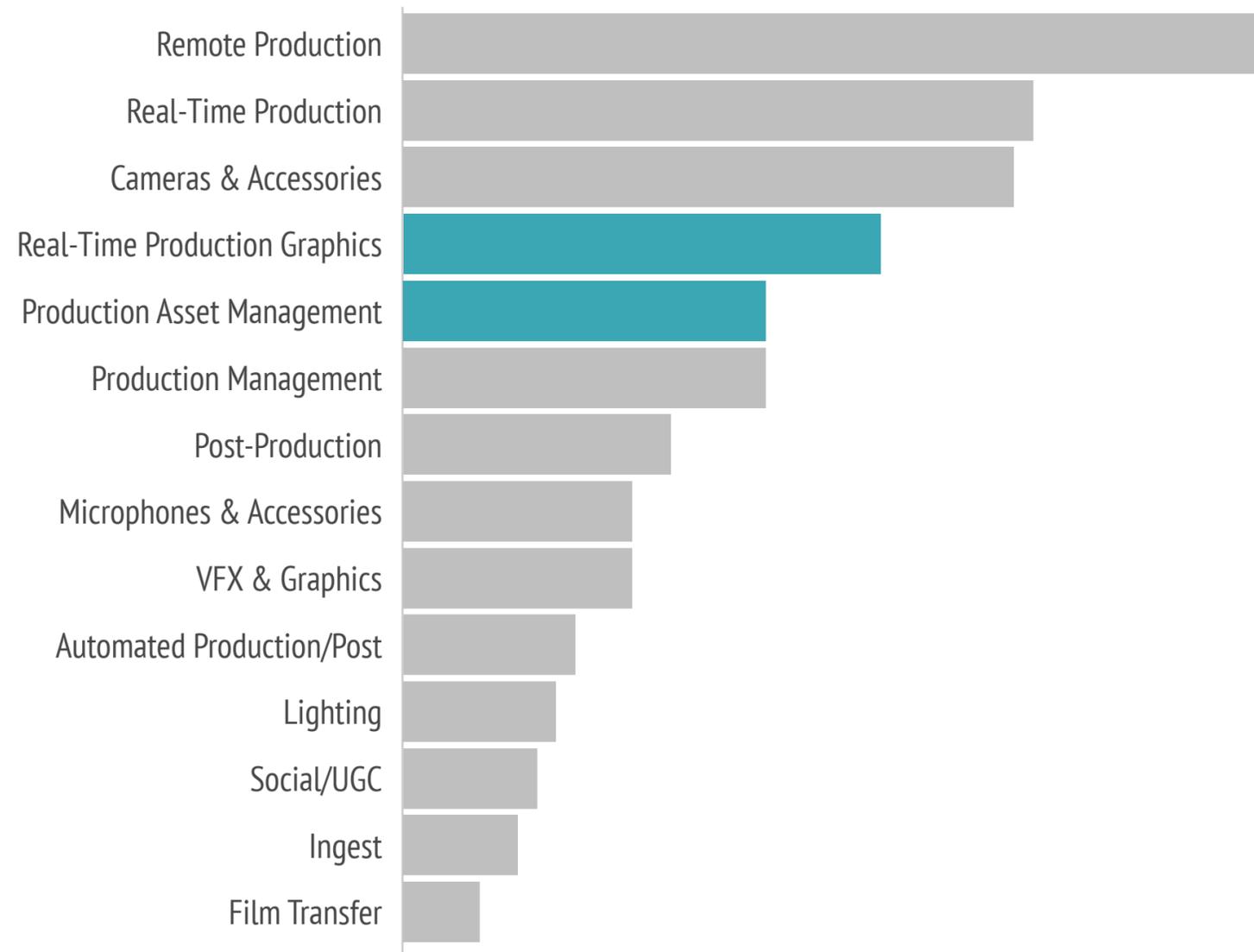
Sources: IABM

AI/ML Adoption Tracker

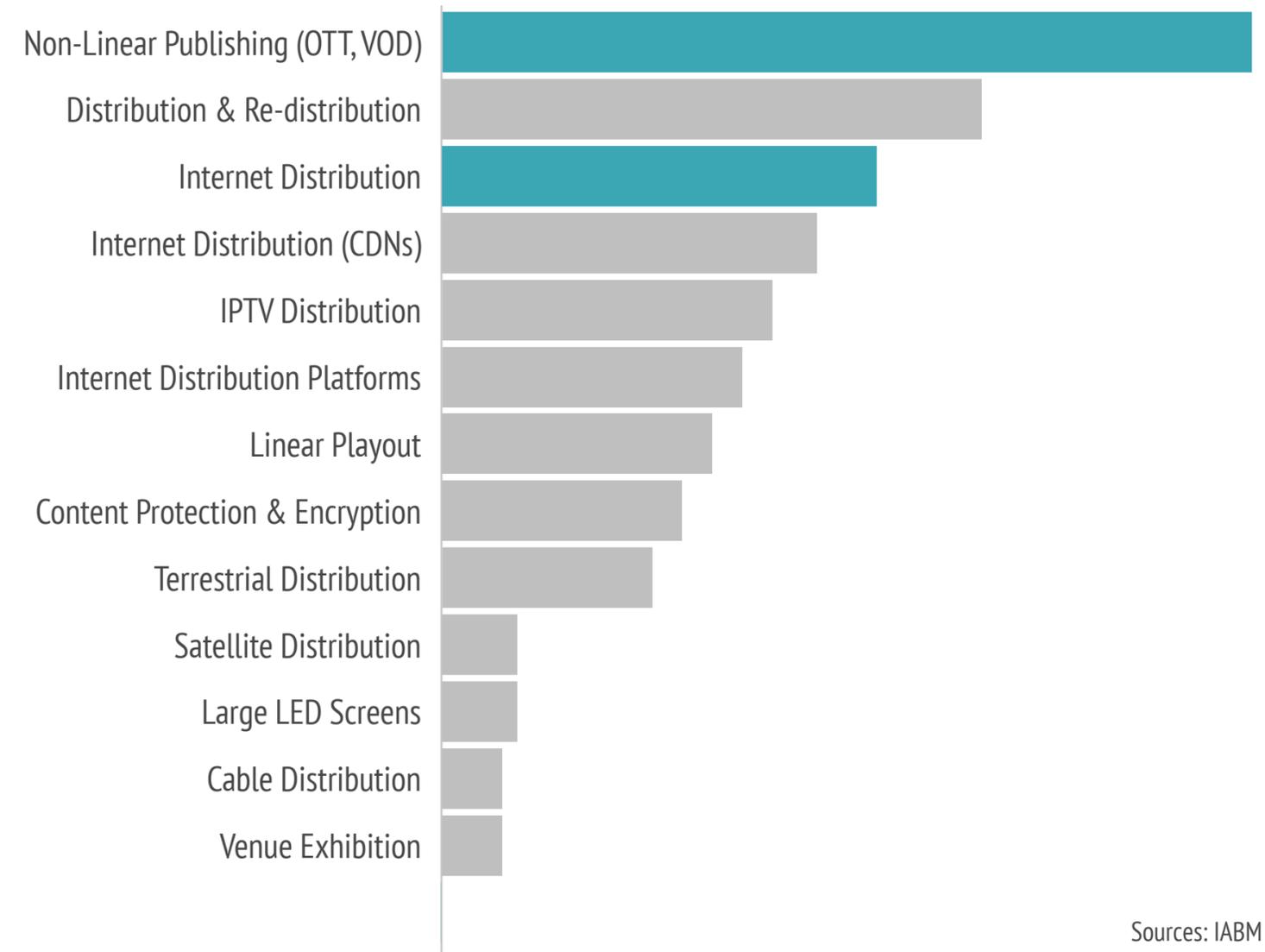
Adoption by Broadcast & Media Industry



Investment outlook in creating and producing content by end-users



Investment outlook in publishing content by end-users



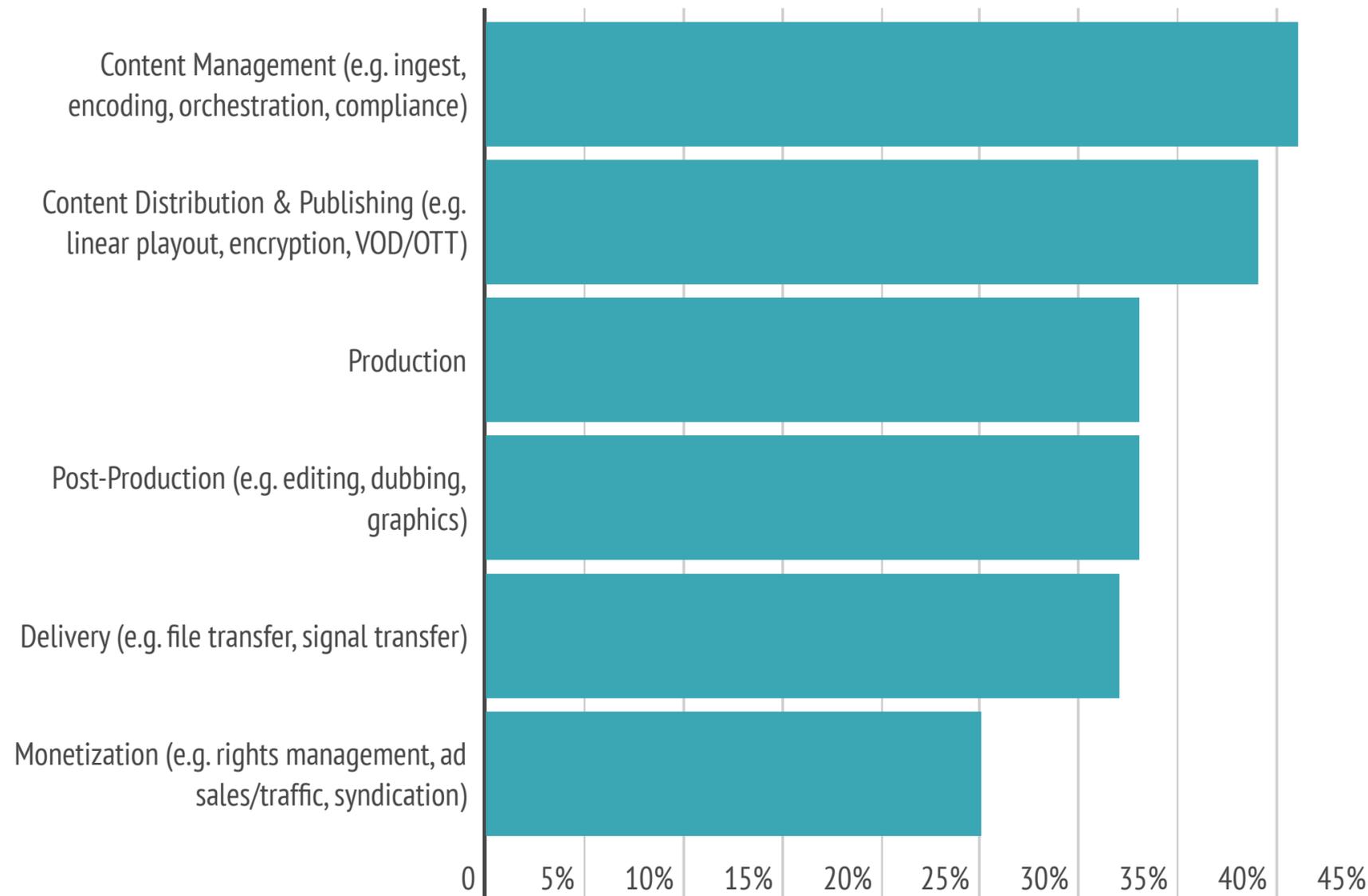
Sources: IABM

AI/ML Adoption Tracker

Adoption by Broadcast & Media Industry



Top deployment areas of AI/ML



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If you're running a news organization and it is ingesting hundreds of feeds from different sources, today the problem is that there aren't enough people to tell you what is in the feeds. There's just more data than can be humanly looked at.

Hiren Hindocha, CEO, Digital Nirvana

Sources: IABM, streamingmedia.com



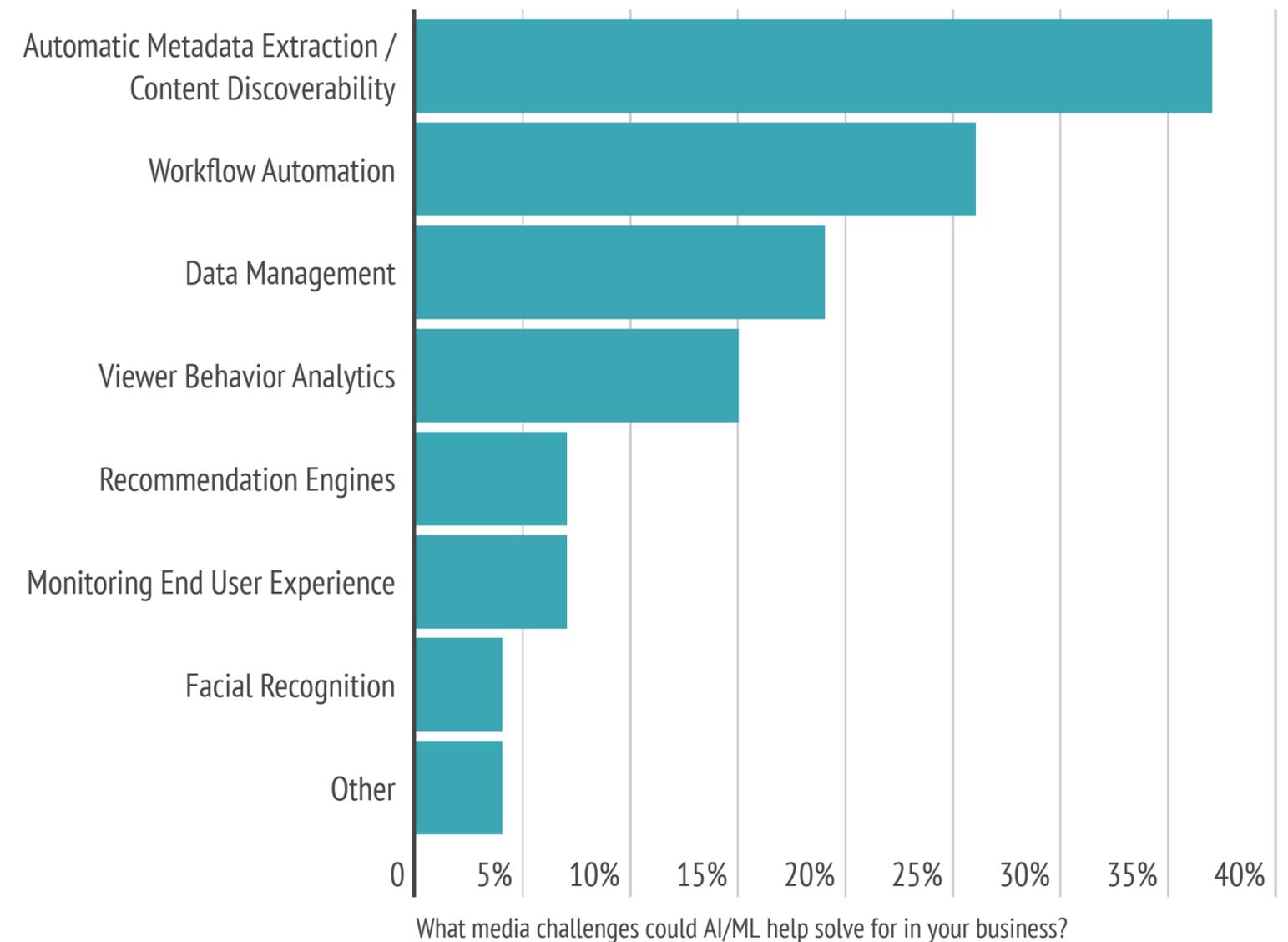
AI/ML Adoption Tracker

Adoption by Broadcast & Media Industry

The growth of cloud-based and data-driven workflows in content management has made the role of AI/ML increasingly important in content auto-discovery, preparation, recommendations, and the creation of insights for internal decision-making. Deeper metadata on ingesting and delivery are increasingly driving monetization, augmenting targeted advertising. As media companies' shift to the cloud becomes more mainstream, hosted infrastructure costs (i.e., bandwidth, processing, and storage costs) continue to decrease, freeing up money to perform rich AI-driven metadata capture, gradually making such functions cheaper.

AI/ML opportunities

Based on IABM Survey Data Text Analysis



Sources: IABM

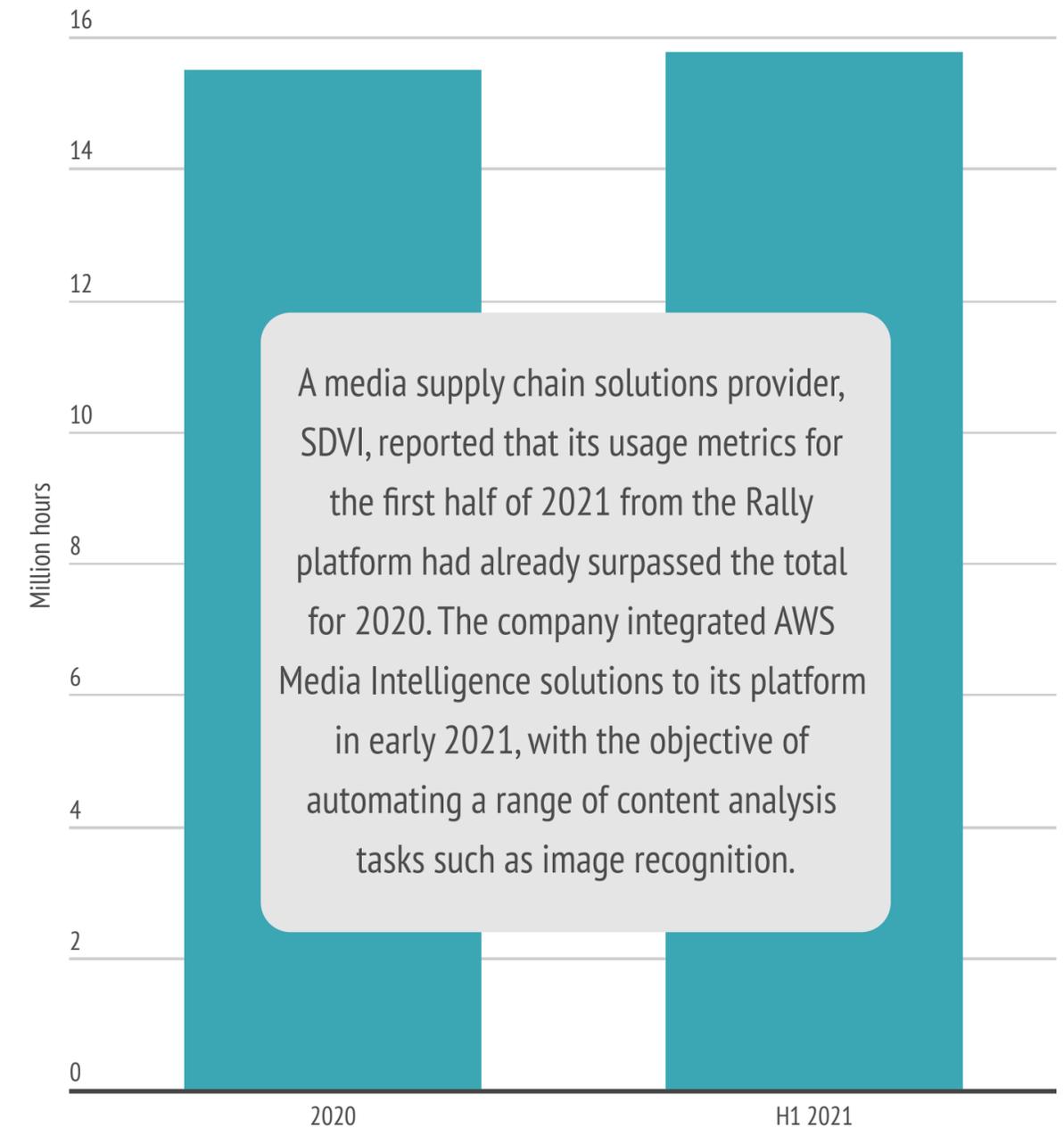


AI/ML Adoption Tracker

Adoption by Broadcast & Media Industry

Due to COVID-19, remote workflows with distributed creative teams have emerged as a new norm. As the demand for content continues to increase, production teams need to be able to access content remotely from anywhere and be able to find it quickly, making AI tools, such as translation and video intelligence with facial and emotion recognition, increasingly important. Particularly for time-sensitive content like news and sports, AI/ML-driven content metadata is increasingly being generated in real-time for raw footage to speed up the accurate search and retrieval of content, significantly reducing its time to market. Many tech vendors like SDVI offer AI/ML solutions to automate metadata creation and enrichment, which are quickly becoming must-have core feature expectations for media companies.

Content passed through SDVI Rally



Sources: IABM, SVDI



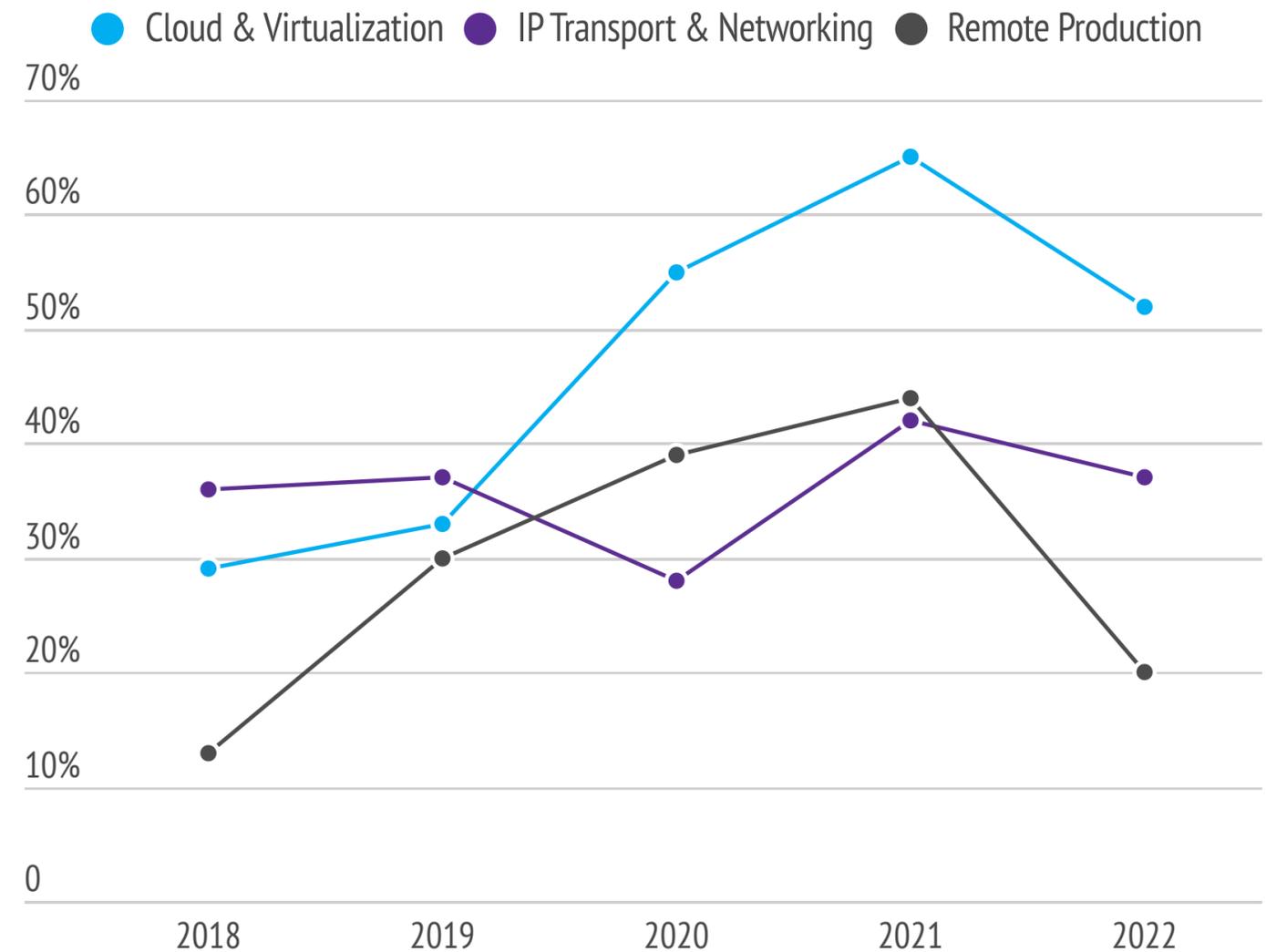
AI/ML Adoption Tracker

Adoption by Broadcast & Media Industry - AI & Cloud

The COVID-19 pandemic accelerated media companies' cloud-based deployments and the adoption of IP networking, allowing them to carry out and control live production remotely as well as stream live content with low latency. Media businesses' shift toward decentralized remote production has incentivized several vendors like Vislink and Mobile Viewpoint to test and pilot AI-assisted remote production techniques.

At the same time, media companies continue to invest more money in interactive, immersive, gamified content - all enabled by the cloud - which is making the role of AI increasingly important; AI is now being used to automate the building, management and (device-level) orchestration of sophisticated gamified content that can generate viewer feedback and dictate how characters can evolve psychologically the more time a viewer spends with them. Big public cloud service providers are in the frontline of this development, each having their own AI research division dedicated to designing a better UX.

Media Businesses' Technology Roadmap



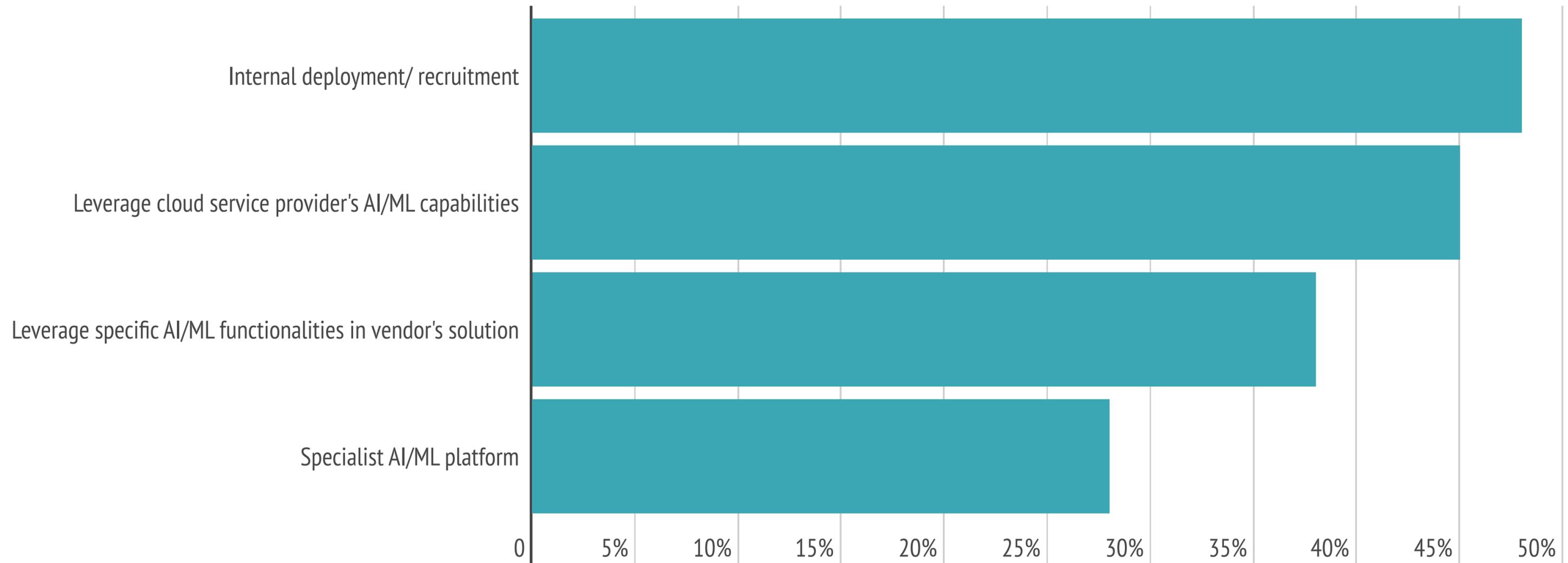
Sources: IABM

AI/ML Adoption Tracker



Adoption by Broadcast & Media Industry - AI & Public cloud

Preferred AI/ML deployment method



Sources: IABM



AI/ML Adoption Tracker

Adoption by Broadcast & Media Industry - AI & Public cloud

Evolution of media companies' cloud moves involving AI/ML

Company	Year	Details
Discovery	2018	"Move to cloud-based playout was part of a broader strategy to virtualize Discovery's entire content supply and delivery chain... The main driver [for on premises] was access to satellites, but the cloud makes geography irrelevant"
ProSiebenSat.1	2019	With AWS, ProSiebenSat.1 is improving the time to market of new applications, and introducing advanced analytics and machine learning (ML) technologies across its organization
Fox	2019	Fox's transition to the cloud included the move of its media supply chain for linear and digital delivery as well as the increasing reliance on analytics services
ViacomCBS	2020	ViacomCBS migrated its entire broadcast infrastructure to the cloud, including 425 linear TV channels and 40 global data and media centers
France Televisions	2020	"Our main objective is to bring together all the data entrusted by producers and the data enriched by AI solutions in order to gauge, for each program, our level of knowledge. All of this data is intended to drastically increase the visibility and discoverability of our content by our audience."
Globo	2021	Globo's transition to the cloud included the migration of 100% of its data centers to the cloud as well as the increasing use of machine learning services
Disney	2021	Disney+ is expanding its use of AWS' services to include more than 50 technologies, such as machine learning, database, storage, content delivery, serverless, and analytics.
SVT	2021	Sveriges Television (SVT) moved from perpetual licences to Avid's MediaCentral subscription model to benefit from Multisite tool, providing AI-assisted search capabilities with phonetic search and seamless integration between SVT's sites.
Discovery	2021	Discovery built its new discovery+ streaming service on AWS' fully managed ML service, Amazon Personalize, generating advanced recommendations to improve UX
TF1 Groupe	2021	TF1 adopted AWS Media Intelligence (AWS MI) solutions, including Amazon Rekognition, Amazon Transcribe, Amazon Translate and Amazon Comprehend enabling faster search and content localization.
Al Jazeera, BeIN Sports	2022	Al Jazeera and BeIN Sports are partnering with Ooredoo and Microsoft Azure to develop new broadcasting capabilities for the FIFA World Cup Qatar 2022, employing AI-enabled cameras and Azure Kubernetes video analytics.

Sources: IABM

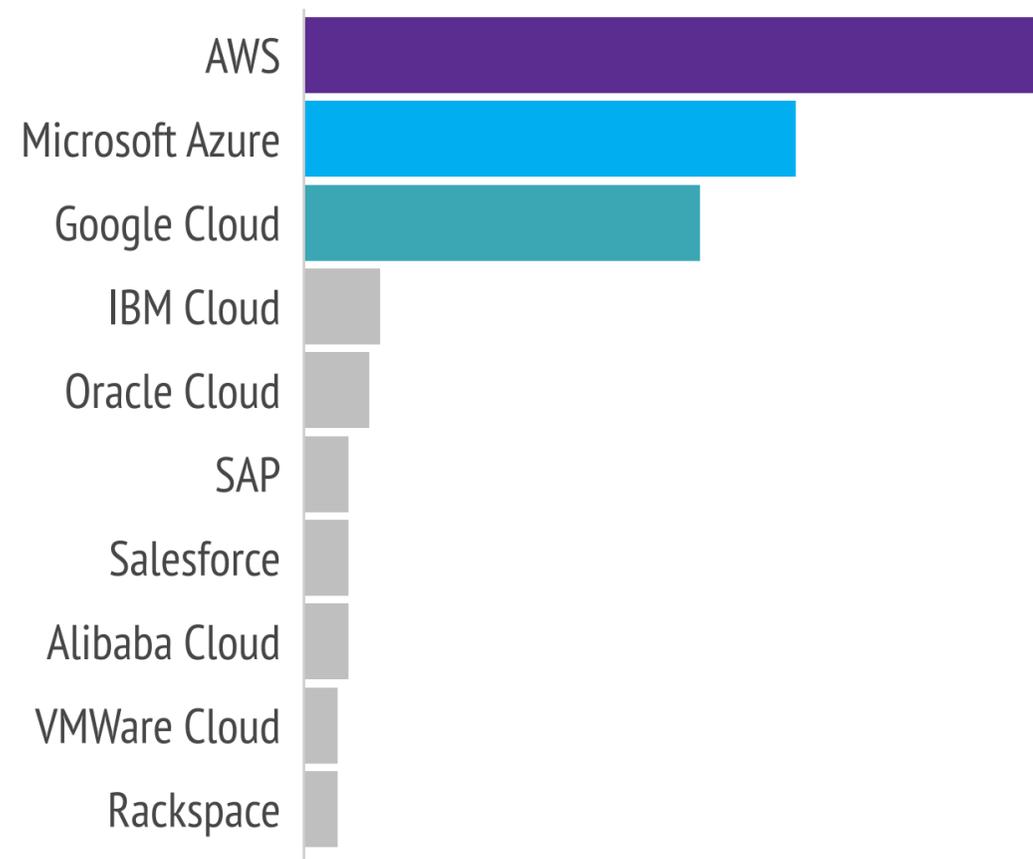


AI/ML Adoption Tracker

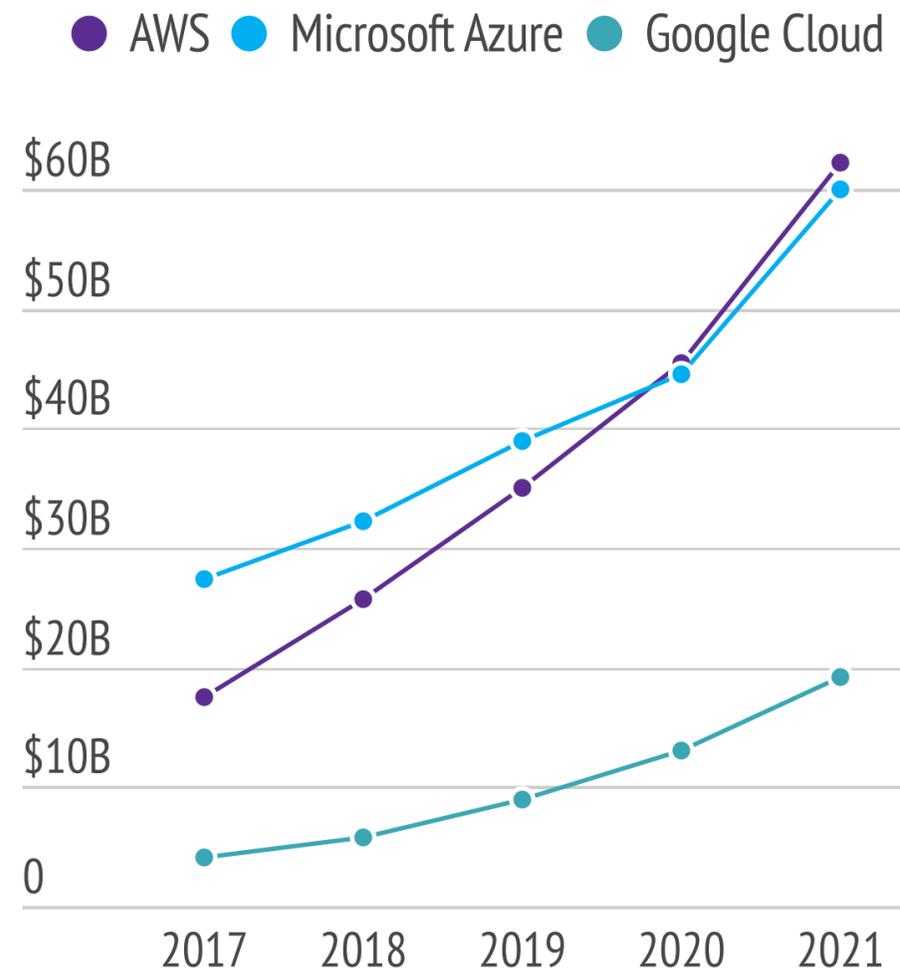
Adoption by Broadcast & Media Industry - AI & Public cloud

Public cloud service providers' revenue growth strengthened in 2021. AWS and Microsoft Azure continue to lead by global revenue and they also are the most preferred cloud service providers among media companies.

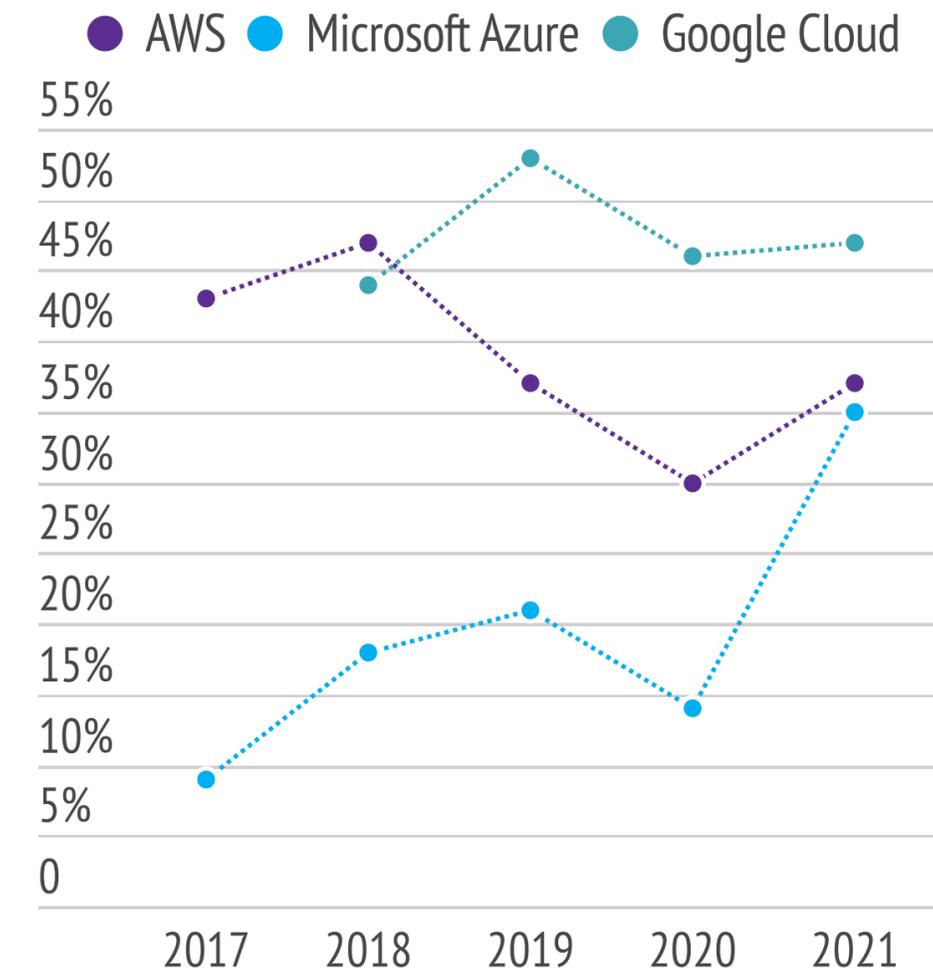
Cloud service providers usage by media businesses



Global revenue in billion USD



Global revenue YoY growth rate



Sources: IABM, Company Filings

AI/ML Adoption Tracker

Adoption by Broadcast & Media Industry - AI & Public cloud



Amazon Machine Learning

Amazon SageMaker

Google AI

Cloud AutoML Vision

TensorFlow

AI/ML services by public cloud service provider - Comparison

	Amazon SageMaker	Microsoft Azure	Google AI	IBM Watson
Classification	✓	✓	✓	✓
Regression	✓	✓	✓	✓
Clustering	✓	✓	✓	✗
Anomaly detection	✓	✓	✗	✗
Recommendations	✓	✓	✓	✗
Ranking	✓	✓	✗	✗
Data labeling	✓	✓	✓	✓
MLOps pipeline support	✓	✓	✓	✓
Built-in algorithms	✓	✓	✓	✗

Sources: IABM, altexsoft.com, AWS, Microsoft, Google, IBM



AI/ML Adoption Tracker

Adoption by Broadcast & Media Industry - AI & Public cloud

Currently, major public cloud service providers offer high-level APIs - services with trained models that require no in-house machine learning expertise from media companies - which can be divided into three main categories:

Text recognition, translation & analysis

Image/video recognition & analysis

Other specific uncategorized services

Speech and text processing APIs - Comparison

	AWS	Microsoft Azure	Google Cloud	IBM Cloud
Speech-to-text recognition	✓	✓	✓	✓
Entities extraction	✓	✓	✓	✓
Key phrase extraction	✓	✓	✓	✓
Language recognition	100+ languages	120 languages	120+ languages	60+ languages
Topics extraction	✓	✓	✓	✓
Spell check	✗	✓	✗	✗
Autocompletion	✗	✓	✗	✗
Voice verification	✓	✓	✗	✗
Intention analysis	✓	✓	✓	✓
Metadata extraction	✗	✗	✗	✓
Relations analysis	✗	✓	✗	✓
Sentiment analysis	✓	✓	✓	✓
Personality analysis	✗	✗	✗	✓
Tagging parts of speech	✗	✓	✓	✗
Filtering inappropriate content	✗	✓	✓	✗
Translation	6 languages	60+ languages	100+ languages	48 languages
Chatbot toolset	✓	✓	✓	✓

Sources: IABM, altexsoft.com

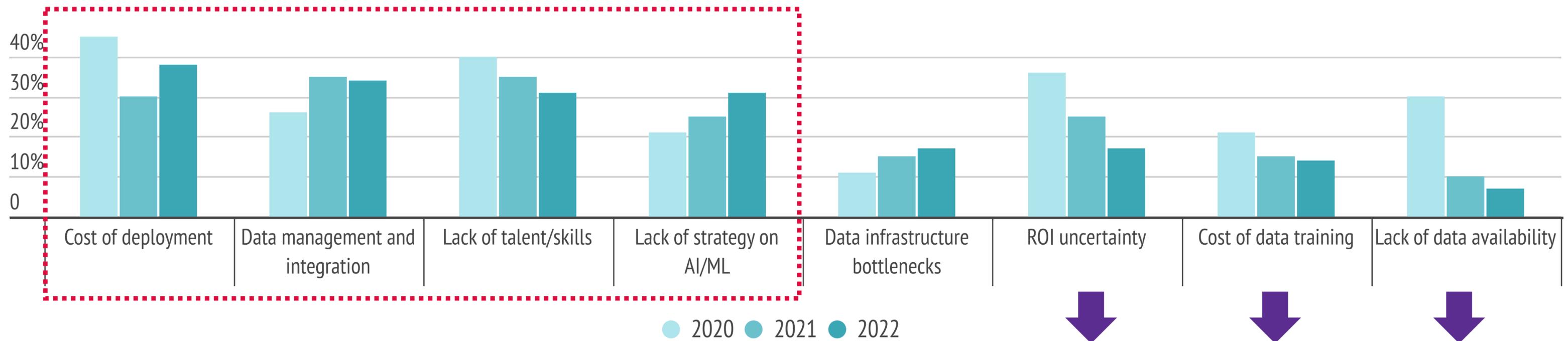


AI/ML Adoption Tracker

Adoption by Broadcast & Media Industry - Challenges

While AI/ML provides great opportunities for content and data management, as well as workflow automation, its deployment is relatively expensive, hindering AI/ML technology adoption. Data availability is growing, and the cost of data training is declining with wider technology deployment, resulting in more predictable ROI. Media businesses prefer internal deployment of AI/ML technology, which requires recruiting talent with specific skills, making talent scarcity one of the main challenges for AI/ML adoption.

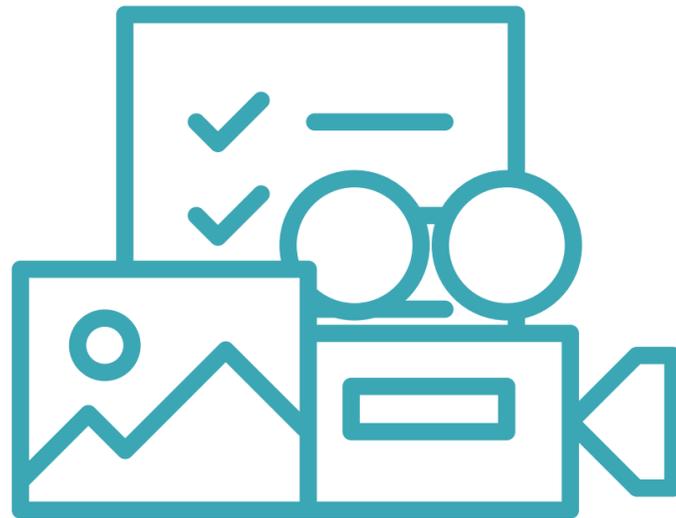
Major Challenges of AI/ML Adoption



Sources: IABM



AI/ML Deployments by Content Chain





AI Deployments by Content Chain

Content Creation & Production - COVID-19 Impact



Move to the cloud: The COVID-19 pandemic significantly accelerated media businesses' move to the cloud, allowing greater collaboration, remote working for (post-) production teams, and also enabled access to an infinite pool of freelancer resources. This has led to the emergence of smaller, consumer-type, single-purpose AI tools, enabling decentralized production teams and creative individuals to use different AI/ML services independently.



Financial pressure and crew consolidation: Financial pressure and need for efficiency, productivity and crew consolidation increased demand for AI-based (post-) production tools in 2021. Integration of (post-) production tools like Avid Media Composer and EditShare's EFS with cloud AI/ML services from providers like AWS is boosting automation particularly in post-production.



AI-powered camera operations: The pandemic drove AI-powered advances in camera and imaging technology resulting in an increasing number of sophisticated AI applications in mid- and higher-end professional cameras (e.g., Sony a6600 and Olympus OM-D E-M1X), which employ AI-based focus systems that enable more precise auto-focus and -follow operations.

”

The thing that I think has happened [during the pandemic] is there are many more smaller, single-purpose AI tools that do one thing like content deduplication, comparing the content, as people migrate to the cloud from multiple different sorts of storage. It's pretty common that you bought the same thing multiple times over because maybe you had it in your tape library and on spinning disc somewhere.

Simon Eldridge, Chief Product Officer, SDVI

Source: IABM, IBC365, thebroadcastbridge.com, streamingmedia.com

AI Deployments by Content Chain



Content Creation & Production - AI/ML improving automation and interactivity

The pandemic pushed media companies to consolidate their crews amid financial pressures and increase the use of AI/ML in real-time production, like news and sports, favoring ML-based computer vision (CV), natural language processing (NLP), and optimization-related applications.

The shift to remote production is driving demand for automated AI-powered camera operations in live sports, eliminating the need for production staff on site. This trend is closely linked with media businesses' move to the cloud, enabling the large-scale, real-time analysis of data stored in the cloud.

Viewers' demand for more interactive, immersive, and gamified content is increasingly pushing sports leagues to invest in AI/ML solutions to make their sports content more appealing to media companies and streaming services fiercely competing over different sports rights.

Source: IABM



AI Deployments by Content Chain

Content Creation & Production - AI/ML improving automation and interactivity

AI/ML deployments in sports production

Tech buyer	Tech vendor	Year	AI application
SolidSport	Mobile Viewpoint (now part of Vislink)	2019	AI-based sports streaming solution IQ-Sports Producer used for automated camera operations in live sports for linear TV and OTT
ESPN	Pixellot	2020	AI-powered automated production/multicam systems used to cover America East sports at seven venues in four university campuses
The French Open/Roland Garros	Infosys AI	2021	AI-based RG Players App used by over 1000 players/coaches to analyse each match with more precision
NBA	Microsoft Azure	2021	AI/ML-backed NBA CourtOptix powered by Microsoft Azure used to track and analyse action on the court, create insights, asses player performance
Premier League	Oracle	2021	ML-based computer vision solution used to track players, create stats, live insights and analytics for TV broadcasts, digital and social media channels
Serie A	WSC Sports	2022	ML-based AI platform used to analyse actions while automatically indexing, cropping and applying graphics to videos, creating highlights published directly across social media and other digital platforms
Liverpool F.C.	SkillCorner	2022	AI platform used to track data points (players, referees, the ball) during live broadcasts
Bundesliga	AWS	2022	ML-powered match statistics platform launched to drive fan engagement by creating insights, analysing player skills and ranking their technical performance
NFL	AWS	2022	NFL Digital Athlete AI tool using TV images and sensors embedded in helmets, mouth guards and shoulder pads to analyse risks of injuries via computer vision technology
ESPN	IBM	2022	IBM Watson Trade Assistant used to assist players of fantasy American football leagues on which players to trade, analyse stats and to listen to TV/radio/podcast shows to benchmark the opinions of sports experts and commentators

Source: IABM, athleticbusiness.com, SVG Europe, Forbes, sporttechnie.com, BBC, medium.com



AI Deployments by Content Chain

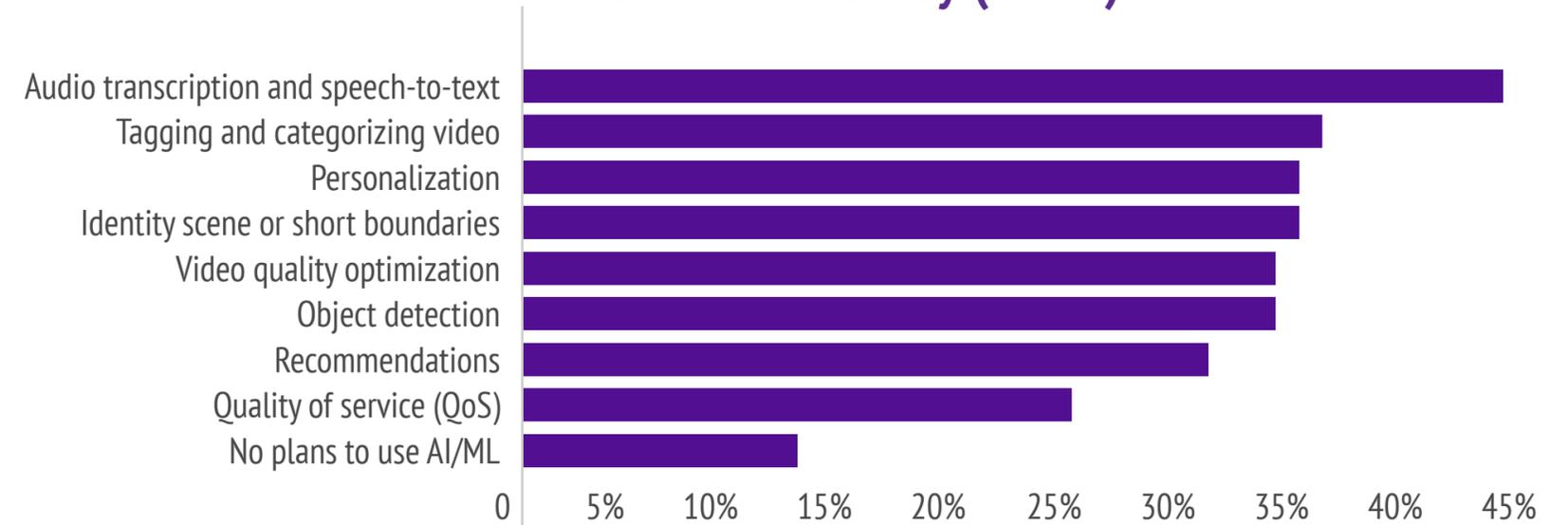
Content Creation & Production - AI/ML improving productivity and UX

As data volumes continue to skyrocket, media companies increasingly need AI/ML tools that can identify text within content and automatically generate video transcripts, improve discoverability of video assets, and enable watching of video muted. For example, Facebook has reported that 85% of video content on its platform is being watched with no sound.

In post-production, the recent shift toward decentralized, virtualized production is driving demand for AI/ML tools that automate traditionally repetitive tasks like tagging shots with metadata, organizing/analyzing/indexing all project clips and synchronizing audible dialog.

In terms of audio, AI/ML is used to remove problems such as wind noise from microphones and is emerging in assisted mastering, mixing and composition. AI/ML is also increasingly applied to upscale footage, when refreshing older video or intercutting lower resolution content.

Top use cases of AI/ML to improve video experience - Bitmovin Survey (2021)



In post-production, you can't just say 'if the results aren't good enough, we'll simply improve the data that feeds into the AI algorithm' because everybody has a different idea of what is good enough. That's why in the future, we'll see more creatives informing how the AI works and what problems it's meant to solve.

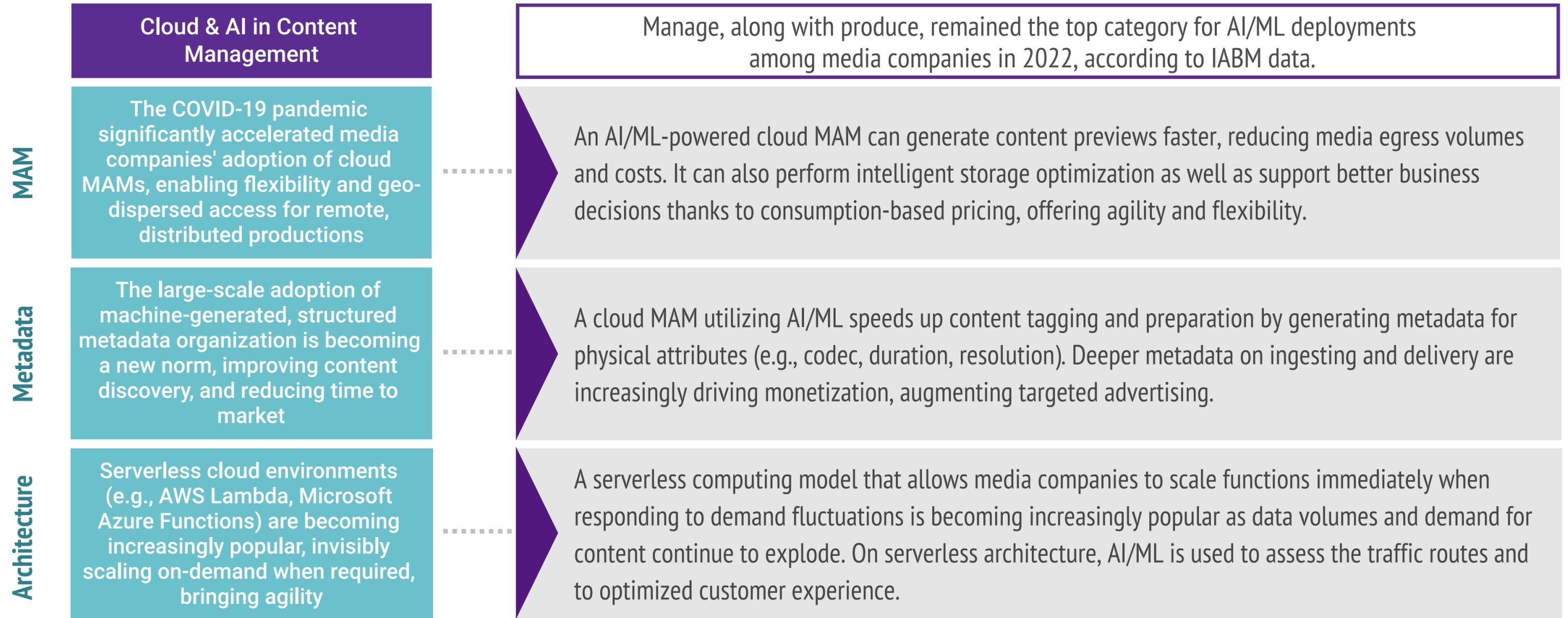
Dado Valentic, Founder, Colourlab.ai

Source: IABM, Bitmovin Developer Report 2021, prosoundnetwork.com, redsharknews.com



AI Deployments by Content Chain

Content Management & Support - Shift to AI/ML-based cloud MAMs



Sources: IABM, wowza.com, dataart.com, BBC, medium.com, section.io



AI Deployments by Content Chain

Content Management & Support - Insourcing and outsourcing AI/ML capabilities for content management

While an increasing number of media companies are adopting AI/ML tools offered by public cloud service providers, some of the biggest ones like Disney and Comcast have developed their own AI platforms to automate metadata generation, while at the same time relying on public cloud service providers' AI/ML technology in other areas.

For example, Disney is using its own ML-based metadata platform - Content Genome - to automate the digital archival and discovery of animation content, while also using AWS' ML/DL tools to automate metadata tagging. Comcast, in turn, announced in January 2022 that its new metadata generation platform, VideoAI -developed in-house - will be used to automatically analyze video assets and segment metadata for dynamic ad insertion (DAI).

AI/ML deployments using public cloud services for content management

Tech buyer	Tech vendor	AI application
Netflix	AWS	eMAM Cloud Service (enabling media companies to manage media assets, tag metadata, edit productions collaboratively)
Discovery	AWS	eMAM Cloud Service
BBC	AWS	eMAM Cloud Service
NFL	AWS	eMAM Cloud Service
Sky	Google Cloud Platform	Google AI Platform/Automatic Video Tagging (enabling automatic video tagging with Cloudinary's video management technology)
MLB	Google Cloud Platform	Google AI Platform/Automatic Video Tagging
20th Century Fox	Google Cloud Platform	Google AI Platform/Automatic Video Tagging
NBC Sports	Microsoft Azure	Azure AI platform (enabling media asset management)
USA	Microsoft	Azure AI platform

Sources: IABM, engadget.com, fiercevideo.com, AWS, Google, Microsoft



AI Deployments by Content Chain

Content Management & Support - Microservices and AI/ML

Microservices are playing an increasingly important role in linking different metadata systems together, enhancing MAM and analytics capabilities - this is crucial in the context of rapidly growing data volumes.

"It is more important than ever to link different metadata systems, which means a greater need for common metadata formats and mappings between them." (Kip Welch, SVP Special Projects, MovieLabs)

Tedial said in Q1/2022 that it is working on a major new concept - Media Integration Platform - which is based on microservices and will include more features and additional business intelligence related to cost predictions of new services.

"Microservices is like a series of compact vans carrying smaller amounts, but offering more flexibility. You don't need the capacity of the large lorry that's there regardless of what you have to transport; instead, you only use what you need." (Julián Fernández-Campón, CTO, Tedial)

Digital Nirvana's latest SaaS-based content management solution, MetadataIQ, is designed on top of the Avid MAM, augmenting it with microservices, which enhance the MAM's capabilities to find content immediately, while automatically generating video intelligence metadata and speech-to-text for Avid MAM/PAM users.

"MetadataIQ applies advanced AI- and ML-based content analysis to create better-structured, more detailed and more accurate metadata automatically in Avid MediaCentral workflows. It automates the entire process of metadata generation." (Russell Wise, Senior VP, Digital Nirvana)

Sources: IABM, IBC365, techtarget.com, avidblogs.com, IBC365



AI Deployments by Content Chain

Content Management & Support - AI in Edge computing

↑ AI in Edge computing

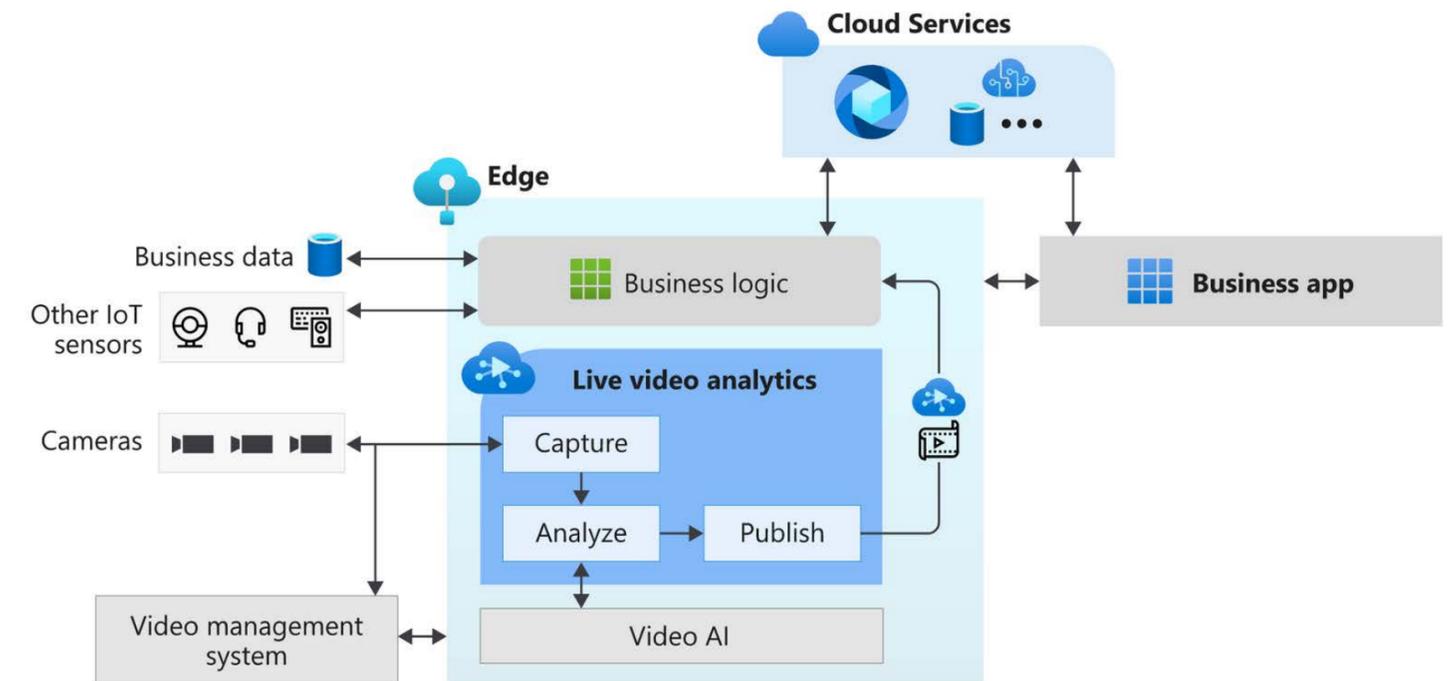
As demand for live video streaming continues to explode, media businesses increasingly rely on edge computing, which brings a host of flexible cloud computing functions - and powerful processing power - to the point where the video is created. Edge computing is increasingly attracting AI workloads from the intelligent cloud to the intelligent edge, significantly improving response times and bandwidth savings.

Computer vision models using large data streams (e.g., live video) as input benefit from processing these large data sets locally at the end-user and device level, saving bandwidth and reducing privacy risks related to streaming into a cloud data center. Hence, media businesses are increasingly interested in edge video analytics systems that use computer vision and deep learning technology directly integrated into the camera or that are attached to another edge computing system.

Sources: IABM, tvtechnology.com, streamingmedia.com, broadcastprome.com, Microsoft, valoremreply.com

Edge AI video analytics - Examples

Microsoft Azure Video Analyzer platform enables users to run real-time AI video analytics on the edge, and combine the functionality with other Azure IoT Edge modules like Stream Analytics on IoT Edge, Cognitive Services on IoT Edge and Azure services in the cloud. Azure Percept - another new Edge AI offering from Microsoft launched in 2021 - offers ready-to-use, prebuilt development kits and a collection of pre-built AI models, allowing developers to get started without the need for custom IoT sensor solutions.





AI Deployments by Content Chain

Content Infrastructure & Storage - AI in cloud storage

Impact on AI/ML deployments

The COVID-19 pandemic dramatically accelerated media companies' demand for cloud storage, increasing the popularity of both hybrid and multi-cloud. As a result, the lines between different types of storage are blurring when tech buyers seek solutions for more flexible storage tiering and (cheaper) migration options.



By adopting a multi-cloud strategy, media companies can use several public cloud providers' AI/ML solutions and optimize their use at lower costs while avoiding being locked in with one single provider - this is very important because all the AI/ML-related IP that a company develops will be bound to the cloud provider's infrastructure and is thus difficult to migrate to another cloud.

Big public cloud vendors are expanding their free tier services and making data retrieval cheaper and faster, blurring the line between hot and cold storage. The AI-based next-generation unstructured data management systems are soon expected to become a game changer in storage pricing, because they can discover, map and replicate data without having to move it between the tiers - changing storage purchase decisions.



A multi-cloud approach enables media companies to match different cloud service providers' specific offerings to their own specific AI/ML data needs and application requirements, allowing them to scale their storage capacity up and down and flexibly deploy their applications in other clouds, if they are better suited to manage a certain workflow.

The move toward decentralized remote productions is driving media companies' investments in AI-supported dynamic, active storage with lower latencies to retrieve data and to reduce application response times. Accessing data storage that is geographically dispersed across multiple clouds helps media companies to leverage geo-proximity to reduce latency and bandwidth costs.



As media companies continue to invest in more interactive, immersive and gamified content, significantly increasing the size of media files processed in decentralized virtual workstations, media companies are increasingly investing in smaller, single-purpose AI tools that are designed to do one specific thing, as production teams (and viewers) migrate to the cloud from multiple different sorts of storage.

Sources: IABM, techtarget.com, AWS, towardsdatascience.com, streamingmedia.com



AI Deployments by Content Chain

Content Infrastructure & Storage - AI in compression optimization

The emergence of game engines, VFX, and virtual studios, as well as increasing demand for interactivity are boosting demand for high-quality codecs (like HEVC, VVC, AV1), because media companies now need to live stream 4K/8K content at a manageable bitrate over the cloud and IP. As a result, AI/ML is used to reduce bandwidth requirements by manipulating the objects in the video and letting AI reconstruct the image details itself, freeing up bandwidth while maintaining the video quality. This kind of AI-generated "perceptual quality" rather than broadcast quality is increasingly used to rate video codecs and automate bitrate tuning. Netflix has taken an active role in developing metrics like Video Multi-method Assessment Fusion (VMAF), comparing how viewers perceive streamed content on different devices.

For example, NVIDIA introduced its new cloud-based AI service, NVIDIA Maxine, in Q1/2022, which is claimed to compress high quality streaming into one tenth of the space (i.e., 0.1165KB per frame) that a traditional streaming feed usually takes, while also featuring AI-powered noise removal, improving video quality - and UX. By "interpolating" live images (i.e., isolating various control points in the image) and then rebuilding them with AI-generated details, the bandwidth is reduced significantly, making the live stream optimized for mobile devices as well as receiving devices in rural areas suffering from poorer connectivity.

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VMAF [Video Multi-method Assessment Fusion] can capture larger differences between codecs, as well as scaling artifacts, in a way that's better correlated with perceptual quality. It enables us to compare codecs in the regions which are truly relevant.

Netflix in its tech blog

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As with IBM Deep Blue, old coding tools had a priori statistical knowledge modelled and hardwired in the tools, but in AI, knowledge is acquired by learning the statistics. This is the reason why AI tools are more promising than traditional data processing tools.

Leonardo Chiariglione, Co-Founder, MPEG)

Sources: IABM, tvtechnology.com, SMPTE, redsharknews.com

AI Deployments by Content Chain

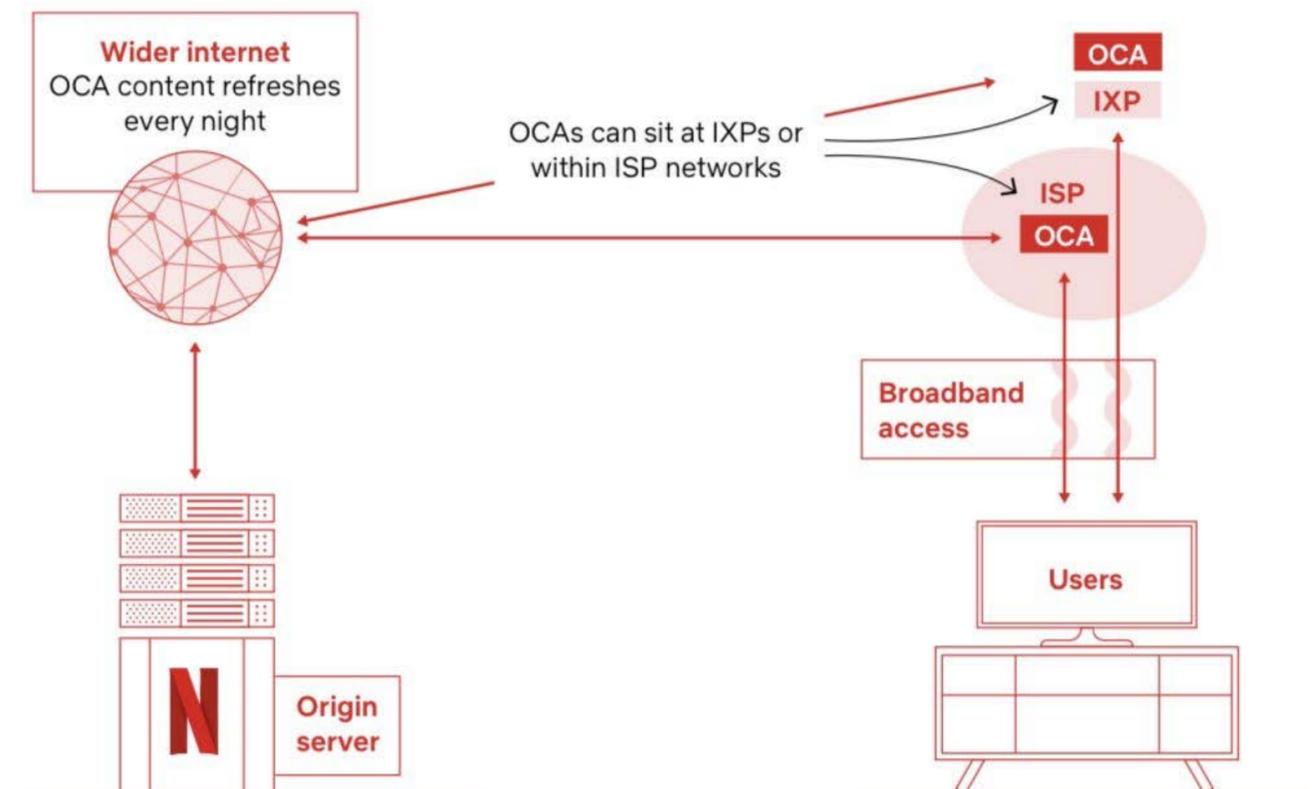
Content Distribution & Monetization - AI improving UX via CDN optimization

Content delivery networks (CDNs) are playing a crucial role in the rise of OTT and thus increasingly becoming a focus of distributors of linear and non-linear content. AI/ML tools can predict usage and automatically scale resources up or down in a cloud-based CDN environment such as Amazon Cloudfront. This is useful for minimizing delay and better budgeting for costs. For example, Netflix uses AI/ML tools to optimize the performance of its CDN, Open Connect.

As the amount of high-quality content on VOD and OTT platforms continues to skyrocket, the routing decision(s) made by the CDN becomes very complex. In these circumstances, AI/ML can be used to make the routing decisions more efficient and intelligent by proactively identifying network traffic patterns and traffic demand (e.g., network bottlenecks) and then communicating them to the network operators.

To improve viewer engagement, media companies - mimicking gaming companies - are increasingly using digital feedback loops, communities and engagement platforms to improve viewer retention. Particularly, sports leagues and clubs have started to set up AI-enriched digital fan engagement platforms that combine physical and digital universes, making their first steps towards the metaverse.

Netflix's Open Connect CDN architecture



Sources: IABM, IBC365, Shyamal Madura Patabendige/ Twitter



AI Deployments by Content Chain

Content Distribution & Monetization - SaaS-based cross-platform ad measurement



The diversification of ad inventory and the shift from upfront linear ad deals to streaming have made traditional audience measurement systems (e.g., Nielsen) antiquated and revealed the lack of collaboration between sell-side and buy-side platforms - ad selling is still happening in silos.



Therefore, media companies - moving their operations to the cloud - are now investing in intelligent SaaS-based cross-platform measurement systems and developing (programmatic) marketplaces that are automating workflows and decisioning across the buy and sell sides of the market - based on AI/ML analytics.



Moving to cross-platform measurement and trading platforms has the advantage that running cross-platform campaigns on CTV/OTT improves addressability and audience reach, when ads can be delivered on a 1:1 basis. This has a significant impact on the overall UX.



BVOD services are still works-in-progress, but we're making a lot of progress quickly. At ITV, we're building out our new marketplace to support programmatic trading and custom audience targeting, using both our own registered user data and advertisers' own datasets. We're creating a common TV identity solution and a marketplace for data to provide greater agility for both incumbent and prospective clients.

Rhys McLachlan, Director Of Advanced Advertising, ITV



Sources: IABM, Bench Media, Sky Media, Comcast Technology Solutions